CITY OF DOVER

PLANNING TECHNICAL REVIEW COMMITTEE – AGENDA

Meeting Type:	Regular Meeting
Meeting Location:	Council Conference Room, City Hall, 288 Central Avenue, Dover, NH 03820
Meeting Date:	**Thursday, January 9, 2025**
Meeting Time:	**10:30 AM**

1. Site Plan for Bohler Engineering, (Owner VC Dover Investments, LLC), Assessor's Map H, Lot 4-3, zoned C*, located at 30 Grapevine Drive. (Proposal is for a ± 3,694 s.f. McDonald's restaurant with a side by side drive thru and 43 parking spaces. (SITE-2024-0020)

   **Located in a Residential-Commercial Mixed-Use Overlay District*

2. Site Plan for 239 Knox Marsh Realty, LLC, Assessor's Map H, Lot 37-A, zoned C, located at 239 Knox Marsh Road. (Proposal is for a ±15,097 s.f. commercial building with eighty-four (84) lodging units and two (2), ninety (90)-unit single occupancy residential buildings restricted to HUD Fair Market rental rates.) (SITE-2024-0019)

   (Related application regarding secondary groundwater recharge, see: COND-2024-0035, and for Transfer of Development Rights, see: TRAN-2024-0016.)

PLAN SNAPSHOT REPORT SITE-2024-0020
FOR CITY OF DOVER, N.H.

Plan Type:	Site Plan - Major	**Project:**		**App Date:**	12/20/2024
Work Class:	New Construction	**District:**	None	**Exp Date:**	02/23/2025
Status:	In Review	**Square Feet:**	0.00	**Completed:**	NOT COMPLETED
Valuation:	$0.00	**Assigned To:**	Blonigen, Rachel	**Approval Expire Date:**	

Description: The Applicant proposes to construct a new 3,694 SF McDonald's restaurant with a side-by-side drive-thru, which consists of two lanes and two order points, along with new parking areas, landscaping, and utilities on the corner of Grapevine Drive and NH-108. The proposed layout results in 43 parking spaces. The proposed activity requires Conditional Use Permits for the following: Development within the Residential-Commercial Mixed-Use Overlay District [170-32.A.(1)], re-contouring or grading of land within the 50' wetland buffer within the Wetland Protection District [170-28.G.(1)(d)], and to increase number of parking spaces permitted for the proposed use [153-14.D.(5)(a)].

Parcel:	H0004-003000 Main	**Address:**	30 Grapevine Dr Main Dover, NH	**Zone:**	C(Non-Residential - Commercial)

Applicant
Connor Ennis
352 Turnpike Road 3rd Floor
3rd Floor
Southborough, MA 01772
Business: (508) 480-9900
Mobile: (856) 357-3485

Engineer
Bohler Engineering
352 Turnpike Road
Southborough, 01772
Business: (508) 480-9900

Surveyor
Control Point Associates, Inc.
352 Turnpike Road
Southborough, MA 01772
Business: (508) 948-3000

Architect
Core States Group
135 Water Street Suite 201
Naperville, IL 60540
Business: (312) 718-5415

Landscape Architect
Bohler Engineering
352 Turnpike Road
Southborough, MA 01772
Business: (508) 480-9900

Plan Custom Fields

Total	0	Total2	3694	Total3	0
Total4	0	Total5	0	Total6	0
Total7	0	Total8	3694	Total9	3694
Street Classification Type	Municipal	Net Change in # Parking Spaces (+/-)	43	Water Service	Municipal
Recording Number		Sewer Service	Municipal	Total Acres (GIS)	1.92
Deed Book	3496	Total SQFT	83635.2	Deed Page	733
Deed Date		Proposed Property Use	Proposed McDonald's Restaurant with Drive-Thru	Area of Parcel to be Developed (SQFT)	79450
Number of Parking Spaces Existing	0	Number of Parking Spaces Proposed	43	Number of Employees Total	75
Number of Employees in Max Shift	14	Distance to City Water	0	Distance to City Sewer	0
Type of Building to be Built	Proposed McDonald's Restaurant with Drive-Thru	Estimated Construction Value	2000000.00	Refuse Removal	Public
Existing Conservation Easement Details		TotalImpactFeeSDTOD	0.00	TotalImpactFeeTHTOD	0.00
TotalImpactFee23FTOD	0.00	TotalImpactFeeA4TOD	0.00	TotalImpactFeeMHTOD	0.00
TotalImpactFeeADUTOD	0.00	TotalImpactFeeAONRTOD	0.00	TotalImpactFeeAR55TOD	0.00
TotalImpactFeeAR62TOD	0.00	Sub Total Residential	0.00	TotalImpactFeeRIRCTOD	0.00
TotalImpactFeeOCSTOD	0.00	TotalImpactFeeITWCTOD	0.00	TotalImpactFeeNHALTOD	0.00

PLAN SNAPSHOT REPORT (SITE-2024-0020)

TotalImpactFeeOIUTOD 0.00	TotalImpactFeeAFAOT OD 0.00	Sub Total Non-Residential 0.00
Total of Impact Fees to be Assessed 0.00		

Attachment File Name	Added On	Added By	Attachment Group	Notes
Signature_Connor_Ennis_12/20/2024.jpg	12/20/2024 13:25	Ennis, Connor		Uploaded via CSS

Invoice No.	Fee	Fee Amount	Amount Paid
INV-00010501	Planning General Application Fee	$200.00	$0.00
	Total for Invoice INV-00010501	**$200.00**	**$0.00**
NOT INVOICED	Planning Non-Res/Mixed Use – New Construction	$554.10	$0.00
	Total for Invoice NOT INVOICED	**$554.10**	**$0.00**
	Grand Total for Plan	**$754.10**	**$0.00**

Workflow Step / Action Name	Action Type	Start Date	End Date
Review v.1			
Confirm application complete v.1	Generic Action		
Technical Review Committee Meeting Agenda v.1	Task		
Land Use Plan Technical Review v.1	Receive Submittal		
Technical Review Committee Meeting v.1	Hold Meeting		
Planning Board v.1			
Planning Board Agenda v.1	Task		
Invoice for Notices v.1	Task		
Send Notices v.1	Task		
Planner Creates Staff Recommendations v.1	Plan Activity		
Distribute Planning Board Materials v.1	Task		
Planning Board Hearing v.1	Hold Hearing		
Planning Board Decision v.1	Plan Activity		
NOD Sent to Applicant v.1	Create Report		
Final Plan v.1			
Land Use Plan Stamped and Signed v.1	Generic Action		
Recording v.1	Task		
Document Archival v.1	Generic Action		
Internal Notification of Plan Completion v.1	Generic Action		
Building Official Notifies Address v.1	Generic Action		
Pre-Con Meeting v.1	Hold Meeting		
Create/Link to Records v.1			
Create / Link to Permit - Building Major v.1	Create Sub Permit		
Create / Link to Permit - Site Work, Construction v.1	Create Sub Permit		

352 Turnpike Road
Southborough, MA 01772
508.480.9900

December 18, 2024

City of Dover
Planning Board
288 Central Avenue
Dover, NH 03820

Attn: Donna Benton, AICP – Director of Planning and Community Development

Re: Conditional Use Permit and Site Plan Review Application
Proposed McDonald's Restaurant with Drive-Thru
30 Grapevine Drive
Dover, NH 03820

Dear Ms. Benton,

On behalf of the Applicant, McDonald's USA, LLC, Bohler is pleased to submit the attached Conditional Use Permit and Site Plan Review Applications Package and supporting documentation as part of the proposed development and construction of a new 3,694 McDonald's restaurant with drive-thru located at 30 Grapevine Drive, Dover, NH 03820 (Map #H, Lot #4-3).

Enclosed, please find the following in support of the above-mentioned project:

- One (1) copy of the Waiver Request Letter;
- One (1) copy of the signed Site Review Application & Checklist;
- One (1) copy of the signed Conditional Use Permit Application;
- One (1) copy of the Planning Application Owner Authorization form;
- Eight (8) 24"x36" copies of the "Proposed Site Plan Documents" prepared by Bohler;
- Eight (8) 11"x17" copies of the architectural elevations;
- Eight (8) 11"x17" copies of the rendered architectural elevations;
- Eight (8) 11"x17" copies of the prototypical McDonald's architectural elevations for reference only;
- One (1) copy of "Supplemental Traffic Analysis" prepared by TFMoran, Inc.;
- One (1) copy of "Stormwater Management Drainage Report" prepared by TFMoran, Inc.;
- One (1) copy of Report of Geotechnical Investigation prepared by Whitestone Associates, Inc.
- Check in the amount of $3,723.60 made out to City of Dover

McDonald's USA, LLC is proposing a substantial investment at the above-mentioned property to develop the existing vacant condominium land unit with a new ±3,694 SF McDonald's restaurant with drive-through and associated improvements. The subject project area is a portion of the overall property located at the corner of Grapevine Drive and Durham Road (NH Route 108) and is bound by Grapevine Drive to the North, Durham Road (NH Route 108) to the East, a vacant field to the South, and an existing stormwater management area and Hannaford supermarket to the West. The property is identified as Map #H and Lot #4-3, and the project area is approximately ±83,463 SF. The site is located within the Commercial (c) District and the Residential-Commercial Mixed Use (RCM) Overlay District.

Under existing conditions, the overall property features an existing Hannaford, existing senior care housing center, Grapevine Drive (private), and associated utilities. The proposed project location consists of a vacant grass area, an existing above ground stormwater management area, an existing retaining wall, and existing utility service stubs. There are wetlands located along the southerly portion of the subject project area and have been delineated by Damon E. Burt (NHCWS #163) of Fraggle Rock Environmental Services on 9/2/2022. The majority of runoff on site flows north to south overland towards the existing wetland area on site. The remaining portion of runoff flows west towards the existing aboveground stormwater management system within the common area of the overall property. Additionally, the site also receives a small portion of run-on from Grapevine Drive and Durham Road (NH Route 108).

The project proposes to develop the existing site to construct a new ±3,690 SF McDonald's restaurant with a side-by-side drive-thru consisting of two (2) lanes and two (2) order points along with new parking areas, landscaping, utilities, and stormwater management improvements, and the Applicant seeks a Conditional Use Permit for development within the Residential-Commercial Mixed Use Overlay District per §170-32.A.(1). One-way circulation around the site is proposed with one (1) full access driveway proposed along Grapevine Drive and one (1) right-out only egress drive proposed along Durham Road (NH Route 108). A total of forty-four (43) parking stalls are proposed whereas a maximum of fourteen (14) spaces are permitted for the retail/service use, and the Applicant seeks a Conditional Use Permit to increase the number of parking spaces permitted for the proposed use per §153-14.D.(5)(a). The proposed development area has been designed to drain to a conventional closed-pipe drainage system with deep-sump, hooded catch basins, and one (1) hydrologically connected subsurface infiltration basin. Pretreatment of stormwater runoff is achieved by either deep sump catches basins or an isolator row within the hydrologically connected subsurface infiltration basin prior to discharge into the existing aboveground stormwater management area within the common area of the property. Additional detail and stormwater management calculations are provided in the "Stormwater Management Drainage Report" prepared by TFMoran, Inc. included as part of this submission. The proposed project results in re-contouring and grading of land within the 50' wetland buffer within the Wetland Protection District, and therefore the Applicant seeks a Conditional Use Permit per §170-32.A.(1).

As to signage, the project proposes one (1) freestanding sign located on the parcel; and, two (2) wall signs affixed to the building. As a corner lot fronting on two (2) streets, the Applicant proposes a wall sign facing Durham Road (NH Route 108) and to a wall sign facing Grapevine Drive. Each wall sign is designed to be smaller in square footage than the linear footage of the respective building side.

Pursuant to §170-19B. of the City of Dover Zoning Ordinance, the Applicant addresses the following non-environmental Conditional Use Permit criteria:

> *§170-19B.(1)(a) – That both public and private buildings and landscaping shall contribute to the physical definition of rights-of-way as civic spaces.*
>
> **The proposed building and landscaping contribute to the physical definition of rights-of-way as civic spaces by providing landscape buffers from the adjacent rights-of-way to separate travelled ways from the proposed building. The proposed layout contributes to the civic space of the rights-of-way by providing one (1) full access drive along Grapevine Drive and one (1) right-out exit to Durham Road (NH Route 108).**
>
> *§170-19B.(1)(b) – That development shall adequately accommodate automobiles, while respecting the pedestrian and the spatial form of public areas.*

The proposed development is anticipated to adequately accommodate automobiles and pedestrians by providing 43 parking spaces, including those reserved for ADA, and respecting pedestrians by providing adequate sidewalks and crosswalks with space for vehicle maneuvering within the parking areas.

§170-19B.(1)(c) – That the design of streets and buildings shall reinforce safe environments, but not at the expense of accessibility.

The proposed development project reinforces safe environments by providing on-site lighting that adequately illuminates the pedestrian walkways and drive-aisles while limiting disturbance to the neighboring properties.

§170-19B.(1)(d) – That architecture and landscape design shall grow from local climate, topography, history, and building practice.

The proposed landscaping and architecture reflect the local climate, topography, history, and building practice by revising the prototypical McDonald's architecture to be more compatible with traditional New England colors and architecture. In an effort to achieve a more traditional New England architecture that aligns with the City of Dover's goals, the prototypical architecture was revised to provide a lighter color palette with limited building signage, varying parapet height, additional mullions in each window, brick wainscot around the entire building, projections at each of the drive-thru window, and a more ornate cornice around the entire building. Refer to Sheet L-101 of the "Proposed Site Plan Documents" prepared by Bohler and the proposed building elevations for additional information on the proposed landscaping and architecture.

§170-19B.(1)(e) – That buildings shall provide their inhabitants with a clear sense of geography and climate through energy-efficient methods via a mixture of elements including windows, floor plan, and public and private space.

The proposed building provides a clear sense of geography and climate through a more traditional New England architectural style including a lighter color palette with limited building signage, varying parapet height, additional mullions in each window, brick wainscot around the entire building, projections at each of the drive-thru window, and a more ornate cornice around the entire building.

§170-19B.(1)(f) – That encourage civic buildings and other public gathering places be provided as locations that reinforce community identity and activity.

The proposed McDonald's restaurant with drive-thru is anticipated to reinforce community identity and activity by providing visually unique New England architecture in character keeping with the City's development goals. The proposed project is anticipated to service the community activity through offering new services, providing employment opportunities for the local workforce, and property tax benefits for the city.

§170-19B.(1)(g) – That civic buildings shall be distinctive and appropriate to a role more important than the other buildings that constitute the fabric of the City.

The proposed McDonald's restaurant with drive-thru is anticipated to be distinctive to the fabric of the City. The proposed landscaping and architecture style will provide a visually attractive alternative to other prototypical fast-food restaurants. The proposed restaurant with drive-thru use is appropriate for the property as the proposed use is permitted within the underlying Commercial District.

§170-19B.(1)(h) – That the preservation and renewal of historic buildings shall be facilitated.

There are no historic buildings located within the proposed project area. Therefore, the proposed project will not directly impact any existing historic buildings.

§170-19B.(1)(i) – That the harmonious and orderly evolution of urban areas shall be advanced by the proposed building and/or use.

The proposed development project is anticipated to promote the evolution of urban areas through the utilization of new technology within the proposed building. Additionally, the proposed building with New England style architecture is anticipated to be harmonious with the surrounding area.

§170-19B.(1)(j) – That if the relief is granted, the surrounding neighborhood is not negatively impacted.

Existing residential uses are located northeast and east of the subject project location across from Grapevine Drive and Durham Road, respectively. The proposed McDonald's building and the proposed drive-thru lanes are located greater than 100' from the closest residential structure, and the proposed drive-thru speakers and ordering points are located on the Southwest portion of the property area to the rear of the building which is the furthest point from the existing residential uses. Furthermore, the proposed landscape buffer along Grapevine Drive and Durham Road provides an additional sound and visual buffer from the drive-thru operations. Therefore, we anticipate the proposed McDonald's restaurant with drive-thru will not negatively impact the surrounding neighborhood.

§170-19B.(2)(a) – The requested use shall be compatible with abutting uses and the surrounding neighborhood.

An existing Hannaford supermarket is located within the overall property and is located west of the subject project area. Additionally, the proposed eating and drinking establishment with drive-thru is a permitted use within the Commercial (C) District. Therefore, we anticipate the proposed McDonald's development will be compatible with the abutting uses and the surrounding neighborhood.

§170-19B.(2)(b) – The requested use will not create undue traffic congestion, or unduly impair pedestrian safety.

The proposed project is located at the corner of a Grapevine Drive and Durham Road (NH Route 108). A large portion of McDonald's customer base is generated by "pass-by" trips consisting of vehicles already travelling on the corridors under pre-development conditions, and a traffic study has been provided which concludes the proposed project is not anticipated to significantly increase traffic volumes. Mitigation improvements to widen Grapevine Drive are being considered by the property owner to be designed and coordinated under a separate application. Please note the Applicant is continuously coordinating with NHDOT and an application for a driveway permit for the exit-only onto NH Route 108 has been filed. Refer to the "Supplemental Traffic Analysis" prepared by TFMoran Inc. dated 10/22/2024 for additional information.

§170-19B.(2)(c) – The requested use will not result in objectionable noise or odor which would constitute a nuisance.

The proposed McDonald's restaurant with drive-thru use is not anticipated to result in objectionable noise or odor that would constitute a nuisance. The volume of the proposed speakers within the drive-thru implements technology to adjust the decibel level based on the ambient noise. For example, at night and when there is less vehicular traffic, the decibel level of the speakers will lower. Additionally, the proposed lighting on-site is not anticipated to be a nuisance to the surrounding neighborhood.

Per §170-32.B.(1) of the City of Dover Zoning Ordinance, the Applicant addresses additional Conditional Use Permit standards for development within the Residential-Commercial Mixed-Use (RCM) Overlay District:

§170-32.B.(1)(a) –The applicant demonstrates that the development complies with the design guidelines that are outlined in §153-16 of the Site Review Regulations. These guidelines encourage a context-sensitive development, which encourages components that act as one project and not as two adjacent projects.

The proposed development project complies with the design guidelines outlined in the Zoning Ordinance. Most notably, the proposed building architecture has been modified from the McDonald's prototypical branding architecture to provide a more traditional New England architectural style. The proposed architecture provides a lighter color palette limited building signage, varying parapet height, additional mullions in each window, brick wainscot around the entire building, projections at each of the drive-thru window, and a more ornate cornice around the entire building. Refer to Sheet L-101 of the "Proposed Site Plan Documents" prepared by Bohler and the proposed building elevations for additional information on the proposed landscaping and architecture.

§170-32.B.(1)(b) – The applicant demonstrates that the development poses no detrimental effects on surrounding properties. Potential areas of impact that need to be analyzed include, but are not limited to, vehicular traffic, noise, property value, visual blight, natural resources degradation, light pollution, and offensive emissions such as dust, odor, or smoke.

The proposed fast-food restaurant with drive-thru use is not anticipated to pose detrimental effects on the surrounding properties including traffic, noise, property value, visual blight, natural resources degradation, light pollution, and offensive omission. A

traffic study has been provided which concludes the proposed project is not anticipated to significantly increase traffic volumes of the nearby area. The proposed restaurant will provide employee opportunities and tax benefits to the City of Dover. Regarding noise, the volume of the proposed speakers within the drive-thru implements technology to adjust the decibel level based on the ambient noise. For example, at night and when there is less vehicular traffic, the decibel level of the speakers will lower. The proposed New England style architecture is anticipated to be aesthetically pleasing and not pose a visual blight, and the proposed lighting on-site is not anticipated to be a nuisance to the surrounding neighborhood.

§170-32.B.(1)(c) – The applicant shall submit a fiscal impact analysis as defined in §157-21.C.(1)(b) of the Land Subdivision Regulations. The analysis shall demonstrate that the project is at least a cost-neutral project for the City at present and 10 years from the occupation.

N/A. No subdivision proposed. By way of further answer, the Applicant states that the development of a new restaurant will generate tax revenue in excess of the anticipated fiscal impacts to the municipality that may reasonably result from a nonresidential operation located within a mixed-use development and access via private development roadway.

Per §153-14D.(5)(a) of the City of Dover Zoning Ordinance, the Applicant addresses the following additional Conditional Use Permit standards for the increase in number of parking spaces:

§153-14D.(5)(a)[1] – The applicant shall submit an analysis justifying a request for increased parking requirements.

The proposed project results in forty-three (43) proposed parking spaces where a maximum of fourteen (14) spaces are permitted as calculated for a retail/service use. The proposed 43 parking spaces are needed for McDonald's operations. Of the 43 proposed spaces, twelve (12) spaces are reserved for ADA parking, drive-thru spaces, curbside pickup spaces, and "McDelivery" courier drivers. Additionally, there will be approximately fourteen (14) employees on a single shift during peak hours. Assuming each employee drives, that leaves just seventeen (17) parking spaces for customers not utilizing mobile ordering or waiting in the drive-thru reserved spaces for large orders placed at the drive-thru ordering station. The majority of customers visiting the restaurant at night order through the drive-thru, and if the drive-thru hours of operation are restricted, then more customers will be required to park and physically enter the restaurant to place orders and/or consume their meals.

§153-14D.(5)(a)[2] – The conditional use permit application shall describe why increased parking is essential to each use.

The increased parking is essential to the proposed McDonald's restaurant with drive-thru use. Of the 43 proposed spaces, twelve (12) spaces are reserved for ADA parking, drive-thru spaces, curbside pickup spaces, and "McDelivery" courier drivers. Additionally, there will be approximately fourteen (14) employees on a single shift during peak hours. Assuming each employee drives, that leaves just seventeen (17) parking spaces for customers not utilizing mobile ordering or waiting in the drive-thru reserved spaces for large orders placed at the drive-thru ordering station. The majority of customers visiting

the restaurant at night order through the drive-thru, and if the drive-thru hours of operation are restricted, then more customers will park and physically enter the restaurant to place orders and/or consume their meals.

§153-14D.(5)(a)[3] – The applicant must show that the use(s) cannot be adequately served by a combination of on- and off-street parking.

A combination of on- and off-street parking is not feasible as Durham Road (NH Route 108) is under NHDOT jurisdiction and no on-street parking opportunities are currently provided.

§153-14D.(5)(a)[4] – The applicant shall design and construct the additional vehicle storage areas, for additional parking requested, using pervious materials. The design of the area shall meet or exceed standards developed and outlined in the New Hampshire Stormwater Manual. The applicant shall also be required to retain the design engineer as an inspector for the duration of construction of the parking area.

The paved areas consisting of the additional parking spaces requested is proposed to be incorporated into the impervious parking area. That said, runoff is proposed to be captured and conveyed to a conventional closed-pipe drainage system with deep-sump, hooded catch basins, and one (1) hydrologically connected subsurface infiltration basin. Pretreatment of stormwater runoff is achieved by either deep sump catch basins or an isolator row within the hydrologically connected subsurface infiltration basin prior to discharge into the existing aboveground stormwater management area within the common area of the mixed-use development. The proposed stormwater management design is anticipated to achieve the intent of utilizing pervious materials and infiltration goals while maintaining the durability and longevity of proposing bituminous concrete.

§153-14D.(5)(a)[5] – The applicant shall contribute to improving electric vehicle infrastructure by using one of the following methods:

> *[a] For uses that typically result in at least two (2) hours or longer of parking which may include but is not limited to gathering places (restaurants and bars), retail/service, lodging, office, educational, medical, and outdoor recreation, the applicant shall provide one Level II commercial electric vehicle charging station for every 10 parking spaces requested over the parking maximum. Electric vehicle charging station spaces shall comply with § 153-14D(3) unless determined otherwise by the Planning Board.*
> *[b] For uses that do not typically result in at least two (2) hours or longer of activity, the applicant shall provide two (2) additional parking spaces that meet electric vehicle readiness requirements for every 10 parking spaces requested over the parking maximum.*

The proposed use does not typically result in at least two (2) hours of activity, and as such, two (2) additional parking spaces that meet electric vehicle readiness for every 10 parking spaces over the parking maximum. 29 parking spaces are requested over the maximum, and therefore six (6) additional parking spaces should be provided that meet electric vehicle readiness. A total of 7 EV ready spaces are provided as a result of the proposed development. Refer to Sheet C-501 of the "Proposed Site Plan Documents" prepared by Bohler for additional information and location.

§153-14D.(5)(a)[6] – Additional Level I commercial electric vehicle charging stations designated for employees, and not for public use, are encouraged.

No designated employee stalls are proposed, and electric vehicle charging stations are available for both employees and customers.

§153-14D.(5)(a)[7] – There shall be no detrimental effects on surrounding properties by any proposal.

The proposed McDonald's restaurant with drive-thru is not anticipated to have detrimental effects on surrounding properties as noted above.

Pursuant to §153-21of the City of Dover Site Review Regulations, a waiver request letter has been prepared by Bohler to respectfully waivers from the Site Plan Review application checklist as outlined in the provided letter. Please refer to the Waiver Request Letter bound separately for additional information.

We trust the provided information is sufficient for your needs at this time. Should you have any questions or require additional information, please do not hesitate to contact me at 508-480-9900.

Sincerely,

BOHLER

Eric Dubrule, PE

Connor Ennis

Docusign Envelope ID: 1BC16E8B-59FA-4E73-9564-4DA322393260

CHRISTOPHER G. PARKER, AICP
Assistant City Manager
Planning & Strategic Initiatives
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City of Dover, New Hampshire

DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT

INSTRUCTIONS TO APPLICANTS TO THE DOVER PLANNING BOARD

IMPORTANT: PLEASE READ ALL INSTRUCTIONS CAREFULLY BEFORE FILLING OUT ATTACHED APPLICATION.
INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED FOR REVIEW.

Dear Applicant:

This will serve to briefly inform you regarding the process to have the Dover Planning Board (the Board) review a land use application. Please refer to the NH Statutes on Land Use and Regulation the Dover Code, and our Developer's Handbook for more specific information.

The Board primarily reviews 5 types of applications:

1. **Site Plans** - A site plan is a professionally rendered drawing which delineates the proposed development of a site. This plan is required for non-residential development, creation of multi-family residential structures, and for extensions of parking lots and alteration of an acre or more of land. These plans require meeting with the Technical Review Committee before Planning Board review.

2. **Subdivisions** - A subdivision is the division of the lot, tract, or parcel of land into two (2) or more lots, plats, sites or other divisions of land for the purpose, whether immediate or future, of sale, rent, lease or building development. It includes re-subdivision and, when appropriate to the context, relates to the process of subdividing or to the land or territory subdivided. Major subdivision plans (4+) require meeting with the Technical Review Committee before Planning Board review.

3. **Lot Line Adjustments** - A lot line adjustment alters the size of two (2) or more lots, but does not create a new buildable lot.

4. **Conditional Use Permits** - A conditional use permit is required for any alteration of wetlands, wetland buffers or work within the City's conservation district. Additionally, a conditional use permit could be issued as to offer relief in the Central Business District, for plans in the Residential Mixed Use Overlay District, or parking relief. Environmental Conditional Use Permits are acted on after Conservation Commission review.

5. **Excavation Permits** – NH RSA Chapter 155-E grants municipalities the authority to regulate earth excavations within their borders. This authority rests with the Planning Board.

Docusign Envelope ID: 1BC16E8B-59FA-4E73-9564-4DA322393260

The Board cannot and will not review applications that do not meet zoning requirements. **Please review the need to apply to the Zoning Board of Adjustment prior to applying to the Board.**

Professional agents will prepare your application; however, you may represent yourself or authorize, in writing, someone else to represent you before the Planning Board.

In most cases, the first step would be to appear before the Technical Review Committee, to apply, eight (8) folded copies of the site plan with scale of not less than 1"=50' or 1" =100' for larger site plans, and a PDF, need to be provided, along with payment of plan review fees. These meetings occur on Thursday, and materials and payment must be submitted three (3) weeks prior to meeting. Meetings are scheduled, upon receipt of completed applications with the full checklist and payment.

The next step would be to provide, two weeks prior to Planning Board, the final plan sets (three (3) full size and twelve (12) half size (11x 17), folded, copies of the plan), and 15 copies, and a PDF, of all supporting materials, including response to TRC comments. Please print all materials on both sides of paper.

For projects not appearing before the Technical Review Committee, Plan Review Fees are due along with three (3) full size and twelve (12) half size (11x17), folded, copies of the plan set and 15 copies, plus a PDF, of plans and materials, 3 weeks prior to the Planning Board meeting. Please print all materials on both sides of paper.

Staff will generate an abutter list, and Abutter/Notice Fees will be invoiced. They are due 28 hours prior to Planning Board. If they are not paid, the application will not be heard.

Once an item is placed upon an agenda the following process is used:

- The Board will hold a public hearing on your application at a regularly scheduled meeting
    - Typically the second or fourth Tuesday of the Month.
- Public notice of the hearing will be posted at the City Clerk's office and the Planning Department office and printed in the newspaper.
- Certified letters will be mailed to you and to all abutters at least ten days before the date of the hearing.
- 28 hours prior to the meeting, abutter/notice fees must be paid
- At the meeting
    - Staff will introduce your project
    - You and all other parties will be invited to appear in person or by agent or counsel to present your application.
        - Your project will be pre-loaded onto a laptop for review by the Board and public
    - The Board may ask clarifying questions
    - The Board will vote to accept jurisdiction on the application
    - If accepted:
        - The Board will hold a public hearing
        - The Board may ask additional questions
        - The Board will deliberate on your application
            - Typically decisions are made the night of the presentation, but an application may be tabled
        - After deliberation, a decision will be made.
            - You will be sent a notice of the decision.

Docusign Envelope ID: 1BC16E8B-59FA-4E73-9564-4DA322393260

City of Dover, New Hampshire
SITE REVIEW APPLICATION

[Revision Date: July 1, 2021]

Office Use Only	Project #:		Date Received:	
	Amount Paid:		Time Received:	

APPLICANT AND OWNER INFORMATION

Name of Applicant: McDonald's USA LLC (c/o Bohler attn. Connor Ennis) Telephone # 508-480-9900

Address of Applicant: 352 Turnpike Road, Ste. 300, Southborough, MA 01772

E-Mail Address: cennis@bohlereng.com

Name of Property Owner (*if different from applicant*): VC Dover Investments LLC Telephone #

Address of Property Owner: 48 Constitution Drive, Bedford, NH 03110

PROPERTY INFORMATION

Address of Property: 30 Grapevine Drive, Dover, NH 03820

Assessor's Map # H Lot(s) # 4-3

Zoning District(s) Commercial (C) Overlay District(s) RCM Overlay District

Size of Parcel: 83,463 sq. ft. 1.92 ac. Property Deed: Book 3496 Page: 733

Existing Use of Property: Overall property consists of an existing Hannaford supermarket and existing Senior Care Housing. Project location is an existing grass field.

SITE PLAN INFORMATION

Describe Proposed Use: Proposed McDonald's Restaurant with Drive-thru

Area of Parcel to be Developed: ±79,450 sq. ft.

If Multi-family Residential: Number of Units N/A & Buildings Proposed N/A

If lodging: Number of Units N/A & number of Buildings N/A

Number of Parking Spaces: Existing N/A Proposed 43

Highway Access (check where applicable): X City Street X State Highway

Number of Employees Total: ±75 In Maximum Shift: 14

Disposition of Parcel:

Building Footprint 3,694 sq. ft.

Total Building Area 3,694 sq. ft.

Paved Area ±33,850 sq. ft.

Building Setbacks:

Front Yard 90.3 ft.

Rear Yard N/A ft.

Side Yard: Right 75.1 ft. Left 156.7 ft.

Docusign Envelope ID: 1BC16E8B-59FA-4E73-9564-4DA322393260

City Water? _X_ Yes ___ No How far is city water from the property? On-site

City Sewer? _X_ Yes ___ No How far is city sewer from the property? On-site

TRANSFER OF DEVELOPMENT RIGHTS INFORMATION

Type of TRANSFER OF DEVELOPMENT RIGHT REQUEST (Check All That Apply):

□ Residential □ Residential (reduced size) □ Industrial | □ Purchase □ Land Preservation

Relief sought (Check All That Apply):

□ Lot Size □ Frontage □ Setback □ 30' Buffer □ Increase by _____ units

Describe Proposed Use or Activity that requires TDR; describe any impacts and document mitigation:

_____

_____

_____

BUILDING INFORMATION

Type of Building to be Built: Fast-Food Restaurant (McDonald's) with Drive-Thru

Height of Building: ±22.0' Finished Floor Elevation: 109.25

Number of Seats (where applicable) 38 Seats

Estimated value of construction: ±$2,000,000 Refuse removal: (Public) / Private (circle one)

WAIVER REQUESTS

Site Review Regulations section(s) to be waived: §153-17.G. - Drive-in facilities hours of operation

Justification for waiver request(s) (*attach additional sheets as needed*):

Refer to Waiver Request Letter attached.

_____

_____

_____

_____

_____

_____

Docusign Envelope ID: 1BC16E8B-59FA-4E73-9564-4DA322393260

SURVEYOR INFORMATION

Name of Surveyor and Company (Licensed in N.H.) John P. Lynch Control Point Associates, Inc.

Address 352 Turnpike Road, Southborough, MA 01772 Telephone #: 508-948-3000

Professional License #: NH P.L.S. #899 E-mail address: _____

ENGINEER INFORMATION

Name of Engineer and Company (Licensed in N.H.) John A. Kucich Bohler

Address 352 Turnpike Road, Southborough, MA 01772 Telephone #: 508-480-9900

Professional License #: NH License #15476 E-mail address: cennis@bohlereng.com

ARCHITECT INFORMATION

Name of Architect and Company (Licensed in N.H.) Marc Pelini Core States Group

Address 135 Water Street, Suite 201, Naperville, IL 60540 Telephone #: 312-718-5415

Professional License #: NH License #05437 E-mail address: _____

LANDSCAPE ARCHITECT INFORMATION

Name of Landscape Architect and Company (Licensed in N.H.) Matthew J. Mrva Bohler

Address 352 Turnpike Road, Southborough, MA 01772 Telephone #: 508-480-9900

Professional License #: NH License #109 E-mail address: cennis@bohlereng.com

SOIL SCIENTIST INFORMATION

Name of Soil Scientist and Company (Licensed in N.H.) _____

Address _____ Telephone #: _____

Professional License #: _____ E-mail address: _____

CONSERVATION EASEMENT HOLDER

Name of Easement Holder: _____ Telephone #_____

Address Easement Holder: _____

Docusign Envelope ID: 1BC16E8B-59FA-4E73-9564-4DA322393260

SIGNATURES

I/We hereby submit this application to the City of Dover Planning Board and attest that to the best of my knowledge all of the information on this application form and in the accompanying application materials and documentation is true and accurate. Furthermore, I/we submit that the existing conditions sheet of the plan represents the lot in question, and that no alteration of the site shall take place during Planning Board review up to and including the pre-construction meeting. As applicant or as agent, I attest that I am duly authorized to act in this capacity.

Signature of Property Owner: Refer to Planning Application Owner Authorization form Date: _____

Signature of Applicant (*if different from owner*): DocuSigned by: Eric Wagner 61FB8F48153D457... Date: 12/18/2024

Signature of Agent: _____ Date: 12/18/2024
(Bohler attn: Connor Ennis)

AUTHORIZATION TO ENTER SUBJECT PROPERTY

I, and my successors, hereby authorize members of the Dover Planning Board, Planning Department and other pertinent City Departments and boards to enter my property for the purpose of evaluating this application, including performing inspections during the application phase, post-approval phase, construction phase and occupancy phase. It is understood that these individuals must use all reasonable care, courtesy, and diligence when on the property.

Signature of Property Owner: Refer to Planning Application Owner Authorization form Date: _____

AUTHORIZATION TO COMPLETE THE PROJECT ON SUBJECT PROPERTY

I, and my successors, hereby the City of Dover or its assigns to enter my property for the purpose of completing the site work as required by the approved plan should the letter or credit or other surety be called. It is understood that these individuals must use all reasonable care, courtesy, and diligence when on the property.

Signature of Property Owner: Refer to Planning Application Owner Authorization form Date: _____

Signature of Applicant (*if different from owner*): DocuSigned by: Eric Wagner 61FB8F48153D457... Date: 12/18/2024

CERTIFICATION OF FEES

I, and my successors, hereby certify that I understand that the City of Dover collects impact fees, utility investment fees and inspection fees for projects developed in Dover. Said fees must be paid before a Certificate of Occupancy can be obtained for a structure, unless a different payment schedule is agreed to by the applicant and the City prior to approvals being issued by the Dover Planning Board. Additionally, should the property be in "Current Use" it will be subject to the Land Use Change Tax.

Signature of Property Owner: Refer to Planning Application Owner Authorization form Date: _____

Signature of Applicant (*if different from owner*): DocuSigned by: Eric Wagner 61FB8F48153D457... Date: 12/18/2024

Docusign Envelope ID: 1BC16E8B-59FA-4E73-9564-4DA322393260

CITY OF DOVER SITE REVIEW
LIST OF ABUTTERS

Pursuant to RSA 676:4, the State Law of New Hampshire, the City of Dover is required to notify the applicant, abutters (including holders of conservation easements), and any professional whose seal is on the plan, of the public hearing by certified mail, return receipt requested. Staff will provide the abutter information, while the applicant must provide accurate contact information for the owner, applicant and professional agents representing the project.

Owner:

TAX MAP	LOT #	PROPERTY OWNER	MAILING ADDRESS
H	4-3	VC Dover Investments LLC	48 Constitution Dr. Bedford, NH 03820

Applicant (if different from owner):

APPLICANT NAME	APPLICANT COMPANY	MAILING ADDRESS
McDonald's USA LLC	c/o Bohler	352 Turnpike Rd Southbough, MA 01752

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	MAILING ADDRESS
John Kucich, PE	Bohler	352 Turnpike Rd Southbough, MA 01752

Conservation Easement Holder:

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	MAILING ADDRESS

Docusign Envelope ID: 1BC16E8B-59FA-4E73-9564-4DA322393260

City of Dover, New Hampshire
SITE PLAN REVIEW SUBMISSION CHECKLIST

[Revision Date: June 4, 2019]

This site plan review checklist, as required by Chapter 153-6-B(2), should be completed by the applicant. It is intended to assist the applicant in the planning process of preparing a Site Plan Review application for Planning Board action. The size of the project will determine the types of information required for review, therefore, a **pre-application conference** with the Planning Department to determine the list of items that must be completed is strongly encouraged.

The first step would be to appear before the Technical Review Committee, to apply, eight (8) folded copies of the site plan with scale of not less than 1"=50' or 1" =100' for larger site plans, need to be provided, along with payment of plan review fees.

Two weeks prior to Planning Board, three (3) full size and twelve (12) half size (11x17), folded, copies of the plan set and materials, including response to TRC comments, will be due. Abutter/Notice Fees will be invoiced and need to be paid 28 hours prior to the Planning Board meeting.

The applicant is cautioned that this checklist is only a guide and is not intended to be a complete list of all site plan review requirements. Please refer to the Site Plan Review Regulations for full details.

APPLICANT: McDonald's USA, LLC (c/o Bohler) File Number: _____

PROJECT TITLE: Proposed McDonald's - Grapevine Drive & NH Route 108

PROPERTY LOCATION: 30 Grapevine Drive Tax Map: H Lot: 4-3

	Where/How Provided	Reviewed
1. Completed and signed Application form	Submitted	
2. Plan Review Fees are provided	TBD	
3. Electronic copy of the engineered/surveyed plan layout	Submitted	
4. Electronic copy of supplementary materials and application	Submitted	
5. Traffic Impact Assessment and Analysis (Standard or Advanced)	Submitted	
6. Waiver requests to the Site Plan Review Regulations, with written justification	Submitted	
7. Conditional Use Permit applications	Submitted	
8. A colored rendering of the streetscape that will be created along the existing public right-of-way	Waiver Requested	
9. A colored architectural plan showing all sides of buildings	Submitted	
10. Folded copies of site plan w/scale of not less than 1"=50' or 1"=100' for larger site plans, for TRC. Plans shall contain the following items as appropriate:	Submitted	
Location map at appropriate scale	See Cover Sheet (C-101)	
Proposed Project name and title and Planning File #	See Site Plan Sheets	
Date, north arrow and scale	See Site Plan Sheets	
Names of all abutting property owners	See Site Plan Sheets	
Name and address of owners and/or applicants	See Site Plan Sheets	
Signature & stamp of NH licensed land surveyor and/or engineer	See Site Plan Sheets	
Zoning District boundaries, including any special or overlay districts	See Site Plan Sheets	
Location of Conservation District areas	N/A	
Location, names and widths of existing and proposed streets, including pavement widths, grades, curbs and crosswalks	See Site Plan Sheets	
Location and widths of existing & proposed easements & right of ways	See Site Plan Sheets	
Location and width of existing and proposed access/egress ways	See Site Plan Sheets	

Docusign Envelope ID: 1BC16E8B-59FA-4E73-9564-4DA322393260

	Explain How Provided	Reviewed
Depict pedestrian walkways and accessible access	See Site Plan Sheets	
Existing and proposed property lines with dimensions and bearings tied into Dover's Geographic Information System coordinate system	See Site Plan Sheets See Site Plan Sheets	
Existing and proposed topographic information at two foot intervals	See Site Plan Sheets	
Existing and proposed buildings and structure locations	See Site Plan Sheets	
Minimum building setbacks or build to lines on all lots	See Site Plan Sheets	
Location and size of existing and proposed electric, telephone, gas cable and other underground utilities	See Site Plan Sheets	
Existing and proposed water lines and fire hydrants, including materials and capacity needed	See Site Plan Sheets	
Location and materials of sanitary sewage facilities within project site and projected additional peak hour sewer load	See Site Plan Sheets	
Existing and proposed stormwater lines and facilities	See Site Plan Sheets	
Lighting plan depicting all existing and proposed exterior light fixtures and a lighting level analysis for parking lots	See Site Plan Sheets	
Location of Flood Hazard Zone	N/A	
Location of all bodies of water and watercourses	N/A	
Location of wetlands and buffers	See Site Plan Sheets	
Neighborhood plan with aerial underlay showing how project relates to abutting uses within the plan set	See Cover Sheet (C-101)	
Existing natural features and/or significant vegetation on property	See Site Plan Sheets	
Depict existing contours up to 100 ft. beyond project limits	See Site Plan Sheets	
Landscape plan depicting existing and proposed landscaping, prepared by a licensed Professional Landscape Architect	See Site Plan Sheets	
Location of parking layout delineating spaces and arrangement; note addressing maximum required spaces	See Site Plan Sheets	
Location, material and size of existing and proposed pavement area	See Site Plan Sheets	
Location of proposed fire lanes	See Site Plan Sheets	
Specify finished floor elevations of buildings	See Site Plan Sheets	
Location of solid waste disposal facilities (dumpster, pad and screening, etc.), including required screening	See Site Plan Sheets	
Depict all service, storage, loading bays and utility areas	See Site Plan Sheets	
All applicable Dover Common Site Plan notes	See Site Plan Sheets	
11. Additional Information if appropriate		
Stormwater Management Plan depicting the existing & proposed storm drainage system and engineered drainage analysis	Submitted	
Stormwater Management System Operation and Maintenance Plan	Submitted	
Letter to Serve from Public and Private Utilities	To be provided	
Erosion and Sedimentation Control Plan	See Site Plan Sheets	
Landscape Operation and Maintenance Plan	See Site Plan Sheets	
Proposed restrictive covenants or homeowners association documents	N/A	
Dates and permit numbers of all required state and federal permits	Not submitted. State permits in progress	
If wetland buffer, indicate placards locations, as applicable	See Site Plan Sheets	
Depict test boring locations, groundwater elevations and soil profiles and/or soils types call-outs	"Report of Geotechnical Investigation" prepared by Whitestone Associates, Inc.	
Location of proposed drive-in facilities	See Site Plan Sheets	
Provide additional exhibits/technical data determined appropriate by the Planning Board or its staff as required	TBD	

REVIEWED BY: _____ DATE_____ TRC DATE_____

Docusign Envelope ID: B73C31B3-0BCE-4816-9737-3099CA2AFB4D

City of Dover, New Hampshire
CONDITIONAL USE PERMIT APPLICATION

[Revision Date: October 19, 2020]

Office Use Only	Project #:		Date Received:	
	Amount Paid:		Time Received:	

APPLICANT AND OWNER INFORMATION

Name of Applicant: McDonald's USA LLC (c/o Bohler) Telephone #630-209-1540

Address of Applicant: 110 N. Carpenter St. Chicago, IL 60607

E-Mail Address: cennis@bohlereng.com

Name of Property Owner (if different from applicant): VC Dover Investments LLC Telephone #_____

Address of Property Owner: 48 Constitution Drive Bedford, NH 03110

PROPERTY INFORMATION

Assessor's Map # H Lot(s) # 4-3

Address of Property: 30 Grapevine Drive, Dover, NH 03820

Zoning District(s) Commercial (C) Overlay District(s) RCM Overlay District

Existing Use of Property: Overall property consists of an existing Hannaford supermarket and existing Senior Care Housing. Project location is an existing grass field.

CONDITIONAL USE PERMIT INFORMATION

Type of Conditional Use Permit (Check All That Apply):

☐ Conservation District	☒ RCM Use Overlay District	☐ Gateway District
☐ Groundwater Protection	☒ Off-Street Parking and Loading	☐ Alternative Treatment Center
☒ Wetland Protection District	☐ Central Business District	☐ Heritage Residential District

Describe Proposed Use or Activity That Requires Conditional Use Permit and Describe Any Impacts:
The Applicant proposed to construct a new 3,694 SF McDonald's restaurant with a side-by-side drive-thru, which consists of two lanes and two order points, along with new parking areas, landscaping, and utilities on the corner of Grapevine Drive and NH-108. The proposed layout results in 43 parking spaces. The proposed activity requires Conditional Use Permits for the following: Development within the Residential-Commercial Mixed-Use Overlay District [170-32.A.(1)], re-contouring or grading of land within the 50' wetland buffer within the Wetland Protection District [170-28.G.(1)(d)], and to increase number of parking spaces permitted for the proposed use [153-14.D.(5)(a)].

Docusign Envelope ID: B73C31B3-0BCE-4816-9737-3099CA2AFB4D

List Any Associated State or Federal Permits That Have Been or Will Be Applied For and Indicate Their Status: NHDES Alteration of Terrain Amendment; NHDOT Driveway Permit

Name of Professional That Prepared Plans: Bohler Engineering c/o John Kucich

Address 352 Turnpike Road Ste. 300 Southborough, MA 01752 Telephone #: 508-480-9900

Professional License #: NH License No. 15476 E-mail address: cennis@bohlereng.com

SIGNATURES

I/We hereby submit this application to the City of Dover Planning Board and attest that to the best of my knowledge all of the information on this application form and in the accompanying application materials and documentation is true and accurate. As applicant or as agent, I attest that I am duly authorized to act in this capacity.

Signature of Property Owner: Refer to Planning Application Owner Authorization form Date:

Signature of Applicant (if different from owner): DocuSigned by: Eric Wagner 61FB8F48153D457... Date: 12/18/2024

Signature of Agent: Date: 12/18/2024
(Bohler attn: Connor Ennis)

AUTHORIZATION TO ENTER SUBJECT PROPERTY

I, and my successors, hereby authorize members of the Dover Planning Board, Planning Department and other pertinent City Departments and boards to enter my property for the purpose of evaluating this application, including performing inspections during the application phase, post-approval phase, construction phase and occupancy phase. It is understood that these individuals must use all reasonable care, courtesy, and diligence when on the property.

Signature of Property Owner: Refer to Planning Application Owner Authorization form Date:

Docusign Envelope ID: B73C31B3-0BCE-4816-9737-3099CA2AFB4D

CITY OF DOVER CONDITIONAL USE
LIST OF ABUTTERS

Pursuant to RSA 676:4, the State Law of New Hampshire, the City of Dover is required to notify the applicant, abutters (including holders of conservation easements), and any professional whose seal is on the plan, of the public hearing by certified mail, return receipt requested. Staff will provide the abutter information, while the applicant must provide accurate contact information for the owner, applicant and professional agents representing the project.

Owner:

TAX MAP	LOT #	PROPERTY OWNER	MAILING ADDRESS
H	4-3	VC Dover Investments LLC	48 Constitution Dr. Bedford, NH 03820

Applicant (if different from owner):

APPLICANT NAME	APPLICANT COMPANY	MAILING ADDRESS
McDonald's USA LLC	c/o Bohler	352 Turnpike Rd Southbough, MA 01752

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	MAILING ADDRESS
John Kucich, PE	Bohler	352 Turnpike Rd Southbough, MA 01752

Conservation Easement Holder:

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	MAILING ADDRESS

Docusign Envelope ID: 055AEEA7-4DBB-4287-B6A9-35F0EB5809FF

CITY OF DOVER, NEW HAMPSHIRE
PLANNING APPLICATION OWNER AUTHORIZATION

OWNER AUTHORIZATION

I/We hereby submit this application to the City of Dover / City of Dover Planning Board and attest that to the best of my knowledge all of the information on this application form and in the accompanying application materials and documentation is true and accurate. As applicant or as agent, I attest that I am duly authorized to act in this capacity.

Property Owner Name: VC Dover Investments, LLC

Signature(s) of Property Owner(s): _____ Date: Dec 13, 2024

Signature of Applicant: DocuSigned by: Eric Wagner 61FB8F48153D457... Date: 12/18/2024

if different from owner

AUTHORIZATION TO ENTER SUBJECT PROPERTY

I/We hereby submit this application to the City of Dover Planning Board and attest that to the best of my knowledge all of the information on this application form and in the accompanying application materials and documentation is true and accurate. As applicant or as agent, I attest that I am duly authorized to act in this capacity..

Property Owner Name: VC Dover Investments, LLC

Signature(s) of Property Owner(s): _____ Date: Dec 13, 2024

Signature of Applicant: DocuSigned by: Eric Wagner 61FB8F48153D457... Date: 12/18/2024

if different from owner

IF SIGN PERMIT, SIGN PERMIT APPLICATION INFORMATION

If the sign permit applicant is not the property owner, this form must be completed and included as part of application submission.

I have read this application and state that, to the best of my knowledge, the information provided is true and that the proposed sign(s) will comply with all applicable regulations in Section 170-32 of the Zoning Ordinance of the City of Dover and shall conform to the submitted materials and designs. Furthermore, after 90 days, any application still waiting information will be denied.

Address of Sign Location: _____

Sign Permit Application Type: (check one)

- ☐ Permanent Sign
- ☐ Temporary Sign
- ☐ Community Sign

352 Turnpike Road
Southborough, MA 01772
508.480.9900

December 18, 2024

City of Dover
Planning Board
288 Central Avenue
Dover, NH 03820

Attn: Donna Benton, Town Planner

Re: Waiver Request Letter
Proposed McDonald's Restaurant with Drive-Thru
30 Grapevine Drive
Dover, NH 03820

Dear Ms. Benton,

Pursuant to §153-21. Of the City of Dover Site Review Regulations, the Planning Board may waive specific provisions of these regulations should the Board find that strict conformity would pose an unnecessary hardship to the applicant and the waiver would not be contrary to the spirit and intent of the regulations; or specific circumstances relative to the subdivision, or conditions of the land in such site plan, indicate that the waiver will properly carry out the spirit and intent of the regulations. As such, we respectfully request the Board consider granting waivers from the following requirements outlined in the City of Dover Site Review Regulations and the Site Plan Review Submission Checklist listed in italicized text with the support of the requests in bold text below:

§153-17.G. - Drive-in facilities shall be designed to impose the least amount of intrusion upon existing residential abutters. Such design features shall include, but not be limited to: nonaudible ordering systems (touchpad or human contact) shall be utilized, placement shall be as far from residential uses as possible, and hours of operation for the drive-in portion of the business shall be limited to 6:00 a.m. to 9:00 p.m.

The Applicant respectfully requests the extension of the drive-thru operations to permit the proposed McDonald's restaurant to operate the drive-thru portion of the business from 5 AM to Midnight (12:00 PM). Limiting drive-thru hours of operation to 6:00 AM to 9:00 PM would pose an operational and financial hardship on the applicant, and would distinguish this location from other nearby and more distant McDonald's locations. We understand the restaurant is permitted to operate the interior dining facilities on a 24-hour basis and can operate its mobile ordering system after drive-thru hours, however the majority of McDonald's business during nighttime hours is generated through the drive-thru operations across other stores even though the dining area remains available. Additionally, the closure of the drive-thru lanes and lighting at 9 PM may give the appearance the interior of the store is closed to potential customers who may be unfamiliar with the location. McDonald's also offers breakfast, and it is important that the drive-thru operate at 5am to serve their early commuter customers. McDonald's utilizes drive-thru speaker technology that will self-adjust and minimize accordingly to ambient noise. Therefore, during the evening when the surrounding roadway traffic noise may be lessened, the speaker volume will lower automatically to reduce audible impacts. Additionally, the drive-thru has been designed to locate the speakers and stacking area toward the rear of the site to muffle sound towards the roadway. Finally, the speakers are facing in the opposite direction from nearby residences. For these reasons we believe the

drive-thru hours can be reasonably extended while maintaining the intent of the regulation, and therefore we respectfully request the Board grant a waiver as requested.

A colored rendering of the street scape that will be created along the existing public right of way

A proposed landscape plan and rendered architectural elevations have been provided as part of this submission. As there are no other existing buildings directly adjacent or in close proximity to the proposed building, the proposed landscaping plan and rendered elevations may be adequate to provide an accurate visual representation of the proposed street scape at the corner of Grapevine Drive and Durham Road. Therefore, we respectfully request a waiver from providing street scape renderings.

We trust the provided information is sufficient for your needs at this time. Should you have any questions or require additional information, please do not hesitate to contact me at 508-480-9900.

Sincerely,

BOHLER

Eric Dubrule, PE

Connor Ennis

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

Supplemental Traffic Analysis

Fast Food Restaurant (Unit 4)

Dover Fields - NH108 & Grapevine Drive

Dover, New Hampshire

22 October 2024

1. Introduction

This supplemental traffic analysis evaluates a McDonald's fast-food restaurant along Grapevine Drive at Unit 4 of the Dover Fields project. According to the current NHDOT Driveway Permit for the project (issued in February 2024), development of the remaining lots (Units 3 and 4) requires a supplemental traffic analysis and new permit.

The previous traffic study for the current permit included a 2,500 sf fast-food restaurant (Taco Bell) at Unit 4; this analysis evaluates a 3,700 sf fast food restaurant (McDonald's) with the driveway shifted approximately 60' further away from NH108.

Scope of Study
The scope of this supplemental analysis is consistent with the previous approved study and is outlined below.

Trip Generation Summary for Unit 4:

Unit 4 Site Trips Fast Food (LUC 934)	Size	AM Peak	PM Peak	SAT Peak
Previous Proposal (Taco Bell)	2,500 sf	112	83	138
Current Proposal (McDonald's)	3,700 sf	165	122	204
Net Change in Trips		*+53*	*+39*	*+66*

Study Area Intersections:

1) NH108 at Grapevine Drive/Deerfield
2) NH108 at Mast Road
3) Mast Road at Grapevine/Stonewall
4) Fast-Food driveway on Grapevine
5) Fast-Food driveway on NH108

Methodology:

- Site trips as calculated based on ITE 11th Edition.
- Provide HCM unsignalized intersection capacity analysis for AM, PM, SAT peak hours, 2025 opening and 2035 future years.
- No Build represents existing development and approved trips only, and Build represents 2024 proposed McDonald's development.
- Provide comparison of HCM theoretical delay and queue for the Grapevine Drive approach vs. actual field measured delay and queue in the 2024 Base PM peak hour condition.

2. Background and No-Build Volumes

New turning movement counts were taken at all study intersections on the following dates: (See Appendix):

- Thursday July 25, 2024 – 7AM to 9AM, 3PM to 6PM.
- Saturday July 27, 2024 – 11 AM to 2 PM.

Seasonal Adjustment.
Based on Group 4 Highway data, the July TMC's were seasonally adjusted upward by a factor of 1% to reflect the July peak month factor.

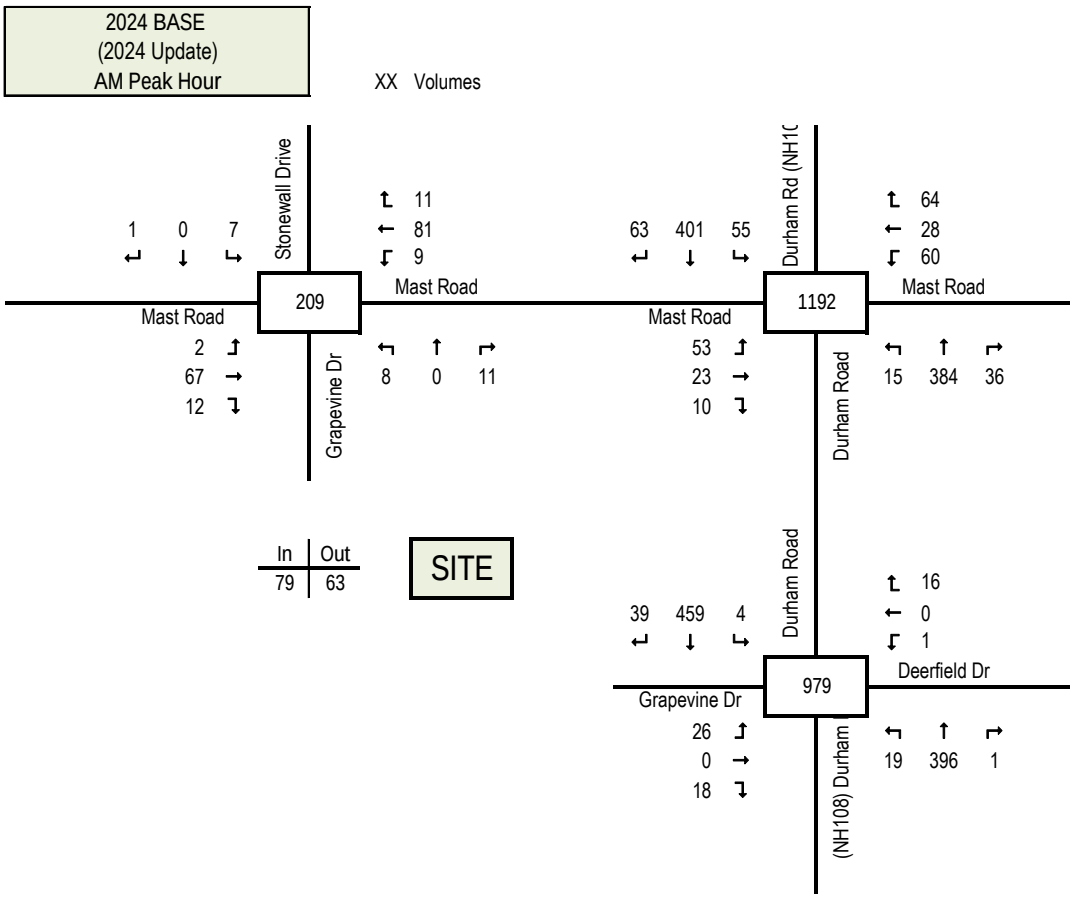
Growth Factor.
A 1% compound annual growth rate was used to account for general population growth and incidental future developments.

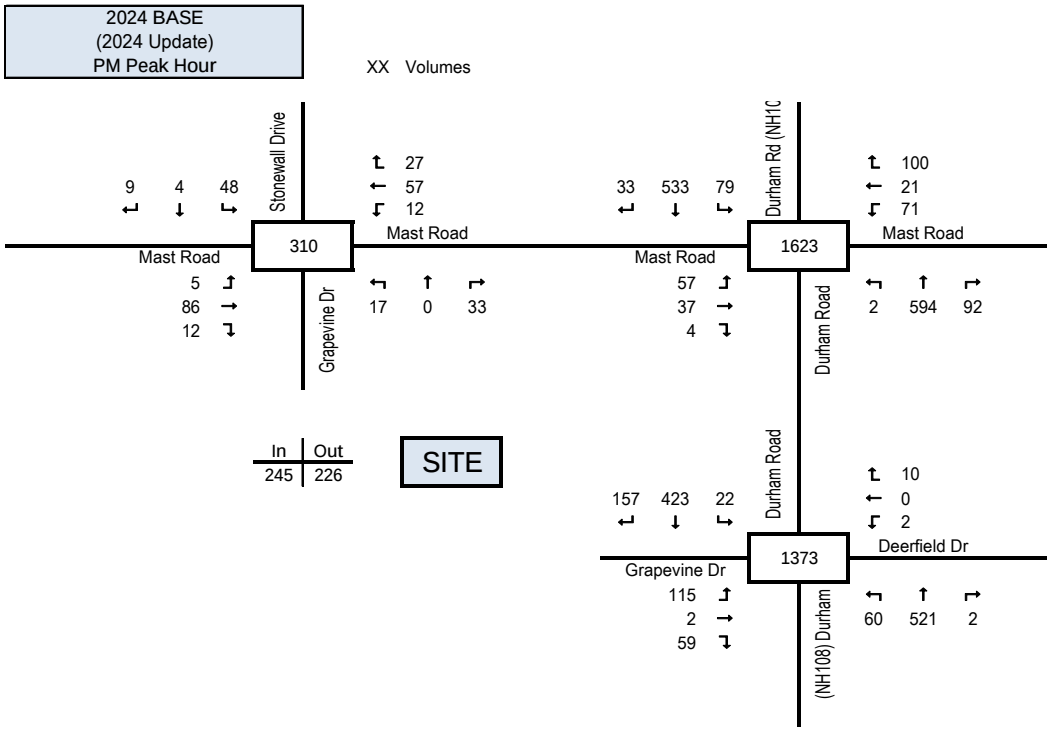
COVID/Stay-at Home Adjustment.
One month of data from previous MS2 count stations was averaged for pre- and post-Covid volumes during AM, PM, and SAT peak hours, resulting in upward adjustments of +2.5%, +1.1% and +2.8%, respectively.

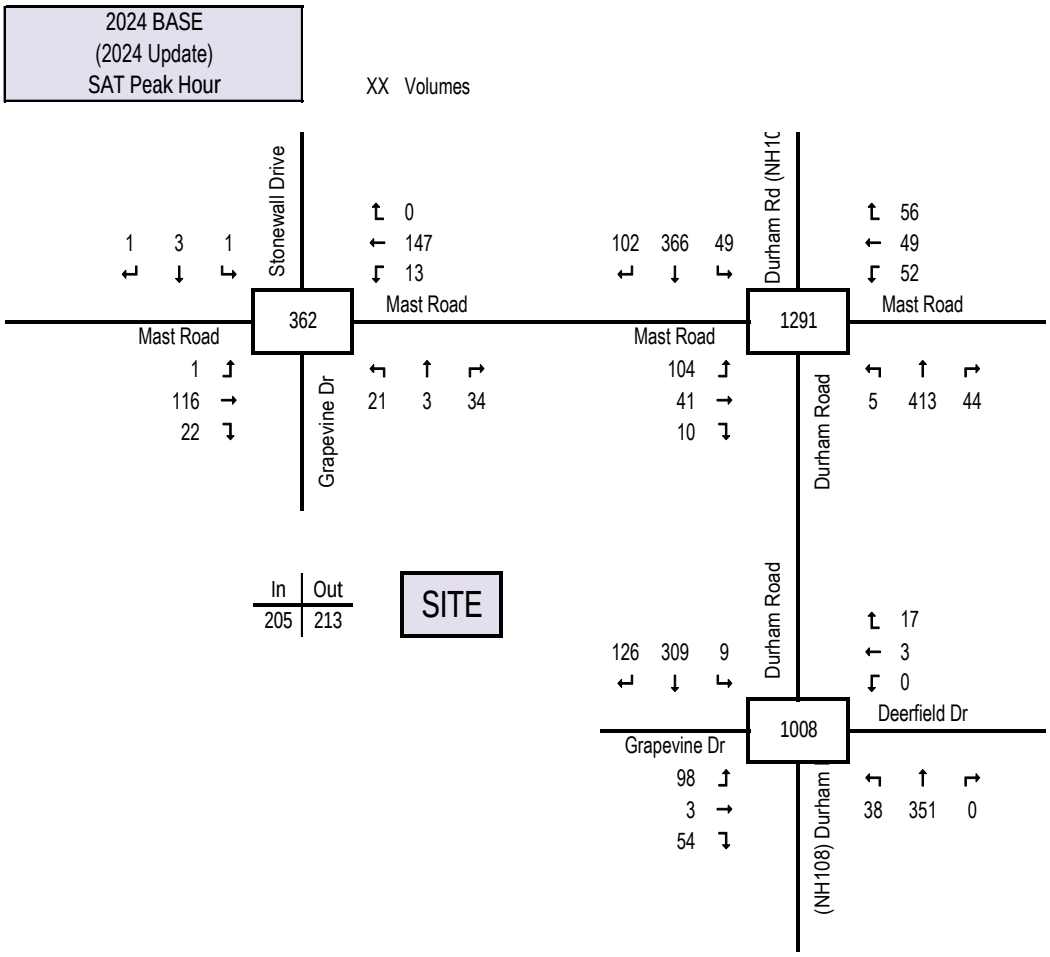
Other Developments
Two previously-approved phases of this projects have not been constructed at the time of the July 2024 counts, so traffic volumes based on appropriate LUCs were added to the No-Build volumes for this analysis to represent full-build conditions in the background volumes:

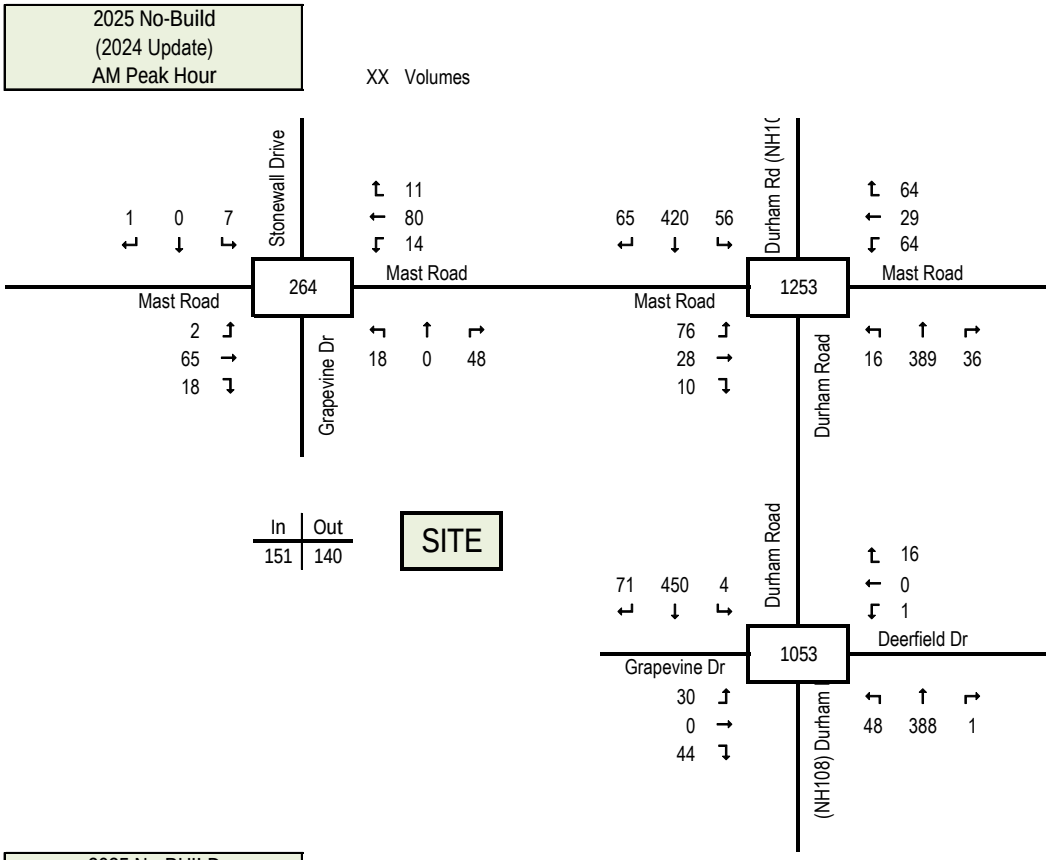
- Arbor Woods Phase 2:
  - 53 additional units
- Dover Fields (Unit 2)
  - Mixed-use building (Unit 2) - 49 apartments on upper floors, small gym and café/sandwich shop on ground level
  - Branch Bank (Unit 3) – 2,500 sf

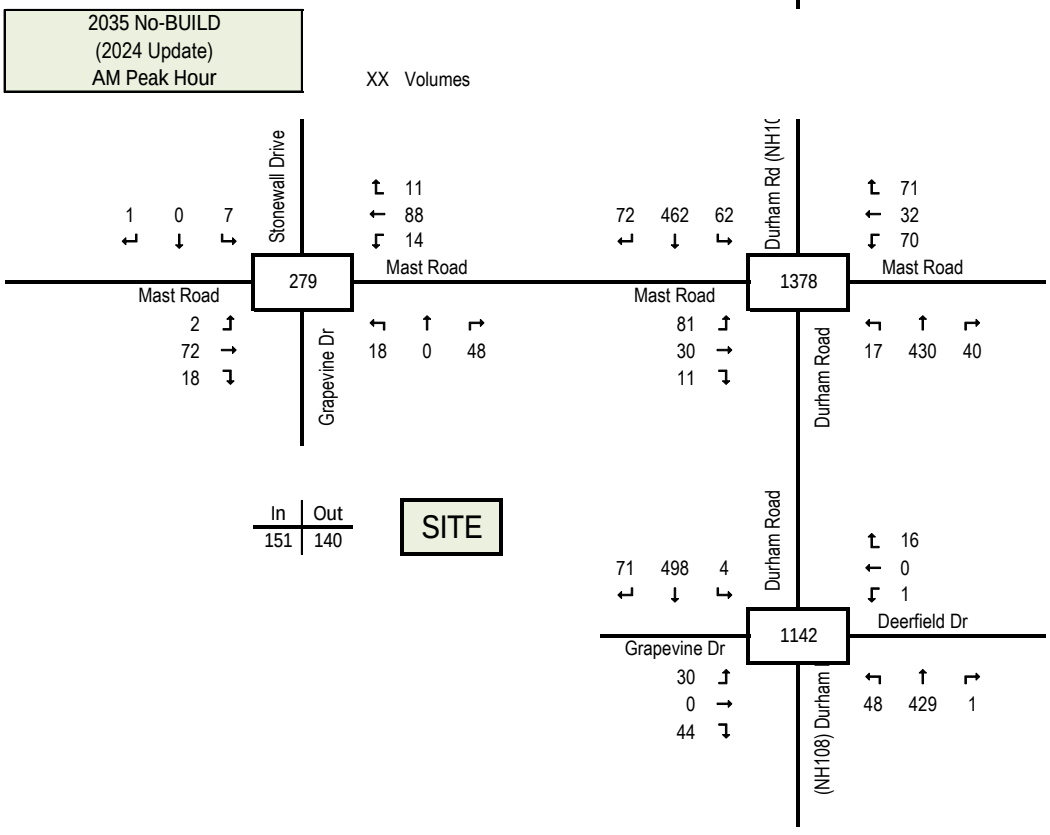
Base diagrams for the 2024 adjusted counts and No-Build volumes for the opening (2025) and future years (2035) adjusted for Growth and Other Developments are presented in the following figures.

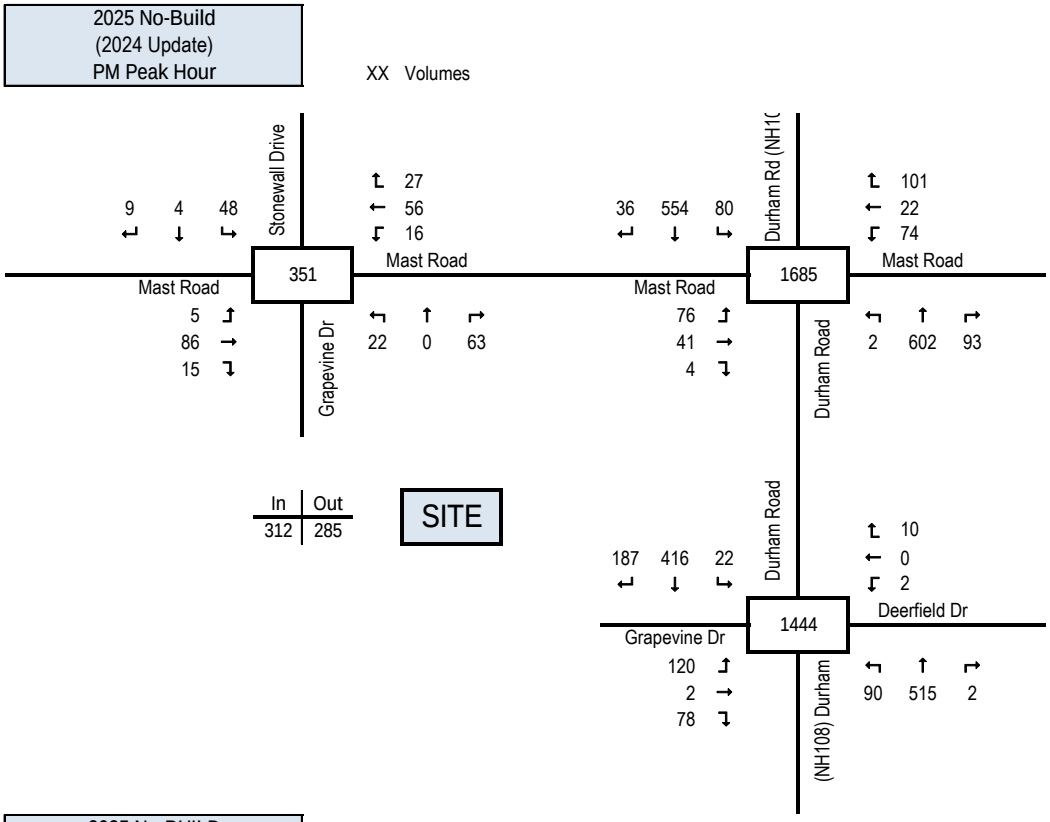

2024 BASE
(2024 Update)
AM Peak Hour
XX Volumes
Stonewall Drive
1 0 7
11
81
9
209
Mast Road
Mast Road
2
67
12
Grapevine Dr
8 0 11
Durham Rd (NH1C
63 401 55
64
28
60
1192
Mast Road
Mast Road
53
23
10
Durham Road
15 384 36
In Out
79 63
SITE
Durham Road
39 459 4
16
0
1
979
Deerfield Dr
Grapevine Dr
26
0
18
19 396 1
(NH108) Durham

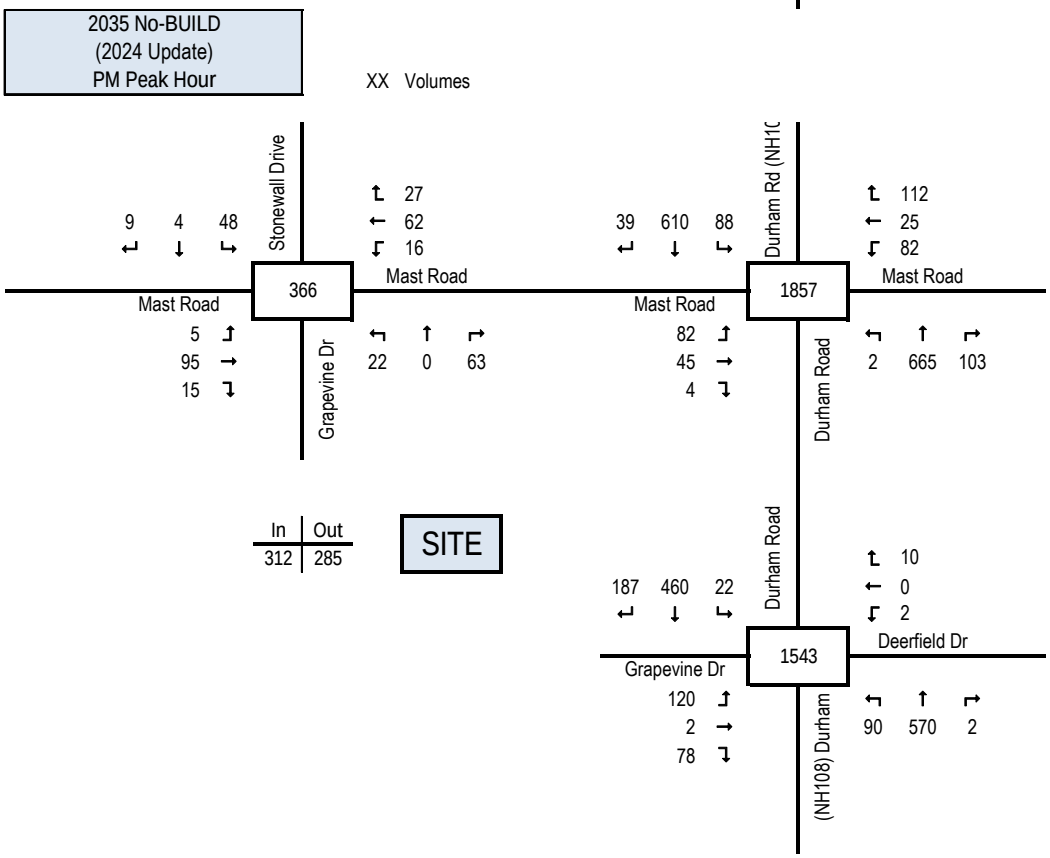

2024 BASE
(2024 Update)
PM Peak Hour
XX Volumes
Stonewall Drive
9 4 48
27
57
12
310
Mast Road
Mast Road
5
86
12
Grapevine Dr
17 0 33
Durham Rd (NH1C
33 533 79
100
21
71
1623
Mast Road
Mast Road
57
37
4
Durham Road
2 594 92
In Out
245 226
SITE
Durham Road
157 423 22
10
0
2
1373
Deerfield Dr
Grapevine Dr
115
2
59
60 521 2
(NH108) Durham

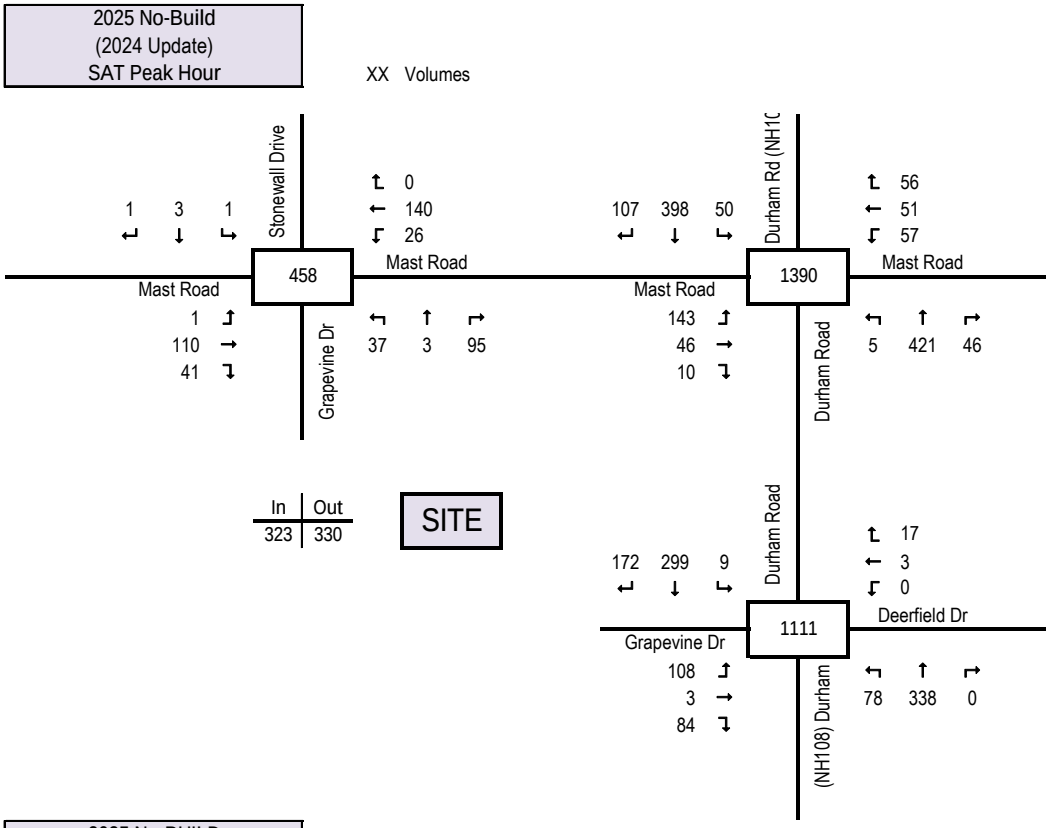

2024 BASE
(2024 Update)
SAT Peak Hour
XX Volumes
Stonewall Drive
1 3 1
0
147
13
362
Mast Road
Mast Road
1 116 22
Grapevine Dr
21 3 34
102 366 49
Durham Rd (NH10
56
49
52
1291
Mast Road
Mast Road
104 41 10
Durham Road
5 413 44
In 205
Out 213
SITE
Durham Road
126 309 9
17
3
0
1008
Deerfield Dr
Grapevine Dr
98 3 54
(NH108) Durham
38 351 0

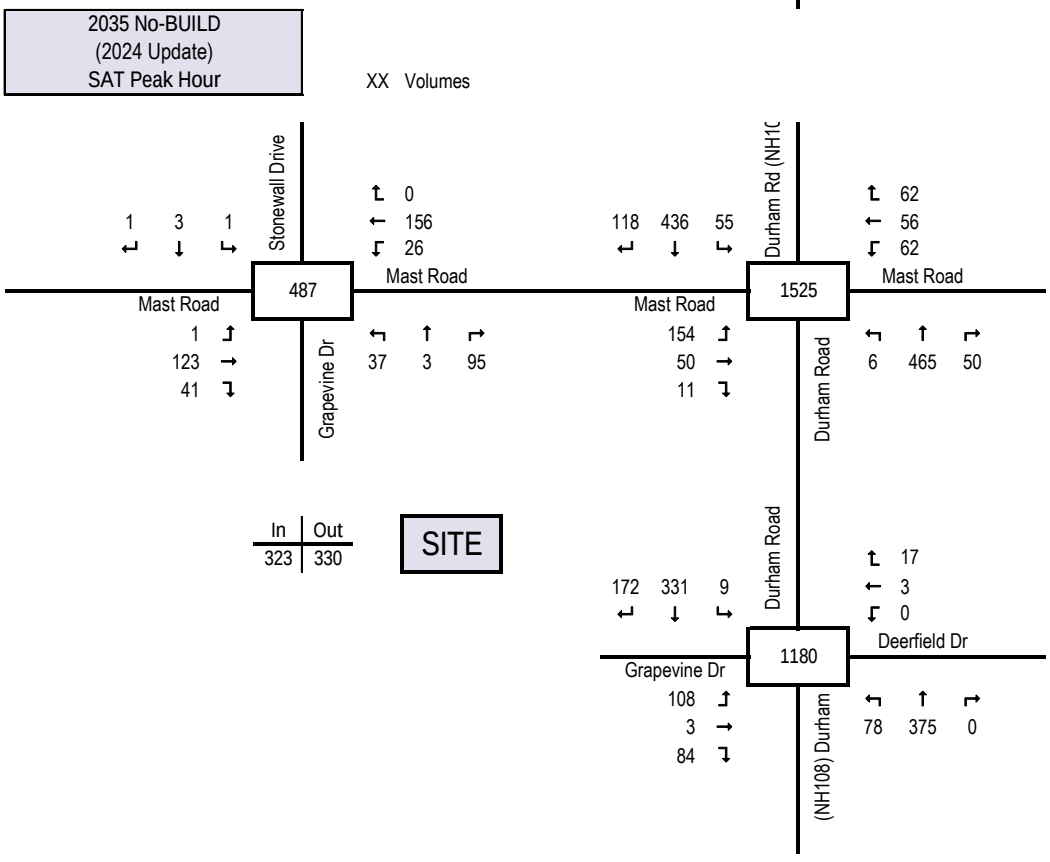

2025 No-Build
(2024 Update)
AM Peak Hour
XX Volumes
Stonewall Drive
1 0 7
11
80
14
Mast Road
264
Mast Road
2
65
18
Grapevine Dr
18 0 48
Durham Rd (NH1(
65 420 56
64
29
64
Mast Road
1253
Mast Road
76
28
10
Durham Road
16 389 36
In Out
151 140
SITE
Durham Road
71 450 4
16
0
1
Deerfield Dr
1053
Grapevine Dr
30
0
44
(NH108) Durham
48 388 1


2035 No-BUILD
(2024 Update)
AM Peak Hour
XX Volumes
Stonewall Drive
1 0 7
11
88
14
Mast Road
279
Mast Road
2
72
18
Grapevine Dr
18 0 48
Durham Rd (NH1(
72 462 62
71
32
70
Mast Road
1378
Mast Road
81
30
11
Durham Road
17 430 40
In Out
151 140
SITE
Durham Road
71 498 4
16
0
1
Deerfield Dr
1142
Grapevine Dr
30
0
44
(NH108) Durham
48 429 1


2025 No-Build
(2024 Update)
PM Peak Hour
XX Volumes
Stonewall Drive
9 4 48
27
56
16
Mast Road
351
Mast Road
Mast Road
5
86
15
Grapevine Dr
22 0 63
Durham Rd (NH1(
36 554 80
101
22
74
Mast Road
1685
Mast Road
76
41
4
Durham Road
2 602 93
In 312
Out 285
SITE
Durham Road
187 416 22
10
0
2
Deerfield Dr
1444
Grapevine Dr
120
2
78
(NH108) Durham
90 515 2


2035 No-BUILD
(2024 Update)
PM Peak Hour
XX Volumes
Stonewall Drive
9 4 48
27
62
16
Mast Road
366
Mast Road
Mast Road
5
95
15
Grapevine Dr
22 0 63
Durham Rd (NH1(
39 610 88
112
25
82
Mast Road
1857
Mast Road
82
45
4
Durham Road
2 665 103
In 312
Out 285
SITE
Durham Road
187 460 22
10
0
2
Deerfield Dr
1543
Grapevine Dr
120
2
78
(NH108) Durham
90 570 2


2025 No-Build
(2024 Update)
SAT Peak Hour
XX Volumes
Stonewall Drive
1 3 1
0
140
26
458
Mast Road
Mast Road
1 110 41
37 3 95
Grapevine Dr
In 323
Out 330
SITE
Durham Rd (NH10
107 398 50
56
51
57
1390
Mast Road
Mast Road
143 46 10
5 421 46
Durham Road
Durham Road
172 299 9
17
3
0
1111
Deerfield Dr
Grapevine Dr
108 3 84
78 338 0
(NH108) Durham


2035 No-BUILD
(2024 Update)
SAT Peak Hour
XX Volumes
Stonewall Drive
1 3 1
0
156
26
487
Mast Road
Mast Road
1 123 41
37 3 95
Grapevine Dr
In 323
Out 330
SITE
Durham Rd (NH10
118 436 55
62
56
62
1525
Mast Road
Mast Road
154 50 11
6 465 50
Durham Road
Durham Road
172 331 9
17
3
0
1180
Deerfield Dr
Grapevine Dr
108 3 84
78 375 0
(NH108) Durham

3. Trip Generation/Composition:

Trip Generation

The previous permit included an allowance for a fast-foot restaurant on Unit 4. The following table 1 shows the previously included site trips based on the updated 2022 site changes and Table 2 show the site trips of the 2024 Update fast-food use.

Table 1 – Previous Taco Bell Site trips

Trip Generation for LUC 934 (2,500 sf)			
Scenario	In	Out	Total
Weekday AM	57	55	112
Weekday PM	43	40	83
Saturday Midday	70	68	138

Table 2 – Proposed McDonald's Site Trips

Trip Generation for LUC 934 (3,700 sf)			
Scenario	In	Out	Total
Weekday AM	84	81	165
Weekday PM	63	59	122
Saturday Midday	104	100	204

Internal Capture

Interaction between proposed uses at Dover Marketplace reduces total external trips. This reduction is known as "internal capture". Standard NCHRP 684 methodologies were used to estimate the internal capture rates. The resulting reduction rate is 12% during the weekday AM peak hour, 27% in the PM peak hour and 17% for the SAT midday peak hour only.

Table 3 – Internal Capture Adjustments

Trip Generation for 2024 Update [Unit 4]			
Scenario	In	Out	Total
McDonald's (3,700 sf) Site Trips (Unadjusted)			
Weekday AM	84	81	165
Weekday PM	63	59	122
Saturday Midday	104	100	204
Less Former Taco Bell Site Trips			
Weekday AM	*57*	*55*	*112*
Weekday PM	*43*	*40*	*83*
Saturday Midday	*70*	*68*	*138*
Less Internal Capture Adjustment			
Weekday AM (12%)	*10*	*10*	*20*
Weekday PM (27%)	*17*	*16*	*33*
Saturday Midday (17%)	*18*	*17*	*35*
Adjusted Site Trips for McDonald's			
Weekday AM	17	16	33
Weekday PM	3	3	6
Saturday Midday	16	15	31

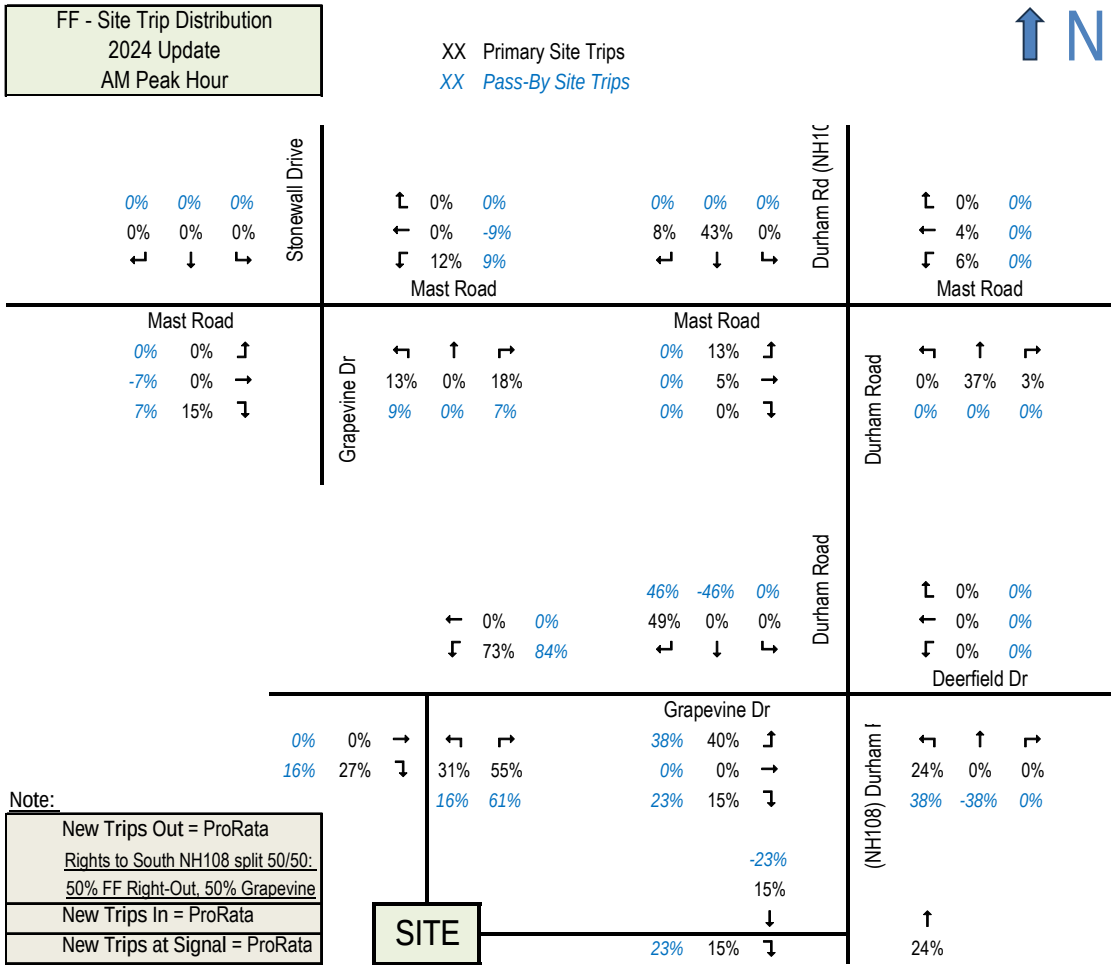
Trip Composition

Table 4: Proposed Fast-Food Trip Composition [Unit 4]

	Non Pass-By		Pass-By		Total at Site
	In	Out	In	Out	
Weekday AM Peak Hour Adj Street	37	35	37	36	145
Weekday PM Peak Hour Adj Street	21	19	25	24	89
Weekend SAT Peak Hour Generator	43	41	43	42	169

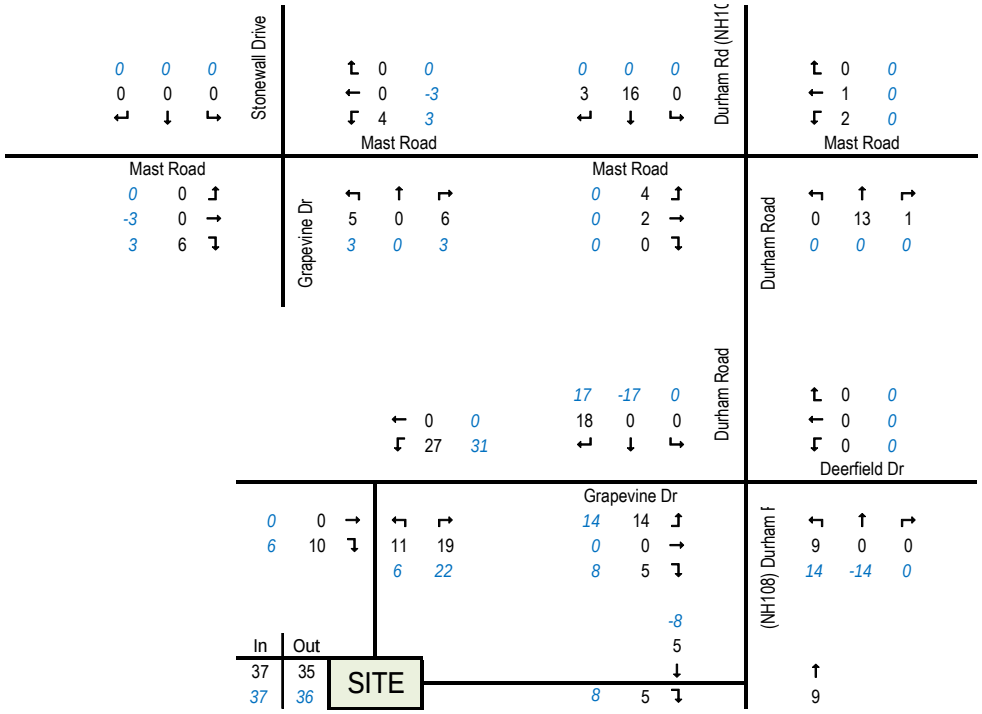
Trip Assignment

Distribution is prorated based on current background volumes.



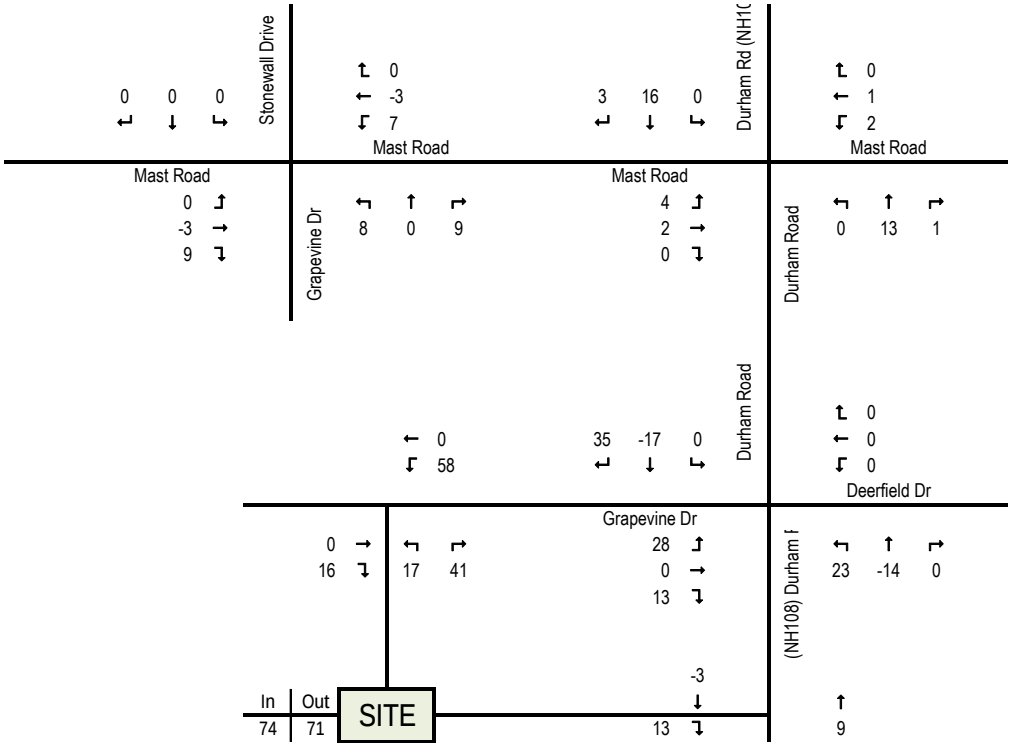
FF - Site Trip Assignments
2024 Update
AM Peak Hour

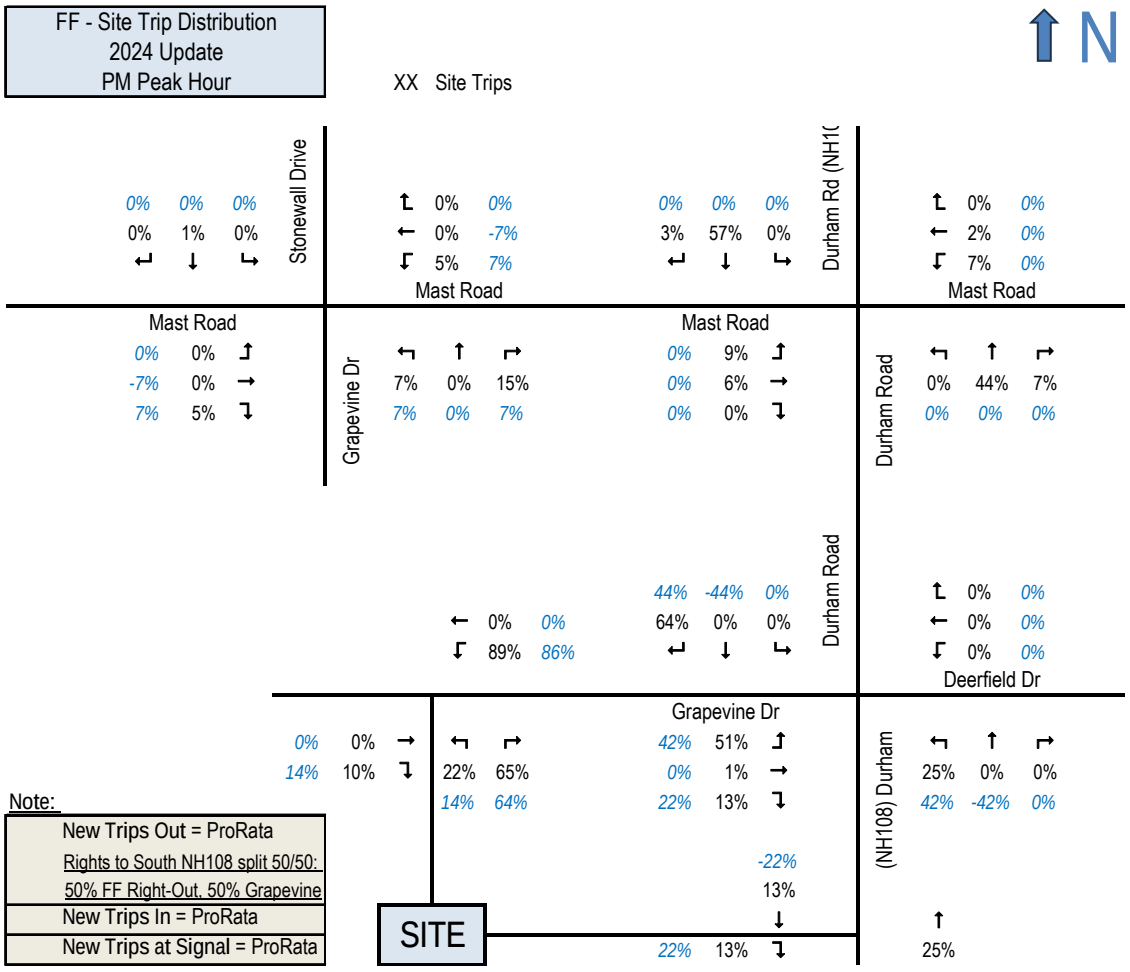
XX Primary Site Trips
XX Pass-By Site Trips

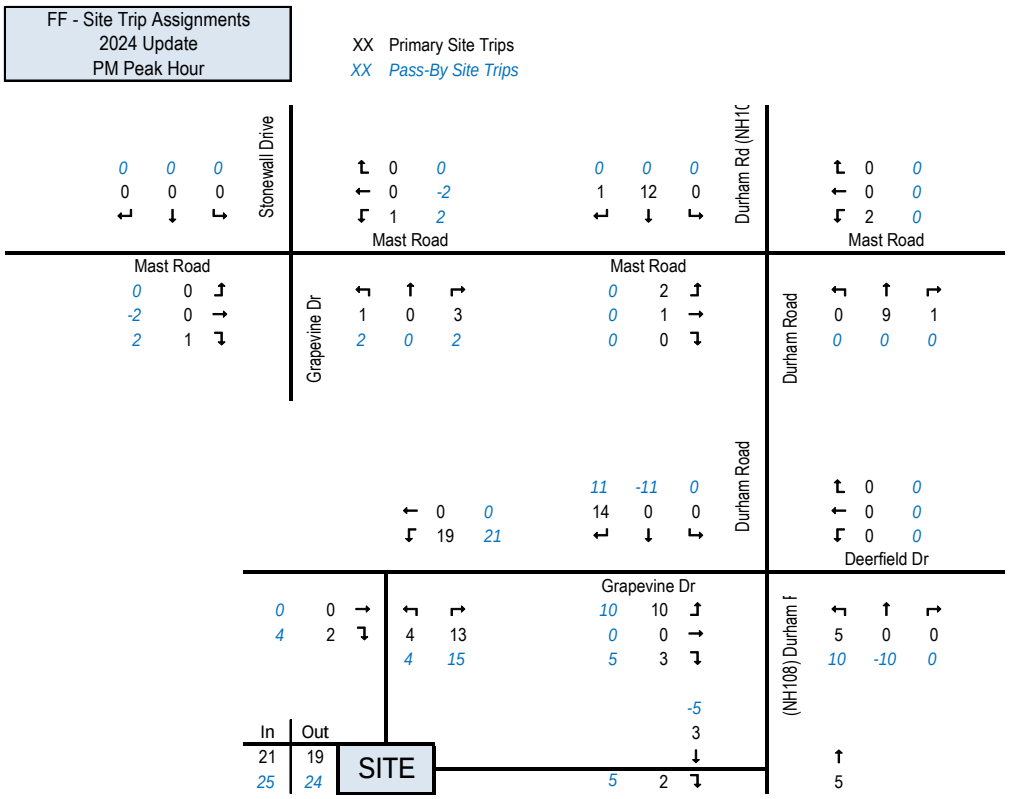


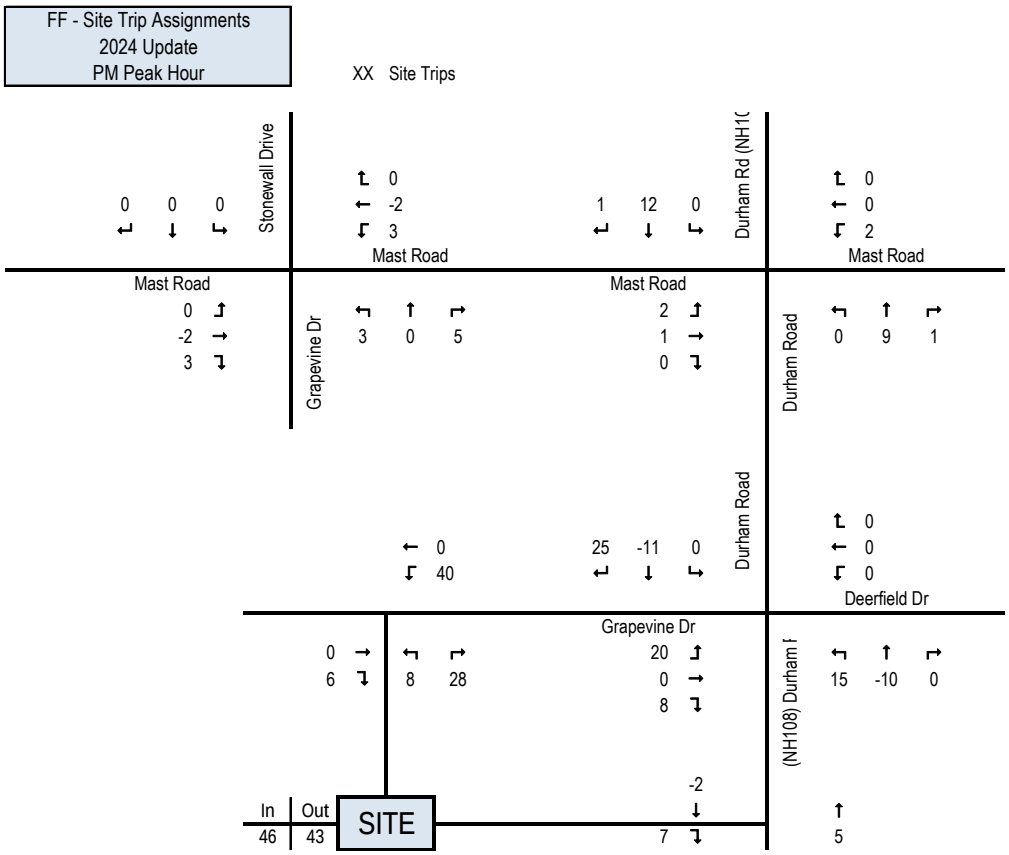
FF - Site Trip Assignments
2024 Update
AM Peak Hour

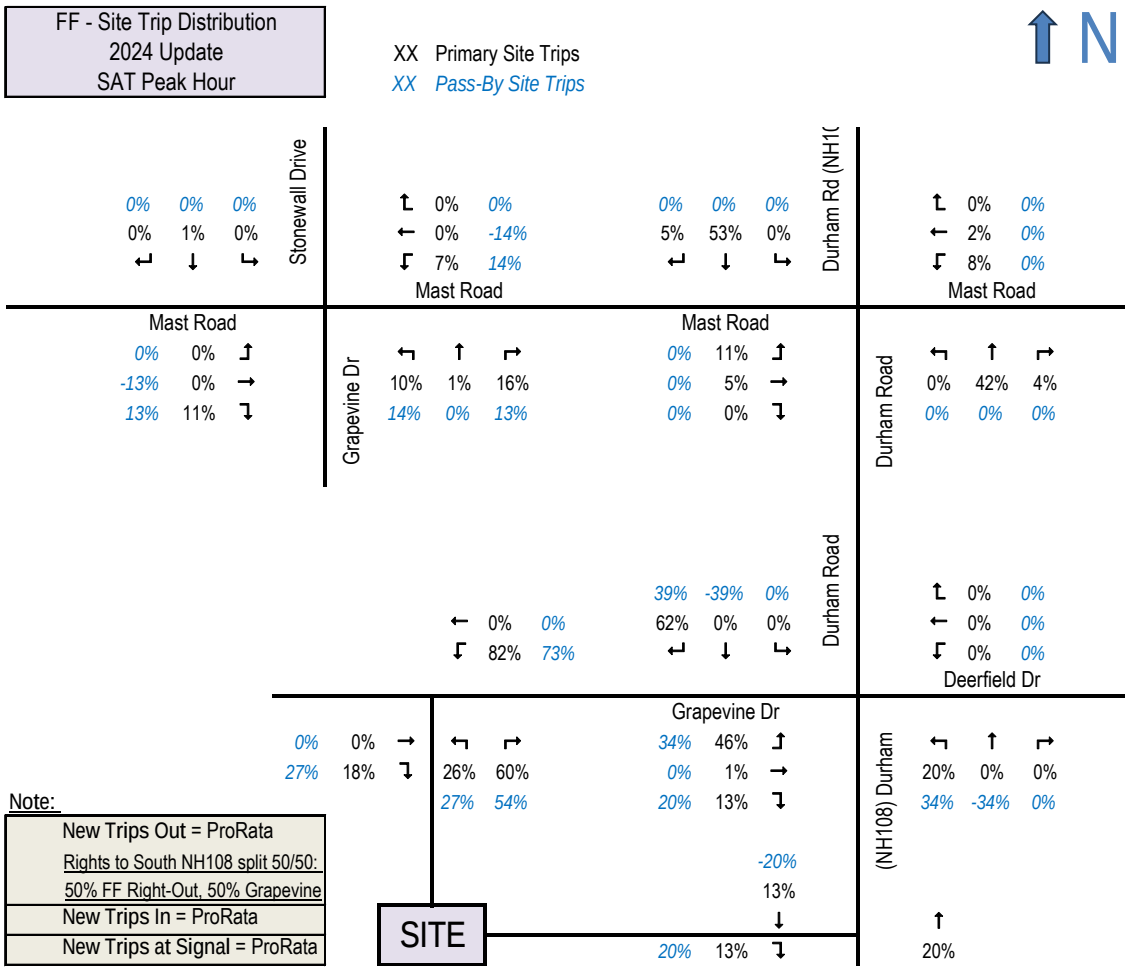
XX Site Trips

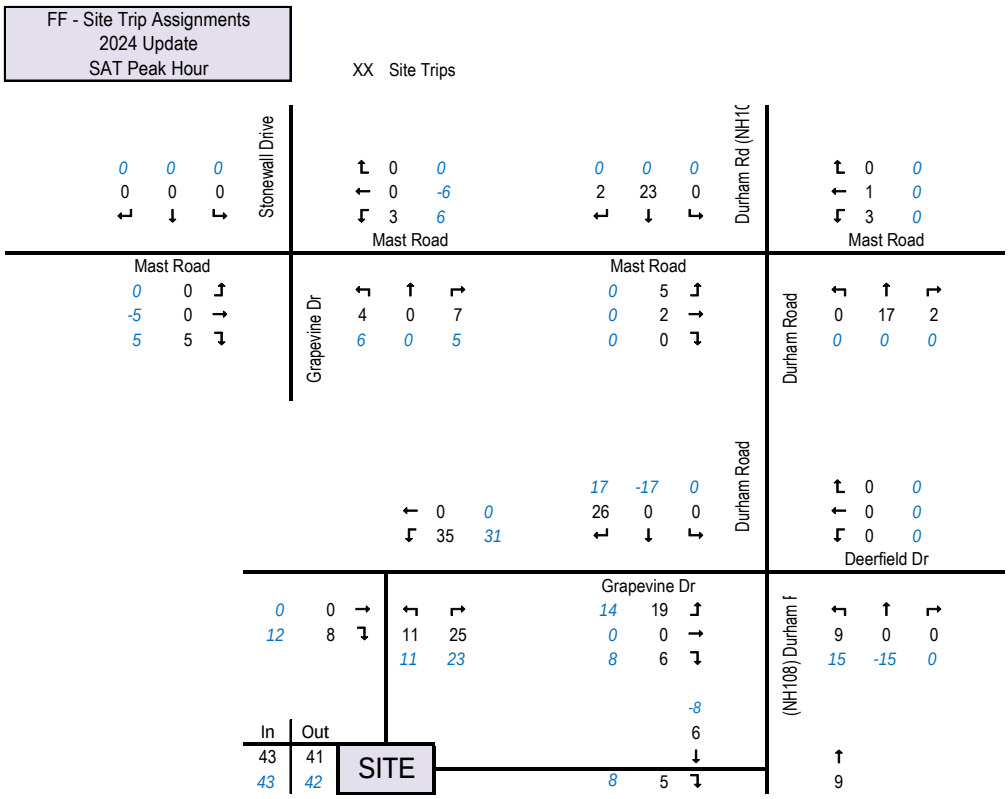


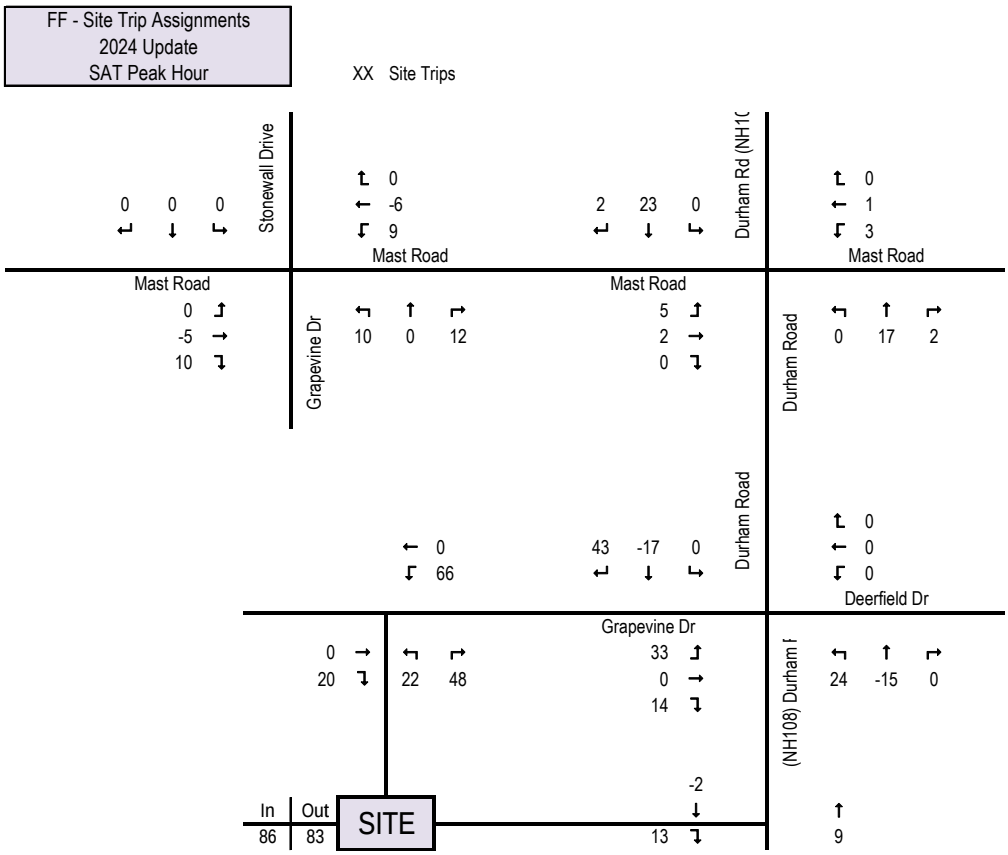

FF - Site Trip Distribution
2024 Update
PM Peak Hour
XX Site Trips
N
Stonewall Drive
Mast Road
Durham Rd (NH1(
Grapevine Dr
Durham Road
Deerfield Dr
(NH108) Durham
Grapevine Dr
SITE
Note:
New Trips Out = ProRata
Rights to South NH108 split 50/50:
50% FF Right-Out, 50% Grapevine
New Trips In = ProRata
New Trips at Signal = ProRata


FF - Site Trip Assignments
2024 Update
PM Peak Hour
XX Primary Site Trips
XX Pass-By Site Trips
Stonewall Drive
Mast Road
Durham Rd (NH10
Grapevine Dr
Durham Road
Deerfield Dr
(NH108) Durham
In
Out
SITE


FF - Site Trip Assignments
2024 Update
PM Peak Hour
XX Site Trips
Stonewall Drive
Mast Road
Durham Rd (NH10
Grapevine Dr
Durham Road
Deerfield Dr
(NH108) Durham
In
Out
SITE

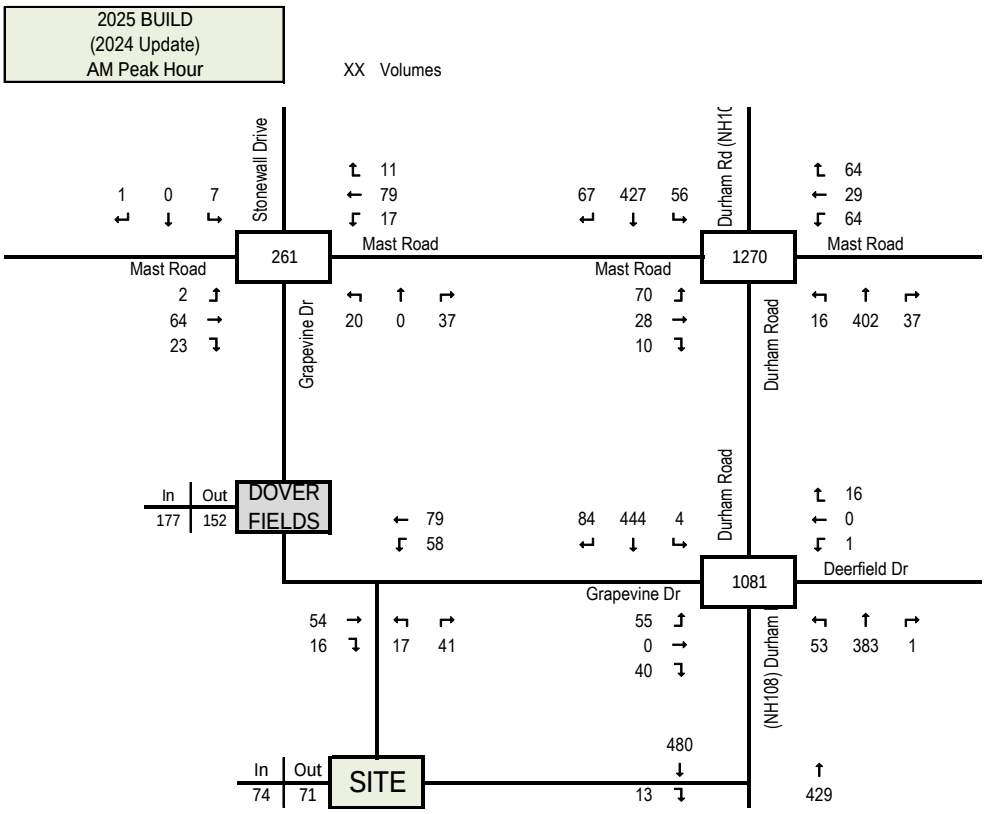

FF - Site Trip Distribution
2024 Update
SAT Peak Hour
XX Primary Site Trips
XX Pass-By Site Trips
N
Stonewall Drive
Durham Rd (NH1(
Mast Road
Mast Road
Mast Road
Mast Road
Grapevine Dr
Durham Road
Durham Road
Deerfield Dr
Grapevine Dr
(NH108) Durham
SITE
Note:
New Trips Out = ProRata
Rights to South NH108 split 50/50:
50% FF Right-Out, 50% Grapevine
New Trips In = ProRata
New Trips at Signal = ProRata

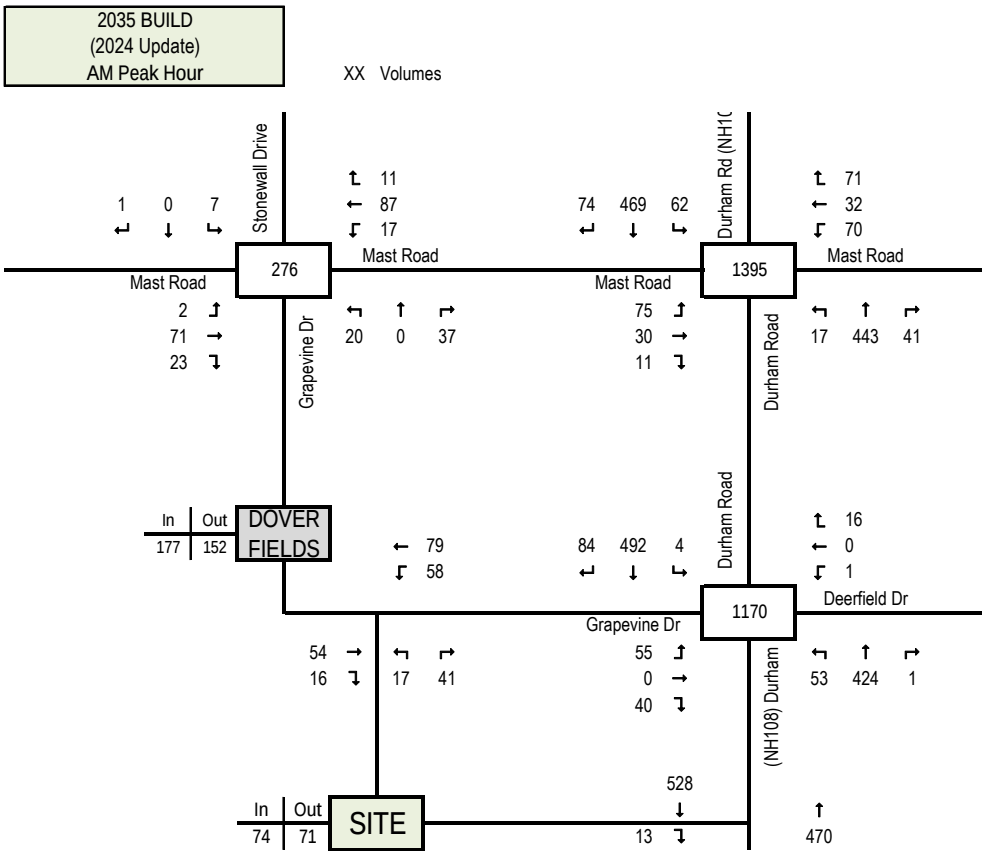

FF - Site Trip Assignments
2024 Update
SAT Peak Hour
XX Site Trips
Stonewall Drive
Durham Rd (NH1(
Mast Road
Grapevine Dr
Durham Road
Deerfield Dr
Grapevine Dr
(NH108) Durham I
In
Out
43
41
43
42
SITE
8
5
9

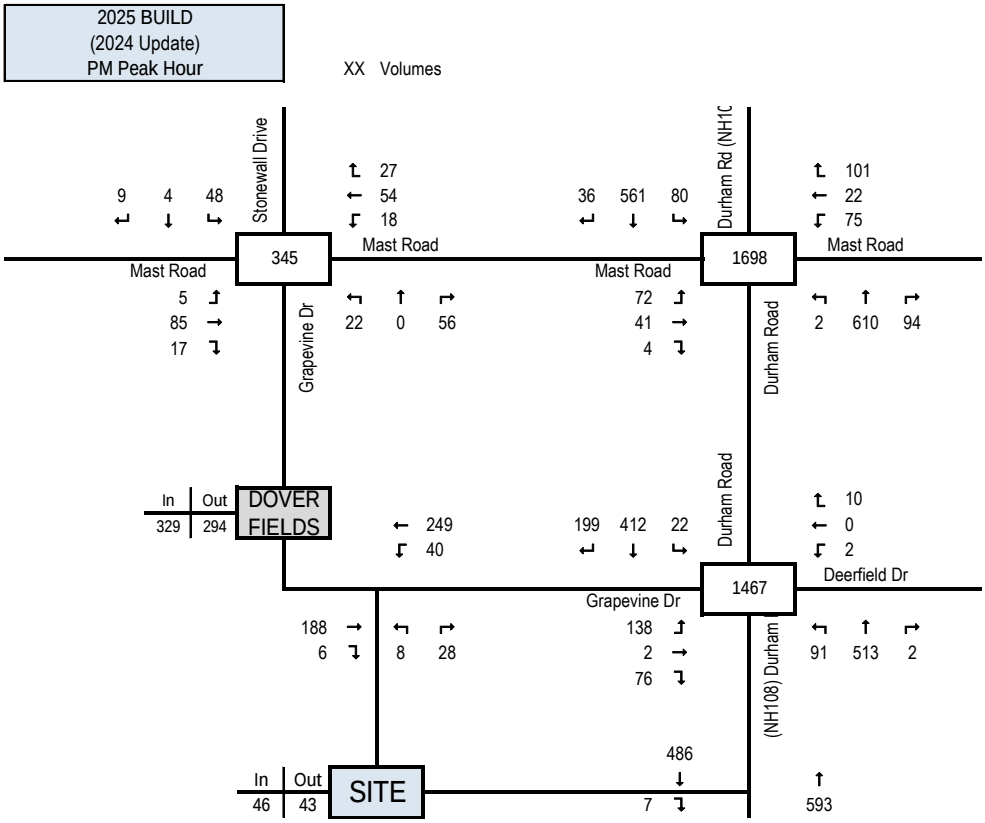

FF - Site Trip Assignments
2024 Update
SAT Peak Hour
XX Site Trips
Stonewall Drive
Durham Rd (NH1(
Mast Road
Grapevine Dr
Durham Road
Deerfield Dr
Grapevine Dr
(NH108) Durham I
In
Out
86
83
SITE
13
9

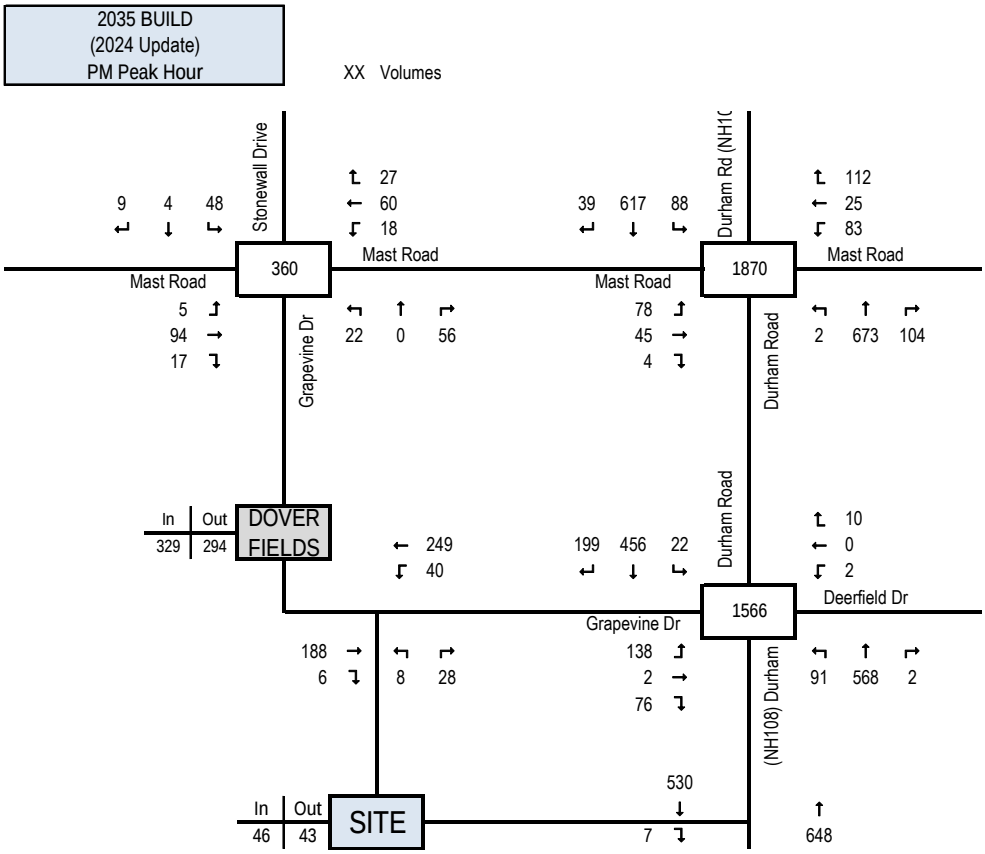
4. Build Volumes:

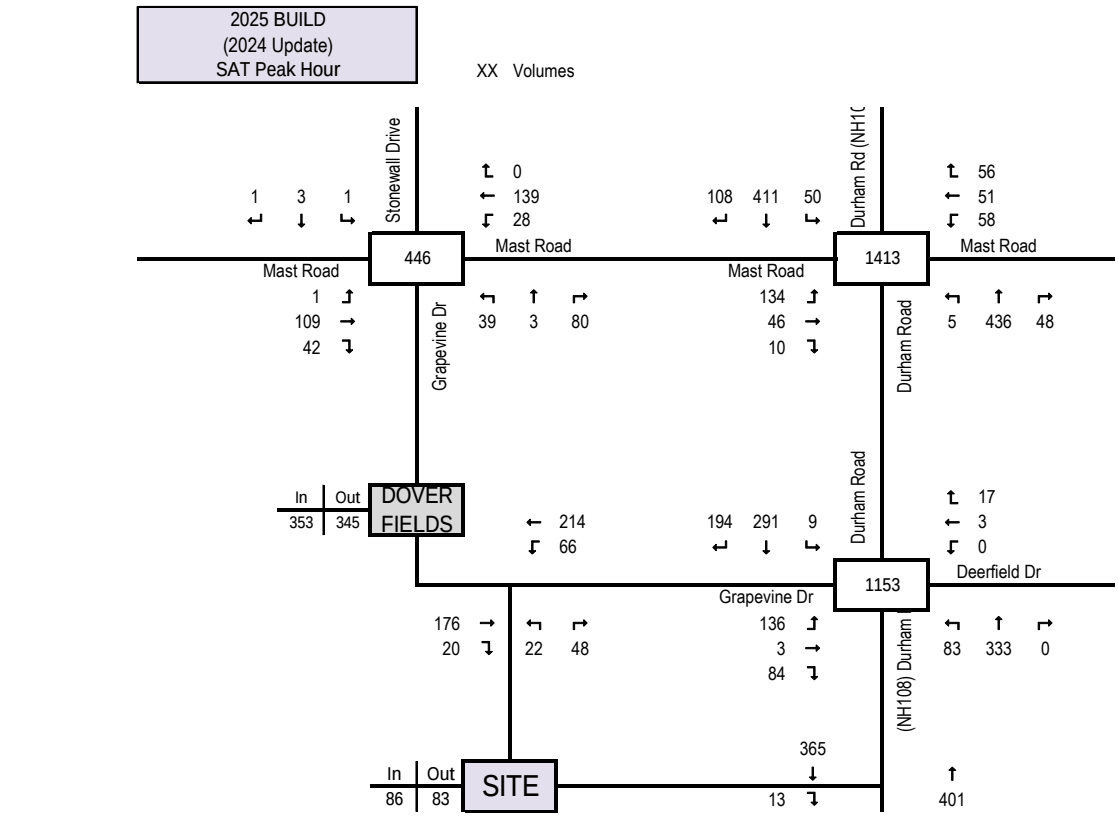
The site trips generated by the 2024 updated development were added to No-Build traffic volumes throughout the study area to produce 2025 & 2035 Build diagrams for each peak hour on the following pages:

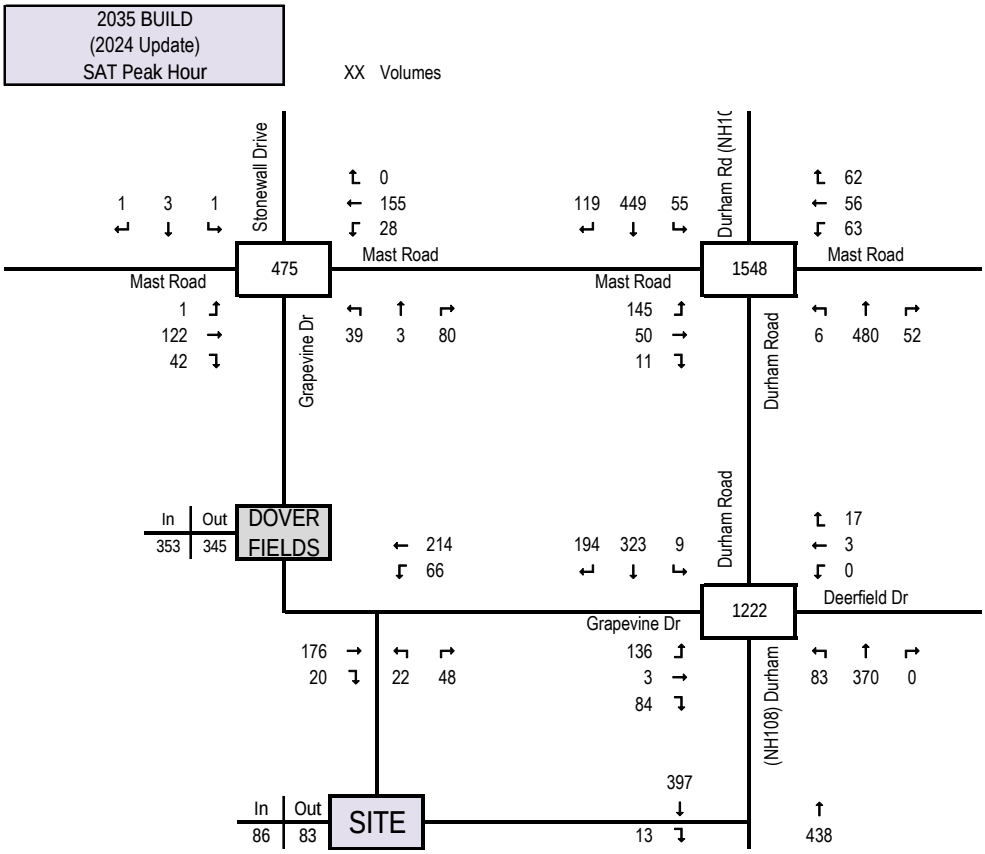

2025 BUILD
(2024 Update)
AM Peak Hour
XX Volumes
Stonewall Drive
Durham Rd (NH1(
261
1270
Mast Road
Mast Road
Grapevine Dr
Durham Road
DOVER FIELDS
In 177 Out 152
1081
Deerfield Dr
Grapevine Dr
(NH108) Durham
SITE
In 74 Out 71
480
429


2035 BUILD
(2024 Update)
AM Peak Hour
XX Volumes
Stonewall Drive
Durham Rd (NH1(
276
1395
Mast Road
Mast Road
Grapevine Dr
Durham Road
DOVER FIELDS
In 177 Out 152
1170
Deerfield Dr
Grapevine Dr
(NH108) Durham
SITE
In 74 Out 71
528
470


2025 BUILD
(2024 Update)
PM Peak Hour
XX Volumes
Stonewall Drive
Durham Rd (NH1C
Mast Road
345
1698
Grapevine Dr
Durham Road
DOVER FIELDS
In 329 Out 294
1467
Deerfield Dr
Grapevine Dr
(NH108) Durham
SITE
In 46 Out 43
9 4 48
27 54 18
36 561 80
101 22 75
5 85 17
22 0 56
72 41 4
2 610 94
249 40
199 412 22
10 0 2
188 6
8 28
138 2 76
91 513 2
486 7
593


2035 BUILD
(2024 Update)
PM Peak Hour
XX Volumes
Stonewall Drive
Durham Rd (NH1C
Mast Road
360
1870
Grapevine Dr
Durham Road
DOVER FIELDS
In 329 Out 294
1566
Deerfield Dr
Grapevine Dr
(NH108) Durham
SITE
In 46 Out 43
9 4 48
27 60 18
39 617 88
112 25 83
5 94 17
22 0 56
78 45 4
2 673 104
249 40
199 456 22
10 0 2
188 6
8 28
138 2 76
91 568 2
530 7
648


2025 BUILD
(2024 Update)
SAT Peak Hour
XX Volumes
Stonewall Drive
Durham Rd (NH1(
446
1413
Mast Road
Grapevine Dr
Durham Road
DOVER FIELDS
In 353 Out 345
1153
Deerfield Dr
(NH108) Durham
SITE
In 86 Out 83


2035 BUILD
(2024 Update)
SAT Peak Hour
XX Volumes
Stonewall Drive
Durham Rd (NH1(
475
1548
Mast Road
Grapevine Dr
Durham Road
DOVER FIELDS
In 353 Out 345
1222
Deerfield Dr
(NH108) Durham
SITE
In 86 Out 83

5. Level of Service Analysis:

Level of Service Analysis:

Level of service (LOS) is a qualitative description of operational conditions within a traffic stream measured in terms of control delay. The relationship between control delay and LOS is shown in the following table.

Level of Service (LOS)	Signalized Control Delay (sec)	Unsignalized Control Delay (sec)
A	≤10.0	≤10.0
B	10.1 to 20.0	10.1 to 15.0
C	20.1 to 35.0	15.1 to 25.0
D	35.1 to 55.0	25.1 to 35.0
E	55.1 to 80.0	35.1 to 50.0
F	Over 80.0	Over 50.0

Methodology.

Trafficware “Synchro” v11 software was used to analyze signalized and unsignalized intersections (based on Synchro/HCM 6th) within the study area intersections during the weekday AM, PM and Saturday peak hours.

Queue Analysis.

Reported queue represents the 95th percentile queue, that is, the queue that will be exceeded no more than 5% of the time during the peak periods.

Signal Timing

Existing signal timing at the NH108/Mast Road intersection was based on current City timings received by TFM on November 9, 2023. There is a single timing plan that runs all day at this signal. The timing plan is attached in the appendix.

Intersection Summaries.

Volume to capacity (v/c) ratios, Level of Service (LOS), delays and queue results are summarized in the following tables.

Table 4. Level of Service Analysis Summary (2024/2025/2035)

	2024 BASE				2025 No-Build				2025 Build				2035 No-Build				2035 Build			
Movement	v/c[a]	Del[b]	LOS[c]	Q[d]	v/c[a]	Del[b]	LOS[c]	Q[d]	v/c[a]	Del[b]	LOS[c]	Q[d]	v/c[a]	Del[b]	LOS[c]	Q[d]	v/c[a]	Del[b]	LOS[c]	Q[d]
9: NH108/Durham Road & Grapevine Drive (East) /Deerfield Drive [Unsignalized]																				
AM Peak OVERALL	---	1.9	A	---	---	2.9	A	---	---	3.0	A	---	---	3.0	A	---	---	3.2	A	---
EB L/T	0.22	28.4	D	20	0.29	34.1	D	28	0.35	36.2	E	38	0.34	41.3	E	35	0.41	45.0	E	45
EB R	0.06	12.1	B	5	0.14	12.9	B	13	0.08	12.3	B	8	0.15	13.6	B	13	0.09	12.9	B	8
WB L	0.04	11.7	B	3	0.04	12.0	B	3	0.04	11.8	B	3	0.05	12.6	B	5	0.05	12.4	B	3
NB L	0.02	8.8	A	3	0.06	9.0	A	5	0.06	8.9	A	5	0.06	9.2	A	5	0.06	9.1	A	5
SB L	0.00	8.2	A	0	0.00	8.1	A	0	0.00	8.1	A	0	0.00	8.3	A	0	0.00	8.2	A	0
PM Peak OVERALL	---	13.4	B	---	---	19.7	C	---	---	28.0	D	---	---	26.5	D	---	---	37.1	E	---
EB L/T	0.99	143.7	F	170	1.18	215.9	F	210	1.36	279.5	F	260	1.41	>300	F	245	1.62	>300	F	298
EB R	0.12	12.6	B	10	0.16	13.0	B	15	0.15	13.0	B	13	0.17	13.7	B	15	0.16	13.7	B	15
WB L	0.06	17.0	C	5	0.07	18.3	C	5	0.07	18.2	C	5	0.08	20.4	C	8	0.08	20.4	C	8
NB L	0.07	9.0	A	5	0.10	9.3	A	8	0.10	9.3	A	8	0.11	9.5	A	10	0.11	9.5	A	10
SB L	0.02	8.6	A	3	0.02	8.6	A	3	0.02	8.6	A	3	0.03	8.8	A	3	0.03	8.8	A	3
SAT Peak OVERALL	---	5.5	A	---	---	8.2	A	---	---	10.8	B	---	---	9.8	A	---	---	13.6	B	---
EB L/T	0.54	37.9	E	73	0.70	58.5	F	110	0.81	75.1	F	143	0.80	78.8	F	133	0.92	104.2	F	170
EB R	0.11	11.4	B	8	0.17	12.0	B	15	0.15	12.0	B	13	0.18	12.4	B	15	0.16	12.4	B	15
WB L	0.07	12.3	B	5	0.07	12.7	B	5	0.07	12.7	B	5	0.08	13.3	B	5	0.08	13.3	B	5
NB L	0.04	8.5	A	3	0.08	8.8	A	8	0.09	8.9	A	8	0.08	8.9	A	8	0.09	9.1	A	8
SB L	0.01	8.0	A	0	0.01	8.0	A	0	0.01	8.0	A	0	0.01	8.1	A	0	0.01	8.1	A	0
13: NH108/Durham Road & FF Right-Out [Unsignalized]																				
AM Peak OVERALL	---	---	---	---	---	---	---	---	---	0.2	A	---	---	---	---	---	---	0.2	A	---
EB L	---	---	---	---	---	---	---	---	0.03	11.7	B	3	---	---	---	---	0.03	12.2	B	3
PM Peak OVERALL	---	---	---	---	---	---	---	---	---	0.1	A	---	---	---	---	---	---	0.1	A	---
EB L	---	---	---	---	---	---	---	---	0.01	11.7	B	0	---	---	---	---	0.02	12.1	B	0
SAT Peak OVERALL	---	---	---	---	---	---	---	---	---	0.2	A	---	---	---	---	---	---	0.2	A	---
EB L	---	---	---	---	---	---	---	---	0.02	10.7	B	3	---	---	---	---	0.02	10.9	B	3

[a] Volume-to-capacity ratio - [b] Average control delay (sec/veh) - [c] Level of service - [d] 95th percentile queue in feet

Table 4 cont. Level of Service Analysis Summary (2024/2025/2035)

	2024 BASE				2025 No-Build				2025 Build				2035 No-Build				2035 Build			
Movement	v/c[a]	Del[b]	LOS[c]	Q[d]	v/c[a]	Del[b]	LOS[c]	Q[d]	v/c[a]	Del[b]	LOS[c]	Q[d]	v/c[a]	Del[b]	LOS[c]	Q[d]	v/c[a]	Del[b]	LOS[c]	Q[d]
12: Fast Food Driveway & Grapevine Drive (East) [Unsignalized]																				
AM Peak OVERALL	---	---	---	---	---	---	---	---	---	3.7	A	---	---	---	---	---	---	3.7	A	---
WB L	---	---	---	---	---	---	---	---	0.04	7.5	A	3	---	---	---	---	0.04	7.5	A	3
NB L	---	---	---	---	---	---	---	---	0.07	9.4	A	5	---	---	---	---	0.07	9.4	A	5
PM Peak OVERALL	---	---	---	---	---	---	---	---	---	1.3	A	---	---	---	---	---	---	1.3	A	---
WB L	---	---	---	---	---	---	---	---	0.03	7.7	A	3	---	---	---	---	0.03	7.7	A	3
NB L	---	---	---	---	---	---	---	---	0.06	10.4	B	5	---	---	---	---	0.06	10.4	B	5
SAT Peak OVERALL	---	---	---	---	---	---	---	---	---	2.4	A	---	---	---	---	---	---	2.4	A	---
WB L	---	---	---	---	---	---	---	---	0.05	7.8	A	5	---	---	---	---	0.05	7.8	A	5
NB L	---	---	---	---	---	---	---	---	0.12	11.2	B	10	---	---	---	---	0.12	11.2	B	10
3 Grapevine Drive (North) /Stonewall Drive & Mast Road [Unsignalized]																				
AM Peak OVERALL	---	1.6	A	---	---	3.0	A	---	---	2.7	A	---	---	2.8	A	---	---	2.8	A	---
EB L	0.00	7.7	A	0	0.00	7.7	A	0	0.00	7.5	A	0	0.00	7.8	A	0	0.00	7.4	A	0
WB L	0.01	7.4	A	0	0.02	7.5	A	0	0.02	7.5	A	3	0.02	7.5	A	0	0.01	7.4	A	0
NB L	0.03	9.6	A	3	0.10	9.7	A	8	0.08	9.8	A	8	0.10	9.8	A	8	0.07	9.6	A	5
SB L	0.02	10.6	B	3	0.02	11.3	B	3	0.02	11.9	B	3	0.02	11.5	B	3	0.02	11.1	B	0
PM Peak OVERALL	---	5.6	A	---	---	6.2	A	---	---	6.0	A	---	---	6.0	A	---	---	4.5	A	---
EB L	0.00	7.6	A	0	0.00	7.6	A	0	0.00	7.6	A	0	0.00	7.6	A	0	0.00	7.6	A	0
WB L	0.01	7.5	A	0	0.01	7.5	A	0	0.01	7.5	A	0	0.01	7.5	A	0	0.01	7.5	A	0
NB L	0.08	9.7	A	5	0.13	9.8	A	10	0.10	9.8	A	8	0.13	9.9	A	10	0.10	9.7	A	8
SB L	0.22	11.9	B	20	0.24	12.6	B	23	0.23	12.4	B	23	0.25	12.8	B	25	0.11	11.3	B	10
SAT Peak OVERALL	---	2.5	A	---	---	4.4	A	---	---	3.5	A	---	---	4.2	A	---	---	3.4	A	---
EB L	0.00	7.6	A	0	0.00	7.6	A	0	0.00	7.6	A	0	0.00	7.6	A	0	0.00	7.5	A	0
WB L	0.01	7.6	A	0	0.02	7.6	A	3	0.03	7.6	A	3	0.02	7.7	A	3	0.02	7.6	A	3
NB L	0.12	10.7	B	10	0.26	11.6	B	25	0.19	11.2	B	18	0.27	11.9	B	28	0.19	11.0	B	18
SB L	0.02	11.3	B	3	0.02	12.0	B	3	0.02	11.9	B	3	0.02	12.3	B	3	0.01	11.6	B	0

[a] Volume-to-capacity ratio - [b] Average control delay (sec/veh) - [c] Level of service - [d] 95th percentile queue in feet

Table 4 cont. Level of Service Analysis Summary (2024/2025/2035)

	2024 BASE				2025 No-Build				2025 Build				2035 No-Build				2035 Build			
Movement	v/c[a]	Del[b]	LOS[c]	Q[d]	v/c[a]	Del[b]	LOS[c]	Q[d]	v/c[a]	Del[b]	LOS[c]	Q[d]	v/c[a]	Del[b]	LOS[c]	Q[d]	v/c[a]	Del[b]	LOS[c]	Q[d]
6: NH108/Durham Road & Mast Road [Signalized]																				
AM Peak OVERALL	0.49	9.2	A	---	0.53	9.9	A	---	0.53	9.7	A	---	0.58	10.4	B	---	0.56	9.8	A	---
EB L	0.33	18.7	B	42	0.42	19.2	B	56	0.40	19.3	B	53	0.46	20.1	C	59	0.38	19.7	B	58
EB T	0.12	17.3	B	25	0.13	17.0	B	28	0.13	17.4	B	28	0.14	17.6	B	29	0.13	17.8	B	31
WB L	0.31	18.5	B	46	0.30	18.1	B	47	0.32	18.6	B	47	0.33	18.9	B	51	0.31	19.0	B	54
WB T	0.17	17.5	B	35	0.16	17.2	B	35	0.17	17.6	B	36	0.18	17.8	B	37	0.17	18.0	B	44
NB L/T	0.54	9.9	A	209	0.56	10.8	B	232	0.57	10.6	B	234	0.61	11.6	B	302	0.60	11.1	B	298
NB R	0.02	7.0	A	0	0.02	7.5	A	0	0.03	7.2	A	0	0.03	7.5	A	0	0.03	7.1	A	0
SB L	0.11	3.9	A	18	0.12	4.3	A	21	0.12	4.2	A	20	0.14	4.7	A	23	0.14	4.4	A	21
SB T/R	0.45	4.4	A	135	0.48	5.0	A	166	0.48	4.7	A	160	0.52	5.3	A	195	0.51	4.8	A	184
PM Peak OVERALL	0.62	11.1	B	---	0.64	11.7	B	---	0.65	11.6	B	---	0.75	15.4	B	---	0.69	12.8	B	---
EB L	0.36	20.6	C	44	0.46	21.4	C	55	0.45	21.4	C	53	0.47	22.0	C	60	0.42	22.5	C	60
EB T	0.15	19.0	B	31	0.16	19.0	B	33	0.16	19.1	B	33	0.16	19.2	B	35	0.16	20.4	C	38
WB L	0.40	20.7	C	51	0.39	20.6	C	52	0.41	20.9	C	53	0.39	20.9	C	56	0.39	22.1	C	62
WB T	0.18	19.2	B	30	0.18	19.1	B	30	0.18	19.2	B	30	0.19	19.4	B	32	0.17	20.5	C	47
NB L/T	0.70	13.0	B	422	0.72	13.9	B	439	0.72	13.8	B	443	0.85	22.3	C	507	0.80	17.3	B	492
NB R	0.06	7.1	A	12	0.06	7.4	A	12	0.06	7.3	A	13	0.07	9.0	A	17	0.07	7.7	A	16
SB L	0.20	5.8	A	25	0.21	6.2	A	26	0.21	6.2	A	26	0.26	8.8	A	29	0.24	7.4	A	26
SB T/R	0.46	4.5	A	179	0.49	4.9	A	199	0.49	4.8	A	198	0.55	6.2	A	235	0.53	4.7	A	216
SAT Peak OVERALL	0.55	10.3	B	---	0.60	11.4	B	---	0.60	11.2	B	---	0.65	12.8	B	---	0.63	11.4	B	---
EB L	0.48	19.2	B	71	0.63	23.6	C	96	0.60	22.6	C	91	0.58	20.9	C	104	0.59	22.5	C	101
EB T	0.14	16.7	B	34	0.15	17.2	B	37	0.16	17.2	B	37	0.14	16.3	B	40	0.15	17.4	B	42
WB L	0.20	17.1	B	42	0.21	17.6	B	45	0.22	17.7	B	45	0.20	16.7	B	48	0.24	18.0	B	49
WB T	0.18	17.0	B	49	0.18	17.4	B	51	0.19	17.4	B	51	0.18	16.5	B	54	0.21	17.7	B	54
NB L/T	0.57	11.2	B	236	0.58	11.7	B	242	0.60	11.9	B	253	0.68	15.4	B	309	0.63	12.5	B	329
NB R	0.03	7.7	A	0	0.03	8.0	A	0	0.03	7.9	A	0	0.04	9.3	A	0	0.04	7.9	A	0
SB L	0.11	4.7	A	20	0.12	5.1	A	20	0.12	5.1	A	20	0.16	6.7	A	21	0.13	5.3	A	21
SB T/R	0.45	5.0	A	154	0.49	5.6	A	172	0.49	5.6	A	178	0.56	7.5	A	198	0.53	5.7	A	207

[a] Volume-to-capacity ratio - [b] Average control delay (sec/veh) - [c] Level of service - [d] 95th percentile queue in feet

6. Lane Warrants and Accident Evaluation:

Right Turn Lane

A turn lane warrant analysis was performed previously for the southbound right turn into Grapevine Drive from NH108. It was agreed at that time that a turn lane was not necessary due to insufficient ROW and the following factors:

- The lane was not required when the original project was permitted with substantially higher volumes
- The analysis shows favorable operating conditions in opening and future build conditions,
- Four years of Dover PD data showed no crashes involved a southbound right turning vehicle.

Accident Evaluation:

Dover PD crash data for study intersections for 2021-2024 (approximately four years of data) is provided in the Appendix and summarized below.

Table 6 – Crash Data Summary

	NH108 (Durham Rd) at Grapevine **(Unsignalized)**	NH108 (Durham Rd) at Mast Rd **(Signalized)**	Mast Road at Grapevine **(Unsignalized)**
CRASH FREQUENCY			
Total Crashes	11	16	3
Crashes/year (Ave)	2.8	4	0.8
Intsn Crashes/year	1.8	3.5	0.5
CRASH SEVERITY			
Property Damage Only	10	14	2
Injury	1	2	1
Fatalities	0	0	0
CRASH TYPE			
Angle	6	8	2
Rear End	1	4	0
Side-Swipe	0	2	0
Fixed Object	2	1	1
Animal	2	1	0
WEATHER			
Clear/Dry	10	13	3
Snow/Ice	1	0	0
Clear/Wet	0	3	0
WEEKDAY COMMUTER PEAK			
AM (7-9am)	0	0	0
PM (3-6pm)	5	4	1
Non-Commuter Peak	6	12	2

NH108 (Durham Road) at Grapevine Drive (Unsignalized)

Eleven crashes occurred in the vicinity of the NH108/Grapevine Drive intersection, one resulting in injury. Four crashes involved fixed objects/animals. There was one rear end crash and six angle crashes (5 with property damage only). Four of the angle crashes were due to left turns exiting Grapevine. None involved SB right turns. Based on this relatively favorable record, there does not appear to be any significant intersection safety issue at this location.

7. Mitigation:

Visual observation of the recent turning movement counts indicate that Synchro predicts longer delays than actually occur at the eastbound approach of Grapevine Drive to NH108 during the PM peak. See table below:

Table 7: Grapevine/NH108 Eastbound Approach

PM Peak	Average Delay (sec)	Avg Queue (cars)	95th Queue (cars)
2024 Observed from TMC	35	3 cars	7 vehicles
McD Synchro (Base)	143.7	-	7 vehicles

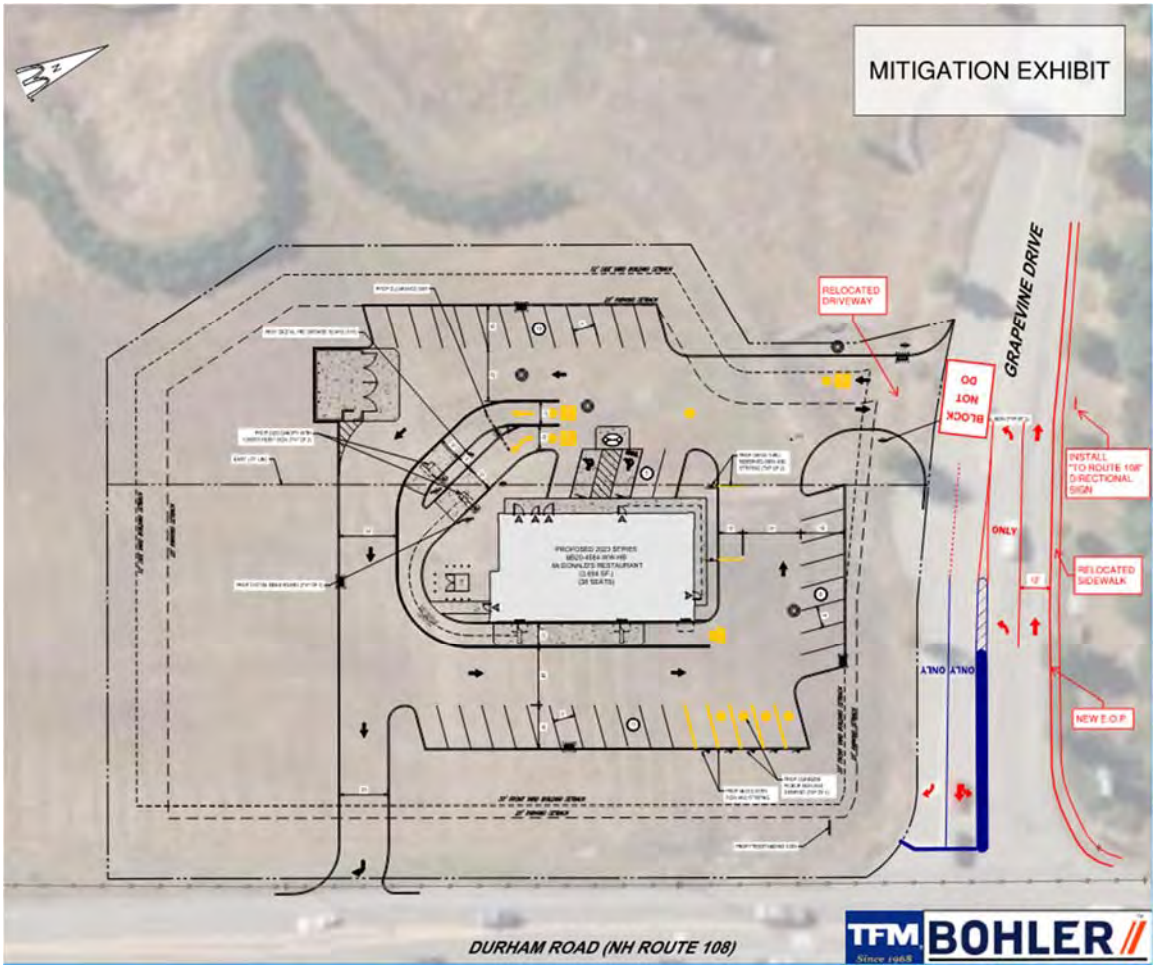
As part of the previous permit, signage was installed along Grapevine Drive directing NB drivers who may be unfamiliar with the site towards the Mast Road driveway rather Grapevine/NH108. The same signage will be installed opposite the McDonalds drive to identify the Mast Road alternative.

Based on observation, the intersection operates at acceptable delays despite the longer Synchro-calculated delays. In addition, drivers who follow signage to the alternative Mast Road exit will also experience lower delays. It is reasonable to assume that over time these two exit points will find a reasonable balance.

Based on the foregoing results and observations, we recommend the following mitigation improvements:

- Signage has been installed previously within the development to instruct drivers of the alternate Mast Road exit, reducing potential congestion at Grapevine. Measured volumes are less at this exit point, and overall traffic volumes of the 2024 counts are lower than the 2022 volumes.
- To further reduce potential congestion, the Fast Food driveway has been shifted approximately 60’ west to create space for two more vehicles in the eastbound queue, and “Do Not Block” striping and signage will be installed at the driveway.
- A right-turn-only exit lane has been added to the Fast Food parcel so that southbound vehicles need not pass through the Grapevine intersection.
- We propose to widen Grapevine Drive to two entering lanes and create a left turn pocket at the Fast Food driveway so that through traffic can bypass vehicles turning into the Fast Food drive. The expected left turn queue is less than one car.

An exhibit detailing these changes is shown in the Appendix.



8. Conclusions:

Recent (July 2024) counts show overall traffic volumes are generally lower than the 2022 volumes of the approved study.

Traffic operations at the Dover Fields access point at Mast Road is favorable in all scenarios, and the Mast Road/NH108 intersection also shows favorable results (C or better) in all scenarios. Build and No-Build queues are essentially unchanged with one or two car queues.

Operations at the Grapevine site driveway are favorable and there is no blocking of westbound through traffic due to the added left turn pocket. The 95th queue for the left turn movement into the site is less than 1 car.

Observed operations at the Grapevine/NH108 intersection show acceptable delays and queues in the PM, and the AM and SAT peaks are within capacity for the left turn movement. As traffic exiting here increases, a higher proportion of northbound (that is, left turning) traffic will likely shift to the Mast Road driveway.

A crash analysis of the Grapevine/NH108 intersection showed generally favorable results, and no evidence of any significant intersection safety issues at this location.

This proposal provides the following mitigation measures to avoid potential spillback from the Fast Food driveway into NH108:

- Additional Grapevine Drive queue storage
- Widened entering roadway
- Left turn pocket into Fast Food and right turn exit to NH108
- Do Not Block signage and markings
- Additional internal signage to Mast Road exit

In summary it is our opinion that the Fast Food use can be safely accommodated without adverse safety impacts at the Grapevine/NH108 driveway.

Please let us know if any additional information is needed in connection with this report.

Respectfully Submitted,
TFMORAN, INC.

Robert Duval, PE
Chief Engineer

APPENDIX A

Trip Generation

Proposed Trip Generation

Internal Capture

Dover Fields [units 2,3&4] + Arbor Woods = APPROVED 2022 Update Trip Generation

TOTAL TRIP GENERATION	Trip Ends		In	Out	Internal Capture %*	Internal Trips In	Internal Trips Out	External Trips In	External Trips Out	External Trips TOTAL
Weekday AM Peak Hour Adjacent Street	178		86	92	16%	13	15	72	77	149
Weekday PM Peak Hour Adjacent Street	187		100	87	32%	33	28	67	59	126
Weekend SAT Peak Hour of Generator	295		148	147	20%	30	30	118	117	235

Dover Fields [2,3&4] + Arbor Woods = APPROVED 2022 Update Trip Composition

	External In	External Out	Non Pass-By % Total	Non Pass-By # In		Non Pass-By # Out	Pass-By % Total	Pass-By # In		Pass-By # Out
AM	72	77		42		50		30		27
PM	67	59		43		37		24		22
SAT	118	117		73		72		45		45

APPROVED Trip Generation - Dover Fields [Unit 4] 2022 Update - FAST FOOD

Based on ITE Trip Generation 11th Edition

ITE LUC 934 - Fast-food with Drive-through Window: 2,500 sf

Time Period	Variable: SF X	Variable: SF Rate	Rate/ Eq Used	Trip Ends	Directional Split In	Directional Split Out	Directional Distribution In	Directional Distribution Out	Internal Capture %	Internal Trips In	Internal Trips Out	External Trips In	External Trips Out	External Trips TOTAL
Weekday AM Peak Hour Adjacent Street	2.5	44.61	Rate	112	51%	49%	57	55	16%	9	9	48	46	94
Weekday PM Peak Hour Adjacent Street	2.5	33.03	Rate	83	52%	48%	43	40	32%	14	13	29	27	56
Weekend SAT Peak Hour of Generator	2.5	55.25	Rate	138	51%	49%	70	68	20%	14	14	56	54	110

Description of LUC 934: This land use includes any fast-food restaurant with a drive-through window. This type of restaurant is characterized by a large drive-through and large carry-out clientele, long hours of service (some are open for breakfast, all are open for lunch and dinner, some are open late at night or 24 hours a day) and high turnover rates for eat-in customers. The restaurant does not provide table service. A patron generally orders from a menu board and pays before receiving the meal. A typical duration of stay for an eat-in patron is less than 30 minutes.

APPROVED Trip Composition - Dover Fields [Unit 4] 2022 Update - FAST FOOD

ITE LUC 934 - Fast-food with Drive-through Window: 2,500 sf

	Trips IN	Trips OUT	Primary % In	Primary # In	Primary % Out	Primary # Out	Pass-By* % In	Pass-By* # In	Pass-By* % Out	Pass-By* # Out
AM	48	46	50%	*24*	50%	*23*	50%	24	50%	23
PM	29	27	45%	13	45%	12	55%	16	55%	15
SAT	56	54	50%	*28*	50%	27	50%	28	50%	27

* Table: Vehicle Pass-By Rates by Land Use, ITE Trip Generation Manual, 11th Edition, LUC 934 Fast-Food Restaurant with Drive-Through Window, Weekday AM Peak Period, Weekday PM Peak Period, used AM rate for SAT

Proposed Trip Generation - Dover Fields [Unit 4] 2024 Update

Based on ITE Trip Generation 11th Edition

ITE LUC 934 - Fast-food with Drive-through Window: 3,700 sf (38 seats)

Time Period	Variable: SF X	Variable: SF Rate	Rate/ Eq Used	Trip Ends	Directional Split In	Directional Split Out	Directional Distribution In	Directional Distribution Out	Internal Capture %	Internal Trips In	Internal Trips Out	External Trips In	External Trips Out	External Trips TOTAL
Weekday AM Peak Hour Adjacent Street	3.7	44.61	Rate	165	51%	49%	84	81	12%	10	10	74	71	145
Weekday PM Peak Hour Adjacent Street	3.7	33.03	Rate	122	52%	48%	63	59	27%	17	16	46	43	89
Weekend SAT Peak Hour of Generator	3.7	55.25	Rate	204	51%	49%	104	100	17%	18	17	86	83	169

Description of LUC 934: This land use includes any fast-food restaurant with a drive-through window. This type of restaurant is characterized by a large drive-through and large carry-out clientele, long hours of service (some are open for breakfast, all are open for lunch and dinner, some are open late at night or 24 hours a day) and high turnover rates for eat-in customers. The restaurant does not provide table service. A patron generally orders from a menu board and pays before receiving the meal. A typical duration of stay for an eat-in patron is less than 30 minutes.

Proposed Trip Composition - Dover Fields [Unit 4] 2024 Update

ITE LUC 934 - Fast-food with Drive-through Window: 3,700 sf (38 seats)

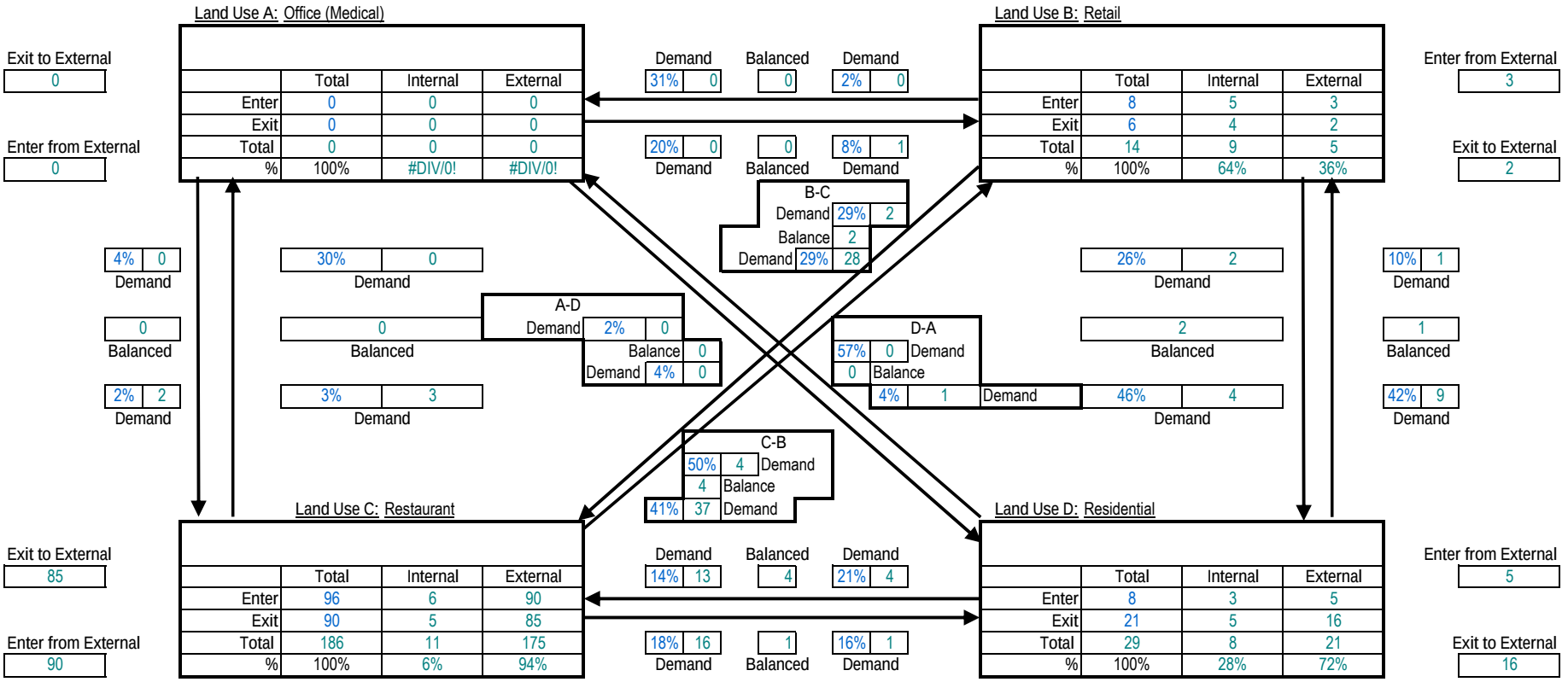
	Trips IN	Trips OUT	Primary % In	Primary # In	Primary % Out	Primary # Out	Pass-By* % In	Pass-By* # In	Pass-By* % Out	Pass-By* # Out
AM	74	71	50%	*37*	50%	*35*	50%	37	50%	36
PM	46	43	45%	21	45%	19	55%	25	55%	24
SAT	86	83	50%	*43*	50%	41	50%	43	50%	42

* Table: Vehicle Pass-By Rates by Land Use, ITE Trip Generation Manual, 11th Edition, LUC 934 Fast-Food Restaurant with Drive-Through Window, Weekday AM Peak Period, Weekday PM Peak Period, used AM rate for SAT

Multi-Use Development: Fast -Food 2024 UPDATE - Dover Fields & Arbor Woods
Internal Capture Summary per NCHRP Report 684

Analyst: TFMoran Inc.
Date: 10/3/2024
Project: 46001.32
Time Period: AM Peak Hour
Phase: Full Build

	LUC	Enter	Exit
Land Use A: Office (Medical)	-	0	0
Land Use B: Retail	492/912	8	6
Land Use C: Restaurant	930/934	96	90
Land Use D: Residential	221/252	8	21
		112	117 Total



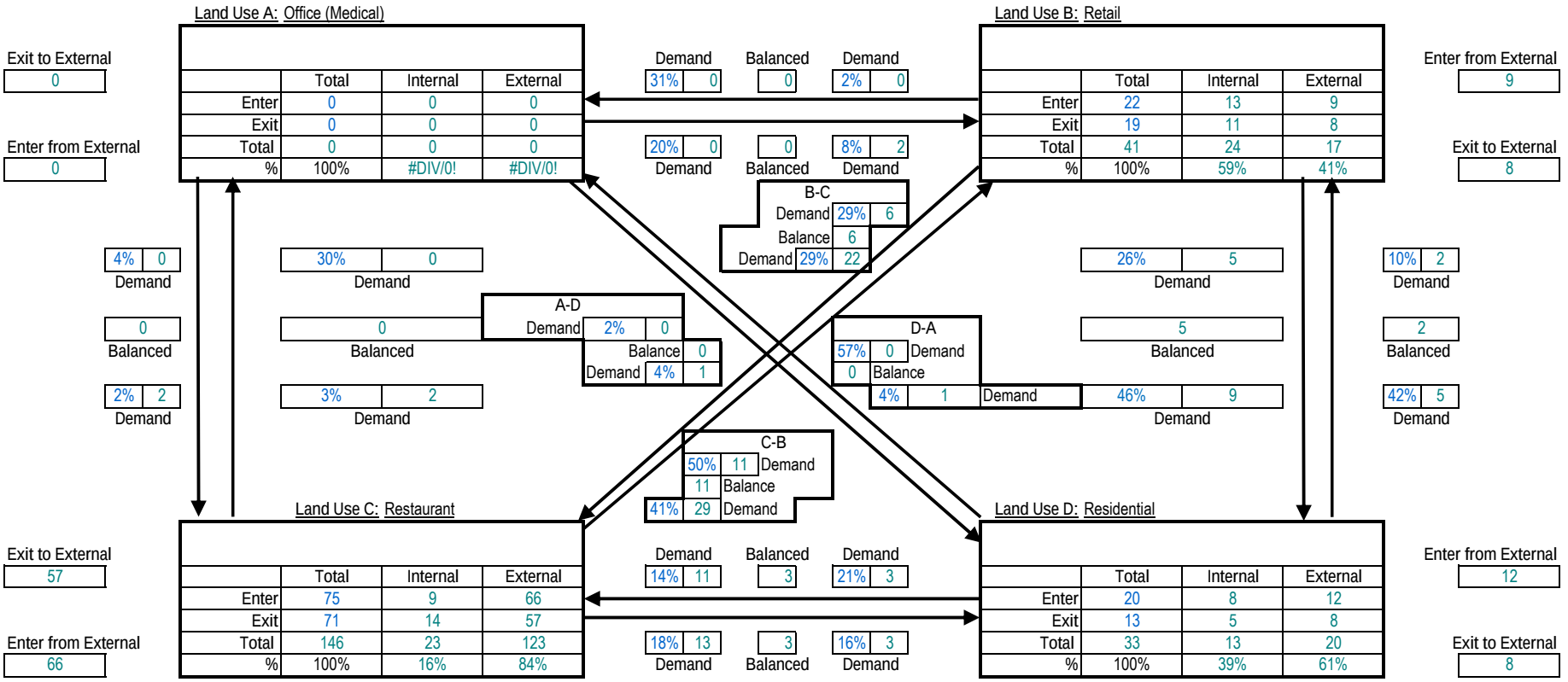
Net External Trips for Multi-Use Development					
	Land Use A	Land Use B	Land Use C	Land Use D	Total
Enter	0	3	90	5	98
Exit	0	2	85	16	103
Total	0	5	175	21	201
Single-Use Trip Gen. Est.	0	14	186	29	229

Internal Capture: 12%

Multi-Use Development: Fast -Food 2024 UPDATE - Dover Fields & Arbor Woods
Internal Capture Summary per NCHRP Report 684

Analyst: TFMoran Inc.
Date: 10/3/2024
Project: 46001.32
Time Period: PM Peak Hour
Phase: Full Build

	LUC	Enter	Exit
Land Use A: Office (Medical)	-	0	0
Land Use B: Retail	492/912	22	19
Land Use C: Restaurant	930/934	75	71
Land Use D: Residential	221/252	20	13
		117	103 Total

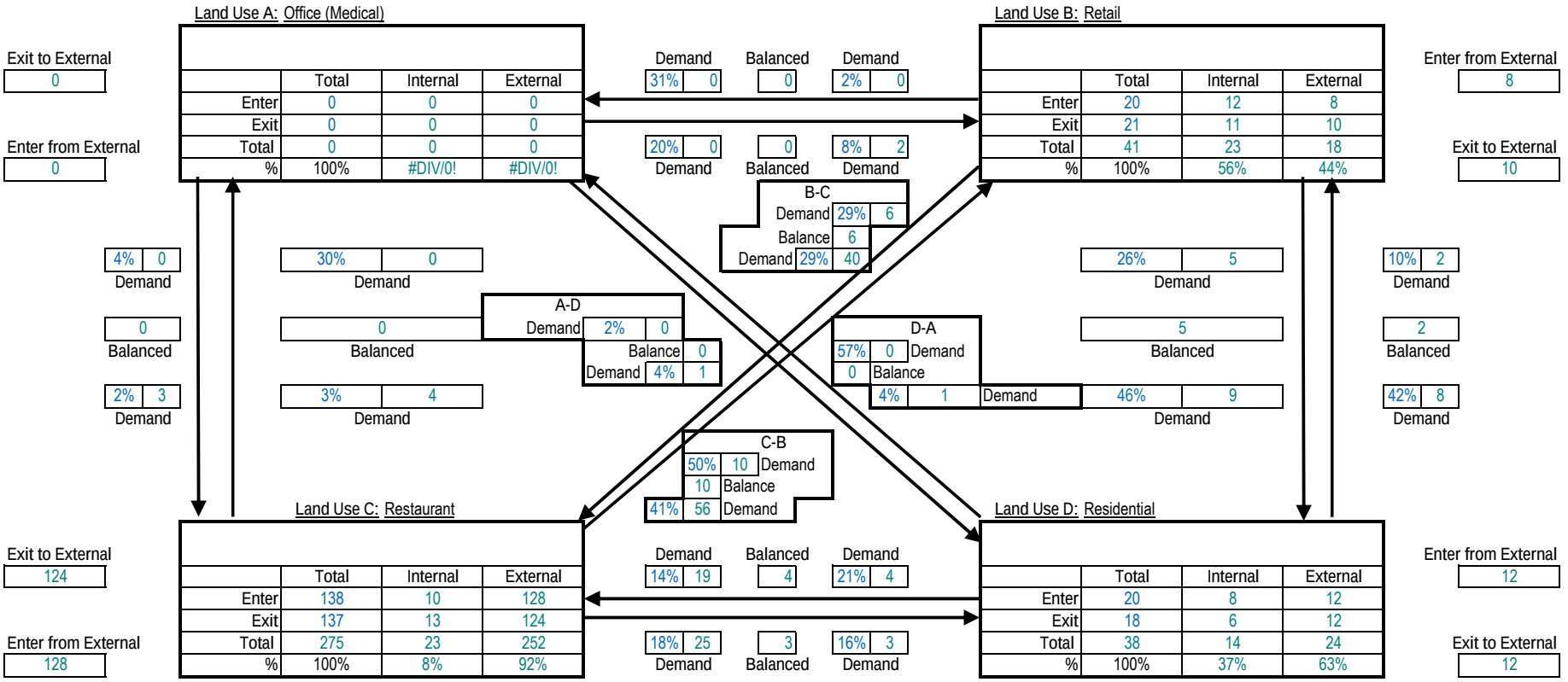


Net External Trips for Multi-Use Development						
	Land Use A	Land Use B	Land Use C	Land Use D	Total	
Enter	0	9	66	12	87	
Exit	0	8	57	8	73	
Total	0	17	123	20	160	Internal Capture
Single-Use Trip Gen. Est.	0	41	146	33	220	27%

Multi-Use Development: Fast -Food 2024 UPDATE - Dover Fields & Arbor Woods
Internal Capture Summary per NCHRP Report 684

Analyst: TFMoran Inc.
Date: 10/3/2024
Project: 46001.32
Time Period: SAT Peak Hour
Phase: Full Build

	LUC	Enter	Exit
Land Use A: Office (Medical)	-	0	0
Land Use B: Retail	492/912	20	21
Land Use C: Restaurant	930/934	138	137
Land Use D: Residential	221/252	20	18
		178	176 Total



Net External Trips for Multi-Use Development						
	Land Use A	Land Use B	Land Use C	Land Use D	Total	
Enter	0	8	128	12	148	
Exit	0	10	124	12	146	
Total	0	18	252	24	294	Internal Capture
Single-Use Trip Gen. Est.	0	41	275	38	354	17%

APPENDIX B

Distribution (AM/PM/SAT)

FAST FOOD

PRIMARY TRIPS - Dover Fields 2024 FF Update

PRORATA PER 2024 COUNTS

			In	Out
		AM Totals	37	35

Mast Road at Grapevine Dr/Stonewall Dr

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL			0	0
EBT			0	0
EBR	15%		6	0
WBL	12%		4	0
WBT			0	0
WBR			0	0
NBL		13%	0	5
NBT			0	0
NBR		18%	0	6
SBL			0	0
SBT			0	0
SBR			0	0

Mast Road at Durham Road (NH108)

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL		13%	0	4
EBT		5%	0	2
EBR			0	0
WBL	6%		2	0
WBT	4%		1	0
WBR			0	0
NBL			0	0
NBT		37%	0	13
NBR		3%	0	1
SBL			0	0
SBT	43%		16	0
SBR	8%		3	0

Durham Road at Grapevine Dr/Deefield Dr

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL		40%	0	14
EBT			0	0
EBR		15%	0	5
WBL			0	0
WBT			0	0
WBR			0	0
NBL	24%		9	0
NBT			0	0
NBR			0	0
SBL			0	0
SBT			0	0
SBR	49%		18	0

Grapevine Dr at FF

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT			0	0
EBR	27%		10	0
WBL	73%		27	0
WBT			0	0
NBL		31%	0	11
NBR		55%	0	19

NH108 at FF Right-Out

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBR		15%	0	5
NBT	24%		9	0
SBT		15%	0	5

PASS-BY TRIPS - Dover Fields 2024 FF Update

PRORATA PER 2024 COUNTS

			In	Out
		AM Totals	37	36

Mast Road at Grapevine Dr/Stonewall Dr

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL			0	0
EBT	-7%		-3	0
EBR	7%		3	0
WBL	9%		3	0
WBT	-9%		-3	0
WBR			0	0
NBL		9%	0	3
NBT			0	0
NBR		7%	0	3
SBL			0	0
SBT			0	0
SBR			0	0

Mast Road at Durham Road (NH108)

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL			0	0
EBT			0	0
EBR			0	0
WBL			0	0
WBT			0	0
WBR			0	0
NBL			0	0
NBT			0	0
NBR			0	0
SBL			0	0
SBT			0	0
SBR			0	0

Durham Road at Grapevine Dr/Deefield Dr

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL		38%	0	14
EBT			0	0
EBR		23%	0	8
WBL			0	0
WBT			0	0
WBR			0	0
NBL	38%		14	0
NBT	-38%		-14	0
NBR			0	0
SBL			0	0
SBT	-46%		-17	0
SBR	46%		17	0

Grapevine Dr at FF

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT			0	0
EBR	16%		6	0
WBL	84%		31	0
WBT			0	0
NBL		16%	0	6
NBR		61%	0	22

NH108 at FF Right-Out

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBR		23%	0	8
NBT			0	0
SBT		-23%	0	-8

TOTAL: Site Trip Assignment

TOTAL

	AM TOTAL
	145

Mast Road at Grapevine Dr/Stonewall Dr

Movement	
EBL	0
EBT	-3
EBR	9
WBL	7
WBT	-3
WBR	0
NBL	8
NBT	0
NBR	9
SBL	0
SBT	0
SBR	0

Mast Road at Durham Road (NH108)

Movement	
EBL	4
EBT	2
EBR	0
WBL	2
WBT	1
WBR	0
NBL	0
NBT	13
NBR	1
SBL	0
SBT	16
SBR	3

Durham Road at Grapevine Dr/Deefield Dr

Movement	
EBL	28
EBT	0
EBR	13
WBL	0
WBT	0
WBR	0
NBL	23
NBT	-14
NBR	0
SBL	0
SBT	-17
SBR	35

Grapevine Dr at FF

Movement	
EBT	0
EBR	16
WBL	58
WBT	0
NBL	17
NBR	41

NH108 at FF Right-Out

Movement	
EBR	13
NBT	9
SBT	-3

FAST FOOD

PRIMARY TRIPS - Dover Fields 2024 FF Update

PRORATA PER 2024 COUNTS

			In	Out
		PM Totals	21	19

Mast Road at Grapevine Dr/Stonewall Dr

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL			0	0
EBT			0	0
EBR	5%		1	0
WBL	5%		1	0
WBT			0	0
WBR			0	0
NBL		7%	0	1
NBT			0	0
NBR		15%	0	3
SBL			0	0
SBT	1%		0	0
SBR			0	0

Mast Road at Durham Road (NH108)

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL		9%	0	2
EBT		6%	0	1
EBR			0	0
WBL	7%		*2*	0
WBT	2%		0	0
WBR			0	0
NBL			0	0
NBT		44%	0	*9*
NBR		7%	0	1
SBL			0	0
SBT	57%		12	0
SBR	3%		1	0

Durham Road at Grapevine Dr/Deefield Dr

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL		51%	0	10
EBT		1%	0	0
EBR		13%	0	*3*
WBL			0	0
WBT			0	0
WBR			0	0
NBL	25%		5	0
NBT			0	0
NBR			0	0
SBL			0	0
SBT			0	0
SBR	64%		*14*	0

Grapevine Dr at FF

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT			0	0
EBR	10%		2	0
WBL	89%		19	0
WBT			0	0
NBL		22%	0	4
NBR		65%	0	*13*

NH108 at FF Right-Out

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBR		13%	0	2
NBT	25%		5	0
SBT		13%	0	*3*

PASS-BY TRIPS - Dover Fields 2024 FF Update

PRORATA PER 2024 COUNTS

			In	Out
		PM Totals	25	24

Mast Road at Grapevine Dr/Stonewall Dr

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL			0	0
EBT	-7%		-2	0
EBR	7%		2	0
WBL	7%		2	0
WBT	-7%		-2	0
WBR			0	0
NBL		7%	0	2
NBT			0	0
NBR		7%	0	2
SBL			0	0
SBT			0	0
SBR			0	0

Mast Road at Durham Road (NH108)

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL			0	0
EBT			0	0
EBR			0	0
WBL			0	0
WBT			0	0
WBR			0	0
NBL			0	0
NBT			0	0
NBR			0	0
SBL			0	0
SBT			0	0
SBR			0	0

Durham Road at Grapevine Dr/Deefield Dr

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL		42%	0	10
EBT			0	0
EBR		22%	0	5
WBL			0	0
WBT			0	0
WBR			0	0
NBL	42%		*10*	0
NBT	-42%		*-10*	0
NBR			0	0
SBL			0	0
SBT	-44%		-11	0
SBR	44%		11	0

Grapevine Dr at FF

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT			0	0
EBR	14%		4	0
WBL	86%		*21*	0
WBT			0	0
NBL		14%	0	*4*
NBR		64%	0	15

NH108 at FF Right-Out

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBR		22%	0	5
NBT			0	0
SBT		-22%	0	-5

TOTAL: Site Trip Assignment

TOTAL

	PM TOTAL
	89

Mast Road at Grapevine Dr/Stonewall Dr

Movement	
EBL	0
EBT	-2
EBR	3
WBL	3
WBT	-2
WBR	0
NBL	3
NBT	0
NBR	5
SBL	0
SBT	0
SBR	0

Mast Road at Durham Road (NH108)

Movement	
EBL	2
EBT	1
EBR	0
WBL	2
WBT	0
WBR	0
NBL	0
NBT	9
NBR	1
SBL	0
SBT	12
SBR	1

Durham Road at Grapevine Dr/Deefield Dr

Movement	
EBL	20
EBT	0
EBR	8
WBL	0
WBT	0
WBR	0
NBL	15
NBT	-10
NBR	0
SBL	0
SBT	-11
SBR	25

Grapevine Dr at FF

Movement	
EBT	0
EBR	6
WBL	40
WBT	0
NBL	8
NBR	28

NH108 at FF Right-Out

Movement	
EBR	7
NBT	5
SBT	-2

FAST FOOD

PRIMARY TRIPS - Dover Fields 2024 Update

PRORATA PER 2024 COUNTS

	In	Out
SAT Totals	43	41

Mast Road at Grapevine Dr/Stonewall Dr

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL			0	0
EBT			0	0
EBR	11%		5	0
WBL	7%		3	0
WBT			0	0
WBR			0	0
NBL		10%	0	4
NBT		1%	0	0
NBR		16%	0	7
SBL			0	0
SBT	1%		0	0
SBR			0	0

Mast Road at Durham Road (NH108)

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL		11%	0	5
EBT		5%	0	2
EBR			0	0
WBL	8%		3	0
WBT	2%		1	0
WBR			0	0
NBL			0	0
NBT		42%	0	17
NBR		4%	0	2
SBL			0	0
SBT	53%		23	0
SBR	5%		2	0

Durham Road at Grapevine Dr/Deefield Dr

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL		46%	0	19
EBT		1%	0	0
EBR		13%	0	6
WBL			0	0
WBT			0	0
WBR			0	0
NBL	20%		9	0
NBT			0	0
NBR			0	0
SBL			0	0
SBT			0	0
SBR	62%		26	0

Grapevine Dr at FF

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT			0	0
EBR	18%		8	0
WBL	82%		35	0
WBT			0	0
NBL		26%	0	11
NBR		60%	0	25

NH108 at FF Right-Out

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBR		13%	0	5
NBT	20%		9	0
SBT		13%	0	6

PASS-BY TRIPS - Dover Fields 2024 Update

PRORATA PER 2024 COUNTS

	In	Out
SAT Totals	43	42

.

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL			0	0
EBT	-13%		-5	0
EBR	13%		5	0
WBL	14%		6	0
WBT	-14%		-6	0
WBR			0	0
NBL		14%	0	6
NBT			0	0
NBR		13%	0	5
SBL			0	0
SBT			0	0
SBR			0	0

Mast Road at Durham Road (NH108)

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL			0	0
EBT			0	0
EBR			0	0
WBL			0	0
WBT			0	0
WBR			0	0
NBL			0	0
NBT			0	0
NBR			0	0
SBL			0	0
SBT			0	0
SBR			0	0

Durham Road at Grapevine Dr/Deefield Dr

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL		34%	0	14
EBT			0	0
EBR		20%	0	8
WBL			0	0
WBT			0	0
WBR			0	0
NBL	34%		15	0
NBT	-34%		-15	0
NBR			0	0
SBL			0	0
SBT	-39%		-17	0
SBR	39%		17	0

Grapevine Dr at FF

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT			0	0
EBR	27%		12	0
WBL	73%		31	0
WBT			0	0
NBL		27%	0	11
NBR		54%	0	23

NH108 at FF Right-Out

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBR		20%	0	8
NBT			0	0
SBT		-20%	0	-8

TOTAL: Site Trip Assignment

TOTAL

	SAT TOTAL
	169

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Movement	
EBL	0
EBT	-5
EBR	10
WBL	9
WBT	-6
WBR	0
NBL	10
NBT	0
NBR	12
SBL	0
SBT	0
SBR	0

Mast Road at Durham Road (NH108)

Movement	
EBL	5
EBT	2
EBR	0
WBL	3
WBT	1
WBR	0
NBL	0
NBT	17
NBR	2
SBL	0
SBT	23
SBR	2

Durham Road at Grapevine Dr/Deefield Dr

Movement	
EBL	33
EBT	0
EBR	14
WBL	0
WBT	0
WBR	0
NBL	24
NBT	-15
NBR	0
SBL	0
SBT	-17
SBR	43

Grapevine Dr at FF

Movement	
EBT	0
EBR	20
WBL	66
WBT	0
NBL	22
NBR	48

NH108 at FF Right-Out

Movement	
EBR	13
NBT	9
SBT	-2

APPENDIX C

Volume Adjustments

Seasonal Adjustment

Covid Factor

Heavy Vehicles

Year 2019 Monthly Data

Group 4 Averages: Urban Highways

Month	ADT	For WARRANTS Adjustment to Average	For Traffic Adjustment to Peak
January	11,431	1.12	1.23
February	11,848	1.08	1.18
March	12,141	1.06	1.15
April	12,860	1.00	1.09
May	13,551	0.95	1.03
June	13,785	0.93	1.02
July	13,942	0.92	1.01
August	14,016	0.92	1.00
September	13,379	0.96	1.05
October	13,339	0.96	1.05
November	12,265	1.05	1.14
December	11,496	1.12	1.22

Average ADT: 12,838
Peak ADT: 14,016

Covid Factor Calculation - NHDOT Methodology

NHDOT currently has a preference on the methodology to be used in determining any required adjustments to traffic counts collected during the pandemic (to compare the month of counts in 2019 and in the pandemic year of

1 Select the appropriate permanent count station.
2 Scroll to the "Volume Count" section and select on one of the eyeball icons.
3 A new screen will open and select the "Compare Count" tab at the bottom.
4 A new window will open and scroll to the "Date Range Selection" section and type in or select the Count Date Range. The first day of the month, to the last day of the month should be selected.
5 Since NHDOT prefers that separate pandemic adjustment factors be used for the different time periods, select Monday through Friday for the weekday daily, weekday AM peak hour, and weekday PM peak hour comparisons. A separate analysis would be performed in determining the Saturday daily and Saturday midday peak hour
6 Click the "Add Count" button and the time period and days of the week selected will appear on the graph to the right.
7 For the pre-pandemic volume comparison, go to the "Count Date Range" and select the same month and days but use 2019 as the pre-pandemic base. For this project, the 2019 month (first day to last day) would be used.
8 Click the "Add Count" button and the 2019 data selected will appear on the graph to the right.
9 Go to the top of the screen and select the "Grid" tab.
10 Hourly and daily ("Total") data will then be shown for the time periods selected for comparison. To determine the weekday AM peak hour comparison, review the highest peak hour traffic volumes from the counts between 7-9 AM (weekday PM = 4-6 PM, Saturday midday = 11 AM-1 PM).

Strafford County - Group 4 Highway Station (Minor Arterial)					
		Dover Point Road	JULY		
02125001	Dover	South of Middlebrook Road			
			2024	2019	change
	7AM - 9AM	AM	722	711	1.5%
	3PM - 6PM	PM	1045	1017	2.8%
	11AM - 2PM	SAT	822	776	5.9%

Rockingham County - Group 4 Highway Station (Minor Arterial)					
		US1 (Lafayette Road)	JULY		
82197076	Hampton	South of Ramp to NH101			
			2024	2019	change
	7AM - 9AM	AM	1450	1465	-1.0%
	3PM - 6PM	PM	1781	1755	1.5%
	11AM - 2PM	SAT	1793	1801	-0.4%

Merrimack County - Group 4 Highway Station (Minor Arterial)					
		NH28 (Suncook Valley Road)	JULY		
02089001	Chichester	North of Bear Hill Road			
			2024	2019	change
	7AM - 9AM	AM	1036	1125	-7.9%
	3PM - 6PM	PM	1251	1352	-7.5%
	11AM - 2PM	SAT	1300	1508	-13.8%

	Average	
Covid Adjust	-2.5%	AM
	-1.1%	PM
	-2.8%	SAT

Station 02125001: Dover

Count 1

N/A For Aggregated Counts

INTERVAL:15-MIN

Time	15-min Interval 1st	2nd	3rd	4th	Hourly Count	% Diff
0:00-1:00	33	19	14	15	81	0.0
1:00-2:00	10	6	6	6	28	-46.6
2:00-3:00	7	7	6	5	25	-41.3
3:00-4:00	7	10	11	13	41	-7.1
4:00-5:00	21	19	35	37	112	0.9
5:00-6:00	42	57	73	83	255	5.2
6:00-7:00	84	101	123	125	433	0.5
7:00-8:00	150	176	195	181	702	-0.7
8:00-9:00	168	186	184	184	722	-1.9
9:00-10:00	175	168	167	176	686	-0.3
10:00-11:00	167	167	181	176	691	-6.4
11:00-12:00	178	184	197	198	757	3.9
12:00-13:00	212	217	206	200	835	8.1
13:00-14:00	194	199	201	209	803	-4.0
14:00-15:00	226	237	252	244	959	9.2
15:00-16:00	232	251	260	244	987	1.4
16:00-17:00	258	282	254	251	1045	-3.0
17:00-18:00	268	281	242	213	1004	-13.3
18:00-19:00	192	178	160	149	679	-13.2
19:00-20:00	146	137	124	110	517	-16.7
20:00-21:00	114	108	99	86	407	-11.1
21:00-22:00	79	73	64	56	272	-6.1
22:00-23:00	55	57	49	40	201	1.5
23:00-24:00	39	36	34	29	138	-2.9
Total			Counts = 14		12380	-2.8

Count Criteria

Local Id	02125001
Start Date	07/01/2024
End Date	07/31/2024
Aggregation	AVG
Include Abnormal	False
Selected Days	Tuesday Wednesday Thursday

Count 2

N/A For Aggregated Counts

INTERVAL:60-MIN

Time	60-min Interval 1st	2nd	3rd	4th	Hourly Count	% Diff
0:00-1:00	-	-	-	-	99	20.0
1:00-2:00	-	-	-	-	37	-19.5
2:00-3:00	-	-	-	-	26	-37.5
3:00-4:00	-	-	-	-	29	-41.1
4:00-5:00	-	-	-	-	79	-33.7
5:00-6:00	-	-	-	-	226	-6.8
6:00-7:00	-	-	-	-	476	9.9
7:00-8:00	-	-	-	-	711	0.6
8:00-9:00	-	-	-	-	701	-4.9
9:00-10:00	-	-	-	-	652	-5.4
10:00-11:00	-	-	-	-	659	-11.2
11:00-12:00	-	-	-	-	717	-1.5
12:00-13:00	-	-	-	-	759	-1.4
13:00-14:00	-	-	-	-	754	-10.3
14:00-15:00	-	-	-	-	821	-6.4
15:00-16:00	-	-	-	-	934	-4.1
16:00-17:00	-	-	-	-	992	-8.2
17:00-18:00	-	-	-	-	1017	-12.0
18:00-19:00	-	-	-	-	700	-10.2
19:00-20:00	-	-	-	-	545	-11.4
20:00-21:00	-	-	-	-	448	-1.6
21:00-22:00	-	-	-	-	329	12.9
22:00-23:00	-	-	-	-	228	14.1
23:00-24:00	-	-	-	-	144	1.4
Total			Counts = 14		12083	-5.3

Count Criteria

Local Id	02125001
Start Date	07/01/2019
End Date	07/31/2019
Aggregation	AVG
Include Abnormal	False
Selected Days	Tuesday Wednesday Thursday

Count 1

N/A For Aggregated Counts

INTERVAL:15-MIN

Time	15-min Interval 1st	2nd	3rd	4th	Hourly Count	% Diff
0:00-1:00	38	23	18	16	95	-6.1
1:00-2:00	15	13	16	10	54	-13.8
2:00-3:00	10	9	4	6	29	-29.4
3:00-4:00	8	7	6	7	28	-16.4
4:00-5:00	6	12	19	16	53	-10.7
5:00-6:00	13	20	35	33	101	-5.8
6:00-7:00	32	47	59	45	183	-3.2
7:00-8:00	60	75	84	77	296	-9.0
8:00-9:00	85	100	121	129	435	-8.6
9:00-10:00	131	144	173	163	611	-7.9
10:00-11:00	165	176	182	181	704	-10.0
11:00-12:00	186	200	200	183	769	2.6
12:00-13:00	201	197	207	200	805	0.4
13:00-14:00	207	204	215	196	822	-3.0
14:00-15:00	206	206	210	190	812	-1.8
15:00-16:00	199	198	201	188	786	3.2
16:00-17:00	190	189	163	162	704	-5.4
17:00-18:00	185	187	179	149	700	1.0
18:00-19:00	162	150	152	136	600	8.2
19:00-20:00	153	130	120	102	505	-0.4
20:00-21:00	109	98	89	90	386	2.6
21:00-22:00	78	84	76	67	305	-4.8
22:00-23:00	70	51	55	37	213	1.4
23:00-24:00	37	37	34	29	137	3.7
Total			Counts = 4		10133	-2.1

Count Criteria

Local Id	02125001
Start Date	07/01/2024
End Date	07/31/2024
Aggregation	AVG
Include Abnormal	False
Selected Days	Saturday

Count 2

N/A For Aggregated Counts

INTERVAL:60-MIN

Time	60-min Interval 1st	2nd	3rd	4th	Hourly Count	% Diff
0:00-1:00	-	-	-	-	132	26.6
1:00-2:00	-	-	-	-	56	-10.2
2:00-3:00	-	-	-	-	44	12.0
3:00-4:00	-	-	-	-	22	-40.0
4:00-5:00	-	-	-	-	38	-43.3
5:00-6:00	-	-	-	-	86	-21.8
6:00-7:00	-	-	-	-	201	6.2
7:00-8:00	-	-	-	-	336	3.6
8:00-9:00	-	-	-	-	461	-2.8
9:00-10:00	-	-	-	-	635	-4.0
10:00-11:00	-	-	-	-	728	-6.6
11:00-12:00	-	-	-	-	776	3.5
12:00-13:00	-	-	-	-	763	-5.0
13:00-14:00	-	-	-	-	731	-14.7
14:00-15:00	-	-	-	-	738	-11.4
15:00-16:00	-	-	-	-	721	-5.4
16:00-17:00	-	-	-	-	704	-5.4
17:00-18:00	-	-	-	-	688	-0.7
18:00-19:00	-	-	-	-	568	2.7
19:00-20:00	-	-	-	-	487	-4.0
20:00-21:00	-	-	-	-	405	7.4
21:00-22:00	-	-	-	-	354	10.1
22:00-23:00	-	-	-	-	229	8.7
23:00-24:00	-	-	-	-	160	19.2
Total			Counts = 4		10063	-2.8

Count Criteria

Local Id	02125001
Start Date	07/01/2019
End Date	07/31/2019
Aggregation	AVG
Include Abnormal	False
Selected Days	Saturday

Station 82197076: Hampton

Count 1

N/A For Aggregated Counts

INTERVAL:15-MIN

Time	15-min Interval 1st	2nd	3rd	4th	Hourly Count	% Diff
0:00-1:00	31	30	24	19	104	-60.4
1:00-2:00	20	16	16	18	70	-49.5
2:00-3:00	12	14	12	14	52	-36.2
3:00-4:00	14	15	16	16	61	-3.2
4:00-5:00	23	42	53	67	185	58.7
5:00-6:00	89	102	136	153	480	54.0
6:00-7:00	168	191	256	247	862	56.2
7:00-8:00	239	287	334	366	1226	45.2
8:00-9:00	336	356	369	389	1450	11.4
9:00-10:00	357	358	377	395	1487	-13.5
10:00-11:00	380	395	398	403	1576	-10.7
11:00-12:00	399	409	423	431	1662	-8.2
12:00-13:00	432	427	429	415	1703	-1.3
13:00-14:00	419	428	426	406	1679	-8.0
14:00-15:00	418	409	439	435	1701	-8.1
15:00-16:00	442	436	441	429	1748	-7.2
16:00-17:00	437	444	458	442	1781	-0.3
17:00-18:00	452	457	439	409	1757	-0.1
18:00-19:00	399	367	353	340	1459	-11.7
19:00-20:00	335	313	286	280	1214	-19.3
20:00-21:00	272	246	235	210	963	-23.5
21:00-22:00	201	177	150	138	666	-21.6
22:00-23:00	143	136	111	94	484	-11.1
23:00-24:00	82	73	60	50	265	-32.8
Total			Counts = 14		24635	-3.5

Count Criteria

Local Id	82197076
Start Date	07/01/2024
End Date	07/31/2024
Aggregation	AVG
Include Abnormal	False
Selected Days	Tuesday Wednesday Thursday

Count 2

N/A For Aggregated Counts

INTERVAL:60-MIN

Time	60-min Interval 1st	2nd	3rd	4th	Hourly Count	% Diff
0:00-1:00	-	-	-	-	126	-42.5
1:00-2:00	-	-	-	-	70	-49.5
2:00-3:00	-	-	-	-	50	-40.0
3:00-4:00	-	-	-	-	63	0.0
4:00-5:00	-	-	-	-	185	58.7
5:00-6:00	-	-	-	-	553	66.8
6:00-7:00	-	-	-	-	944	64.4
7:00-8:00	-	-	-	-	1307	51.2
8:00-9:00	-	-	-	-	1465	12.4
9:00-10:00	-	-	-	-	1439	-16.7
10:00-11:00	-	-	-	-	1535	-13.4
11:00-12:00	-	-	-	-	1622	-10.7
12:00-13:00	-	-	-	-	1616	-6.5
13:00-14:00	-	-	-	-	1583	-13.9
14:00-15:00	-	-	-	-	1628	-12.4
15:00-16:00	-	-	-	-	1655	-12.6
16:00-17:00	-	-	-	-	1739	-2.7
17:00-18:00	-	-	-	-	1755	-0.2
18:00-19:00	-	-	-	-	1484	-10.0
19:00-20:00	-	-	-	-	1168	-23.1
20:00-21:00	-	-	-	-	943	-25.6
21:00-22:00	-	-	-	-	704	-16.1
22:00-23:00	-	-	-	-	517	-4.5
23:00-24:00	-	-	-	-	294	-22.6
Total			Counts = 14		24445	-4.3

Count Criteria

Local Id	82197076
Start Date	07/01/2019
End Date	07/31/2019
Aggregation	AVG
Include Abnormal	False
Selected Days	Tuesday Wednesday Thursday

Count 1

N/A For Aggregated Counts

INTERVAL:15-MIN

Time	15-min Interval 1st	2nd	3rd	4th	Hourly Count	% Diff
0:00-1:00	56	46	49	39	190	-2.1
1:00-2:00	31	26	29	22	108	-7.1
2:00-3:00	22	27	20	14	83	10.1
3:00-4:00	10	13	11	12	46	-31.2
4:00-5:00	15	22	26	28	91	-10.4
5:00-6:00	49	47	63	76	235	-16.0
6:00-7:00	74	96	122	118	410	-16.6
7:00-8:00	125	158	185	222	690	-11.5
8:00-9:00	218	259	286	314	1077	-18.3
9:00-10:00	332	381	383	411	1507	-12.2
10:00-11:00	415	394	419	423	1651	-6.1
11:00-12:00	421	447	443	461	1772	-1.8
12:00-13:00	433	452	454	434	1773	2.7
13:00-14:00	432	440	459	462	1793	-1.4
14:00-15:00	433	464	444	449	1790	-3.0
15:00-16:00	454	447	450	430	1781	-5.3
16:00-17:00	434	437	421	434	1726	-3.5
17:00-18:00	441	420	409	386	1656	-6.0
18:00-19:00	378	376	382	346	1482	-10.2
19:00-20:00	353	345	316	319	1333	-10.0
20:00-21:00	301	293	275	261	1130	-7.7
21:00-22:00	222	221	182	158	783	-5.5
22:00-23:00	164	143	114	96	517	-4.5
23:00-24:00	93	88	78	69	328	-11.8
Total			Counts = 4		23952	-6.3

Count Criteria

Local Id	82197076
Start Date	07/01/2024
End Date	07/31/2024
Aggregation	AVG
Include Abnormal	False
Selected Days	Saturday

Count 2

N/A For Aggregated Counts

INTERVAL:60-MIN

Time	60-min Interval 1st	2nd	3rd	4th	Hourly Count	% Diff
0:00-1:00	-	-	-	-	213	9.3
1:00-2:00	-	-	-	-	123	5.9
2:00-3:00	-	-	-	-	77	2.6
3:00-4:00	-	-	-	-	67	6.2
4:00-5:00	-	-	-	-	98	-3.0
5:00-6:00	-	-	-	-	234	-16.5
6:00-7:00	-	-	-	-	471	-2.7
7:00-8:00	-	-	-	-	845	8.8
8:00-9:00	-	-	-	-	1319	1.9
9:00-10:00	-	-	-	-	1668	-2.0
10:00-11:00	-	-	-	-	1737	-1.0
11:00-12:00	-	-	-	-	1756	-2.8
12:00-13:00	-	-	-	-	1801	4.3
13:00-14:00	-	-	-	-	1764	-3.1
14:00-15:00	-	-	-	-	1692	-8.6
15:00-16:00	-	-	-	-	1694	-10.3
16:00-17:00	-	-	-	-	1634	-8.9
17:00-18:00	-	-	-	-	1628	-7.7
18:00-19:00	-	-	-	-	1576	-4.0
19:00-20:00	-	-	-	-	1337	-9.7
20:00-21:00	-	-	-	-	1109	-9.5
21:00-22:00	-	-	-	-	872	5.3
22:00-23:00	-	-	-	-	592	9.0
23:00-24:00	-	-	-	-	338	-8.8
Total			Counts = 4		24645	-3.5

Count Criteria

Local Id	82197076
Start Date	07/01/2019
End Date	07/31/2019
Aggregation	AVG
Include Abnormal	False
Selected Days	Saturday

Station 02089001: Chichester

Count 1

N/A For Aggregated Counts

INTERVAL:15-MIN

Time	15-min Interval 1st	2nd	3rd	4th	Hourly Count	% Diff
0:00-1:00	11	11	9	9	40	10.5
1:00-2:00	9	7	6	8	30	-9.5
2:00-3:00	9	10	12	7	38	2.7
3:00-4:00	10	14	18	18	60	-16.8
4:00-5:00	23	39	46	47	155	-3.8
5:00-6:00	76	109	139	147	471	-5.6
6:00-7:00	158	202	218	215	793	-4.7
7:00-8:00	249	273	275	239	1036	-3.0
8:00-9:00	224	229	220	203	876	-8.5
9:00-10:00	199	199	205	200	803	-4.0
10:00-11:00	201	209	212	218	840	3.5
11:00-12:00	222	221	224	218	885	-2.2
12:00-13:00	232	234	229	223	918	-3.6
13:00-14:00	230	229	230	228	917	-2.6
14:00-15:00	239	242	254	254	989	-2.2
15:00-16:00	273	283	308	296	1160	-9.4
16:00-17:00	304	317	313	317	1251	-8.0
17:00-18:00	302	301	295	258	1156	-7.7
18:00-19:00	223	212	185	164	784	-4.1
19:00-20:00	160	144	133	122	559	-13.5
20:00-21:00	125	112	107	91	435	-18.4
21:00-22:00	87	80	63	48	278	-15.3
22:00-23:00	55	47	39	32	173	11.6
23:00-24:00	37	32	24	18	111	-15.0
Total			Counts = 14		14758	-5.6

Count Criteria

Local Id	02089001
Start Date	07/01/2024
End Date	07/31/2024
Aggregation	AVG
Include Abnormal	False
Selected Days	Tuesday Wednesday Thursday

Count 2

N/A For Aggregated Counts

INTERVAL:60-MIN

Time	60-min Interval 1st	2nd	3rd	4th	Hourly Count	% Diff
0:00-1:00	-	-	-	-	81	76.9
1:00-2:00	-	-	-	-	33	0.0
2:00-3:00	-	-	-	-	45	19.5
3:00-4:00	-	-	-	-	66	-7.3
4:00-5:00	-	-	-	-	170	5.4
5:00-6:00	-	-	-	-	514	3.2
6:00-7:00	-	-	-	-	877	5.4
7:00-8:00	-	-	-	-	1125	5.2
8:00-9:00	-	-	-	-	906	-5.2
9:00-10:00	-	-	-	-	833	-0.4
10:00-11:00	-	-	-	-	859	5.7
11:00-12:00	-	-	-	-	900	-0.6
12:00-13:00	-	-	-	-	940	-1.3
13:00-14:00	-	-	-	-	931	-1.1
14:00-15:00	-	-	-	-	1004	-0.7
15:00-16:00	-	-	-	-	1191	-6.8
16:00-17:00	-	-	-	-	1352	-0.2
17:00-18:00	-	-	-	-	1300	4.1
18:00-19:00	-	-	-	-	887	8.2
19:00-20:00	-	-	-	-	627	-2.1
20:00-21:00	-	-	-	-	497	-5.1
21:00-22:00	-	-	-	-	330	1.8
22:00-23:00	-	-	-	-	218	34.4
23:00-24:00	-	-	-	-	129	0.0
Total			Counts = 14		15815	1.3

Count Criteria

Local Id	02089001
Start Date	07/01/2019
End Date	07/31/2019
Aggregation	AVG
Include Abnormal	False
Selected Days	Tuesday Wednesday Thursday

Count 1

N/A For Aggregated Counts

INTERVAL:15-MIN

Time	15-min Interval 1st	2nd	3rd	4th	Hourly Count	% Diff
0:00-1:00	21	15	16	17	69	62.9
1:00-2:00	12	10	6	9	37	11.4
2:00-3:00	10	9	9	6	34	-8.5
3:00-4:00	8	8	12	12	40	-55.9
4:00-5:00	14	15	13	21	63	-87.5
5:00-6:00	25	32	45	42	144	-110.3
6:00-7:00	55	65	74	83	277	-100.0
7:00-8:00	100	119	141	148	508	-71.1
8:00-9:00	158	198	226	245	827	-14.3
9:00-10:00	248	268	292	282	1090	26.4
10:00-11:00	322	308	331	333	1294	45.9
11:00-12:00	313	324	331	329	1297	35.6
12:00-13:00	320	342	323	315	1300	30.9
13:00-14:00	314	305	307	277	1203	24.4
14:00-15:00	281	267	270	263	1081	6.7
15:00-16:00	281	263	260	246	1050	-19.4
16:00-17:00	257	235	233	244	969	-33.2
17:00-18:00	234	230	210	202	876	-35.0
18:00-19:00	187	183	168	164	702	-15.1
19:00-20:00	164	152	140	132	588	-8.5
20:00-21:00	121	128	119	115	483	-8.0
21:00-22:00	113	101	98	84	396	20.0
22:00-23:00	72	68	54	44	238	42.9
23:00-24:00	40	43	36	30	149	14.4
Total			Counts = 4		14715	-5.9

Count Criteria

Local Id	02089001
Start Date	07/01/2024
End Date	07/31/2024
Aggregation	AVG
Include Abnormal	False
Selected Days	Saturday

Count 2

N/A For Aggregated Counts

INTERVAL:60-MIN

Time	60-min Interval 1st	2nd	3rd	4th	Hourly Count	% Diff
0:00-1:00	-	-	-	-	103	96.4
1:00-2:00	-	-	-	-	45	30.8
2:00-3:00	-	-	-	-	43	15.0
3:00-4:00	-	-	-	-	38	-60.6
4:00-5:00	-	-	-	-	70	-78.8
5:00-6:00	-	-	-	-	161	-102.3
6:00-7:00	-	-	-	-	296	-94.9
7:00-8:00	-	-	-	-	566	-61.4
8:00-9:00	-	-	-	-	888	-7.2
9:00-10:00	-	-	-	-	1170	33.3
10:00-11:00	-	-	-	-	1432	55.4
11:00-12:00	-	-	-	-	1508	50.0
12:00-13:00	-	-	-	-	1376	36.4
13:00-14:00	-	-	-	-	1283	30.8
14:00-15:00	-	-	-	-	1202	17.3
15:00-16:00	-	-	-	-	1102	-14.6
16:00-17:00	-	-	-	-	969	-33.2
17:00-18:00	-	-	-	-	918	-30.5
18:00-19:00	-	-	-	-	732	-11.0
19:00-20:00	-	-	-	-	658	2.8
20:00-21:00	-	-	-	-	529	1.1
21:00-22:00	-	-	-	-	433	28.8
22:00-23:00	-	-	-	-	273	55.7
23:00-24:00	-	-	-	-	158	20.2
Total			Counts = 4		15953	2.2

Count Criteria

Local Id	02089001
Start Date	07/01/2019
End Date	07/31/2019
Aggregation	AVG
Include Abnormal	False
Selected Days	Saturday

Background Traffic Volumes - HEAVY VEHICLE CALCULATIONS

AM Peak Hour	Counted			Proposed		
	AM %Heavy	2024 RAW	AM Heavy	AM Heavy Vehicles	2025 Build	AM % Heavy
				Proposed		
3. Mast Road at Grapevine Dr/Stonewall Dr						
Movement						
EBL	0%	2	0	0	2	0%
EBT	25%	64	16	0	64	25%
EBR	8%	12	1	0	23	4%
WBL	0%	9	0	0	17	0%
WBT	22%	78	17	0	79	22%
WBR	55%	11	6	0	11	55%
NBL	25%	8	2	0	20	10%
NBT	0%	0	0	0	0	-
NBR	0%	11	0	0	37	0%
SBL	57%	7	4	0	7	57%
SBT	0%	0	0	0	0	-
SBR	0%	1	0	0	1	0%
6. Mast Road at Durham Road (NH108)						
Movement						
EBL	14%	51	7	0	70	10%
EBT	9%	22	2	0	28	7%
EBR	60%	10	6	0	10	60%
WBL	2%	58	1	0	64	2%
WBT	7%	27	2	0	29	7%
WBR	0%	61	0	0	64	0%
NBL	80%	15	12	0	16	75%
NBT	2%	371	7	0	402	2%
NBR	0%	35	0	0	37	0%
SBL	0%	53	0	0	56	0%
SBT	3%	387	13	0	427	3%
SBR	15%	60	9	0	67	13%
9. Durham Road at Grapevine Dr/Deefield Dr						
Movement						
EBL	8%	25	2	0	55	4%
EBT	0%	0	0	0	0	-
EBR	6%	18	1	0	40	3%
WBL	0%	1	0	0	1	0%
WBT	0%	0	0	0	0	-
WBR	0%	16	0	0	16	0%
NBL	11%	19	2	0	53	4%
NBT	4%	382	17	0	383	4%
NBR	0%	1	0	0	1	0%
SBL	0%	4	0	0	4	0%
SBT	5%	444	21	0	444	5%
SBR	5%	38	2	0	84	2%
12. Grapevine Drive at FF						
Movement						
EBT	7%	43	3	0	54	6%
EBR	0%	0	0	0	16	0%
WBL	0%	0	0	0	58	0%
WBT	7%	57	4	0	79	5%
NBL	0%	0	0	0	17	0%
NBR	0%	0	0	0	41	0%
13. NH108 at FF						
Movement						
EBR	0%	0	0	0	13	0%
NBT	5%	402	19	0	429	4%
SBT	5%	463	22	0	480	5%

Background Traffic Volumes - HEAVY VEHICLE CALCULATIONS

PM Peak Hour	Counted			Proposed		
	PM %Heavy	2024 RAW	PM Heavy	PM Heavy Vehicles	2025 Build	PM % Heavy
				Proposed		
3. Mast Road at Grapevine Dr/Stonewall Dr						
Movement						
EBL	20%	5	1	0	5	20%
EBT	11%	84	9	0	85	11%
EBR	0%	12	0	0	17	0%
WBL	0%	12	0	0	18	0%
WBT	22%	55	12	0	54	22%
WBR	22%	27	6	0	27	22%
NBL	0%	17	0	0	22	0%
NBT	0%	0	0	0	0	-
NBR	0%	33	0	0	56	0%
SBL	15%	47	7	0	48	15%
SBT	0%	4	0	0	4	0%
SBR	0%	9	0	0	9	0%
6. Mast Road at Durham Road (NH108)						
Movement						
EBL	0%	55	0	0	72	0%
EBT	0%	37	0	0	41	0%
EBR	25%	4	1	0	4	25%
WBL	0%	69	0	0	75	0%
WBT	0%	21	0	0	22	0%
WBR	0%	98	0	0	101	0%
NBL	0%	2	0	0	2	0%
NBT	1%	582	8	0	610	1%
NBR	0%	90	0	0	94	0%
SBL	0%	77	0	0	80	0%
SBT	0%	522	2	0	561	0%
SBR	27%	33	9	0	36	25%
9. Durham Road at Grapevine Dr/Deefield Dr						
Movement						
EBL	0%	114	0	0	138	0%
EBT	0%	2	0	0	2	0%
EBR	0%	58	0	0	76	0%
WBL	0%	2	0	0	2	0%
WBT	0%	0	0	0	0	-
WBR	10%	10	1	0	10	10%
NBL	0%	59	0	0	91	0%
NBT	1%	510	5	0	513	1%
NBR	0%	2	0	0	2	0%
SBL	0%	22	0	0	22	0%
SBT	0%	414	2	0	412	0%
SBR	1%	155	1	0	199	1%
12. Grapevine Drive at FF						
Movement						
EBT	0%	174	0	0	188	0%
EBR	0%	0	0	0	6	0%
WBL	0%	0	0	0	40	0%
WBT	0%	214	1	0	249	0%
NBL	0%	0	0	0	8	0%
NBR	0%	0	0	0	28	0%
13. NH108 at FF						
Movement						
EBR	0%	0	0	0	7	0%
NBT	1%	571	5	0	593	1%
SBT	0%	474	2	0	486	0%

Background Traffic Volumes - HEAVY VEHICLE CALCULATIONS

SAT Peak Hour	Counted			Proposed		
	SAT %Heavy	2024 RAW	SAT Heavy	SAT Heavy Vehicles	2025 Build	SAT % Heavy
				Proposed		
3. Mast Road at Grapevine Dr/Stonewall Dr						
Movement						
EBL	0%	1	0	0	1	0%
EBT	1%	112	1	0	109	1%
EBR	5%	21	1	0	42	2%
WBL	0%	13	0	0	28	0%
WBT	0%	142	0	0	139	0%
WBR	0%	0	0	0	0	-
NBL	5%	20	1	0	39	3%
NBT	0%	3	0	0	3	0%
NBR	0%	33	0	0	80	0%
SBL	0%	1	0	0	1	0%
SBT	0%	3	0	0	3	0%
SBR	0%	1	0	0	1	0%
6. Mast Road at Durham Road (NH108)						
Movement						
EBL	0%	100	0	0	134	0%
EBT	0%	40	0	0	46	0%
EBR	10%	10	1	0	10	10%
WBL	0%	50	0	0	58	0%
WBT	0%	48	0	0	51	0%
WBR	0%	53	0	0	56	0%
NBL	20%	5	1	0	5	20%
NBT	2%	398	8	0	436	2%
NBR	2%	43	1	0	48	2%
SBL	0%	48	0	0	50	0%
SBT	1%	352	2	0	411	0%
SBR	0%	98	0	0	108	0%
9. Durham Road at Grapevine Dr/Deefield Dr						
Movement						
EBL	3%	95	3	0	136	2%
EBT	33%	3	1	0	3	33%
EBR	0%	53	0	0	84	0%
WBL	0%	0	0	0	0	-
WBT	0%	3	0	0	3	0%
WBR	6%	17	1	0	17	6%
NBL	0%	37	0	0	83	0%
NBT	2%	338	6	0	333	2%
NBR	0%	0	0	0	0	-
SBL	0%	9	0	0	9	0%
SBT	2%	298	6	0	291	2%
SBR	1%	123	1	0	194	1%
12. Grapevine Drive at FF						
Movement						
EBT	3%	151	4	0	176	2%
EBR	0%	0	0	0	20	0%
WBL	0%	0	0	0	66	0%
WBT	1%	163	1	0	214	0%
NBL	0%	0	0	0	22	0%
NBR	0%	0	0	0	48	0%
13. NH108 at FF						
Movement						
EBR	0%	0	0	0	13	0%
NBT	2%	375	6	0	401	1%
SBT	2%	351	6	0	365	2%

APPENDIX D

Other Developments

Previously Permitted Dover Fields [Units 2,3&4]

Previously Permitted Fast-Food Only [Unit 4]

APPROVED 2022 Update DEVELOPMENT: Dover Fields [Units 2,3&4] + Arbor Woods

PRIMARY TRIPS - Dover Fields 2022 Update

PRORATA PER 2023 COUNTS

Entering Trips: based on ProRata,
Exiting Trips: 28% northbound trips directed to Mast Road via signage, 26% to NH108

	In	Out
AM Totals	42	50

Mast Road at Grapevine Dr/Stonewall Dr

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL			0	0
EBT			0	0
EBR	9%		4	0
WBL	8%		3	0
WBT			0	0
WBR			0	0
NBL		16%	0	8
NBT			0	0
NBR		54%	0	27
SBL			0	0
SBT			0	0
SBR			0	0

Mast Road at Durham Road (NH108)

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL		45%	0	*22*
EBT		9%	0	5
EBR			0	0
WBL	8%		3	0
WBT	3%		1	0
WBR			0	0
NBL			0	0
NBT		1%	0	1
NBR		0%	0	0
SBL			0	0
SBT	36%		15	0
SBR	5%		2	0

Durham Road at Grapevine Dr/Deefield Dr

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL		1%	0	1
EBT			0	0
EBR		29%	0	*14*
WBL			0	0
WBT			0	0
WBR			0	0
NBL	39%		*17*	0
NBT			0	0
NBR			0	0
SBL			0	0
SBT			0	0
SBR	44%		18	0

PASS-BY TRIPS - Dover Fields 2022 Update

PRORATA PER 2023 COUNTS

	In	Out
AM Totals	30	27

Mast Road at Grapevine Dr/Stonewall Dr

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL			0	0
EBT	-8%		-2	0
EBR	8%		2	0
WBL	7%		2	0
WBT	-7%		-2	0
WBR			0	0
NBL		7%	0	2
NBT			0	0
NBR		36%	0	10
SBL			0	0
SBT			0	0
SBR			0	0

Mast Road at Durham Road (NH108)

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL			0	0
EBT			0	0
EBR			0	0
WBL			0	0
WBT			0	0
WBR			0	0
NBL			0	0
NBT			0	0
NBR			0	0
SBL			0	0
SBT			0	0
SBR			0	0

Durham Road at Grapevine Dr/Deefield Dr

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL		12%	0	3
EBT			0	0
EBR		45%	0	12
WBL			0	0
WBT			0	0
WBR			0	0
NBL	40%		*12*	0
NBT	-40%		*-12*	0
NBR			0	0
SBL			0	0
SBT	-45%		-14	0
SBR	45%		14	0

TOTAL: Site Trip Assignment

TOTAL

AM TOTAL
149

Mast Road at Grapevine Dr/Stonewall Dr

Movement	
EBL	0
EBT	-2
EBR	6
WBL	5
WBT	-2
WBR	0
NBL	10
NBT	0
NBR	37
SBL	0
SBT	0
SBR	0

Mast Road at Durham Road (NH108)

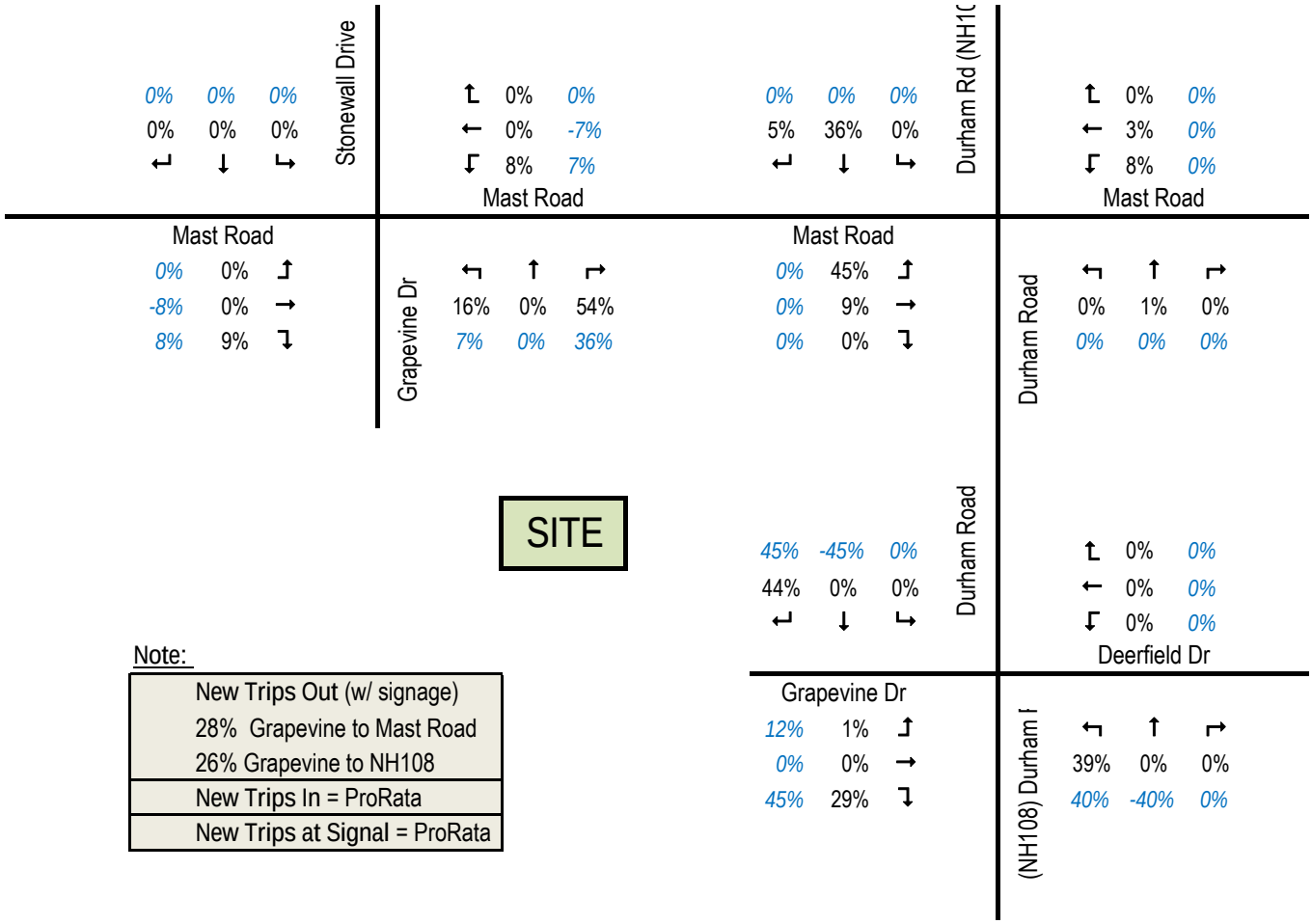
Movement	
EBL	22
EBT	5
EBR	0
WBL	3
WBT	1
WBR	0
NBL	0
NBT	1
NBR	0
SBL	0
SBT	15
SBR	2

Durham Road at Grapevine Dr/Deefield Dr

Movement	
EBL	4
EBT	0
EBR	26
WBL	0
WBT	0
WBR	0
NBL	29
NBT	-12
NBR	0
SBL	0
SBT	-14
SBR	32

Site Trip Distribution
2023 Update - 70/30
AM Peak Hour

XX Primary Site Trips
XX Pass-By Site Trips

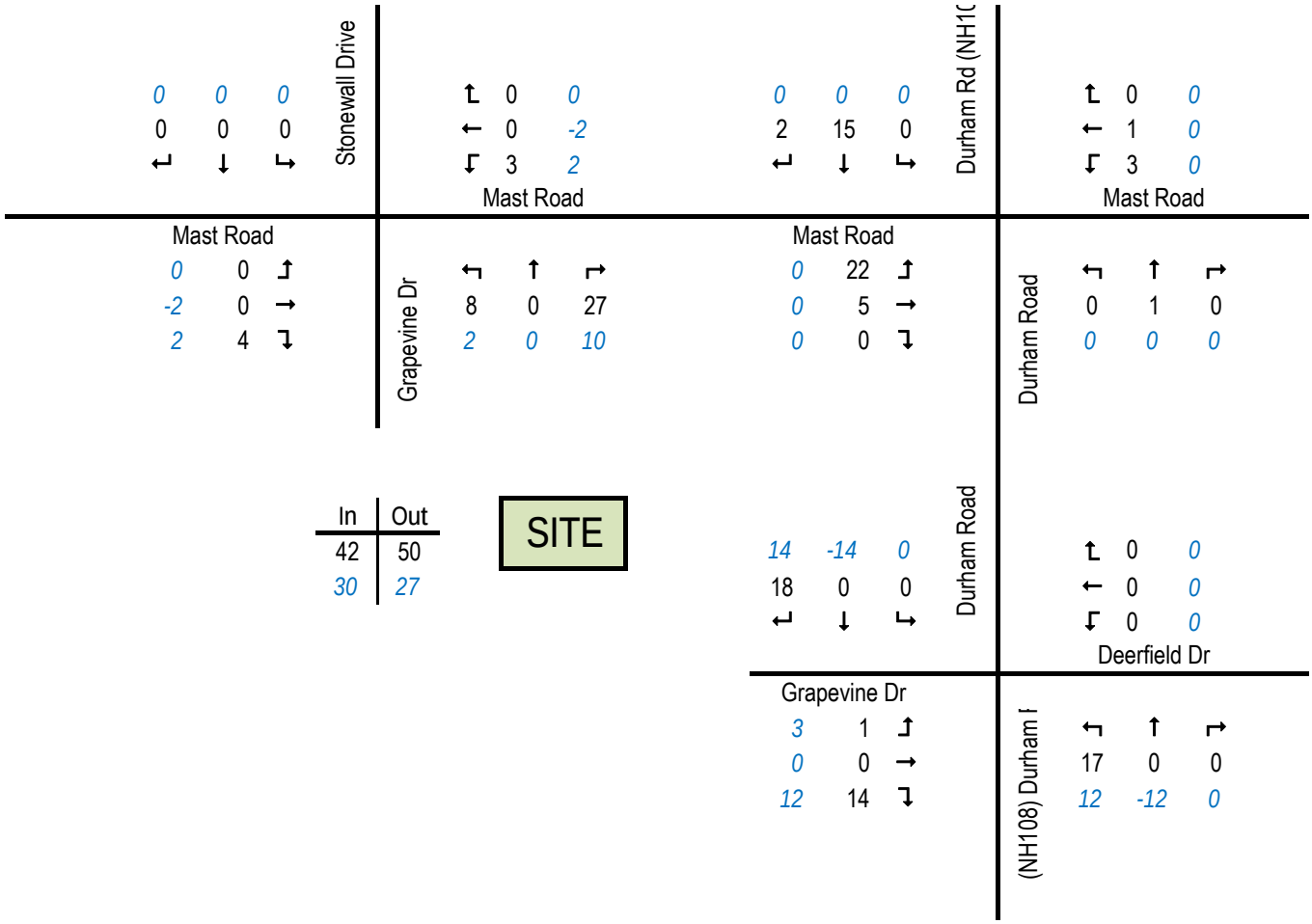


Note:

New Trips Out (w/ signage)
28% Grapevine to Mast Road
26% Grapevine to NH108
New Trips In = ProRata
New Trips at Signal = ProRata

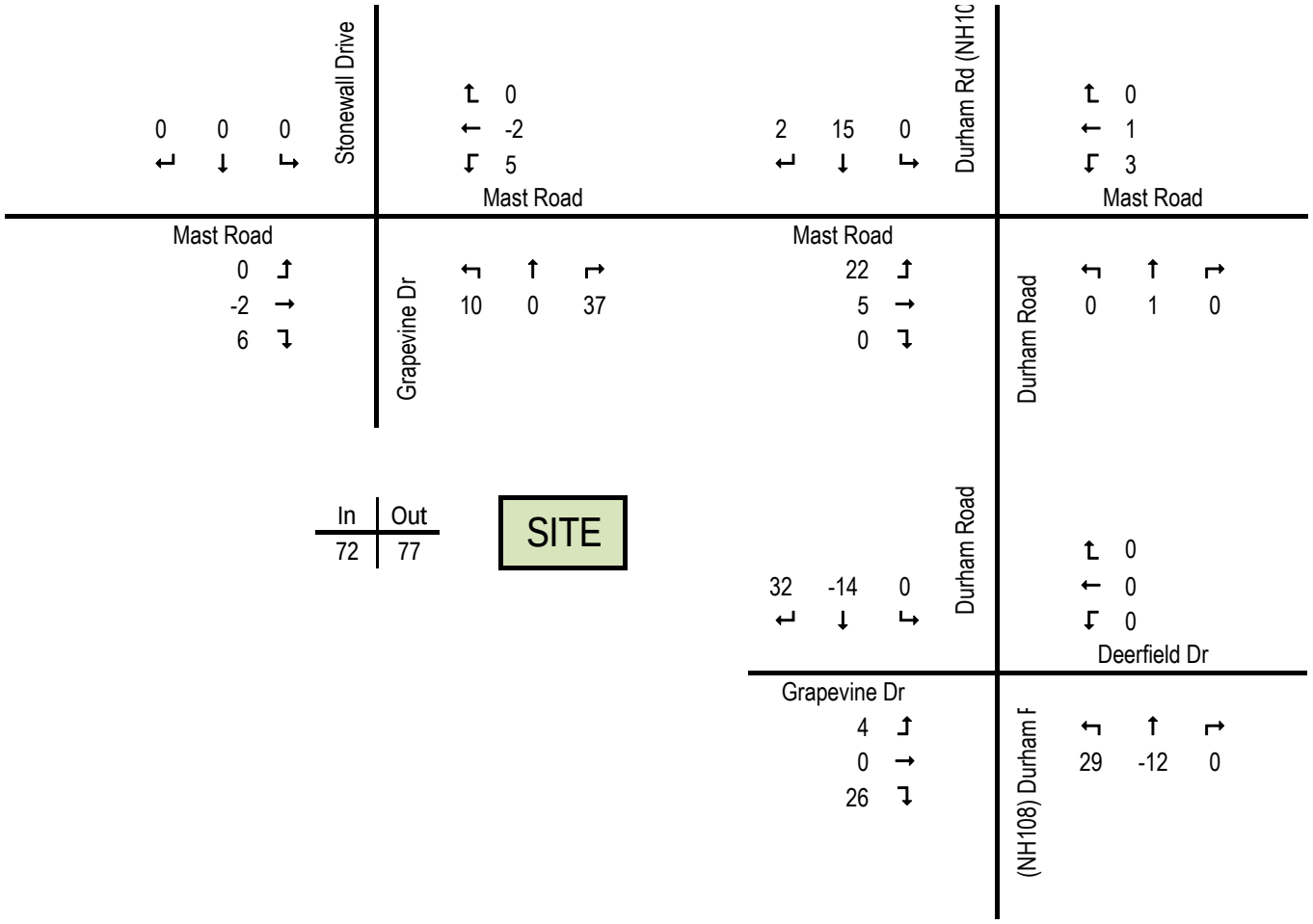
Site Trip Assignments
2023 Update - 70/30
AM Peak Hour

XX Primary Site Trips
XX Pass-By Site Trips



Site Trips
2023 Update - 70/30
AM Peak Hour

XX Site Trips



APPROVED 2022 Update DEVELOPMENT: Dover Fields [Units 2,3&4] + Arbor Woods

PRIMARY TRIPS - Dover Fields 2022 Update

PRORATA PER 2023 COUNTS

Entering Trips: based on ProRata,
Exiting Trips: 70% northbound trips directed to Mast Road via signage, 30% to NH108

	In	Out
PM Totals	43	37

Mast Road at Grapevine Dr/Stonewall Dr

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL			0	0
EBT			0	0
EBR	5%		2	0
WBL	7%		3	0
WBT			0	0
WBR			0	0
NBL		9%	0	*4*
NBT			0	0
NBR		61%	0	*22*
SBL			0	0
SBT			0	0
SBR			0	0

Mast Road at Durham Road (NH108)

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL		52%	0	19
EBT		9%	0	3
EBR			0	0
WBL	6%		3	0
WBT	2%		1	0
WBR			0	0
NBL			0	0
NBT		5%	0	2
NBR		1%	0	0
SBL			0	0
SBT	38%		16	0
SBR	5%		2	0

Durham Road at Grapevine Dr/Deefield Dr

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL		6%	0	*2*
EBT			0	0
EBR		24%	0	9
WBL			0	0
WBT			0	0
WBR			0	0
NBL	44%		19	0
NBT			0	0
NBR			0	0
SBL			0	0
SBT			0	0
SBR	44%		19	0

PASS-BY TRIPS - Dover Fields 2022 Update

PRORATA PER 2023 COUNTS

	In	Out
PM Totals	24	22

Mast Road at Grapevine Dr/Stonewall Dr

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL			0	0
EBT	-5%		-1	0
EBR	5%		1	0
WBL	4%		1	0
WBT	-4%		-1	0
WBR			0	0
NBL		4%	0	1
NBT			0	0
NBR		38%	0	8
SBL			0	0
SBT			0	0
SBR			0	0

Mast Road at Durham Road (NH108)

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL			0	0
EBT			0	0
EBR			0	0
WBL			0	0
WBT			0	0
WBR			0	0
NBL			0	0
NBT			0	0
NBR			0	0
SBL			0	0
SBT			0	0
SBR			0	0

Durham Road at Grapevine Dr/Deefield Dr

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL		14%	0	3
EBT			0	0
EBR		44%	0	10
WBL			0	0
WBT			0	0
WBR			0	0
NBL	47%		11	0
NBT	-47%		-11	0
NBR			0	0
SBL			0	0
SBT	-44%		-11	0
SBR	44%		*11*	0

TOTAL: Site Trip Assignment

TOTAL

	PM TOTAL
	126

Mast Road at Grapevine Dr/Stonewall Dr

Movement	
EBL	0
EBT	-1
EBR	3
WBL	4
WBT	-1
WBR	0
NBL	5
NBT	0
NBR	30
SBL	0
SBT	0
SBR	0

Mast Road at Durham Road (NH108)

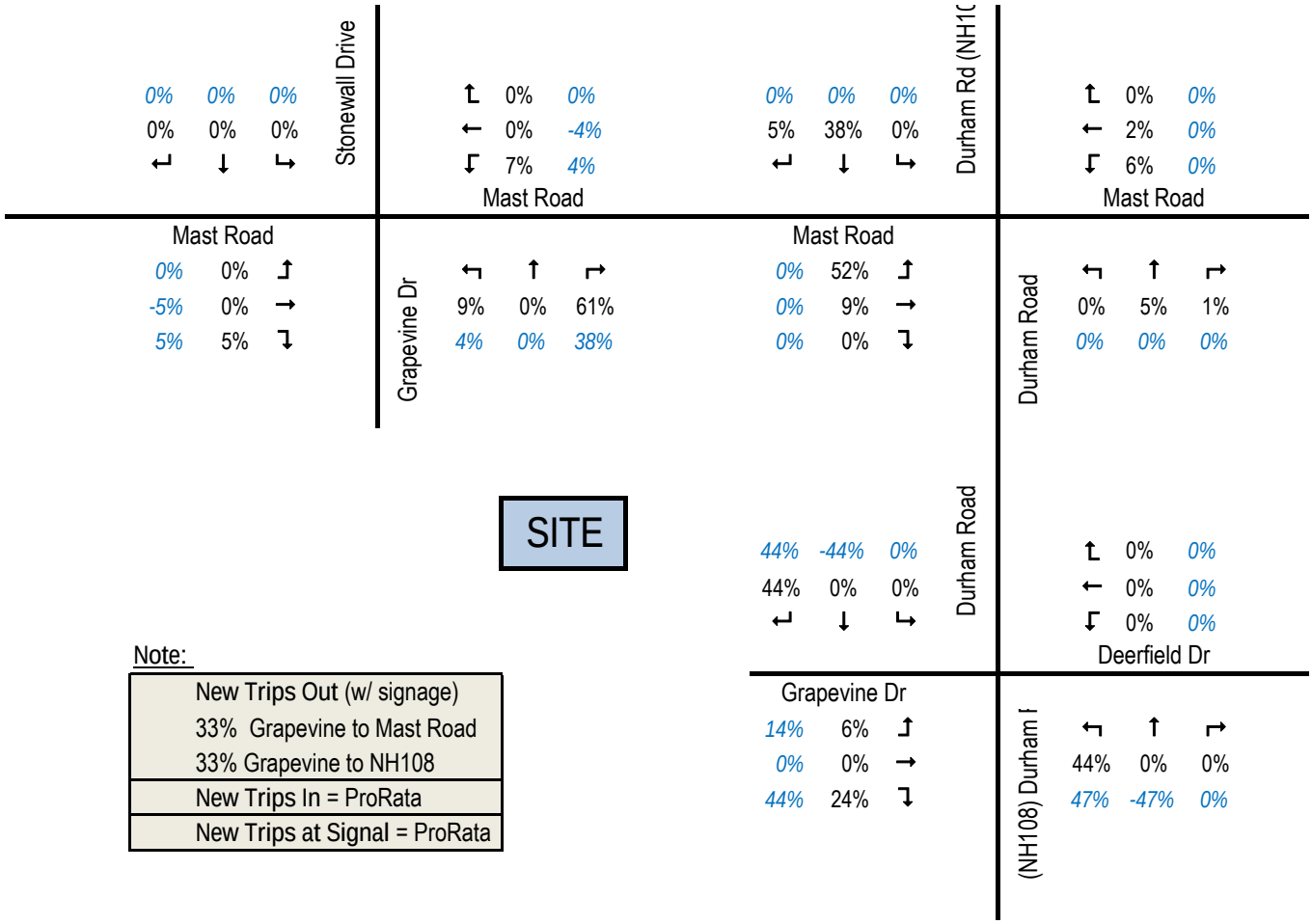
Movement	
EBL	19
EBT	3
EBR	0
WBL	3
WBT	1
WBR	0
NBL	0
NBT	2
NBR	0
SBL	0
SBT	16
SBR	2

Durham Road at Grapevine Dr/Deefield Dr

Movement	
EBL	5
EBT	0
EBR	19
WBL	0
WBT	0
WBR	0
NBL	30
NBT	-11
NBR	0
SBL	0
SBT	-11
SBR	30

Site Trip Distribution
2023 Update - 70/30
PM Peak Hour

XX Site Trips

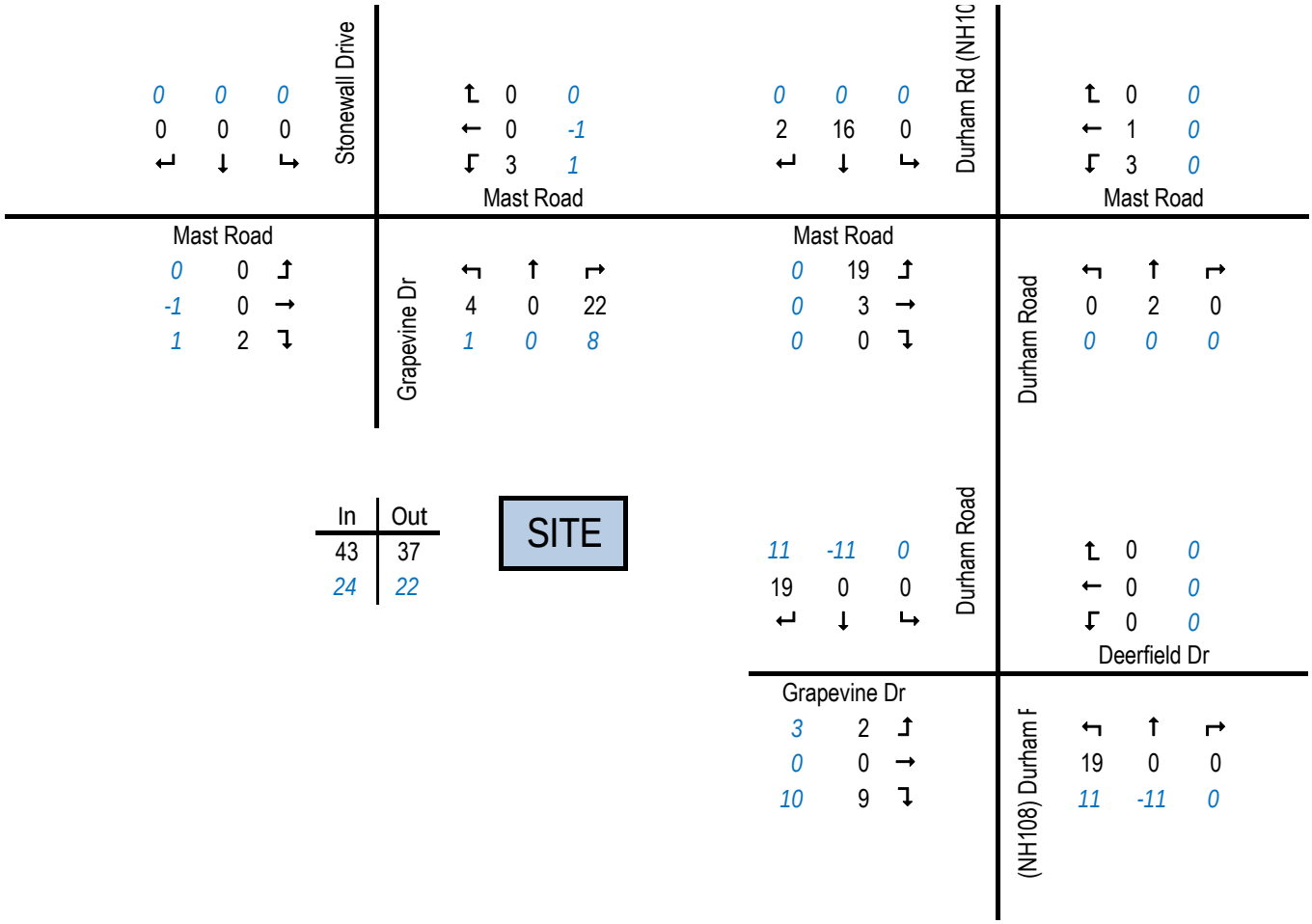


Note:

New Trips Out (w/ signage)
33% Grapevine to Mast Road
33% Grapevine to NH108
New Trips In = ProRata
New Trips at Signal = ProRata

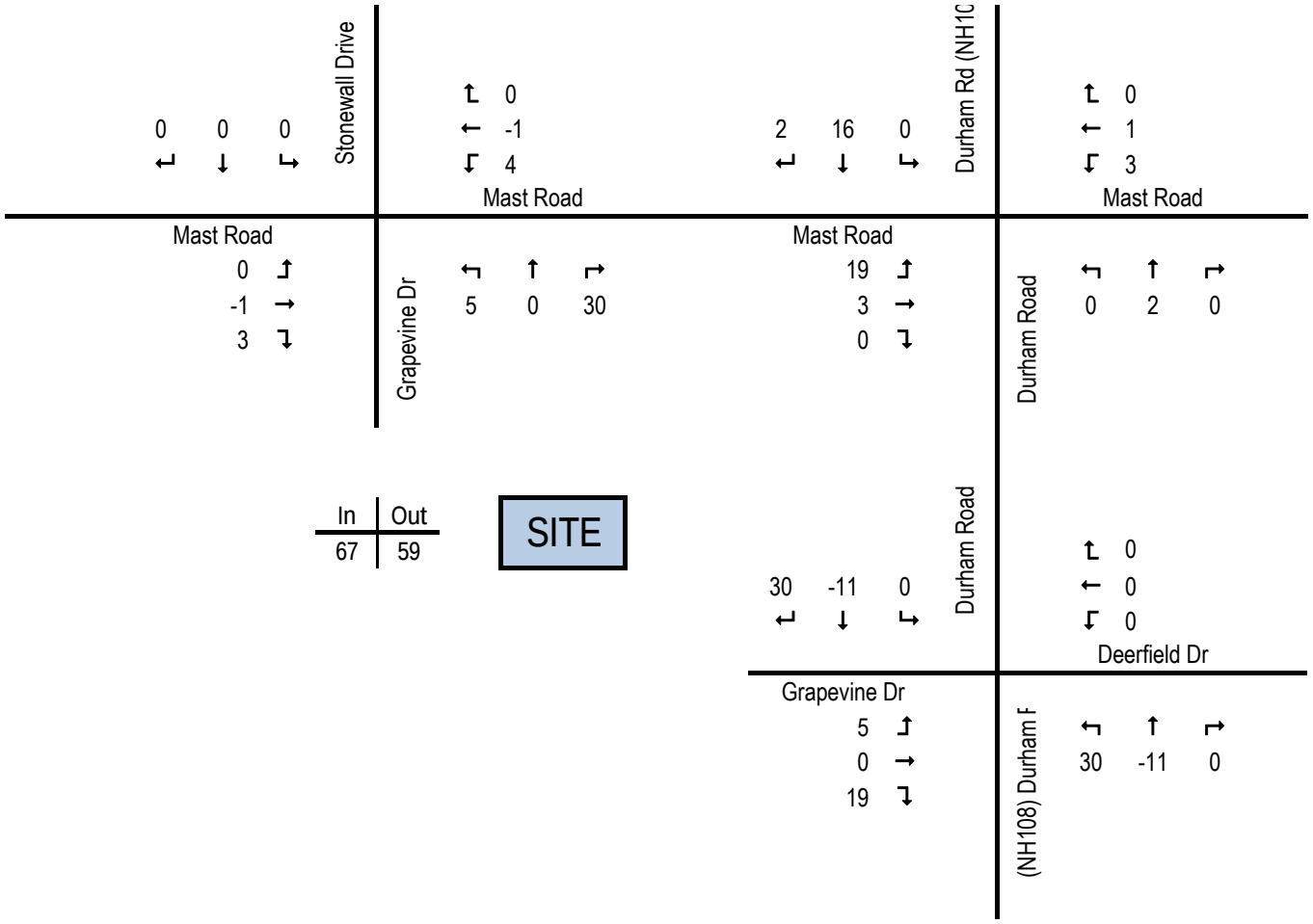
Site Trip Assignments
2023 Update - 70/30
PM Peak Hour

XX Primary Site Trips
XX Pass-By Site Trips



Site Trips
2023 Update - 70/30
PM Peak Hour

XX Site Trips



APPROVED 2022 Update DEVELOPMENT: Dover Fields [Units 2,3&4] + Arbor Woods

PRIMARY TRIPS - Dover Fields 2022 Update

PRORATA PER 2023 COUNTS

Entering Trips: based on ProRata,
Exiting Trips: 31% northbound trips directed to Mast Road via signage, 32% to NH108

	In	Out
SAT Totals	73	72

Mast Road at Grapevine Dr/Stonewall Dr

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL			0	0
EBT			0	0
EBR	16%		12	0
WBL	7%		5	0
WBT			0	0
WBR			0	0
NBL		12%	0	9
NBT			0	0
NBR		58%	0	42
SBL			0	0
SBT			0	0
SBR			0	0

Mast Road at Durham Road (NH108)

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL		53%	0	38
EBT		5%	0	4
EBR			0	0
WBL	6%		4	0
WBT	2%		1	0
WBR			0	0
NBL			0	0
NBT		6%	0	4
NBR		1%	0	1
SBL			0	0
SBT	38%		28	0
SBR	5%		4	0

Durham Road at Grapevine Dr/Deefield Dr

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL		7%	0	5
EBT			0	0
EBR		23%	0	*16*
WBL			0	0
WBT			0	0
WBR			0	0
NBL	33%		24	0
NBT			0	0
NBR			0	0
SBL			0	0
SBT			0	0
SBR	44%		32	0

PASS-BY TRIPS - Dover Fields 2022 Update

PRORATA PER 2023 COUNTS

	In	Out
SAT Totals	45	45

Mast Road at Grapevine Dr/Stonewall Dr

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL			0	0
EBT	-17%		-7	0
EBR	17%		7	0
WBL	17%		8	0
WBT	-17%		-8	0
WBR			0	0
NBL		17%	0	7
NBT			0	0
NBR		42%	0	19
SBL			0	0
SBT			0	0
SBR			0	0

Mast Road at Durham Road (NH108)

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL			0	0
EBT			0	0
EBR			0	0
WBL			0	0
WBT			0	0
WBR			0	0
NBL			0	0
NBT			0	0
NBR			0	0
SBL			0	0
SBT			0	0
SBR			0	0

Durham Road at Grapevine Dr/Deefield Dr

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL		11%	0	5
EBT			0	0
EBR		31%	0	14
WBL			0	0
WBT			0	0
WBR			0	0
NBL	35%		16	0
NBT	-35%		-16	0
NBR			0	0
SBL			0	0
SBT	-31%		-14	0
SBR	31%		14	0

TOTAL: Site Trip Assignment

TOTAL

	SAT TOTAL
SAT Totals	235

Mast Road at Grapevine Dr/Stonewall Dr

Movement	
EBL	0
EBT	-7
EBR	19
WBL	13
WBT	-8
WBR	0
NBL	16
NBT	0
NBR	61
SBL	0
SBT	0
SBR	0

Mast Road at Durham Road (NH108)

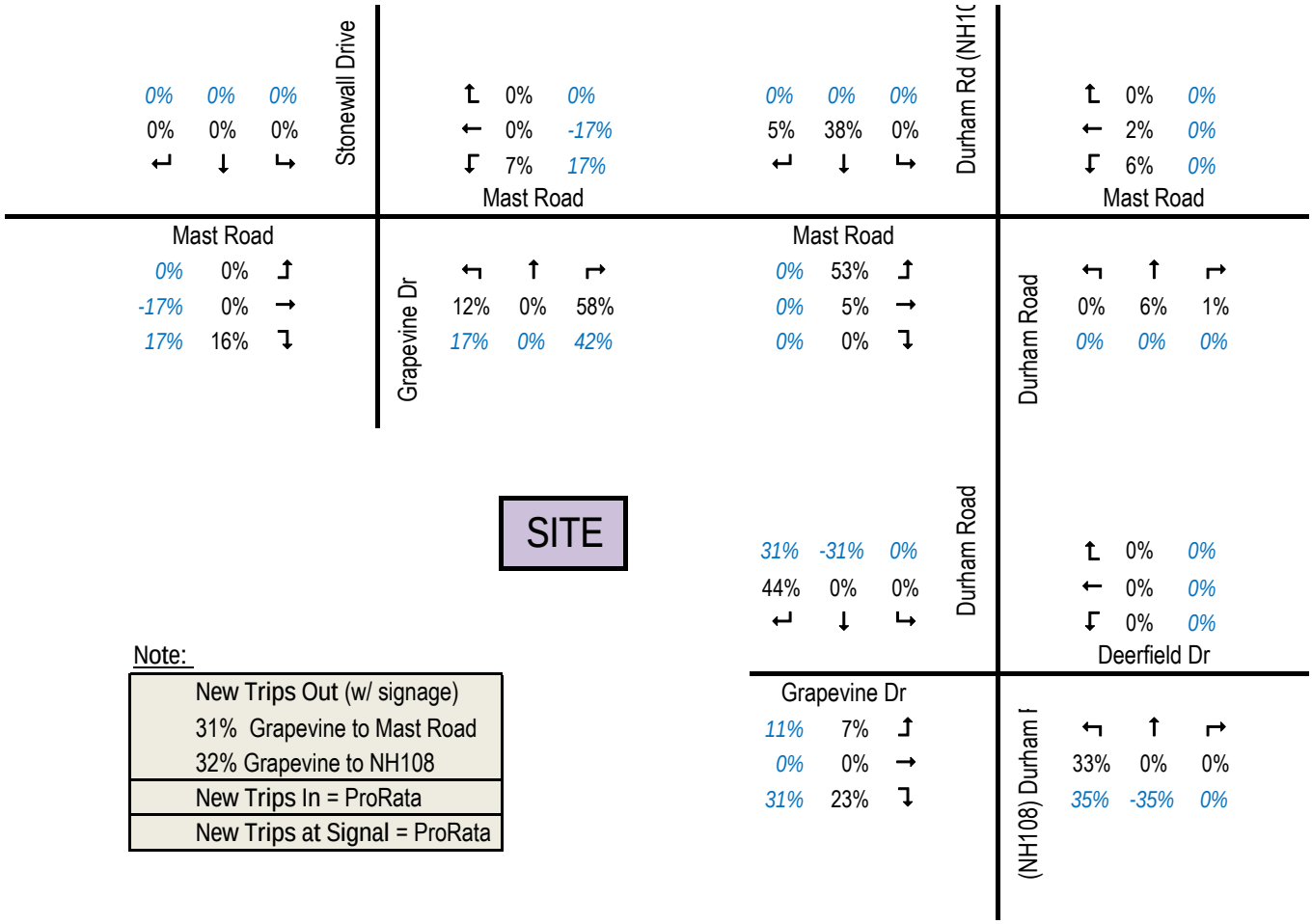
Movement	
EBL	38
EBT	4
EBR	0
WBL	4
WBT	1
WBR	0
NBL	0
NBT	4
NBR	1
SBL	0
SBT	28
SBR	4

Durham Road at Grapevine Dr/Deefield Dr

Movement	
EBL	10
EBT	0
EBR	30
WBL	0
WBT	0
WBR	0
NBL	40
NBT	-16
NBR	0
SBL	0
SBT	-14
SBR	46

Site Trip Distribution
2023 Update - 70/30
SAT Peak Hour

XX Primary Site Trips
XX Pass-By Site Trips

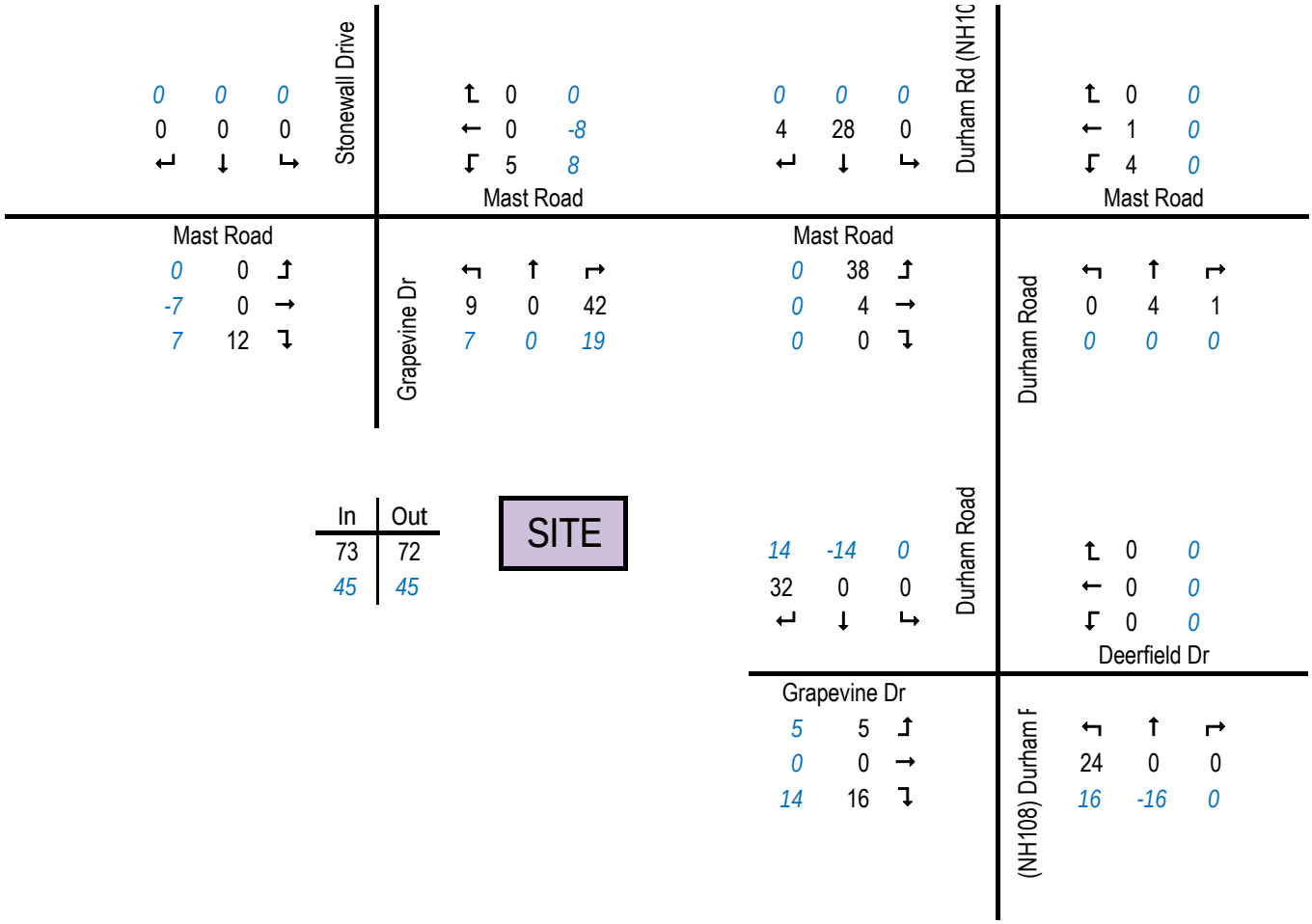


Note:

New Trips Out (w/ signage)
31% Grapevine to Mast Road
32% Grapevine to NH108
New Trips In = ProRata
New Trips at Signal = ProRata

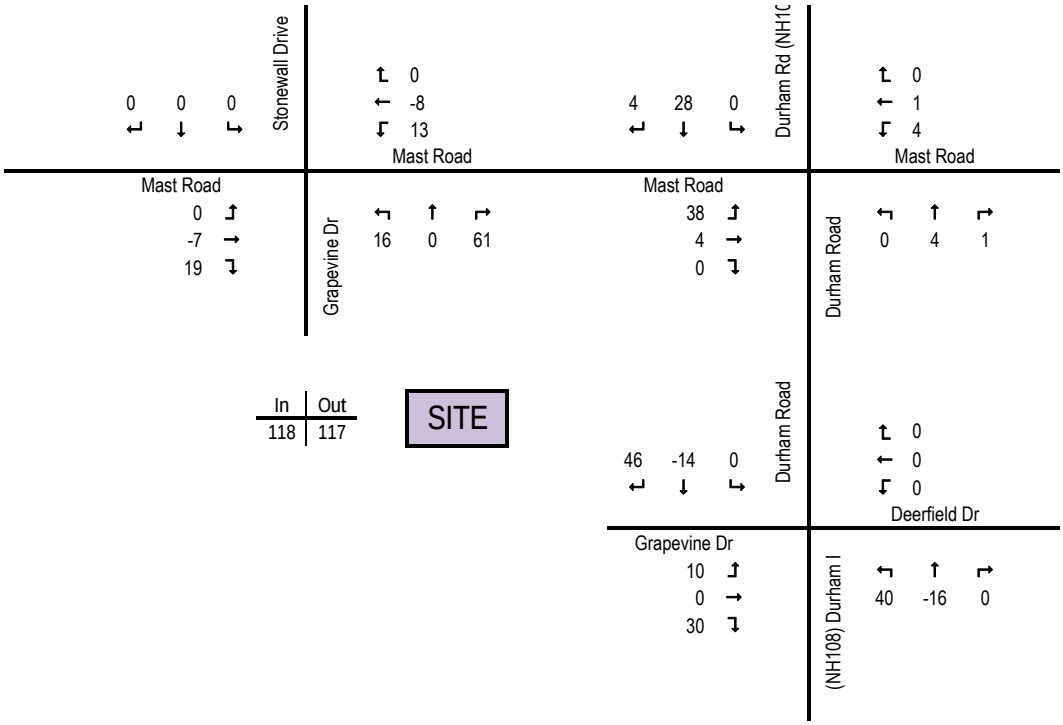
Site Trip Assignments
2023 Update - 70/30
SAT Peak Hour

XX Site Trips



Site Trips
2023 Update - 70/30
SAT Peak Hour

XX Site Trips



APPROVED 2022 Update DEVELOPMENT: Dover Fields [Unit 4] - FF

PRIMARY TRIPS - Dover Fields 2022 Update

PRORATA PER 2023 COUNTS

Entering Trips: based on ProRata,
Exiting Trips: 28% northbound trips directed to Mast Road via signage, 26% to NH108

	In	Out
AM Totals	24	23

Mast Road at Grapevine Dr/Stonewall Dr

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL			0	0
EBT			0	0
EBR	9%		2	0
WBL	8%		2	0
WBT			0	0
WBR			0	0
NBL		16%	0	4
NBT			0	0
NBR		54%	0	12
SBL			0	0
SBT			0	0
SBR			0	0

Mast Road at Durham Road (NH108)

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL		45%	0	10
EBT		9%	0	2
EBR			0	0
WBL	8%		2	0
WBT	3%		1	0
WBR			0	0
NBL			0	0
NBT		1%	0	0
NBR		0%	0	0
SBL			0	0
SBT	36%		9	0
SBR	5%		1	0

Durham Road at Grapevine Dr/Deefield Dr

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL		1%	0	0
EBT			0	0
EBR		29%	0	7
WBL			0	0
WBT			0	0
WBR			0	0
NBL	39%		9	0
NBT			0	0
NBR			0	0
SBL			0	0
SBT			0	0
SBR	44%		11	0

PASS-BY TRIPS - Dover Fields 2022 Update

PRORATA PER 2023 COUNTS

	In	Out
AM Totals	24	23

Mast Road at Grapevine Dr/Stonewall Dr

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL			0	0
EBT	-8%		-2	0
EBR	8%		2	0
WBL	7%		2	0
WBT	-7%		-2	0
WBR			0	0
NBL		7%	0	2
NBT			0	0
NBR		36%	0	8
SBL			0	0
SBT			0	0
SBR			0	0

Mast Road at Durham Road (NH108)

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL			0	0
EBT			0	0
EBR			0	0
WBL			0	0
WBT			0	0
WBR			0	0
NBL			0	0
NBT			0	0
NBR			0	0
SBL			0	0
SBT			0	0
SBR			0	0

Durham Road at Grapevine Dr/Deefield Dr

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL		12%	0	3
EBT			0	0
EBR		45%	0	10
WBL			0	0
WBT			0	0
WBR			0	0
NBL	40%		9	0
NBT	-40%		-9	0
NBR			0	0
SBL			0	0
SBT	-45%		-11	0
SBR	45%		11	0

TOTAL: Site Trip Assignment

TOTAL

AM TOTAL
94

Mast Road at Grapevine Dr/Stonewall Dr

Movement	
EBL	0
EBT	-2
EBR	4
WBL	4
WBT	-2
WBR	0
NBL	6
NBT	0
NBR	20
SBL	0
SBT	0
SBR	0

Mast Road at Durham Road (NH108)

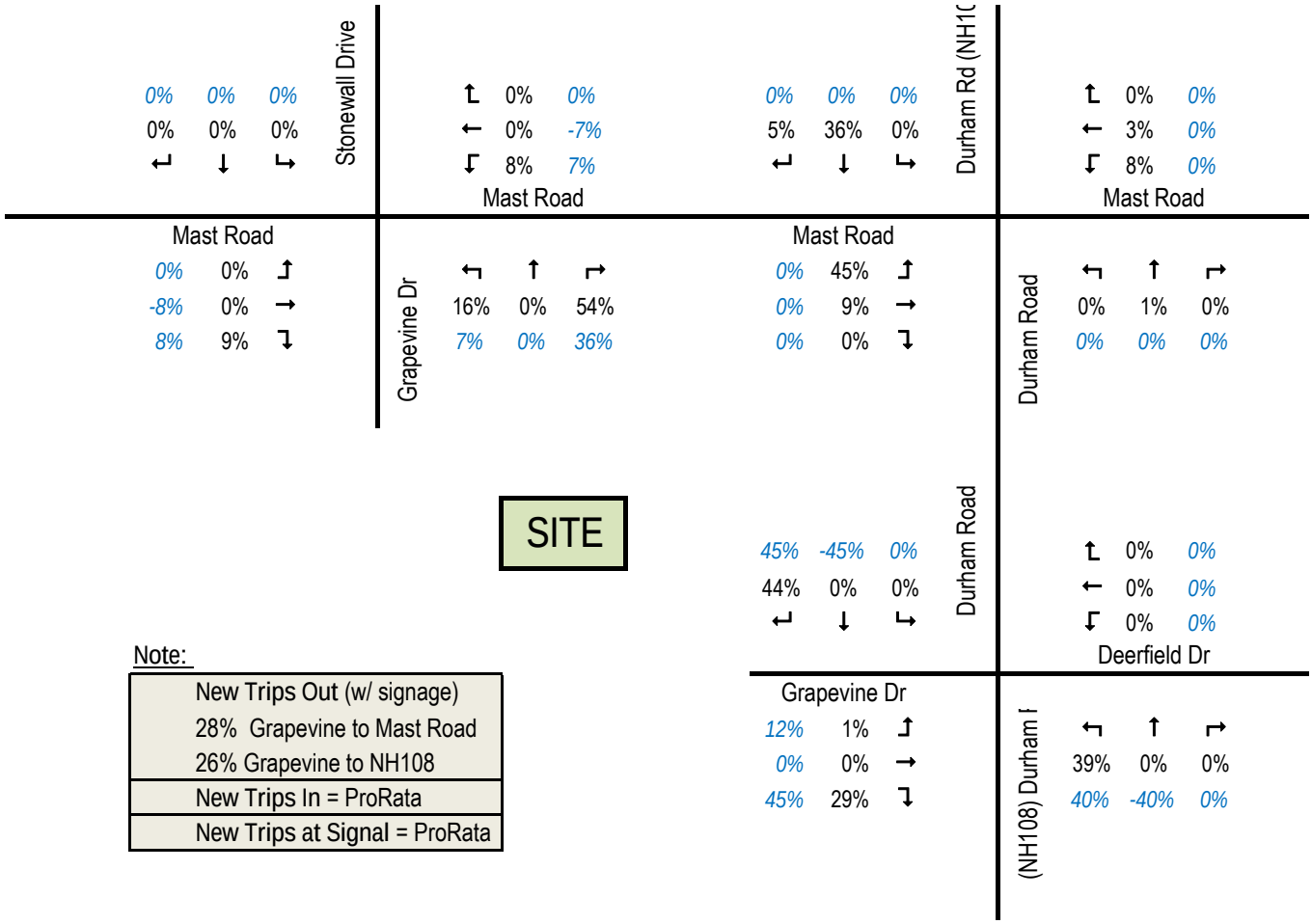
Movement	
EBL	10
EBT	2
EBR	0
WBL	2
WBT	1
WBR	0
NBL	0
NBT	0
NBR	0
SBL	0
SBT	9
SBR	1

Durham Road at Grapevine Dr/Deefield Dr

Movement	
EBL	3
EBT	0
EBR	17
WBL	0
WBT	0
WBR	0
NBL	18
NBT	-9
NBR	0
SBL	0
SBT	-11
SBR	22

APPROVED FF: Site Trip Distribution
2023 Update - 70/30
AM Peak Hour

XX Primary Site Trips
XX Pass-By Site Trips

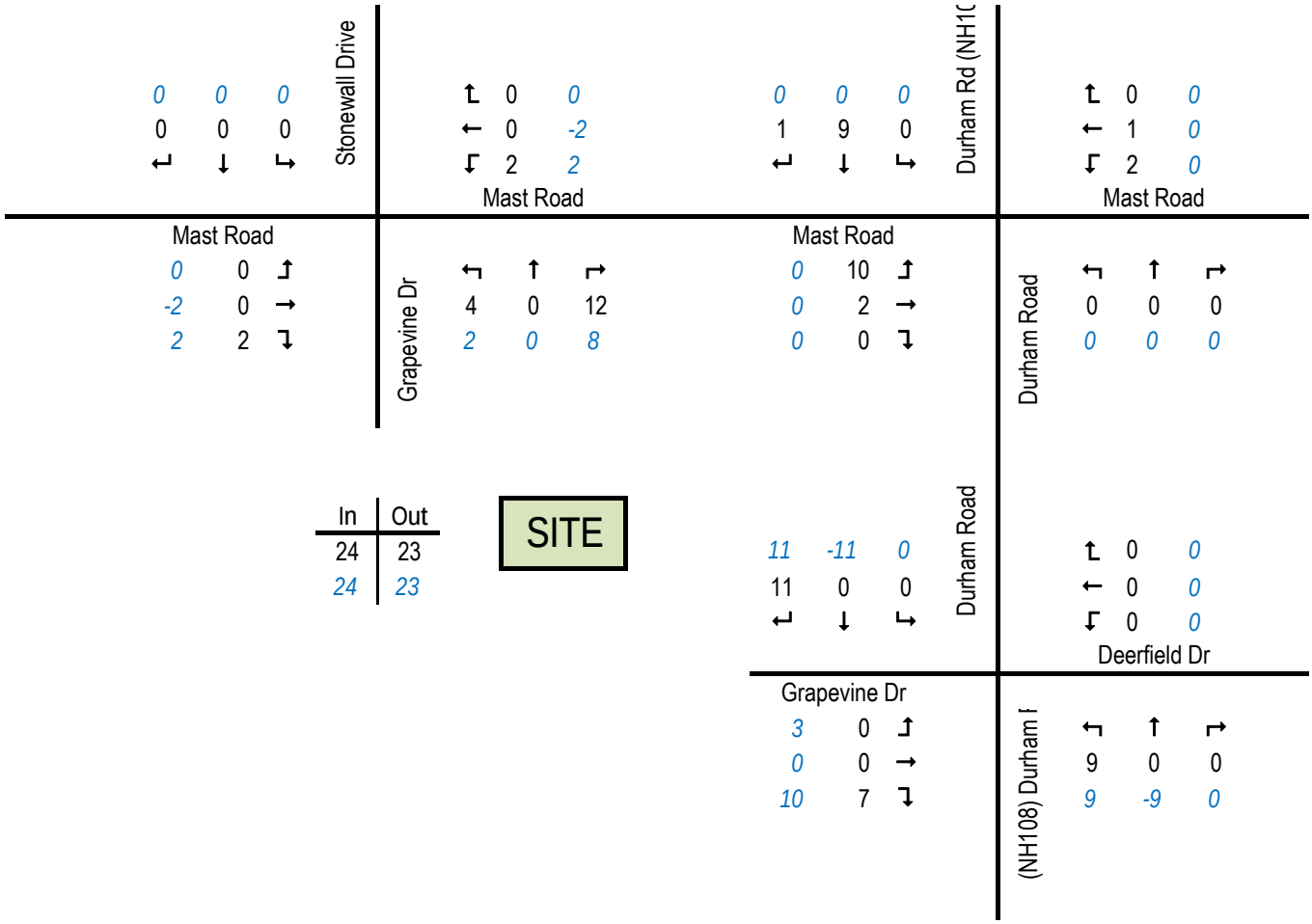


Note:

New Trips Out (w/ signage)
28% Grapevine to Mast Road
26% Grapevine to NH108
New Trips In = ProRata
New Trips at Signal = ProRata

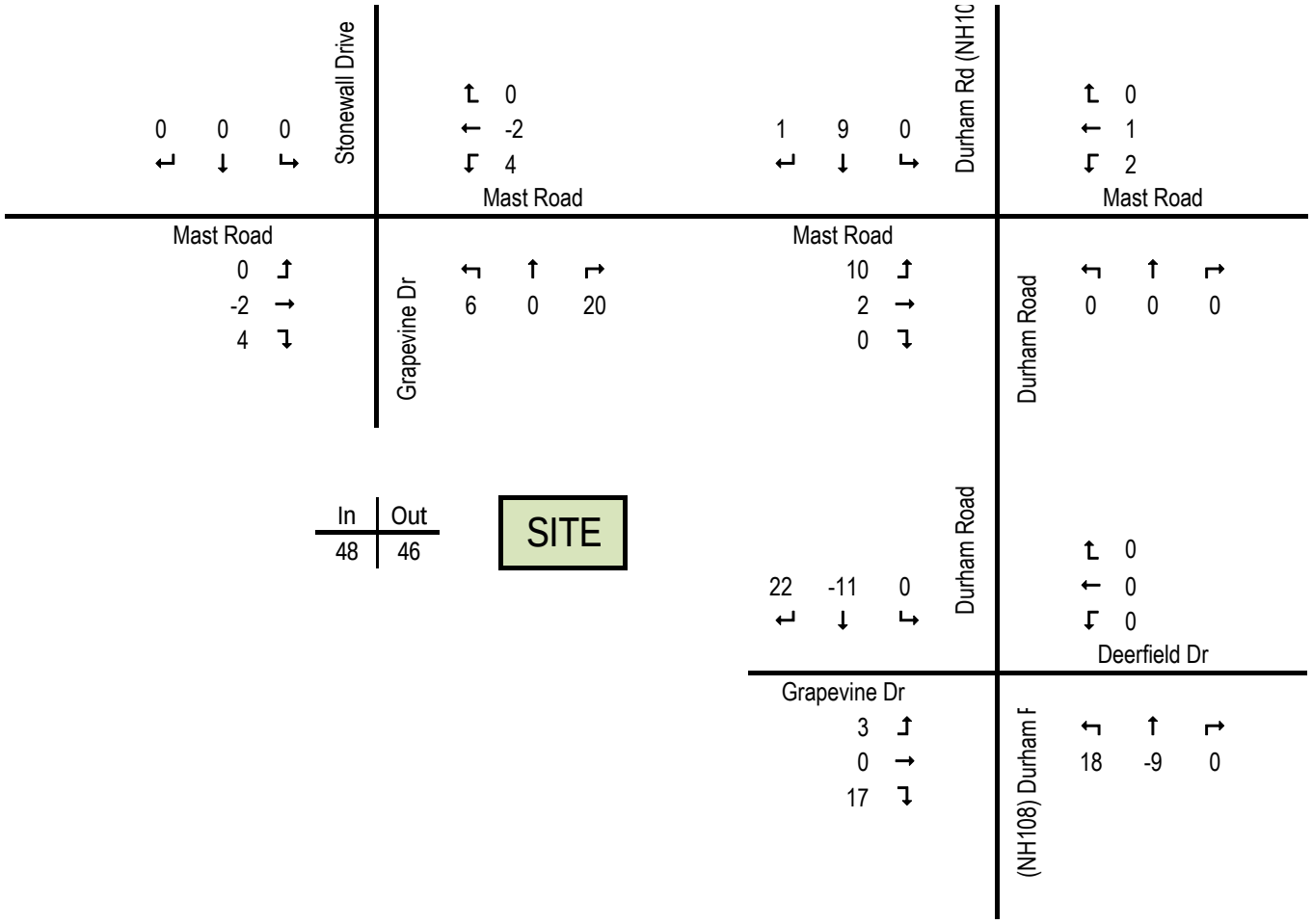
APPROVED FF: Site Trip Assignments
2023 Update - 70/30
AM Peak Hour

XX Primary Site Trips
XX Pass-By Site Trips



APPROVED FF: Site Trips
2023 Update - 70/30
AM Peak Hour

XX Site Trips



APPROVED 2022 Update DEVELOPMENT: Dover Fields [Unit 4] - FF

PRIMARY TRIPS - Dover Fields 2022 Update

PRORATA PER 2023 COUNTS

Entering Trips: based on ProRata,
Exiting Trips: 70% northbound trips directed to Mast Road via signage, 30% to NH108

	In	Out
PM Totals	13	12

Mast Road at Grapevine Dr/Stonewall Dr

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL			0	0
EBT			0	0
EBR	5%		*0*	0
WBL	7%		1	0
WBT			0	0
WBR			0	0
NBL		9%	0	*2*
NBT			0	0
NBR		61%	0	*7*
SBL			0	0
SBT			0	0
SBR			0	0

Mast Road at Durham Road (NH108)

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL		52%	0	6
EBT		9%	0	1
EBR			0	0
WBL	6%		1	0
WBT	2%		0	0
WBR			0	0
NBL			0	0
NBT		5%	0	1
NBR		1%	0	0
SBL			0	0
SBT	38%		5	0
SBR	5%		1	0

Durham Road at Grapevine Dr/Deefield Dr

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL		6%	0	*0*
EBT			0	0
EBR		24%	0	3
WBL			0	0
WBT			0	0
WBR			0	0
NBL	44%		6	0
NBT			0	0
NBR			0	0
SBL			0	0
SBT			0	0
SBR	44%		6	0

PASS-BY TRIPS - Dover Fields 2022 Update

PRORATA PER 2023 COUNTS

	In	Out
PM Totals	16	15

Mast Road at Grapevine Dr/Stonewall Dr

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL			0	0
EBT	-5%		-1	0
EBR	5%		1	0
WBL	4%		0	0
WBT	-4%		*0*	0
WBR			*0*	0
NBL		4%	0	1
NBT			0	0
NBR		38%	0	*5*
SBL			0	0
SBT			0	0
SBR			0	0

Mast Road at Durham Road (NH108)

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL			0	0
EBT			0	0
EBR			0	0
WBL			0	0
WBT			0	0
WBR			0	0
NBL			0	0
NBT			0	0
NBR			0	0
SBL			0	0
SBT			0	0
SBR			0	0

Durham Road at Grapevine Dr/Deefield Dr

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL		14%	0	2
EBT			0	0
EBR		44%	0	7
WBL			0	0
WBT			0	0
WBR			0	0
NBL	47%		8	0
NBT	-47%		-8	0
NBR			0	0
SBL			0	0
SBT	-44%		-7	0
SBR	44%		7	0

TOTAL: Site Trip Assignment

TOTAL

	PM TOTAL
	56

Mast Road at Grapevine Dr/Stonewall Dr

Movement	
EBL	0
EBT	-1
EBR	1
WBL	1
WBT	0
WBR	0
NBL	3
NBT	0
NBR	12
SBL	0
SBT	0
SBR	0

Mast Road at Durham Road (NH108)

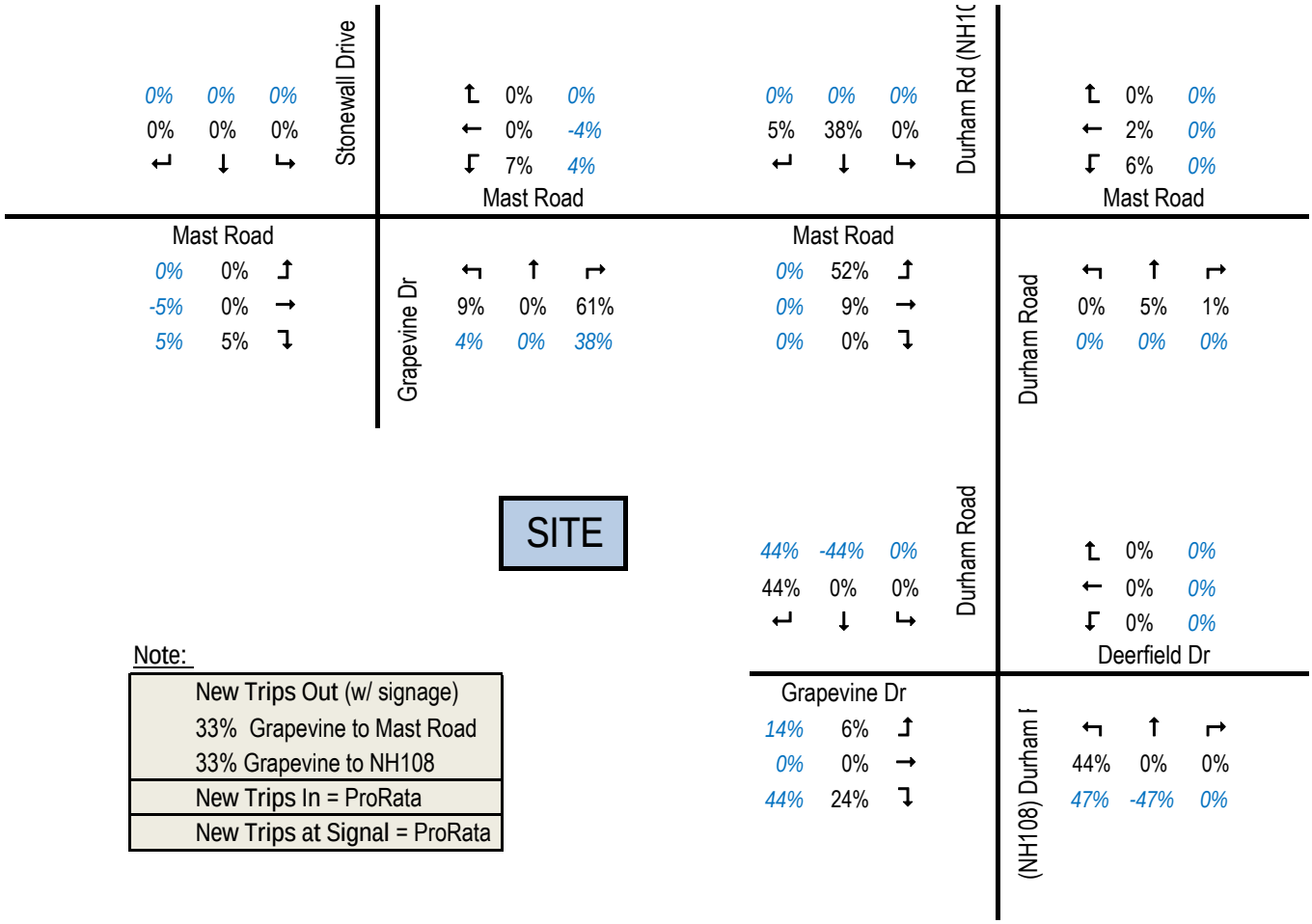
Movement	
EBL	6
EBT	1
EBR	0
WBL	1
WBT	0
WBR	0
NBL	0
NBT	1
NBR	0
SBL	0
SBT	5
SBR	1

Durham Road at Grapevine Dr/Deefield Dr

Movement	
EBL	2
EBT	0
EBR	10
WBL	0
WBT	0
WBR	0
NBL	14
NBT	-8
NBR	0
SBL	0
SBT	-7
SBR	13

APPROVED FF: Site Trip Distribution
2023 Update - 70/30
PM Peak Hour

XX Site Trips

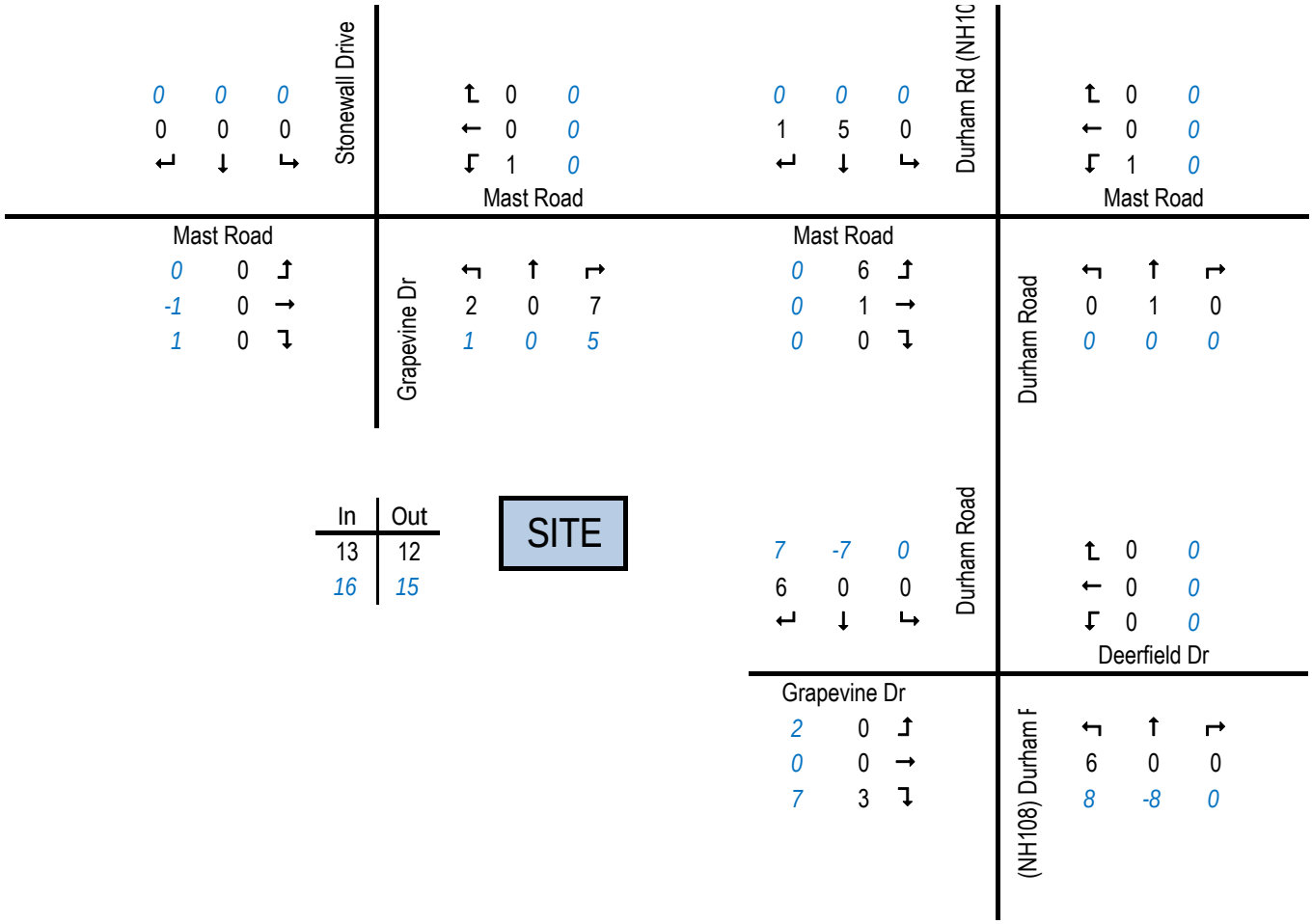


Note:

New Trips Out (w/ signage)
33% Grapevine to Mast Road
33% Grapevine to NH108
New Trips In = ProRata
New Trips at Signal = ProRata

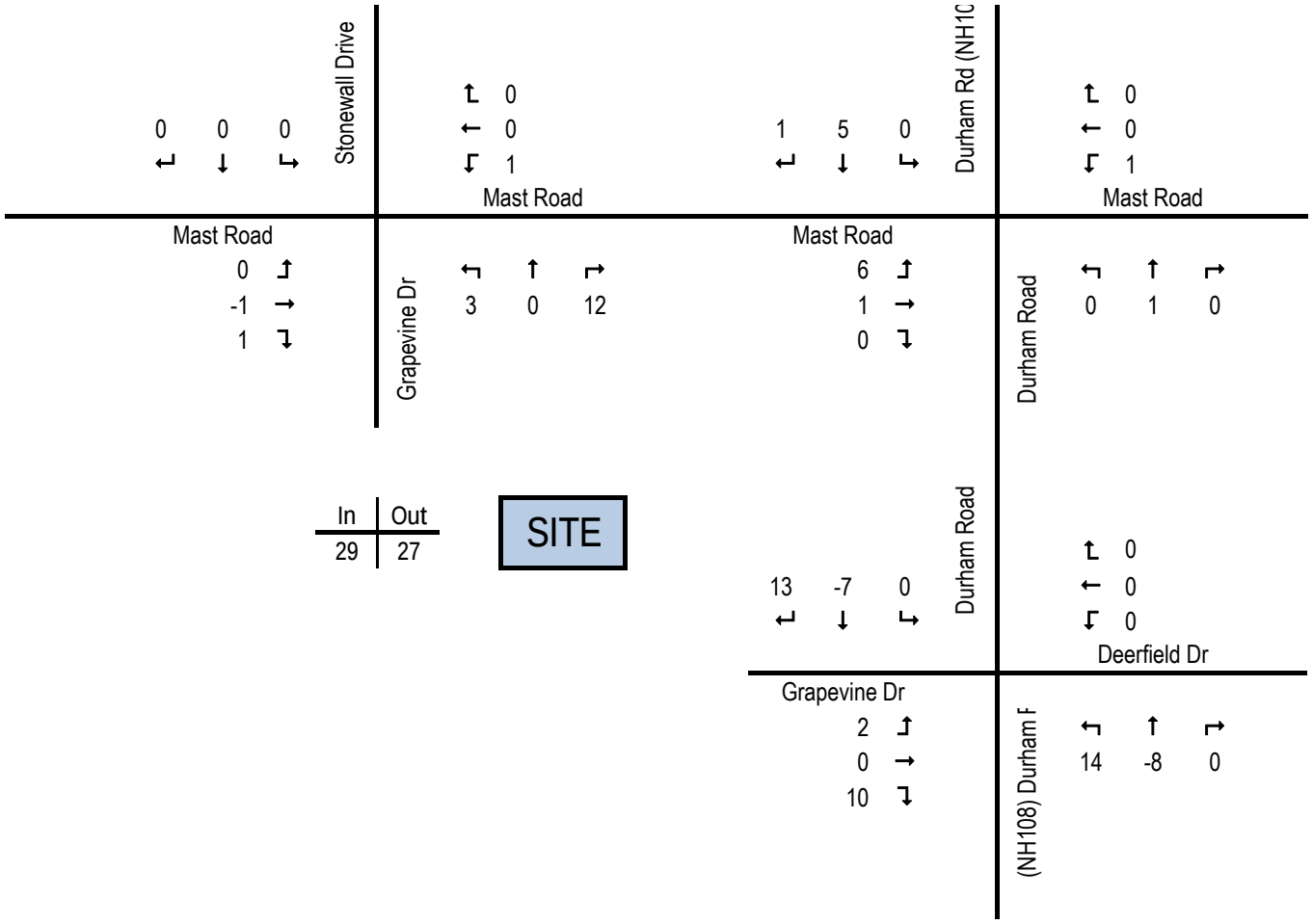
APPROVED FF: Site Trip Assignments
2023 Update - 70/30
PM Peak Hour

XX Primary Site Trips
XX Pass-By Site Trips



APPROVED FF: Site Trips
2023 Update - 70/30
PM Peak Hour

XX Site Trips



In	Out
29	27

SITE

APPROVED 2022 Update DEVELOPMENT: Dover Fields [Unit 4] - FF

PRIMARY TRIPS - Dover Fields 2022 Update

PRORATA PER 2023 COUNTS

Entering Trips: based on ProRata,
Exiting Trips: 31% northbound trips directed to Mast Road via signage, 32% to NH108

	In	Out
SAT Totals	28	27

Mast Road at Grapevine Dr/Stonewall Dr

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL			0	0
EBT			0	0
EBR	16%		5	0
WBL	7%		2	0
WBT			0	0
WBR			0	0
NBL		12%	0	3
NBT			0	0
NBR		58%	0	16
SBL			0	0
SBT			0	0
SBR			0	0

Mast Road at Durham Road (NH108)

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL		53%	0	14
EBT		5%	0	2
EBR			0	0
WBL	6%		2	0
WBT	2%		1	0
WBR			0	0
NBL			0	0
NBT		6%	0	2
NBR		1%	0	0
SBL			0	0
SBT	38%		10	0
SBR	5%		1	0

Durham Road at Grapevine Dr/Deefield Dr

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL		7%	0	2
EBT			0	0
EBR		23%	0	6
WBL			0	0
WBT			0	0
WBR			0	0
NBL	33%		9	0
NBT			0	0
NBR			0	0
SBL			0	0
SBT			0	0
SBR	44%		12	0

PASS-BY TRIPS - Dover Fields 2022 Update

PRORATA PER 2023 COUNTS

	In	Out
SAT Totals	28	27

.

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL			0	0
EBT	-17%		-4	0
EBR	17%		4	0
WBL	17%		5	0
WBT	-17%		-5	0
WBR			0	0
NBL		17%	0	5
NBT			0	0
NBR		42%	0	11
SBL			0	0
SBT			0	0
SBR			0	0

Mast Road at Durham Road (NH108)

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL			0	0
EBT			0	0
EBR			0	0
WBL			0	0
WBT			0	0
WBR			0	0
NBL			0	0
NBT			0	0
NBR			0	0
SBL			0	0
SBT			0	0
SBR			0	0

Durham Road at Grapevine Dr/Deefield Dr

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL		11%	0	3
EBT			0	0
EBR		31%	0	8
WBL			0	0
WBT			0	0
WBR			0	0
NBL	35%		10	0
NBT	-35%		-10	0
NBR			0	0
SBL			0	0
SBT	-31%		-9	0
SBR	31%		9	0

TOTAL: Site Trip Assignment

TOTAL

	SAT TOTAL
	110

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Mast Road at Grapevine Dr/Stonewall Dr

Movement	
EBL	0
EBT	-4
EBR	9
WBL	7
WBT	-5
WBR	0
NBL	8
NBT	0
NBR	27
SBL	0
SBT	0
SBR	0

Mast Road at Durham Road (NH108)

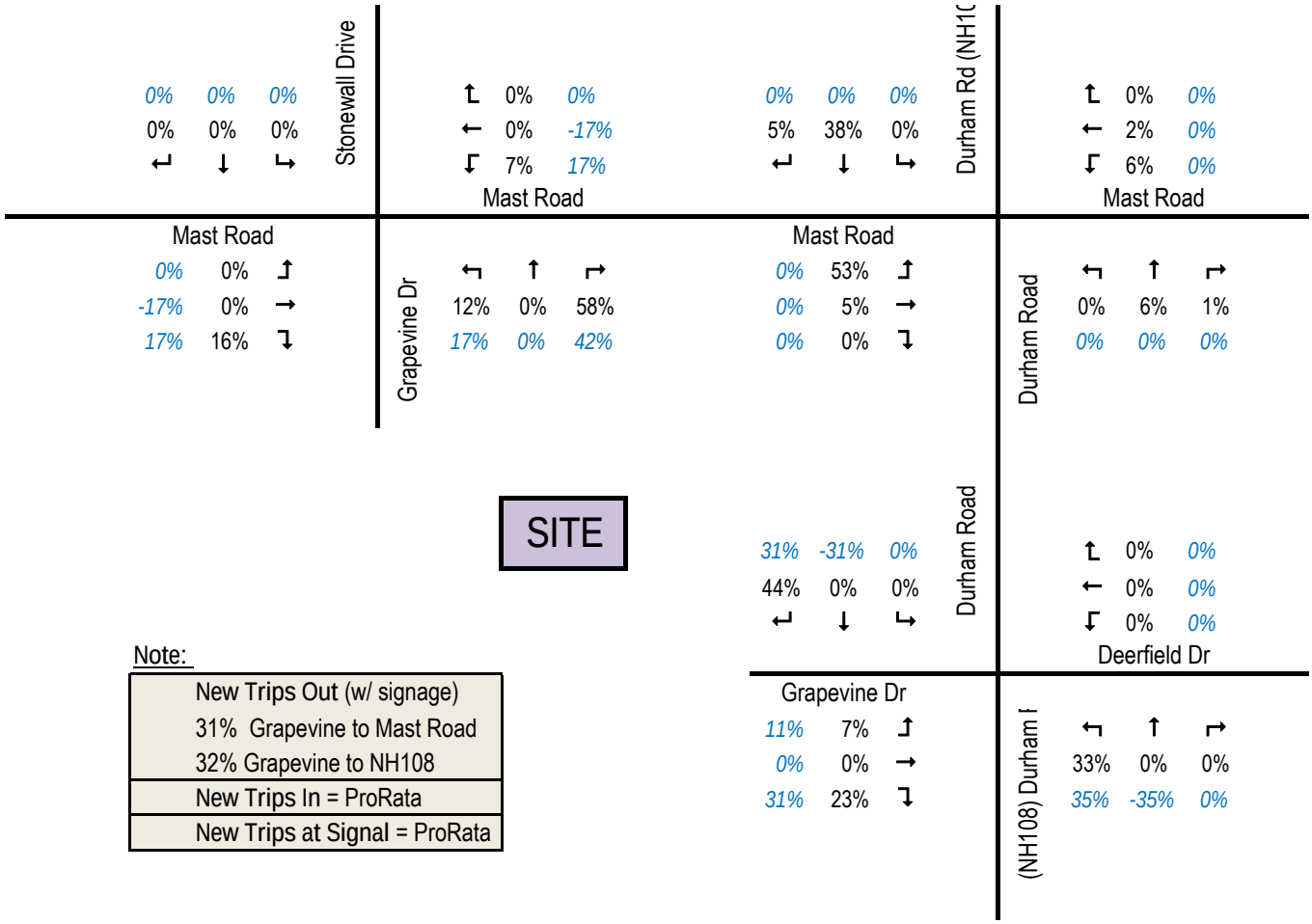
Movement	
EBL	14
EBT	2
EBR	0
WBL	2
WBT	1
WBR	0
NBL	0
NBT	2
NBR	0
SBL	0
SBT	10
SBR	1

Durham Road at Grapevine Dr/Deefield Dr

Movement	
EBL	5
EBT	0
EBR	14
WBL	0
WBT	0
WBR	0
NBL	19
NBT	-10
NBR	0
SBL	0
SBT	-9
SBR	21

APPROVED FF: Site Trip Distribution
2023 Update - 70/30
SAT Peak Hour

XX Primary Site Trips
XX Pass-By Site Trips

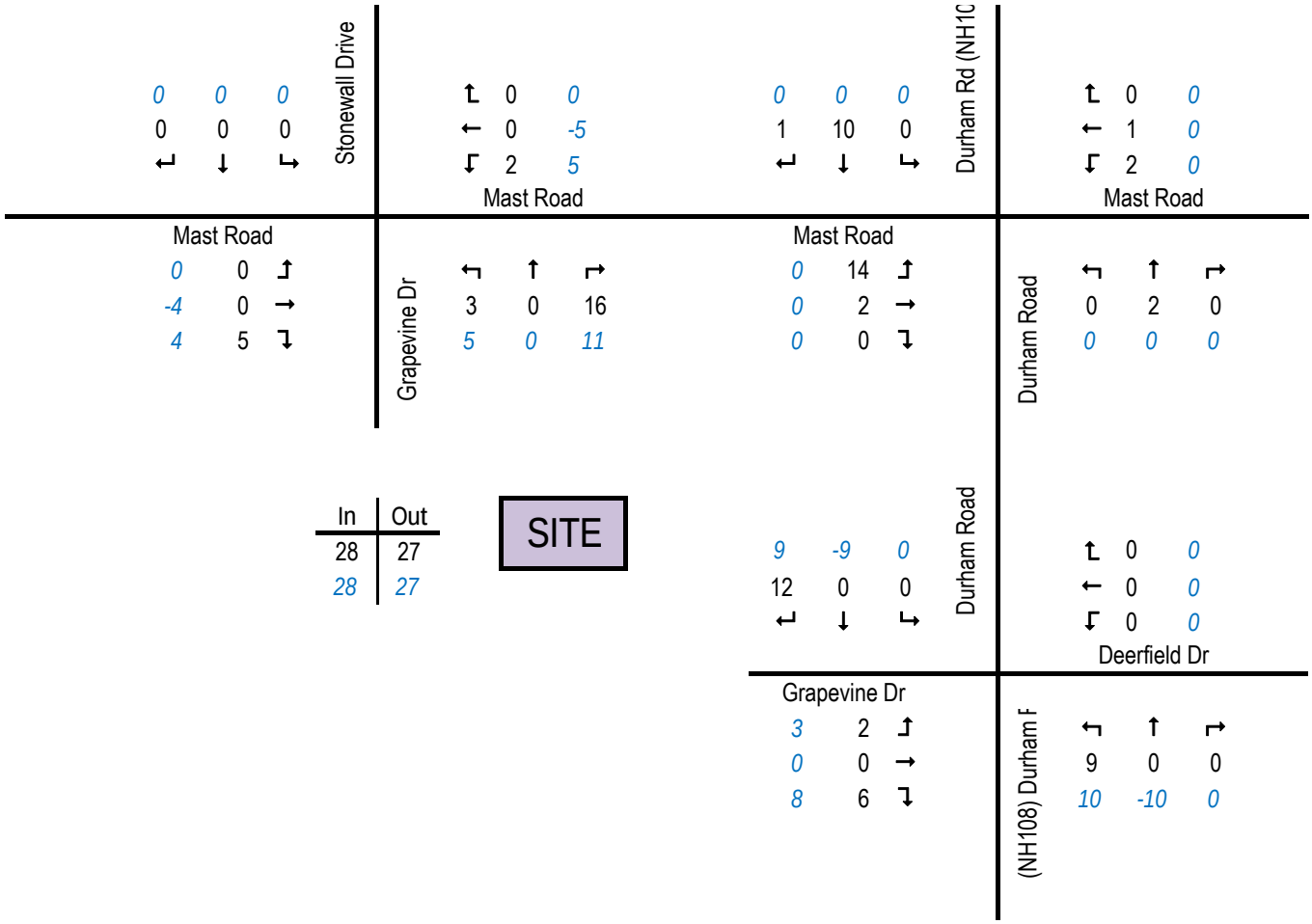


Note:

New Trips Out (w/ signage)
31% Grapevine to Mast Road
32% Grapevine to NH108
New Trips In = ProRata
New Trips at Signal = ProRata

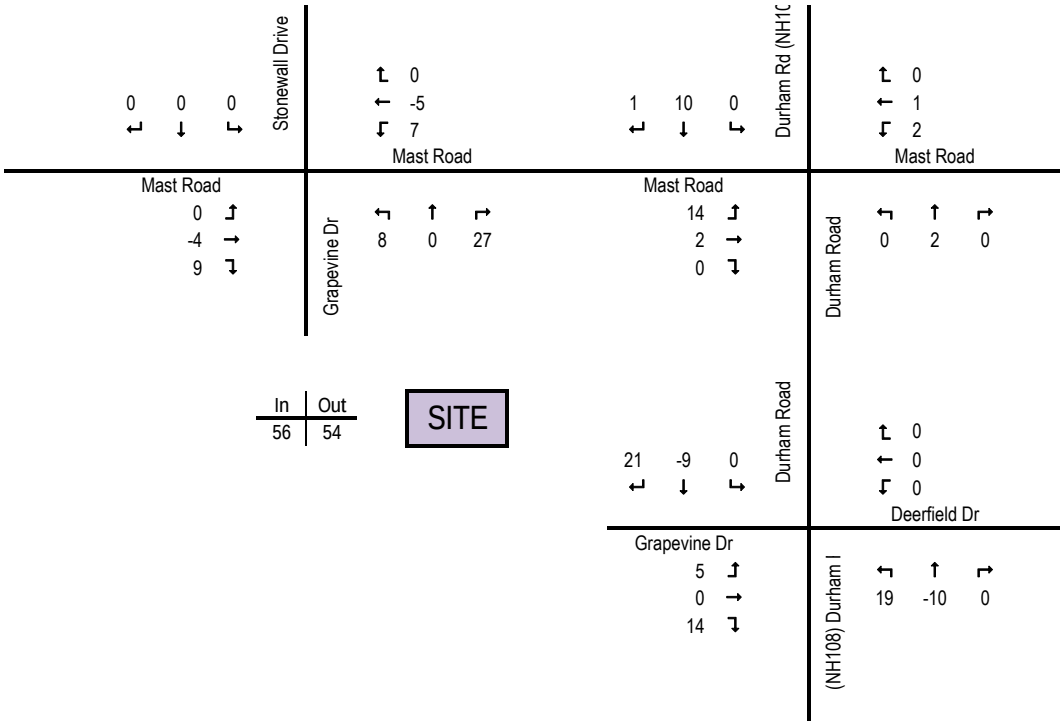
APPROVED FF: Site Trip Assignments
2023 Update - 70/30
SAT Peak Hour

XX Site Trips



APPROVED FF: Site Trips
2023 Update - 70/30
SAT Peak Hour

XX Site Trips



APPENDIX E

Volumes (AM/PM/SAT)

Calculations

ProRata

Background Traffic Volumes
AM Peak data

Assumed growth rate	0.01	
July 2019 Seasonal Adjust	1.01	NHDOT Group 4 Averages
Covid/Stay-home factor	1.025	NHDOT Methodology

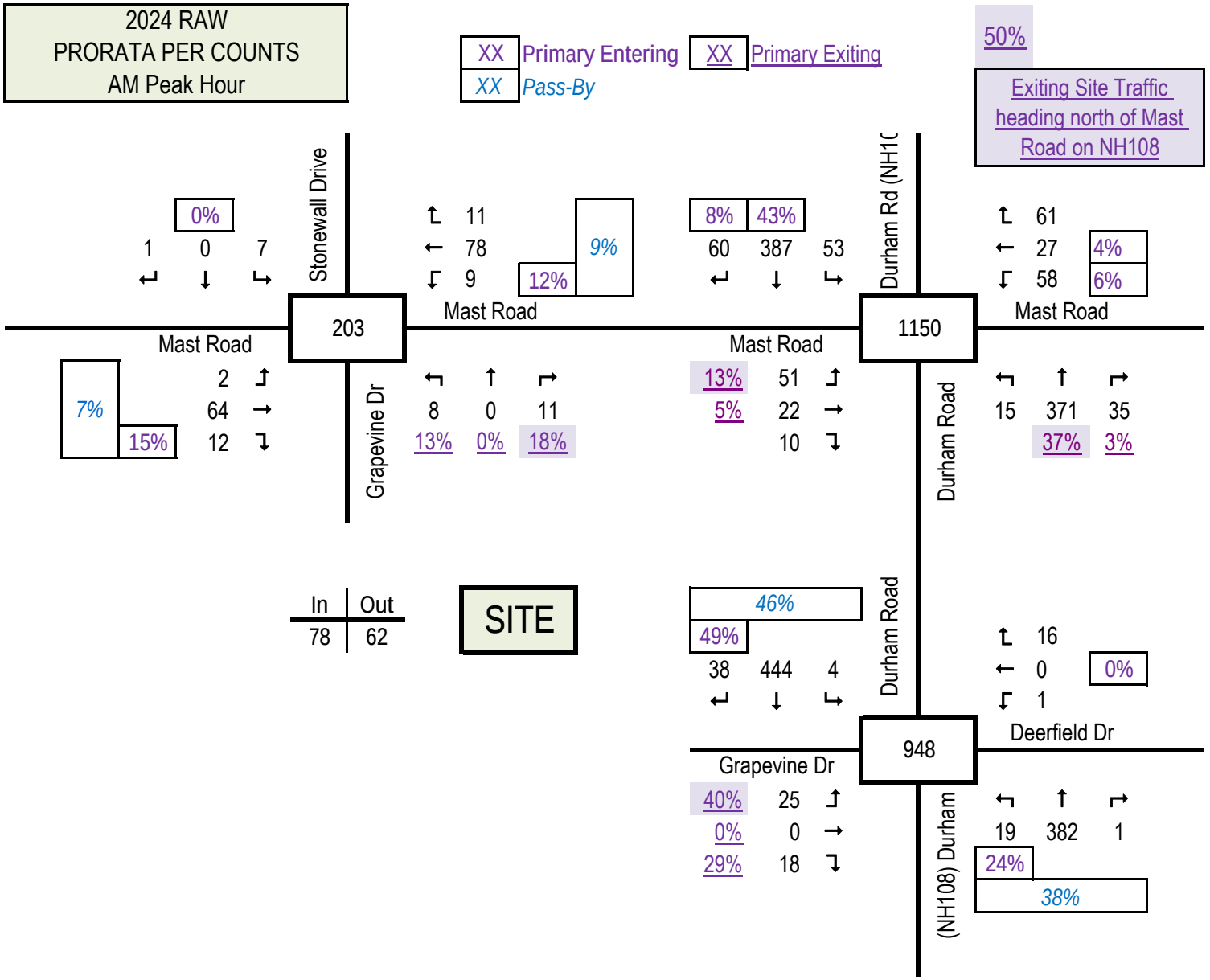
Site Trips are not Seasonally Adjusted or Grown.

ALL TRIPS ARE COVID ADJUSTED

AM Peak Hour	Existing 2024 (Raw data) [07/25/2024]	Existing 2024 w/ Seasonal Adjustment	Covid/Stay Home Adjustment	2024 BASE	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	AM PHF	% Heavy	Counted Heavy
3. Mast Road at Grapevine Dr/Stonewall Dr	8:00 AM																	
Movement	(C)																	
EBL	2	*2*	1.025	2.05	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*		0%	0
EBT	64	65	1.025	66.63	67.30	67.97	68.65	69.34	70.03	70.73	71.44	72.15	72.87	73.60	74.34	0.75	25%	16
EBR	12	*12*	1.025	12.30	*12*	*12*	*12*	*12*	*12*	*12*	*12*	*12*	*12*	*12*	*12*		8%	1
WBL	9	*9*	1.025	9.23	*9*	*9*	*9*	*9*	*9*	*9*	*9*	*9*	*9*	*9*	*9*		0%	0
WBT	78	79	1.025	80.98	81.79	82.61	83.44	84.27	85.11	85.96	86.82	87.69	88.57	89.46	90.35	0.60	22%	17
WBR	11	*11*	1.025	11.28	*11*	*11*	*11*	*11*	*11*	*11*	*11*	*11*	*11*	*11*	*11*		55%	6
NBL	8	*8*	1.025	8.20	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*		25%	2
NBT	0	*0*	1.025	0.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0.79	0%	0
NBR	11	*11*	1.025	11.28	*11*	*11*	*11*	*11*	*11*	*11*	*11*	*11*	*11*	*11*	*11*		0%	0
SBL	7	*7*	1.025	7.18	*7*	*7*	*7*	*7*	*7*	*7*	*7*	*7*	*7*	*7*	*7*		57%	4
SBT	0	*0*	1.025	0.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0.67	0%	0
SBR	1	*1*	1.025	1.03	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*		0%	0
6. Mast Road at Durham Road (NH108)	8:00 AM																	
Movement	(B)																	
EBL	51	52	1.025	53.30	53.83	54.37	54.91	55.46	56.01	56.57	57.14	57.71	58.29	58.87	59.46		14%	7
EBT	22	22	1.025	22.55	22.78	23.01	23.24	23.47	23.70	23.94	24.18	24.42	24.66	24.91	25.16	0.80	9%	2
EBR	10	10	1.025	10.25	10.35	10.45	10.55	10.66	10.77	10.88	10.99	11.10	11.21	11.32	11.43		60%	6
WBL	58	59	1.025	60.48	61.08	61.69	62.31	62.93	63.56	64.20	64.84	65.49	66.14	66.80	67.47		2%	1
WBT	27	27	1.025	27.68	27.96	28.24	28.52	28.81	29.10	29.39	29.68	29.98	30.28	30.58	30.89	0.79	7%	2
WBR	61	62	1.025	63.55	64.19	64.83	65.48	66.13	66.79	67.46	68.13	68.81	69.50	70.20	70.90		0%	0
NBL	15	15	1.025	15.38	15.53	15.69	15.85	16.01	16.17	16.33	16.49	16.65	16.82	16.99	17.16		80%	12
NBT	371	375	1.025	384.38	388.22	392.10	396.02	399.98	403.98	408.02	412.10	416.22	420.38	424.58	428.83	0.89	2%	7
NBR	35	35	1.025	35.88	36.24	36.60	36.97	37.34	37.71	38.09	38.47	38.85	39.24	39.63	40.03		0%	0
SBL	53	54	1.025	55.35	55.90	56.46	57.02	57.59	58.17	58.75	59.34	59.93	60.53	61.14	61.75		0%	0
SBT	387	391	1.025	400.78	404.79	408.84	412.93	417.06	421.23	425.44	429.69	433.99	438.33	442.71	447.14	0.87	3%	13
SBR	60	61	1.025	62.53	63.16	63.79	64.43	65.07	65.72	66.38	67.04	67.71	68.39	69.07	69.76		15%	9
9. Durham Road at Grapevine Dr/Deefield Dr	7:30 AM																	
Movement	(A)																	
EBL	25	*25*	1.025	25.63	*26*	*26*	*26*	*26*	*26*	*26*	*26*	*26*	*26*	*26*	*26*		8%	2
EBT	0	*0*	1.025	0.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0.60	0%	0
EBR	18	*18*	1.025	18.45	*18*	*18*	*18*	*18*	*18*	*18*	*18*	*18*	*18*	*18*	*18*		6%	1
WBL	1	*1*	1.025	1.03	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*		0%	0
WBT	0	*0*	1.025	0.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0.71	0%	0
WBR	16	*16*	1.025	16.40	*16*	*16*	*16*	*16*	*16*	*16*	*16*	*16*	*16*	*16*	*16*		0%	0
NBL	19	*19*	1.025	19.48	*19*	*19*	*19*	*19*	*19*	*19*	*19*	*19*	*19*	*19*	*19*		11%	2
NBT	382	386	1.025	395.65	399.61	403.61	407.65	411.73	415.85	420.01	424.21	428.45	432.73	437.06	441.43	0.93	4%	17
NBR	1	*1*	1.025	1.03	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*		0%	0
SBL	4	*4*	1.025	4.10	*4*	*4*	*4*	*4*	*4*	*4*	*4*	*4*	*4*	*4*	*4*		0%	0
SBT	444	448	1.025	459.20	463.79	468.43	473.11	477.84	482.62	487.45	492.32	497.24	502.21	507.23	512.30	0.89	5%	21
SBR	38	*38*	1.025	38.95	*39*	*39*	*39*	*39*	*39*	*39*	*39*	*39*	*39*	*39*	*39*		5%	2
12. Grapevine Drive at FF																		
Movement	(CALCULATED)																	
EBT	43	*43*	1.025	44.08	*44*	*44*	*44*	*44*	*44*	*44*	*44*	*44*	*44*	*44*	*44*	0.90	7%	3
EBR		*0*	1.025	0.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*		0%	
WBL		*0*	1.025	0.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*		0%	
WBT	57	*57*	1.025	58.43	*58*	*58*	*58*	*58*	*58*	*58*	*58*	*58*	*58*	*58*	*58*	0.90	7%	4
NBL		*0*	1.025	0.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*		0%	
NBR		*0*	1.025	0.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0.90	0%	
13. NH108 at FF																		
Movement	(CALCULATED)																	
EBR		*0*	1.025	0.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0.90	0%	
NBT	402	406	1.025	416.16	419.61	423.61	427.65	431.73	435.85	440.01	444.21	448.45	452.73	457.06	461.43	0.90	5%	19
SBT	463	467	1.025	478.68	482.79	487.43	492.11	496.84	501.62	506.45	511.32	516.24	521.21	526.23	531.3	0.90	5%	22

AM Peak Hour	2024 BASE	2025	APPROVED [Units 2,3&4] +Arbor Site Trip Distribution	2025 No-Build	(-SUBTRACT) APPROVED [Unit 4] Fast Food Site Trip Distribution	+ADD PROPOSED [Unit 4] Fast Food Site Trip Distribution	2025 Build	AM PHF BUILD	*Calculated % Heavy BUILD*
3. Mast Road at Grapevine Dr/Stonewall									
Movement									
EBL	2	2	0	2	0	0	2		*0%*
EBT	67	67	-2	65	2	-3	64	0.75	*25%*
EBR	12	12	6	18	-4	9	23		*4%*
WBL	9	9	5	14	-4	7	17		*0%*
WBT	81	82	-2	80	2	-3	79	0.60	*22%*
WBR	11	11	0	11	0	0	11		*55%*
NBL	8	8	10	18	-6	8	20		*10%*
NBT	0	0	0	0	0	0	0	0.90	-
NBR	11	11	37	48	-20	9	37		*0%*
SBL	7	7	0	7	0	0	7		*57%*
SBT	0	0	0	0	0	0	0	0.67	-
SBR	1	1	0	1	0	0	1		*0%*
6. Mast Road at Durham Road (NH108)									
Movement									
EBL	53	54	22	76	-10	4	70		*10%*
EBT	23	23	5	28	-2	2	28	0.80	*7%*
EBR	10	10	0	10	0	0	10		*60%*
WBL	60	61	3	64	-2	2	64		*2%*
WBT	28	28	1	29	-1	1	29	0.79	*7%*
WBR	64	64	0	64	0	0	64		*0%*
NBL	15	16	0	16	0	0	16		*75%*
NBT	384	388	1	389	0	13	402	0.89	*2%*
NBR	36	36	0	36	0	1	37		*0%*
SBL	55	56	0	56	0	0	56		*0%*
SBT	401	405	15	420	-9	16	427	0.87	*3%*
SBR	63	63	2	65	-1	3	67		*13%*
9. Durham Road at Grapevine Dr/Deefield Dr									
Movement									
EBL	26	26	4	30	-3	28	55		*4%*
EBT	0	0	0	0	0	0	0	0.90	-
EBR	18	18	26	44	-17	13	40		*3%*
WBL	1	1	0	1	0	0	1		*0%*
WBT	0	0	0	0	0	0	0	0.71	-
WBR	16	16	0	16	0	0	16		*0%*
NBL	19	19	29	48	-18	23	53		*4%*
NBT	396	400	-12	388	9	-14	383	0.93	*4%*
NBR	1	1	0	1	0	0	1		*0%*
SBL	4	4	0	4	0	0	4		*0%*
SBT	459	464	-14	450	11	-17	444	0.89	*5%*
SBR	39	39	32	71	-22	35	84		*2%*
12. Grapevine Drive at FF									
Movement									
EBT	44	44	30	74	-20	0	54	0.90	*6%*
EBR	0	0		0		16	16		*0%*
WBL	0	0		0		58	58	0.90	*0%*
WBT	58	58	61	119	-40	0	79		*5%*
NBL	0	0		0		17	17	0.90	*0%*
NBR	0	0		0		41	41		*0%*
13. NH108 at FF									
Movement									
EBR	0	0		0	0	13	13	0.90	*0%*
NBT	416	420		420	0	9	429	0.90	*4%*
SBT	479	483		483	0	-3	480	0.90	*5%*

PM Peak Hour	2035	APPROVED DF [units 2&3] Site Trip Distribution	2035 No-Build	(-SUBTRACT) APPROVED [Unit 4] Fast Food Site Trip Distribution	+ADD PROPOSED [Unit 4] Fast Food Site Trip Distribution	2035 Build
3. Mast Road at Grapevine Dr/Stonewall						
Movement						
EBL	2	0	2	0	0	2
EBT	74	-2	72	2	-3	71
EBR	12	6	18	-4	9	23
WBL	9	5	14	-4	7	17
WBT	90	-2	88	2	-3	87
WBR	11	0	11	0	0	11
NBL	8	10	18	-6	8	20
NBT	0	0	0	0	0	0
NBR	11	37	48	-20	9	37
SBL	7	0	7	0	0	7
SBT	0	0	0	0	0	0
SBR	1	0	1	0	0	1
6. Mast Road at Durham Road (NH108)						
Movement						
EBL	59	22	81	-10	4	75
EBT	25	5	30	-2	2	30
EBR	11	0	11	0	0	11
WBL	67	3	70	-2	2	70
WBT	31	1	32	-1	1	32
WBR	71	0	71	0	0	71
NBL	17	0	17	0	0	17
NBT	429	1	430	0	13	443
NBR	40	0	40	0	1	41
SBL	62	0	62	0	0	62
SBT	447	15	462	-9	16	469
SBR	70	2	72	-1	3	74
9. Durham Road at Grapevine Dr/Deefield Dr						
Movement						
EBL	26	4	30	-3	28	55
EBT	0	0	0	0	0	0
EBR	18	26	44	-17	13	40
WBL	1	0	1	0	0	1
WBT	0	0	0	0	0	0
WBR	16	0	16	0	0	16
NBL	19	29	48	-18	23	53
NBT	441	-12	429	9	-14	424
NBR	1	0	1	0	0	1
SBL	4	0	4	0	0	4
SBT	512	-14	498	11	-17	492
SBR	39	32	71	-22	35	84
12. Grapevine Drive at FF						
Movement						
EBT	44	30	74	-20	0	54
EBR	0		0		16	16
WBL	0		0		58	58
WBT	58	61	119	-40	0	79
NBL	0		0		17	17
NBR	0		0		41	41
13. NH108 at FF						
Movement						
EBR	0		0		13	13
NBT	461		461		9	470
SBT	531		531		-3	528


2024 RAW
PRORATA PER COUNTS
AM Peak Hour
XX Primary Entering
XX Pass-By
XX Primary Exiting
50%
Exiting Site Traffic heading north of Mast Road on NH108
Stonewall Drive
Grapevine Dr
Durham Rd (NH1C
Durham Road
(NH108) Durham
Mast Road
Deerfield Dr
203
1150
948
0%
1 0 7
11
78
9
12%
9%
8% 43%
60 387 53
61
27
4%
58
6%
7%
15%
2
64
12
8
0
11
13%
0%
18%
13%
5%
51
22
10
15
371
35
37%
3%
In 78
Out 62
SITE
46%
49%
38 444 4
16
0
1
0%
40%
0%
29%
25
0
18
19
382
1
24%
38%

Background Traffic Volumes
PM Peak data

Assumed growth rate	0.01		
July 2019 Seasonal Adjust	1.01	NHDOT Group 4 Averages	
Covid/Stay-home factor	1.011	NHDOT Methodology	

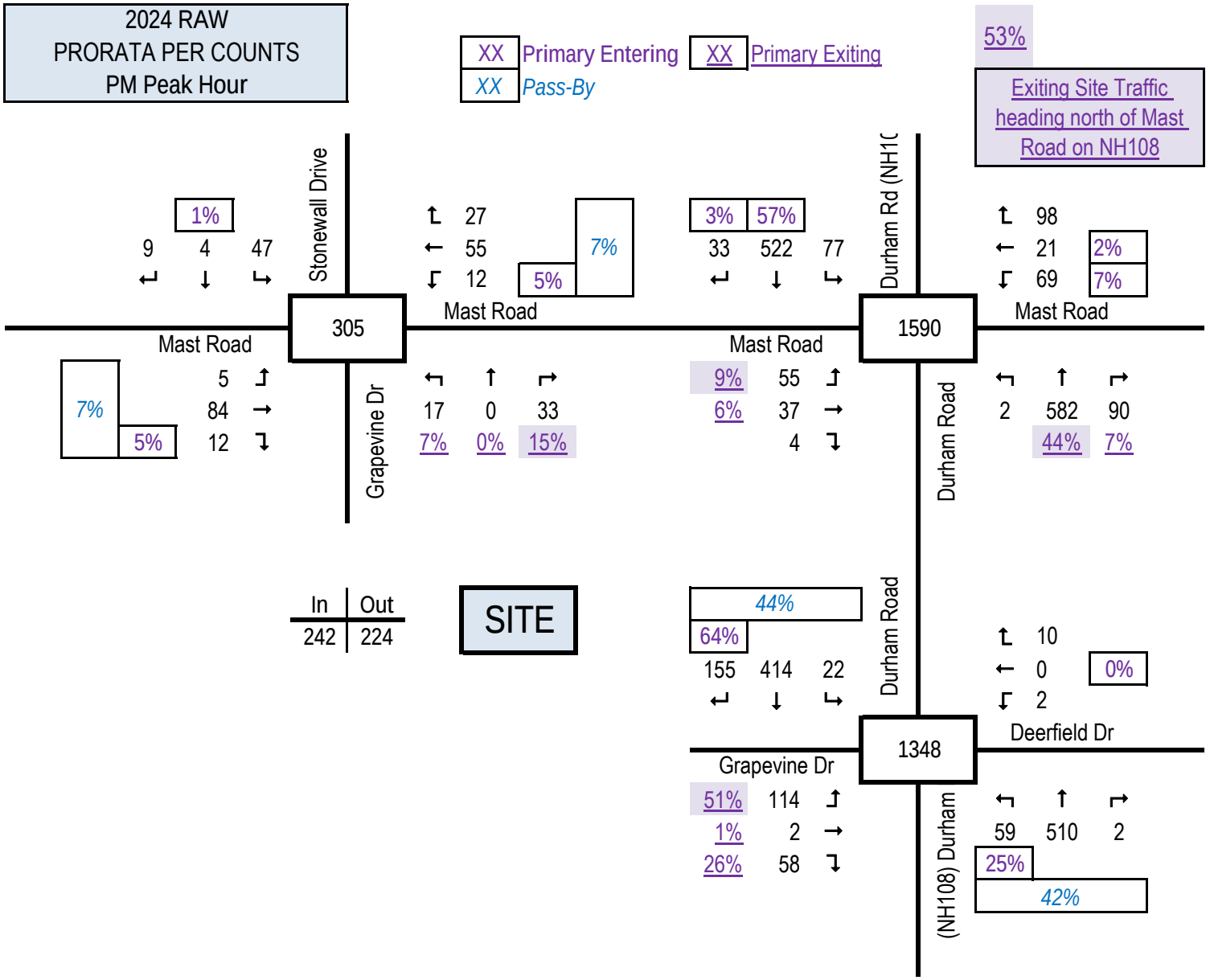
Site Trips are not Seasonally Adjusted or Grown.

ALL TRIPS ARE COVID ADJUSTED

PM Peak Hour	Existing 2024 (Raw data) [07/25/2024]	Existing 2024 w/ Seasonal Adjustment	Covid/Stay Home Adjustment	2024 BASE	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	PM PHF	% Heavy	Counted Heavy
3. Mast Road at Grapevine Dr/Stonewall Dr	3:00 PM																	
Movement	(C)																	
EBL	5	*5*	1.011	*5.06*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*		20%	1
EBT	84	85	1.011	85.94	86.80	87.67	88.55	89.44	90.33	91.23	92.14	93.06	93.99	94.93	95.88	0.81	11%	9
EBR	12	*12*	1.011	*12.13*	*12*	*12*	*12*	*12*	*12*	*12*	*12*	*12*	*12*	*12*	*12*		0%	0
WBL	12	*12*	1.011	*12.13*	*12*	*12*	*12*	*12*	*12*	*12*	*12*	*12*	*12*	*12*	*12*		0%	0
WBT	55	56	1.011	56.62	57.19	57.76	58.34	58.92	59.51	60.11	60.71	61.32	61.93	62.55	63.18	0.87	22%	12
WBR	27	*27*	1.011	*27.30*	*27*	*27*	*27*	*27*	*27*	*27*	*27*	*27*	*27*	*27*	*27*		22%	6
NBL	17	*17*	1.011	*17.19*	*17*	*17*	*17*	*17*	*17*	*17*	*17*	*17*	*17*	*17*	*17*		0%	0
NBT	0	*0*	1.011	*0.00*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0.80	0%	0
NBR	33	*33*	1.011	*33.36*	*33*	*33*	*33*	*33*	*33*	*33*	*33*	*33*	*33*	*33*	*33*		0%	0
SBL	47	*47*	1.011	*47.52*	*48*	*48*	*48*	*48*	*48*	*48*	*48*	*48*	*48*	*48*	*48*		15%	7
SBT	4	*4*	1.011	*4.04*	*4*	*4*	*4*	*4*	*4*	*4*	*4*	*4*	*4*	*4*	*4*	0.41	0%	0
SBR	9	*9*	1.011	*9.10*	*9*	*9*	*9*	*9*	*9*	*9*	*9*	*9*	*9*	*9*	*9*		0%	0
6. Mast Road at Durham Road (NH108)	4:45 PM																	
Movement	(B)																	
EBL	55	56	1.011	56.62	57.19	57.76	58.34	58.92	59.51	60.11	60.71	61.32	61.93	62.55	63.18		0%	0
EBT	37	37	1.011	37.41	37.78	38.16	38.54	38.93	39.32	39.71	40.11	40.51	40.92	41.33	41.74	0.75	0%	0
EBR	4	4	1.011	4.04	4.08	4.12	4.16	4.20	4.24	4.28	4.32	4.36	4.40	4.44	4.48		25%	1
WBL	69	70	1.011	70.77	71.48	72.19	72.91	73.64	74.38	75.12	75.87	76.63	77.40	78.17	78.95		0%	0
WBT	21	21	1.011	21.23	21.44	21.65	21.87	22.09	22.31	22.53	22.76	22.99	23.22	23.45	23.68	0.73	0%	0
WBR	98	99	1.011	100.09	101.09	102.10	103.12	104.15	105.19	106.24	107.30	108.37	109.45	110.54	111.65		0%	0
NBL	2	2	1.011	2.02	2.04	2.06	2.08	2.10	2.12	2.14	2.16	2.18	2.20	2.22	2.24		0%	0
NBT	582	588	1.011	594.47	600.41	606.41	612.47	618.59	624.78	631.03	637.34	643.71	650.15	656.65	663.22	0.91	1%	8
NBR	90	91	1.011	92.00	92.92	93.85	94.79	95.74	96.70	97.67	98.65	99.64	100.64	101.65	102.67		0%	0
SBL	77	78	1.011	78.86	79.65	80.45	81.25	82.06	82.88	83.71	84.55	85.40	86.25	87.11	87.98		0%	0
SBT	522	527	1.011	532.80	538.13	543.51	548.95	554.44	559.98	565.58	571.24	576.95	582.72	588.55	594.44	0.97	0%	2
SBR	33	33	1.011	33.36	33.69	34.03	34.37	34.71	35.06	35.41	35.76	36.12	36.48	36.84	37.21		27%	9
9. Durham Road at Grapevine Dr/Deefield Dr	4:45 PM																	
Movement	(A)																	
EBL	114	*114*	1.011	*115.25*	*115*	*115*	*115*	*115*	*115*	*115*	*115*	*115*	*115*	*115*	*115*		0%	0
EBT	2	*2*	1.011	*2.02*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	0.93	0%	0
EBR	58	*58*	1.011	*58.64*	*59*	*59*	*59*	*59*	*59*	*59*	*59*	*59*	*59*	*59*	*59*		0%	0
WBL	2	*2*	1.011	*2.02*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*		0%	0
WBT	0	*0*	1.011	*0.00*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0.60	0%	0
WBR	10	*10*	1.011	*10.11*	*10*	*10*	*10*	*10*	*10*	*10*	*10*	*10*	*10*	*10*	*10*		10%	1
NBL	59	*59*	1.011	*59.65*	*60*	*60*	*60*	*60*	*60*	*60*	*60*	*60*	*60*	*60*	*60*		0%	0
NBT	510	515	1.011	520.67	525.88	531.14	536.45	541.81	547.23	552.70	558.23	563.81	569.45	575.14	580.89	0.94	1%	5
NBR	2	*2*	1.011	*2.02*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*		0%	0
SBL	22	*22*	1.011	*22.24*	*22*	*22*	*22*	*22*	*22*	*22*	*22*	*22*	*22*	*22*	*22*		0%	0
SBT	414	418	1.011	422.60	426.83	431.10	435.41	439.76	444.16	448.60	453.09	457.62	462.20	466.82	471.49	0.91	0%	2
SBR	155	*155*	1.011	*156.71*	*157*	*157*	*157*	*157*	*157*	*157*	*157*	*157*	*157*	*157*	*157*		1%	1
12. Grapevine Drive at FF																		
Movement	(CALCULATED)																	
EBT	174	*174*	1.011	*175.91*	*176*	*176*	*176*	*176*	*176*	*176*	*176*	*176*	*176*	*176*	*176*	0.90	0%	0
EBR		*0*	1.011	*0.00*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*		0%	
WBL		*0*	1.011	*0.00*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*		0%	
WBT	214	*214*	1.011	*216.35*	*216*	*216*	*216*	*216*	*216*	*216*	*216*	*216*	*216*	*216*	*216*	0.90	0%	1
NBL		*0*	1.011	*0.00*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*		0%	
NBR		*0*	1.011	*0.00*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0.90	0%	
13. NH108 at FF																		
Movement	(CALCULATED)																	
EBR		*0*	1.011	0.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0.90	0%	
NBT	571	576	1.011	582.34	587.88	593.14	598.45	603.81	609.23	614.7	620.23	625.81	631.45	637.14	642.89	0.90	1%	5
SBT	474	478	1.011	483.26	487.83	492.1	496.41	500.76	505.16	509.6	514.09	518.62	523.2	527.82	532.49	0.90	0%	2

PM Peak Hour	2024 BASE	2025	APPROVED [Units 2,3&4] +Arbor Site Trip Distribution	2025 No-Build	(-SUBTRACT) APPROVED [Unit 4] Fast Food Site Trip Distribution	+ADD PROPOSED [Unit 4] Fast Food Site Trip Distribution	2025 Build	PM PHF BUILD	*Calculated % Heavy*
3. Mast Road at Grapevine Dr/Stonewall									
Movement									
EBL	5	5	0	5	0	0	5		*20%*
EBT	86	87	-1	86	1	-2	85	0.81	*11%*
EBR	12	12	3	15	-1	3	17		*0%*
WBL	12	12	4	16	-1	3	18		*0%*
WBT	57	57	-1	56	0	-2	54	0.87	*22%*
WBR	27	27	0	27	0	0	27		*22%*
NBL	17	17	5	22	-3	3	22		*0%*
NBT	0	0	0	0	0	0	0	0.90	-
NBR	33	33	30	63	-12	5	56		*0%*
SBL	48	48	0	48	0	0	48		*15%*
SBT	4	4	0	4	0	0	4	0.41	*0%*
SBR	9	9	0	9	0	0	9		*0%*
6. Mast Road at Durham Road (NH108)									
Movement									
EBL	57	57	19	76	-6	2	72		*0%*
EBT	37	38	3	41	-1	1	41	0.75	*0%*
EBR	4	4	0	4	0	0	4		*25%*
WBL	71	71	3	74	-1	2	75		*0%*
WBT	21	21	1	22	0	0	22	0.73	*0%*
WBR	100	101	0	101	0	0	101		*0%*
NBL	2	2	0	2	0	0	2		*0%*
NBT	594	600	2	602	-1	9	610	0.91	*1%*
NBR	92	93	0	93	0	1	94		*0%*
SBL	79	80	0	80	0	0	80		*0%*
SBT	533	538	16	554	-5	12	561	0.97	*0%*
SBR	33	34	2	36	-1	1	36		*25%*
9. Durham Road at Grapevine Dr/Deefield Dr									
Movement									
EBL	115	115	5	120	-2	20	138		*0%*
EBT	2	2	0	2	0	0	2	0.93	*0%*
EBR	59	59	19	78	-10	8	76		*0%*
WBL	2	2	0	2	0	0	2		*0%*
WBT	0	0	0	0	0	0	0	0.60	-
WBR	10	10	0	10	0	0	10		*10%*
NBL	60	60	30	90	-14	15	91		*0%*
NBT	521	526	-11	515	8	-10	513	0.94	*1%*
NBR	2	2	0	2	0	0	2		*0%*
SBL	22	22	0	22	0	0	22		*0%*
SBT	423	427	-11	416	7	-11	412	0.91	*0%*
SBR	157	157	30	187	-13	25	199		*1%*
12. Grapevine Drive at FF									
Movement									
EBT	176	176	24	200	-12	0	188	0.90	*0%*
EBR	0	0		0		6	6		*0%*
WBL	0	0		0		40	40	0.90	*0%*
WBT	216	216	60	276	-27	0	249		*0%*
NBL	0	0		0		8	8	0.90	*0%*
NBR	0	0		0		28	28		*0%*
13. NH108 at FF									
Movement									
EBR	0	0		0		7	7	0.90	*0%*
NBT	582	588		588		5	593	0.90	*1%*
SBT	483	488		488		-2	486	0.90	*0%*

PM Peak Hour	2035	APPROVED [Units 2&3] +Arbor Site Trip Distribution	2035 No-Build	(-SUBTRACT) APPROVED [Unit 4] Fast Food Site Trip Distribution	+ADD PROPOSED [Unit 4] Fast Food Site Trip Distribution	2035 Build	PM PHF FUTURE
3. Mast Road at Grapevine Dr/Stonewall							
Movement							
EBL	5	0	5	0	0	5	
EBT	96	-1	95	1	-2	94	0.90
EBR	12	3	15	-1	3	17	
WBL	12	4	16	-1	3	18	
WBT	63	-1	62	0	-2	60	0.90
WBR	27	0	27	0	0	27	
NBL	17	5	22	-3	3	22	
NBT	0	0	0	0	0	0	0.90
NBR	33	30	63	-12	5	56	
SBL	48	0	48	0	0	48	
SBT	4	0	4	0	0	4	0.90
SBR	9	0	9	0	0	9	
6. Mast Road at Durham Road (NH108)							
Movement							
EBL	63	19	82	-6	2	78	
EBT	42	3	45	-1	1	45	0.90
EBR	4	0	4	0	0	4	
WBL	79	3	82	-1	2	83	
WBT	24	1	25	0	0	25	0.90
WBR	112	0	112	0	0	112	
NBL	2	0	2	0	0	2	
NBT	663	2	665	-1	9	673	0.91
NBR	103	0	103	0	1	104	
SBL	88	0	88	0	0	88	
SBT	594	16	610	-5	12	617	0.97
SBR	37	2	39	-1	1	39	
9. Durham Road at Grapevine Dr/Deefield Dr							
Movement							
EBL	115	5	120	-2	20	138	
EBT	2	0	2	0	0	2	0.93
EBR	59	19	78	-10	8	76	
WBL	2	0	2	0	0	2	
WBT	0	0	0	0	0	0	0.90
WBR	10	0	10	0	0	10	
NBL	60	30	90	-14	15	91	
NBT	581	-11	570	8	-10	568	0.94
NBR	2	0	2	0	0	2	
SBL	22	0	22	0	0	22	
SBT	471	-11	460	7	-11	456	0.91
SBR	157	30	187	-13	25	199	
12. Grapevine Drive at FF							
Movement							
EBT	176	24	200	-12	0	188	0.90
EBR	0		0		6	6	
WBL	0		0		40	40	0.90
WBT	216	60	276	-27	0	249	
NBL	0		0		8	8	0.90
NBR	0		0		28	28	
13. NH108 at FF							
Movement							
EBR	0		0		7	7	0.90
NBT	643		643		5	648	0.90
SBT	532		532		-2	530	0.90


2024 RAW
PRORATA PER COUNTS
PM Peak Hour
XX Primary Entering
XX Pass-By
XX Primary Exiting
53%
Exiting Site Traffic heading north of Mast Road on NH108
Stonewall Drive
Grapevine Dr
Durham Rd (NH1C
Durham Road
(NH108) Durham
Deerfield Dr
Mast Road
305
1590
1348
SITE
In 242
Out 224
1% 9 4 47
27 55 12
5% 7%
3% 57% 33 522 77
98 21 69
2% 7%
7% 5 84 12
5%
17 0 33
7% 0% 15%
9% 55
6% 37 4
2 582 90
44% 7%
44%
64% 155 414 22
10 0 2
0%
51% 114
1% 2
26% 58
59 510 2
25%
42%

Background Traffic Volumes
SAT Peak data

Assumed growth rate	0.01		
July 2019 Seasonal Adjust	1.01	NHDOT Group 4 Averages	
Covid/Stay-home factor	1.028	NHDOT Methodology	

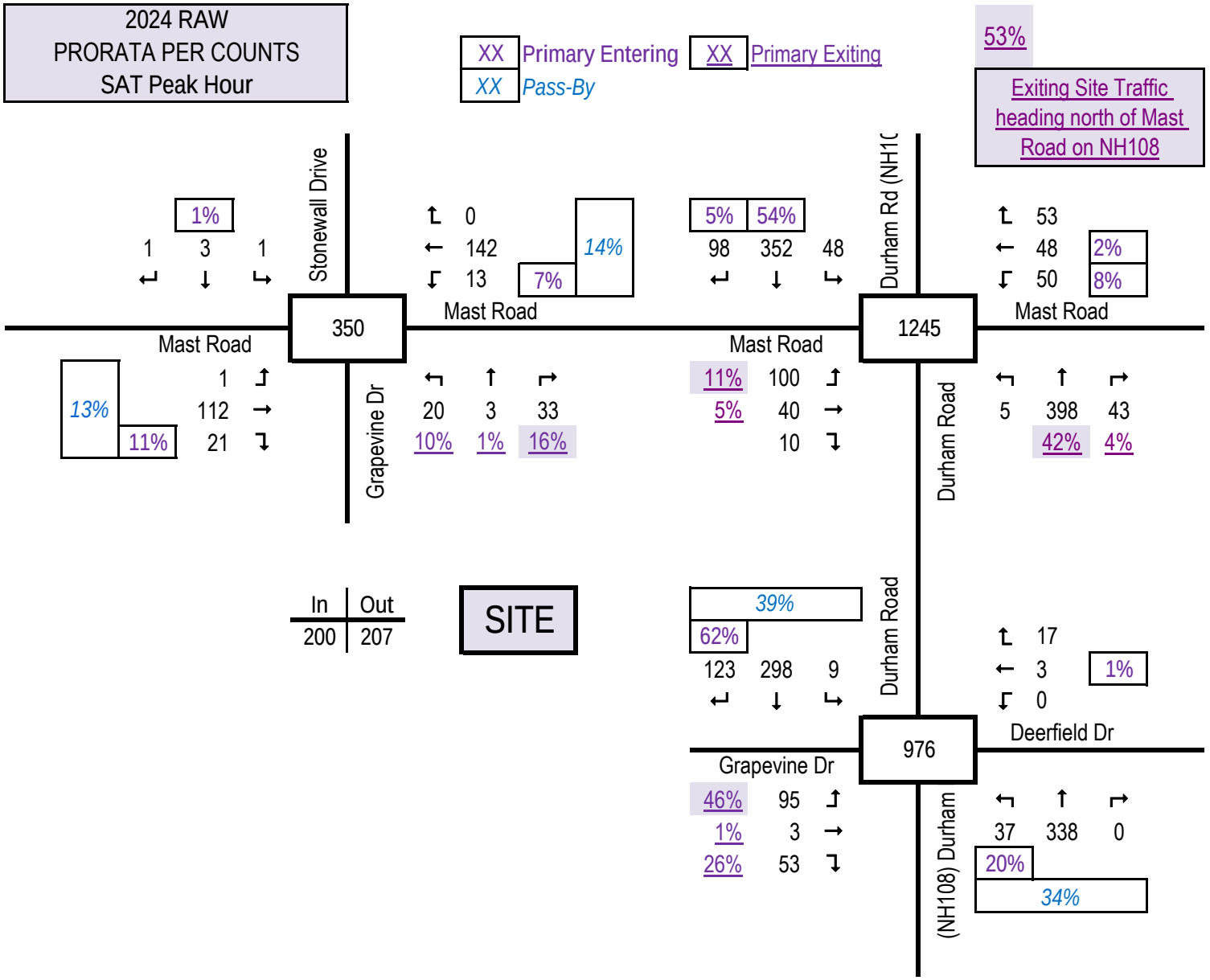
Site Trips are not Seasonally Adjusted or Grown.

ALL TRIPS ARE COVID ADJUSTED

SAT Peak Hour	Existing 2024 (Raw data) [07/27/2024]	Existing 2024 w/ Seasonal Adjustment	Covid/Stay Home Adjustment	2024 BASE	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	SAT PHF	% Heavy	Counted Heavy
3. Mast Road at Grapevine Dr/Stonewall Dr	11:00 AM																	
Movement	(C)																	
EBL	1	*1*	1.028	1.03	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*		0%	0
EBT	112	113	1.028	116.16	117.32	118.49	119.67	120.87	122.08	123.30	124.53	125.78	127.04	128.31	129.59	0.82	1%	1
EBR	21	*21*	1.028	21.59	*22*	*22*	*22*	*22*	*22*	*22*	*22*	*22*	*22*	*22*	*22*		5%	1
WBL	13	*13*	1.028	13.36	*13*	*13*	*13*	*13*	*13*	*13*	*13*	*13*	*13*	*13*	*13*		0%	0
WBT	142	143	1.028	147.00	148.47	149.95	151.45	152.96	154.49	156.03	157.59	159.17	160.76	162.37	163.99	0.78	0%	0
WBR	0	*0*	1.028	0.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*		0%	0
NBL	20	*20*	1.028	20.56	*21*	*21*	*21*	*21*	*21*	*21*	*21*	*21*	*21*	*21*	*21*		5%	1
NBT	3	*3*	1.028	3.08	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	0.70	0%	0
NBR	33	*33*	1.028	33.92	*34*	*34*	*34*	*34*	*34*	*34*	*34*	*34*	*34*	*34*	*34*		0%	0
SBL	1	*1*	1.028	1.03	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*		0%	0
SBT	3	*3*	1.028	3.08	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	0.42	0%	0
SBR	1	*1*	1.028	1.03	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*		0%	0
6. Mast Road at Durham Road (NH108)	11:00 AM																	
Movement	(B)																	
EBL	100	101	1.028	103.83	104.87	105.92	106.98	108.05	109.13	110.22	111.32	112.43	113.55	114.69	115.84		0%	0
EBT	40	40	1.028	41.12	41.53	41.95	42.37	42.79	43.22	43.65	44.09	44.53	44.98	45.43	45.88	0.80	0%	0
EBR	10	10	1.028	10.28	10.38	10.48	10.58	10.69	10.80	10.91	11.02	11.13	11.24	11.35	11.46		10%	1
WBL	50	51	1.028	52.43	52.95	53.48	54.01	54.55	55.10	55.65	56.21	56.77	57.34	57.91	58.49		0%	0
WBT	48	48	1.028	49.34	49.83	50.33	50.83	51.34	51.85	52.37	52.89	53.42	53.95	54.49	55.03	0.90	0%	0
WBR	53	54	1.028	55.51	56.07	56.63	57.20	57.77	58.35	58.93	59.52	60.12	60.72	61.33	61.94		0%	0
NBL	5	5	1.028	5.14	5.19	5.24	5.29	5.34	5.39	5.44	5.49	5.54	5.60	5.66	5.72		20%	1
NBT	398	402	1.028	413.26	417.39	421.56	425.78	430.04	434.34	438.68	443.07	447.50	451.98	456.50	461.07	0.87	2%	8
NBR	43	43	1.028	44.20	44.64	45.09	45.54	46.00	46.46	46.92	47.39	47.86	48.34	48.82	49.31		2%	1
SBL	48	48	1.028	49.34	49.83	50.33	50.83	51.34	51.85	52.37	52.89	53.42	53.95	54.49	55.03		0%	0
SBT	352	356	1.028	365.97	369.63	373.33	377.06	380.83	384.64	388.49	392.37	396.29	400.25	404.25	408.29	0.88	1%	2
SBR	98	99	1.028	101.77	102.79	103.82	104.86	105.91	106.97	108.04	109.12	110.21	111.31	112.42	113.54		0%	0
9. Durham Road at Grapevine Dr/Deefield Dr	11:45 AM																	
Movement	(A)																	
EBL	95	*95*	1.028	97.66	*98*	*98*	*98*	*98*	*98*	*98*	*98*	*98*	*98*	*98*	*98*		3%	3
EBT	3	*3*	1.028	3.08	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	0.82	33%	1
EBR	53	*53*	1.028	54.48	*54*	*54*	*54*	*54*	*54*	*54*	*54*	*54*	*54*	*54*	*54*		0%	0
WBL	0	*0*	1.028	0.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*		0%	0
WBT	3	*3*	1.028	3.08	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	0.56	0%	0
WBR	17	*17*	1.028	17.48	*17*	*17*	*17*	*17*	*17*	*17*	*17*	*17*	*17*	*17*	*17*		6%	1
NBL	37	*37*	1.028	38.04	*38*	*38*	*38*	*38*	*38*	*38*	*38*	*38*	*38*	*38*	*38*		0%	0
NBT	338	341	1.028	350.55	354.06	357.60	361.18	364.79	368.44	372.12	375.84	379.60	383.40	387.23	391.10	0.96	2%	6
NBR	0	*0*	1.028	0.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*		0%	0
SBL	9	*9*	1.028	9.25	*9*	*9*	*9*	*9*	*9*	*9*	*9*	*9*	*9*	*9*	*9*		0%	0
SBT	298	301	1.028	309.43	312.52	315.65	318.81	322.00	325.22	328.47	331.75	335.07	338.42	341.80	345.22	0.86	2%	6
SBR	123	*123*	1.028	126.44	*126*	*126*	*126*	*126*	*126*	*126*	*126*	*126*	*126*	*126*	*126*		1%	1
12. Grapevine Drive at FF																		
Movement	(CALCULATED)																	
EBT	151	*151*	1.028	155.23	*155*	*155*	*155*	*155*	*155*	*155*	*155*	*155*	*155*	*155*	*155*	0.90	3%	4
EBR		*0*	1.028	0.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*		0%	
WBL		*0*	1.028	0.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*		0%	
WBT	163	*163*	1.028	167.56	*168*	*168*	*168*	*168*	*168*	*168*	*168*	*168*	*168*	*168*	*168*	0.90	1%	1
NBL		*0*	1.028	0.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*		0%	
NBR		*0*	1.028	0.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0.90	0%	
13. NH108 at FF																		
Movement	(CALCULATED)																	
EBR		*0*	1.028	0.00	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0.90	0%	
NBT	375	378	1.028	388.59	392.06	395.6	399.18	402.79	406.44	410.12	413.84	417.6	421.4	425.23	429.1	0.90	2%	6
SBT	351	354	1.028	363.91	366.52	369.65	372.81	376	379.22	382.47	385.75	389.07	392.42	395.8	399.22	0.90	2%	6

SAT Peak Hour	2024 BASE	2025	APPROVED [Units 2,3&4] +Arbor Site Trip Distribution	2025 No-Build	(-SUBTRACT) APPROVED [Unit 4] Fast Food Site Trip Distribution	+ADD PROPOSED [Unit 4] Fast Food Site Trip Distribution	2025 Build	AM PHF BUILD	Calculated % Heavy BUILD
3. Mast Road at Grapevine Dr/Stonewall									
Movement									
EBL	1	1	0	1	0	0	1		0%
EBT	116	117	-7	110	4	-5	109	0.82	1%
EBR	22	22	19	41	-9	10	42		2%
WBL	13	13	13	26	-7	9	28		0%
WBT	147	148	-8	140	5	-6	139	0.78	0%
WBR	0	0	0	0	0	0	0		-
NBL	21	21	16	37	-8	10	39		3%
NBT	3	3	0	3	0	0	3	0.90	0%
NBR	34	34	61	95	-27	12	80		0%
SBL	1	1	0	1	0	0	1		0%
SBT	3	3	0	3	0	0	3	0.42	0%
SBR	1	1	0	1	0	0	1		0%
6. Mast Road at Durham Road (NH108)									
Movement									
EBL	104	105	38	143	-14	5	134		0%
EBT	41	42	4	46	-2	2	46	0.80	0%
EBR	10	10	0	10	0	0	10		10%
WBL	52	53	4	57	-2	3	58		0%
WBT	49	50	1	51	-1	1	51	0.90	0%
WBR	56	56	0	56	0	0	56		0%
NBL	5	5	0	5	0	0	5		20%
NBT	413	417	4	421	-2	17	436	0.87	2%
NBR	44	45	1	46	0	2	48		2%
SBL	49	50	0	50	0	0	50		0%
SBT	366	370	28	398	-10	23	411	0.88	0%
SBR	102	103	4	107	-1	2	108		0%
9. Durham Road at Grapevine Dr/Deefield Dr									
Movement									
EBL	98	98	10	108	-5	33	136		2%
EBT	3	3	0	3	0	0	3	0.90	33%
EBR	54	54	30	84	-14	14	84		0%
WBL	0	0	0	0	0	0	0		-
WBT	3	3	0	3	0	0	3	0.56	0%
WBR	17	17	0	17	0	0	17		6%
NBL	38	38	40	78	-19	24	83		0%
NBT	351	354	-16	338	10	-15	333	0.96	2%
NBR	0	0	0	0	0	0	0		-
SBL	9	9	0	9	0	0	9		0%
SBT	309	313	-14	299	9	-17	291	0.86	2%
SBR	126	126	46	172	-21	43	194		1%
12. Grapevine Drive at FF									
Movement									
EBT	155	155	40	195	-19	0	176	0.90	2%
EBR	0	0		0		20	20		0%
WBL	0	0		0		66	66	0.90	0%
WBT	168	168	86	254	-40	0	214		0%
NBL	0	0		0		22	22	0.90	0%
NBR	0	0		0		48	48		0%
13. NH108 at FF									
Movement									
EBR	0	0		0		13	13	0.90	0%
NBT	389	392		392		9	401	0.90	1%
SBT	364	367		367		-2	365	0.90	2%

SAT Peak Hour	2035	APPROVED [Units 2&3] +Arbor Site Trip Distribution	2035 No-Build	(-SUBTRACT) APPROVED [Unit 4] Fast Food Site Trip Distribution	+ADD PROPOSED [Unit 4] Fast Food Site Trip Distribution	2035 Build	SAT PHF FUTURE
3. Mast Road at Grapevine Dr/Stonewall							
Movement							
EBL	1	0	1	0	0	1	
EBT	130	-7	123	4	-5	122	0.90
EBR	22	19	41	-9	10	42	
WBL	13	13	26	-7	9	28	
WBT	164	-8	156	5	-6	155	0.90
WBR	0	0	0	0	0	0	
NBL	21	16	37	-8	10	39	
NBT	3	0	3	0	0	3	0.90
NBR	34	61	95	-27	12	80	
SBL	1	0	1	0	0	1	
SBT	3	0	3	0	0	3	0.90
SBR	1	0	1	0	0	1	
6. Mast Road at Durham Road (NH108)							
Movement							
EBL	116	38	154	-14	5	145	
EBT	46	4	50	-2	2	50	0.90
EBR	11	0	11	0	0	11	
WBL	58	4	62	-2	3	63	
WBT	55	1	56	-1	1	56	0.90
WBR	62	0	62	0	0	62	
NBL	6	0	6	0	0	6	
NBT	461	4	465	-2	17	480	0.90
NBR	49	1	50	0	2	52	
SBL	55	0	55	0	0	55	
SBT	408	28	436	-10	23	449	0.90
SBR	114	4	118	-1	2	119	
9. Durham Road at Grapevine Dr/Deefield Dr							
Movement							
EBL	98	10	108	-5	33	136	
EBT	3	0	3	0	0	3	0.90
EBR	54	30	84	-14	14	84	
WBL	0	0	0	0	0	0	
WBT	3	0	3	0	0	3	0.90
WBR	17	0	17	0	0	17	
NBL	38	40	78	-19	24	83	
NBT	391	-16	375	10	-15	370	0.96
NBR	0	0	0	0	0	0	
SBL	9	0	9	0	0	9	
SBT	345	-14	331	9	-17	323	0.90
SBR	126	46	172	-21	43	194	
12. Grapevine Drive at FF							
Movement							
EBT	155	40	195	-19	0	176	0.90
EBR	0		0		20	20	
WBL	0		0		66	66	0.90
WBT	168	86	254	-40	0	214	
NBL	0		0		22	22	0.90
NBR	0		0		48	48	
13. NH108 at FF							
Movement							
EBR	0		0		13	13	0.90
NBT	429		429		9	438	0.90
SBT	399		399		-2	397	0.90


2024 RAW
PRORATA PER COUNTS
SAT Peak Hour
XX Primary Entering
XX Pass-By
XX Primary Exiting
53%
Exiting Site Traffic heading north of Mast Road on NH108
Stonewall Drive
Grapevine Dr
Durham Rd (NH1C
Durham Road
(NH108) Durham
Mast Road
Deerfield Dr
350
1245
976
1%
1 3 1
0
142
13
7%
14%
5% 54%
98 352 48
53
48
50
2%
8%
13%
11%
1 112 21
20 3 33
10% 1% 16%
11% 100 40 10
5%
5 398 43
42% 4%
39%
62%
123 298 9
17
3
0
1%
46% 95
1% 3
26% 53
37 338 0
20%
34%
In 200
Out 207
SITE

APPENDIX F

AM Synchro

2024 – BASE

2025, 2035 – No-Build

2025, 2035 – Build

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↰	↑			↕			↕	
Traffic Vol, veh/h	2	67	12	9	81	11	8	0	11	7	0	1
Future Vol, veh/h	2	67	12	9	81	11	8	0	11	7	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	60	60	60	79	79	79	67	67	67
Heavy Vehicles, %	20	11	0	0	22	22	0	0	0	15	0	0
Mvmt Flow	3	89	16	15	135	18	10	0	14	10	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	153	0	0	105	0	0	278	286	97	284	285	144
Stage 1	-	-	-	-	-	-	103	103	-	174	174	-
Stage 2	-	-	-	-	-	-	175	183	-	110	111	-
Critical Hdwy	4.3	-	-	4.1	-	-	7.1	6.5	6.2	7.25	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.25	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.25	5.5	-
Follow-up Hdwy	2.38	-	-	2.2	-	-	3.5	4	3.3	3.635	4	3.3
Pot Cap-1 Maneuver	1325	-	-	1499	-	-	678	627	965	643	628	909
Stage 1	-	-	-	-	-	-	908	814	-	798	759	-
Stage 2	-	-	-	-	-	-	832	752	-	864	807	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1325	-	-	1499	-	-	671	619	965	628	620	909
Mov Cap-2 Maneuver	-	-	-	-	-	-	671	619	-	628	620	-
Stage 1	-	-	-	-	-	-	906	812	-	796	751	-
Stage 2	-	-	-	-	-	-	822	744	-	850	805	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.7	9.6	10.6
HCM LOS			A	B

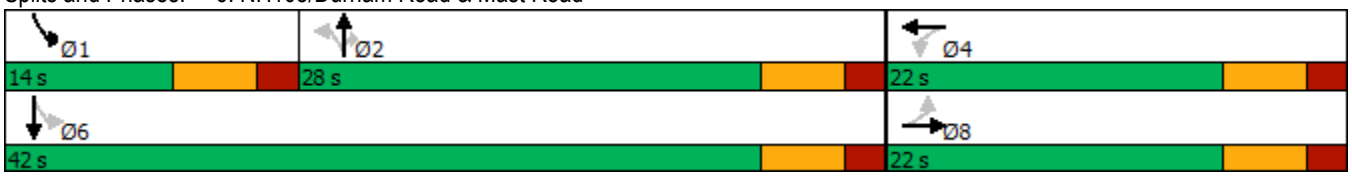
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	815	1325	-	-	1499	-	-	653
HCM Lane V/C Ratio	0.03	0.002	-	-	0.01	-	-	0.018
HCM Control Delay (s)	9.6	7.7	0	-	7.4	-	-	10.6
HCM Lane LOS	A	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	53	23	60	28	15	384	36	55	401
Future Volume (vph)	53	23	60	28	15	384	36	55	401
Lane Group Flow (vph)	66	42	76	116	0	448	40	63	533
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		8		4		2		1	6
Permitted Phases	8		4		2		2	6	
Detector Phase	8	8	4	4	2	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	22.0	22.0	9.0	22.0
Total Split (s)	22.0	22.0	22.0	22.0	28.0	28.0	28.0	14.0	42.0
Total Split (%)	34.4%	34.4%	34.4%	34.4%	43.8%	43.8%	43.8%	21.9%	65.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0
Lead/Lag					Lag	Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	Min	None	Min
Act Effct Green (s)	10.9	10.9	10.9	10.9		24.9	24.9	29.9	31.2
Actuated g/C Ratio	0.24	0.24	0.24	0.24		0.54	0.54	0.65	0.68
v/c Ratio	0.25	0.12	0.24	0.25		0.47	0.04	0.10	0.44
Control Delay	20.4	14.8	19.7	9.8		13.5	0.1	4.4	6.3
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	20.4	14.8	19.7	9.8		13.5	0.1	4.4	6.3
LOS	C	B	B	A		B	A	A	A
Approach Delay		18.2		13.7		12.4			6.1
Approach LOS		B		B		B			A
Queue Length 50th (ft)	17	7	19	9		102	0	6	62
Queue Length 95th (ft)	42	25	46	35		209	0	18	135
Internal Link Dist (ft)		1120		720		420			720
Turn Bay Length (ft)	150		25				175	125	
Base Capacity (vph)	489	633	586	763		1066	1037	703	1444
Starvation Cap Reductn	0	0	0	0		0	0	0	0
Spillback Cap Reductn	0	0	0	0		0	0	0	0
Storage Cap Reductn	0	0	0	0		0	0	0	0
Reduced v/c Ratio	0.13	0.07	0.13	0.15		0.42	0.04	0.09	0.37

Intersection Summary

Cycle Length: 64
Actuated Cycle Length: 45.8
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.47
Intersection Signal Delay: 10.3 Intersection LOS: B
Intersection Capacity Utilization 62.4% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 6: NH108/Durham Road & Mast Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	23	10	60	28	64	15	384	36	55	401	63
Future Volume (vph)	53	23	10	60	28	64	15	384	36	55	401	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt	1.00	0.95		1.00	0.90			1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1583	1452		1770	1666			1807	1615	1805	1779	
Flt Permitted	0.68	1.00		0.73	1.00			0.97	1.00	0.34	1.00	
Satd. Flow (perm)	1137	1452		1359	1666			1763	1615	655	1779	
Peak-hour factor, PHF	0.80	0.80	0.80	0.79	0.79	0.79	0.89	0.89	0.89	0.87	0.87	0.87
Adj. Flow (vph)	66	29	12	76	35	81	17	431	40	63	461	72
RTOR Reduction (vph)	0	11	0	0	66	0	0	0	21	0	7	0
Lane Group Flow (vph)	66	31	0	76	50	0	0	448	19	63	526	0
Heavy Vehicles (%)	14%	9%	60%	2%	7%	0%	80%	2%	0%	0%	3%	15%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		8			4			2		1	6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	6.9	6.9		6.9	6.9			21.5	21.5	30.8	30.8	
Effective Green, g (s)	8.9	8.9		8.9	8.9			23.5	23.5	32.8	32.8	
Actuated g/C Ratio	0.18	0.18		0.18	0.18			0.47	0.47	0.66	0.66	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	203	260		243	298			833	763	554	1174	
v/s Ratio Prot		0.02			0.03					0.01	c0.30	
v/s Ratio Perm	c0.06			0.06				c0.25	0.01	0.06		
v/c Ratio	0.33	0.12		0.31	0.17			0.54	0.02	0.11	0.45	
Uniform Delay, d1	17.8	17.1		17.7	17.3			9.3	7.0	3.8	4.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.9	0.2		0.7	0.3			0.7	0.0	0.1	0.3	
Delay (s)	18.7	17.3		18.5	17.5			9.9	7.0	3.9	4.4	
Level of Service	B	B		B	B			A	A	A	A	
Approach Delay (s)		18.2			17.9			9.7			4.3	
Approach LOS		B			B			A			A	

Intersection Summary

HCM 2000 Control Delay	9.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	49.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection												
Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	26	0	18	1	0	16	19	396	1	4	459	39
Future Vol, veh/h	26	0	18	1	0	16	19	396	1	4	459	39
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	110	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	60	60	60	71	71	71	93	93	93	89	89	89
Heavy Vehicles, %	8	0	6	0	0	0	11	4	0	0	5	5
Mvmt Flow	43	0	30	1	0	23	20	426	1	4	516	44

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1024	1013	538	1028	1035	427	560	0	0	427	0	0
Stage 1	546	546	-	467	467	-	-	-	-	-	-	-
Stage 2	478	467	-	561	568	-	-	-	-	-	-	-
Critical Hdwy	7.18	6.5	6.26	7.1	6.5	6.2	4.21	-	-	4.1	-	-
Critical Hdwy Stg 1	6.18	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.18	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.572	4	3.354	3.5	4	3.3	2.299	-	-	2.2	-	-
Pot Cap-1 Maneuver	208	241	535	214	234	632	968	-	-	1143	-	-
Stage 1	511	521	-	580	565	-	-	-	-	-	-	-
Stage 2	557	565	-	516	510	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	197	235	535	198	228	632	968	-	-	1143	-	-
Mov Cap-2 Maneuver	197	235	-	198	228	-	-	-	-	-	-	-
Stage 1	500	519	-	568	553	-	-	-	-	-	-	-
Stage 2	526	553	-	485	508	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21.7	11.7	0.4	0.1
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	968	-	-	197	535	560	1143	-	-
HCM Lane V/C Ratio	0.021	-	-	0.22	0.056	0.043	0.004	-	-
HCM Control Delay (s)	8.8	-	-	28.4	12.1	11.7	8.2	-	-
HCM Lane LOS	A	-	-	D	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.8	0.2	0.1	0	-	-

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↰	↑			↕			↕	
Traffic Vol, veh/h	2	65	18	14	80	11	18	0	48	7	0	1
Future Vol, veh/h	2	65	18	14	80	11	18	0	48	7	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	60	60	60	79	79	79	67	67	67
Heavy Vehicles, %	20	11	0	0	22	22	0	0	0	15	0	0
Mvmt Flow	3	87	24	23	133	18	23	0	61	10	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	151	0	0	111	0	0	294	302	99	324	305	142
Stage 1	-	-	-	-	-	-	105	105	-	188	188	-
Stage 2	-	-	-	-	-	-	189	197	-	136	117	-
Critical Hdwy	4.3	-	-	4.1	-	-	7.1	6.5	6.2	7.25	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.25	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.25	5.5	-
Follow-up Hdwy	2.38	-	-	2.2	-	-	3.5	4	3.3	3.635	4	3.3
Pot Cap-1 Maneuver	1327	-	-	1492	-	-	662	614	962	605	612	911
Stage 1	-	-	-	-	-	-	906	812	-	785	748	-
Stage 2	-	-	-	-	-	-	817	742	-	837	803	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1327	-	-	1492	-	-	652	604	962	559	602	911
Mov Cap-2 Maneuver	-	-	-	-	-	-	652	604	-	559	602	-
Stage 1	-	-	-	-	-	-	904	810	-	783	737	-
Stage 2	-	-	-	-	-	-	803	731	-	783	801	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	1	9.7	11.3
HCM LOS			A	B

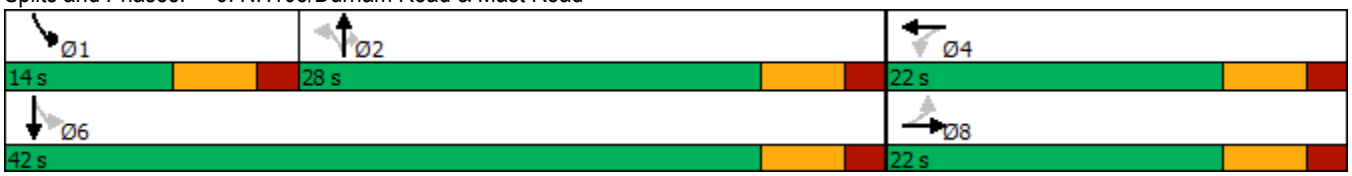
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	852	1327	-	-	1492	-	-	587
HCM Lane V/C Ratio	0.098	0.002	-	-	0.016	-	-	0.02
HCM Control Delay (s)	9.7	7.7	0	-	7.5	-	-	11.3
HCM Lane LOS	A	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.1

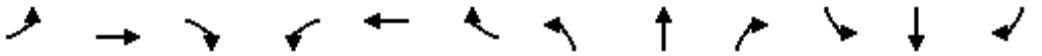
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	76	28	64	29	16	389	36	56	420
Future Volume (vph)	76	28	64	29	16	389	36	56	420
Lane Group Flow (vph)	95	48	81	118	0	455	40	64	558
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		8		4		2		1	6
Permitted Phases	8		4		2		2	6	
Detector Phase	8	8	4	4	2	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	22.0	22.0	9.0	22.0
Total Split (s)	22.0	22.0	22.0	22.0	28.0	28.0	28.0	14.0	42.0
Total Split (%)	34.4%	34.4%	34.4%	34.4%	43.8%	43.8%	43.8%	21.9%	65.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0
Lead/Lag					Lag	Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	Min	None	Min
Act Effct Green (s)	12.1	12.1	12.1	12.1		25.2	25.2	30.1	31.4
Actuated g/C Ratio	0.26	0.26	0.26	0.26		0.53	0.53	0.64	0.66
v/c Ratio	0.33	0.12	0.23	0.24		0.49	0.04	0.10	0.47
Control Delay	21.1	14.6	19.1	9.4		14.9	0.1	5.1	7.4
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	21.1	14.6	19.1	9.4		14.9	0.1	5.1	7.4
LOS	C	B	B	A		B	A	A	A
Approach Delay		18.9		13.3		13.7			7.1
Approach LOS		B		B		B			A
Queue Length 50th (ft)	26	9	21	9		111	0	6	74
Queue Length 95th (ft)	56	28	47	35		232	0	21	166
Internal Link Dist (ft)		1120		720		420			720
Turn Bay Length (ft)	150		25				175	125	
Base Capacity (vph)	479	634	570	751		1044	1022	677	1414
Starvation Cap Reductn	0	0	0	0		0	0	0	0
Spillback Cap Reductn	0	0	0	0		0	0	0	0
Storage Cap Reductn	0	0	0	0		0	0	0	0
Reduced v/c Ratio	0.20	0.08	0.14	0.16		0.44	0.04	0.09	0.39

Intersection Summary

Cycle Length: 64
Actuated Cycle Length: 47.3
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.49
Intersection Signal Delay: 11.4
Intersection LOS: B
Intersection Capacity Utilization 64.1%
ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 6: NH108/Durham Road & Mast Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	28	10	64	29	64	16	389	36	56	420	65
Future Volume (vph)	76	28	10	64	29	64	16	389	36	56	420	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	0.90			1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1583	1484		1770	1668			1804	1615	1805	1780	
Flt Permitted	0.68	1.00		0.73	1.00			0.97	1.00	0.33	1.00	
Satd. Flow (perm)	1135	1484		1352	1668			1756	1615	632	1780	
Peak-hour factor, PHF	0.80	0.80	0.80	0.79	0.79	0.79	0.89	0.89	0.89	0.87	0.87	0.87
Adj. Flow (vph)	95	35	12	81	37	81	18	437	40	64	483	75
RTOR Reduction (vph)	0	10	0	0	65	0	0	0	21	0	8	0
Lane Group Flow (vph)	95	38	0	81	53	0	0	455	19	64	550	0
Heavy Vehicles (%)	14%	9%	60%	2%	7%	0%	80%	2%	0%	0%	3%	15%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		8			4			2		1	6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	8.1	8.1		8.1	8.1			21.6	21.6	30.9	30.9	
Effective Green, g (s)	10.1	10.1		10.1	10.1			23.6	23.6	32.9	32.9	
Actuated g/C Ratio	0.20	0.20		0.20	0.20			0.46	0.46	0.65	0.65	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	224	293		267	330			812	747	529	1148	
v/s Ratio Prot		0.03			0.03					0.01	c0.31	
v/s Ratio Perm	c0.08			0.06				c0.26	0.01	0.07		
v/c Ratio	0.42	0.13		0.30	0.16			0.56	0.02	0.12	0.48	
Uniform Delay, d1	17.9	16.8		17.4	16.9			9.9	7.4	4.2	4.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.3	0.2		0.6	0.2			0.9	0.0	0.1	0.3	
Delay (s)	19.2	17.0		18.1	17.2			10.8	7.5	4.3	5.0	
Level of Service	B	B		B	B			B	A	A	A	
Approach Delay (s)		18.5			17.5			10.6			4.9	
Approach LOS		B			B			B			A	

Intersection Summary

HCM 2000 Control Delay	9.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	51.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	0	44	1	0	16	48	388	1	4	450	71
Future Vol, veh/h	30	0	44	1	0	16	48	388	1	4	450	71
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	110	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	60	60	60	71	71	71	93	93	93	89	89	89
Heavy Vehicles, %	8	0	6	0	0	0	11	4	0	0	5	5
Mvmt Flow	50	0	73	1	0	23	52	417	1	4	506	80

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1087	1076	546	1113	1116	418	586	0	0	418	0	0
Stage 1	554	554	-	522	522	-	-	-	-	-	-	-
Stage 2	533	522	-	591	594	-	-	-	-	-	-	-
Critical Hdwy	7.18	6.5	6.26	7.1	6.5	6.2	4.21	-	-	4.1	-	-
Critical Hdwy Stg 1	6.18	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.18	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.572	4	3.354	3.5	4	3.3	2.299	-	-	2.2	-	-
Pot Cap-1 Maneuver	188	221	530	187	209	639	946	-	-	1152	-	-
Stage 1	506	517	-	542	534	-	-	-	-	-	-	-
Stage 2	520	534	-	497	496	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	173	208	530	154	197	639	946	-	-	1152	-	-
Mov Cap-2 Maneuver	173	208	-	154	197	-	-	-	-	-	-	-
Stage 1	478	515	-	512	505	-	-	-	-	-	-	-
Stage 2	474	505	-	427	495	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21.5	12	1	0.1
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	946	-	-	173	530	539	1152	-	-
HCM Lane V/C Ratio	0.055	-	-	0.289	0.138	0.044	0.004	-	-
HCM Control Delay (s)	9	-	-	34.1	12.9	12	8.1	-	-
HCM Lane LOS	A	-	-	D	B	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	1.1	0.5	0.1	0	-	-

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	72	18	14	88	11	18	0	48	7	0	1
Future Vol, veh/h	2	72	18	14	88	11	18	0	48	7	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	60	60	60	79	79	79	67	67	67
Heavy Vehicles, %	20	11	0	0	22	22	0	0	0	15	0	0
Mvmt Flow	3	96	24	23	147	18	23	0	61	10	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	165	0	0	120	0	0	317	325	108	347	328	156
Stage 1	-	-	-	-	-	-	114	114	-	202	202	-
Stage 2	-	-	-	-	-	-	203	211	-	145	126	-
Critical Hdwy	4.3	-	-	4.1	-	-	7.1	6.5	6.2	7.25	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.25	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.25	5.5	-
Follow-up Hdwy	2.38	-	-	2.2	-	-	3.5	4	3.3	3.635	4	3.3
Pot Cap-1 Maneuver	1311	-	-	1480	-	-	640	596	951	584	594	895
Stage 1	-	-	-	-	-	-	896	805	-	771	738	-
Stage 2	-	-	-	-	-	-	804	731	-	828	796	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1311	-	-	1480	-	-	630	585	951	540	583	895
Mov Cap-2 Maneuver	-	-	-	-	-	-	630	585	-	540	583	-
Stage 1	-	-	-	-	-	-	894	803	-	769	726	-
Stage 2	-	-	-	-	-	-	790	719	-	774	794	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.9	9.8	11.5
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	835	1311	-	-	1480	-	-	568
HCM Lane V/C Ratio	0.1	0.002	-	-	0.016	-	-	0.021
HCM Control Delay (s)	9.8	7.8	0	-	7.5	-	-	11.5
HCM Lane LOS	A	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.1

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	81	30	70	32	17	430	40	62	462
Future Volume (vph)	81	30	70	32	17	430	40	62	462
Lane Group Flow (vph)	101	52	89	131	0	502	45	71	614
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		8		4		2		1	6
Permitted Phases	8		4		2		2	6	
Detector Phase	8	8	4	4	2	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	22.0	22.0	9.0	22.0
Total Split (s)	22.0	22.0	22.0	22.0	28.0	28.0	28.0	14.0	42.0
Total Split (%)	34.4%	34.4%	34.4%	34.4%	43.8%	43.8%	43.8%	21.9%	65.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0
Lead/Lag					Lag	Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	Min	None	Min
Act Effct Green (s)	12.4	12.4	12.4	12.4		26.3	26.3	31.3	32.7
Actuated g/C Ratio	0.25	0.25	0.25	0.25		0.54	0.54	0.64	0.67
v/c Ratio	0.35	0.13	0.26	0.27		0.53	0.05	0.12	0.51
Control Delay	21.9	14.7	19.7	9.4		16.4	0.1	5.3	8.0
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	21.9	14.7	19.7	9.4		16.4	0.1	5.3	8.0
LOS	C	B	B	A		B	A	A	A
Approach Delay		19.5		13.6		15.1			7.7
Approach LOS		B		B		B			A
Queue Length 50th (ft)	29	10	25	11		130	0	7	89
Queue Length 95th (ft)	59	29	51	37		#302	0	23	195
Internal Link Dist (ft)		1120		720		420			720
Turn Bay Length (ft)	150		25				175	125	
Base Capacity (vph)	458	615	550	734		1016	999	646	1395
Starvation Cap Reductn	0	0	0	0		0	0	0	0
Spillback Cap Reductn	0	0	0	0		0	0	0	0
Storage Cap Reductn	0	0	0	0		0	0	0	0
Reduced v/c Ratio	0.22	0.08	0.16	0.18		0.49	0.05	0.11	0.44

Intersection Summary

Cycle Length: 64
Actuated Cycle Length: 48.7
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.53
Intersection Signal Delay: 12.2 Intersection LOS: B
Intersection Capacity Utilization 69.3% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 6: NH108/Durham Road & Mast Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	30	11	70	32	71	17	430	40	62	462	72
Future Volume (vph)	81	30	11	70	32	71	17	430	40	62	462	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	0.90			1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1583	1486		1770	1668			1807	1615	1805	1779	
Flt Permitted	0.67	1.00		0.72	1.00			0.97	1.00	0.30	1.00	
Satd. Flow (perm)	1122	1486		1347	1668			1756	1615	571	1779	
Peak-hour factor, PHF	0.80	0.80	0.80	0.79	0.79	0.79	0.89	0.89	0.89	0.87	0.87	0.87
Adj. Flow (vph)	101	38	14	89	41	90	19	483	45	71	531	83
RTOR Reduction (vph)	0	11	0	0	72	0	0	0	24	0	8	0
Lane Group Flow (vph)	101	41	0	89	59	0	0	502	21	71	606	0
Heavy Vehicles (%)	14%	9%	60%	2%	7%	0%	80%	2%	0%	0%	3%	15%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		8			4			2		1	6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	8.4	8.4		8.4	8.4			22.8	22.8	32.2	32.2	
Effective Green, g (s)	10.4	10.4		10.4	10.4			24.8	24.8	34.2	34.2	
Actuated g/C Ratio	0.20	0.20		0.20	0.20			0.47	0.47	0.65	0.65	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	221	293		266	329			827	761	497	1156	
v/s Ratio Prot		0.03			0.04					0.01	c0.34	
v/s Ratio Perm	c0.09			0.07				c0.29	0.01	0.08		
v/c Ratio	0.46	0.14		0.33	0.18			0.61	0.03	0.14	0.52	
Uniform Delay, d1	18.6	17.4		18.1	17.5			10.3	7.4	4.5	4.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.5	0.2		0.7	0.3			1.3	0.0	0.1	0.4	
Delay (s)	20.1	17.6		18.9	17.8			11.6	7.5	4.7	5.3	
Level of Service	C	B		B	B			B	A	A	A	
Approach Delay (s)		19.3			18.2			11.2			5.2	
Approach LOS		B			B			B			A	

Intersection Summary

HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	52.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	0	44	1	0	16	48	429	1	4	498	71
Future Vol, veh/h	30	0	44	1	0	16	48	429	1	4	498	71
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	110	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	60	60	60	71	71	71	93	93	93	89	89	89
Heavy Vehicles, %	8	0	6	0	0	0	11	4	0	0	5	5
Mvmt Flow	50	0	73	1	0	23	52	461	1	4	560	80

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1185	1174	600	1211	1214	462	640	0	0	462	0	0
Stage 1	608	608	-	566	566	-	-	-	-	-	-	-
Stage 2	577	566	-	645	648	-	-	-	-	-	-	-
Critical Hdwy	7.18	6.5	6.26	7.1	6.5	6.2	4.21	-	-	4.1	-	-
Critical Hdwy Stg 1	6.18	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.18	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.572	4	3.354	3.5	4	3.3	2.299	-	-	2.2	-	-
Pot Cap-1 Maneuver	161	193	494	161	183	604	903	-	-	1110	-	-
Stage 1	473	489	-	513	511	-	-	-	-	-	-	-
Stage 2	492	511	-	464	469	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	148	181	494	131	172	604	903	-	-	1110	-	-
Mov Cap-2 Maneuver	148	181	-	131	172	-	-	-	-	-	-	-
Stage 1	446	487	-	483	481	-	-	-	-	-	-	-
Stage 2	446	481	-	394	467	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	24.8	12.6	0.9	0.1
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	903	-	-	148	494	498	1110	-	-
HCM Lane V/C Ratio	0.057	-	-	0.338	0.148	0.048	0.004	-	-
HCM Control Delay (s)	9.2	-	-	41.3	13.6	12.6	8.3	-	-
HCM Lane LOS	A	-	-	E	B	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	1.4	0.5	0.2	0	-	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	64	23	17	79	11	20	0	37	7	0	1
Future Vol, veh/h	2	64	23	17	79	11	20	0	37	7	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	60	60	60	90	90	90	67	67	67
Heavy Vehicles, %	0	25	4	0	22	55	10	0	0	57	0	0
Mvmt Flow	3	85	31	28	132	18	22	0	41	10	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	150	0	0	116	0	0	305	313	101	324	319	141
Stage 1	-	-	-	-	-	-	107	107	-	197	197	-
Stage 2	-	-	-	-	-	-	198	206	-	127	122	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.2	6.5	6.2	7.67	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.2	5.5	-	6.67	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.2	5.5	-	6.67	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.59	4	3.3	4.013	4	3.3
Pot Cap-1 Maneuver	1444	-	-	1485	-	-	632	606	960	536	601	912
Stage 1	-	-	-	-	-	-	879	811	-	694	742	-
Stage 2	-	-	-	-	-	-	786	735	-	760	799	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1444	-	-	1485	-	-	621	593	960	505	588	912
Mov Cap-2 Maneuver	-	-	-	-	-	-	621	593	-	505	588	-
Stage 1	-	-	-	-	-	-	877	809	-	693	728	-
Stage 2	-	-	-	-	-	-	770	721	-	726	797	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	1.2	9.8	11.9
HCM LOS			A	B

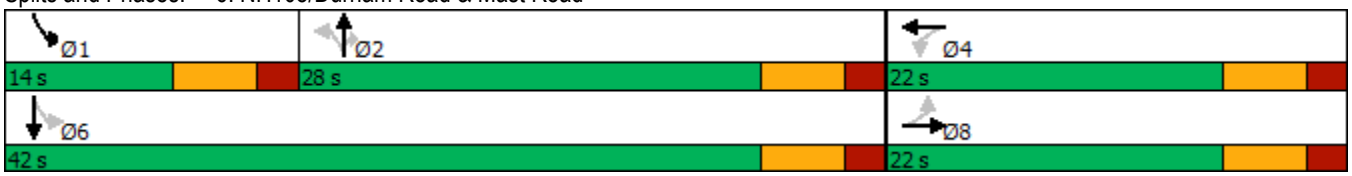
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	806	1444	-	-	1485	-	-	535
HCM Lane V/C Ratio	0.079	0.002	-	-	0.019	-	-	0.022
HCM Control Delay (s)	9.8	7.5	0	-	7.5	-	-	11.9
HCM Lane LOS	A	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0.1	-	-	0.1

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	70	28	64	29	16	402	37	56	427
Future Volume (vph)	70	28	64	29	16	402	37	56	427
Lane Group Flow (vph)	88	48	81	118	0	470	42	64	568
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		8		4		2		1	6
Permitted Phases	8		4		2		2	6	
Detector Phase	8	8	4	4	2	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	22.0	22.0	9.0	22.0
Total Split (s)	22.0	22.0	22.0	22.0	28.0	28.0	28.0	14.0	42.0
Total Split (%)	34.4%	34.4%	34.4%	34.4%	43.8%	43.8%	43.8%	21.9%	65.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0
Lead/Lag					Lag	Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	Min	None	Min
Act Effct Green (s)	11.7	11.7	11.7	11.7		25.5	25.5	30.4	31.8
Actuated g/C Ratio	0.25	0.25	0.25	0.25		0.54	0.54	0.65	0.68
v/c Ratio	0.30	0.13	0.24	0.25		0.49	0.04	0.10	0.47
Control Delay	20.9	14.8	19.6	9.6		14.5	0.1	4.8	7.1
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	20.9	14.8	19.6	9.6		14.5	0.1	4.8	7.1
LOS	C	B	B	A		B	A	A	A
Approach Delay		18.8		13.6		13.3			6.8
Approach LOS		B		B		B			A
Queue Length 50th (ft)	24	9	22	10		114	0	6	73
Queue Length 95th (ft)	53	28	47	36		234	0	20	160
Internal Link Dist (ft)		1120		720		420			720
Turn Bay Length (ft)	150		25				175	125	
Base Capacity (vph)	494	638	568	748		1043	1019	677	1424
Starvation Cap Reductn	0	0	0	0		0	0	0	0
Spillback Cap Reductn	0	0	0	0		0	0	0	0
Storage Cap Reductn	0	0	0	0		0	0	0	0
Reduced v/c Ratio	0.18	0.08	0.14	0.16		0.45	0.04	0.09	0.40

Intersection Summary

Cycle Length: 64
Actuated Cycle Length: 47.1
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.49
Intersection Signal Delay: 11.1
Intersection LOS: B
Intersection Capacity Utilization 63.7%
ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 6: NH108/Durham Road & Mast Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	28	10	64	29	64	16	402	37	56	427	67
Future Volume (vph)	70	28	10	64	29	64	16	402	37	56	427	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	0.90			1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1641	1502		1770	1668			1810	1615	1805	1784	
Flt Permitted	0.68	1.00		0.73	1.00			0.97	1.00	0.33	1.00	
Satd. Flow (perm)	1176	1502		1352	1668			1762	1615	619	1784	
Peak-hour factor, PHF	0.80	0.80	0.80	0.79	0.79	0.79	0.89	0.89	0.89	0.87	0.87	0.87
Adj. Flow (vph)	88	35	12	81	37	81	18	452	42	64	491	77
RTOR Reduction (vph)	0	11	0	0	66	0	0	0	22	0	8	0
Lane Group Flow (vph)	88	37	0	81	52	0	0	470	20	64	560	0
Heavy Vehicles (%)	10%	7%	60%	2%	7%	0%	75%	2%	0%	0%	3%	13%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		8			4			2		1	6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	7.6	7.6		7.6	7.6			22.0	22.0	31.3	31.3	
Effective Green, g (s)	9.6	9.6		9.6	9.6			24.0	24.0	33.3	33.3	
Actuated g/C Ratio	0.19	0.19		0.19	0.19			0.47	0.47	0.65	0.65	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	221	283		254	314			830	761	528	1167	
v/s Ratio Prot		0.02			0.03					0.01	c0.31	
v/s Ratio Perm	c0.07			0.06				c0.27	0.01	0.07		
v/c Ratio	0.40	0.13		0.32	0.17			0.57	0.03	0.12	0.48	
Uniform Delay, d1	18.1	17.2		17.8	17.3			9.7	7.2	4.1	4.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.2	0.2		0.7	0.3			0.9	0.0	0.1	0.3	
Delay (s)	19.3	17.4		18.6	17.6			10.6	7.2	4.2	4.7	
Level of Service	B	B		B	B			B	A	A	A	
Approach Delay (s)		18.6			18.0			10.3			4.7	
Approach LOS		B			B			B			A	

Intersection Summary

HCM 2000 Control Delay	9.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	50.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	55	0	40	1	0	16	53	383	1	4	444	84
Future Vol, veh/h	55	0	40	1	0	16	53	383	1	4	444	84
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	71	71	71	93	93	93	89	89	89
Heavy Vehicles, %	4	0	3	0	0	0	4	4	0	0	5	2
Mvmt Flow	61	0	44	1	0	23	57	412	1	4	499	94

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1092	1081	546	1103	1128	413	593	0	0	413	0	0
Stage 1	554	554	-	527	527	-	-	-	-	-	-	-
Stage 2	538	527	-	576	601	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.5	6.23	7.1	6.5	6.2	4.14	-	-	4.1	-	-
Critical Hdwy Stg 1	6.14	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4	3.327	3.5	4	3.3	2.236	-	-	2.2	-	-
Pot Cap-1 Maneuver	190	220	536	190	206	643	973	-	-	1157	-	-
Stage 1	513	517	-	538	532	-	-	-	-	-	-	-
Stage 2	524	532	-	506	493	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	175	206	536	166	193	643	973	-	-	1157	-	-
Mov Cap-2 Maneuver	175	206	-	166	193	-	-	-	-	-	-	-
Stage 1	483	515	-	506	501	-	-	-	-	-	-	-
Stage 2	476	501	-	462	492	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	26.1	11.8	1.1	0.1
HCM LOS	D	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	973	-	-	175	536	550	1157	-	-
HCM Lane V/C Ratio	0.059	-	-	0.349	0.083	0.044	0.004	-	-
HCM Control Delay (s)	8.9	-	-	36.2	12.3	11.8	8.1	-	-
HCM Lane LOS	A	-	-	E	B	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	1.5	0.3	0.1	0	-	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	54	16	58	79	17	41
Future Vol, veh/h	54	16	58	79	17	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	6	0	0	5	0	0
Mvmt Flow	60	18	64	88	19	46

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	78	0	285	69
Stage 1	-	-	-	-	69	-
Stage 2	-	-	-	-	216	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1533	-	710	1000
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	825	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1533	-	679	1000
Mov Cap-2 Maneuver	-	-	-	-	679	-
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	789	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.2	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	878	-	-	1533	-
HCM Lane V/C Ratio	0.073	-	-	0.042	-
HCM Control Delay (s)	9.4	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	13	0	429	480	0
Future Vol, veh/h	0	13	0	429	480	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	4	5	0
Mvmt Flow	0	14	0	477	533	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	533	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	551	0	-	-	0
Stage 1	0	-	0	-	-	0
Stage 2	0	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	551	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	551	-
HCM Lane V/C Ratio	-	0.026	-
HCM Control Delay (s)	-	11.7	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.1	-

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	71	23	17	87	11	20	0	37	7	0	1
Future Vol, veh/h	2	71	23	17	87	11	20	0	37	7	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	25	4	0	22	55	10	0	0	57	0	0
Mvmt Flow	2	79	26	19	97	12	22	0	41	8	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	109	0	0	105	0	0	238	243	92	258	250	103
Stage 1	-	-	-	-	-	-	96	96	-	141	141	-
Stage 2	-	-	-	-	-	-	142	147	-	117	109	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.2	6.5	6.2	7.67	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.2	5.5	-	6.67	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.2	5.5	-	6.67	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.59	4	3.3	4.013	4	3.3
Pot Cap-1 Maneuver	1494	-	-	1499	-	-	700	662	971	596	656	957
Stage 1	-	-	-	-	-	-	891	819	-	747	784	-
Stage 2	-	-	-	-	-	-	842	779	-	770	809	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1494	-	-	1499	-	-	692	653	971	565	647	957
Mov Cap-2 Maneuver	-	-	-	-	-	-	692	653	-	565	647	-
Stage 1	-	-	-	-	-	-	890	818	-	746	774	-
Stage 2	-	-	-	-	-	-	830	769	-	737	808	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	1.1	9.6	11.1
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	851	1494	-	-	1499	-	-	595
HCM Lane V/C Ratio	0.074	0.001	-	-	0.013	-	-	0.015
HCM Control Delay (s)	9.6	7.4	0	-	7.4	-	-	11.1
HCM Lane LOS	A	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	75	30	70	32	17	443	41	62	469
Future Volume (vph)	75	30	70	32	17	443	41	62	469
Lane Group Flow (vph)	83	45	78	115	0	511	46	69	603
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		8		4		2		1	6
Permitted Phases	8		4		2		2	6	
Detector Phase	8	8	4	4	2	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	22.0	22.0	9.0	22.0
Total Split (s)	22.0	22.0	22.0	22.0	28.0	28.0	28.0	14.0	42.0
Total Split (%)	34.4%	34.4%	34.4%	34.4%	43.8%	43.8%	43.8%	21.9%	65.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0
Lead/Lag					Lag	Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	Min	None	Min
Act Effct Green (s)	11.5	11.5	11.5	11.5		26.3	26.3	31.3	32.6
Actuated g/C Ratio	0.24	0.24	0.24	0.24		0.55	0.55	0.66	0.68
v/c Ratio	0.29	0.12	0.24	0.25		0.53	0.05	0.11	0.49
Control Delay	21.2	15.1	19.9	9.8		15.4	0.1	4.8	7.2
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	21.2	15.1	19.9	9.8		15.4	0.1	4.8	7.2
LOS	C	B	B	A		B	A	A	A
Approach Delay		19.0		13.9		14.2			6.9
Approach LOS		B		B		B			A
Queue Length 50th (ft)	24	9	22	10		127	0	7	79
Queue Length 95th (ft)	58	31	54	44		#298	0	21	184
Internal Link Dist (ft)		1120		720		420			720
Turn Bay Length (ft)	150		25				175	125	
Base Capacity (vph)	487	629	560	735		1032	1009	656	1418
Starvation Cap Reductn	0	0	0	0		0	0	0	0
Spillback Cap Reductn	0	0	0	0		0	0	0	0
Storage Cap Reductn	0	0	0	0		0	0	0	0
Reduced v/c Ratio	0.17	0.07	0.14	0.16		0.50	0.05	0.11	0.43

Intersection Summary

Cycle Length: 64
Actuated Cycle Length: 47.7
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.53
Intersection Signal Delay: 11.4 Intersection LOS: B
Intersection Capacity Utilization 69.0% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 6: NH108/Durham Road & Mast Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	30	11	70	32	71	17	443	41	62	469	74
Future Volume (vph)	75	30	11	70	32	71	17	443	41	62	469	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	0.90			1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1641	1506		1770	1668			1811	1615	1805	1783	
Flt Permitted	0.68	1.00		0.73	1.00			0.97	1.00	0.30	1.00	
Satd. Flow (perm)	1180	1506		1356	1668			1762	1615	569	1783	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	83	33	12	78	36	79	19	492	46	69	521	82
RTOR Reduction (vph)	0	10	0	0	64	0	0	0	24	0	7	0
Lane Group Flow (vph)	83	35	0	78	51	0	0	511	22	69	596	0
Heavy Vehicles (%)	10%	7%	60%	2%	7%	0%	75%	2%	0%	0%	3%	13%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		8			4			2		1	6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	7.5	7.5		7.5	7.5			22.8	22.8	32.2	32.2	
Effective Green, g (s)	9.5	9.5		9.5	9.5			24.8	24.8	34.2	34.2	
Actuated g/C Ratio	0.18	0.18		0.18	0.18			0.48	0.48	0.66	0.66	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	216	276		249	306			845	774	505	1179	
v/s Ratio Prot		0.02			0.03					0.01	c0.33	
v/s Ratio Perm	c0.07			0.06				c0.29	0.01	0.08		
v/c Ratio	0.38	0.13		0.31	0.17			0.60	0.03	0.14	0.51	
Uniform Delay, d1	18.5	17.6		18.3	17.8			9.9	7.1	4.3	4.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.1	0.2		0.7	0.3			1.2	0.0	0.1	0.3	
Delay (s)	19.7	17.8		19.0	18.0			11.1	7.1	4.4	4.8	
Level of Service	B	B		B	B			B	A	A	A	
Approach Delay (s)		19.0			18.4			10.8			4.7	
Approach LOS		B			B			B			A	

Intersection Summary

HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	51.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	55	0	40	1	0	16	53	424	1	4	492	84
Future Vol, veh/h	55	0	40	1	0	16	53	424	1	4	492	84
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	71	71	71	93	93	93	89	89	89
Heavy Vehicles, %	4	0	3	0	0	0	4	4	0	0	5	2
Mvmt Flow	61	0	44	1	0	23	57	456	1	4	553	94

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1190	1179	600	1201	1226	457	647	0	0	457	0	0
Stage 1	608	608	-	571	571	-	-	-	-	-	-	-
Stage 2	582	571	-	630	655	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.5	6.23	7.1	6.5	6.2	4.14	-	-	4.1	-	-
Critical Hdwy Stg 1	6.14	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4	3.327	3.5	4	3.3	2.236	-	-	2.2	-	-
Pot Cap-1 Maneuver	163	192	499	163	180	608	929	-	-	1114	-	-
Stage 1	479	489	-	509	508	-	-	-	-	-	-	-
Stage 2	495	508	-	473	466	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	149	180	499	141	168	608	929	-	-	1114	-	-
Mov Cap-2 Maneuver	149	180	-	141	168	-	-	-	-	-	-	-
Stage 1	450	487	-	478	477	-	-	-	-	-	-	-
Stage 2	447	477	-	429	464	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	31.5	12.4	1	0.1
HCM LOS	D	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	929	-	-	149	499	509	1114	-	-
HCM Lane V/C Ratio	0.061	-	-	0.41	0.089	0.047	0.004	-	-
HCM Control Delay (s)	9.1	-	-	45	12.9	12.4	8.2	-	-
HCM Lane LOS	A	-	-	E	B	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	1.8	0.3	0.1	0	-	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	54	16	58	79	17	41
Future Vol, veh/h	54	16	58	79	17	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	6	0	0	5	0	0
Mvmt Flow	60	18	64	88	19	46

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	78	0	285	69
Stage 1	-	-	-	-	69	-
Stage 2	-	-	-	-	216	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1533	-	710	1000
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	825	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1533	-	679	1000
Mov Cap-2 Maneuver	-	-	-	-	679	-
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	789	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.2	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	878	-	-	1533	-
HCM Lane V/C Ratio	0.073	-	-	0.042	-
HCM Control Delay (s)	9.4	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	13	0	470	528	0
Future Vol, veh/h	0	13	0	470	528	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	4	5	0
Mvmt Flow	0	14	0	522	587	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	587	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	513	0	-	-	0
Stage 1	0	-	0	-	-	0
Stage 2	0	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	513	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	513	-
HCM Lane V/C Ratio	-	0.028	-
HCM Control Delay (s)	-	12.2	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.1	-

APPENDIX G

PM Synchro

2024 – BASE

2025, 2035 – No-Build

2025, 2035 – Build

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	86	12	12	57	27	17	0	33	48	4	9
Future Vol, veh/h	5	86	12	12	57	27	17	0	33	48	4	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	87	87	87	80	80	80	41	41	41
Heavy Vehicles, %	20	11	0	0	22	22	0	0	0	15	0	0
Mvmt Flow	6	106	15	14	66	31	21	0	41	117	10	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	97	0	0	121	0	0	252	251	114	256	243	82
Stage 1	-	-	-	-	-	-	126	126	-	110	110	-
Stage 2	-	-	-	-	-	-	126	125	-	146	133	-
Critical Hdwy	4.3	-	-	4.1	-	-	7.1	6.5	6.2	7.25	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.25	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.25	5.5	-
Follow-up Hdwy	2.38	-	-	2.2	-	-	3.5	4	3.3	3.635	4	3.3
Pot Cap-1 Maneuver	1391	-	-	1479	-	-	706	656	944	671	662	983
Stage 1	-	-	-	-	-	-	883	796	-	864	808	-
Stage 2	-	-	-	-	-	-	883	796	-	827	790	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1391	-	-	1479	-	-	675	647	944	635	653	983
Mov Cap-2 Maneuver	-	-	-	-	-	-	675	647	-	635	653	-
Stage 1	-	-	-	-	-	-	879	792	-	860	801	-
Stage 2	-	-	-	-	-	-	845	789	-	787	786	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.9	9.7	11.9
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	831	1391	-	-	1479	-	-	671
HCM Lane V/C Ratio	0.075	0.004	-	-	0.009	-	-	0.222
HCM Control Delay (s)	9.7	7.6	0	-	7.5	-	-	11.9
HCM Lane LOS	A	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.8

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	57	37	71	21	2	594	92	79	533
Future Volume (vph)	57	37	71	21	2	594	92	79	533
Lane Group Flow (vph)	76	54	97	166	0	655	101	81	583
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		8		4		2		1	6
Permitted Phases	8		4		2		2	6	
Detector Phase	8	8	4	4	2	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	22.0	22.0	9.0	22.0
Total Split (s)	22.0	22.0	22.0	22.0	28.0	28.0	28.0	14.0	42.0
Total Split (%)	34.4%	34.4%	34.4%	34.4%	43.8%	43.8%	43.8%	21.9%	65.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0
Lead/Lag					Lag	Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	Min	None	Min
Act Effct Green (s)	11.5	11.5	11.5	11.5		28.2	28.2	33.7	34.9
Actuated g/C Ratio	0.23	0.23	0.23	0.23		0.56	0.56	0.67	0.70
v/c Ratio	0.28	0.13	0.31	0.34		0.62	0.10	0.16	0.45
Control Delay	21.4	17.2	21.3	8.1		18.2	1.4	5.1	6.8
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	21.4	17.2	21.3	8.1		18.2	1.4	5.1	6.8
LOS	C	B	C	A		B	A	A	A
Approach Delay		19.6		13.0		16.0			6.6
Approach LOS		B		B		B			A
Queue Length 50th (ft)	22	13	28	8		179	0	8	76
Queue Length 95th (ft)	44	31	51	30		#422	12	25	179
Internal Link Dist (ft)		1120		720		420			720
Turn Bay Length (ft)	150		25				175	125	
Base Capacity (vph)	443	696	519	714		1055	973	559	1433
Starvation Cap Reductn	0	0	0	0		0	0	0	0
Spillback Cap Reductn	0	0	0	0		0	0	0	0
Storage Cap Reductn	0	0	0	0		0	0	0	0
Reduced v/c Ratio	0.17	0.08	0.19	0.23		0.62	0.10	0.14	0.41

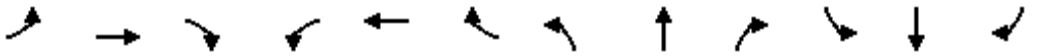
Intersection Summary

Cycle Length: 64
Actuated Cycle Length: 50.2
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.62
Intersection Signal Delay: 12.4 Intersection LOS: B
Intersection Capacity Utilization 85.4% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 6: NH108/Durham Road & Mast Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	37	4	71	21	100	2	594	92	79	533	33
Future Volume (vph)	57	37	4	71	21	100	2	594	92	79	533	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	0.88			1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	1831		1805	1665			1881	1615	1805	1854	
Flt Permitted	0.62	1.00		0.72	1.00			1.00	1.00	0.21	1.00	
Satd. Flow (perm)	1172	1831		1371	1665			1879	1615	391	1854	
Peak-hour factor, PHF	0.75	0.75	0.75	0.73	0.73	0.73	0.91	0.91	0.91	0.97	0.97	0.97
Adj. Flow (vph)	76	49	5	97	29	137	2	653	101	81	549	34
RTOR Reduction (vph)	0	4	0	0	112	0	0	0	51	0	3	0
Lane Group Flow (vph)	76	50	0	97	54	0	0	655	50	81	580	0
Heavy Vehicles (%)	0%	0%	25%	0%	0%	0%	0%	1%	0%	0%	0%	27%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		8			4			2		1	6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	7.7	7.7		7.7	7.7			24.9	24.9	34.5	34.5	
Effective Green, g (s)	9.7	9.7		9.7	9.7			26.9	26.9	36.5	36.5	
Actuated g/C Ratio	0.18	0.18		0.18	0.18			0.50	0.50	0.67	0.67	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	209	327		245	297			932	801	409	1248	
v/s Ratio Prot		0.03			0.03					0.02	c0.31	
v/s Ratio Perm	0.06			c0.07				c0.35	0.03	0.11		
v/c Ratio	0.36	0.15		0.40	0.18			0.70	0.06	0.20	0.46	
Uniform Delay, d1	19.5	18.8		19.7	18.9			10.6	7.1	5.5	4.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.1	0.2		1.1	0.3			2.4	0.0	0.2	0.3	
Delay (s)	20.6	19.0		20.7	19.2			13.0	7.1	5.8	4.5	
Level of Service	C	B		C	B			B	A	A	A	
Approach Delay (s)		19.9			19.7			12.2			4.6	
Approach LOS		B			B			B			A	

Intersection Summary

HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	54.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection												
Int Delay, s/veh	13.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	115	2	59	2	0	10	60	521	2	22	423	157
Future Vol, veh/h	115	2	59	2	0	10	60	521	2	22	423	157
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	110	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	60	60	60	94	94	94	91	91	91
Heavy Vehicles, %	0	0	0	0	0	10	0	1	0	0	0	1
Mvmt Flow	124	2	63	3	0	17	64	554	2	24	465	173

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1292	1284	552	1315	1369	555	638	0	0	556	0	0
Stage 1	600	600	-	683	683	-	-	-	-	-	-	-
Stage 2	692	684	-	632	686	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.3	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.39	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	141	166	537	136	148	516	956	-	-	1025	-	-
Stage 1	491	493	-	442	452	-	-	-	-	-	-	-
Stage 2	437	452	-	472	451	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	127	151	537	111	135	516	956	-	-	1025	-	-
Mov Cap-2 Maneuver	127	151	-	111	135	-	-	-	-	-	-	-
Stage 1	458	482	-	412	422	-	-	-	-	-	-	-
Stage 2	395	422	-	405	441	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	99.8	17	0.9	0.3
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	956	-	-	127	537	321	1025	-	-
HCM Lane V/C Ratio	0.067	-	-	0.991	0.118	0.062	0.024	-	-
HCM Control Delay (s)	9	-	-	143.7	12.6	17	8.6	-	-
HCM Lane LOS	A	-	-	F	B	C	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	6.8	0.4	0.2	0.1	-	-

Intersection												
Int Delay, s/veh	6.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	86	15	16	56	27	22	0	63	48	4	9
Future Vol, veh/h	5	86	15	16	56	27	22	0	63	48	4	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	87	87	87	80	80	80	41	41	41
Heavy Vehicles, %	20	11	0	0	22	22	0	0	0	15	0	0
Mvmt Flow	6	106	19	18	64	31	28	0	79	117	10	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	95	0	0	125	0	0	260	259	116	283	253	80
Stage 1	-	-	-	-	-	-	128	128	-	116	116	-
Stage 2	-	-	-	-	-	-	132	131	-	167	137	-
Critical Hdwy	4.3	-	-	4.1	-	-	7.1	6.5	6.2	7.25	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.25	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.25	5.5	-
Follow-up Hdwy	2.38	-	-	2.2	-	-	3.5	4	3.3	3.635	4	3.3
Pot Cap-1 Maneuver	1393	-	-	1474	-	-	697	649	942	644	654	986
Stage 1	-	-	-	-	-	-	881	794	-	858	803	-
Stage 2	-	-	-	-	-	-	876	792	-	805	787	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1393	-	-	1474	-	-	665	638	942	582	643	986
Mov Cap-2 Maneuver	-	-	-	-	-	-	665	638	-	582	643	-
Stage 1	-	-	-	-	-	-	877	790	-	854	793	-
Stage 2	-	-	-	-	-	-	836	782	-	734	783	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	1.2	9.8	12.6
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	850	1393	-	-	1474	-	-	624
HCM Lane V/C Ratio	0.125	0.004	-	-	0.012	-	-	0.238
HCM Control Delay (s)	9.8	7.6	0	-	7.5	-	-	12.6
HCM Lane LOS	A	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0.9

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	76	41	74	22	2	602	93	80	554
Future Volume (vph)	76	41	74	22	2	602	93	80	554
Lane Group Flow (vph)	101	60	101	168	0	664	102	82	608
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		8		4		2		1	6
Permitted Phases	8		4		2		2	6	
Detector Phase	8	8	4	4	2	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	22.0	22.0	9.0	22.0
Total Split (s)	22.0	22.0	22.0	22.0	28.0	28.0	28.0	14.0	42.0
Total Split (%)	34.4%	34.4%	34.4%	34.4%	43.8%	43.8%	43.8%	21.9%	65.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0
Lead/Lag					Lag	Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	Min	None	Min
Act Effct Green (s)	12.2	12.2	12.2	12.2		28.4	28.4	33.9	35.1
Actuated g/C Ratio	0.24	0.24	0.24	0.24		0.56	0.56	0.66	0.69
v/c Ratio	0.36	0.14	0.31	0.33		0.64	0.11	0.17	0.48
Control Delay	22.6	17.1	21.0	7.9		19.2	1.4	5.5	7.4
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	22.6	17.1	21.0	7.9		19.2	1.4	5.5	7.4
LOS	C	B	C	A		B	A	A	A
Approach Delay		20.5		12.8		16.8			7.2
Approach LOS		C		B		B			A
Queue Length 50th (ft)	29	15	29	8		189	0	8	86
Queue Length 95th (ft)	55	33	52	30		#439	12	26	199
Internal Link Dist (ft)		1120		720		420			720
Turn Bay Length (ft)	150		25				175	125	
Base Capacity (vph)	433	686	507	706		1044	965	542	1415
Starvation Cap Reductn	0	0	0	0		0	0	0	0
Spillback Cap Reductn	0	0	0	0		0	0	0	0
Storage Cap Reductn	0	0	0	0		0	0	0	0
Reduced v/c Ratio	0.23	0.09	0.20	0.24		0.64	0.11	0.15	0.43

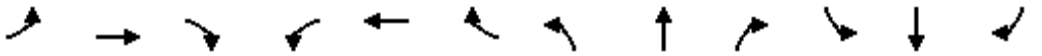
Intersection Summary

Cycle Length: 64
Actuated Cycle Length: 51.1
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.64
Intersection Signal Delay: 13.1 Intersection LOS: B
Intersection Capacity Utilization 88.1% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 6: NH108/Durham Road & Mast Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	41	4	74	22	101	2	602	93	80	554	36
Future Volume (vph)	76	41	4	74	22	101	2	602	93	80	554	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	0.88			1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	1838		1805	1666			1881	1615	1805	1852	
Flt Permitted	0.61	1.00		0.72	1.00			1.00	1.00	0.19	1.00	
Satd. Flow (perm)	1164	1838		1364	1666			1879	1615	370	1852	
Peak-hour factor, PHF	0.75	0.75	0.75	0.73	0.73	0.73	0.91	0.91	0.91	0.97	0.97	0.97
Adj. Flow (vph)	101	55	5	101	30	138	2	662	102	82	571	37
RTOR Reduction (vph)	0	4	0	0	112	0	0	0	52	0	3	0
Lane Group Flow (vph)	101	56	0	101	56	0	0	664	50	82	605	0
Heavy Vehicles (%)	0%	0%	25%	0%	0%	0%	0%	1%	0%	0%	0%	27%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		8			4			2		1	6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	8.4	8.4		8.4	8.4			25.1	25.1	34.8	34.8	
Effective Green, g (s)	10.4	10.4		10.4	10.4			27.1	27.1	36.8	36.8	
Actuated g/C Ratio	0.19	0.19		0.19	0.19			0.49	0.49	0.67	0.67	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	219	346		256	313			922	792	394	1234	
v/s Ratio Prot		0.03			0.03					0.02	c0.33	
v/s Ratio Perm	c0.09			0.07				c0.35	0.03	0.12		
v/c Ratio	0.46	0.16		0.39	0.18			0.72	0.06	0.21	0.49	
Uniform Delay, d1	19.9	18.8		19.6	18.8			11.1	7.4	5.9	4.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.5	0.2		1.0	0.3			2.8	0.0	0.3	0.3	
Delay (s)	21.4	19.0		20.6	19.1			13.9	7.4	6.2	4.9	
Level of Service	C	B		C	B			B	A	A	A	
Approach Delay (s)		20.5			19.7			13.0			5.0	
Approach LOS		C			B			B			A	

Intersection Summary

HCM 2000 Control Delay	11.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	55.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	88.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	19.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	120	2	78	2	0	10	90	515	2	22	416	187
Future Vol, veh/h	120	2	78	2	0	10	90	515	2	22	416	187
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	110	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	60	60	60	94	94	94	91	91	91
Heavy Vehicles, %	0	0	0	0	0	10	0	1	0	0	0	1
Mvmt Flow	129	2	84	3	0	17	96	548	2	24	457	205

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1358	1350	560	1392	1451	549	662	0	0	550	0	0
Stage 1	608	608	-	741	741	-	-	-	-	-	-	-
Stage 2	750	742	-	651	710	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.3	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.39	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 127	152	532	121	132	520	936	-	-	1030	-	-
Stage 1	486	489	-	411	426	-	-	-	-	-	-	-
Stage 2	407	425	-	461	440	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 111	133	532	91	116	520	936	-	-	1030	-	-
Mov Cap-2 Maneuver	~ 111	133	-	91	116	-	-	-	-	-	-	-
Stage 1	436	478	-	369	382	-	-	-	-	-	-	-
Stage 2	354	381	-	378	430	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	136.8	18.3	1.4	0.3
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	936	-	-	111	532	291	1030	-	-
HCM Lane V/C Ratio	0.102	-	-	1.182	0.158	0.069	0.023	-	-
HCM Control Delay (s)	9.3	-	-	215.9	13	18.3	8.6	-	-
HCM Lane LOS	A	-	-	F	B	C	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	8.4	0.6	0.2	0.1	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	95	15	16	62	27	22	0	63	48	4	9
Future Vol, veh/h	5	95	15	16	62	27	22	0	63	48	4	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	87	87	87	80	80	80	41	41	41
Heavy Vehicles, %	20	11	0	0	22	22	0	0	0	15	0	0
Mvmt Flow	6	117	19	18	71	31	28	0	79	117	10	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	102	0	0	136	0	0	278	277	127	301	271	87
Stage 1	-	-	-	-	-	-	139	139	-	123	123	-
Stage 2	-	-	-	-	-	-	139	138	-	178	148	-
Critical Hdwy	4.3	-	-	4.1	-	-	7.1	6.5	6.2	7.25	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.25	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.25	5.5	-
Follow-up Hdwy	2.38	-	-	2.2	-	-	3.5	4	3.3	3.635	4	3.3
Pot Cap-1 Maneuver	1385	-	-	1461	-	-	678	634	929	626	639	977
Stage 1	-	-	-	-	-	-	869	785	-	851	798	-
Stage 2	-	-	-	-	-	-	869	786	-	794	779	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1385	-	-	1461	-	-	646	623	929	565	628	977
Mov Cap-2 Maneuver	-	-	-	-	-	-	646	623	-	565	628	-
Stage 1	-	-	-	-	-	-	865	781	-	847	788	-
Stage 2	-	-	-	-	-	-	829	777	-	723	775	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	1.1	9.9	12.8
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	834	1385	-	-	1461	-	-	607
HCM Lane V/C Ratio	0.127	0.004	-	-	0.013	-	-	0.245
HCM Control Delay (s)	9.9	7.6	0	-	7.5	-	-	12.8
HCM Lane LOS	A	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	1

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	82	45	82	25	2	665	103	88	610
Future Volume (vph)	82	45	82	25	2	665	103	88	610
Lane Group Flow (vph)	109	65	112	187	0	733	113	91	669
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		8		4		2		1	6
Permitted Phases	8		4		2		2	6	
Detector Phase	8	8	4	4	2	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	22.0	22.0	9.0	22.0
Total Split (s)	22.0	22.0	22.0	22.0	28.0	28.0	28.0	14.0	42.0
Total Split (%)	34.4%	34.4%	34.4%	34.4%	43.8%	43.8%	43.8%	21.9%	65.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0
Lead/Lag					Lag	Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	Min	None	Min
Act Effct Green (s)	12.7	12.7	12.7	12.7		27.3	27.3	37.5	37.5
Actuated g/C Ratio	0.22	0.22	0.22	0.22		0.47	0.47	0.64	0.64
v/c Ratio	0.46	0.16	0.38	0.39		0.83	0.14	0.23	0.56
Control Delay	26.3	17.7	22.9	8.1		28.8	1.9	6.3	8.7
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	26.3	17.7	22.9	8.1		28.8	1.9	6.3	8.7
LOS	C	B	C	A		C	A	A	A
Approach Delay		23.0		13.6		25.2			8.4
Approach LOS		C		B		C			A
Queue Length 50th (ft)	33	17	33	9		228	0	10	105
Queue Length 95th (ft)	60	35	56	32		#507	17	29	235
Internal Link Dist (ft)		1120		720		420			720
Turn Bay Length (ft)	150		25				175	125	
Base Capacity (vph)	334	575	421	622		879	837	425	1223
Starvation Cap Reductn	0	0	0	0		0	0	0	0
Spillback Cap Reductn	0	0	0	0		0	0	0	0
Storage Cap Reductn	0	0	0	0		0	0	0	0
Reduced v/c Ratio	0.33	0.11	0.27	0.30		0.83	0.14	0.21	0.55

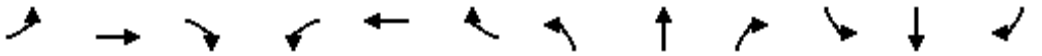
Intersection Summary

Cycle Length: 64
Actuated Cycle Length: 58.2
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 17.2 Intersection LOS: B
Intersection Capacity Utilization 95.7% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 6: NH108/Durham Road & Mast Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	45	4	82	25	112	2	665	103	88	610	39
Future Volume (vph)	82	45	4	82	25	112	2	665	103	88	610	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	0.88			1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	1843		1805	1667			1881	1615	1805	1853	
Flt Permitted	0.57	1.00		0.71	1.00			1.00	1.00	0.13	1.00	
Satd. Flow (perm)	1079	1843		1358	1667			1879	1615	243	1853	
Peak-hour factor, PHF	0.75	0.75	0.75	0.73	0.73	0.73	0.91	0.91	0.91	0.97	0.97	0.97
Adj. Flow (vph)	109	60	5	112	34	153	2	731	113	91	629	40
RTOR Reduction (vph)	0	4	0	0	120	0	0	0	61	0	3	0
Lane Group Flow (vph)	109	61	0	112	67	0	0	733	52	91	666	0
Heavy Vehicles (%)	0%	0%	25%	0%	0%	0%	0%	1%	0%	0%	0%	27%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		8			4			2		1	6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	10.7	10.7		10.7	10.7			25.3	25.3	36.8	36.8	
Effective Green, g (s)	12.7	12.7		12.7	12.7			27.3	27.3	38.8	38.8	
Actuated g/C Ratio	0.21	0.21		0.21	0.21			0.46	0.46	0.65	0.65	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	230	393		289	355			862	741	355	1208	
v/s Ratio Prot		0.03			0.04					0.03	c0.36	
v/s Ratio Perm	c0.10			0.08				c0.39	0.03	0.13		
v/c Ratio	0.47	0.16		0.39	0.19			0.85	0.07	0.26	0.55	
Uniform Delay, d1	20.5	19.0		20.1	19.2			14.3	9.0	8.4	5.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.5	0.2		0.9	0.3			8.1	0.0	0.4	0.5	
Delay (s)	22.0	19.2		20.9	19.4			22.3	9.0	8.8	6.2	
Level of Service	C	B		C	B			C	A	A	A	
Approach Delay (s)		21.0			20.0			20.6			6.5	
Approach LOS		C			B			C			A	

Intersection Summary

HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	59.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	95.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Intersection												
Int Delay, s/veh	26.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	120	2	78	2	0	10	90	570	2	22	460	187
Future Vol, veh/h	120	2	78	2	0	10	90	570	2	22	460	187
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	110	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	60	60	60	94	94	94	91	91	91
Heavy Vehicles, %	0	0	0	0	0	10	0	1	0	0	0	1
Mvmt Flow	129	2	84	3	0	17	96	606	2	24	505	205

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1464	1456	608	1498	1557	607	710	0	0	608	0	0
Stage 1	656	656	-	799	799	-	-	-	-	-	-	-
Stage 2	808	800	-	699	758	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.3	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.39	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 107	131	499	102	114	482	899	-	-	980	-	-
Stage 1	458	465	-	382	401	-	-	-	-	-	-	-
Stage 2	378	400	-	434	418	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 93	114	499	75	99	482	899	-	-	980	-	-
Mov Cap-2 Maneuver	~ 93	114	-	75	99	-	-	-	-	-	-	-
Stage 1	409	454	-	341	358	-	-	-	-	-	-	-
Stage 2	326	357	-	351	408	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	199.3	20.4	1.3	0.3
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	899	-	-	93	499	253	980	-	-
HCM Lane V/C Ratio	0.107	-	-	1.411	0.168	0.079	0.025	-	-
HCM Control Delay (s)	9.5	-	-	$ 318	13.7	20.4	8.8	-	-
HCM Lane LOS	A	-	-	F	B	C	A	-	-
HCM 95th %tile Q(veh)	0.4	-	-	9.8	0.6	0.3	0.1	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	85	17	18	54	27	22	0	56	48	4	9
Future Vol, veh/h	5	85	17	18	54	27	22	0	56	48	4	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	87	87	87	90	90	90	41	41	41
Heavy Vehicles, %	20	11	0	0	22	22	0	0	0	15	0	0
Mvmt Flow	6	105	21	21	62	31	24	0	62	117	10	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	93	0	0	126	0	0	264	263	116	279	258	78
Stage 1	-	-	-	-	-	-	128	128	-	120	120	-
Stage 2	-	-	-	-	-	-	136	135	-	159	138	-
Critical Hdwy	4.3	-	-	4.1	-	-	7.1	6.5	6.2	7.25	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.25	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.25	5.5	-
Follow-up Hdwy	2.38	-	-	2.2	-	-	3.5	4	3.3	3.635	4	3.3
Pot Cap-1 Maneuver	1396	-	-	1473	-	-	693	646	942	648	650	988
Stage 1	-	-	-	-	-	-	881	794	-	854	800	-
Stage 2	-	-	-	-	-	-	872	789	-	813	786	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1396	-	-	1473	-	-	660	634	942	596	638	988
Mov Cap-2 Maneuver	-	-	-	-	-	-	660	634	-	596	638	-
Stage 1	-	-	-	-	-	-	877	790	-	850	789	-
Stage 2	-	-	-	-	-	-	830	778	-	756	782	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	1.4	9.8	12.4
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	841	1396	-	-	1473	-	-	636
HCM Lane V/C Ratio	0.103	0.004	-	-	0.014	-	-	0.234
HCM Control Delay (s)	9.8	7.6	0	-	7.5	-	-	12.4
HCM Lane LOS	A	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.9

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	72	41	75	22	2	610	94	80	561
Future Volume (vph)	72	41	75	22	2	610	94	80	561
Lane Group Flow (vph)	96	60	103	168	0	672	103	82	615
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		8		4		2		1	6
Permitted Phases	8		4		2		2	6	
Detector Phase	8	8	4	4	2	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	22.0	22.0	9.0	22.0
Total Split (s)	22.0	22.0	22.0	22.0	28.0	28.0	28.0	14.0	42.0
Total Split (%)	34.4%	34.4%	34.4%	34.4%	43.8%	43.8%	43.8%	21.9%	65.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0
Lead/Lag					Lag	Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	Min	None	Min
Act Effct Green (s)	11.9	11.9	11.9	11.9		28.4	28.4	34.0	35.2
Actuated g/C Ratio	0.23	0.23	0.23	0.23		0.56	0.56	0.67	0.69
v/c Ratio	0.35	0.14	0.32	0.34		0.64	0.11	0.17	0.48
Control Delay	22.5	17.2	21.3	8.0		19.2	1.4	5.4	7.3
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	22.5	17.2	21.3	8.0		19.2	1.4	5.4	7.3
LOS	C	B	C	A		B	A	A	A
Approach Delay		20.5		13.1		16.9			7.1
Approach LOS		C		B		B			A
Queue Length 50th (ft)	28	15	30	8		191	0	8	87
Queue Length 95th (ft)	53	33	53	30		#443	13	26	198
Internal Link Dist (ft)		1120		720		420			720
Turn Bay Length (ft)	150		25				175	125	
Base Capacity (vph)	430	685	506	705		1047	968	539	1423
Starvation Cap Reductn	0	0	0	0		0	0	0	0
Spillback Cap Reductn	0	0	0	0		0	0	0	0
Storage Cap Reductn	0	0	0	0		0	0	0	0
Reduced v/c Ratio	0.22	0.09	0.20	0.24		0.64	0.11	0.15	0.43

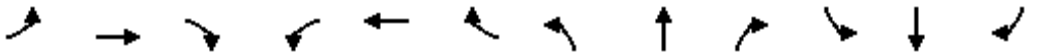
Intersection Summary

Cycle Length: 64
Actuated Cycle Length: 51
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.64
Intersection Signal Delay: 13.0 Intersection LOS: B
Intersection Capacity Utilization 87.9% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 6: NH108/Durham Road & Mast Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	41	4	75	22	101	2	610	94	80	561	36
Future Volume (vph)	72	41	4	75	22	101	2	610	94	80	561	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	0.88			1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	1838		1805	1666			1881	1615	1805	1855	
Flt Permitted	0.61	1.00		0.72	1.00			1.00	1.00	0.19	1.00	
Satd. Flow (perm)	1161	1838		1364	1666			1879	1615	364	1855	
Peak-hour factor, PHF	0.75	0.75	0.75	0.73	0.73	0.73	0.91	0.91	0.91	0.97	0.97	0.97
Adj. Flow (vph)	96	55	5	103	30	138	2	670	103	82	578	37
RTOR Reduction (vph)	0	4	0	0	112	0	0	0	52	0	3	0
Lane Group Flow (vph)	96	56	0	103	56	0	0	672	51	82	612	0
Heavy Vehicles (%)	0%	0%	25%	0%	0%	0%	0%	1%	0%	0%	0%	25%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		8			4			2		1	6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	8.2	8.2		8.2	8.2			25.2	25.2	34.9	34.9	
Effective Green, g (s)	10.2	10.2		10.2	10.2			27.2	27.2	36.9	36.9	
Actuated g/C Ratio	0.19	0.19		0.19	0.19			0.49	0.49	0.67	0.67	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	214	340		252	308			927	797	392	1242	
v/s Ratio Prot		0.03			0.03					0.02	c0.33	
v/s Ratio Perm	c0.08			0.08				c0.36	0.03	0.12		
v/c Ratio	0.45	0.16		0.41	0.18			0.72	0.06	0.21	0.49	
Uniform Delay, d1	20.0	18.9		19.8	18.9			11.0	7.3	6.0	4.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.5	0.2		1.1	0.3			2.8	0.0	0.3	0.3	
Delay (s)	21.4	19.1		20.9	19.2			13.8	7.3	6.2	4.8	
Level of Service	C	B		C	B			B	A	A	A	
Approach Delay (s)		20.5			19.8			13.0			5.0	
Approach LOS		C			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	11.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	55.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	87.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection

Int Delay, s/veh	28											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	138	2	76	2	0	10	91	513	2	22	412	199
Future Vol, veh/h	138	2	76	2	0	10	91	513	2	22	412	199
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	60	60	60	94	94	94	91	91	91
Heavy Vehicles, %	0	0	0	0	0	10	0	1	0	0	0	1
Mvmt Flow	148	2	82	3	0	17	97	546	2	24	453	219

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1361	1353	563	1394	1461	547	672	0	0	548	0	0
Stage 1	611	611	-	741	741	-	-	-	-	-	-	-
Stage 2	750	742	-	653	720	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.3	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.39	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 127	151	530	120	130	522	928	-	-	1032	-	-
Stage 1	484	487	-	411	426	-	-	-	-	-	-	-
Stage 2	407	425	-	460	435	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 111	132	530	91	114	522	928	-	-	1032	-	-
Mov Cap-2 Maneuver	~ 111	132	-	91	114	-	-	-	-	-	-	-
Stage 1	433	476	-	368	381	-	-	-	-	-	-	-
Stage 2	353	380	-	378	425	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	185.7	18.2	1.4	0.3
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	928	-	-	111	530	292	1032	-	-
HCM Lane V/C Ratio	0.104	-	-	1.356	0.154	0.068	0.023	-	-
HCM Control Delay (s)	9.3	-	-	279.5	13	18.2	8.6	-	-
HCM Lane LOS	A	-	-	F	B	C	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	10.4	0.5	0.2	0.1	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	188	6	40	249	8	28
Future Vol, veh/h	188	6	40	249	8	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	209	7	44	277	9	31

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	216	0	578	213
Stage 1	-	-	-	-	213	-
Stage 2	-	-	-	-	365	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1366	-	481	832
Stage 1	-	-	-	-	827	-
Stage 2	-	-	-	-	707	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1366	-	463	832
Mov Cap-2 Maneuver	-	-	-	-	463	-
Stage 1	-	-	-	-	827	-
Stage 2	-	-	-	-	680	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	707	-	-	1366	-
HCM Lane V/C Ratio	0.057	-	-	0.033	-
HCM Control Delay (s)	10.4	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	7	0	593	486	0
Future Vol, veh/h	0	7	0	593	486	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	1	0	0
Mvmt Flow	0	8	0	659	540	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	540	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	546	0	-	-	0
Stage 1	0	-	0	-	-	0
Stage 2	0	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	546	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	546	-
HCM Lane V/C Ratio	-	0.014	-
HCM Control Delay (s)	-	11.7	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0	-

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↰	↱			↕			↕	
Traffic Vol, veh/h	5	94	17	18	60	27	22	0	56	48	4	9
Future Vol, veh/h	5	94	17	18	60	27	22	0	56	48	4	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	20	11	0	0	22	22	0	0	0	15	0	0
Mvmt Flow	6	104	19	20	67	30	24	0	62	53	4	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	97	0	0	123	0	0	255	263	114	279	257	82
Stage 1	-	-	-	-	-	-	126	126	-	122	122	-
Stage 2	-	-	-	-	-	-	129	137	-	157	135	-
Critical Hdwy	4.3	-	-	4.1	-	-	7.1	6.5	6.2	7.25	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.25	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.25	5.5	-
Follow-up Hdwy	2.38	-	-	2.2	-	-	3.5	4	3.3	3.635	4	3.3
Pot Cap-1 Maneuver	1391	-	-	1477	-	-	702	646	944	648	651	983
Stage 1	-	-	-	-	-	-	883	796	-	852	799	-
Stage 2	-	-	-	-	-	-	880	787	-	815	789	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1391	-	-	1477	-	-	682	634	944	597	639	983
Mov Cap-2 Maneuver	-	-	-	-	-	-	682	634	-	597	639	-
Stage 1	-	-	-	-	-	-	879	792	-	848	788	-
Stage 2	-	-	-	-	-	-	854	776	-	757	785	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	1.3	9.7	11.3
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	852	1391	-	-	1477	-	-	637
HCM Lane V/C Ratio	0.102	0.004	-	-	0.014	-	-	0.106
HCM Control Delay (s)	9.7	7.6	0	-	7.5	-	-	11.3
HCM Lane LOS	A	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.4

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	78	45	83	25	2	673	104	88	617
Future Volume (vph)	78	45	83	25	2	673	104	88	617
Lane Group Flow (vph)	87	54	92	152	0	742	114	91	676
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		8		4		2		1	6
Permitted Phases	8		4		2		2	6	
Detector Phase	8	8	4	4	2	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	22.0	22.0	9.0	22.0
Total Split (s)	22.0	22.0	22.0	22.0	28.0	28.0	28.0	14.0	42.0
Total Split (%)	34.4%	34.4%	34.4%	34.4%	43.8%	43.8%	43.8%	21.9%	65.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0
Lead/Lag					Lag	Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	Min	None	Min
Act Effct Green (s)	11.2	11.2	11.2	11.2		29.2	29.2	37.9	39.0
Actuated g/C Ratio	0.21	0.21	0.21	0.21		0.54	0.54	0.70	0.72
v/c Ratio	0.35	0.14	0.33	0.34		0.74	0.12	0.21	0.51
Control Delay	23.4	18.0	22.4	8.6		23.2	1.8	5.4	7.2
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	23.4	18.0	22.4	8.6		23.2	1.8	5.4	7.2
LOS	C	B	C	A		C	A	A	A
Approach Delay		21.3		13.8		20.4			7.0
Approach LOS		C		B		C			A
Queue Length 50th (ft)	25	14	26	8		219	0	9	96
Queue Length 95th (ft)	60	38	62	47		#492	16	26	216
Internal Link Dist (ft)		1120		720		420			720
Turn Bay Length (ft)	150		25				175	125	
Base Capacity (vph)	405	622	460	642		1007	936	473	1360
Starvation Cap Reductn	0	0	0	0		0	0	0	0
Spillback Cap Reductn	0	0	0	0		0	0	0	0
Storage Cap Reductn	0	0	0	0		0	0	0	0
Reduced v/c Ratio	0.21	0.09	0.20	0.24		0.74	0.12	0.19	0.50

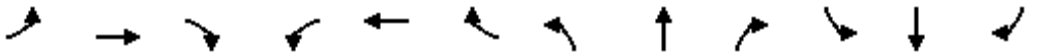
Intersection Summary

Cycle Length: 64
Actuated Cycle Length: 54.4
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 14.5 Intersection LOS: B
Intersection Capacity Utilization 95.7% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 6: NH108/Durham Road & Mast Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	45	4	83	25	112	2	673	104	88	617	39
Future Volume (vph)	78	45	4	83	25	112	2	673	104	88	617	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	0.88			1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	1845		1805	1668			1881	1615	1805	1856	
Flt Permitted	0.64	1.00		0.72	1.00			1.00	1.00	0.14	1.00	
Satd. Flow (perm)	1208	1845		1371	1668			1879	1615	267	1856	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.91	0.91	0.91	0.97	0.97	0.97
Adj. Flow (vph)	87	50	4	92	28	124	2	740	114	91	636	40
RTOR Reduction (vph)	0	3	0	0	103	0	0	0	58	0	3	0
Lane Group Flow (vph)	87	51	0	92	49	0	0	742	56	91	673	0
Heavy Vehicles (%)	0%	0%	25%	0%	0%	0%	0%	1%	0%	0%	0%	25%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		8			4			2		1	6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	7.8	7.8		7.8	7.8			26.1	26.1	37.3	37.3	
Effective Green, g (s)	9.8	9.8		9.8	9.8			28.1	28.1	39.3	39.3	
Actuated g/C Ratio	0.17	0.17		0.17	0.17			0.49	0.49	0.69	0.69	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	207	316		235	286			924	794	377	1277	
v/s Ratio Prot		0.03			0.03					0.03	c0.36	
v/s Ratio Perm	c0.07			0.07				c0.39	0.03	0.14		
v/c Ratio	0.42	0.16		0.39	0.17			0.80	0.07	0.24	0.53	
Uniform Delay, d1	21.1	20.1		21.0	20.2			12.2	7.6	7.1	4.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.4	0.2		1.1	0.3			5.1	0.0	0.3	0.4	
Delay (s)	22.5	20.4		22.1	20.5			17.3	7.7	7.4	4.7	
Level of Service	C	C		C	C			B	A	A	A	
Approach Delay (s)		21.7			21.1			16.0			5.1	
Approach LOS		C			C			B			A	

Intersection Summary

HCM 2000 Control Delay	12.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	57.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	95.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Intersection												
Int Delay, s/veh	37.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	138	2	76	2	0	10	91	568	2	22	456	199
Future Vol, veh/h	138	2	76	2	0	10	91	568	2	22	456	199
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	60	60	60	94	94	94	91	91	91
Heavy Vehicles, %	0	0	0	0	0	10	0	1	0	0	0	1
Mvmt Flow	148	2	82	3	0	17	97	604	2	24	501	219

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1467	1459	611	1500	1567	605	720	0	0	606	0	0
Stage 1	659	659	-	799	799	-	-	-	-	-	-	-
Stage 2	808	800	-	701	768	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.3	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.39	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 107	131	497	101	112	483	891	-	-	982	-	-
Stage 1	456	464	-	382	401	-	-	-	-	-	-	-
Stage 2	378	400	-	433	414	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 93	114	497	75	97	483	891	-	-	982	-	-
Mov Cap-2 Maneuver	~ 93	114	-	75	97	-	-	-	-	-	-	-
Stage 1	406	453	-	340	357	-	-	-	-	-	-	-
Stage 2	325	356	-	351	404	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	264.7	20.4	1.3	0.3
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	891	-	-	93	497	253	982	-	-
HCM Lane V/C Ratio	0.109	-	-	1.619	0.164	0.079	0.025	-	-
HCM Control Delay (s)	9.5	-	-	$ 401	13.7	20.4	8.8	-	-
HCM Lane LOS	A	-	-	F	B	C	A	-	-
HCM 95th %tile Q(veh)	0.4	-	-	11.9	0.6	0.3	0.1	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	188	6	40	249	8	28
Future Vol, veh/h	188	6	40	249	8	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	209	7	44	277	9	31

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	216	0	578	213
Stage 1	-	-	-	-	213	-
Stage 2	-	-	-	-	365	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1366	-	481	832
Stage 1	-	-	-	-	827	-
Stage 2	-	-	-	-	707	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1366	-	463	832
Mov Cap-2 Maneuver	-	-	-	-	463	-
Stage 1	-	-	-	-	827	-
Stage 2	-	-	-	-	680	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	707	-	-	1366	-
HCM Lane V/C Ratio	0.057	-	-	0.033	-
HCM Control Delay (s)	10.4	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	7	0	648	530	0
Future Vol, veh/h	0	7	0	648	530	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	1	0	0
Mvmt Flow	0	8	0	720	589	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	589	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	512	0	-	-	0
Stage 1	0	-	0	-	-	0
Stage 2	0	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	512	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	512	-
HCM Lane V/C Ratio	-	0.015	-
HCM Control Delay (s)	-	12.1	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0	-

APPENDIX H

SAT Synchro

2024 – BASE

2025, 2035 – No-Build

2025, 2035 – Build

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	116	22	13	147	0	21	3	34	1	3	1
Future Vol, veh/h	1	116	22	13	147	0	21	3	34	1	3	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	78	78	78	70	70	70	42	42	42
Heavy Vehicles, %	0	1	5	0	0	0	5	0	0	0	0	0
Mvmt Flow	1	141	27	17	188	0	30	4	49	2	7	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	188	0	0	168	0	0	384	379	155	405	392	188
Stage 1	-	-	-	-	-	-	157	157	-	222	222	-
Stage 2	-	-	-	-	-	-	227	222	-	183	170	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.15	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.15	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.15	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.545	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1398	-	-	1422	-	-	569	556	896	560	547	859
Stage 1	-	-	-	-	-	-	838	772	-	785	723	-
Stage 2	-	-	-	-	-	-	769	723	-	823	762	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1398	-	-	1422	-	-	556	549	896	521	540	859
Mov Cap-2 Maneuver	-	-	-	-	-	-	556	549	-	521	540	-
Stage 1	-	-	-	-	-	-	837	771	-	784	714	-
Stage 2	-	-	-	-	-	-	750	714	-	773	761	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.6	10.7	11.3
HCM LOS			B	B

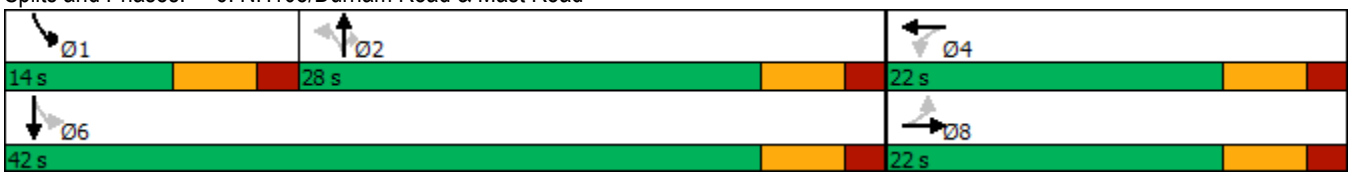
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	714	1398	-	-	1422	-	-	579
HCM Lane V/C Ratio	0.116	0.001	-	-	0.012	-	-	0.021
HCM Control Delay (s)	10.7	7.6	0	-	7.6	-	-	11.3
HCM Lane LOS	B	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0.1

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	104	41	52	49	5	413	44	49	366
Future Volume (vph)	104	41	52	49	5	413	44	49	366
Lane Group Flow (vph)	130	64	58	116	0	481	51	56	532
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		8		4		2		1	6
Permitted Phases	8		4		2		2	6	
Detector Phase	8	8	4	4	2	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	22.0	22.0	9.0	22.0
Total Split (s)	22.0	22.0	22.0	22.0	28.0	28.0	28.0	14.0	42.0
Total Split (%)	34.4%	34.4%	34.4%	34.4%	43.8%	43.8%	43.8%	21.9%	65.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0
Lead/Lag					Lag	Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	Min	None	Min
Act Effct Green (s)	12.9	12.9	12.8	12.8		25.0	25.0	29.8	31.1
Actuated g/C Ratio	0.27	0.27	0.27	0.27		0.53	0.53	0.63	0.65
v/c Ratio	0.37	0.13	0.16	0.23		0.50	0.06	0.09	0.44
Control Delay	20.9	14.7	17.9	10.8		15.2	0.1	5.4	7.1
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	20.9	14.7	17.9	10.8		15.2	0.1	5.4	7.1
LOS	C	B	B	B		B	A	A	A
Approach Delay		18.9		13.2		13.7			6.9
Approach LOS		B		B		B			A
Queue Length 50th (ft)	36	13	15	14		122	0	6	70
Queue Length 95th (ft)	71	34	42	49		236	0	20	154
Internal Link Dist (ft)		1120		720		420			720
Turn Bay Length (ft)	150		25				175	125	
Base Capacity (vph)	548	771	574	775		1096	1002	651	1441
Starvation Cap Reductn	0	0	0	0		0	0	0	0
Spillback Cap Reductn	0	0	0	0		0	0	0	0
Storage Cap Reductn	0	0	0	0		0	0	0	0
Reduced v/c Ratio	0.24	0.08	0.10	0.15		0.44	0.05	0.09	0.37

Intersection Summary

Cycle Length: 64
Actuated Cycle Length: 47.6
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.50
Intersection Signal Delay: 11.7
Intersection LOS: B
Intersection Capacity Utilization 59.8%
ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 6: NH108/Durham Road & Mast Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	41	10	52	49	56	5	413	44	49	366	102
Future Volume (vph)	104	41	10	52	49	56	5	413	44	49	366	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.92			1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	1805		1805	1748			1857	1583	1805	1824	
Flt Permitted	0.68	1.00		0.72	1.00			0.99	1.00	0.31	1.00	
Satd. Flow (perm)	1296	1805		1359	1748			1846	1583	584	1824	
Peak-hour factor, PHF	0.80	0.80	0.80	0.90	0.90	0.90	0.87	0.87	0.87	0.88	0.88	0.88
Adj. Flow (vph)	130	51	12	58	54	62	6	475	51	56	416	116
RTOR Reduction (vph)	0	10	0	0	49	0	0	0	28	0	14	0
Lane Group Flow (vph)	130	54	0	58	67	0	0	481	23	56	518	0
Heavy Vehicles (%)	0%	0%	10%	0%	0%	0%	20%	2%	2%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		8			4			2		1	6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	8.7	8.7		8.7	8.7			21.4	21.4	30.6	30.6	
Effective Green, g (s)	10.7	10.7		10.7	10.7			23.4	23.4	32.6	32.6	
Actuated g/C Ratio	0.21	0.21		0.21	0.21			0.46	0.46	0.64	0.64	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	270	376		283	364			842	722	494	1159	
v/s Ratio Prot		0.03			0.04					0.01	c0.28	
v/s Ratio Perm	c0.10			0.04				c0.26	0.01	0.06		
v/c Ratio	0.48	0.14		0.20	0.18			0.57	0.03	0.11	0.45	
Uniform Delay, d1	17.9	16.6		16.8	16.7			10.3	7.7	4.6	4.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.4	0.2		0.4	0.2			0.9	0.0	0.1	0.3	
Delay (s)	19.2	16.7		17.1	17.0			11.2	7.7	4.7	5.0	
Level of Service	B	B		B	B			B	A	A	A	
Approach Delay (s)		18.4			17.0			10.9			5.0	
Approach LOS		B			B			B			A	

Intersection Summary

HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	51.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection												
Int Delay, s/veh	5.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	98	3	54	0	3	17	38	351	0	9	309	126
Future Vol, veh/h	98	3	54	0	3	17	38	351	0	9	309	126
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	110	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	56	56	56	96	96	96	86	86	86
Heavy Vehicles, %	3	33	0	0	0	6	0	2	0	0	2	1
Mvmt Flow	120	4	66	0	5	30	40	366	0	10	359	147

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	917	899	433	934	972	366	506	0	0	366	0	0
Stage 1	453	453	-	446	446	-	-	-	-	-	-	-
Stage 2	464	446	-	488	526	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.83	6.2	7.1	6.5	6.26	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.13	5.83	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.83	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.297	3.3	3.5	4	3.354	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	252	248	627	248	254	670	1069	-	-	1204	-	-
Stage 1	584	521	-	595	577	-	-	-	-	-	-	-
Stage 2	576	525	-	565	532	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	228	237	627	212	243	670	1069	-	-	1204	-	-
Mov Cap-2 Maneuver	228	237	-	212	243	-	-	-	-	-	-	-
Stage 1	562	517	-	573	556	-	-	-	-	-	-	-
Stage 2	524	506	-	498	528	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	28.7	12.3	0.8	0.2
HCM LOS	D	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1069	-	-	228	627	530	1204	-	-
HCM Lane V/C Ratio	0.037	-	-	0.54	0.105	0.067	0.009	-	-
HCM Control Delay (s)	8.5	-	-	37.9	11.4	12.3	8	-	-
HCM Lane LOS	A	-	-	E	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	2.9	0.3	0.2	0	-	-

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	110	41	26	140	0	37	3	95	1	3	1
Future Vol, veh/h	1	110	41	26	140	0	37	3	95	1	3	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	78	78	78	70	70	70	42	42	42
Heavy Vehicles, %	0	1	5	0	0	0	5	0	0	0	0	0
Mvmt Flow	1	134	50	33	179	0	53	4	136	2	7	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	179	0	0	184	0	0	411	406	159	476	431	179
Stage 1	-	-	-	-	-	-	161	161	-	245	245	-
Stage 2	-	-	-	-	-	-	250	245	-	231	186	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.15	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.15	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.15	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.545	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1409	-	-	1403	-	-	546	537	892	503	520	869
Stage 1	-	-	-	-	-	-	834	769	-	763	707	-
Stage 2	-	-	-	-	-	-	747	707	-	776	750	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1409	-	-	1403	-	-	529	524	892	416	507	869
Mov Cap-2 Maneuver	-	-	-	-	-	-	529	524	-	416	507	-
Stage 1	-	-	-	-	-	-	833	768	-	762	690	-
Stage 2	-	-	-	-	-	-	720	690	-	654	749	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.2	11.6	12
HCM LOS			B	B

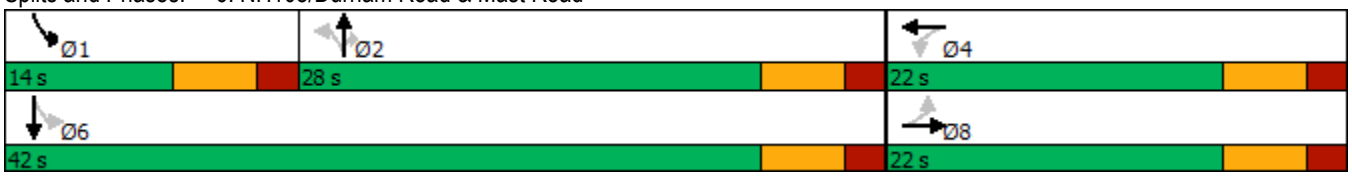
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	741	1409	-	-	1403	-	-	528
HCM Lane V/C Ratio	0.26	0.001	-	-	0.024	-	-	0.023
HCM Control Delay (s)	11.6	7.6	0	-	7.6	-	-	12
HCM Lane LOS	B	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	1	0	-	-	0.1	-	-	0.1

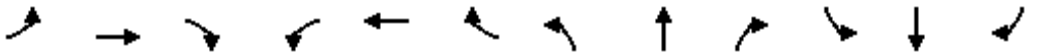
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	143	46	57	51	5	421	46	50	398
Future Volume (vph)	143	46	57	51	5	421	46	50	398
Lane Group Flow (vph)	179	71	63	119	0	490	53	57	574
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		8		4		2		1	6
Permitted Phases	8		4		2		2	6	
Detector Phase	8	8	4	4	2	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	22.0	22.0	9.0	22.0
Total Split (s)	22.0	22.0	22.0	22.0	28.0	28.0	28.0	14.0	42.0
Total Split (%)	34.4%	34.4%	34.4%	34.4%	43.8%	43.8%	43.8%	21.9%	65.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0
Lead/Lag					Lag	Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	Min	None	Min
Act Effct Green (s)	14.5	14.5	13.9	13.9		26.5	26.5	31.4	32.7
Actuated g/C Ratio	0.29	0.29	0.28	0.28		0.53	0.53	0.62	0.65
v/c Ratio	0.48	0.13	0.17	0.23		0.51	0.06	0.10	0.48
Control Delay	22.9	14.8	17.9	10.8		16.1	0.1	5.8	8.1
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	22.9	14.8	17.9	10.8		16.1	0.1	5.8	8.1
LOS	C	B	B	B		B	A	A	A
Approach Delay		20.6		13.3		14.6			7.9
Approach LOS		C		B		B			A
Queue Length 50th (ft)	54	16	17	15		137	0	7	92
Queue Length 95th (ft)	96	37	45	51		242	0	20	172
Internal Link Dist (ft)		1120		720		420			720
Turn Bay Length (ft)	150		25				175	125	
Base Capacity (vph)	507	719	529	724		1048	965	625	1414
Starvation Cap Reductn	0	0	0	0		0	0	0	0
Spillback Cap Reductn	0	0	0	0		0	0	0	0
Storage Cap Reductn	0	0	0	0		0	0	0	0
Reduced v/c Ratio	0.35	0.10	0.12	0.16		0.47	0.05	0.09	0.41

Intersection Summary

Cycle Length: 64
Actuated Cycle Length: 50.4
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.51
Intersection Signal Delay: 12.7
Intersection LOS: B
Intersection Capacity Utilization 62.8%
ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 6: NH108/Durham Road & Mast Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	143	46	10	57	51	56	5	421	46	50	398	107
Future Volume (vph)	143	46	10	57	51	56	5	421	46	50	398	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.92			1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	1815		1805	1752			1858	1583	1805	1825	
Flt Permitted	0.68	1.00		0.71	1.00			0.99	1.00	0.30	1.00	
Satd. Flow (perm)	1293	1815		1350	1752			1846	1583	573	1825	
Peak-hour factor, PHF	0.80	0.80	0.80	0.90	0.90	0.90	0.87	0.87	0.87	0.88	0.88	0.88
Adj. Flow (vph)	179	58	12	63	57	62	6	484	53	57	452	122
RTOR Reduction (vph)	0	10	0	0	48	0	0	0	29	0	14	0
Lane Group Flow (vph)	179	61	0	63	71	0	0	490	24	57	560	0
Heavy Vehicles (%)	0%	0%	10%	0%	0%	0%	20%	2%	2%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		8			4			2		1	6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	9.9	9.9		9.9	9.9			22.9	22.9	32.2	32.2	
Effective Green, g (s)	11.9	11.9		11.9	11.9			24.9	24.9	34.2	34.2	
Actuated g/C Ratio	0.22	0.22		0.22	0.22			0.46	0.46	0.63	0.63	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	284	399		296	385			849	728	482	1153	
v/s Ratio Prot		0.03			0.04					0.01	c0.31	
v/s Ratio Perm	c0.14			0.05				c0.27	0.02	0.06		
v/c Ratio	0.63	0.15		0.21	0.18			0.58	0.03	0.12	0.49	
Uniform Delay, d1	19.1	17.0		17.3	17.2			10.7	8.0	5.0	5.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.5	0.2		0.4	0.2			1.0	0.0	0.1	0.3	
Delay (s)	23.6	17.2		17.6	17.4			11.7	8.0	5.1	5.6	
Level of Service	C	B		B	B			B	A	A	A	
Approach Delay (s)		21.8			17.5			11.3			5.6	
Approach LOS		C			B			B			A	

Intersection Summary

HCM 2000 Control Delay	11.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	54.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	8.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	108	3	84	0	3	17	78	338	0	9	299	172
Future Vol, veh/h	108	3	84	0	3	17	78	338	0	9	299	172
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	110	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	56	56	56	96	96	96	86	86	86
Heavy Vehicles, %	3	33	0	0	0	6	0	2	0	0	2	1
Mvmt Flow	132	4	102	0	5	30	81	352	0	10	348	200

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1000	982	448	1035	1082	352	548	0	0	352	0	0
Stage 1	468	468	-	514	514	-	-	-	-	-	-	-
Stage 2	532	514	-	521	568	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.83	6.2	7.1	6.5	6.26	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.13	5.83	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.83	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.297	3.3	3.5	4	3.354	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	221	221	615	212	219	683	1032	-	-	1218	-	-
Stage 1	574	512	-	547	539	-	-	-	-	-	-	-
Stage 2	529	488	-	542	510	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	193	202	615	163	200	683	1032	-	-	1218	-	-
Mov Cap-2 Maneuver	193	202	-	163	200	-	-	-	-	-	-	-
Stage 1	529	508	-	504	497	-	-	-	-	-	-	-
Stage 2	461	450	-	445	506	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	38.5	12.7	1.6	0.1
HCM LOS	E	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1032	-	-	193	615	501	1218	-	-
HCM Lane V/C Ratio	0.079	-	-	0.701	0.167	0.071	0.009	-	-
HCM Control Delay (s)	8.8	-	-	58.5	12	12.7	8	-	-
HCM Lane LOS	A	-	-	F	B	B	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	4.4	0.6	0.2	0	-	-

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↰	↑			↕			↕	
Traffic Vol, veh/h	1	123	41	26	156	0	37	3	95	1	3	1
Future Vol, veh/h	1	123	41	26	156	0	37	3	95	1	3	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	78	78	78	70	70	70	42	42	42
Heavy Vehicles, %	0	1	5	0	0	0	5	0	0	0	0	0
Mvmt Flow	1	150	50	33	200	0	53	4	136	2	7	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	200	0	0	200	0	0	448	443	175	513	468	200
Stage 1	-	-	-	-	-	-	177	177	-	266	266	-
Stage 2	-	-	-	-	-	-	271	266	-	247	202	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.15	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.15	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.15	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.545	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1384	-	-	1384	-	-	516	512	874	475	496	846
Stage 1	-	-	-	-	-	-	818	756	-	744	692	-
Stage 2	-	-	-	-	-	-	728	692	-	761	738	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1384	-	-	1384	-	-	499	499	874	391	484	846
Mov Cap-2 Maneuver	-	-	-	-	-	-	499	499	-	391	484	-
Stage 1	-	-	-	-	-	-	817	755	-	743	675	-
Stage 2	-	-	-	-	-	-	701	675	-	639	737	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.1	11.9	12.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	715	1384	-	-	1384	-	-	503
HCM Lane V/C Ratio	0.27	0.001	-	-	0.024	-	-	0.024
HCM Control Delay (s)	11.9	7.6	0	-	7.7	-	-	12.3
HCM Lane LOS	B	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	1.1	0	-	-	0.1	-	-	0.1

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	154	50	62	56	6	465	50	55	436
Future Volume (vph)	154	50	62	56	6	465	50	55	436
Lane Group Flow (vph)	193	77	69	131	0	541	57	63	629
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		8		4		2		1	6
Permitted Phases	8		4		2		2	6	
Detector Phase	8	8	4	4	2	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	22.0	22.0	9.0	22.0
Total Split (s)	22.0	22.0	22.0	22.0	28.0	28.0	28.0	14.0	42.0
Total Split (%)	34.4%	34.4%	34.4%	34.4%	43.8%	43.8%	43.8%	21.9%	65.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0
Lead/Lag					Lag	Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	Min	None	Min
Act Effct Green (s)	14.7	14.7	14.7	14.7		24.4	24.4	31.1	31.1
Actuated g/C Ratio	0.27	0.27	0.27	0.27		0.45	0.45	0.57	0.57
v/c Ratio	0.56	0.15	0.19	0.25		0.65	0.07	0.13	0.59
Control Delay	25.3	15.0	18.2	10.9		19.8	0.2	6.1	9.9
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	25.3	15.0	18.2	10.9		19.8	0.2	6.1	9.9
LOS	C	B	B	B		B	A	A	A
Approach Delay		22.4		13.4		18.0			9.6
Approach LOS		C		B		B			A
Queue Length 50th (ft)	61	17	19	17		162	0	8	112
Queue Length 95th (ft)	104	40	48	54		#309	0	21	198
Internal Link Dist (ft)		1120		720		420			720
Turn Bay Length (ft)	150		25				175	125	
Base Capacity (vph)	443	639	465	652		883	838	518	1346
Starvation Cap Reductn	0	0	0	0		0	0	0	0
Spillback Cap Reductn	0	0	0	0		0	0	0	0
Storage Cap Reductn	0	0	0	0		0	0	0	0
Reduced v/c Ratio	0.44	0.12	0.15	0.20		0.61	0.07	0.12	0.47

Intersection Summary

Cycle Length: 64
Actuated Cycle Length: 54.1
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 14.8 Intersection LOS: B
Intersection Capacity Utilization 67.6% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 6: NH108/Durham Road & Mast Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	154	50	11	62	56	62	6	465	50	55	436	118
Future Volume (vph)	154	50	11	62	56	62	6	465	50	55	436	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.92			1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	1815		1805	1750			1857	1583	1805	1825	
Flt Permitted	0.67	1.00		0.71	1.00			0.99	1.00	0.24	1.00	
Satd. Flow (perm)	1279	1815		1343	1750			1842	1583	449	1825	
Peak-hour factor, PHF	0.80	0.80	0.80	0.90	0.90	0.90	0.87	0.87	0.87	0.88	0.88	0.88
Adj. Flow (vph)	192	62	14	69	62	69	7	534	57	62	495	134
RTOR Reduction (vph)	0	10	0	0	51	0	0	0	32	0	15	0
Lane Group Flow (vph)	193	67	0	69	80	0	0	541	25	63	614	0
Heavy Vehicles (%)	0%	0%	10%	0%	0%	0%	20%	2%	2%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		8			4			2		1	6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	12.6	12.6		12.6	12.6			22.3	22.3	31.9	31.9	
Effective Green, g (s)	14.6	14.6		14.6	14.6			24.3	24.3	33.9	33.9	
Actuated g/C Ratio	0.26	0.26		0.26	0.26			0.43	0.43	0.60	0.60	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	330	469		347	452			792	680	403	1095	
v/s Ratio Prot		0.04			0.05					0.02	c0.34	
v/s Ratio Perm	c0.15			0.05				c0.29	0.02	0.08		
v/c Ratio	0.58	0.14		0.20	0.18			0.68	0.04	0.16	0.56	
Uniform Delay, d1	18.3	16.1		16.4	16.3			13.0	9.3	6.5	6.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.6	0.1		0.3	0.2			2.4	0.0	0.2	0.7	
Delay (s)	20.9	16.3		16.7	16.5			15.4	9.3	6.7	7.5	
Level of Service	C	B		B	B			B	A	A	A	
Approach Delay (s)		19.6			16.5			14.9			7.4	
Approach LOS		B			B			B			A	

Intersection Summary

HCM 2000 Control Delay	12.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	56.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection												
Int Delay, s/veh	9.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	108	3	84	0	3	17	78	375	0	9	331	172
Future Vol, veh/h	108	3	84	0	3	17	78	375	0	9	331	172
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	110	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	56	56	56	96	96	96	86	86	86
Heavy Vehicles, %	3	33	0	0	0	6	0	2	0	0	2	1
Mvmt Flow	132	4	102	0	5	30	81	391	0	10	385	200

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1076	1058	485	1111	1158	391	585	0	0	391	0	0
Stage 1	505	505	-	553	553	-	-	-	-	-	-	-
Stage 2	571	553	-	558	605	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.83	6.2	7.1	6.5	6.26	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.13	5.83	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.83	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.297	3.3	3.5	4	3.354	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	196	198	586	188	198	649	1000	-	-	1179	-	-
Stage 1	548	492	-	521	518	-	-	-	-	-	-	-
Stage 2	504	467	-	518	491	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	170	181	586	142	181	649	1000	-	-	1179	-	-
Mov Cap-2 Maneuver	170	181	-	142	181	-	-	-	-	-	-	-
Stage 1	504	488	-	479	476	-	-	-	-	-	-	-
Stage 2	437	429	-	421	487	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	50.2	13.3	1.5	0.1
HCM LOS	F	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1000	-	-	170	586	468	1179	-	-
HCM Lane V/C Ratio	0.081	-	-	0.796	0.175	0.076	0.009	-	-
HCM Control Delay (s)	8.9	-	-	78.8	12.4	13.3	8.1	-	-
HCM Lane LOS	A	-	-	F	B	B	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	5.3	0.6	0.2	0	-	-

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	109	42	28	139	0	39	3	80	1	3	1
Future Vol, veh/h	1	109	42	28	139	0	39	3	80	1	3	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	78	78	78	90	90	90	42	42	42
Heavy Vehicles, %	0	1	2	0	0	0	3	0	0	0	0	0
Mvmt Flow	1	133	51	36	178	0	43	3	89	2	7	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	178	0	0	184	0	0	416	411	159	457	436	178
Stage 1	-	-	-	-	-	-	161	161	-	250	250	-
Stage 2	-	-	-	-	-	-	255	250	-	207	186	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.13	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.527	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1410	-	-	1403	-	-	545	534	892	517	517	870
Stage 1	-	-	-	-	-	-	839	769	-	759	704	-
Stage 2	-	-	-	-	-	-	747	704	-	800	750	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1410	-	-	1403	-	-	526	520	892	454	503	870
Mov Cap-2 Maneuver	-	-	-	-	-	-	526	520	-	454	503	-
Stage 1	-	-	-	-	-	-	838	768	-	758	686	-
Stage 2	-	-	-	-	-	-	718	686	-	716	749	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.3	11.2	11.9
HCM LOS			B	B

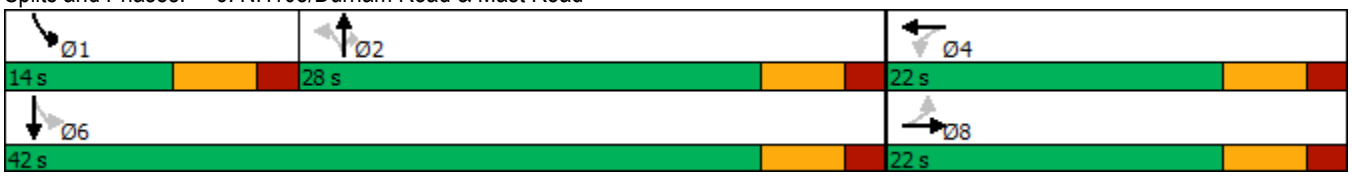
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	719	1410	-	-	1403	-	-	537
HCM Lane V/C Ratio	0.189	0.001	-	-	0.026	-	-	0.022
HCM Control Delay (s)	11.2	7.6	0	-	7.6	-	-	11.9
HCM Lane LOS	B	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0.1	-	-	0.1

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	134	46	58	51	5	436	48	50	411
Future Volume (vph)	134	46	58	51	5	436	48	50	411
Lane Group Flow (vph)	168	71	64	119	0	507	55	57	590
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		8		4		2		1	6
Permitted Phases	8		4		2		2	6	
Detector Phase	8	8	4	4	2	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	22.0	22.0	9.0	22.0
Total Split (s)	22.0	22.0	22.0	22.0	28.0	28.0	28.0	14.0	42.0
Total Split (%)	34.4%	34.4%	34.4%	34.4%	43.8%	43.8%	43.8%	21.9%	65.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0
Lead/Lag					Lag	Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	Min	None	Min
Act Effct Green (s)	14.1	14.1	13.7	13.7		26.3	26.3	31.2	32.6
Actuated g/C Ratio	0.28	0.28	0.28	0.28		0.53	0.53	0.63	0.65
v/c Ratio	0.46	0.14	0.17	0.23		0.52	0.06	0.10	0.49
Control Delay	22.6	15.0	18.1	10.9		16.4	0.1	5.7	8.0
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	22.6	15.0	18.1	10.9		16.4	0.1	5.7	8.0
LOS	C	B	B	B		B	A	A	A
Approach Delay		20.3		13.4		14.8			7.8
Approach LOS		C		B		B			A
Queue Length 50th (ft)	51	16	18	16		141	0	7	92
Queue Length 95th (ft)	91	37	45	51		253	0	20	178
Internal Link Dist (ft)		1120		720		420			720
Turn Bay Length (ft)	150		25				175	125	
Base Capacity (vph)	520	738	543	742		1049	965	624	1427
Starvation Cap Reductn	0	0	0	0		0	0	0	0
Spillback Cap Reductn	0	0	0	0		0	0	0	0
Storage Cap Reductn	0	0	0	0		0	0	0	0
Reduced v/c Ratio	0.32	0.10	0.12	0.16		0.48	0.06	0.09	0.41

Intersection Summary

Cycle Length: 64
Actuated Cycle Length: 49.8
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.52
Intersection Signal Delay: 12.7 Intersection LOS: B
Intersection Capacity Utilization 62.3% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 6: NH108/Durham Road & Mast Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	134	46	10	58	51	56	5	436	48	50	411	108
Future Volume (vph)	134	46	10	58	51	56	5	436	48	50	411	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.92			1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	1815		1805	1752			1858	1583	1805	1841	
Flt Permitted	0.68	1.00		0.71	1.00			0.99	1.00	0.29	1.00	
Satd. Flow (perm)	1293	1815		1350	1752			1846	1583	549	1841	
Peak-hour factor, PHF	0.80	0.80	0.80	0.90	0.90	0.90	0.87	0.87	0.87	0.88	0.88	0.88
Adj. Flow (vph)	168	58	12	64	57	62	6	501	55	57	467	123
RTOR Reduction (vph)	0	10	0	0	49	0	0	0	30	0	13	0
Lane Group Flow (vph)	168	61	0	64	70	0	0	507	25	57	577	0
Heavy Vehicles (%)	0%	0%	10%	0%	0%	0%	20%	2%	2%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		8			4			2		1	6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	9.6	9.6		9.6	9.6			22.7	22.7	32.0	32.0	
Effective Green, g (s)	11.6	11.6		11.6	11.6			24.7	24.7	34.0	34.0	
Actuated g/C Ratio	0.22	0.22		0.22	0.22			0.46	0.46	0.63	0.63	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	279	392		292	379			850	729	472	1167	
v/s Ratio Prot		0.03			0.04					0.01	c0.31	
v/s Ratio Perm	c0.13			0.05				c0.27	0.02	0.06		
v/c Ratio	0.60	0.16		0.22	0.19			0.60	0.03	0.12	0.49	
Uniform Delay, d1	18.9	17.0		17.3	17.1			10.7	7.9	5.0	5.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.6	0.2		0.4	0.2			1.1	0.0	0.1	0.3	
Delay (s)	22.6	17.2		17.7	17.4			11.9	7.9	5.1	5.6	
Level of Service	C	B		B	B			B	A	A	A	
Approach Delay (s)		21.0			17.5			11.5			5.5	
Approach LOS		C			B			B			A	

Intersection Summary

HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	53.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection												
Int Delay, s/veh	10.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	136	3	84	0	3	17	83	333	0	9	291	194
Future Vol, veh/h	136	3	84	0	3	17	83	333	0	9	291	194
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	56	56	56	96	96	96	86	86	86
Heavy Vehicles, %	4	0	2	0	0	0	4	4	0	0	5	2
Mvmt Flow	151	3	93	0	5	30	86	347	0	10	338	226

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1008	990	451	1038	1103	347	564	0	0	347	0	0
Stage 1	471	471	-	519	519	-	-	-	-	-	-	-
Stage 2	537	519	-	519	584	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.5	6.22	7.1	6.5	6.2	4.14	-	-	4.1	-	-
Critical Hdwy Stg 1	6.14	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4	3.318	3.5	4	3.3	2.236	-	-	2.2	-	-
Pot Cap-1 Maneuver	217	248	608	211	213	701	998	-	-	1223	-	-
Stage 1	570	563	-	544	536	-	-	-	-	-	-	-
Stage 2	524	536	-	544	501	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	189	225	608	164	193	701	998	-	-	1223	-	-
Mov Cap-2 Maneuver	189	225	-	164	193	-	-	-	-	-	-	-
Stage 1	521	558	-	497	490	-	-	-	-	-	-	-
Stage 2	453	490	-	454	497	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	51.3	12.7	1.8	0.1
HCM LOS	F	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	998	-	-	190	608	503	1223	-	-
HCM Lane V/C Ratio	0.087	-	-	0.813	0.154	0.071	0.009	-	-
HCM Control Delay (s)	8.9	-	-	75.1	12	12.7	8	-	-
HCM Lane LOS	A	-	-	F	B	B	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	5.7	0.5	0.2	0	-	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	176	20	66	214	22	48
Future Vol, veh/h	176	20	66	214	22	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	0	0	0	0	0
Mvmt Flow	196	22	73	238	24	53

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	218	0	591	207
Stage 1	-	-	-	-	207	-
Stage 2	-	-	-	-	384	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1364	-	473	839
Stage 1	-	-	-	-	832	-
Stage 2	-	-	-	-	693	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1364	-	444	839
Mov Cap-2 Maneuver	-	-	-	-	444	-
Stage 1	-	-	-	-	832	-
Stage 2	-	-	-	-	650	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.8	11.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	656	-	-	1364	-
HCM Lane V/C Ratio	0.119	-	-	0.054	-
HCM Control Delay (s)	11.2	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	13	0	401	365	0
Future Vol, veh/h	0	13	0	401	365	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	1	2	0
Mvmt Flow	0	14	0	446	406	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	406	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	649	0	-	-	0
Stage 1	0	-	0	-	-	0
Stage 2	0	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	649	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	649	-
HCM Lane V/C Ratio	-	0.022	-
HCM Control Delay (s)	-	10.7	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.1	-

Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	122	42	28	155	0	39	3	80	1	3	1
Future Vol, veh/h	1	122	42	28	155	0	39	3	80	1	3	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	1	2	0	0	0	3	0	0	0	0	0
Mvmt Flow	1	136	47	31	172	0	43	3	89	1	3	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	172	0	0	183	0	0	398	396	160	442	419	172
Stage 1	-	-	-	-	-	-	162	162	-	234	234	-
Stage 2	-	-	-	-	-	-	236	234	-	208	185	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.13	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.527	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1417	-	-	1404	-	-	560	544	890	529	528	877
Stage 1	-	-	-	-	-	-	838	768	-	774	715	-
Stage 2	-	-	-	-	-	-	765	715	-	799	751	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1417	-	-	1404	-	-	547	531	890	466	516	877
Mov Cap-2 Maneuver	-	-	-	-	-	-	547	531	-	466	516	-
Stage 1	-	-	-	-	-	-	837	767	-	773	699	-
Stage 2	-	-	-	-	-	-	744	699	-	715	750	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.2	11	11.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	731	1417	-	-	1404	-	-	549
HCM Lane V/C Ratio	0.185	0.001	-	-	0.022	-	-	0.01
HCM Control Delay (s)	11	7.5	0	-	7.6	-	-	11.6
HCM Lane LOS	B	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0.1	-	-	0

6: NH108/Durham Road & Mast Road

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	145	50	63	56	6	480	52	55	449
Future Volume (vph)	145	50	63	56	6	480	52	55	449
Lane Group Flow (vph)	161	68	70	131	0	540	58	61	631
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		8		4		2		1	6
Permitted Phases	8		4		2		2	6	
Detector Phase	8	8	4	4	2	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	22.0	22.0	9.0	22.0
Total Split (s)	22.0	22.0	22.0	22.0	28.0	28.0	28.0	14.0	42.0
Total Split (%)	34.4%	34.4%	34.4%	34.4%	43.8%	43.8%	43.8%	21.9%	65.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0
Lead/Lag					Lag	Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	Min	None	Min
Act Effct Green (s)	14.0	14.0	13.6	13.6		26.6	26.6	31.5	32.9
Actuated g/C Ratio	0.28	0.28	0.27	0.27		0.53	0.53	0.63	0.66
v/c Ratio	0.45	0.13	0.19	0.25		0.55	0.06	0.11	0.52
Control Delay	22.7	15.1	18.4	10.9		17.4	0.1	5.7	8.4
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	22.7	15.1	18.4	10.9		17.4	0.1	5.7	8.4
LOS	C	B	B	B		B	A	A	A
Approach Delay		20.4		13.5		15.7			8.2
Approach LOS		C		B		B			A
Queue Length 50th (ft)	49	15	20	17		152	0	7	101
Queue Length 95th (ft)	101	42	49	54		#329	0	21	207
Internal Link Dist (ft)		1120		720		420			720
Turn Bay Length (ft)	150		25				175	125	
Base Capacity (vph)	508	730	538	737		1042	961	604	1428
Starvation Cap Reductn	0	0	0	0		0	0	0	0
Spillback Cap Reductn	0	0	0	0		0	0	0	0
Storage Cap Reductn	0	0	0	0		0	0	0	0
Reduced v/c Ratio	0.32	0.09	0.13	0.18		0.52	0.06	0.10	0.44

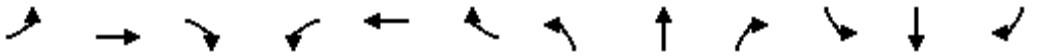
Intersection Summary

Cycle Length: 64
Actuated Cycle Length: 50
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.55
Intersection Signal Delay: 13.0 Intersection LOS: B
Intersection Capacity Utilization 67.1% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 6: NH108/Durham Road & Mast Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	50	11	63	56	62	6	480	52	55	449	119
Future Volume (vph)	145	50	11	63	56	62	6	480	52	55	449	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.92			1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	1818		1805	1750			1857	1583	1805	1840	
Flt Permitted	0.67	1.00		0.71	1.00			0.99	1.00	0.27	1.00	
Satd. Flow (perm)	1279	1818		1354	1750			1843	1583	504	1840	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	161	56	12	70	62	69	7	533	58	61	499	132
RTOR Reduction (vph)	0	9	0	0	54	0	0	0	31	0	13	0
Lane Group Flow (vph)	161	59	0	70	77	0	0	540	27	61	618	0
Heavy Vehicles (%)	0%	0%	10%	0%	0%	0%	20%	2%	2%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		8			4			2		1	6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	9.5	9.5		9.5	9.5			23.0	23.0	32.4	32.4	
Effective Green, g (s)	11.5	11.5		11.5	11.5			25.0	25.0	34.4	34.4	
Actuated g/C Ratio	0.21	0.21		0.21	0.21			0.46	0.46	0.64	0.64	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	272	387		288	373			854	734	452	1174	
v/s Ratio Prot		0.03			0.04					0.01	c0.34	
v/s Ratio Perm	c0.13			0.05				c0.29	0.02	0.07		
v/c Ratio	0.59	0.15		0.24	0.21			0.63	0.04	0.13	0.53	
Uniform Delay, d1	19.1	17.2		17.6	17.4			11.0	7.9	5.2	5.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.4	0.2		0.4	0.3			1.5	0.0	0.1	0.4	
Delay (s)	22.5	17.4		18.0	17.7			12.5	7.9	5.3	5.7	
Level of Service	C	B		B	B			B	A	A	A	
Approach Delay (s)		21.0			17.8			12.1			5.7	
Approach LOS		C			B			B			A	

Intersection Summary

HCM 2000 Control Delay	11.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	53.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection												
Int Delay, s/veh	13.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	136	3	84	0	3	17	83	370	0	9	323	194
Future Vol, veh/h	136	3	84	0	3	17	83	370	0	9	323	194
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	56	56	56	96	96	96	86	86	86
Heavy Vehicles, %	4	0	2	0	0	0	4	4	0	0	5	2
Mvmt Flow	151	3	93	0	5	30	86	385	0	10	376	226

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1084	1066	489	1114	1179	385	602	0	0	385	0	0
Stage 1	509	509	-	557	557	-	-	-	-	-	-	-
Stage 2	575	557	-	557	622	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.5	6.22	7.1	6.5	6.2	4.14	-	-	4.1	-	-
Critical Hdwy Stg 1	6.14	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4	3.318	3.5	4	3.3	2.236	-	-	2.2	-	-
Pot Cap-1 Maneuver	193	224	579	187	192	667	966	-	-	1185	-	-
Stage 1	543	541	-	518	515	-	-	-	-	-	-	-
Stage 2	500	515	-	518	482	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	167	202	579	143	174	667	966	-	-	1185	-	-
Mov Cap-2 Maneuver	167	202	-	143	174	-	-	-	-	-	-	-
Stage 1	495	537	-	472	469	-	-	-	-	-	-	-
Stage 2	430	469	-	428	478	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	69.6	13.3	1.7	0.1
HCM LOS	F	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	966	-	-	168	579	468	1185	-	-
HCM Lane V/C Ratio	0.09	-	-	0.919	0.161	0.076	0.009	-	-
HCM Control Delay (s)	9.1	-	-	104.2	12.4	13.3	8.1	-	-
HCM Lane LOS	A	-	-	F	B	B	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	6.8	0.6	0.2	0	-	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	176	20	66	214	22	48
Future Vol, veh/h	176	20	66	214	22	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	0	0	0	0	0
Mvmt Flow	196	22	73	238	24	53

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	218	0	591	207
Stage 1	-	-	-	-	207	-
Stage 2	-	-	-	-	384	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1364	-	473	839
Stage 1	-	-	-	-	832	-
Stage 2	-	-	-	-	693	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1364	-	444	839
Mov Cap-2 Maneuver	-	-	-	-	444	-
Stage 1	-	-	-	-	832	-
Stage 2	-	-	-	-	650	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.8	11.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	656	-	-	1364	-
HCM Lane V/C Ratio	0.119	-	-	0.054	-
HCM Control Delay (s)	11.2	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	13	0	438	397	0
Future Vol, veh/h	0	13	0	438	397	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	1	2	0
Mvmt Flow	0	14	0	487	441	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	441	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	621	0	-	-	0
Stage 1	0	-	0	-	-	0
Stage 2	0	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	621	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.9	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	621	-
HCM Lane V/C Ratio	-	0.023	-
HCM Control Delay (s)	-	10.9	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.1	-

APPENDIX I

Mitigation Synchro (AM/PM/SAT)

AM 2025, 2035 – Build MIT

PM 2025, 2035 – Build MIT

SAT 2025, 2035 – Build MIT

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	64	23	17	79	11	20	0	37	7	0	1
Future Vol, veh/h	2	64	23	17	79	11	20	0	37	7	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	60	60	60	90	90	90	67	67	67
Heavy Vehicles, %	0	25	4	0	22	55	10	0	0	57	0	0
Mvmt Flow	3	85	31	28	132	18	22	0	41	10	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	150	0	0	116	0	0	305	313	101	324	319	141
Stage 1	-	-	-	-	-	-	107	107	-	197	197	-
Stage 2	-	-	-	-	-	-	198	206	-	127	122	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.2	6.5	6.2	7.67	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.2	5.5	-	6.67	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.2	5.5	-	6.67	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.59	4	3.3	4.013	4	3.3
Pot Cap-1 Maneuver	1444	-	-	1485	-	-	632	606	960	536	601	912
Stage 1	-	-	-	-	-	-	879	811	-	694	742	-
Stage 2	-	-	-	-	-	-	786	735	-	760	799	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1444	-	-	1485	-	-	621	593	960	505	588	912
Mov Cap-2 Maneuver	-	-	-	-	-	-	621	593	-	505	588	-
Stage 1	-	-	-	-	-	-	877	809	-	693	728	-
Stage 2	-	-	-	-	-	-	770	721	-	726	797	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	1.2	9.8	11.9
HCM LOS			A	B

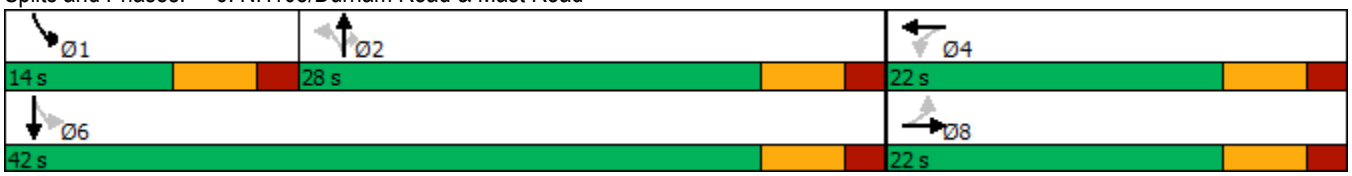
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	806	1444	-	-	1485	-	-	535
HCM Lane V/C Ratio	0.079	0.002	-	-	0.019	-	-	0.022
HCM Control Delay (s)	9.8	7.5	0	-	7.5	-	-	11.9
HCM Lane LOS	A	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0.1	-	-	0.1

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	70	28	64	29	16	402	37	56	427
Future Volume (vph)	70	28	64	29	16	402	37	56	427
Lane Group Flow (vph)	88	48	81	118	0	470	42	64	568
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		8		4		2		1	6
Permitted Phases	8		4		2		2	6	
Detector Phase	8	8	4	4	2	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	22.0	22.0	9.0	22.0
Total Split (s)	22.0	22.0	22.0	22.0	28.0	28.0	28.0	14.0	42.0
Total Split (%)	34.4%	34.4%	34.4%	34.4%	43.8%	43.8%	43.8%	21.9%	65.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0
Lead/Lag					Lag	Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	Min	None	Min
Act Effct Green (s)	11.7	11.7	11.7	11.7		25.5	25.5	30.4	31.8
Actuated g/C Ratio	0.25	0.25	0.25	0.25		0.54	0.54	0.65	0.68
v/c Ratio	0.30	0.13	0.24	0.25		0.49	0.04	0.10	0.47
Control Delay	20.9	14.8	19.6	9.6		14.5	0.1	4.8	7.1
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	20.9	14.8	19.6	9.6		14.5	0.1	4.8	7.1
LOS	C	B	B	A		B	A	A	A
Approach Delay		18.8		13.6		13.3			6.8
Approach LOS		B		B		B			A
Queue Length 50th (ft)	24	9	22	10		114	0	6	73
Queue Length 95th (ft)	53	28	47	36		234	0	20	160
Internal Link Dist (ft)		1120		720		420			720
Turn Bay Length (ft)	150		25				175	125	
Base Capacity (vph)	494	638	568	748		1043	1019	677	1424
Starvation Cap Reductn	0	0	0	0		0	0	0	0
Spillback Cap Reductn	0	0	0	0		0	0	0	0
Storage Cap Reductn	0	0	0	0		0	0	0	0
Reduced v/c Ratio	0.18	0.08	0.14	0.16		0.45	0.04	0.09	0.40

Intersection Summary

Cycle Length: 64
Actuated Cycle Length: 47.1
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.49
Intersection Signal Delay: 11.1 Intersection LOS: B
Intersection Capacity Utilization 63.7% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 6: NH108/Durham Road & Mast Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	28	10	64	29	64	16	402	37	56	427	67
Future Volume (vph)	70	28	10	64	29	64	16	402	37	56	427	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	0.90			1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1641	1502		1770	1668			1810	1615	1805	1784	
Flt Permitted	0.68	1.00		0.73	1.00			0.97	1.00	0.33	1.00	
Satd. Flow (perm)	1176	1502		1352	1668			1762	1615	619	1784	
Peak-hour factor, PHF	0.80	0.80	0.80	0.79	0.79	0.79	0.89	0.89	0.89	0.87	0.87	0.87
Adj. Flow (vph)	88	35	12	81	37	81	18	452	42	64	491	77
RTOR Reduction (vph)	0	11	0	0	66	0	0	0	22	0	8	0
Lane Group Flow (vph)	88	37	0	81	52	0	0	470	20	64	560	0
Heavy Vehicles (%)	10%	7%	60%	2%	7%	0%	75%	2%	0%	0%	3%	13%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		8			4			2		1	6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	7.6	7.6		7.6	7.6			22.0	22.0	31.3	31.3	
Effective Green, g (s)	9.6	9.6		9.6	9.6			24.0	24.0	33.3	33.3	
Actuated g/C Ratio	0.19	0.19		0.19	0.19			0.47	0.47	0.65	0.65	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	221	283		254	314			830	761	528	1167	
v/s Ratio Prot		0.02			0.03					0.01	c0.31	
v/s Ratio Perm	c0.07			0.06				c0.27	0.01	0.07		
v/c Ratio	0.40	0.13		0.32	0.17			0.57	0.03	0.12	0.48	
Uniform Delay, d1	18.1	17.2		17.8	17.3			9.7	7.2	4.1	4.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.2	0.2		0.7	0.3			0.9	0.0	0.1	0.3	
Delay (s)	19.3	17.4		18.6	17.6			10.6	7.2	4.2	4.7	
Level of Service	B	B		B	B			B	A	A	A	
Approach Delay (s)		18.6			18.0			10.3			4.7	
Approach LOS		B			B			B			A	

Intersection Summary

HCM 2000 Control Delay	9.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	50.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	55	0	40	1	0	16	53	383	1	4	444	84
Future Vol, veh/h	55	0	40	1	0	16	53	383	1	4	444	84
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	71	71	71	93	93	93	89	89	89
Heavy Vehicles, %	4	0	3	0	0	0	4	4	0	0	5	2
Mvmt Flow	61	0	44	1	0	23	57	412	1	4	499	94

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1092	1081	546	1103	1128	413	593	0	0	413	0	0
Stage 1	554	554	-	527	527	-	-	-	-	-	-	-
Stage 2	538	527	-	576	601	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.5	6.23	7.1	6.5	6.2	4.14	-	-	4.1	-	-
Critical Hdwy Stg 1	6.14	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4	3.327	3.5	4	3.3	2.236	-	-	2.2	-	-
Pot Cap-1 Maneuver	190	220	536	190	206	643	973	-	-	1157	-	-
Stage 1	513	517	-	538	532	-	-	-	-	-	-	-
Stage 2	524	532	-	506	493	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	175	206	536	166	193	643	973	-	-	1157	-	-
Mov Cap-2 Maneuver	175	206	-	166	193	-	-	-	-	-	-	-
Stage 1	483	515	-	506	501	-	-	-	-	-	-	-
Stage 2	476	501	-	462	492	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	26.1	11.8	1.1	0.1
HCM LOS	D	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	973	-	-	175	536	550	1157	-	-
HCM Lane V/C Ratio	0.059	-	-	0.349	0.083	0.044	0.004	-	-
HCM Control Delay (s)	8.9	-	-	36.2	12.3	11.8	8.1	-	-
HCM Lane LOS	A	-	-	E	B	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	1.5	0.3	0.1	0	-	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	54	16	58	79	17	41
Future Vol, veh/h	54	16	58	79	17	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	6	0	0	5	0	0
Mvmt Flow	60	18	64	88	19	46

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	78	0	285	69
Stage 1	-	-	-	-	69	-
Stage 2	-	-	-	-	216	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1533	-	710	1000
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	825	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1533	-	680	1000
Mov Cap-2 Maneuver	-	-	-	-	680	-
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	790	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.2	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	879	-	-	1533	-
HCM Lane V/C Ratio	0.073	-	-	0.042	-
HCM Control Delay (s)	9.4	-	-	7.5	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	13	0	429	480	0
Future Vol, veh/h	0	13	0	429	480	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	4	5	0
Mvmt Flow	0	14	0	477	533	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	533	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	551	0	-	-	0
Stage 1	0	-	0	-	-	0
Stage 2	0	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	551	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	551	-
HCM Lane V/C Ratio	-	0.026	-
HCM Control Delay (s)	-	11.7	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.1	-

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	71	23	17	87	11	20	0	37	7	0	1
Future Vol, veh/h	2	71	23	17	87	11	20	0	37	7	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	25	4	0	22	55	10	0	0	57	0	0
Mvmt Flow	2	79	26	19	97	12	22	0	41	8	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	109	0	0	105	0	0	238	243	92	258	250	103
Stage 1	-	-	-	-	-	-	96	96	-	141	141	-
Stage 2	-	-	-	-	-	-	142	147	-	117	109	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.2	6.5	6.2	7.67	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.2	5.5	-	6.67	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.2	5.5	-	6.67	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.59	4	3.3	4.013	4	3.3
Pot Cap-1 Maneuver	1494	-	-	1499	-	-	700	662	971	596	656	957
Stage 1	-	-	-	-	-	-	891	819	-	747	784	-
Stage 2	-	-	-	-	-	-	842	779	-	770	809	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1494	-	-	1499	-	-	692	653	971	565	647	957
Mov Cap-2 Maneuver	-	-	-	-	-	-	692	653	-	565	647	-
Stage 1	-	-	-	-	-	-	890	818	-	746	774	-
Stage 2	-	-	-	-	-	-	830	769	-	737	808	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	1.1	9.6	11.1
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	851	1494	-	-	1499	-	-	595
HCM Lane V/C Ratio	0.074	0.001	-	-	0.013	-	-	0.015
HCM Control Delay (s)	9.6	7.4	0	-	7.4	-	-	11.1
HCM Lane LOS	A	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	75	30	70	32	17	443	41	62	469
Future Volume (vph)	75	30	70	32	17	443	41	62	469
Lane Group Flow (vph)	83	45	78	115	0	511	46	69	603
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		8		4		2		1	6
Permitted Phases	8		4		2		2	6	
Detector Phase	8	8	4	4	2	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	22.0	22.0	9.0	22.0
Total Split (s)	22.0	22.0	22.0	22.0	28.0	28.0	28.0	14.0	42.0
Total Split (%)	34.4%	34.4%	34.4%	34.4%	43.8%	43.8%	43.8%	21.9%	65.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0
Lead/Lag					Lag	Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	Min	None	Min
Act Effct Green (s)	11.5	11.5	11.5	11.5		26.3	26.3	31.3	32.6
Actuated g/C Ratio	0.24	0.24	0.24	0.24		0.55	0.55	0.66	0.68
v/c Ratio	0.29	0.12	0.24	0.25		0.53	0.05	0.11	0.49
Control Delay	21.2	15.1	19.9	9.8		15.4	0.1	4.8	7.2
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	21.2	15.1	19.9	9.8		15.4	0.1	4.8	7.2
LOS	C	B	B	A		B	A	A	A
Approach Delay		19.0		13.9		14.2			6.9
Approach LOS		B		B		B			A
Queue Length 50th (ft)	24	9	22	10		127	0	7	79
Queue Length 95th (ft)	58	31	54	44		#298	0	21	184
Internal Link Dist (ft)		1120		720		420			720
Turn Bay Length (ft)	150		25				175	125	
Base Capacity (vph)	487	629	560	735		1032	1009	656	1418
Starvation Cap Reductn	0	0	0	0		0	0	0	0
Spillback Cap Reductn	0	0	0	0		0	0	0	0
Storage Cap Reductn	0	0	0	0		0	0	0	0
Reduced v/c Ratio	0.17	0.07	0.14	0.16		0.50	0.05	0.11	0.43

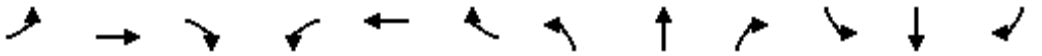
Intersection Summary

Cycle Length: 64
Actuated Cycle Length: 47.7
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.53
Intersection Signal Delay: 11.4 Intersection LOS: B
Intersection Capacity Utilization 69.0% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 6: NH108/Durham Road & Mast Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	30	11	70	32	71	17	443	41	62	469	74
Future Volume (vph)	75	30	11	70	32	71	17	443	41	62	469	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	0.90			1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1641	1506		1770	1668			1811	1615	1805	1783	
Flt Permitted	0.68	1.00		0.73	1.00			0.97	1.00	0.30	1.00	
Satd. Flow (perm)	1180	1506		1356	1668			1762	1615	569	1783	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	83	33	12	78	36	79	19	492	46	69	521	82
RTOR Reduction (vph)	0	10	0	0	64	0	0	0	24	0	7	0
Lane Group Flow (vph)	83	35	0	78	51	0	0	511	22	69	596	0
Heavy Vehicles (%)	10%	7%	60%	2%	7%	0%	75%	2%	0%	0%	3%	13%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		8			4			2		1	6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	7.5	7.5		7.5	7.5			22.8	22.8	32.2	32.2	
Effective Green, g (s)	9.5	9.5		9.5	9.5			24.8	24.8	34.2	34.2	
Actuated g/C Ratio	0.18	0.18		0.18	0.18			0.48	0.48	0.66	0.66	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	216	276		249	306			845	774	505	1179	
v/s Ratio Prot		0.02			0.03					0.01	c0.33	
v/s Ratio Perm	c0.07			0.06				c0.29	0.01	0.08		
v/c Ratio	0.38	0.13		0.31	0.17			0.60	0.03	0.14	0.51	
Uniform Delay, d1	18.5	17.6		18.3	17.8			9.9	7.1	4.3	4.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.1	0.2		0.7	0.3			1.2	0.0	0.1	0.3	
Delay (s)	19.7	17.8		19.0	18.0			11.1	7.1	4.4	4.8	
Level of Service	B	B		B	B			B	A	A	A	
Approach Delay (s)		19.0			18.4			10.8			4.7	
Approach LOS		B			B			B			A	

Intersection Summary

HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	51.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	55	0	40	1	0	16	53	424	1	4	492	84
Future Vol, veh/h	55	0	40	1	0	16	53	424	1	4	492	84
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	71	71	71	93	93	93	89	89	89
Heavy Vehicles, %	4	0	3	0	0	0	4	4	0	0	5	2
Mvmt Flow	61	0	44	1	0	23	57	456	1	4	553	94

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1190	1179	600	1201	1226	457	647	0	0	457	0	0
Stage 1	608	608	-	571	571	-	-	-	-	-	-	-
Stage 2	582	571	-	630	655	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.5	6.23	7.1	6.5	6.2	4.14	-	-	4.1	-	-
Critical Hdwy Stg 1	6.14	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4	3.327	3.5	4	3.3	2.236	-	-	2.2	-	-
Pot Cap-1 Maneuver	163	192	499	163	180	608	929	-	-	1114	-	-
Stage 1	479	489	-	509	508	-	-	-	-	-	-	-
Stage 2	495	508	-	473	466	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	149	180	499	141	168	608	929	-	-	1114	-	-
Mov Cap-2 Maneuver	149	180	-	141	168	-	-	-	-	-	-	-
Stage 1	450	487	-	478	477	-	-	-	-	-	-	-
Stage 2	447	477	-	429	464	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	31.5	12.4	1	0.1
HCM LOS	D	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	929	-	-	149	499	509	1114	-	-
HCM Lane V/C Ratio	0.061	-	-	0.41	0.089	0.047	0.004	-	-
HCM Control Delay (s)	9.1	-	-	45	12.9	12.4	8.2	-	-
HCM Lane LOS	A	-	-	E	B	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	1.8	0.3	0.1	0	-	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	54	16	58	79	17	41
Future Vol, veh/h	54	16	58	79	17	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	6	0	0	5	0	0
Mvmt Flow	60	18	64	88	19	46

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	78	0	285	69
Stage 1	-	-	-	-	69	-
Stage 2	-	-	-	-	216	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1533	-	710	1000
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	825	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1533	-	680	1000
Mov Cap-2 Maneuver	-	-	-	-	680	-
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	790	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.2	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	879	-	-	1533	-
HCM Lane V/C Ratio	0.073	-	-	0.042	-
HCM Control Delay (s)	9.4	-	-	7.5	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	13	0	470	528	0
Future Vol, veh/h	0	13	0	470	528	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	4	5	0
Mvmt Flow	0	14	0	522	587	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	587	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	513	0	-	-	0
Stage 1	0	-	0	-	-	0
Stage 2	0	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	513	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	513	-
HCM Lane V/C Ratio	-	0.028	-
HCM Control Delay (s)	-	12.2	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.1	-

Intersection	
Int Delay, s/veh	6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	85	17	18	54	27	22	0	56	48	4	9
Future Vol, veh/h	5	85	17	18	54	27	22	0	56	48	4	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	87	87	87	90	90	90	41	41	41
Heavy Vehicles, %	20	11	0	0	22	22	0	0	0	15	0	0
Mvmt Flow	6	105	21	21	62	31	24	0	62	117	10	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	93	0	0	126	0	0	264	263	116	279	258	78
Stage 1	-	-	-	-	-	-	128	128	-	120	120	-
Stage 2	-	-	-	-	-	-	136	135	-	159	138	-
Critical Hdwy	4.3	-	-	4.1	-	-	7.1	6.5	6.2	7.25	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.25	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.25	5.5	-
Follow-up Hdwy	2.38	-	-	2.2	-	-	3.5	4	3.3	3.635	4	3.3
Pot Cap-1 Maneuver	1396	-	-	1473	-	-	693	646	942	648	650	988
Stage 1	-	-	-	-	-	-	881	794	-	854	800	-
Stage 2	-	-	-	-	-	-	872	789	-	813	786	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1396	-	-	1473	-	-	660	634	942	596	638	988
Mov Cap-2 Maneuver	-	-	-	-	-	-	660	634	-	596	638	-
Stage 1	-	-	-	-	-	-	877	790	-	850	789	-
Stage 2	-	-	-	-	-	-	830	778	-	756	782	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	1.4	9.8	12.4
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	841	1396	-	-	1473	-	-	636
HCM Lane V/C Ratio	0.103	0.004	-	-	0.014	-	-	0.234
HCM Control Delay (s)	9.8	7.6	0	-	7.5	-	-	12.4
HCM Lane LOS	A	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.9

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	72	41	75	22	2	610	94	80	561
Future Volume (vph)	72	41	75	22	2	610	94	80	561
Lane Group Flow (vph)	96	60	103	168	0	672	103	82	615
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		8		4		2		1	6
Permitted Phases	8		4		2		2	6	
Detector Phase	8	8	4	4	2	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	22.0	22.0	9.0	22.0
Total Split (s)	22.0	22.0	22.0	22.0	28.0	28.0	28.0	14.0	42.0
Total Split (%)	34.4%	34.4%	34.4%	34.4%	43.8%	43.8%	43.8%	21.9%	65.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0
Lead/Lag					Lag	Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	Min	None	Min
Act Effct Green (s)	11.9	11.9	11.9	11.9		28.4	28.4	34.0	35.2
Actuated g/C Ratio	0.23	0.23	0.23	0.23		0.56	0.56	0.67	0.69
v/c Ratio	0.35	0.14	0.32	0.34		0.64	0.11	0.17	0.48
Control Delay	22.5	17.2	21.3	8.0		19.2	1.4	5.4	7.3
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	22.5	17.2	21.3	8.0		19.2	1.4	5.4	7.3
LOS	C	B	C	A		B	A	A	A
Approach Delay		20.5		13.1		16.9			7.1
Approach LOS		C		B		B			A
Queue Length 50th (ft)	28	15	30	8		191	0	8	87
Queue Length 95th (ft)	53	33	53	30		#443	13	26	198
Internal Link Dist (ft)		1120		720		420			720
Turn Bay Length (ft)	150		25				175	125	
Base Capacity (vph)	430	685	506	705		1047	968	539	1423
Starvation Cap Reductn	0	0	0	0		0	0	0	0
Spillback Cap Reductn	0	0	0	0		0	0	0	0
Storage Cap Reductn	0	0	0	0		0	0	0	0
Reduced v/c Ratio	0.22	0.09	0.20	0.24		0.64	0.11	0.15	0.43

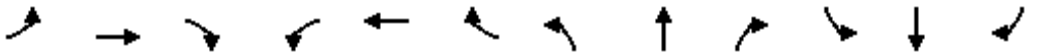
Intersection Summary

Cycle Length: 64
Actuated Cycle Length: 51
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.64
Intersection Signal Delay: 13.0 Intersection LOS: B
Intersection Capacity Utilization 87.9% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 6: NH108/Durham Road & Mast Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	41	4	75	22	101	2	610	94	80	561	36
Future Volume (vph)	72	41	4	75	22	101	2	610	94	80	561	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	0.88			1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	1838		1805	1666			1881	1615	1805	1855	
Flt Permitted	0.61	1.00		0.72	1.00			1.00	1.00	0.19	1.00	
Satd. Flow (perm)	1161	1838		1364	1666			1879	1615	364	1855	
Peak-hour factor, PHF	0.75	0.75	0.75	0.73	0.73	0.73	0.91	0.91	0.91	0.97	0.97	0.97
Adj. Flow (vph)	96	55	5	103	30	138	2	670	103	82	578	37
RTOR Reduction (vph)	0	4	0	0	112	0	0	0	52	0	3	0
Lane Group Flow (vph)	96	56	0	103	56	0	0	672	51	82	612	0
Heavy Vehicles (%)	0%	0%	25%	0%	0%	0%	0%	1%	0%	0%	0%	25%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		8			4			2		1	6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	8.2	8.2		8.2	8.2			25.2	25.2	34.9	34.9	
Effective Green, g (s)	10.2	10.2		10.2	10.2			27.2	27.2	36.9	36.9	
Actuated g/C Ratio	0.19	0.19		0.19	0.19			0.49	0.49	0.67	0.67	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	214	340		252	308			927	797	392	1242	
v/s Ratio Prot		0.03			0.03					0.02	c0.33	
v/s Ratio Perm	c0.08			0.08				c0.36	0.03	0.12		
v/c Ratio	0.45	0.16		0.41	0.18			0.72	0.06	0.21	0.49	
Uniform Delay, d1	20.0	18.9		19.8	18.9			11.0	7.3	6.0	4.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.5	0.2		1.1	0.3			2.8	0.0	0.3	0.3	
Delay (s)	21.4	19.1		20.9	19.2			13.8	7.3	6.2	4.8	
Level of Service	C	B		C	B			B	A	A	A	
Approach Delay (s)		20.5			19.8			13.0			5.0	
Approach LOS		C			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	11.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	55.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	87.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	28

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	138	2	76	2	0	10	91	513	2	22	412	199
Future Vol, veh/h	138	2	76	2	0	10	91	513	2	22	412	199
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	60	60	60	94	94	94	91	91	91
Heavy Vehicles, %	0	0	0	0	0	10	0	1	0	0	0	1
Mvmt Flow	148	2	82	3	0	17	97	546	2	24	453	219

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1361	1353	563	1394	1461	547	672	0	0	548	0	0
Stage 1	611	611	-	741	741	-	-	-	-	-	-	-
Stage 2	750	742	-	653	720	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.3	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.39	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 127	151	530	120	130	522	928	-	-	1032	-	-
Stage 1	484	487	-	411	426	-	-	-	-	-	-	-
Stage 2	407	425	-	460	435	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 111	132	530	91	114	522	928	-	-	1032	-	-
Mov Cap-2 Maneuver	~ 111	132	-	91	114	-	-	-	-	-	-	-
Stage 1	433	476	-	368	381	-	-	-	-	-	-	-
Stage 2	353	380	-	378	425	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	185.7	18.2	1.4	0.3
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	928	-	-	111	530	292	1032	-	-
HCM Lane V/C Ratio	0.104	-	-	1.356	0.154	0.068	0.023	-	-
HCM Control Delay (s)	9.3	-	-	279.5	13	18.2	8.6	-	-
HCM Lane LOS	A	-	-	F	B	C	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	10.4	0.5	0.2	0.1	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	188	6	40	249	8	28
Future Vol, veh/h	188	6	40	249	8	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	209	7	44	277	9	31

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	216	0	578	213
Stage 1	-	-	-	-	213	-
Stage 2	-	-	-	-	365	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1366	-	481	832
Stage 1	-	-	-	-	827	-
Stage 2	-	-	-	-	707	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1366	-	466	832
Mov Cap-2 Maneuver	-	-	-	-	466	-
Stage 1	-	-	-	-	827	-
Stage 2	-	-	-	-	684	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	708	-	-	1366	-
HCM Lane V/C Ratio	0.056	-	-	0.033	-
HCM Control Delay (s)	10.4	-	-	7.7	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	7	0	593	486	0
Future Vol, veh/h	0	7	0	593	486	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	1	0	0
Mvmt Flow	0	8	0	659	540	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	540	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	546	0	-	-	0
Stage 1	0	-	0	-	-	0
Stage 2	0	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	546	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	546	-
HCM Lane V/C Ratio	-	0.014	-
HCM Control Delay (s)	-	11.7	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0	-

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↰	↱			↕			↕	
Traffic Vol, veh/h	5	94	17	18	60	27	22	0	56	48	4	9
Future Vol, veh/h	5	94	17	18	60	27	22	0	56	48	4	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	20	11	0	0	22	22	0	0	0	15	0	0
Mvmt Flow	6	104	19	20	67	30	24	0	62	53	4	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	97	0	0	123	0	0	255	263	114	279	257	82
Stage 1	-	-	-	-	-	-	126	126	-	122	122	-
Stage 2	-	-	-	-	-	-	129	137	-	157	135	-
Critical Hdwy	4.3	-	-	4.1	-	-	7.1	6.5	6.2	7.25	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.25	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.25	5.5	-
Follow-up Hdwy	2.38	-	-	2.2	-	-	3.5	4	3.3	3.635	4	3.3
Pot Cap-1 Maneuver	1391	-	-	1477	-	-	702	646	944	648	651	983
Stage 1	-	-	-	-	-	-	883	796	-	852	799	-
Stage 2	-	-	-	-	-	-	880	787	-	815	789	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1391	-	-	1477	-	-	682	634	944	597	639	983
Mov Cap-2 Maneuver	-	-	-	-	-	-	682	634	-	597	639	-
Stage 1	-	-	-	-	-	-	879	792	-	848	788	-
Stage 2	-	-	-	-	-	-	854	776	-	757	785	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	1.3	9.7	11.3
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	852	1391	-	-	1477	-	-	637
HCM Lane V/C Ratio	0.102	0.004	-	-	0.014	-	-	0.106
HCM Control Delay (s)	9.7	7.6	0	-	7.5	-	-	11.3
HCM Lane LOS	A	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.4

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	78	45	83	25	2	673	104	88	617
Future Volume (vph)	78	45	83	25	2	673	104	88	617
Lane Group Flow (vph)	87	54	92	152	0	742	114	91	676
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		8		4		2		1	6
Permitted Phases	8		4		2		2	6	
Detector Phase	8	8	4	4	2	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	22.0	22.0	9.0	22.0
Total Split (s)	22.0	22.0	22.0	22.0	28.0	28.0	28.0	14.0	42.0
Total Split (%)	34.4%	34.4%	34.4%	34.4%	43.8%	43.8%	43.8%	21.9%	65.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0
Lead/Lag					Lag	Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	Min	None	Min
Act Effct Green (s)	11.2	11.2	11.2	11.2		29.2	29.2	37.9	39.0
Actuated g/C Ratio	0.21	0.21	0.21	0.21		0.54	0.54	0.70	0.72
v/c Ratio	0.35	0.14	0.33	0.34		0.74	0.12	0.21	0.51
Control Delay	23.4	18.0	22.4	8.6		23.2	1.8	5.4	7.2
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	23.4	18.0	22.4	8.6		23.2	1.8	5.4	7.2
LOS	C	B	C	A		C	A	A	A
Approach Delay		21.3		13.8		20.4			7.0
Approach LOS		C		B		C			A
Queue Length 50th (ft)	25	14	26	8		219	0	9	96
Queue Length 95th (ft)	60	38	62	47		#492	16	26	216
Internal Link Dist (ft)		1120		720		420			720
Turn Bay Length (ft)	150		25				175	125	
Base Capacity (vph)	405	622	460	642		1007	936	473	1360
Starvation Cap Reductn	0	0	0	0		0	0	0	0
Spillback Cap Reductn	0	0	0	0		0	0	0	0
Storage Cap Reductn	0	0	0	0		0	0	0	0
Reduced v/c Ratio	0.21	0.09	0.20	0.24		0.74	0.12	0.19	0.50

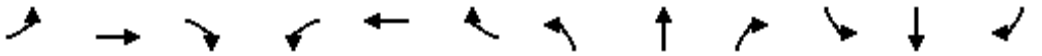
Intersection Summary

Cycle Length: 64
Actuated Cycle Length: 54.4
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 14.5 Intersection LOS: B
Intersection Capacity Utilization 95.7% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 6: NH108/Durham Road & Mast Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	45	4	83	25	112	2	673	104	88	617	39
Future Volume (vph)	78	45	4	83	25	112	2	673	104	88	617	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	0.88			1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	1845		1805	1668			1881	1615	1805	1856	
Flt Permitted	0.64	1.00		0.72	1.00			1.00	1.00	0.14	1.00	
Satd. Flow (perm)	1208	1845		1371	1668			1879	1615	267	1856	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.91	0.91	0.91	0.97	0.97	0.97
Adj. Flow (vph)	87	50	4	92	28	124	2	740	114	91	636	40
RTOR Reduction (vph)	0	3	0	0	103	0	0	0	58	0	3	0
Lane Group Flow (vph)	87	51	0	92	49	0	0	742	56	91	673	0
Heavy Vehicles (%)	0%	0%	25%	0%	0%	0%	0%	1%	0%	0%	0%	25%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		8			4			2		1	6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	7.8	7.8		7.8	7.8			26.1	26.1	37.3	37.3	
Effective Green, g (s)	9.8	9.8		9.8	9.8			28.1	28.1	39.3	39.3	
Actuated g/C Ratio	0.17	0.17		0.17	0.17			0.49	0.49	0.69	0.69	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	207	316		235	286			924	794	377	1277	
v/s Ratio Prot		0.03			0.03					0.03	c0.36	
v/s Ratio Perm	c0.07			0.07				c0.39	0.03	0.14		
v/c Ratio	0.42	0.16		0.39	0.17			0.80	0.07	0.24	0.53	
Uniform Delay, d1	21.1	20.1		21.0	20.2			12.2	7.6	7.1	4.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.4	0.2		1.1	0.3			5.1	0.0	0.3	0.4	
Delay (s)	22.5	20.4		22.1	20.5			17.3	7.7	7.4	4.7	
Level of Service	C	C		C	C			B	A	A	A	
Approach Delay (s)		21.7			21.1			16.0			5.1	
Approach LOS		C			C			B			A	

Intersection Summary

HCM 2000 Control Delay	12.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	57.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	95.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Intersection												
Int Delay, s/veh	37.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	138	2	76	2	0	10	91	568	2	22	456	199
Future Vol, veh/h	138	2	76	2	0	10	91	568	2	22	456	199
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	60	60	60	94	94	94	91	91	91
Heavy Vehicles, %	0	0	0	0	0	10	0	1	0	0	0	1
Mvmt Flow	148	2	82	3	0	17	97	604	2	24	501	219

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1467	1459	611	1500	1567	605	720	0	0	606	0	0
Stage 1	659	659	-	799	799	-	-	-	-	-	-	-
Stage 2	808	800	-	701	768	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.3	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.39	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 107	131	497	101	112	483	891	-	-	982	-	-
Stage 1	456	464	-	382	401	-	-	-	-	-	-	-
Stage 2	378	400	-	433	414	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 93	114	497	75	97	483	891	-	-	982	-	-
Mov Cap-2 Maneuver	~ 93	114	-	75	97	-	-	-	-	-	-	-
Stage 1	406	453	-	340	357	-	-	-	-	-	-	-
Stage 2	325	356	-	351	404	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	264.7	20.4	1.3	0.3
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	891	-	-	93	497	253	982	-	-
HCM Lane V/C Ratio	0.109	-	-	1.619	0.164	0.079	0.025	-	-
HCM Control Delay (s)	9.5	-	-	$ 401	13.7	20.4	8.8	-	-
HCM Lane LOS	A	-	-	F	B	C	A	-	-
HCM 95th %tile Q(veh)	0.4	-	-	11.9	0.6	0.3	0.1	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	188	6	40	249	8	28
Future Vol, veh/h	188	6	40	249	8	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	209	7	44	277	9	31

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	216	0	578	213
Stage 1	-	-	-	-	213	-
Stage 2	-	-	-	-	365	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1366	-	481	832
Stage 1	-	-	-	-	827	-
Stage 2	-	-	-	-	707	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1366	-	466	832
Mov Cap-2 Maneuver	-	-	-	-	466	-
Stage 1	-	-	-	-	827	-
Stage 2	-	-	-	-	684	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	708	-	-	1366	-
HCM Lane V/C Ratio	0.056	-	-	0.033	-
HCM Control Delay (s)	10.4	-	-	7.7	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	7	0	648	530	0
Future Vol, veh/h	0	7	0	648	530	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	1	0	0
Mvmt Flow	0	8	0	720	589	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	589	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	512	0	-	-	0
Stage 1	0	-	0	-	-	0
Stage 2	0	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	512	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	512	-
HCM Lane V/C Ratio	-	0.015	-
HCM Control Delay (s)	-	12.1	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0	-

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	109	42	28	139	0	39	3	80	1	3	1
Future Vol, veh/h	1	109	42	28	139	0	39	3	80	1	3	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	78	78	78	90	90	90	42	42	42
Heavy Vehicles, %	0	1	2	0	0	0	3	0	0	0	0	0
Mvmt Flow	1	133	51	36	178	0	43	3	89	2	7	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	178	0	0	184	0	0	416	411	159	457	436	178
Stage 1	-	-	-	-	-	-	161	161	-	250	250	-
Stage 2	-	-	-	-	-	-	255	250	-	207	186	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.13	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.527	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1410	-	-	1403	-	-	545	534	892	517	517	870
Stage 1	-	-	-	-	-	-	839	769	-	759	704	-
Stage 2	-	-	-	-	-	-	747	704	-	800	750	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1410	-	-	1403	-	-	526	520	892	454	503	870
Mov Cap-2 Maneuver	-	-	-	-	-	-	526	520	-	454	503	-
Stage 1	-	-	-	-	-	-	838	768	-	758	686	-
Stage 2	-	-	-	-	-	-	718	686	-	716	749	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.3	11.2	11.9
HCM LOS			B	B

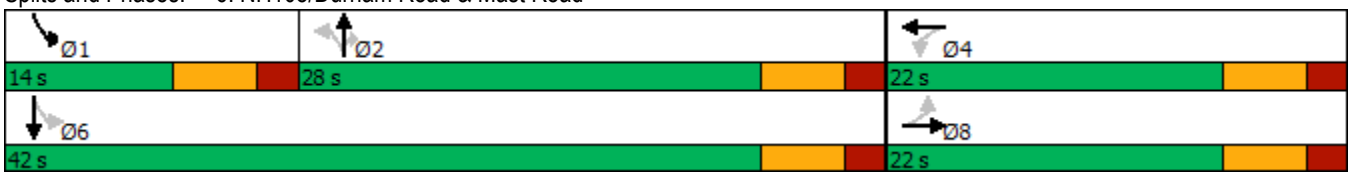
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	719	1410	-	-	1403	-	-	537
HCM Lane V/C Ratio	0.189	0.001	-	-	0.026	-	-	0.022
HCM Control Delay (s)	11.2	7.6	0	-	7.6	-	-	11.9
HCM Lane LOS	B	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0.1	-	-	0.1

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	134	46	58	51	5	436	48	50	411
Future Volume (vph)	134	46	58	51	5	436	48	50	411
Lane Group Flow (vph)	168	71	64	119	0	507	55	57	590
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		8		4		2		1	6
Permitted Phases	8		4		2		2	6	
Detector Phase	8	8	4	4	2	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	22.0	22.0	9.0	22.0
Total Split (s)	22.0	22.0	22.0	22.0	28.0	28.0	28.0	14.0	42.0
Total Split (%)	34.4%	34.4%	34.4%	34.4%	43.8%	43.8%	43.8%	21.9%	65.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0
Lead/Lag					Lag	Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	Min	None	Min
Act Effct Green (s)	14.1	14.1	13.7	13.7		26.3	26.3	31.2	32.6
Actuated g/C Ratio	0.28	0.28	0.28	0.28		0.53	0.53	0.63	0.65
v/c Ratio	0.46	0.14	0.17	0.23		0.52	0.06	0.10	0.49
Control Delay	22.6	15.0	18.1	10.9		16.4	0.1	5.7	8.0
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	22.6	15.0	18.1	10.9		16.4	0.1	5.7	8.0
LOS	C	B	B	B		B	A	A	A
Approach Delay		20.3		13.4		14.8			7.8
Approach LOS		C		B		B			A
Queue Length 50th (ft)	51	16	18	16		141	0	7	92
Queue Length 95th (ft)	91	37	45	51		253	0	20	178
Internal Link Dist (ft)		1120		720		420			720
Turn Bay Length (ft)	150		25				175	125	
Base Capacity (vph)	520	738	543	742		1049	965	624	1427
Starvation Cap Reductn	0	0	0	0		0	0	0	0
Spillback Cap Reductn	0	0	0	0		0	0	0	0
Storage Cap Reductn	0	0	0	0		0	0	0	0
Reduced v/c Ratio	0.32	0.10	0.12	0.16		0.48	0.06	0.09	0.41

Intersection Summary

Cycle Length: 64
Actuated Cycle Length: 49.8
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.52
Intersection Signal Delay: 12.7 Intersection LOS: B
Intersection Capacity Utilization 62.3% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 6: NH108/Durham Road & Mast Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	134	46	10	58	51	56	5	436	48	50	411	108
Future Volume (vph)	134	46	10	58	51	56	5	436	48	50	411	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.92			1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	1815		1805	1752			1858	1583	1805	1841	
Flt Permitted	0.68	1.00		0.71	1.00			0.99	1.00	0.29	1.00	
Satd. Flow (perm)	1293	1815		1350	1752			1846	1583	549	1841	
Peak-hour factor, PHF	0.80	0.80	0.80	0.90	0.90	0.90	0.87	0.87	0.87	0.88	0.88	0.88
Adj. Flow (vph)	168	58	12	64	57	62	6	501	55	57	467	123
RTOR Reduction (vph)	0	10	0	0	49	0	0	0	30	0	13	0
Lane Group Flow (vph)	168	61	0	64	70	0	0	507	25	57	577	0
Heavy Vehicles (%)	0%	0%	10%	0%	0%	0%	20%	2%	2%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		8			4			2		1	6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	9.6	9.6		9.6	9.6			22.7	22.7	32.0	32.0	
Effective Green, g (s)	11.6	11.6		11.6	11.6			24.7	24.7	34.0	34.0	
Actuated g/C Ratio	0.22	0.22		0.22	0.22			0.46	0.46	0.63	0.63	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	279	392		292	379			850	729	472	1167	
v/s Ratio Prot		0.03			0.04					0.01	c0.31	
v/s Ratio Perm	c0.13			0.05				c0.27	0.02	0.06		
v/c Ratio	0.60	0.16		0.22	0.19			0.60	0.03	0.12	0.49	
Uniform Delay, d1	18.9	17.0		17.3	17.1			10.7	7.9	5.0	5.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.6	0.2		0.4	0.2			1.1	0.0	0.1	0.3	
Delay (s)	22.6	17.2		17.7	17.4			11.9	7.9	5.1	5.6	
Level of Service	C	B		B	B			B	A	A	A	
Approach Delay (s)		21.0			17.5			11.5			5.5	
Approach LOS		C			B			B			A	

Intersection Summary

HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	53.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection												
Int Delay, s/veh	10.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	136	3	84	0	3	17	83	333	0	9	291	194
Future Vol, veh/h	136	3	84	0	3	17	83	333	0	9	291	194
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	56	56	56	96	96	96	86	86	86
Heavy Vehicles, %	4	0	2	0	0	0	4	4	0	0	5	2
Mvmt Flow	151	3	93	0	5	30	86	347	0	10	338	226

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1008	990	451	1038	1103	347	564	0	0	347	0	0
Stage 1	471	471	-	519	519	-	-	-	-	-	-	-
Stage 2	537	519	-	519	584	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.5	6.22	7.1	6.5	6.2	4.14	-	-	4.1	-	-
Critical Hdwy Stg 1	6.14	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4	3.318	3.5	4	3.3	2.236	-	-	2.2	-	-
Pot Cap-1 Maneuver	217	248	608	211	213	701	998	-	-	1223	-	-
Stage 1	570	563	-	544	536	-	-	-	-	-	-	-
Stage 2	524	536	-	544	501	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	189	225	608	164	193	701	998	-	-	1223	-	-
Mov Cap-2 Maneuver	189	225	-	164	193	-	-	-	-	-	-	-
Stage 1	521	558	-	497	490	-	-	-	-	-	-	-
Stage 2	453	490	-	454	497	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	51.3	12.7	1.8	0.1
HCM LOS	F	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	998	-	-	190	608	503	1223	-	-
HCM Lane V/C Ratio	0.087	-	-	0.813	0.154	0.071	0.009	-	-
HCM Control Delay (s)	8.9	-	-	75.1	12	12.7	8	-	-
HCM Lane LOS	A	-	-	F	B	B	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	5.7	0.5	0.2	0	-	-

Intersection						
Int Delay, s/veh	2.4					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	176	20	66	214	22	48
Future Vol, veh/h	176	20	66	214	22	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	0	0	0	0	0
Mvmt Flow	196	22	73	238	24	53

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	218	0	591	207
Stage 1	-	-	-	-	207	-
Stage 2	-	-	-	-	384	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1364	-	473	839
Stage 1	-	-	-	-	832	-
Stage 2	-	-	-	-	693	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1364	-	447	839
Mov Cap-2 Maneuver	-	-	-	-	447	-
Stage 1	-	-	-	-	832	-
Stage 2	-	-	-	-	656	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.8	11.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	658	-	-	1364	-
HCM Lane V/C Ratio	0.118	-	-	0.054	-
HCM Control Delay (s)	11.2	-	-	7.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	13	0	401	365	0
Future Vol, veh/h	0	13	0	401	365	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	1	2	0
Mvmt Flow	0	14	0	446	406	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	406	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	649	0	-	-	0
Stage 1	0	-	0	-	-	0
Stage 2	0	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	649	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	649	-
HCM Lane V/C Ratio	-	0.022	-
HCM Control Delay (s)	-	10.7	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.1	-

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	122	42	28	155	0	39	3	80	1	3	1
Future Vol, veh/h	1	122	42	28	155	0	39	3	80	1	3	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	1	2	0	0	0	3	0	0	0	0	0
Mvmt Flow	1	136	47	31	172	0	43	3	89	1	3	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	172	0	0	183	0	0	398	396	160	442	419	172
Stage 1	-	-	-	-	-	-	162	162	-	234	234	-
Stage 2	-	-	-	-	-	-	236	234	-	208	185	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.13	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.527	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1417	-	-	1404	-	-	560	544	890	529	528	877
Stage 1	-	-	-	-	-	-	838	768	-	774	715	-
Stage 2	-	-	-	-	-	-	765	715	-	799	751	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1417	-	-	1404	-	-	547	531	890	466	516	877
Mov Cap-2 Maneuver	-	-	-	-	-	-	547	531	-	466	516	-
Stage 1	-	-	-	-	-	-	837	767	-	773	699	-
Stage 2	-	-	-	-	-	-	744	699	-	715	750	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.2	11	11.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	731	1417	-	-	1404	-	-	549
HCM Lane V/C Ratio	0.185	0.001	-	-	0.022	-	-	0.01
HCM Control Delay (s)	11	7.5	0	-	7.6	-	-	11.6
HCM Lane LOS	B	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0.1	-	-	0

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Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	145	50	63	56	6	480	52	55	449
Future Volume (vph)	145	50	63	56	6	480	52	55	449
Lane Group Flow (vph)	161	68	70	131	0	540	58	61	631
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		8		4		2		1	6
Permitted Phases	8		4		2		2	6	
Detector Phase	8	8	4	4	2	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	22.0	22.0	9.0	22.0
Total Split (s)	22.0	22.0	22.0	22.0	28.0	28.0	28.0	14.0	42.0
Total Split (%)	34.4%	34.4%	34.4%	34.4%	43.8%	43.8%	43.8%	21.9%	65.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0
Lead/Lag					Lag	Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	Min	None	Min
Act Effct Green (s)	14.0	14.0	13.6	13.6		26.6	26.6	31.5	32.9
Actuated g/C Ratio	0.28	0.28	0.27	0.27		0.53	0.53	0.63	0.66
v/c Ratio	0.45	0.13	0.19	0.25		0.55	0.06	0.11	0.52
Control Delay	22.7	15.1	18.4	10.9		17.4	0.1	5.7	8.4
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	22.7	15.1	18.4	10.9		17.4	0.1	5.7	8.4
LOS	C	B	B	B		B	A	A	A
Approach Delay		20.4		13.5		15.7			8.2
Approach LOS		C		B		B			A
Queue Length 50th (ft)	49	15	20	17		152	0	7	101
Queue Length 95th (ft)	101	42	49	54		#329	0	21	207
Internal Link Dist (ft)		1120		720		420			720
Turn Bay Length (ft)	150		25				175	125	
Base Capacity (vph)	508	730	538	737		1042	961	604	1428
Starvation Cap Reductn	0	0	0	0		0	0	0	0
Spillback Cap Reductn	0	0	0	0		0	0	0	0
Storage Cap Reductn	0	0	0	0		0	0	0	0
Reduced v/c Ratio	0.32	0.09	0.13	0.18		0.52	0.06	0.10	0.44

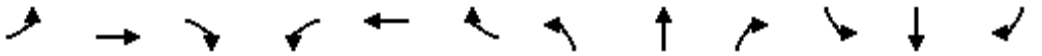
Intersection Summary

Cycle Length: 64
Actuated Cycle Length: 50
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.55
Intersection Signal Delay: 13.0 Intersection LOS: B
Intersection Capacity Utilization 67.1% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 6: NH108/Durham Road & Mast Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	50	11	63	56	62	6	480	52	55	449	119
Future Volume (vph)	145	50	11	63	56	62	6	480	52	55	449	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.92			1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	1818		1805	1750			1857	1583	1805	1840	
Flt Permitted	0.67	1.00		0.71	1.00			0.99	1.00	0.27	1.00	
Satd. Flow (perm)	1279	1818		1354	1750			1843	1583	504	1840	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	161	56	12	70	62	69	7	533	58	61	499	132
RTOR Reduction (vph)	0	9	0	0	54	0	0	0	31	0	13	0
Lane Group Flow (vph)	161	59	0	70	77	0	0	540	27	61	618	0
Heavy Vehicles (%)	0%	0%	10%	0%	0%	0%	20%	2%	2%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		8			4			2		1	6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	9.5	9.5		9.5	9.5			23.0	23.0	32.4	32.4	
Effective Green, g (s)	11.5	11.5		11.5	11.5			25.0	25.0	34.4	34.4	
Actuated g/C Ratio	0.21	0.21		0.21	0.21			0.46	0.46	0.64	0.64	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	272	387		288	373			854	734	452	1174	
v/s Ratio Prot		0.03			0.04					0.01	c0.34	
v/s Ratio Perm	c0.13			0.05				c0.29	0.02	0.07		
v/c Ratio	0.59	0.15		0.24	0.21			0.63	0.04	0.13	0.53	
Uniform Delay, d1	19.1	17.2		17.6	17.4			11.0	7.9	5.2	5.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.4	0.2		0.4	0.3			1.5	0.0	0.1	0.4	
Delay (s)	22.5	17.4		18.0	17.7			12.5	7.9	5.3	5.7	
Level of Service	C	B		B	B			B	A	A	A	
Approach Delay (s)		21.0			17.8			12.1			5.7	
Approach LOS		C			B			B			A	

Intersection Summary

HCM 2000 Control Delay	11.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	53.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection												
Int Delay, s/veh	13.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	136	3	84	0	3	17	83	370	0	9	323	194
Future Vol, veh/h	136	3	84	0	3	17	83	370	0	9	323	194
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	56	56	56	96	96	96	86	86	86
Heavy Vehicles, %	4	0	2	0	0	0	4	4	0	0	5	2
Mvmt Flow	151	3	93	0	5	30	86	385	0	10	376	226

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1084	1066	489	1114	1179	385	602	0	0	385	0	0
Stage 1	509	509	-	557	557	-	-	-	-	-	-	-
Stage 2	575	557	-	557	622	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.5	6.22	7.1	6.5	6.2	4.14	-	-	4.1	-	-
Critical Hdwy Stg 1	6.14	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4	3.318	3.5	4	3.3	2.236	-	-	2.2	-	-
Pot Cap-1 Maneuver	193	224	579	187	192	667	966	-	-	1185	-	-
Stage 1	543	541	-	518	515	-	-	-	-	-	-	-
Stage 2	500	515	-	518	482	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	167	202	579	143	174	667	966	-	-	1185	-	-
Mov Cap-2 Maneuver	167	202	-	143	174	-	-	-	-	-	-	-
Stage 1	495	537	-	472	469	-	-	-	-	-	-	-
Stage 2	430	469	-	428	478	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	69.6	13.3	1.7	0.1
HCM LOS	F	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	966	-	-	168	579	468	1185	-	-
HCM Lane V/C Ratio	0.09	-	-	0.919	0.161	0.076	0.009	-	-
HCM Control Delay (s)	9.1	-	-	104.2	12.4	13.3	8.1	-	-
HCM Lane LOS	A	-	-	F	B	B	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	6.8	0.6	0.2	0	-	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	176	20	66	214	22	48
Future Vol, veh/h	176	20	66	214	22	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	0	0	0	0	0
Mvmt Flow	196	22	73	238	24	53

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	218	0	591	207
Stage 1	-	-	-	-	207	-
Stage 2	-	-	-	-	384	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1364	-	473	839
Stage 1	-	-	-	-	832	-
Stage 2	-	-	-	-	693	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1364	-	447	839
Mov Cap-2 Maneuver	-	-	-	-	447	-
Stage 1	-	-	-	-	832	-
Stage 2	-	-	-	-	656	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.8	11.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	658	-	-	1364	-
HCM Lane V/C Ratio	0.118	-	-	0.054	-
HCM Control Delay (s)	11.2	-	-	7.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	13	0	438	397	0
Future Vol, veh/h	0	13	0	438	397	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	1	2	0
Mvmt Flow	0	14	0	487	441	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	441	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	621	0	-	-	0
Stage 1	0	-	0	-	-	0
Stage 2	0	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	621	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.9	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	621	-
HCM Lane V/C Ratio	-	0.023	-
HCM Control Delay (s)	-	10.9	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.1	-

APPENDIX J

PM Queue/Delay Calibration Calculations

Peak Hour: 4:45pm 7/25/2024
Grapevine Drive

D=DARK C=CAR
L=LIGHT T-TRUCK
R=RED S=SUV

Left = 114, Thru = 2

Vehicle ID	Vehicle color	Vehicle Type	Entered Queue	Cleared Queue	Delay	Left or Thru	Queue Length @ arrival
1	L	S	4:45:00	4:45:01	0:00:01	L	2
2	L	S	4:45:49	4:46:07	0:00:18	L	2
3	L	C	4:45:54	4:46:09	0:00:15	L	2
4	L	S	4:45:54	4:46:15	0:00:21	L	3
5	D	S	4:46:25	4:46:38	0:00:13	L	2
6	L	S	4:45:39	4:46:49	0:01:10	L	2
7	D	S	4:47:32	4:47:46	0:00:14	L	2
8	L	S	4:47:42	4:47:53	0:00:11	L	2
9	L	C	4:47:49	4:48:07	0:00:18	L	2
10	L	T	4:48:28	4:49:07	0:00:39	L	2
11	R	C	4:48:33	4:49:15	0:00:42	L	2
12	L	C	4:48:59	4:49:22	0:00:23	L	3
13	L	T	4:49:36	4:49:36	0:00:00	L	2
14	D	C	4:49:48	4:50:37	0:00:49	L	2
15	L	C	4:49:58	4:50:44	0:00:46	L	2
16	L	C	4:51:03	4:51:42	0:00:39	L	2
17	L	S	4:51:10	4:52:09	0:00:59	L	2
18	L	S	4:51:20	4:52:15	0:00:55	L	3
19	L	S	4:51:49	4:52:27	0:00:38	L	3
20	L	C	4:52:06	4:52:32	0:00:26	L	4
21	L	C	4:54:03	4:54:08	0:00:05	L	2
22	D	C	4:54:23	4:54:44	0:00:21	L	2
23	D	C	4:54:32	4:55:11	0:00:39	L	2
24	D	S	4:54:32	4:55:20	0:00:48	L	3
25	L	C	4:54:53	4:55:26	0:00:33	L	3
26	D	C	4:55:53	4:55:57	0:00:04	L	2
27	L	C	4:56:24	4:56:28	0:00:04	L	2
28	D	C	4:56:35	4:57:02	0:00:27	L	2
29	D	C	4:57:29	4:57:41	0:00:12	L	2
30	R	T	4:57:57	4:57:58	0:00:01	L	2
31	D	C	4:59:26	5:00:18	0:00:52	L	2
32	D	C	4:59:34	5:00:24	0:00:50	L	2
33	L	C	5:00:06	5:00:36	0:00:30	L	3
34	D	S	5:00:17	5:00:39	0:00:22	L	4
35	D	T	5:01:34	5:02:11	0:00:37	L	1
36	D	C	5:02:46	5:02:50	0:00:04	L	1
37	D	C	5:03:18	5:03:25	0:00:07	L	1
38	L	S	5:03:34	5:03:42	0:00:08	L	1
39	R	T	5:03:45	5:04:42	0:00:57	L	1
40	D	S	5:04:44	5:04:47	0:00:03	L	1
41	L	C	5:04:52	5:05:26	0:00:34	L	1
42	D	C	5:05:53	5:06:39	0:00:46	L	1
43	D	S	5:06:26	5:06:40	0:00:14	L	2
44	L	C	5:07:02	5:07:09	0:00:07	L	1
45	D	C	5:10:57	5:11:36	0:00:39	L	1
46	D	S	5:11:17	5:11:40	0:00:23	L	2
47	L	C	5:10:35	5:11:45	0:01:10	L	3
48	D	S	5:11:48	5:11:51	0:00:03	L	2
49	D	S	5:11:50	5:11:52	0:00:02	L	2
50	D	C	5:11:54	5:12:20	0:00:26	L	1
51	L	S	5:12:36	5:13:13	0:00:37	L	1
52	L	C	5:12:41	5:13:18	0:00:37	L	2
53	D	C	5:12:57	5:13:26	0:00:29	L	3
54	L	S	5:13:44	5:14:11	0:00:27	L	1
55	L	S	5:14:43	5:14:48	0:00:05	L	1
56	D	S	5:15:06	5:15:18	0:00:12	T	1
57	D	S	5:15:38	5:15:44	0:00:06	L	1
58	D	S	5:16:18	5:17:16	0:00:58	L	1
59	L	C	5:16:22	5:17:57	0:01:35	L	2
60	L	C	5:16:24	5:18:00	0:01:36	L	3
61	L	S	5:16:44	5:18:14	0:01:30	L	4
62	D	S	5:19:21	5:20:12	0:00:51	L	1
63	D	C	5:19:33	5:20:22	0:00:49	L	3

Right = 58

Vehicle ID	Vehicle color	Vehicle Type	Entered Queue	Cleared Queue	Delay
1	D	C	4:45:15	4:45:15	0:00:00
2	L	C	4:45:38	4:45:49	0:00:11
3	L	C	4:45:45	4:46:07	0:00:22
4	D	C	4:46:27	4:46:29	0:00:02
5	D	C	4:47:20	4:47:24	0:00:04
6	L	C	4:47:54	4:47:58	0:00:04
7	L	C	4:49:43	4:49:43	0:00:00
8	D	C	4:49:54	4:50:25	0:00:31
9	D	S	4:53:10	4:53:10	0:00:00
10	D	T	4:53:45	4:53:45	0:00:00
11	D	C	4:54:12	4:54:23	0:00:11
12	L	C	4:54:53	4:54:56	0:00:03
13	L	S	4:55:55	4:56:01	0:00:06
14	L	C	4:57:25	4:57:25	0:00:00
15	L	S	4:57:35	4:57:35	0:00:00
16	L	T	4:57:46	4:57:49	0:00:03
17	D	C	4:58:27	4:58:33	0:00:06
18	D	C	4:58:54	4:58:55	0:00:01
19	D	S	5:01:25	5:01:26	0:00:01
20	L	C	5:01:58	5:02:02	0:00:04
21	L	S	5:03:42	5:03:45	0:00:03
22	L	T	5:04:23	5:04:28	0:00:05
23	L	C	5:06:21	5:06:29	0:00:08
24	R	C	5:07:36	5:07:45	0:00:09
25	D	S	5:07:49	5:07:51	0:00:02
26	L	T	5:08:41	5:08:41	0:00:00
27	L	T	5:10:01	5:10:09	0:00:08
28	D	S	5:10:38	5:10:43	0:00:05
29	D	S	5:12:08	5:12:12	0:00:04
30	D	C	5:13:13	5:13:13	0:00:00
31	D	C	5:15:35	5:15:36	0:00:01
32	D	C	5:16:00	5:16:04	0:00:04
33	D	S	5:18:57	5:18:57	0:00:00
34	D	S	5:19:21	5:19:22	0:00:01
35	R	S	5:19:26	5:19:55	0:00:29
36	L	T	5:21:02	5:21:02	0:00:00
37	D	T	5:21:44	5:21:59	0:00:15
38	L	C	5:22:56	5:22:56	0:00:00
39	D	S	5:23:06	5:23:09	0:00:03
40	D	C	5:24:18	5:24:19	0:00:01
41	L	T	5:24:24	5:24:25	0:00:01
42	L	S	5:24:41	5:24:44	0:00:03
43	D	T	5:24:48	5:24:48	0:00:00
44	D	S	5:24:54	5:24:55	0:00:01
45	D	C	5:26:21	5:26:29	0:00:08
46	D	S	5:26:37	5:26:39	0:00:02
47	L	C	5:28:52	5:29:17	0:00:25
48	L	C	5:29:15	5:29:22	0:00:07
49	D	S	5:31:20	5:31:20	0:00:00
50	D	C	5:34:45	5:34:48	0:00:03
51	D	S	5:34:55	5:34:55	0:00:00
52	D	S	5:35:29	5:35:31	0:00:02
53	D	S	5:36:00	5:36:03	0:00:03
54	D	S	5:37:54	5:38:04	0:00:10
55	L	T	5:38:18	5:38:20	0:00:02
56	L	T	5:38:25	5:38:33	0:00:08
57	L	C	5:40:22	5:40:29	0:00:07
58	D	T	5:41:37	5:41:41	0:00:04
59	L	S	5:43:09	5:43:27	0:00:18

AVERAGE DELAY	*0:00:05*
Max Delay	0:00:31

Peak Hour: 4:45pm 7/25/2024
Grapevine Drive

L=LIGHT T-TRUCK
R=RED S=SUV

Left = 114, Thru = 2

Vehicle ID	Vehicle color	Vehicle Type	Entered Queue	Cleared Queue	Delay	Left or Thru	Queue Length @ arrival
64	D	C	5:19:42	5:21:44	0:02:02	L	4
65	L	S	5:21:55	5:22:09	0:00:14	L	1
66	R	C	5:22:10	5:22:14	0:00:04	L	1
67	D	S	5:22:16	5:22:18	0:00:02	L	
68	L	C	5:22:25	5:22:25	0:00:00	L	
69	L	T	5:23:29	5:24:14	0:00:45	L	
70	D	C	5:24:32	5:24:41	0:00:09	L	
71	D	T	5:24:24	5:24:24	0:00:00	L	
72	L	C	5:25:27	5:25:36	0:00:09	L	
73	L	S	5:25:31	5:25:40	0:00:09	L	
74	D	S	5:25:51	5:26:11	0:00:20	L	
75	D	S	5:26:14	5:26:14	0:00:00	L	
76	D	C	5:26:25	5:26:26	0:00:01	L	
77	L	S	5:26:38	5:26:43	0:00:05	L	
78	D	S	5:28:18	5:28:35	0:00:17	L	
79	D	S	5:28:24	5:28:38	0:00:14	L	
80	L	T	5:28:25	5:28:42	0:00:17	L	3
81	L	C	5:28:34	5:29:46	0:01:12	L	4
82	D	C	5:28:49	5:29:50	0:01:01	L	
83	D	C	5:29:27	5:30:00	0:00:33	L	
84	D	C	5:30:08	5:30:13	0:00:05	L	
85	D	T	5:30:56	5:31:29	0:00:33	L	
86	R	S	5:31:36	5:32:08	0:00:32	L	
87	D	C	5:33:07	5:33:21	0:00:14	L	
88	D	C	5:33:07	5:33:30	0:00:23	L	
89	D	C	5:33:14	5:33:35	0:00:21	L	3
90	D	S	5:34:00	5:34:45	0:00:45	L	
91	D	S	5:34:36	5:35:10	0:00:34	L	
92	L	C	5:35:00	5:35:41	0:00:41	L	
93	D	S	5:35:10	5:35:43	0:00:33	L	
94	D	S	5:35:25	5:35:50	0:00:25	L	3
95	D	C	5:35:31	5:36:05	0:00:34	L	4
96	D	C	5:35:57	5:37:14	0:01:17	L	
97	L	T	5:36:55	5:38:41	0:01:46	L	
98	D	S	5:36:55	5:38:43	0:01:48	L	3
99	L	C	5:37:00	5:39:11	0:02:11	L	4
100	L	S	5:37:10	5:39:16	0:02:06	L	5
101	L	S	5:37:25	5:39:59	0:02:34	L	5
102	R	C	5:37:44	5:40:30	0:02:46	L	6
103	L	C	5:38:25	5:40:41	0:02:16	L	7
104	L	C	5:38:45	5:40:42	0:01:57	L	6
105	L	S	5:39:37	5:40:49	0:01:12	L	5
106	D	S	5:40:05	5:40:52	0:00:47	L	5
107	L	C	5:40:14	5:41:26	0:01:12	L	
108	D	C	5:40:59	5:41:28	0:00:29	L	
109	D	S	5:41:31	5:41:49	0:00:18	L	
110	D	S	5:41:35	5:41:51	0:00:16	L	
111	L	S	5:41:43	5:41:55	0:00:12	L	
112	L	S	5:41:48	5:41:59	0:00:11	T	4
113	L	S	5:42:17	5:42:19	0:00:02	L	
114	L	S	5:42:18	5:42:25	0:00:07	L	
115	R	C	5:42:54	5:43:02	0:00:08	L	
116	D	S	5:42:56	5:43:04	0:00:08	L	
117	L	S	5:43:09	5:43:41	0:00:32	L	
118	D	S	5:44:11	5:44:17	0:00:06	L	
119	D	S	5:44:21	5:44:36	0:00:15	L	

Right = 58

Vehicle ID	Vehicle color	Vehicle Type	Entered Queue	Cleared Queue	Delay

PEAK HR AVG DELAY	*0:00:35*
Max Delay	0:02:46
PEAK 15M AVG DELAY	*0:00:31*

7	Max Queue
2.5125	Ave Queue

APPENDIX K

Turning Movement Counts

PDI

Accurate Counts

PRECISION DATA INDUSTRIES, LLC

Location Map: 240098 Dover, NH

Precision Data Industries, LLC 157 Washington Street, Suite 2, Hudson, MA 01749 ph: 508-875-0100 email: datarequests@pdillc.com

(3) 7-9am/3-6pm TMCs
(3) Sat 11am-2pm TMCs

** 5 VCUs
2 VCUs @ A and B



Client:	Engineer:	Site Code:	Date:	PDI Job #	City, State:
TF Moran	J. Porter	46001.32	Thurs 7/25 and Sat 7/27/2024	240098	Dover, NH

PDI File #: **240098 A**
Location: **N: Durham Road S: Durham Road**
Location: **E: Deerfield Drive W: Grapevine Drive**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Durham Road from North					Deerfield Drive from East					Durham Road from South					Grapevine Drive from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	4	87	1	0	92	3	0	0	0	3	0	60	7	0	67	1	0	9	0	10	172
7:15 AM	5	96	1	0	102	1	0	1	0	2	0	74	3	0	77	4	0	8	0	12	193
7:30 AM	11	125	1	0	137	6	0	0	0	6	0	94	7	0	101	4	0	3	0	7	251
7:45 AM	9	112	0	0	121	3	0	0	0	3	1	91	4	0	96	6	0	12	0	18	238
Total	29	420	3	0	452	13	0	1	0	14	1	319	21	0	341	15	0	32	0	47	854
8:00 AM	10	95	2	0	107	4	0	1	0	5	0	104	4	0	108	1	0	5	0	6	226
8:15 AM	8	112	1	0	121	3	0	0	0	3	0	93	4	0	97	7	0	5	0	12	233
8:30 AM	16	107	0	0	123	3	0	0	0	3	1	85	6	0	92	5	0	8	0	13	231
8:45 AM	13	89	3	0	105	5	0	1	0	6	0	91	4	0	95	4	0	11	0	15	221
Total	47	403	6	0	456	15	0	2	0	17	1	373	18	0	392	17	0	29	0	46	911
Grand Total	76	823	9	0	908	28	0	3	0	31	2	692	39	0	733	32	0	61	0	93	1765
Approach %	8.4	90.6	1.0	0.0		90.3	0.0	9.7	0.0		0.3	94.4	5.3	0.0		34.4	0.0	65.6	0.0		
Total %	4.3	46.6	0.5	0.0	51.4	1.6	0.0	0.2	0.0	1.8	0.1	39.2	2.2	0.0	41.5	1.8	0.0	3.5	0.0	5.3	
Exiting Leg Total					781					11					858					115	1765
Cars	74	782	8	0	864	28	0	3	0	31	2	656	36	0	694	30	0	59	0	89	1678
% Cars	97.4	95.0	88.9	0.0	95.2	100.0	0.0	100.0	0.0	100.0	100.0	94.8	92.3	0.0	94.7	93.8	0.0	96.7	0.0	95.7	95.1
Exiting Leg Total					743					10					815					110	1678
Heavy Vehicles	2	41	1	0	44	0	0	0	0	0	0	36	3	0	39	2	0	2	0	4	87
% Heavy Vehicles	2.6	5.0	11.1	0.0	4.8	0.0	0.0	0.0	0.0	0.0	0.0	5.2	7.7	0.0	5.3	6.3	0.0	3.3	0.0	4.3	4.9
Exiting Leg Total					38					1					43					5	87

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:30 AM	Durham Road from North					Deerfield Drive from East					Durham Road from South					Grapevine Drive from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:30 AM	11	125	1	0	137	6	0	0	0	6	0	94	7	0	101	4	0	3	0	7	251
7:45 AM	9	112	0	0	121	3	0	0	0	3	1	91	4	0	96	6	0	12	0	18	238
8:00 AM	10	95	2	0	107	4	0	1	0	5	0	104	4	0	108	1	0	5	0	6	226
8:15 AM	8	112	1	0	121	3	0	0	0	3	0	93	4	0	97	7	0	5	0	12	233
Total Volume	38	444	4	0	486	16	0	1	0	17	1	382	19	0	402	18	0	25	0	43	948
% Approach Total	7.8	91.4	0.8	0.0		94.1	0.0	5.9	0.0		0.2	95.0	4.7	0.0		41.9	0.0	58.1	0.0		
PHF	0.864	0.888	0.500	0.000	0.887	0.667	0.000	0.250	0.000	0.708	0.250	0.918	0.679	0.000	0.931	0.643	0.000	0.521	0.000	0.597	0.944
Cars	36	423	4	0	463	16	0	1	0	17	1	365	17	0	383	17	0	23	0	40	903
Cars %	94.7	95.3	100.0	0.0	95.3	100.0	0.0	100.0	0.0	100.0	100.0	95.5	89.5	0.0	95.3	94.4	0.0	92.0	0.0	93.0	95.3
Heavy Vehicles	2	21	0	0	23	0	0	0	0	0	0	17	2	0	19	1	0	2	0	3	45
Heavy Vehicles %	5.3	4.7	0.0	0.0	4.7	0.0	0.0	0.0	0.0	0.0	0.0	4.5	10.5	0.0	4.7	5.6	0.0	8.0	0.0	7.0	4.7
Cars Enter Leg	36	423	4	0	463	16	0	1	0	17	1	365	17	0	383	17	0	23	0	40	903
Heavy Enter Leg	2	21	0	0	23	0	0	0	0	0	0	17	2	0	19	1	0	2	0	3	45
Total Entering Leg	38	444	4	0	486	16	0	1	0	17	1	382	19	0	402	18	0	25	0	43	948
Cars Exiting Leg					404					5					441					53	903
Heavy Exiting Leg					19					0					22					4	45
Total Exiting Leg					423					5					463					57	948

PDI File #: **240098 A**
Location: **N: Durham Road S: Durham Road**
Location: **E: Deerfield Drive W: Grapevine Drive**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class: **Cars**

	Durham Road from North					Deerfield Drive from East					Durham Road from South					Grapevine Drive from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	4	84	1	0	89	3	0	0	0	3	0	55	6	0	61	0	0	9	0	9	162
7:15 AM	5	87	1	0	93	1	0	1	0	2	0	69	3	0	72	4	0	8	0	12	179
7:30 AM	10	120	1	0	131	6	0	0	0	6	0	86	7	0	93	4	0	3	0	7	237
7:45 AM	9	105	0	0	114	3	0	0	0	3	1	89	3	0	93	6	0	11	0	17	227
Total	28	396	3	0	427	13	0	1	0	14	1	299	19	0	319	14	0	31	0	45	805
8:00 AM	9	89	2	0	100	4	0	1	0	5	0	100	3	0	103	1	0	4	0	5	213
8:15 AM	8	109	1	0	118	3	0	0	0	3	0	90	4	0	94	6	0	5	0	11	226
8:30 AM	16	105	0	0	121	3	0	0	0	3	1	80	6	0	87	5	0	8	0	13	224
8:45 AM	13	83	2	0	98	5	0	1	0	6	0	87	4	0	91	4	0	11	0	15	210
Total	46	386	5	0	437	15	0	2	0	17	1	357	17	0	375	16	0	28	0	44	873
Grand Total	74	782	8	0	864	28	0	3	0	31	2	656	36	0	694	30	0	59	0	89	1678
Approach %	8.6	90.5	0.9	0.0		90.3	0.0	9.7	0.0		0.3	94.5	5.2	0.0		33.7	0.0	66.3	0.0		
Total %	4.4	46.6	0.5	0.0	51.5	1.7	0.0	0.2	0.0	1.8	0.1	39.1	2.1	0.0	41.4	1.8	0.0	3.5	0.0	5.3	
Exiting Leg Total					743					10					815					110	1678

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:30 AM	Durham Road from North					Deerfield Drive from East					Durham Road from South					Grapevine Drive from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:30 AM	10	120	1	0	131	6	0	0	0	6	0	86	7	0	93	4	0	3	0	7	237
7:45 AM	9	105	0	0	114	3	0	0	0	3	1	89	3	0	93	6	0	11	0	17	227
8:00 AM	9	89	2	0	100	4	0	1	0	5	0	100	3	0	103	1	0	4	0	5	213
8:15 AM	8	109	1	0	118	3	0	0	0	3	0	90	4	0	94	6	0	5	0	11	226
Total Volume	36	423	4	0	463	16	0	1	0	17	1	365	17	0	383	17	0	23	0	40	903
% Approach Total	7.8	91.4	0.9	0.0		94.1	0.0	5.9	0.0		0.3	95.3	4.4	0.0		42.5	0.0	57.5	0.0		
PHF	0.900	0.881	0.500	0.000	0.884	0.667	0.000	0.250	0.000	0.708	0.250	0.913	0.607	0.000	0.930	0.708	0.000	0.523	0.000	0.588	0.953
Entering Leg	36	423	4	0	463	16	0	1	0	17	1	365	17	0	383	17	0	23	0	40	903
Exiting Leg					404					5					441					53	903
Total					867					22					824					93	1806

PDI File #: **240098 A**
Location: **N: Durham Road S: Durham Road**
Location: **E: Deerfield Drive W: Grapevine Drive**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Durham Road from North					Deerfield Drive from East					Durham Road from South					Grapevine Drive from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	3	0	0	3	0	0	0	0	0	0	5	1	0	6	1	0	0	0	1	10
7:15 AM	0	9	0	0	9	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	14
7:30 AM	1	5	0	0	6	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	14
7:45 AM	0	7	0	0	7	0	0	0	0	0	0	2	1	0	3	0	0	1	0	1	11
Total	1	24	0	0	25	0	0	0	0	0	0	20	2	0	22	1	0	1	0	2	49
8:00 AM	1	6	0	0	7	0	0	0	0	0	0	4	1	0	5	0	0	1	0	1	13
8:15 AM	0	3	0	0	3	0	0	0	0	0	0	3	0	0	3	1	0	0	0	1	7
8:30 AM	0	2	0	0	2	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	7
8:45 AM	0	6	1	0	7	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	11
Total	1	17	1	0	19	0	0	0	0	0	0	16	1	0	17	1	0	1	0	2	38
Grand Total	2	41	1	0	44	0	0	0	0	0	0	36	3	0	39	2	0	2	0	4	87
Approach %	4.5	93.2	2.3	0.0		0.0	0.0	0.0	0.0		0.0	92.3	7.7	0.0		50.0	0.0	50.0	0.0		
Total %	2.3	47.1	1.1	0.0	50.6	0.0	0.0	0.0	0.0	0.0	0.0	41.4	3.4	0.0	44.8	2.3	0.0	2.3	0.0	4.6	
Exiting Leg Total					38					1					43					5	87
Buses	0	6	0	0	6	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	7
% Buses	0.0	14.6	0.0	0.0	13.6	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.0	2.6	0.0	0.0	0.0	0.0	0.0	8.0
Exiting Leg Total					1					0					6					0	7
Single-Unit Trucks	2	31	1	0	34	0	0	0	0	0	0	24	3	0	27	1	0	2	0	3	64
% Single-Unit	100.0	75.6	100.0	0.0	77.3	0.0	0.0	0.0	0.0	0.0	0.0	66.7	100.0	0.0	69.2	50.0	0.0	100.0	0.0	75.0	73.6
Exiting Leg Total					26					1					32					5	64
Articulated Trucks	0	4	0	0	4	0	0	0	0	0	0	11	0	0	11	1	0	0	0	1	16
% Articulated	0.0	9.8	0.0	0.0	9.1	0.0	0.0	0.0	0.0	0.0	0.0	30.6	0.0	0.0	28.2	50.0	0.0	0.0	0.0	25.0	18.4
Exiting Leg Total					11					0					5					0	16

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:15 AM	Durham Road from North					Deerfield Drive from East					Durham Road from South					Grapevine Drive from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:15 AM	0	9	0	0	9	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	14
7:30 AM	1	5	0	0	6	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	14
7:45 AM	0	7	0	0	7	0	0	0	0	0	0	2	1	0	3	0	0	1	0	1	11
8:00 AM	1	6	0	0	7	0	0	0	0	0	0	4	1	0	5	0	0	1	0	1	13
Total Volume	2	27	0	0	29	0	0	0	0	0	0	19	2	0	21	0	0	2	0	2	52
% Approach Total	6.9	93.1	0.0	0.0		0.0	0.0	0.0	0.0		0.0	90.5	9.5	0.0		0.0	0.0	100.0	0.0		
PHF	0.500	0.750	0.000	0.000	0.806	0.000	0.000	0.000	0.000	0.000	0.000	0.594	0.500	0.000	0.656	0.000	0.000	0.500	0.000	0.500	0.929
Buses	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Buses %	0.0	18.5	0.0	0.0	17.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.6
Single-Unit Trucks	2	19	0	0	21	0	0	0	0	0	0	13	2	0	15	0	0	2	0	2	38
Single-Unit %	100.0	70.4	0.0	0.0	72.4	0.0	0.0	0.0	0.0	0.0	0.0	68.4	100.0	0.0	71.4	0.0	0.0	100.0	0.0	100.0	73.1
Articulated Trucks	0	3	0	0	3	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	9
Articulated %	0.0	11.1	0.0	0.0	10.3	0.0	0.0	0.0	0.0	0.0	0.0	31.6	0.0	0.0	28.6	0.0	0.0	0.0	0.0	0.0	17.3
Buses	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Single-Unit Trucks	2	19	0	0	21	0	0	0	0	0	0	13	2	0	15	0	0	2	0	2	38
Articulated Trucks	0	3	0	0	3	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	9
Total Entering Leg	2	27	0	0	29	0	0	0	0	0	0	19	2	0	21	0	0	2	0	2	52
Buses					0					0					5					0	5
Single-Unit Trucks					15					0					19					4	38
Articulated Trucks					6					0					3					0	9
Total Exiting Leg					21					0					27					4	52

PDI File #: **240098 A**
Location: **N: Durham Road S: Durham Road**
Location: **E: Deerfield Drive W: Grapevine Drive**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class: **Buses**

	Durham Road					Deerfield Drive					Durham Road					Grapevine Drive					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:45 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
8:00 AM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
Grand Total	0	6	0	0	6	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	7
Approach %	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	85.7	0.0	0.0	85.7	0.0	0.0	0.0	0.0	0.0	0.0	14.3	0.0	0.0	14.3	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					1					0					6					0	7

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:15 AM	Durham Road					Deerfield Drive					Durham Road					Grapevine Drive					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:15 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:45 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:00 AM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total Volume	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
% Approach Total	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.625	0.000	0.000	0.625	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.625
Entering Leg	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Exiting Leg					0					0					5					0	5
Total					5					0					5					0	10

PDI File #: **240098 A**
Location: **N: Durham Road S: Durham Road**
Location: **E: Deerfield Drive W: Grapevine Drive**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class: **Single-Unit Trucks**

	Durham Road					Deerfield Drive					Durham Road					Grapevine Drive					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	2	0	0	2	0	0	0	0	0	0	2	1	0	3	0	0	0	0	0	5
7:15 AM	0	6	0	0	6	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	10
7:30 AM	1	4	0	0	5	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	10
7:45 AM	0	5	0	0	5	0	0	0	0	0	0	1	1	0	2	0	0	1	0	1	8
Total	1	17	0	0	18	0	0	0	0	0	0	12	2	0	14	0	0	1	0	1	33
8:00 AM	1	4	0	0	5	0	0	0	0	0	0	3	1	0	4	0	0	1	0	1	10
8:15 AM	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	1	0	0	0	1	5
8:30 AM	0	2	0	0	2	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	6
8:45 AM	0	6	1	0	7	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	10
Total	1	14	1	0	16	0	0	0	0	0	0	12	1	0	13	1	0	1	0	2	31
Grand Total	2	31	1	0	34	0	0	0	0	0	0	24	3	0	27	1	0	2	0	3	64
Approach %	5.9	91.2	2.9	0.0		0.0	0.0	0.0	0.0		0.0	88.9	11.1	0.0		33.3	0.0	66.7	0.0		
Total %	3.1	48.4	1.6	0.0	53.1	0.0	0.0	0.0	0.0	0.0	0.0	37.5	4.7	0.0	42.2	1.6	0.0	3.1	0.0	4.7	
Exiting Leg Total					26					1					32					5	64

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:15 AM	Durham Road					Deerfield Drive					Durham Road					Grapevine Drive					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:15 AM	0	6	0	0	6	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	10
7:30 AM	1	4	0	0	5	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	10
7:45 AM	0	5	0	0	5	0	0	0	0	0	0	1	1	0	2	0	0	1	0	1	8
8:00 AM	1	4	0	0	5	0	0	0	0	0	0	3	1	0	4	0	0	1	0	1	10
Total Volume	2	19	0	0	21	0	0	0	0	0	0	13	2	0	15	0	0	2	0	2	38
% Approach Total	9.5	90.5	0.0	0.0		0.0	0.0	0.0	0.0		0.0	86.7	13.3	0.0		0.0	0.0	100.0	0.0		
PHF	0.500	0.792	0.000	0.000	0.875	0.000	0.000	0.000	0.000	0.000	0.000	0.650	0.500	0.000	0.750	0.000	0.000	0.500	0.000	0.500	0.950
Entering Leg	2	19	0	0	21	0	0	0	0	0	0	13	2	0	15	0	0	2	0	2	38
Exiting Leg					15					0					19					4	38
Total					36					0					34					6	76

PDI File #: **240098 A**
Location: **N: Durham Road S: Durham Road**
Location: **E: Deerfield Drive W: Grapevine Drive**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class:

Articulated Trucks

	Durham Road					Deerfield Drive					Durham Road					Grapevine Drive					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	1	0	0	0	1	4
7:15 AM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	3
7:45 AM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
Total	0	3	0	0	3	0	0	0	0	0	0	8	0	0	8	1	0	0	0	1	12
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
8:15 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	4
Grand Total	0	4	0	0	4	0	0	0	0	0	0	11	0	0	11	1	0	0	0	1	16
Approach %	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		100.0	0.0	0.0	0.0		
Total %	0.0	25.0	0.0	0.0	25.0	0.0	0.0	0.0	0.0	0.0	0.0	68.8	0.0	0.0	68.8	6.3	0.0	0.0	0.0	6.3	
Exiting Leg Total					11					0					5					0	16

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Durham Road					Deerfield Drive					Durham Road					Grapevine Drive					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	1	0	0	0	1	4
7:15 AM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	3
7:45 AM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
Total Volume	0	3	0	0	3	0	0	0	0	0	0	8	0	0	8	1	0	0	0	1	12
% Approach Total	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		100.0	0.0	0.0	0.0		
PHF	0.000	0.375	0.000	0.000	0.375	0.000	0.000	0.000	0.000	0.000	0.000	0.667	0.000	0.000	0.667	0.250	0.000	0.000	0.000	0.250	0.750
Entering Leg	0	3	0	0	3	0	0	0	0	0	0	8	0	0	8	1	0	0	0	1	12
Exiting Leg					8					0					4					0	12
Total					11					0					12					1	24

PDI File #: **240098 A**
Location: **N: Durham Road S: Durham Road**
Location: **E: Deerfield Drive W: Grapevine Drive**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION D A T A INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Durham Road from North							Deerfield Drive from East							Durham Road from South							Grapevine Drive from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Approach %	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	100.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total							0							1							0							0	1

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:45 AM	Durham Road from North							Deerfield Drive from East							Durham Road from South							Grapevine Drive from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	100.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exiting Leg							0							1							0							0	1
Total							0							2							0							0	2

PDI File #: **240098 A**
Location: **N: Durham Road S: Durham Road**
Location: **E: Deerfield Drive W: Grapevine Drive**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION D A T A INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Pedestrians

	Durham Road from North							Deerfield Drive from East							Durham Road from South							Grapevine Drive from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	0	0	0	0	0	0	0	0	0	0	0	2	1	3	0	0	0	0	0	0	0	0	0	0	0	0	1	1	4
Grand Total	0	0	0	0	0	0	0	0	0	0	0	3	1	4	0	0	0	0	0	0	0	0	0	0	0	0	1	1	5
Approach %	0	0	0	0	0	0		0	0	0	0	75	25		0	0	0	0	0	0		0	0	0	0	0	100		
Total %	0	0	0	0	0	0	0	0	0	0	0	60	20	80	0	0	0	0	0	0	0	0	0	0	0	0	20	20	
Exiting Leg Total							0							4							0							1	5

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Durham Road from North							Deerfield Drive from East							Durham Road from South							Grapevine Drive from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total Volume	0	0	0	0	0	0	0	0	0	0	0	2	1	3	0	0	0	0	0	0	0	0	0	0	0	0	1	1	4
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	66.7	33.3		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	100.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.250	0.375	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.500
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	2	1	3	0	0	0	0	0	0	0	0	0	0	0	0	1	1	4
Exiting Leg							0							3							0							1	4
Total							0							6							0							2	8

PDI File #: **240098 A**
Location: **N: Durham Road S: Durham Road**
Location: **E: Deerfield Drive W: Grapevine Drive**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **3:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Durham Road from North					Deerfield Drive from East					Durham Road from South					Grapevine Drive from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	29	85	2	1	117	4	0	0	0	4	0	100	13	0	113	5	0	15	0	20	254
3:15 PM	32	86	4	0	122	2	2	0	0	4	1	105	11	0	117	15	0	20	0	35	278
3:30 PM	26	88	15	0	129	3	1	1	0	5	0	121	16	0	137	15	1	30	0	46	317
3:45 PM	25	97	5	0	127	3	2	0	0	5	0	115	9	0	124	10	3	24	0	37	293
Total	112	356	26	1	495	12	5	1	0	18	1	441	49	0	491	45	4	89	0	138	1142
4:00 PM	30	80	7	0	117	2	0	0	0	2	1	109	15	0	125	6	2	22	0	30	274
4:15 PM	28	88	5	0	121	5	0	0	0	5	0	114	17	0	131	11	1	25	0	37	294
4:30 PM	38	82	6	0	126	3	0	0	0	3	0	101	14	0	115	13	3	25	0	41	285
4:45 PM	40	112	10	0	162	4	0	1	0	5	1	116	11	0	128	18	0	29	0	47	342
Total	136	362	28	0	526	14	0	1	0	15	2	440	57	0	499	48	6	101	0	155	1195
5:00 PM	38	103	7	0	148	1	0	0	0	1	1	137	14	0	152	9	0	25	0	34	335
5:15 PM	34	103	2	0	139	3	0	1	0	4	0	127	14	0	141	19	2	26	0	47	331
5:30 PM	43	96	3	0	142	2	0	0	0	2	0	130	20	0	150	12	0	34	0	46	340
5:45 PM	33	71	4	0	108	1	1	0	0	2	0	91	9	0	100	11	0	32	0	43	253
Total	148	373	16	0	537	7	1	1	0	9	1	485	57	0	543	51	2	117	0	170	1259
Grand Total	396	1091	70	1	1558	33	6	3	0	42	4	1366	163	0	1533	144	12	307	0	463	3596
Approach %	25.4	70.0	4.5	0.1		78.6	14.3	7.1	0.0		0.3	89.1	10.6	0.0		31.1	2.6	66.3	0.0		
Total %	11.0	30.3	1.9	0.0	43.3	0.9	0.2	0.1	0.0	1.2	0.1	38.0	4.5	0.0	42.6	4.0	0.3	8.5	0.0	12.9	
Exiting Leg Total					1707					86					1238					565	3596
Cars	393	1067	70	1	1531	32	6	3	0	41	4	1336	163	0	1503	144	12	304	0	460	3535
% Cars	99.2	97.8	100.0	100.0	98.3	97.0	100.0	100.0	0.0	97.6	100.0	97.8	100.0	0.0	98.0	100.0	100.0	99.0	0.0	99.4	98.3
Exiting Leg Total					1673					86					1214					562	3535
Heavy Vehicles	3	24	0	0	27	1	0	0	0	1	0	30	0	0	30	0	0	3	0	3	61
% Heavy Vehicles	0.8	2.2	0.0	0.0	1.7	3.0	0.0	0.0	0.0	2.4	0.0	2.2	0.0	0.0	2.0	0.0	0.0	1.0	0.0	0.6	1.7
Exiting Leg Total					34					0					24					3	61

Peak Hour Analysis from 03:00 PM to 06:00 PM begins at:

4:45 PM	Durham Road from North					Deerfield Drive from East					Durham Road from South					Grapevine Drive from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:45 PM	40	112	10	0	162	4	0	1	0	5	1	116	11	0	128	18	0	29	0	47	342
5:00 PM	38	103	7	0	148	1	0	0	0	1	1	137	14	0	152	9	0	25	0	34	335
5:15 PM	34	103	2	0	139	3	0	1	0	4	0	127	14	0	141	19	2	26	0	47	331
5:30 PM	43	96	3	0	142	2	0	0	0	2	0	130	20	0	150	12	0	34	0	46	340
Total Volume	155	414	22	0	591	10	0	2	0	12	2	510	59	0	571	58	2	114	0	174	1348
% Approach Total	26.2	70.1	3.7	0.0		83.3	0.0	16.7	0.0		0.4	89.3	10.3	0.0		33.3	1.1	65.5	0.0		
PHF	0.901	0.924	0.550	0.000	0.912	0.625	0.000	0.500	0.000	0.600	0.500	0.931	0.738	0.000	0.939	0.763	0.250	0.838	0.000	0.926	0.985
Cars	154	412	22	0	588	9	0	2	0	11	2	505	59	0	566	58	2	114	0	174	1339
Cars %	99.4	99.5	100.0	0.0	99.5	90.0	0.0	100.0	0.0	91.7	100.0	99.0	100.0	0.0	99.1	100.0	100.0	100.0	0.0	100.0	99.3
Heavy Vehicles	1	2	0	0	3	1	0	0	0	1	0	5	0	0	5	0	0	0	0	0	9
Heavy Vehicles %	0.6	0.5	0.0	0.0	0.5	10.0	0.0	0.0	0.0	8.3	0.0	1.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.7
Cars Enter Leg	154	412	22	0	588	9	0	2	0	11	2	505	59	0	566	58	2	114	0	174	1339
Heavy Enter Leg	1	2	0	0	3	1	0	0	0	1	0	5	0	0	5	0	0	0	0	0	9
Total Entering Leg	155	414	22	0	591	10	0	2	0	12	2	510	59	0	571	58	2	114	0	174	1348
Cars Exiting Leg					628					26					472					213	1339
Heavy Exiting Leg					6					0					2					1	9
Total Exiting Leg					634					26					474					214	1348

PDI File #: **240098 A**
Location: **N: Durham Road S: Durham Road**
Location: **E: Deerfield Drive W: Grapevine Drive**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **3:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class: **Cars**

	Durham Road from North					Deerfield Drive from East					Durham Road from South					Grapevine Drive from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	29	78	2	1	110	4	0	0	0	4	0	94	13	0	107	5	0	15	0	20	241
3:15 PM	30	83	4	0	117	2	2	0	0	4	1	101	11	0	113	15	0	20	0	35	269
3:30 PM	26	86	15	0	127	3	1	1	0	5	0	114	16	0	130	15	1	28	0	44	306
3:45 PM	25	93	5	0	123	3	2	0	0	5	0	113	9	0	122	10	3	24	0	37	287
Total	110	340	26	1	477	12	5	1	0	18	1	422	49	0	472	45	4	87	0	136	1103
4:00 PM	30	77	7	0	114	2	0	0	0	2	1	106	15	0	122	6	2	22	0	30	268
4:15 PM	28	87	5	0	120	5	0	0	0	5	0	112	17	0	129	11	1	25	0	37	291
4:30 PM	38	80	6	0	124	3	0	0	0	3	0	101	14	0	115	13	3	25	0	41	283
4:45 PM	39	112	10	0	161	3	0	1	0	4	1	115	11	0	127	18	0	29	0	47	339
Total	135	356	28	0	519	13	0	1	0	14	2	434	57	0	493	48	6	101	0	155	1181
5:00 PM	38	103	7	0	148	1	0	0	0	1	1	136	14	0	151	9	0	25	0	34	334
5:15 PM	34	103	2	0	139	3	0	1	0	4	0	125	14	0	139	19	2	26	0	47	329
5:30 PM	43	94	3	0	140	2	0	0	0	2	0	129	20	0	149	12	0	34	0	46	337
5:45 PM	33	71	4	0	108	1	1	0	0	2	0	90	9	0	99	11	0	31	0	42	251
Total	148	371	16	0	535	7	1	1	0	9	1	480	57	0	538	51	2	116	0	169	1251
Grand Total	393	1067	70	1	1531	32	6	3	0	41	4	1336	163	0	1503	144	12	304	0	460	3535
Approach %	25.7	69.7	4.6	0.1		78.0	14.6	7.3	0.0		0.3	88.9	10.8	0.0		31.3	2.6	66.1	0.0		
Total %	11.1	30.2	2.0	0.0	43.3	0.9	0.2	0.1	0.0	1.2	0.1	37.8	4.6	0.0	42.5	4.1	0.3	8.6	0.0	13.0	
Exiting Leg Total					1673					86					1214					562	3535

Peak Hour Analysis from 03:00 PM to 06:00 PM begins at:

4:45 PM	Durham Road from North					Deerfield Drive from East					Durham Road from South					Grapevine Drive from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:45 PM	39	112	10	0	161	3	0	1	0	4	1	115	11	0	127	18	0	29	0	47	339
5:00 PM	38	103	7	0	148	1	0	0	0	1	1	136	14	0	151	9	0	25	0	34	334
5:15 PM	34	103	2	0	139	3	0	1	0	4	0	125	14	0	139	19	2	26	0	47	329
5:30 PM	43	94	3	0	140	2	0	0	0	2	0	129	20	0	149	12	0	34	0	46	337
Total Volume	154	412	22	0	588	9	0	2	0	11	2	505	59	0	566	58	2	114	0	174	1339
% Approach Total	26.2	70.1	3.7	0.0		81.8	0.0	18.2	0.0		0.4	89.2	10.4	0.0		33.3	1.1	65.5	0.0		
PHF	0.895	0.920	0.550	0.000	0.913	0.750	0.000	0.500	0.000	0.688	0.500	0.928	0.738	0.000	0.937	0.763	0.250	0.838	0.000	0.926	0.987
Entering Leg	154	412	22	0	588	9	0	2	0	11	2	505	59	0	566	58	2	114	0	174	1339
Exiting Leg					628					26					472					213	1339
Total					1216					37					1038					387	2678

PDI File #: **240098 A**
Location: **N: Durham Road S: Durham Road**
Location: **E: Deerfield Drive W: Grapevine Drive**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **3:00 PM**
End Time: **6:00 PM**

PRECISION D A T A INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Durham Road from North					Deerfield Drive from East					Durham Road from South					Grapevine Drive from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	0	7	0	0	7	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	13
3:15 PM	2	3	0	0	5	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	9
3:30 PM	0	2	0	0	2	0	0	0	0	0	0	7	0	0	7	0	0	2	0	2	11
3:45 PM	0	4	0	0	4	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	6
Total	2	16	0	0	18	0	0	0	0	0	0	19	0	0	19	0	0	2	0	2	39
4:00 PM	0	3	0	0	3	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	6
4:15 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
4:30 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:45 PM	1	0	0	0	1	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	3
Total	1	6	0	0	7	1	0	0	0	1	0	6	0	0	6	0	0	0	0	0	14
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
5:30 PM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	2
Total	0	2	0	0	2	0	0	0	0	0	0	5	0	0	5	0	0	1	0	1	8
Grand Total	3	24	0	0	27	1	0	0	0	1	0	30	0	0	30	0	0	3	0	3	61
Approach %	11.1	88.9	0.0	0.0		100.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	100.0	0.0		
Total %	4.9	39.3	0.0	0.0	44.3	1.6	0.0	0.0	0.0	1.6	0.0	49.2	0.0	0.0	49.2	0.0	0.0	4.9	0.0	4.9	
Exiting Leg Total					34					0					24					3	61
Buses	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
% Buses	0.0	4.2	0.0	0.0	3.7	0.0	0.0	0.0	0.0	0.0	0.0	3.3	0.0	0.0	3.3	0.0	0.0	0.0	0.0	0.0	3.3
Exiting Leg Total					1					0					1					0	2
Single-Unit Trucks	2	16	0	0	18	1	0	0	0	1	0	23	0	0	23	0	0	2	0	2	44
% Single-Unit	66.7	66.7	0.0	0.0	66.7	100.0	0.0	0.0	0.0	100.0	0.0	76.7	0.0	0.0	76.7	0.0	0.0	66.7	0.0	66.7	72.1
Exiting Leg Total					26					0					16					2	44
Articulated Trucks	1	7	0	0	8	0	0	0	0	0	0	6	0	0	6	0	0	1	0	1	15
% Articulated	33.3	29.2	0.0	0.0	29.6	0.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0	0.0	33.3	0.0	33.3	24.6
Exiting Leg Total					7					0					7					1	15

Peak Hour Analysis from 03:00 PM to 06:00 PM begins at:

3:00 PM	Durham Road from North					Deerfield Drive from East					Durham Road from South					Grapevine Drive from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	0	7	0	0	7	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	13
3:15 PM	2	3	0	0	5	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	9
3:30 PM	0	2	0	0	2	0	0	0	0	0	0	7	0	0	7	0	0	2	0	2	11
3:45 PM	0	4	0	0	4	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	6
Total Volume	2	16	0	0	18	0	0	0	0	0	0	19	0	0	19	0	0	2	0	2	39
% Approach Total	11.1	88.9	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	100.0	0.0		
PHF	0.250	0.571	0.000	0.000	0.643	0.000	0.000	0.000	0.000	0.000	0.000	0.679	0.000	0.000	0.679	0.000	0.000	0.250	0.000	0.250	0.750
Buses	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Buses %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.3	0.0	0.0	5.3	0.0	0.0	0.0	0.0	0.0	2.6
Single-Unit Trucks	1	11	0	0	12	0	0	0	0	0	0	14	0	0	14	0	0	1	0	1	27
Single-Unit %	50.0	68.8	0.0	0.0	66.7	0.0	0.0	0.0	0.0	0.0	0.0	73.7	0.0	0.0	73.7	0.0	0.0	50.0	0.0	50.0	69.2
Articulated Trucks	1	5	0	0	6	0	0	0	0	0	0	4	0	0	4	0	0	1	0	1	11
Articulated %	50.0	31.3	0.0	0.0	33.3	0.0	0.0	0.0	0.0	0.0	0.0	21.1	0.0	0.0	21.1	0.0	0.0	50.0	0.0	50.0	28.2
Buses	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Single-Unit Trucks	1	11	0	0	12	0	0	0	0	0	0	14	0	0	14	0	0	1	0	1	27
Articulated Trucks	1	5	0	0	6	0	0	0	0	0	0	4	0	0	4	0	0	1	0	1	11
Total Entering Leg	2	16	0	0	18	0	0	0	0	0	0	19	0	0	19	0	0	2	0	2	39
Buses					1					0					0					0	1
Single-Unit Trucks					15					0					11					1	27
Articulated Trucks					5					0					5					1	11
Total Exiting Leg					21					0					16					2	39

PDI File #: **240098 A**
Location: **N: Durham Road S: Durham Road**
Location: **E: Deerfield Drive W: Grapevine Drive**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **3:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Buses

	Durham Road from North					Deerfield Drive from East					Durham Road from South					Grapevine Drive from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
Approach %	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					1					0					1					0	2

Peak Hour Analysis from 03:00 PM to 06:00 PM begins at:

3:00 PM	Durham Road from North					Deerfield Drive from East					Durham Road from South					Grapevine Drive from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
% Approach Total	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Exiting Leg					1					0					0					0	1
Total					1					0					1					0	2

PDI File #: **240098 A**
Location: **N: Durham Road S: Durham Road**
Location: **E: Deerfield Drive W: Grapevine Drive**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **3:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class:

Single-Unit Trucks

	Durham Road					Deerfield Drive					Durham Road					Grapevine Drive					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	0	6	0	0	6	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	11
3:15 PM	1	2	0	0	3	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	5
3:30 PM	0	1	0	0	1	0	0	0	0	0	0	5	0	0	5	0	0	1	0	1	7
3:45 PM	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4
Total	1	11	0	0	12	0	0	0	0	0	0	14	0	0	14	0	0	1	0	1	27
4:00 PM	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	5
4:15 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
4:30 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:45 PM	1	0	0	0	1	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	3
Total	1	5	0	0	6	1	0	0	0	1	0	5	0	0	5	0	0	0	0	0	12
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	2
Total	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	0	1	0	1	5
Grand Total	2	16	0	0	18	1	0	0	0	1	0	23	0	0	23	0	0	2	0	2	44
Approach %	11.1	88.9	0.0	0.0		100.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	100.0	0.0		
Total %	4.5	36.4	0.0	0.0	40.9	2.3	0.0	0.0	0.0	2.3	0.0	52.3	0.0	0.0	52.3	0.0	0.0	4.5	0.0	4.5	
Exiting Leg Total					26					0					16					2	44

Peak Hour Analysis from 03:00 PM to 06:00 PM begins at:

3:00 PM	Durham Road					Deerfield Drive					Durham Road					Grapevine Drive					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	0	6	0	0	6	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	11
3:15 PM	1	2	0	0	3	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	5
3:30 PM	0	1	0	0	1	0	0	0	0	0	0	5	0	0	5	0	0	1	0	1	7
3:45 PM	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4
Total Volume	1	11	0	0	12	0	0	0	0	0	0	14	0	0	14	0	0	1	0	1	27
% Approach Total	8.3	91.7	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	100.0	0.0		
PHF	0.250	0.458	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.700	0.000	0.000	0.700	0.000	0.000	0.250	0.000	0.250	0.614
Entering Leg	1	11	0	0	12	0	0	0	0	0	0	14	0	0	14	0	0	1	0	1	27
Exiting Leg					15					0					11					1	27
Total					27					0					25					2	54

PDI File #: **240098 A**
Location: **N: Durham Road S: Durham Road**
Location: **E: Deerfield Drive W: Grapevine Drive**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **3:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Articulated Trucks

	Durham Road					Deerfield Drive					Durham Road					Grapevine Drive					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
3:15 PM	1	1	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4
3:30 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	3
3:45 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	1	5	0	0	6	0	0	0	0	0	0	4	0	0	4	0	0	1	0	1	11
4:00 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
5:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
Grand Total	1	7	0	0	8	0	0	0	0	0	0	6	0	0	6	0	0	1	0	1	15
Approach %	12.5	87.5	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	100.0	0.0		
Total %	6.7	46.7	0.0	0.0	53.3	0.0	0.0	0.0	0.0	0.0	0.0	40.0	0.0	0.0	40.0	0.0	0.0	6.7	0.0	6.7	
Exiting Leg Total					7					0					7					1	15

Peak Hour Analysis from 03:00 PM to 06:00 PM begins at:

3:00 PM	Durham Road					Deerfield Drive					Durham Road					Grapevine Drive					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
3:15 PM	1	1	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4
3:30 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	3
3:45 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total Volume	1	5	0	0	6	0	0	0	0	0	0	4	0	0	4	0	0	1	0	1	11
% Approach Total	16.7	83.3	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	100.0	0.0		
PHF	0.250	0.625	0.000	0.000	0.750	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.500	0.000	0.000	0.250	0.000	0.250	0.688
Entering Leg	1	5	0	0	6	0	0	0	0	0	0	4	0	0	4	0	0	1	0	1	11
Exiting Leg					5					0					5					1	11
Total					11					0					9					2	22

PDI File #: **240098 A**
Location: **N: Durham Road S: Durham Road**
Location: **E: Deerfield Drive W: Grapevine Drive**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **3:00 PM**
End Time: **6:00 PM**

PRECISION D A T A INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class:

Bicycles (on Roadway and Crosswalks)

	Durham Road from North							Deerfield Drive from East							Durham Road from South							Grapevine Drive from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	2
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	1	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	0	1	1	0	0	0	2	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:00 PM	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2
Grand Total	0	2	1	0	0	0	3	0	1	0	0	0	0	1	0	2	0	0	0	0	2	0	0	1	0	0	0	1	7
Approach %	0.0	66.7	33.3	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0	0.0	0.0		
Total %	0.0	28.6	14.3	0.0	0.0	0.0	42.9	0.0	14.3	0.0	0.0	0.0	0.0	14.3	0.0	28.6	0.0	0.0	0.0	0.0	28.6	0.0	0.0	14.3	0.0	0.0	0.0	14.3	
Exiting Leg Total							3							1							2							1	7

Peak Hour Analysis from 03:00 PM to 06:00 PM begins at:

4:30 PM	Durham Road from North							Deerfield Drive from East							Durham Road from South							Grapevine Drive from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:30 PM	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	1	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:00 PM	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
Total Volume	0	2	1	0	0	0	3	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	5
% Approach Total	0.0	66.7	33.3	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0	0.0	0.0		
PHF	0.000	0.500	0.250	0.000	0.000	0.000	0.750	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.625
Entering Leg	0	2	1	0	0	0	3	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	5
Exiting Leg							1							1							2							1	5
Total							4							2							2							2	10

PDI File #: **240098 A**
Location: **N: Durham Road S: Durham Road**
Location: **E: Deerfield Drive W: Grapevine Drive**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **3:00 PM**
End Time: **6:00 PM**

PRECISION D A T A INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class:

Pedestrians

	Durham Road from North							Deerfield Drive from East							Durham Road from South							Grapevine Drive from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Approach %	0	0	0	0	0	100		0	0	0	0	0	0		0	0	0	0	0	0		0	0	0	0	0	0		
Total %	0	0	0	0	0	100	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Exiting Leg Total							1							0							0							0	1

Peak Hour Analysis from 03:00 PM to 06:00 PM begins at:

3:00 PM	Durham Road from North							Deerfield Drive from East							Durham Road from South							Grapevine Drive from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% Approach Total	0.0	0.0	0.0	0.0	0.0	100.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exiting Leg							1							0							0							0	1
Total							2							0							0							0	2

PDI File #: **240098 A**
Location: **N: Durham Road S: Durham Road**
Location: **E: Deerfield Drive W: Grapevine Drive**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Saturday, July 27, 2024**
Start Time: **11:00 AM**
End Time: **2:00 PM**
Class:

PRECISION D A T A INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Durham Road from North					Deerfield Drive from East					Durham Road from South					Grapevine Drive from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	37	63	2	0	102	2	1	0	0	3	0	69	13	0	82	12	0	15	1	28	215
11:15 AM	26	53	5	0	84	3	2	0	0	5	0	72	10	0	82	9	0	20	0	29	200
11:30 AM	36	65	1	0	102	1	1	0	0	2	0	85	8	0	93	11	2	35	0	48	245
11:45 AM	40	82	3	0	125	9	0	0	0	9	0	87	11	0	98	11	1	21	0	33	265
Total	139	263	11	0	413	15	4	0	0	19	0	313	42	0	355	43	3	91	1	138	925
12:00 PM	23	73	2	0	98	5	0	0	0	5	0	83	8	0	91	11	0	24	0	35	229
12:15 PM	26	66	3	0	95	3	1	0	0	4	0	84	7	0	91	16	0	30	0	46	236
12:30 PM	34	77	1	0	112	0	2	0	0	2	0	84	11	0	95	15	2	20	0	37	246
12:45 PM	32	61	4	0	97	3	0	0	0	3	0	83	10	0	93	17	2	25	0	44	237
Total	115	277	10	0	402	11	3	0	0	14	0	334	36	0	370	59	4	99	0	162	948
1:00 PM	31	59	3	0	93	7	0	0	0	7	0	82	8	0	90	6	1	21	0	28	218
1:15 PM	27	69	4	0	100	0	0	0	0	0	1	57	8	0	66	8	0	29	0	37	203
1:30 PM	20	58	2	0	80	5	0	0	0	5	0	84	10	0	94	15	1	27	0	43	222
1:45 PM	27	51	6	0	84	4	1	0	0	5	0	102	9	0	111	9	1	20	0	30	230
Total	105	237	15	0	357	16	1	0	0	17	1	325	35	0	361	38	3	97	0	138	873
Grand Total	359	777	36	0	1172	42	8	0	0	50	1	972	113	0	1086	140	10	287	1	438	2746
Approach %	30.6	66.3	3.1	0.0		84.0	16.0	0.0	0.0		0.1	89.5	10.4	0.0		32.0	2.3	65.5	0.2		
Total %	13.1	28.3	1.3	0.0	42.7	1.5	0.3	0.0	0.0	1.8	0.0	35.4	4.1	0.0	39.5	5.1	0.4	10.5	0.0	16.0	
Exiting Leg Total					1301					47					917					481	2746
Cars	358	768	36	0	1162	41	8	0	0	49	1	957	109	0	1067	140	9	282	1	432	2710
% Cars	99.7	98.8	100.0	0.0	99.1	97.6	100.0	0.0	0.0	98.0	100.0	98.5	96.5	0.0	98.3	100.0	90.0	98.3	100.0	98.6	98.7
Exiting Leg Total					1280					46					908					476	2710
Heavy Vehicles	1	9	0	0	10	1	0	0	0	1	0	15	4	0	19	0	1	5	0	6	36
% Heavy Vehicles	0.3	1.2	0.0	0.0	0.9	2.4	0.0	0.0	0.0	2.0	0.0	1.5	3.5	0.0	1.7	0.0	10.0	1.7	0.0	1.4	1.3
Exiting Leg Total					21					1					9					5	36

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

11:45 AM	Durham Road from North					Deerfield Drive from East					Durham Road from South					Grapevine Drive from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:45 AM	40	82	3	0	125	9	0	0	0	9	0	87	11	0	98	11	1	21	0	33	265
12:00 PM	23	73	2	0	98	5	0	0	0	5	0	83	8	0	91	11	0	24	0	35	229
12:15 PM	26	66	3	0	95	3	1	0	0	4	0	84	7	0	91	16	0	30	0	46	236
12:30 PM	34	77	1	0	112	0	2	0	0	2	0	84	11	0	95	15	2	20	0	37	246
Total Volume	123	298	9	0	430	17	3	0	0	20	0	338	37	0	375	53	3	95	0	151	976
% Approach Total	28.6	69.3	2.1	0.0		85.0	15.0	0.0	0.0		0.0	90.1	9.9	0.0		35.1	2.0	62.9	0.0		
PHF	0.769	0.909	0.750	0.000	0.860	0.472	0.375	0.000	0.000	0.556	0.000	0.971	0.841	0.000	0.957	0.828	0.375	0.792	0.000	0.821	0.921
Cars	122	292	9	0	423	16	3	0	0	19	0	332	37	0	369	53	2	92	0	147	958
Cars %	99.2	98.0	100.0	0.0	98.4	94.1	100.0	0.0	0.0	95.0	0.0	98.2	100.0	0.0	98.4	100.0	66.7	96.8	0.0	97.4	98.2
Heavy Vehicles	1	6	0	0	7	1	0	0	0	1	0	6	0	0	6	0	1	3	0	4	18
Heavy Vehicles %	0.8	2.0	0.0	0.0	1.6	5.9	0.0	0.0	0.0	5.0	0.0	1.8	0.0	0.0	1.6	0.0	33.3	3.2	0.0	2.6	1.8
Cars Enter Leg	122	292	9	0	423	16	3	0	0	19	0	332	37	0	369	53	2	92	0	147	958
Heavy Enter Leg	1	6	0	0	7	1	0	0	0	1	0	6	0	0	6	0	1	3	0	4	18
Total Entering Leg	123	298	9	0	430	17	3	0	0	20	0	338	37	0	375	53	3	95	0	151	976
Cars Exiting Leg					440					11					345					162	958
Heavy Exiting Leg					10					1					6					1	18
Total Exiting Leg					450					12					351					163	976

PDI File #: **240098 A**
Location: **N: Durham Road S: Durham Road**
Location: **E: Deerfield Drive W: Grapevine Drive**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Saturday, July 27, 2024**
Start Time: **11:00 AM**
End Time: **2:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class:

Cars

	Durham Road from North					Deerfield Drive from East					Durham Road from South					Grapevine Drive from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	37	62	2	0	101	2	1	0	0	3	0	68	12	0	80	12	0	13	1	26	210
11:15 AM	26	52	5	0	83	3	2	0	0	5	0	72	8	0	80	9	0	20	0	29	197
11:30 AM	36	65	1	0	102	1	1	0	0	2	0	82	8	0	90	11	2	35	0	48	242
11:45 AM	40	81	3	0	124	9	0	0	0	9	0	85	11	0	96	11	1	19	0	31	260
Total	139	260	11	0	410	15	4	0	0	19	0	307	39	0	346	43	3	87	1	134	909
12:00 PM	23	70	2	0	95	4	0	0	0	4	0	83	8	0	91	11	0	24	0	35	225
12:15 PM	25	66	3	0	94	3	1	0	0	4	0	81	7	0	88	16	0	29	0	45	231
12:30 PM	34	75	1	0	110	0	2	0	0	2	0	83	11	0	94	15	1	20	0	36	242
12:45 PM	32	61	4	0	97	3	0	0	0	3	0	83	10	0	93	17	2	25	0	44	237
Total	114	272	10	0	396	10	3	0	0	13	0	330	36	0	366	59	3	98	0	160	935
1:00 PM	31	58	3	0	92	7	0	0	0	7	0	80	8	0	88	6	1	21	0	28	215
1:15 PM	27	69	4	0	100	0	0	0	0	0	1	57	8	0	66	8	0	29	0	37	203
1:30 PM	20	58	2	0	80	5	0	0	0	5	0	82	10	0	92	15	1	27	0	43	220
1:45 PM	27	51	6	0	84	4	1	0	0	5	0	101	8	0	109	9	1	20	0	30	228
Total	105	236	15	0	356	16	1	0	0	17	1	320	34	0	355	38	3	97	0	138	866
Grand Total	358	768	36	0	1162	41	8	0	0	49	1	957	109	0	1067	140	9	282	1	432	2710
Approach %	30.8	66.1	3.1	0.0		83.7	16.3	0.0	0.0		0.1	89.7	10.2	0.0		32.4	2.1	65.3	0.2		
Total %	13.2	28.3	1.3	0.0	42.9	1.5	0.3	0.0	0.0	1.8	0.0	35.3	4.0	0.0	39.4	5.2	0.3	10.4	0.0	15.9	
Exiting Leg Total					1280					46					908					476	2710

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

11:30 AM	Durham Road from North					Deerfield Drive from East					Durham Road from South					Grapevine Drive from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:30 AM	36	65	1	0	102	1	1	0	0	2	0	82	8	0	90	11	2	35	0	48	242
11:45 AM	40	81	3	0	124	9	0	0	0	9	0	85	11	0	96	11	1	19	0	31	260
12:00 PM	23	70	2	0	95	4	0	0	0	4	0	83	8	0	91	11	0	24	0	35	225
12:15 PM	25	66	3	0	94	3	1	0	0	4	0	81	7	0	88	16	0	29	0	45	231
Total Volume	124	282	9	0	415	17	2	0	0	19	0	331	34	0	365	49	3	107	0	159	958
% Approach Total	29.9	68.0	2.2	0.0		89.5	10.5	0.0	0.0		0.0	90.7	9.3	0.0		30.8	1.9	67.3	0.0		
PHF	0.775	0.870	0.750	0.000	0.837	0.472	0.500	0.000	0.000	0.528	0.000	0.974	0.773	0.000	0.951	0.766	0.375	0.764	0.000	0.828	0.921
Entering Leg	124	282	9	0	415	17	2	0	0	19	0	331	34	0	365	49	3	107	0	159	958
Exiting Leg					455					12					331					160	958
Total					870					31					696					319	1916

PDI File #: **240098 A**
Location: **N: Durham Road S: Durham Road**
Location: **E: Deerfield Drive W: Grapevine Drive**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Saturday, July 27, 2024**
Start Time: **11:00 AM**
End Time: **2:00 PM**

PRECISION D A T A INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Durham Road from North					Deerfield Drive from East					Durham Road from South					Grapevine Drive from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	0	1	0	0	1	0	0	0	0	0	0	1	1	0	2	0	0	2	0	2	5
11:15 AM	0	1	0	0	1	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	3
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	3
11:45 AM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	2	0	2	5
Total	0	3	0	0	3	0	0	0	0	0	0	6	3	0	9	0	0	4	0	4	16
12:00 PM	0	3	0	0	3	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	4
12:15 PM	1	0	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	1	0	1	5
12:30 PM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	4
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	5	0	0	6	1	0	0	0	1	0	4	0	0	4	0	1	1	0	2	13
1:00 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	2
Total	0	1	0	0	1	0	0	0	0	0	0	5	1	0	6	0	0	0	0	0	7
Grand Total	1	9	0	0	10	1	0	0	0	1	0	15	4	0	19	0	1	5	0	6	36
Approach %	10.0	90.0	0.0	0.0		100.0	0.0	0.0	0.0		0.0	78.9	21.1	0.0		0.0	16.7	83.3	0.0		
Total %	2.8	25.0	0.0	0.0	27.8	2.8	0.0	0.0	0.0	2.8	0.0	41.7	11.1	0.0	52.8	0.0	2.8	13.9	0.0	16.7	
Exiting Leg Total					21					1					9					5	36
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total					0					0					0					0	0
Single-Unit Trucks	1	9	0	0	10	1	0	0	0	1	0	14	4	0	18	0	1	5	0	6	35
% Single-Unit	100.0	100.0	0.0	0.0	100.0	100.0	0.0	0.0	0.0	100.0	0.0	93.3	100.0	0.0	94.7	0.0	100.0	100.0	0.0	100.0	97.2
Exiting Leg Total					20					1					9					5	35
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
% Articulated	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.7	0.0	0.0	5.3	0.0	0.0	0.0	0.0	0.0	2.8
Exiting Leg Total					1					0					0					0	1

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

11:45 AM	Durham Road from North					Deerfield Drive from East					Durham Road from South					Grapevine Drive from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:45 AM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	2	0	2	5
12:00 PM	0	3	0	0	3	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	4
12:15 PM	1	0	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	1	0	1	5
12:30 PM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	4
Total Volume	1	6	0	0	7	1	0	0	0	1	0	6	0	0	6	0	1	3	0	4	18
% Approach Total	14.3	85.7	0.0	0.0		100.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	25.0	75.0	0.0		
PHF	0.250	0.500	0.000	0.000	0.583	0.250	0.000	0.000	0.000	0.250	0.000	0.500	0.000	0.000	0.500	0.000	0.250	0.375	0.000	0.500	0.900
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Single-Unit Trucks	1	6	0	0	7	1	0	0	0	1	0	5	0	0	5	0	1	3	0	4	17
Single-Unit %	100.0	100.0	0.0	0.0	100.0	100.0	0.0	0.0	0.0	100.0	0.0	83.3	0.0	0.0	83.3	0.0	100.0	100.0	0.0	100.0	94.4
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.7	0.0	0.0	16.7	0.0	0.0	0.0	0.0	0.0	5.6
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Single-Unit Trucks	1	6	0	0	7	1	0	0	0	1	0	5	0	0	5	0	1	3	0	4	17
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total Entering Leg	1	6	0	0	7	1	0	0	0	1	0	6	0	0	6	0	1	3	0	4	18
Buses					0					0					0					0	0
Single-Unit Trucks					9					1					6					1	17
Articulated Trucks					1					0					0					0	1
Total Exiting Leg					10					1					6					1	18

PDI File #: **240098 A**
Location: **N: Durham Road S: Durham Road**
Location: **E: Deerfield Drive W: Grapevine Drive**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Saturday, July 27, 2024**
Start Time: **11:00 AM**
End Time: **2:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class: **Buses**

	Durham Road					Deerfield Drive					Durham Road					Grapevine Drive					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					0					0					0					0	0

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

11:00 AM	Durham Road					Deerfield Drive					Durham Road					Grapevine Drive					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg					0					0					0					0	0
Total					0					0					0					0	0

PDI File #: **240098 A**
Location: **N: Durham Road S: Durham Road**
Location: **E: Deerfield Drive W: Grapevine Drive**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Saturday, July 27, 2024**
Start Time: **11:00 AM**
End Time: **2:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class:

Single-Unit Trucks

	Durham Road					Deerfield Drive					Durham Road					Grapevine Drive					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	0	1	0	0	1	0	0	0	0	0	0	1	1	0	2	0	0	2	0	2	5
11:15 AM	0	1	0	0	1	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	3
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	3
11:45 AM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	2	0	2	5
Total	0	3	0	0	3	0	0	0	0	0	0	6	3	0	9	0	0	4	0	4	16
12:00 PM	0	3	0	0	3	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	4
12:15 PM	1	0	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	4
12:30 PM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	4
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	5	0	0	6	1	0	0	0	1	0	3	0	0	3	0	1	1	0	2	12
1:00 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	2
Total	0	1	0	0	1	0	0	0	0	0	0	5	1	0	6	0	0	0	0	0	7
Grand Total	1	9	0	0	10	1	0	0	0	1	0	14	4	0	18	0	1	5	0	6	35
Approach %	10.0	90.0	0.0	0.0		100.0	0.0	0.0	0.0		0.0	77.8	22.2	0.0		0.0	16.7	83.3	0.0		
Total %	2.9	25.7	0.0	0.0	28.6	2.9	0.0	0.0	0.0	2.9	0.0	40.0	11.4	0.0	51.4	0.0	2.9	14.3	0.0	17.1	
Exiting Leg Total					20					1					9					5	35

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

11:45 AM	Durham Road					Deerfield Drive					Durham Road					Grapevine Drive					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:45 AM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	2	0	2	5
12:00 PM	0	3	0	0	3	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	4
12:15 PM	1	0	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	4
12:30 PM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	4
Total Volume	1	6	0	0	7	1	0	0	0	1	0	5	0	0	5	0	1	3	0	4	17
% Approach Total	14.3	85.7	0.0	0.0		100.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	25.0	75.0	0.0		
PHF	0.250	0.500	0.000	0.000	0.583	0.250	0.000	0.000	0.000	0.250	0.000	0.625	0.000	0.000	0.625	0.000	0.250	0.375	0.000	0.500	0.850
Entering Leg	1	6	0	0	7	1	0	0	0	1	0	5	0	0	5	0	1	3	0	4	17
Exiting Leg					9					1					6					1	17
Total					16					2					11					5	34

PDI File #: **240098 A**
Location: **N: Durham Road S: Durham Road**
Location: **E: Deerfield Drive W: Grapevine Drive**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Saturday, July 27, 2024**
Start Time: **11:00 AM**
End Time: **2:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class:

Articulated Trucks

	Durham Road					Deerfield Drive					Durham Road					Grapevine Drive					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Approach %	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					1					0					0					0	1

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

11:30 AM	Durham Road					Deerfield Drive					Durham Road					Grapevine Drive					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total Volume	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
% Approach Total	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Exiting Leg					1					0					0					0	1
Total					1					0					1					0	2

PDI File #: **240098 A**
Location: **N: Durham Road S: Durham Road**
Location: **E: Deerfield Drive W: Grapevine Drive**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Saturday, July 27, 2024**
Start Time: **11:00 AM**
End Time: **2:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Durham Road from North							Deerfield Drive from East							Durham Road from South							Grapevine Drive from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total							0							0							0							0	0

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

11:00 AM	Durham Road from North							Deerfield Drive from East							Durham Road from South							Grapevine Drive from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg							0							0							0							0	0
Total							0							0							0							0	0

PDI File #: **240098 A**
Location: **N: Durham Road S: Durham Road**
Location: **E: Deerfield Drive W: Grapevine Drive**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Saturday, July 27, 2024**
Start Time: **11:00 AM**
End Time: **2:00 PM**
Class:

PRECISION D A T A INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Pedestrians

	Durham Road from North							Deerfield Drive from East							Durham Road from South							Grapevine Drive from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	2	3
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	2	4
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
Total	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
Grand Total	0	0	0	0	0	2	2	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	2	1	3	6
Approach %	0	0	0	0	0	100		0	0	0	0	100	0		0	0	0	0	0	0		0	0	0	0	66.7	33.3		
Total %	0	0	0	0	0	33.3	33.3	0	0	0	0	16.7	0	16.7	0	0	0	0	0	0	0	0	0	0	0	33.3	16.7	50	
Exiting Leg Total							2							1							0							3	6

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

11:30 AM	Durham Road from North							Deerfield Drive from East							Durham Road from South							Grapevine Drive from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	2	3
Total Volume	0	0	0	0	0	1	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	2	4
% Approach Total	0.0	0.0	0.0	0.0	0.0	100.0		0.0	0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	50.0	50.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.250	0.333
Entering Leg	0	0	0	0	0	1	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	2	4
Exiting Leg							1							1							0							2	4
Total							2							2							0							4	8

PDI File #: **240098 B**
Location: **N: Durham Road S: Durham Road**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Durham Road from North					Mast Road from East					Durham Road from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	5	69	10	0	84	9	4	12	0	25	6	64	4	0	74	1	0	5	0	6	189
7:15 AM	2	80	6	0	88	13	4	15	0	32	8	70	3	0	81	7	2	14	0	23	224
7:30 AM	10	101	16	0	127	9	7	18	0	34	8	86	4	0	98	2	6	7	0	15	274
7:45 AM	15	95	19	0	129	10	1	19	0	30	5	100	2	0	107	2	5	8	0	15	281
Total	32	345	51	0	428	41	16	64	0	121	27	320	13	0	360	12	13	34	0	59	968
8:00 AM	7	89	10	0	106	14	4	16	0	34	6	108	4	0	118	0	7	12	0	19	277
8:15 AM	9	102	18	0	129	12	5	16	0	33	10	91	1	0	102	2	6	6	0	14	278
8:30 AM	25	104	15	0	144	21	9	16	0	46	11	80	6	0	97	3	8	13	0	24	311
8:45 AM	19	92	10	0	121	14	9	10	0	33	8	92	4	0	104	5	1	20	0	26	284
Total	60	387	53	0	500	61	27	58	0	146	35	371	15	0	421	10	22	51	0	83	1150
Grand Total	92	732	104	0	928	102	43	122	0	267	62	691	28	0	781	22	35	85	0	142	2118
Approach %	9.9	78.9	11.2	0.0		38.2	16.1	45.7	0.0		7.9	88.5	3.6	0.0		15.5	24.6	59.9	0.0		
Total %	4.3	34.6	4.9	0.0	43.8	4.8	2.0	5.8	0.0	12.6	2.9	32.6	1.3	0.0	36.9	1.0	1.7	4.0	0.0	6.7	
Exiting Leg Total					878					201					876					163	2118
Cars	76	704	103	0	883	100	40	120	0	260	61	675	5	0	741	6	33	65	0	104	1988
% Cars	82.6	96.2	99.0	0.0	95.2	98.0	93.0	98.4	0.0	97.4	98.4	97.7	17.9	0.0	94.9	27.3	94.3	76.5	0.0	73.2	93.9
Exiting Leg Total					840					197					830					121	1988
Heavy Vehicles	16	28	1	0	45	2	3	2	0	7	1	16	23	0	40	16	2	20	0	38	130
% Heavy Vehicles	17.4	3.8	1.0	0.0	4.8	2.0	7.0	1.6	0.0	2.6	1.6	2.3	82.1	0.0	5.1	72.7	5.7	23.5	0.0	26.8	6.1
Exiting Leg Total					38					4					46					42	130

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Durham Road from North					Mast Road from East					Durham Road from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	7	89	10	0	106	14	4	16	0	34	6	108	4	0	118	0	7	12	0	19	277
8:15 AM	9	102	18	0	129	12	5	16	0	33	10	91	1	0	102	2	6	6	0	14	278
8:30 AM	25	104	15	0	144	21	9	16	0	46	11	80	6	0	97	3	8	13	0	24	311
8:45 AM	19	92	10	0	121	14	9	10	0	33	8	92	4	0	104	5	1	20	0	26	284
Total Volume	60	387	53	0	500	61	27	58	0	146	35	371	15	0	421	10	22	51	0	83	1150
% Approach Total	12.0	77.4	10.6	0.0		41.8	18.5	39.7	0.0		8.3	88.1	3.6	0.0		12.0	26.5	61.4	0.0		
PHF	0.600	0.930	0.736	0.000	0.868	0.726	0.750	0.906	0.000	0.793	0.795	0.859	0.625	0.000	0.892	0.500	0.688	0.638	0.000	0.798	0.924
Cars	51	374	53	0	478	61	25	57	0	143	35	364	3	0	402	4	20	44	0	68	1091
Cars %	85.0	96.6	100.0	0.0	95.6	100.0	92.6	98.3	0.0	97.9	100.0	98.1	20.0	0.0	95.5	40.0	90.9	86.3	0.0	81.9	94.9
Heavy Vehicles	9	13	0	0	22	0	2	1	0	3	0	7	12	0	19	6	2	7	0	15	59
Heavy Vehicles %	15.0	3.4	0.0	0.0	4.4	0.0	7.4	1.7	0.0	2.1	0.0	1.9	80.0	0.0	4.5	60.0	9.1	13.7	0.0	18.1	5.1
Cars Enter Leg	51	374	53	0	478	61	25	57	0	143	35	364	3	0	402	4	20	44	0	68	1091
Heavy Enter Leg	9	13	0	0	22	0	2	1	0	3	0	7	12	0	19	6	2	7	0	15	59
Total Entering Leg	60	387	53	0	500	61	27	58	0	146	35	371	15	0	421	10	22	51	0	83	1150
Cars Exiting Leg					469					108					435					79	1091
Heavy Exiting Leg					14					2					20					23	59
Total Exiting Leg					483					110					455					102	1150

PDI File #: **240098 B**
Location: **N: Durham Road S: Durham Road**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class: **Cars**

	Durham Road from North					Mast Road from East					Durham Road from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	3	66	10	0	79	9	4	12	0	25	6	62	0	0	68	0	0	5	0	5	177
7:15 AM	1	75	6	0	82	13	4	15	0	32	7	69	0	0	76	1	2	6	0	9	199
7:30 AM	9	98	15	0	122	7	6	18	0	31	8	81	1	0	90	1	6	4	0	11	254
7:45 AM	12	91	19	0	122	10	1	18	0	29	5	99	1	0	105	0	5	6	0	11	267
Total	25	330	50	0	405	39	15	63	0	117	26	311	2	0	339	2	13	21	0	36	897
8:00 AM	5	83	10	0	98	14	4	16	0	34	6	105	1	0	112	0	6	9	0	15	259
8:15 AM	8	100	18	0	126	12	5	16	0	33	10	88	0	0	98	1	5	5	0	11	268
8:30 AM	22	103	15	0	140	21	8	16	0	45	11	80	1	0	92	2	8	12	0	22	299
8:45 AM	16	88	10	0	114	14	8	9	0	31	8	91	1	0	100	1	1	18	0	20	265
Total	51	374	53	0	478	61	25	57	0	143	35	364	3	0	402	4	20	44	0	68	1091
Grand Total	76	704	103	0	883	100	40	120	0	260	61	675	5	0	741	6	33	65	0	104	1988
Approach %	8.6	79.7	11.7	0.0		38.5	15.4	46.2	0.0		8.2	91.1	0.7	0.0		5.8	31.7	62.5	0.0		
Total %	3.8	35.4	5.2	0.0	44.4	5.0	2.0	6.0	0.0	13.1	3.1	34.0	0.3	0.0	37.3	0.3	1.7	3.3	0.0	5.2	
Exiting Leg Total					840					197					830					121	1988

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:45 AM	Durham Road from North					Mast Road from East					Durham Road from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:45 AM	12	91	19	0	122	10	1	18	0	29	5	99	1	0	105	0	5	6	0	11	267
8:00 AM	5	83	10	0	98	14	4	16	0	34	6	105	1	0	112	0	6	9	0	15	259
8:15 AM	8	100	18	0	126	12	5	16	0	33	10	88	0	0	98	1	5	5	0	11	268
8:30 AM	22	103	15	0	140	21	8	16	0	45	11	80	1	0	92	2	8	12	0	22	299
Total Volume	47	377	62	0	486	57	18	66	0	141	32	372	3	0	407	3	24	32	0	59	1093
% Approach Total	9.7	77.6	12.8	0.0		40.4	12.8	46.8	0.0		7.9	91.4	0.7	0.0		5.1	40.7	54.2	0.0		
PHF	0.534	0.915	0.816	0.000	0.868	0.679	0.563	0.917	0.000	0.783	0.727	0.886	0.750	0.000	0.908	0.375	0.750	0.667	0.000	0.670	0.914
Entering Leg	47	377	62	0	486	57	18	66	0	141	32	372	3	0	407	3	24	32	0	59	1093
Exiting Leg					461					118					446					68	1093
Total					947					259					853					127	2186

PDI File #: **240098 B**
Location: **N: Durham Road S: Durham Road**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Durham Road from North					Mast Road from East					Durham Road from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	2	3	0	0	5	0	0	0	0	0	0	2	4	0	6	1	0	0	0	1	12
7:15 AM	1	5	0	0	6	0	0	0	0	0	1	1	3	0	5	6	0	8	0	14	25
7:30 AM	1	3	1	0	5	2	1	0	0	3	0	5	3	0	8	1	0	3	0	4	20
7:45 AM	3	4	0	0	7	0	0	1	0	1	0	1	1	0	2	2	0	2	0	4	14
Total	7	15	1	0	23	2	1	1	0	4	1	9	11	0	21	10	0	13	0	23	71
8:00 AM	2	6	0	0	8	0	0	0	0	0	0	3	3	0	6	0	1	3	0	4	18
8:15 AM	1	2	0	0	3	0	0	0	0	0	0	3	1	0	4	1	1	1	0	3	10
8:30 AM	3	1	0	0	4	0	1	0	0	1	0	0	5	0	5	1	0	1	0	2	12
8:45 AM	3	4	0	0	7	0	1	1	0	2	0	1	3	0	4	4	0	2	0	6	19
Total	9	13	0	0	22	0	2	1	0	3	0	7	12	0	19	6	2	7	0	15	59
Grand Total	16	28	1	0	45	2	3	2	0	7	1	16	23	0	40	16	2	20	0	38	130
Approach %	35.6	62.2	2.2	0.0		28.6	42.9	28.6	0.0		2.5	40.0	57.5	0.0		42.1	5.3	52.6	0.0		
Total %	12.3	21.5	0.8	0.0	34.6	1.5	2.3	1.5	0.0	5.4	0.8	12.3	17.7	0.0	30.8	12.3	1.5	15.4	0.0	29.2	
Exiting Leg Total					38					4					46					42	130
Buses	0	5	0	0	5	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	7
% Buses	0.0	17.9	0.0	0.0	11.1	50.0	0.0	0.0	0.0	14.3	0.0	6.3	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	5.4
Exiting Leg Total					2					0					5					0	7
Single-Unit Trucks	8	22	1	0	31	1	2	2	0	5	0	14	14	0	28	12	2	15	0	29	93
% Single-Unit	50.0	78.6	100.0	0.0	68.9	50.0	66.7	100.0	0.0	71.4	0.0	87.5	60.9	0.0	70.0	75.0	100.0	75.0	0.0	76.3	71.5
Exiting Leg Total					30					3					36					24	93
Articulated Trucks	8	1	0	0	9	0	1	0	0	1	1	1	9	0	11	4	0	5	0	9	30
% Articulated	50.0	3.6	0.0	0.0	20.0	0.0	33.3	0.0	0.0	14.3	100.0	6.3	39.1	0.0	27.5	25.0	0.0	25.0	0.0	23.7	23.1
Exiting Leg Total					6					1					5					18	30

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:15 AM	Durham Road from North					Mast Road from East					Durham Road from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:15 AM	1	5	0	0	6	0	0	0	0	0	1	1	3	0	5	6	0	8	0	14	25
7:30 AM	1	3	1	0	5	2	1	0	0	3	0	5	3	0	8	1	0	3	0	4	20
7:45 AM	3	4	0	0	7	0	0	1	0	1	0	1	1	0	2	2	0	2	0	4	14
8:00 AM	2	6	0	0	8	0	0	0	0	0	0	3	3	0	6	0	1	3	0	4	18
Total Volume	7	18	1	0	26	2	1	1	0	4	1	10	10	0	21	9	1	16	0	26	77
% Approach Total	26.9	69.2	3.8	0.0		50.0	25.0	25.0	0.0		4.8	47.6	47.6	0.0		34.6	3.8	61.5	0.0		
PHF	0.583	0.750	0.250	0.000	0.813	0.250	0.250	0.250	0.000	0.333	0.250	0.500	0.833	0.000	0.656	0.375	0.250	0.500	0.000	0.464	0.770
Buses	0	4	0	0	4	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	5
Buses %	0.0	22.2	0.0	0.0	15.4	50.0	0.0	0.0	0.0	25.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.5
Single-Unit Trucks	4	14	1	0	19	1	1	1	0	3	0	9	7	0	16	6	1	13	0	20	58
Single-Unit %	57.1	77.8	100.0	0.0	73.1	50.0	100.0	100.0	0.0	75.0	0.0	90.0	70.0	0.0	76.2	66.7	100.0	81.3	0.0	76.9	75.3
Articulated Trucks	3	0	0	0	3	0	0	0	0	0	1	1	3	0	5	3	0	3	0	6	14
Articulated %	42.9	0.0	0.0	0.0	11.5	0.0	0.0	0.0	0.0	0.0	100.0	10.0	30.0	0.0	23.8	33.3	0.0	18.8	0.0	23.1	18.2
Buses	0	4	0	0	4	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	5
Single-Unit Trucks	4	14	1	0	19	1	1	1	0	3	0	9	7	0	16	6	1	13	0	20	58
Articulated Trucks	3	0	0	0	3	0	0	0	0	0	1	1	3	0	5	3	0	3	0	6	14
Total Entering Leg	7	18	1	0	26	2	1	1	0	4	1	10	10	0	21	9	1	16	0	26	77
Buses					1					0					4					0	5
Single-Unit Trucks					23					2					21					12	58
Articulated Trucks					4					1					3					6	14
Total Exiting Leg					28					3					28					18	77

PDI File #: **240098 B**
Location: **N: Durham Road S: Durham Road**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class: **Buses**

	Durham Road from North					Mast Road from East					Durham Road from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	1	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
7:45 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	4	0	0	4	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	5
8:00 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
Grand Total	0	5	0	0	5	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	7
Approach %	0.0	100.0	0.0	0.0		100.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	71.4	0.0	0.0	71.4	14.3	0.0	0.0	0.0	14.3	0.0	14.3	0.0	0.0	14.3	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					2					0					5					0	7

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Durham Road from North					Mast Road from East					Durham Road from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	1	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
7:45 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	4	0	0	4	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	5
% Approach Total	0.0	100.0	0.0	0.0		100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	1.000	0.000	0.000	1.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.625
Entering Leg	0	4	0	0	4	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	5
Exiting Leg					1					0					4					0	5
Total					5					1					4					0	10

PDI File #: **240098 B**
Location: **N: Durham Road S: Durham Road**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class: **Single-Unit Trucks**

	Durham Road from North					Mast Road from East					Durham Road from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	1	0	0	0	1	4
7:15 AM	1	4	0	0	5	0	0	0	0	0	0	1	2	0	3	4	0	8	0	12	20
7:30 AM	0	2	1	0	3	1	1	0	0	2	0	4	2	0	6	1	0	1	0	2	13
7:45 AM	3	3	0	0	6	0	0	1	0	1	0	1	1	0	2	1	0	2	0	3	12
Total	4	10	1	0	15	1	1	1	0	3	0	8	5	0	13	7	0	11	0	18	49
8:00 AM	0	5	0	0	5	0	0	0	0	0	0	3	2	0	5	0	1	2	0	3	13
8:15 AM	0	2	0	0	2	0	0	0	0	0	0	2	1	0	3	0	1	0	0	1	6
8:30 AM	3	1	0	0	4	0	1	0	0	1	0	0	4	0	4	1	0	0	0	1	10
8:45 AM	1	4	0	0	5	0	0	1	0	1	0	1	2	0	3	4	0	2	0	6	15
Total	4	12	0	0	16	0	1	1	0	2	0	6	9	0	15	5	2	4	0	11	44
Grand Total	8	22	1	0	31	1	2	2	0	5	0	14	14	0	28	12	2	15	0	29	93
Approach %	25.8	71.0	3.2	0.0		20.0	40.0	40.0	0.0		0.0	50.0	50.0	0.0		41.4	6.9	51.7	0.0		
Total %	8.6	23.7	1.1	0.0	33.3	1.1	2.2	2.2	0.0	5.4	0.0	15.1	15.1	0.0	30.1	12.9	2.2	16.1	0.0	31.2	
Exiting Leg Total					30					3					36					24	93

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:15 AM	Durham Road from North					Mast Road from East					Durham Road from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:15 AM	1	4	0	0	5	0	0	0	0	0	0	1	2	0	3	4	0	8	0	12	20
7:30 AM	0	2	1	0	3	1	1	0	0	2	0	4	2	0	6	1	0	1	0	2	13
7:45 AM	3	3	0	0	6	0	0	1	0	1	0	1	1	0	2	1	0	2	0	3	12
8:00 AM	0	5	0	0	5	0	0	0	0	0	0	3	2	0	5	0	1	2	0	3	13
Total Volume	4	14	1	0	19	1	1	1	0	3	0	9	7	0	16	6	1	13	0	20	58
% Approach Total	21.1	73.7	5.3	0.0		33.3	33.3	33.3	0.0		0.0	56.3	43.8	0.0		30.0	5.0	65.0	0.0		
PHF	0.333	0.700	0.250	0.000	0.792	0.250	0.250	0.250	0.000	0.375	0.000	0.563	0.875	0.000	0.667	0.375	0.250	0.406	0.000	0.417	0.725
Entering Leg	4	14	1	0	19	1	1	1	0	3	0	9	7	0	16	6	1	13	0	20	58
Exiting Leg					23					2					21					12	58
Total					42					5					37					32	116

PDI File #: **240098 B**
Location: **N: Durham Road S: Durham Road**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class:

Articulated Trucks

	Durham Road from North					Mast Road from East					Durham Road from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	2	1	0	0	3	0	0	0	0	0	0	0	4	0	4	0	0	0	0	0	7
7:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	2	0	0	0	2	4
7:30 AM	1	0	0	0	1	0	0	0	0	0	0	1	1	0	2	0	0	2	0	2	5
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
Total	3	1	0	0	4	0	0	0	0	0	1	1	6	0	8	3	0	2	0	5	17
8:00 AM	2	0	0	0	2	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	4
8:15 AM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	3
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	2
8:45 AM	2	0	0	0	2	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	4
Total	5	0	0	0	5	0	1	0	0	1	0	0	3	0	3	1	0	3	0	4	13
Grand Total	8	1	0	0	9	0	1	0	0	1	1	1	9	0	11	4	0	5	0	9	30
Approach %	88.9	11.1	0.0	0.0		0.0	100.0	0.0	0.0		9.1	9.1	81.8	0.0		44.4	0.0	55.6	0.0		
Total %	26.7	3.3	0.0	0.0	30.0	0.0	3.3	0.0	0.0	3.3	3.3	3.3	30.0	0.0	36.7	13.3	0.0	16.7	0.0	30.0	
Exiting Leg Total					6					1					5					18	30

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Durham Road from North					Mast Road from East					Durham Road from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	2	1	0	0	3	0	0	0	0	0	0	0	4	0	4	0	0	0	0	0	7
7:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	2	0	0	0	2	4
7:30 AM	1	0	0	0	1	0	0	0	0	0	0	1	1	0	2	0	0	2	0	2	5
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
Total Volume	3	1	0	0	4	0	0	0	0	0	1	1	6	0	8	3	0	2	0	5	17
% Approach Total	75.0	25.0	0.0	0.0		0.0	0.0	0.0	0.0		12.5	12.5	75.0	0.0		60.0	0.0	40.0	0.0		
PHF	0.375	0.250	0.000	0.000	0.333	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.375	0.000	0.500	0.375	0.000	0.250	0.000	0.625	0.607
Entering Leg	3	1	0	0	4	0	0	0	0	0	1	1	6	0	8	3	0	2	0	5	17
Exiting Leg					3					1					4					9	17
Total					7					1					12					14	34

PDI File #: **240098 B**
Location: **N: Durham Road S: Durham Road**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION D A T A INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Durham Road from North							Mast Road from East							Durham Road from South							Mast Road from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	1	2
7:15 AM	0	0	0	0	0	0	0	1	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	1	0	0	0	1	1	1	0	0	0	0	2	0	0	1	0	0	0	1	0	0	1	0	0	0	1	5
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	0	1	0	0	0	1	1	1	0	0	0	1	3	0	0	1	0	0	0	1	0	0	1	0	0	0	1	6
Approach %	0.0	0.0	100.0	0.0	0.0	0.0		33.3	33.3	0.0	0.0	0.0	33.3		0.0	0.0	100.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0	0.0	0.0		
Total %	0.0	0.0	16.7	0.0	0.0	0.0	16.7	16.7	16.7	0.0	0.0	0.0	16.7	50.0	0.0	0.0	16.7	0.0	0.0	0.0	16.7	0.0	0.0	16.7	0.0	0.0	0.0	16.7	
Exiting Leg Total							2							2							0							2	6

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Durham Road from North							Mast Road from East							Durham Road from South							Mast Road from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	1	2
7:15 AM	0	0	0	0	0	0	0	1	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	0	1	0	0	0	1	1	1	0	0	0	0	2	0	0	1	0	0	0	1	0	0	1	0	0	0	1	5
% Approach Total	0.0	0.0	100.0	0.0	0.0	0.0		50.0	50.0	0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.250	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.625
Entering Leg	0	0	1	0	0	0	1	1	1	0	0	0	0	2	0	0	1	0	0	0	1	0	0	1	0	0	0	1	5
Exiting Leg							2							1							0							2	5
Total							3							3							1							3	10

PDI File #: **240098 B**
Location: **N: Durham Road S: Durham Road**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION D A T A INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class: **Pedestrians**

	Durham Road from North							Mast Road from East							Durham Road from South							Mast Road from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	0	0	0	0	0	2	2	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	0	0	0	0	0	0	0	0	0	0	0	3	2	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Grand Total	0	0	0	0	0	2	2	0	0	0	0	4	2	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
Approach %	0	0	0	0	0	100		0	0	0	0	66.7	33.3		0	0	0	0	0	0		0	0	0	0	0	0		
Total %	0	0	0	0	0	25	25	0	0	0	0	50	25	75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Exiting Leg Total							2							6							0							0	8

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:45 AM	Durham Road from North							Mast Road from East							Durham Road from South							Mast Road from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:45 AM	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	2	2	0	0	0	0	2	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
% Approach Total	0.0	0.0	0.0	0.0	0.0	100.0		0.0	0.0	0.0	0.0	66.7	33.3		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.000	0.000	0.500	0.250	0.750	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.625
Entering Leg	0	0	0	0	0	2	2	0	0	0	0	2	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Exiting Leg							2							3							0							0	5
Total							4							6							0							0	10

PDI File #: **240098 B**
Location: **N: Durham Road S: Durham Road**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **3:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Durham Road from North					Mast Road from East					Durham Road from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	20	96	12	0	128	11	4	17	0	32	12	108	3	0	123	5	9	25	0	39	322
3:15 PM	15	96	20	0	131	15	10	17	0	42	13	113	2	0	128	4	7	21	0	32	333
3:30 PM	10	104	19	0	133	18	3	22	0	43	18	135	3	0	156	3	15	43	0	61	393
3:45 PM	16	110	14	0	140	12	8	11	0	31	23	119	1	0	143	4	8	22	0	34	348
Total	61	406	65	0	532	56	25	67	0	148	66	475	9	0	550	16	39	111	0	166	1396
4:00 PM	8	97	14	0	119	22	5	20	0	47	18	106	3	0	127	1	5	12	0	18	311
4:15 PM	7	104	17	0	128	18	6	15	0	39	16	128	3	0	147	1	6	13	0	20	334
4:30 PM	5	107	18	0	130	21	2	19	0	42	16	111	0	0	127	3	13	16	0	32	331
4:45 PM	10	135	17	0	162	26	7	31	0	64	23	129	0	0	152	1	9	11	0	21	399
Total	30	443	66	0	539	87	20	85	0	192	73	474	6	0	553	6	33	52	0	91	1375
5:00 PM	14	127	22	0	163	26	3	18	0	47	26	144	2	0	172	1	15	16	0	32	414
5:15 PM	4	127	15	0	146	23	5	11	0	39	20	145	0	0	165	1	8	11	0	20	370
5:30 PM	5	133	23	0	161	23	6	9	0	38	21	164	0	0	185	1	5	17	0	23	407
5:45 PM	8	86	7	0	101	18	6	22	0	46	11	109	3	0	123	0	7	16	0	23	293
Total	31	473	67	0	571	90	20	60	0	170	78	562	5	0	645	3	35	60	0	98	1484
Grand Total	122	1322	198	0	1642	233	65	212	0	510	217	1511	20	0	1748	25	107	223	0	355	4255
Approach %	7.4	80.5	12.1	0.0		45.7	12.7	41.6	0.0		12.4	86.4	1.1	0.0		7.0	30.1	62.8	0.0		
Total %	2.9	31.1	4.7	0.0	38.6	5.5	1.5	5.0	0.0	12.0	5.1	35.5	0.5	0.0	41.1	0.6	2.5	5.2	0.0	8.3	
Exiting Leg Total					1967					522					1559					207	4255
Cars	102	1310	196	0	1608	233	63	212	0	508	217	1486	8	0	1711	10	107	213	0	330	4157
% Cars	83.6	99.1	99.0	0.0	97.9	100.0	96.9	100.0	0.0	99.6	100.0	98.3	40.0	0.0	97.9	40.0	100.0	95.5	0.0	93.0	97.7
Exiting Leg Total					1932					520					1532					173	4157
Heavy Vehicles	20	12	2	0	34	0	2	0	0	2	0	25	12	0	37	15	0	10	0	25	98
% Heavy Vehicles	16.4	0.9	1.0	0.0	2.1	0.0	3.1	0.0	0.0	0.4	0.0	1.7	60.0	0.0	2.1	60.0	0.0	4.5	0.0	7.0	2.3
Exiting Leg Total					35					2					27					34	98

Peak Hour Analysis from 03:00 PM to 06:00 PM begins at:

4:45 PM	Durham Road from North					Mast Road from East					Durham Road from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:45 PM	10	135	17	0	162	26	7	31	0	64	23	129	0	0	152	1	9	11	0	21	399
5:00 PM	14	127	22	0	163	26	3	18	0	47	26	144	2	0	172	1	15	16	0	32	414
5:15 PM	4	127	15	0	146	23	5	11	0	39	20	145	0	0	165	1	8	11	0	20	370
5:30 PM	5	133	23	0	161	23	6	9	0	38	21	164	0	0	185	1	5	17	0	23	407
Total Volume	33	522	77	0	632	98	21	69	0	188	90	582	2	0	674	4	37	55	0	96	1590
% Approach Total	5.2	82.6	12.2	0.0		52.1	11.2	36.7	0.0		13.4	86.4	0.3	0.0		4.2	38.5	57.3	0.0		
PHF	0.589	0.967	0.837	0.000	0.969	0.942	0.750	0.556	0.000	0.734	0.865	0.887	0.250	0.000	0.911	1.000	0.617	0.809	0.000	0.750	0.960
Cars	24	520	77	0	621	98	21	69	0	188	90	574	2	0	666	3	37	55	0	95	1570
Cars %	72.7	99.6	100.0	0.0	98.3	100.0	100.0	100.0	0.0	100.0	100.0	98.6	100.0	0.0	98.8	75.0	100.0	100.0	0.0	99.0	98.7
Heavy Vehicles	9	2	0	0	11	0	0	0	0	0	0	8	0	0	8	1	0	0	0	1	20
Heavy Vehicles %	27.3	0.4	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	1.2	25.0	0.0	0.0	0.0	1.0	1.3
Cars Enter Leg	24	520	77	0	621	98	21	69	0	188	90	574	2	0	666	3	37	55	0	95	1570
Heavy Enter Leg	9	2	0	0	11	0	0	0	0	0	0	8	0	0	8	1	0	0	0	1	20
Total Entering Leg	33	522	77	0	632	98	21	69	0	188	90	582	2	0	674	4	37	55	0	96	1590
Cars Exiting Leg					727					204					592					47	1570
Heavy Exiting Leg					8					0					3					9	20
Total Exiting Leg					735					204					595					56	1590

PDI File #: **240098 B**
Location: **N: Durham Road S: Durham Road**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **3:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class: **Cars**

	Durham Road from North					Mast Road from East					Durham Road from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	17	92	12	0	121	11	4	17	0	32	12	104	0	0	116	2	9	23	0	34	303
3:15 PM	13	94	20	0	127	15	9	17	0	41	13	111	1	0	125	1	7	21	0	29	322
3:30 PM	6	104	19	0	129	18	3	22	0	43	18	129	0	0	147	1	15	39	0	55	374
3:45 PM	15	109	13	0	137	12	7	11	0	30	23	116	1	0	140	1	8	20	0	29	336
Total	51	399	64	0	514	56	23	67	0	146	66	460	2	0	528	5	39	103	0	147	1335
4:00 PM	8	95	13	0	116	22	5	20	0	47	18	105	1	0	124	0	5	12	0	17	304
4:15 PM	6	104	17	0	127	18	6	15	0	39	16	128	1	0	145	0	6	11	0	17	328
4:30 PM	5	106	18	0	129	21	2	19	0	42	16	111	0	0	127	2	13	16	0	31	329
4:45 PM	8	134	17	0	159	26	7	31	0	64	23	126	0	0	149	1	9	11	0	21	393
Total	27	439	65	0	531	87	20	85	0	192	73	470	2	0	545	3	33	50	0	86	1354
5:00 PM	11	127	22	0	160	26	3	18	0	47	26	143	2	0	171	1	15	16	0	32	410
5:15 PM	1	127	15	0	143	23	5	11	0	39	20	143	0	0	163	1	8	11	0	20	365
5:30 PM	4	132	23	0	159	23	6	9	0	38	21	162	0	0	183	0	5	17	0	22	402
5:45 PM	8	86	7	0	101	18	6	22	0	46	11	108	2	0	121	0	7	16	0	23	291
Total	24	472	67	0	563	90	20	60	0	170	78	556	4	0	638	2	35	60	0	97	1468
Grand Total	102	1310	196	0	1608	233	63	212	0	508	217	1486	8	0	1711	10	107	213	0	330	4157
Approach %	6.3	81.5	12.2	0.0		45.9	12.4	41.7	0.0		12.7	86.8	0.5	0.0		3.0	32.4	64.5	0.0		
Total %	2.5	31.5	4.7	0.0	38.7	5.6	1.5	5.1	0.0	12.2	5.2	35.7	0.2	0.0	41.2	0.2	2.6	5.1	0.0	7.9	
Exiting Leg Total					1932					520					1532					173	4157

Peak Hour Analysis from 03:00 PM to 06:00 PM begins at:

4:45 PM	Durham Road from North					Mast Road from East					Durham Road from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:45 PM	8	134	17	0	159	26	7	31	0	64	23	126	0	0	149	1	9	11	0	21	393
5:00 PM	11	127	22	0	160	26	3	18	0	47	26	143	2	0	171	1	15	16	0	32	410
5:15 PM	1	127	15	0	143	23	5	11	0	39	20	143	0	0	163	1	8	11	0	20	365
5:30 PM	4	132	23	0	159	23	6	9	0	38	21	162	0	0	183	0	5	17	0	22	402
Total Volume	24	520	77	0	621	98	21	69	0	188	90	574	2	0	666	3	37	55	0	95	1570
% Approach Total	3.9	83.7	12.4	0.0		52.1	11.2	36.7	0.0		13.5	86.2	0.3	0.0		3.2	38.9	57.9	0.0		
PHF	0.545	0.970	0.837	0.000	0.970	0.942	0.750	0.556	0.000	0.734	0.865	0.886	0.250	0.000	0.910	0.750	0.617	0.809	0.000	0.742	0.957
Entering Leg	24	520	77	0	621	98	21	69	0	188	90	574	2	0	666	3	37	55	0	95	1570
Exiting Leg					727					204					592					47	1570
Total					1348					392					1258					142	3140

PDI File #: **240098 B**
Location: **N: Durham Road S: Durham Road**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **3:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Durham Road from North					Mast Road from East					Durham Road from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	3	4	0	0	7	0	0	0	0	0	0	4	3	0	7	3	0	2	0	5	19
3:15 PM	2	2	0	0	4	0	1	0	0	1	0	2	1	0	3	3	0	0	0	3	11
3:30 PM	4	0	0	0	4	0	0	0	0	0	0	6	3	0	9	2	0	4	0	6	19
3:45 PM	1	1	1	0	3	0	1	0	0	1	0	3	0	0	3	3	0	2	0	5	12
Total	10	7	1	0	18	0	2	0	0	2	0	15	7	0	22	11	0	8	0	19	61
4:00 PM	0	2	1	0	3	0	0	0	0	0	0	1	2	0	3	1	0	0	0	1	7
4:15 PM	1	0	0	0	1	0	0	0	0	0	0	0	2	0	2	1	0	2	0	3	6
4:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2
4:45 PM	2	1	0	0	3	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	6
Total	3	4	1	0	8	0	0	0	0	0	0	4	4	0	8	3	0	2	0	5	21
5:00 PM	3	0	0	0	3	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	4
5:15 PM	3	0	0	0	3	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	5
5:30 PM	1	1	0	0	2	0	0	0	0	0	0	2	0	0	2	1	0	0	0	1	5
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	2
Total	7	1	0	0	8	0	0	0	0	0	0	6	1	0	7	1	0	0	0	1	16
Grand Total	20	12	2	0	34	0	2	0	0	2	0	25	12	0	37	15	0	10	0	25	98
Approach %	58.8	35.3	5.9	0.0		0.0	100.0	0.0	0.0		0.0	67.6	32.4	0.0		60.0	0.0	40.0	0.0		
Total %	20.4	12.2	2.0	0.0	34.7	0.0	2.0	0.0	0.0	2.0	0.0	25.5	12.2	0.0	37.8	15.3	0.0	10.2	0.0	25.5	
Exiting Leg Total					35					2					27					34	98
Buses	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
% Buses	0.0	8.3	0.0	0.0	2.9	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0	0.0	2.7	0.0	0.0	0.0	0.0	0.0	2.0
Exiting Leg Total					1					0					1					0	2
Single-Unit Trucks	12	10	2	0	24	0	2	0	0	2	0	21	8	0	29	7	0	9	0	16	71
% Single-Unit	60.0	83.3	100.0	0.0	70.6	0.0	100.0	0.0	0.0	100.0	0.0	84.0	66.7	0.0	78.4	46.7	0.0	90.0	0.0	64.0	72.4
Exiting Leg Total					30					2					17					22	71
Articulated Trucks	8	1	0	0	9	0	0	0	0	0	0	3	4	0	7	8	0	1	0	9	25
% Articulated	40.0	8.3	0.0	0.0	26.5	0.0	0.0	0.0	0.0	0.0	0.0	12.0	33.3	0.0	18.9	53.3	0.0	10.0	0.0	36.0	25.5
Exiting Leg Total					4					0					9					12	25

Peak Hour Analysis from 03:00 PM to 06:00 PM begins at:

3:00 PM	Durham Road from North					Mast Road from East					Durham Road from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	3	4	0	0	7	0	0	0	0	0	0	4	3	0	7	3	0	2	0	5	19
3:15 PM	2	2	0	0	4	0	1	0	0	1	0	2	1	0	3	3	0	0	0	3	11
3:30 PM	4	0	0	0	4	0	0	0	0	0	0	6	3	0	9	2	0	4	0	6	19
3:45 PM	1	1	1	0	3	0	1	0	0	1	0	3	0	0	3	3	0	2	0	5	12
Total Volume	10	7	1	0	18	0	2	0	0	2	0	15	7	0	22	11	0	8	0	19	61
% Approach Total	55.6	38.9	5.6	0.0		0.0	100.0	0.0	0.0		0.0	68.2	31.8	0.0		57.9	0.0	42.1	0.0		
PHF	0.625	0.438	0.250	0.000	0.643	0.000	0.500	0.000	0.000	0.500	0.000	0.625	0.583	0.000	0.611	0.917	0.000	0.500	0.000	0.792	0.803
Buses	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Buses %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.7	0.0	0.0	4.5	0.0	0.0	0.0	0.0	0.0	1.6
Single-Unit Trucks	6	6	1	0	13	0	2	0	0	2	0	12	4	0	16	5	0	7	0	12	43
Single-Unit %	60.0	85.7	100.0	0.0	72.2	0.0	100.0	0.0	0.0	100.0	0.0	80.0	57.1	0.0	72.7	45.5	0.0	87.5	0.0	63.2	70.5
Articulated Trucks	4	1	0	0	5	0	0	0	0	0	0	2	3	0	5	6	0	1	0	7	17
Articulated %	40.0	14.3	0.0	0.0	27.8	0.0	0.0	0.0	0.0	0.0	0.0	13.3	42.9	0.0	22.7	54.5	0.0	12.5	0.0	36.8	27.9
Buses	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Single-Unit Trucks	6	6	1	0	13	0	2	0	0	2	0	12	4	0	16	5	0	7	0	12	43
Articulated Trucks	4	1	0	0	5	0	0	0	0	0	0	2	3	0	5	6	0	1	0	7	17
Total Entering Leg	10	7	1	0	18	0	2	0	0	2	0	15	7	0	22	11	0	8	0	19	61
Buses					1					0					0					0	1
Single-Unit Trucks					19					1					11					12	43
Articulated Trucks					3					0					7					7	17
Total Exiting Leg					23					1					18					19	61

PDI File #: **240098 B**
Location: **N: Durham Road S: Durham Road**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **3:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class: **Buses**

	Durham Road from North					Mast Road from East					Durham Road from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
Approach %	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					1					0					1					0	2

Peak Hour Analysis from 03:00 PM to 06:00 PM begins at:

3:00 PM	Durham Road from North					Mast Road from East					Durham Road from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
% Approach Total	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Exiting Leg					1					0					0					0	1
Total					1					0					1					0	2

PDI File #: **240098 B**
Location: **N: Durham Road S: Durham Road**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **3:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class: **Single-Unit Trucks**

	Durham Road from North					Mast Road from East					Durham Road from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	2	4	0	0	6	0	0	0	0	0	0	3	2	0	5	2	0	2	0	4	15
3:15 PM	1	1	0	0	2	0	1	0	0	1	0	2	1	0	3	2	0	0	0	2	8
3:30 PM	2	0	0	0	2	0	0	0	0	0	0	4	1	0	5	1	0	3	0	4	11
3:45 PM	1	1	1	0	3	0	1	0	0	1	0	3	0	0	3	0	0	2	0	2	9
Total	6	6	1	0	13	0	2	0	0	2	0	12	4	0	16	5	0	7	0	12	43
4:00 PM	0	2	1	0	3	0	0	0	0	0	0	1	2	0	3	0	0	0	0	0	6
4:15 PM	1	0	0	0	1	0	0	0	0	0	0	0	1	0	1	1	0	2	0	3	5
4:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2
4:45 PM	2	1	0	0	3	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	6
Total	3	4	1	0	8	0	0	0	0	0	0	4	3	0	7	2	0	2	0	4	19
5:00 PM	2	0	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
5:30 PM	1	0	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	2
Total	3	0	0	0	3	0	0	0	0	0	0	5	1	0	6	0	0	0	0	0	9
Grand Total	12	10	2	0	24	0	2	0	0	2	0	21	8	0	29	7	0	9	0	16	71
Approach %	50.0	41.7	8.3	0.0		0.0	100.0	0.0	0.0		0.0	72.4	27.6	0.0		43.8	0.0	56.3	0.0		
Total %	16.9	14.1	2.8	0.0	33.8	0.0	2.8	0.0	0.0	2.8	0.0	29.6	11.3	0.0	40.8	9.9	0.0	12.7	0.0	22.5	
Exiting Leg Total					30					2					17					22	71

Peak Hour Analysis from 03:00 PM to 06:00 PM begins at:

3:00 PM	Durham Road from North					Mast Road from East					Durham Road from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	2	4	0	0	6	0	0	0	0	0	0	3	2	0	5	2	0	2	0	4	15
3:15 PM	1	1	0	0	2	0	1	0	0	1	0	2	1	0	3	2	0	0	0	2	8
3:30 PM	2	0	0	0	2	0	0	0	0	0	0	4	1	0	5	1	0	3	0	4	11
3:45 PM	1	1	1	0	3	0	1	0	0	1	0	3	0	0	3	0	0	2	0	2	9
Total Volume	6	6	1	0	13	0	2	0	0	2	0	12	4	0	16	5	0	7	0	12	43
% Approach Total	46.2	46.2	7.7	0.0		0.0	100.0	0.0	0.0		0.0	75.0	25.0	0.0		41.7	0.0	58.3	0.0		
PHF	0.750	0.375	0.250	0.000	0.542	0.000	0.500	0.000	0.000	0.500	0.000	0.750	0.500	0.000	0.800	0.625	0.000	0.583	0.000	0.750	0.717
Entering Leg	6	6	1	0	13	0	2	0	0	2	0	12	4	0	16	5	0	7	0	12	43
Exiting Leg					19					1					11					12	43
Total					32					3					27					24	86

PDI File #: **240098 B**
Location: **N: Durham Road S: Durham Road**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **3:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class:

Articulated Trucks

	Durham Road from North					Mast Road from East					Durham Road from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	1	0	0	0	1	0	0	0	0	0	0	1	1	0	2	1	0	0	0	1	4
3:15 PM	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	3
3:30 PM	2	0	0	0	2	0	0	0	0	0	0	1	2	0	3	1	0	1	0	2	7
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	3
Total	4	1	0	0	5	0	0	0	0	0	0	2	3	0	5	6	0	1	0	7	17
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	2
5:00 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	3	0	0	0	3	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	4
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	4	0	0	0	4	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	6
Grand Total	8	1	0	0	9	0	0	0	0	0	0	3	4	0	7	8	0	1	0	9	25
Approach %	88.9	11.1	0.0	0.0		0.0	0.0	0.0	0.0		0.0	42.9	57.1	0.0		88.9	0.0	11.1	0.0		
Total %	32.0	4.0	0.0	0.0	36.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0	16.0	0.0	28.0	32.0	0.0	4.0	0.0	36.0	
Exiting Leg Total					4					0					9					12	25

Peak Hour Analysis from 03:00 PM to 06:00 PM begins at:

3:00 PM	Durham Road from North					Mast Road from East					Durham Road from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	1	0	0	0	1	0	0	0	0	0	0	1	1	0	2	1	0	0	0	1	4
3:15 PM	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	3
3:30 PM	2	0	0	0	2	0	0	0	0	0	0	1	2	0	3	1	0	1	0	2	7
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	3
Total Volume	4	1	0	0	5	0	0	0	0	0	0	2	3	0	5	6	0	1	0	7	17
% Approach Total	80.0	20.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	40.0	60.0	0.0		85.7	0.0	14.3	0.0		
PHF	0.500	0.250	0.000	0.000	0.625	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.375	0.000	0.417	0.500	0.000	0.250	0.000	0.583	0.607
Entering Leg	4	1	0	0	5	0	0	0	0	0	0	2	3	0	5	6	0	1	0	7	17
Exiting Leg					3					0					7					7	17
Total					8					0					12					14	34

PDI File #: **240098 B**
Location: **N: Durham Road S: Durham Road**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **3:00 PM**
End Time: **6:00 PM**
Class:

PRECISION D A T A INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Durham Road from North							Mast Road from East							Durham Road from South							Mast Road from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	0	1	2
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	2	0	0	1	0	0	0	1	3
4:00 PM	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	1	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
Total	2	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	4
5:00 PM	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
Total	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	3	4
Grand Total	2	1	1	0	0	0	4	0	0	0	0	0	0	0	1	1	0	0	0	0	2	0	0	4	0	1	0	5	11
Approach %	50.0	25.0	25.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		50.0	50.0	0.0	0.0	0.0	0.0		0.0	0.0	80.0	0.0	20.0	0.0		
Total %	18.2	9.1	9.1	0.0	0.0	0.0	36.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.1	9.1	0.0	0.0	0.0	0.0	18.2	0.0	0.0	36.4	0.0	9.1	0.0	45.5	
Exiting Leg Total							5							2							1							3	11

Peak Hour Analysis from 03:00 PM to 06:00 PM begins at:

4:30 PM	Durham Road from North							Mast Road from East							Durham Road from South							Mast Road from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:30 PM	1	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
5:00 PM	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
Total Volume	1	1	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	3	6
% Approach Total	33.3	33.3	33.3	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	66.7	0.0	33.3	0.0		
PHF	0.250	0.250	0.250	0.000	0.000	0.000	0.375	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.250	0.000	0.750	0.750
Entering Leg	1	1	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	3	6
Exiting Leg							2							1							1							2	6
Total							5							1							1							5	12

PDI File #: **240098 B**
Location: **N: Durham Road S: Durham Road**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **3:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Pedestrians

	Durham Road from North							Mast Road from East							Durham Road from South							Mast Road from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Approach %	0	0	0	0	0	0		0	0	0	0	50	50		0	0	0	0	0	0		0	0	0	0	0	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	50	50	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Exiting Leg Total							0							2							0							0	2

Peak Hour Analysis from 03:00 PM to 06:00 PM begins at:

4:00 PM	Durham Road from North							Mast Road from East							Durham Road from South							Mast Road from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	50.0	50.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Exiting Leg							0							2							0							0	2
Total							0							4							0							0	4

PDI File #: **240098 B**
Location: **N: Durham Road S: Durham Road**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Saturday, July 27, 2024**
Start Time: **11:00 AM**
End Time: **2:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Durham Road from North					Mast Road from East					Durham Road from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	31	85	13	0	129	13	16	11	0	40	9	81	2	0	92	5	16	26	0	47	308
11:15 AM	20	75	11	0	106	10	13	7	0	30	8	98	1	0	107	3	9	26	0	38	281
11:30 AM	23	90	8	0	121	17	9	13	0	39	18	109	1	0	128	0	7	28	0	35	323
11:45 AM	24	102	16	0	142	13	10	19	0	42	8	110	1	0	119	2	8	20	0	30	333
Total	98	352	48	0	498	53	48	50	0	151	43	398	5	0	446	10	40	100	0	150	1245
12:00 PM	19	81	12	0	112	14	7	13	0	34	12	105	1	0	118	4	6	22	0	32	296
12:15 PM	25	81	8	0	114	8	11	11	0	30	13	98	0	0	111	2	8	13	0	23	278
12:30 PM	25	93	10	0	128	6	7	12	0	25	14	89	1	0	104	2	10	27	0	39	296
12:45 PM	20	80	9	0	109	10	5	13	0	28	14	94	1	0	109	1	7	19	0	27	273
Total	89	335	39	0	463	38	30	49	0	117	53	386	3	0	442	9	31	81	0	121	1143
1:00 PM	16	82	15	0	113	12	12	12	0	36	18	88	1	0	107	1	8	20	0	29	285
1:15 PM	16	79	14	0	109	11	7	20	0	38	13	75	2	0	90	0	10	15	0	25	262
1:30 PM	18	67	8	0	93	9	4	12	0	25	19	96	1	0	116	2	6	17	0	25	259
1:45 PM	19	74	8	0	101	7	6	10	0	23	12	111	0	0	123	2	10	18	0	30	277
Total	69	302	45	0	416	39	29	54	0	122	62	370	4	0	436	5	34	70	0	109	1083
Grand Total	256	989	132	0	1377	130	107	153	0	390	158	1154	12	0	1324	24	105	251	0	380	3471
Approach %	18.6	71.8	9.6	0.0		33.3	27.4	39.2	0.0		11.9	87.2	0.9	0.0		6.3	27.6	66.1	0.0		
Total %	7.4	28.5	3.8	0.0	39.7	3.7	3.1	4.4	0.0	11.2	4.6	33.2	0.3	0.0	38.1	0.7	3.0	7.2	0.0	10.9	
Exiting Leg Total					1535					395					1166					375	3471
Cars	254	981	132	0	1367	130	107	153	0	390	156	1138	9	0	1303	20	105	250	0	375	3435
% Cars	99.2	99.2	100.0	0.0	99.3	100.0	100.0	100.0	0.0	100.0	98.7	98.6	75.0	0.0	98.4	83.3	100.0	99.6	0.0	98.7	99.0
Exiting Leg Total					1518					393					1154					370	3435
Heavy Vehicles	2	8	0	0	10	0	0	0	0	0	2	16	3	0	21	4	0	1	0	5	36
% Heavy Vehicles	0.8	0.8	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	1.3	1.4	25.0	0.0	1.6	16.7	0.0	0.4	0.0	1.3	1.0
Exiting Leg Total					17					2					12					5	36

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

11:00 AM	Durham Road from North					Mast Road from East					Durham Road from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	31	85	13	0	129	13	16	11	0	40	9	81	2	0	92	5	16	26	0	47	308
11:15 AM	20	75	11	0	106	10	13	7	0	30	8	98	1	0	107	3	9	26	0	38	281
11:30 AM	23	90	8	0	121	17	9	13	0	39	18	109	1	0	128	0	7	28	0	35	323
11:45 AM	24	102	16	0	142	13	10	19	0	42	8	110	1	0	119	2	8	20	0	30	333
Total Volume	98	352	48	0	498	53	48	50	0	151	43	398	5	0	446	10	40	100	0	150	1245
% Approach Total	19.7	70.7	9.6	0.0		35.1	31.8	33.1	0.0		9.6	89.2	1.1	0.0		6.7	26.7	66.7	0.0		
PHF	0.790	0.863	0.750	0.000	0.877	0.779	0.750	0.658	0.000	0.899	0.597	0.905	0.625	0.000	0.871	0.500	0.625	0.893	0.000	0.798	0.935
Cars	98	350	48	0	496	53	48	50	0	151	42	390	4	0	436	9	40	100	0	149	1232
Cars %	100.0	99.4	100.0	0.0	99.6	100.0	100.0	100.0	0.0	100.0	97.7	98.0	80.0	0.0	97.8	90.0	100.0	100.0	0.0	99.3	99.0
Heavy Vehicles	0	2	0	0	2	0	0	0	0	0	1	8	1	0	10	1	0	0	0	1	13
Heavy Vehicles %	0.0	0.6	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	2.3	2.0	20.0	0.0	2.2	10.0	0.0	0.0	0.0	0.7	1.0
Cars Enter Leg	98	350	48	0	496	53	48	50	0	151	42	390	4	0	436	9	40	100	0	149	1232
Heavy Enter Leg	0	2	0	0	2	0	0	0	0	0	1	8	1	0	10	1	0	0	0	1	13
Total Entering Leg	98	352	48	0	498	53	48	50	0	151	43	398	5	0	446	10	40	100	0	150	1245
Cars Exiting Leg					543					130					409					150	1232
Heavy Exiting Leg					8					1					3					1	13
Total Exiting Leg					551					131					412					151	1245

PDI File #: **240098 B**
Location: **N: Durham Road S: Durham Road**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Saturday, July 27, 2024**
Start Time: **11:00 AM**
End Time: **2:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class: **Cars**

	Durham Road from North					Mast Road from East					Durham Road from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	31	85	13	0	129	13	16	11	0	40	9	79	2	0	90	4	16	26	0	46	305
11:15 AM	20	74	11	0	105	10	13	7	0	30	8	97	1	0	106	3	9	26	0	38	279
11:30 AM	23	90	8	0	121	17	9	13	0	39	17	107	1	0	125	0	7	28	0	35	320
11:45 AM	24	101	16	0	141	13	10	19	0	42	8	107	0	0	115	2	8	20	0	30	328
Total	98	350	48	0	496	53	48	50	0	151	42	390	4	0	436	9	40	100	0	149	1232
12:00 PM	19	78	12	0	109	14	7	13	0	34	11	105	1	0	117	3	6	22	0	31	291
12:15 PM	25	80	8	0	113	8	11	11	0	30	13	96	0	0	109	2	8	13	0	23	275
12:30 PM	24	92	10	0	126	6	7	12	0	25	14	87	0	0	101	1	10	26	0	37	289
12:45 PM	20	80	9	0	109	10	5	13	0	28	14	94	1	0	109	1	7	19	0	27	273
Total	88	330	39	0	457	38	30	49	0	117	52	382	2	0	436	7	31	80	0	118	1128
1:00 PM	16	81	15	0	112	12	12	12	0	36	18	86	1	0	105	1	8	20	0	29	282
1:15 PM	16	79	14	0	109	11	7	20	0	38	13	75	2	0	90	0	10	15	0	25	262
1:30 PM	18	67	8	0	93	9	4	12	0	25	19	95	0	0	114	1	6	17	0	24	256
1:45 PM	18	74	8	0	100	7	6	10	0	23	12	110	0	0	122	2	10	18	0	30	275
Total	68	301	45	0	414	39	29	54	0	122	62	366	3	0	431	4	34	70	0	108	1075
Grand Total	254	981	132	0	1367	130	107	153	0	390	156	1138	9	0	1303	20	105	250	0	375	3435
Approach %	18.6	71.8	9.7	0.0		33.3	27.4	39.2	0.0		12.0	87.3	0.7	0.0		5.3	28.0	66.7	0.0		
Total %	7.4	28.6	3.8	0.0	39.8	3.8	3.1	4.5	0.0	11.4	4.5	33.1	0.3	0.0	37.9	0.6	3.1	7.3	0.0	10.9	
Exiting Leg Total					1518					393					1154					370	3435

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

11:00 AM	Durham Road from North					Mast Road from East					Durham Road from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	31	85	13	0	129	13	16	11	0	40	9	79	2	0	90	4	16	26	0	46	305
11:15 AM	20	74	11	0	105	10	13	7	0	30	8	97	1	0	106	3	9	26	0	38	279
11:30 AM	23	90	8	0	121	17	9	13	0	39	17	107	1	0	125	0	7	28	0	35	320
11:45 AM	24	101	16	0	141	13	10	19	0	42	8	107	0	0	115	2	8	20	0	30	328
Total Volume	98	350	48	0	496	53	48	50	0	151	42	390	4	0	436	9	40	100	0	149	1232
% Approach Total	19.8	70.6	9.7	0.0		35.1	31.8	33.1	0.0		9.6	89.4	0.9	0.0		6.0	26.8	67.1	0.0		
PHF	0.790	0.866	0.750	0.000	0.879	0.779	0.750	0.658	0.000	0.899	0.618	0.911	0.500	0.000	0.872	0.563	0.625	0.893	0.000	0.810	0.939
Entering Leg	98	350	48	0	496	53	48	50	0	151	42	390	4	0	436	9	40	100	0	149	1232
Exiting Leg					543					130					409					150	1232
Total					1039					281					845					299	2464

PDI File #: **240098 B**
Location: **N: Durham Road S: Durham Road**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Saturday, July 27, 2024**
Start Time: **11:00 AM**
End Time: **2:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Durham Road from North					Mast Road from East					Durham Road from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	1	0	0	0	1	3
11:15 AM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
11:30 AM	0	0	0	0	0	0	0	0	0	0	1	2	0	0	3	0	0	0	0	0	3
11:45 AM	0	1	0	0	1	0	0	0	0	0	0	3	1	0	4	0	0	0	0	0	5
Total	0	2	0	0	2	0	0	0	0	0	1	8	1	0	10	1	0	0	0	1	13
12:00 PM	0	3	0	0	3	0	0	0	0	0	1	0	0	0	1	1	0	0	0	1	5
12:15 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
12:30 PM	1	1	0	0	2	0	0	0	0	0	0	2	1	0	3	1	0	1	0	2	7
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	5	0	0	6	0	0	0	0	0	1	4	1	0	6	2	0	1	0	3	15
1:00 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	1	0	0	0	1	3
1:45 PM	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
Total	1	1	0	0	2	0	0	0	0	0	0	4	1	0	5	1	0	0	0	1	8
Grand Total	2	8	0	0	10	0	0	0	0	0	2	16	3	0	21	4	0	1	0	5	36
Approach %	20.0	80.0	0.0	0.0		0.0	0.0	0.0	0.0		9.5	76.2	14.3	0.0		80.0	0.0	20.0	0.0		
Total %	5.6	22.2	0.0	0.0	27.8	0.0	0.0	0.0	0.0	0.0	5.6	44.4	8.3	0.0	58.3	11.1	0.0	2.8	0.0	13.9	
Exiting Leg Total					17					2					12					5	36
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total					0					0					0					0	0
Single-Unit Trucks	2	7	0	0	9	0	0	0	0	0	2	16	3	0	21	4	0	1	0	5	35
% Single-Unit	100.0	87.5	0.0	0.0	90.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0	100.0	0.0	100.0	100.0	0.0	100.0	0.0	100.0	97.2
Exiting Leg Total					17					2					11					5	35
Articulated Trucks	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% Articulated	0.0	12.5	0.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8
Exiting Leg Total					0					0					1					0	1

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

11:45 AM	Durham Road from North					Mast Road from East					Durham Road from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:45 AM	0	1	0	0	1	0	0	0	0	0	0	3	1	0	4	0	0	0	0	0	5
12:00 PM	0	3	0	0	3	0	0	0	0	0	1	0	0	0	1	1	0	0	0	1	5
12:15 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
12:30 PM	1	1	0	0	2	0	0	0	0	0	0	2	1	0	3	1	0	1	0	2	7
Total Volume	1	6	0	0	7	0	0	0	0	0	1	7	2	0	10	2	0	1	0	3	20
% Approach Total	14.3	85.7	0.0	0.0		0.0	0.0	0.0	0.0		10.0	70.0	20.0	0.0		66.7	0.0	33.3	0.0		
PHF	0.250	0.500	0.000	0.000	0.583	0.000	0.000	0.000	0.000	0.000	0.250	0.583	0.500	0.000	0.625	0.500	0.000	0.250	0.000	0.375	0.714
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Single-Unit Trucks	1	5	0	0	6	0	0	0	0	0	1	7	2	0	10	2	0	1	0	3	19
Single-Unit %	100.0	83.3	0.0	0.0	85.7	0.0	0.0	0.0	0.0	0.0	100.0	100.0	100.0	0.0	100.0	100.0	0.0	100.0	0.0	100.0	95.0
Articulated Trucks	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Articulated %	0.0	16.7	0.0	0.0	14.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Single-Unit Trucks	1	5	0	0	6	0	0	0	0	0	1	7	2	0	10	2	0	1	0	3	19
Articulated Trucks	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Entering Leg	1	6	0	0	7	0	0	0	0	0	1	7	2	0	10	2	0	1	0	3	20
Buses					0					0					0					0	0
Single-Unit Trucks					8					1					7					3	19
Articulated Trucks					0					0					1					0	1
Total Exiting Leg					8					1					8					3	20

PDI File #: **240098 B**
Location: **N: Durham Road S: Durham Road**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Saturday, July 27, 2024**
Start Time: **11:00 AM**
End Time: **2:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class: **Buses**

	Durham Road from North					Mast Road from East					Durham Road from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					0					0					0					0	0

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

11:00 AM	Durham Road from North					Mast Road from East					Durham Road from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg					0					0					0					0	0
Total					0					0					0					0	0

PDI File #: **240098 B**
Location: **N: Durham Road S: Durham Road**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Saturday, July 27, 2024**
Start Time: **11:00 AM**
End Time: **2:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class: **Single-Unit Trucks**

	Durham Road from North					Mast Road from East					Durham Road from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	1	0	0	0	1	3
11:15 AM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
11:30 AM	0	0	0	0	0	0	0	0	0	0	1	2	0	0	3	0	0	0	0	0	3
11:45 AM	0	1	0	0	1	0	0	0	0	0	0	3	1	0	4	0	0	0	0	0	5
Total	0	2	0	0	2	0	0	0	0	0	1	8	1	0	10	1	0	0	0	1	13
12:00 PM	0	2	0	0	2	0	0	0	0	0	1	0	0	0	1	1	0	0	0	1	4
12:15 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
12:30 PM	1	1	0	0	2	0	0	0	0	0	0	2	1	0	3	1	0	1	0	2	7
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	4	0	0	5	0	0	0	0	0	1	4	1	0	6	2	0	1	0	3	14
1:00 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	1	0	0	0	1	3
1:45 PM	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
Total	1	1	0	0	2	0	0	0	0	0	0	4	1	0	5	1	0	0	0	1	8
Grand Total	2	7	0	0	9	0	0	0	0	0	2	16	3	0	21	4	0	1	0	5	35
Approach %	22.2	77.8	0.0	0.0		0.0	0.0	0.0	0.0		9.5	76.2	14.3	0.0		80.0	0.0	20.0	0.0		
Total %	5.7	20.0	0.0	0.0	25.7	0.0	0.0	0.0	0.0	0.0	5.7	45.7	8.6	0.0	60.0	11.4	0.0	2.9	0.0	14.3	
Exiting Leg Total					17					2					11					5	35

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

11:45 AM	Durham Road from North					Mast Road from East					Durham Road from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:45 AM	0	1	0	0	1	0	0	0	0	0	0	3	1	0	4	0	0	0	0	0	5
12:00 PM	0	2	0	0	2	0	0	0	0	0	1	0	0	0	1	1	0	0	0	1	4
12:15 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
12:30 PM	1	1	0	0	2	0	0	0	0	0	0	2	1	0	3	1	0	1	0	2	7
Total Volume	1	5	0	0	6	0	0	0	0	0	1	7	2	0	10	2	0	1	0	3	19
% Approach Total	16.7	83.3	0.0	0.0		0.0	0.0	0.0	0.0		10.0	70.0	20.0	0.0		66.7	0.0	33.3	0.0		
PHF	0.250	0.625	0.000	0.000	0.750	0.000	0.000	0.000	0.000	0.000	0.250	0.583	0.500	0.000	0.625	0.500	0.000	0.250	0.000	0.375	0.679
Entering Leg	1	5	0	0	6	0	0	0	0	0	1	7	2	0	10	2	0	1	0	3	19
Exiting Leg					8					1					7					3	19
Total					14					1					17					6	38

PDI File #: **240098 B**
Location: **N: Durham Road S: Durham Road**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Saturday, July 27, 2024**
Start Time: **11:00 AM**
End Time: **2:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class:

Articulated Trucks

	Durham Road from North					Mast Road from East					Durham Road from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Approach %	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	100.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					0					0					1					0	1

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

11:15 AM	Durham Road from North					Mast Road from East					Durham Road from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% Approach Total	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exiting Leg					0					0					1					0	1
Total					1					0					1					0	2

PDI File #: **240098 B**
Location: **N: Durham Road S: Durham Road**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Saturday, July 27, 2024**
Start Time: **11:00 AM**
End Time: **2:00 PM**
Class:

PRECISION D A T A INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Durham Road from North							Mast Road from East							Durham Road from South							Mast Road from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	2	3
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	2	3
Approach %	0.0	0.0	0.0	0.0	0.0	0.0		100.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33.3	0.0	0.0	0.0	0.0	0.0	33.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	66.7	0.0	0.0	0.0	66.7	
Exiting Leg Total							3							0							0							0	3

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

11:30 AM	Durham Road from North							Mast Road from East							Durham Road from South							Mast Road from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
Total Volume	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	2	3
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0		100.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.375
Entering Leg	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	2	3
Exiting Leg							3							0							0							0	3
Total							3							1							0							2	6

PDI File #: **240098 B**
Location: **N: Durham Road S: Durham Road**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Saturday, July 27, 2024**
Start Time: **11:00 AM**
End Time: **2:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class:

Pedestrians

	Durham Road from North							Mast Road from East							Durham Road from South							Mast Road from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	0	0	0	0	0	0	0	0	0	0	2	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Approach %	0	0	0	0	0	0		0	0	0	0	50	50		0	0	0	0	0	0		0	0	0	0	0	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	50	50	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Exiting Leg Total							0							4							0							0	4

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

12:00 PM	Durham Road from North							Mast Road from East							Durham Road from South							Mast Road from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	50.0	50.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Exiting Leg							0							2							0							0	2
Total							0							4							0							0	4

PDI File #: **240098 C**
Location: **N: Stonewall Drive S: Grapevine Drive**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Stonewall Drive from North					Mast Road from East					Grapevine Drive from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	1	0	1	0	2	4	10	0	0	14	1	0	0	0	1	0	4	2	0	6	23
7:15 AM	1	0	0	0	1	0	10	0	0	10	1	1	1	0	3	2	22	1	0	25	39
7:30 AM	1	0	2	0	3	7	13	1	0	21	5	1	1	0	7	2	11	0	0	13	44
7:45 AM	0	0	0	0	0	4	14	0	0	18	1	0	1	0	2	2	13	0	0	15	35
Total	3	0	3	0	6	15	47	1	0	63	8	2	3	0	13	6	50	3	0	59	141
8:00 AM	0	0	2	0	2	3	10	1	0	14	4	0	2	0	6	1	12	0	0	13	35
8:15 AM	0	0	2	0	2	1	11	4	0	16	1	0	2	0	3	4	9	1	0	14	35
8:30 AM	1	0	2	0	3	4	33	3	1	41	1	0	3	0	4	3	22	1	0	26	74
8:45 AM	0	0	1	0	1	3	24	1	0	28	5	0	1	0	6	4	21	0	0	25	60
Total	1	0	7	0	8	11	78	9	1	99	11	0	8	0	19	12	64	2	0	78	204
Grand Total	4	0	10	0	14	26	125	10	1	162	19	2	11	0	32	18	114	5	0	137	345
Approach %	28.6	0.0	71.4	0.0		16.0	77.2	6.2	0.6		59.4	6.3	34.4	0.0		13.1	83.2	3.6	0.0		
Total %	1.2	0.0	2.9	0.0	4.1	7.5	36.2	2.9	0.3	47.0	5.5	0.6	3.2	0.0	9.3	5.2	33.0	1.4	0.0	39.7	
Exiting Leg Total					33					144					28					140	345
Cars	3	0	4	0	7	16	93	10	1	120	18	2	8	0	28	15	77	4	0	96	251
% Cars	75.0	0.0	40.0	0.0	50.0	61.5	74.4	100.0	100.0	74.1	94.7	100.0	72.7	0.0	87.5	83.3	67.5	80.0	0.0	70.1	72.8
Exiting Leg Total					22					100					25					104	251
Heavy Vehicles	1	0	6	0	7	10	32	0	0	42	1	0	3	0	4	3	37	1	0	41	94
% Heavy Vehicles	25.0	0.0	60.0	0.0	50.0	38.5	25.6	0.0	0.0	25.9	5.3	0.0	27.3	0.0	12.5	16.7	32.5	20.0	0.0	29.9	27.2
Exiting Leg Total					11					44					3					36	94

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Stonewall Drive from North					Mast Road from East					Grapevine Drive from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	0	0	2	0	2	3	10	1	0	14	4	0	2	0	6	1	12	0	0	13	35
8:15 AM	0	0	2	0	2	1	11	4	0	16	1	0	2	0	3	4	9	1	0	14	35
8:30 AM	1	0	2	0	3	4	33	3	1	41	1	0	3	0	4	3	22	1	0	26	74
8:45 AM	0	0	1	0	1	3	24	1	0	28	5	0	1	0	6	4	21	0	0	25	60
Total Volume	1	0	7	0	8	11	78	9	1	99	11	0	8	0	19	12	64	2	0	78	204
% Approach Total	12.5	0.0	87.5	0.0		11.1	78.8	9.1	1.0		57.9	0.0	42.1	0.0		15.4	82.1	2.6	0.0		
PHF	0.250	0.000	0.875	0.000	0.667	0.688	0.591	0.563	0.250	0.604	0.550	0.000	0.667	0.000	0.792	0.750	0.727	0.500	0.000	0.750	0.689
Cars	1	0	3	0	4	5	61	9	1	76	11	0	6	0	17	11	48	2	0	61	158
Cars %	100.0	0.0	42.9	0.0	50.0	45.5	78.2	100.0	100.0	76.8	100.0	0.0	75.0	0.0	89.5	91.7	75.0	100.0	0.0	78.2	77.5
Heavy Vehicles	0	0	4	0	4	6	17	0	0	23	0	0	2	0	2	1	16	0	0	17	46
Heavy Vehicles %	0.0	0.0	57.1	0.0	50.0	54.5	21.8	0.0	0.0	23.2	0.0	0.0	25.0	0.0	10.5	8.3	25.0	0.0	0.0	21.8	22.5
Cars Enter Leg	1	0	3	0	4	5	61	9	1	76	11	0	6	0	17	11	48	2	0	61	158
Heavy Enter Leg	0	0	4	0	4	6	17	0	0	23	0	0	2	0	2	1	16	0	0	17	46
Total Entering Leg	1	0	7	0	8	11	78	9	1	99	11	0	8	0	19	12	64	2	0	78	204
Cars Exiting Leg					7					63					20					68	158
Heavy Exiting Leg					6					20					1					19	46
Total Exiting Leg					13					83					21					87	204

PDI File #: **240098 C**
Location: **N: Stonewall Drive S: Grapevine Drive**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Cars

	Stonewall Drive from North					Mast Road from East					Grapevine Drive from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	1	0	1	1	7	0	0	8	1	0	0	0	1	0	3	1	0	4	14
7:15 AM	1	0	0	0	1	0	5	0	0	5	1	1	1	0	3	2	9	1	0	12	21
7:30 AM	1	0	0	0	1	6	9	1	0	16	4	1	0	0	5	1	9	0	0	10	32
7:45 AM	0	0	0	0	0	4	11	0	0	15	1	0	1	0	2	1	8	0	0	9	26
Total	2	0	1	0	3	11	32	1	0	44	7	2	2	0	11	4	29	2	0	35	93
8:00 AM	0	0	1	0	1	1	7	1	0	9	4	0	1	0	5	1	9	0	0	10	25
8:15 AM	0	0	0	0	0	0	10	4	0	14	1	0	1	0	2	4	7	1	0	12	28
8:30 AM	1	0	1	0	2	4	24	3	1	32	1	0	3	0	4	3	20	1	0	24	62
8:45 AM	0	0	1	0	1	0	20	1	0	21	5	0	1	0	6	3	12	0	0	15	43
Total	1	0	3	0	4	5	61	9	1	76	11	0	6	0	17	11	48	2	0	61	158
Grand Total	3	0	4	0	7	16	93	10	1	120	18	2	8	0	28	15	77	4	0	96	251
Approach %	42.9	0.0	57.1	0.0		13.3	77.5	8.3	0.8		64.3	7.1	28.6	0.0		15.6	80.2	4.2	0.0		
Total %	1.2	0.0	1.6	0.0	2.8	6.4	37.1	4.0	0.4	47.8	7.2	0.8	3.2	0.0	11.2	6.0	30.7	1.6	0.0	38.2	
Exiting Leg Total					22					100					25					104	251

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Stonewall Drive from North					Mast Road from East					Grapevine Drive from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	0	0	1	0	1	1	7	1	0	9	4	0	1	0	5	1	9	0	0	10	25
8:15 AM	0	0	0	0	0	0	10	4	0	14	1	0	1	0	2	4	7	1	0	12	28
8:30 AM	1	0	1	0	2	4	24	3	1	32	1	0	3	0	4	3	20	1	0	24	62
8:45 AM	0	0	1	0	1	0	20	1	0	21	5	0	1	0	6	3	12	0	0	15	43
Total Volume	1	0	3	0	4	5	61	9	1	76	11	0	6	0	17	11	48	2	0	61	158
% Approach Total	25.0	0.0	75.0	0.0		6.6	80.3	11.8	1.3		64.7	0.0	35.3	0.0		18.0	78.7	3.3	0.0		
PHF	0.250	0.000	0.750	0.000	0.500	0.313	0.635	0.563	0.250	0.594	0.550	0.000	0.500	0.000	0.708	0.688	0.600	0.500	0.000	0.635	0.637
Entering Leg	1	0	3	0	4	5	61	9	1	76	11	0	6	0	17	11	48	2	0	61	158
Exiting Leg					7					63					20					68	158
Total					11					139					37					129	316

PDI File #: **240098 C**
Location: **N: Stonewall Drive S: Grapevine Drive**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Stonewall Drive from North					Mast Road from East					Grapevine Drive from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	1	0	0	0	1	3	3	0	0	6	0	0	0	0	0	0	1	1	0	2	9
7:15 AM	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	13	0	0	13	18
7:30 AM	0	0	2	0	2	1	4	0	0	5	1	0	1	0	2	1	2	0	0	3	12
7:45 AM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	1	5	0	0	6	9
Total	1	0	2	0	3	4	15	0	0	19	1	0	1	0	2	2	21	1	0	24	48
8:00 AM	0	0	1	0	1	2	3	0	0	5	0	0	1	0	1	0	3	0	0	3	10
8:15 AM	0	0	2	0	2	1	1	0	0	2	0	0	1	0	1	0	2	0	0	2	7
8:30 AM	0	0	1	0	1	0	9	0	0	9	0	0	0	0	0	0	2	0	0	2	12
8:45 AM	0	0	0	0	0	3	4	0	0	7	0	0	0	0	0	1	9	0	0	10	17
Total	0	0	4	0	4	6	17	0	0	23	0	0	2	0	2	1	16	0	0	17	46
Grand Total	1	0	6	0	7	10	32	0	0	42	1	0	3	0	4	3	37	1	0	41	94
Approach %	14.3	0.0	85.7	0.0		23.8	76.2	0.0	0.0		25.0	0.0	75.0	0.0		7.3	90.2	2.4	0.0		
Total %	1.1	0.0	6.4	0.0	7.4	10.6	34.0	0.0	0.0	44.7	1.1	0.0	3.2	0.0	4.3	3.2	39.4	1.1	0.0	43.6	
Exiting Leg Total					11					44					3					36	94
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total					0					0					0					0	0
Single-Unit Trucks	1	0	0	0	1	0	22	0	0	22	1	0	3	0	4	2	32	1	0	35	62
% Single-Unit	100.0	0.0	0.0	0.0	14.3	0.0	68.8	0.0	0.0	52.4	100.0	0.0	100.0	0.0	100.0	66.7	86.5	100.0	0.0	85.4	66.0
Exiting Leg Total					1					33					2					26	62
Articulated Trucks	0	0	6	0	6	10	10	0	0	20	0	0	0	0	0	1	5	0	0	6	32
% Articulated	0.0	0.0	100.0	0.0	85.7	100.0	31.3	0.0	0.0	47.6	0.0	0.0	0.0	0.0	0.0	33.3	13.5	0.0	0.0	14.6	34.0
Exiting Leg Total					10					11					1					10	32

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:15 AM	Stonewall Drive from North					Mast Road from East					Grapevine Drive from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:15 AM	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	13	0	0	13	18
7:30 AM	0	0	2	0	2	1	4	0	0	5	1	0	1	0	2	1	2	0	0	3	12
7:45 AM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	1	5	0	0	6	9
8:00 AM	0	0	1	0	1	2	3	0	0	5	0	0	1	0	1	0	3	0	0	3	10
Total Volume	0	0	3	0	3	3	15	0	0	18	1	0	2	0	3	2	23	0	0	25	49
% Approach Total	0.0	0.0	100.0	0.0		16.7	83.3	0.0	0.0		33.3	0.0	66.7	0.0		8.0	92.0	0.0	0.0		
PHF	0.000	0.000	0.375	0.000	0.375	0.375	0.750	0.000	0.000	0.900	0.250	0.000	0.500	0.000	0.375	0.500	0.442	0.000	0.000	0.481	0.681
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Single-Unit Trucks	0	0	0	0	0	0	10	0	0	10	1	0	2	0	3	2	19	0	0	21	34
Single-Unit %	0.0	0.0	0.0	0.0	0.0	0.0	66.7	0.0	0.0	55.6	100.0	0.0	100.0	0.0	100.0	100.0	82.6	0.0	0.0	84.0	69.4
Articulated Trucks	0	0	3	0	3	3	5	0	0	8	0	0	0	0	0	0	4	0	0	4	15
Articulated %	0.0	0.0	100.0	0.0	100.0	100.0	33.3	0.0	0.0	44.4	0.0	0.0	0.0	0.0	0.0	0.0	17.4	0.0	0.0	16.0	30.6
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Single-Unit Trucks	0	0	0	0	0	0	10	0	0	10	1	0	2	0	3	2	19	0	0	21	34
Articulated Trucks	0	0	3	0	3	3	5	0	0	8	0	0	0	0	0	0	4	0	0	4	15
Total Entering Leg	0	0	3	0	3	3	15	0	0	18	1	0	2	0	3	2	23	0	0	25	49
Buses					0					0					0					0	0
Single-Unit Trucks					0					20					2					12	34
Articulated Trucks					3					7					0					5	15
Total Exiting Leg					3					27					2					17	49

PDI File #: **240098 C**
Location: **N: Stonewall Drive S: Grapevine Drive**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class: **Buses**

	Stonewall Drive from North					Mast Road from East					Grapevine Drive from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					0					0					0					0	0

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Stonewall Drive from North					Mast Road from East					Grapevine Drive from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg					0					0					0					0	0
Total					0					0					0					0	0

PDI File #: **240098 C**
Location: **N: Stonewall Drive S: Grapevine Drive**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class: **Single-Unit Trucks**

	Stonewall Drive from North					Mast Road from East					Grapevine Drive from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	3
7:15 AM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	11	0	0	11	14
7:30 AM	0	0	0	0	0	0	3	0	0	3	1	0	1	0	2	1	1	0	0	2	7
7:45 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	1	4	0	0	5	7
Total	1	0	0	0	1	0	8	0	0	8	1	0	1	0	2	2	17	1	0	20	31
8:00 AM	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	0	3	0	0	3	6
8:15 AM	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	0	1	0	0	1	3
8:30 AM	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	0	2	0	0	2	10
8:45 AM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	9	0	0	9	12
Total	0	0	0	0	0	0	14	0	0	14	0	0	2	0	2	0	15	0	0	15	31
Grand Total	1	0	0	0	1	0	22	0	0	22	1	0	3	0	4	2	32	1	0	35	62
Approach %	100.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		25.0	0.0	75.0	0.0		5.7	91.4	2.9	0.0		
Total %	1.6	0.0	0.0	0.0	1.6	0.0	35.5	0.0	0.0	35.5	1.6	0.0	4.8	0.0	6.5	3.2	51.6	1.6	0.0	56.5	
Exiting Leg Total					1					33					2					26	62

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:15 AM	Stonewall Drive from North					Mast Road from East					Grapevine Drive from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:15 AM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	11	0	0	11	14
7:30 AM	0	0	0	0	0	0	3	0	0	3	1	0	1	0	2	1	1	0	0	2	7
7:45 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	1	4	0	0	5	7
8:00 AM	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	0	3	0	0	3	6
Total Volume	0	0	0	0	0	0	10	0	0	10	1	0	2	0	3	2	19	0	0	21	34
% Approach Total	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		33.3	0.0	66.7	0.0		9.5	90.5	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.833	0.000	0.000	0.833	0.250	0.000	0.500	0.000	0.375	0.500	0.432	0.000	0.000	0.477	0.607
Entering Leg	0	0	0	0	0	0	10	0	0	10	1	0	2	0	3	2	19	0	0	21	34
Exiting Leg					0					20					2					12	34
Total					0					30					5					33	68

PDI File #: **240098 C**
Location: **N: Stonewall Drive S: Grapevine Drive**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class:

Articulated Trucks

	Stonewall Drive from North					Mast Road from East					Grapevine Drive from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	3	3	0	0	6	0	0	0	0	0	0	0	0	0	0	6
7:15 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	4
7:30 AM	0	0	2	0	2	1	1	0	0	2	0	0	0	0	0	0	1	0	0	1	5
7:45 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
Total	0	0	2	0	2	4	7	0	0	11	0	0	0	0	0	0	4	0	0	4	17
8:00 AM	0	0	1	0	1	2	1	0	0	3	0	0	0	0	0	0	0	0	0	0	4
8:15 AM	0	0	2	0	2	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	4
8:30 AM	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
8:45 AM	0	0	0	0	0	3	1	0	0	4	0	0	0	0	0	1	0	0	0	1	5
Total	0	0	4	0	4	6	3	0	0	9	0	0	0	0	0	1	1	0	0	2	15
Grand Total	0	0	6	0	6	10	10	0	0	20	0	0	0	0	0	1	5	0	0	6	32
Approach %	0.0	0.0	100.0	0.0		50.0	50.0	0.0	0.0		0.0	0.0	0.0	0.0		16.7	83.3	0.0	0.0		
Total %	0.0	0.0	18.8	0.0	18.8	31.3	31.3	0.0	0.0	62.5	0.0	0.0	0.0	0.0	0.0	3.1	15.6	0.0	0.0	18.8	
Exiting Leg Total					10					11					1					10	32

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Stonewall Drive from North					Mast Road from East					Grapevine Drive from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	3	3	0	0	6	0	0	0	0	0	0	0	0	0	0	6
7:15 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	4
7:30 AM	0	0	2	0	2	1	1	0	0	2	0	0	0	0	0	0	1	0	0	1	5
7:45 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
Total Volume	0	0	2	0	2	4	7	0	0	11	0	0	0	0	0	0	4	0	0	4	17
% Approach Total	0.0	0.0	100.0	0.0		36.4	63.6	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		
PHF	0.000	0.000	0.250	0.000	0.250	0.333	0.583	0.000	0.000	0.458	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.500	0.708
Entering Leg	0	0	2	0	2	4	7	0	0	11	0	0	0	0	0	0	4	0	0	4	17
Exiting Leg					4					6					0					7	17
Total					6					17					0					11	34

PDI File #: **240098 C**
Location: **N: Stonewall Drive S: Grapevine Drive**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION D A T A INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class:

Bicycles (on Roadway and Crosswalks)

	Stonewall Drive from North							Mast Road from East							Grapevine Drive from South							Mast Road from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	2
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	1	0	0	0	0	1	2	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Total	1	0	0	0	0	1	2	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Grand Total	1	0	0	0	0	1	2	1	1	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	1	5
Approach %	50.0	0.0	0.0	0.0	0.0	50.0		50.0	50.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0	0.0		
Total %	20.0	0.0	0.0	0.0	0.0	20.0	40.0	20.0	20.0	0.0	0.0	0.0	0.0	40.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	20.0	
Exiting Leg Total							2							1							0							2	5

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Stonewall Drive from North							Mast Road from East							Grapevine Drive from South							Mast Road from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	1	0	0	0	0	1	2	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Total Volume	1	0	0	0	0	1	2	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
% Approach Total	50.0	0.0	0.0	0.0	0.0	50.0		100.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.250	0.000	0.000	0.000	0.000	0.250	0.250	0.250	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	1	0	0	0	0	1	2	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Exiting Leg							2							0							0							1	3
Total							4							1							0							1	6

PDI File #: **240098 C**
Location: **N: Stonewall Drive S: Grapevine Drive**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class:

Pedestrians

	Stonewall Drive (from North)							Mast Road (from East)							Grapevine Drive (from South)							Mast Road (from West)							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
Total	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	2
8:45 AM	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	3
Total	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	2	1	3	0	0	0	0	0	0	0	5
Grand Total	0	0	0	0	2	1	3	0	0	0	0	0	0	0	0	0	0	0	3	1	4	0	0	0	0	0	0	0	7
Approach %	0	0	0	0	66.7	33.3		0	0	0	0	0	0		0	0	0	0	75	25		0	0	0	0	0	0		
Total %	0	0	0	0	28.6	14.3	42.9	0	0	0	0	0	0	0	0	0	0	0	42.9	14.3	57.1	0	0	0	0	0	0	0	
Exiting Leg Total							3							0							4							0	7

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Stonewall Drive (from North)							Mast Road (from East)							Grapevine Drive (from South)							Mast Road (from West)							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	2
8:45 AM	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	3
Total Volume	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	2	1	3	0	0	0	0	0	0	0	5
% Approach Total	0.0	0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	66.7	33.3		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.375	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.417
Entering Leg	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	2	1	3	0	0	0	0	0	0	0	5
Exiting Leg							2							0							3							0	5
Total							4							0							6							0	10

PDI File #: **240098 C**
Location: **N: Stonewall Drive S: Grapevine Drive**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **3:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Stonewall Drive from North					Mast Road from East					Grapevine Drive from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	1	1	5	0	7	5	19	3	0	27	8	1	7	0	16	2	29	0	0	31	81
3:15 PM	0	0	7	0	7	6	17	3	0	26	7	0	3	0	10	5	20	2	0	27	70
3:30 PM	6	3	28	0	37	4	11	2	0	17	9	0	3	0	12	5	22	0	0	27	93
3:45 PM	2	0	7	0	9	12	8	4	0	24	9	0	4	0	13	0	13	3	0	16	62
Total	9	4	47	0	60	27	55	12	0	94	33	1	17	0	51	12	84	5	0	101	306
4:00 PM	0	2	4	0	6	0	11	3	0	14	6	2	3	0	11	4	8	0	0	12	43
4:15 PM	0	0	5	0	5	2	10	6	0	18	6	0	5	0	11	4	11	0	0	15	49
4:30 PM	0	0	5	0	5	0	3	3	0	6	9	0	7	0	16	3	14	0	0	17	44
4:45 PM	0	1	3	0	4	0	14	3	0	17	7	0	3	0	10	3	12	0	0	15	46
Total	0	3	17	0	20	2	38	15	0	55	28	2	18	0	48	14	45	0	0	59	182
5:00 PM	0	0	3	0	3	1	13	5	0	19	9	0	5	0	14	5	21	0	0	26	62
5:15 PM	1	0	1	0	2	3	7	1	0	11	7	0	3	0	10	5	9	0	0	14	37
5:30 PM	1	0	2	0	3	1	8	2	0	11	11	0	4	0	15	6	13	0	0	19	48
5:45 PM	0	0	3	0	3	2	10	3	0	15	11	0	7	0	18	5	6	0	0	11	47
Total	2	0	9	0	11	7	38	11	0	56	38	0	19	0	57	21	49	0	0	70	194
Grand Total	11	7	73	0	91	36	131	38	0	205	99	3	54	0	156	47	178	5	0	230	682
Approach %	12.1	7.7	80.2	0.0		17.6	63.9	18.5	0.0		63.5	1.9	34.6	0.0		20.4	77.4	2.2	0.0		
Total %	1.6	1.0	10.7	0.0	13.3	5.3	19.2	5.6	0.0	30.1	14.5	0.4	7.9	0.0	22.9	6.9	26.1	0.7	0.0	33.7	
Exiting Leg Total					44					350					92					196	682
Cars	11	7	64	0	82	25	110	38	0	173	99	3	54	0	156	47	165	4	0	216	627
% Cars	100.0	100.0	87.7	0.0	90.1	69.4	84.0	100.0	0.0	84.4	100.0	100.0	100.0	0.0	100.0	100.0	92.7	80.0	0.0	93.9	91.9
Exiting Leg Total					32					328					92					175	627
Heavy Vehicles	0	0	9	0	9	11	21	0	0	32	0	0	0	0	0	0	13	1	0	14	55
% Heavy Vehicles	0.0	0.0	12.3	0.0	9.9	30.6	16.0	0.0	0.0	15.6	0.0	0.0	0.0	0.0	0.0	0.0	7.3	20.0	0.0	6.1	8.1
Exiting Leg Total					12					22					0					21	55

Peak Hour Analysis from 03:00 PM to 06:00 PM begins at:

3:00 PM	Stonewall Drive from North					Mast Road from East					Grapevine Drive from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	1	1	5	0	7	5	19	3	0	27	8	1	7	0	16	2	29	0	0	31	81
3:15 PM	0	0	7	0	7	6	17	3	0	26	7	0	3	0	10	5	20	2	0	27	70
3:30 PM	6	3	28	0	37	4	11	2	0	17	9	0	3	0	12	5	22	0	0	27	93
3:45 PM	2	0	7	0	9	12	8	4	0	24	9	0	4	0	13	0	13	3	0	16	62
Total Volume	9	4	47	0	60	27	55	12	0	94	33	1	17	0	51	12	84	5	0	101	306
% Approach Total	15.0	6.7	78.3	0.0		28.7	58.5	12.8	0.0		64.7	2.0	33.3	0.0		11.9	83.2	5.0	0.0		
PHF	0.375	0.333	0.420	0.000	0.405	0.563	0.724	0.750	0.000	0.870	0.917	0.250	0.607	0.000	0.797	0.600	0.724	0.417	0.000	0.815	0.823
Cars	9	4	40	0	53	21	43	12	0	76	33	1	17	0	51	12	75	4	0	91	271
Cars %	100.0	100.0	85.1	0.0	88.3	77.8	78.2	100.0	0.0	80.9	100.0	100.0	100.0	0.0	100.0	100.0	89.3	80.0	0.0	90.1	88.6
Heavy Vehicles	0	0	7	0	7	6	12	0	0	18	0	0	0	0	0	0	9	1	0	10	35
Heavy Vehicles %	0.0	0.0	14.9	0.0	11.7	22.2	21.8	0.0	0.0	19.1	0.0	0.0	0.0	0.0	0.0	0.0	10.7	20.0	0.0	9.9	11.4
Cars Enter Leg	9	4	40	0	53	21	43	12	0	76	33	1	17	0	51	12	75	4	0	91	271
Heavy Enter Leg	0	0	7	0	7	6	12	0	0	18	0	0	0	0	0	0	9	1	0	10	35
Total Entering Leg	9	4	47	0	60	27	55	12	0	94	33	1	17	0	51	12	84	5	0	101	306
Cars Exiting Leg					26					148					28					69	271
Heavy Exiting Leg					7					16					0					12	35
Total Exiting Leg					33					164					28					81	306

PDI File #: **240098 C**
Location: **N: Stonewall Drive S: Grapevine Drive**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **3:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Cars

	Stonewall Drive from North					Mast Road from East					Grapevine Drive from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	1	1	4	0	6	4	15	3	0	22	8	1	7	0	16	2	26	0	0	28	72
3:15 PM	0	0	6	0	6	5	15	3	0	23	7	0	3	0	10	5	19	1	0	25	64
3:30 PM	6	3	26	0	35	1	6	2	0	9	9	0	3	0	12	5	19	0	0	24	80
3:45 PM	2	0	4	0	6	11	7	4	0	22	9	0	4	0	13	0	11	3	0	14	55
Total	9	4	40	0	53	21	43	12	0	76	33	1	17	0	51	12	75	4	0	91	271
4:00 PM	0	2	3	0	5	0	9	3	0	12	6	2	3	0	11	4	8	0	0	12	40
4:15 PM	0	0	5	0	5	1	8	6	0	15	6	0	5	0	11	4	8	0	0	12	43
4:30 PM	0	0	5	0	5	0	3	3	0	6	9	0	7	0	16	3	13	0	0	16	43
4:45 PM	0	1	3	0	4	0	13	3	0	16	7	0	3	0	10	3	12	0	0	15	45
Total	0	3	16	0	19	1	33	15	0	49	28	2	18	0	48	14	41	0	0	55	171
5:00 PM	0	0	3	0	3	0	11	5	0	16	9	0	5	0	14	5	21	0	0	26	59
5:15 PM	1	0	1	0	2	0	7	1	0	8	7	0	3	0	10	5	9	0	0	14	34
5:30 PM	1	0	1	0	2	1	7	2	0	10	11	0	4	0	15	6	13	0	0	19	46
5:45 PM	0	0	3	0	3	2	9	3	0	14	11	0	7	0	18	5	6	0	0	11	46
Total	2	0	8	0	10	3	34	11	0	48	38	0	19	0	57	21	49	0	0	70	185
Grand Total	11	7	64	0	82	25	110	38	0	173	99	3	54	0	156	47	165	4	0	216	627
Approach %	13.4	8.5	78.0	0.0		14.5	63.6	22.0	0.0		63.5	1.9	34.6	0.0		21.8	76.4	1.9	0.0		
Total %	1.8	1.1	10.2	0.0	13.1	4.0	17.5	6.1	0.0	27.6	15.8	0.5	8.6	0.0	24.9	7.5	26.3	0.6	0.0	34.4	
Exiting Leg Total					32					328					92					175	627

Peak Hour Analysis from 03:00 PM to 06:00 PM begins at:

3:00 PM	Stonewall Drive from North					Mast Road from East					Grapevine Drive from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	1	1	4	0	6	4	15	3	0	22	8	1	7	0	16	2	26	0	0	28	72
3:15 PM	0	0	6	0	6	5	15	3	0	23	7	0	3	0	10	5	19	1	0	25	64
3:30 PM	6	3	26	0	35	1	6	2	0	9	9	0	3	0	12	5	19	0	0	24	80
3:45 PM	2	0	4	0	6	11	7	4	0	22	9	0	4	0	13	0	11	3	0	14	55
Total Volume	9	4	40	0	53	21	43	12	0	76	33	1	17	0	51	12	75	4	0	91	271
% Approach Total	17.0	7.5	75.5	0.0		27.6	56.6	15.8	0.0		64.7	2.0	33.3	0.0		13.2	82.4	4.4	0.0		
PHF	0.375	0.333	0.385	0.000	0.379	0.477	0.717	0.750	0.000	0.826	0.917	0.250	0.607	0.000	0.797	0.600	0.721	0.333	0.000	0.813	0.847
Entering Leg	9	4	40	0	53	21	43	12	0	76	33	1	17	0	51	12	75	4	0	91	271
Exiting Leg					26					148					28					69	271
Total					79					224					79					160	542

PDI File #: **240098 C**
Location: **N: Stonewall Drive S: Grapevine Drive**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **3:00 PM**
End Time: **6:00 PM**

PRECISION D A T A INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Stonewall Drive from North					Mast Road from East					Grapevine Drive from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	0	0	1	0	1	1	4	0	0	5	0	0	0	0	0	0	3	0	0	3	9
3:15 PM	0	0	1	0	1	1	2	0	0	3	0	0	0	0	0	0	1	1	0	2	6
3:30 PM	0	0	2	0	2	3	5	0	0	8	0	0	0	0	0	0	3	0	0	3	13
3:45 PM	0	0	3	0	3	1	1	0	0	2	0	0	0	0	0	0	2	0	0	2	7
Total	0	0	7	0	7	6	12	0	0	18	0	0	0	0	0	0	9	1	0	10	35
4:00 PM	0	0	1	0	1	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	3
4:15 PM	0	0	0	0	0	1	2	0	0	3	0	0	0	0	0	0	3	0	0	3	6
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
4:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	1	0	1	1	5	0	0	6	0	0	0	0	0	0	4	0	0	4	11
5:00 PM	0	0	0	0	0	1	2	0	0	3	0	0	0	0	0	0	0	0	0	0	3
5:15 PM	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3
5:30 PM	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	1	0	1	4	4	0	0	8	0	0	0	0	0	0	0	0	0	0	9
Grand Total	0	0	9	0	9	11	21	0	0	32	0	0	0	0	0	0	13	1	0	14	55
Approach %	0.0	0.0	100.0	0.0		34.4	65.6	0.0	0.0		0.0	0.0	0.0	0.0		0.0	92.9	7.1	0.0		
Total %	0.0	0.0	16.4	0.0	16.4	20.0	38.2	0.0	0.0	58.2	0.0	0.0	0.0	0.0	0.0	0.0	23.6	1.8	0.0	25.5	
Exiting Leg Total					12					22					0					21	55
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total					0					0					0					0	0
Single-Unit Trucks	0	0	2	0	2	2	18	0	0	20	0	0	0	0	0	0	11	1	0	12	34
% Single-Unit	0.0	0.0	22.2	0.0	22.2	18.2	85.7	0.0	0.0	62.5	0.0	0.0	0.0	0.0	0.0	0.0	84.6	100.0	0.0	85.7	61.8
Exiting Leg Total					3					13					0					18	34
Articulated Trucks	0	0	7	0	7	9	3	0	0	12	0	0	0	0	0	0	2	0	0	2	21
% Articulated	0.0	0.0	77.8	0.0	77.8	81.8	14.3	0.0	0.0	37.5	0.0	0.0	0.0	0.0	0.0	0.0	15.4	0.0	0.0	14.3	38.2
Exiting Leg Total					9					9					0					3	21

Peak Hour Analysis from 03:00 PM to 06:00 PM begins at:

3:00 PM	Stonewall Drive from North					Mast Road from East					Grapevine Drive from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	0	0	1	0	1	1	4	0	0	5	0	0	0	0	0	0	3	0	0	3	9
3:15 PM	0	0	1	0	1	1	2	0	0	3	0	0	0	0	0	0	1	1	0	2	6
3:30 PM	0	0	2	0	2	3	5	0	0	8	0	0	0	0	0	0	3	0	0	3	13
3:45 PM	0	0	3	0	3	1	1	0	0	2	0	0	0	0	0	0	2	0	0	2	7
Total Volume	0	0	7	0	7	6	12	0	0	18	0	0	0	0	0	0	9	1	0	10	35
% Approach Total	0.0	0.0	100.0	0.0		33.3	66.7	0.0	0.0		0.0	0.0	0.0	0.0		0.0	90.0	10.0	0.0		
PHF	0.000	0.000	0.583	0.000	0.583	0.500	0.600	0.000	0.000	0.563	0.000	0.000	0.000	0.000	0.000	0.000	0.750	0.250	0.000	0.833	0.673
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Single-Unit Trucks	0	0	2	0	2	2	9	0	0	11	0	0	0	0	0	0	7	1	0	8	21
Single-Unit %	0.0	0.0	28.6	0.0	28.6	33.3	75.0	0.0	0.0	61.1	0.0	0.0	0.0	0.0	0.0	0.0	77.8	100.0	0.0	80.0	60.0
Articulated Trucks	0	0	5	0	5	4	3	0	0	7	0	0	0	0	0	0	2	0	0	2	14
Articulated %	0.0	0.0	71.4	0.0	71.4	66.7	25.0	0.0	0.0	38.9	0.0	0.0	0.0	0.0	0.0	0.0	22.2	0.0	0.0	20.0	40.0
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Single-Unit Trucks	0	0	2	0	2	2	9	0	0	11	0	0	0	0	0	0	7	1	0	8	21
Articulated Trucks	0	0	5	0	5	4	3	0	0	7	0	0	0	0	0	0	2	0	0	2	14
Total Entering Leg	0	0	7	0	7	6	12	0	0	18	0	0	0	0	0	0	9	1	0	10	35
Buses					0					0					0					0	0
Single-Unit Trucks					3					9					0					9	21
Articulated Trucks					4					7					0					3	14
Total Exiting Leg					7					16					0					12	35

PDI File #: **240098 C**
Location: **N: Stonewall Drive S: Grapevine Drive**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **3:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class: **Buses**

	Stonewall Drive from North					Mast Road from East					Grapevine Drive from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					0					0					0					0	0

Peak Hour Analysis from 03:00 PM to 06:00 PM begins at:

3:00 PM	Stonewall Drive from North					Mast Road from East					Grapevine Drive from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg					0					0					0					0	0
Total					0					0					0					0	0

PDI File #: **240098 C**
Location: **N: Stonewall Drive S: Grapevine Drive**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **3:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Single-Unit Trucks

	Stonewall Drive from North					Mast Road from East					Grapevine Drive from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	3	0	0	3	7
3:15 PM	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	1	1	0	2	4
3:30 PM	0	0	1	0	1	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	6
3:45 PM	0	0	1	0	1	1	1	0	0	2	0	0	0	0	0	0	1	0	0	1	4
Total	0	0	2	0	2	2	9	0	0	11	0	0	0	0	0	0	7	1	0	8	21
4:00 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2
4:15 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	5
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
4:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	4	0	0	4	9
5:00 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	4
Grand Total	0	0	2	0	2	2	18	0	0	20	0	0	0	0	0	0	11	1	0	12	34
Approach %	0.0	0.0	100.0	0.0		10.0	90.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	91.7	8.3	0.0		
Total %	0.0	0.0	5.9	0.0	5.9	5.9	52.9	0.0	0.0	58.8	0.0	0.0	0.0	0.0	0.0	0.0	32.4	2.9	0.0	35.3	
Exiting Leg Total					3					13					0					18	34

Peak Hour Analysis from 03:00 PM to 06:00 PM begins at:

3:00 PM	Stonewall Drive from North					Mast Road from East					Grapevine Drive from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	3	0	0	3	7
3:15 PM	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	1	1	0	2	4
3:30 PM	0	0	1	0	1	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	6
3:45 PM	0	0	1	0	1	1	1	0	0	2	0	0	0	0	0	0	1	0	0	1	4
Total Volume	0	0	2	0	2	2	9	0	0	11	0	0	0	0	0	0	7	1	0	8	21
% Approach Total	0.0	0.0	100.0	0.0		18.2	81.8	0.0	0.0		0.0	0.0	0.0	0.0		0.0	87.5	12.5	0.0		
PHF	0.000	0.000	0.500	0.000	0.500	0.500	0.563	0.000	0.000	0.688	0.000	0.000	0.000	0.000	0.000	0.000	0.583	0.250	0.000	0.667	0.750
Entering Leg	0	0	2	0	2	2	9	0	0	11	0	0	0	0	0	0	7	1	0	8	21
Exiting Leg					3					9					0					9	21
Total					5					20					0					17	42

PDI File #: **240098 C**
Location: **N: Stonewall Drive S: Grapevine Drive**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **3:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Articulated Trucks

	Stonewall Drive from North					Mast Road from East					Grapevine Drive from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
3:15 PM	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
3:30 PM	0	0	1	0	1	3	2	0	0	5	0	0	0	0	0	0	1	0	0	1	7
3:45 PM	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	3
Total	0	0	5	0	5	4	3	0	0	7	0	0	0	0	0	0	2	0	0	2	14
4:00 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
5:00 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3
5:30 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	0	1	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	5
Grand Total	0	0	7	0	7	9	3	0	0	12	0	0	0	0	0	0	2	0	0	2	21
Approach %	0.0	0.0	100.0	0.0		75.0	25.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		
Total %	0.0	0.0	33.3	0.0	33.3	42.9	14.3	0.0	0.0	57.1	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	9.5	
Exiting Leg Total					9					9					0					3	21

Peak Hour Analysis from 03:00 PM to 06:00 PM begins at:

3:00 PM	Stonewall Drive from North					Mast Road from East					Grapevine Drive from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
3:15 PM	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
3:30 PM	0	0	1	0	1	3	2	0	0	5	0	0	0	0	0	0	1	0	0	1	7
3:45 PM	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	3
Total Volume	0	0	5	0	5	4	3	0	0	7	0	0	0	0	0	0	2	0	0	2	14
% Approach Total	0.0	0.0	100.0	0.0		57.1	42.9	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		
PHF	0.000	0.000	0.625	0.000	0.625	0.333	0.375	0.000	0.000	0.350	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.500	0.500
Entering Leg	0	0	5	0	5	4	3	0	0	7	0	0	0	0	0	0	2	0	0	2	14
Exiting Leg					4					7					0					3	14
Total					9					14					0					5	28

PDI File #: **240098 C**
Location: **N: Stonewall Drive S: Grapevine Drive**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **3:00 PM**
End Time: **6:00 PM**

PRECISION D A T A INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class:

Bicycles (on Roadway and Crosswalks)

	Stonewall Drive from North							Mast Road from East							Grapevine Drive from South							Mast Road from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
4:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
Total	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	2
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2
Grand Total	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	4	0	0	0	0	4	5
Approach %	0.0	0.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	80.0	0.0	0.0	0.0	0.0	80.0	
Exiting Leg Total							0							4							0							1	5

Peak Hour Analysis from 03:00 PM to 06:00 PM begins at:

3:15 PM	Stonewall Drive from North							Mast Road from East							Grapevine Drive from South							Mast Road from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	2
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.500
Entering Leg	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	2
Exiting Leg							0							1							0							1	2
Total							0							2							0							2	4

PDI File #: **240098 C**
Location: **N: Stonewall Drive S: Grapevine Drive**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Thursday, July 25, 2024**
Start Time: **3:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Pedestrians

	Stonewall Drive from North							Mast Road from East							Grapevine Drive from South							Mast Road from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
Grand Total	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
Approach %	0	0	0	0	0	0		0	0	0	0	100	0		0	0	0	0	100	0		0	0	0	0	0	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	50	0	50	0	0	0	0	50	0	50	0	0	0	0	0	0	0	
Exiting Leg Total							0							1							1							0	2

Peak Hour Analysis from 03:00 PM to 06:00 PM begins at:

4:45 PM	Stonewall Drive from North							Mast Road from East							Grapevine Drive from South							Mast Road from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
Total Volume	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
Exiting Leg							0							1							1							0	2
Total							0							2							2							0	4

PDI File #: **240098 C**
Location: **N: Stonewall Drive S: Grapevine Drive**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Saturday, July 27, 2024**
Start Time: **11:00 AM**
End Time: **2:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Stonewall Drive from North					Mast Road from East					Grapevine Drive from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	0	1	0	0	1	0	48	2	0	50	15	0	5	0	20	6	35	0	0	41	112
11:15 AM	0	0	0	0	0	0	34	3	0	37	6	0	6	0	12	4	25	1	0	30	79
11:30 AM	0	2	1	0	3	0	30	4	0	34	8	1	5	0	14	6	32	0	0	38	89
11:45 AM	1	0	0	0	1	0	30	4	0	34	4	2	4	0	10	5	20	0	0	25	70
Total	1	3	1	0	5	0	142	13	0	155	33	3	20	0	56	21	112	1	0	134	350
12:00 PM	0	0	4	0	4	2	24	3	0	29	9	0	1	0	10	12	19	0	0	31	74
12:15 PM	0	0	0	0	0	1	32	4	0	37	6	0	5	0	11	4	23	1	0	28	76
12:30 PM	0	1	0	0	1	1	28	4	0	33	4	0	6	0	10	2	32	0	0	34	78
12:45 PM	0	1	0	0	1	0	20	6	0	26	5	1	3	0	9	3	22	1	0	26	62
Total	0	2	4	0	6	4	104	17	0	125	24	1	15	0	40	21	96	2	0	119	290
1:00 PM	0	0	1	0	1	0	22	4	1	27	6	0	7	0	13	2	19	0	0	21	62
1:15 PM	0	0	0	0	0	0	23	4	0	27	7	0	0	0	7	5	17	0	0	22	56
1:30 PM	0	0	0	0	0	0	23	2	0	25	6	0	4	0	10	4	21	1	0	26	61
1:45 PM	0	0	1	0	1	1	18	3	0	22	5	0	1	0	6	1	22	1	0	24	53
Total	0	0	2	0	2	1	86	13	1	101	24	0	12	0	36	12	79	2	0	93	232
Grand Total	1	5	7	0	13	5	332	43	1	381	81	4	47	0	132	54	287	5	0	346	872
Approach %	7.7	38.5	53.8	0.0		1.3	87.1	11.3	0.3		61.4	3.0	35.6	0.0		15.6	82.9	1.4	0.0		
Total %	0.1	0.6	0.8	0.0	1.5	0.6	38.1	4.9	0.1	43.7	9.3	0.5	5.4	0.0	15.1	6.2	32.9	0.6	0.0	39.7	
Exiting Leg Total					14					376					102					380	872
Cars	1	5	7	0	13	5	330	42	1	378	80	4	46	0	130	52	284	5	0	341	862
% Cars	100.0	100.0	100.0	0.0	100.0	100.0	99.4	97.7	100.0	99.2	98.8	100.0	97.9	0.0	98.5	96.3	99.0	100.0	0.0	98.6	98.9
Exiting Leg Total					14					372					99					377	862
Heavy Vehicles	0	0	0	0	0	0	2	1	0	3	1	0	1	0	2	2	3	0	0	5	10
% Heavy Vehicles	0.0	0.0	0.0	0.0	0.0	0.0	0.6	2.3	0.0	0.8	1.2	0.0	2.1	0.0	1.5	3.7	1.0	0.0	0.0	1.4	1.1
Exiting Leg Total					0					4					3					3	10

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

11:00 AM	Stonewall Drive from North					Mast Road from East					Grapevine Drive from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	0	1	0	0	1	0	48	2	0	50	15	0	5	0	20	6	35	0	0	41	112
11:15 AM	0	0	0	0	0	0	34	3	0	37	6	0	6	0	12	4	25	1	0	30	79
11:30 AM	0	2	1	0	3	0	30	4	0	34	8	1	5	0	14	6	32	0	0	38	89
11:45 AM	1	0	0	0	1	0	30	4	0	34	4	2	4	0	10	5	20	0	0	25	70
Total Volume	1	3	1	0	5	0	142	13	0	155	33	3	20	0	56	21	112	1	0	134	350
% Approach Total	20.0	60.0	20.0	0.0		0.0	91.6	8.4	0.0		58.9	5.4	35.7	0.0		15.7	83.6	0.7	0.0		
PHF	0.250	0.375	0.250	0.000	0.417	0.000	0.740	0.813	0.000	0.775	0.550	0.375	0.833	0.000	0.700	0.875	0.800	0.250	0.000	0.817	0.781
Cars	1	3	1	0	5	0	142	13	0	155	33	3	19	0	55	20	111	1	0	132	347
Cars %	100.0	100.0	100.0	0.0	100.0	0.0	100.0	100.0	0.0	100.0	100.0	100.0	95.0	0.0	98.2	95.2	99.1	100.0	0.0	98.5	99.1
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	0	2	3
Heavy Vehicles %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	1.8	4.8	0.9	0.0	0.0	1.5	0.9
Cars Enter Leg	1	3	1	0	5	0	142	13	0	155	33	3	19	0	55	20	111	1	0	132	347
Heavy Enter Leg	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	0	2	3
Total Entering Leg	1	3	1	0	5	0	142	13	0	155	33	3	20	0	56	21	112	1	0	134	350
Cars Exiting Leg					4					145					36					162	347
Heavy Exiting Leg					0					1					1					1	3
Total Exiting Leg					4					146					37					163	350

PDI File #: **240098 C**
Location: **N: Stonewall Drive S: Grapevine Drive**
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City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Saturday, July 27, 2024**
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Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Cars

	Stonewall Drive from North					Mast Road from East					Grapevine Drive from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	0	1	0	0	1	0	48	2	0	50	15	0	5	0	20	6	34	0	0	40	111
11:15 AM	0	0	0	0	0	0	34	3	0	37	6	0	6	0	12	3	25	1	0	29	78
11:30 AM	0	2	1	0	3	0	30	4	0	34	8	1	4	0	13	6	32	0	0	38	88
11:45 AM	1	0	0	0	1	0	30	4	0	34	4	2	4	0	10	5	20	0	0	25	70
Total	1	3	1	0	5	0	142	13	0	155	33	3	19	0	55	20	111	1	0	132	347
12:00 PM	0	0	4	0	4	2	24	3	0	29	8	0	1	0	9	11	19	0	0	30	72
12:15 PM	0	0	0	0	0	1	32	4	0	37	6	0	5	0	11	4	23	1	0	28	76
12:30 PM	0	1	0	0	1	1	27	3	0	31	4	0	6	0	10	2	31	0	0	33	75
12:45 PM	0	1	0	0	1	0	20	6	0	26	5	1	3	0	9	3	22	1	0	26	62
Total	0	2	4	0	6	4	103	16	0	123	23	1	15	0	39	20	95	2	0	117	285
1:00 PM	0	0	1	0	1	0	22	4	1	27	6	0	7	0	13	2	19	0	0	21	62
1:15 PM	0	0	0	0	0	0	23	4	0	27	7	0	0	0	7	5	17	0	0	22	56
1:30 PM	0	0	0	0	0	0	22	2	0	24	6	0	4	0	10	4	20	1	0	25	59
1:45 PM	0	0	1	0	1	1	18	3	0	22	5	0	1	0	6	1	22	1	0	24	53
Total	0	0	2	0	2	1	85	13	1	100	24	0	12	0	36	12	78	2	0	92	230
Grand Total	1	5	7	0	13	5	330	42	1	378	80	4	46	0	130	52	284	5	0	341	862
Approach %	7.7	38.5	53.8	0.0		1.3	87.3	11.1	0.3		61.5	3.1	35.4	0.0		15.2	83.3	1.5	0.0		
Total %	0.1	0.6	0.8	0.0	1.5	0.6	38.3	4.9	0.1	43.9	9.3	0.5	5.3	0.0	15.1	6.0	32.9	0.6	0.0	39.6	
Exiting Leg Total					14					372					99					377	862

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

11:00 AM	Stonewall Drive from North					Mast Road from East					Grapevine Drive from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	0	1	0	0	1	0	48	2	0	50	15	0	5	0	20	6	34	0	0	40	111
11:15 AM	0	0	0	0	0	0	34	3	0	37	6	0	6	0	12	3	25	1	0	29	78
11:30 AM	0	2	1	0	3	0	30	4	0	34	8	1	4	0	13	6	32	0	0	38	88
11:45 AM	1	0	0	0	1	0	30	4	0	34	4	2	4	0	10	5	20	0	0	25	70
Total Volume	1	3	1	0	5	0	142	13	0	155	33	3	19	0	55	20	111	1	0	132	347
% Approach Total	20.0	60.0	20.0	0.0		0.0	91.6	8.4	0.0		60.0	5.5	34.5	0.0		15.2	84.1	0.8	0.0		
PHF	0.250	0.375	0.250	0.000	0.417	0.000	0.740	0.813	0.000	0.775	0.550	0.375	0.792	0.000	0.688	0.833	0.816	0.250	0.000	0.825	0.782
Entering Leg	1	3	1	0	5	0	142	13	0	155	33	3	19	0	55	20	111	1	0	132	347
Exiting Leg					4					145					36					162	347
Total					9					300					91					294	694

PDI File #: **240098 C**
Location: **N: Stonewall Drive S: Grapevine Drive**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Saturday, July 27, 2024**
Start Time: **11:00 AM**
End Time: **2:00 PM**

PRECISION D A T A INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Stonewall Drive from North					Mast Road from East					Grapevine Drive from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	0	2	3
12:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	1	2
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	1	0	0	1	3
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1	1	0	2	1	0	0	0	1	1	1	0	0	2	5
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
Grand Total	0	0	0	0	0	0	2	1	0	3	1	0	1	0	2	2	3	0	0	5	10
Approach %	0.0	0.0	0.0	0.0		0.0	66.7	33.3	0.0		50.0	0.0	50.0	0.0		40.0	60.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	20.0	10.0	0.0	30.0	10.0	0.0	10.0	0.0	20.0	20.0	30.0	0.0	0.0	50.0	
Exiting Leg Total					0					4					3					3	10
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total					0					0					0					0	0
Single-Unit Trucks	0	0	0	0	0	0	2	1	0	3	1	0	1	0	2	2	3	0	0	5	10
% Single-Unit	0.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0	0.0	100.0	100.0	0.0	100.0	0.0	100.0	100.0	100.0	0.0	0.0	100.0	100.0
Exiting Leg Total					0					4					3					3	10
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total					0					0					0					0	0

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

11:45 AM	Stonewall Drive from North					Mast Road from East					Grapevine Drive from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	1	2
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	1	0	0	1	3
Total Volume	0	0	0	0	0	0	1	1	0	2	1	0	0	0	1	1	1	0	0	2	5
% Approach Total	0.0	0.0	0.0	0.0		0.0	50.0	50.0	0.0		100.0	0.0	0.0	0.0		50.0	50.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.250	0.250	0.000	0.000	0.000	0.250	0.250	0.250	0.000	0.000	0.500	0.417
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Single-Unit Trucks	0	0	0	0	0	0	1	1	0	2	1	0	0	0	1	1	1	0	0	2	5
Single-Unit %	0.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0	0.0	100.0	100.0	0.0	0.0	0.0	100.0	100.0	100.0	0.0	0.0	100.0	100.0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Single-Unit Trucks	0	0	0	0	0	0	1	1	0	2	1	0	0	0	1	1	1	0	0	2	5
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Entering Leg	0	0	0	0	0	0	1	1	0	2	1	0	0	0	1	1	1	0	0	2	5
Buses					0					0					0					0	0
Single-Unit Trucks					0					2					2					1	5
Articulated Trucks					0					0					0					0	0
Total Exiting Leg					0					2					2					1	5

PDI File #: **240098 C**
Location: **N: Stonewall Drive S: Grapevine Drive**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Saturday, July 27, 2024**
Start Time: **11:00 AM**
End Time: **2:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class: **Buses**

	Stonewall Drive from North					Mast Road from East					Grapevine Drive from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					0					0					0					0	0

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

11:00 AM	Stonewall Drive from North					Mast Road from East					Grapevine Drive from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg					0					0					0					0	0
Total					0					0					0					0	0

PDI File #: **240098 C**
Location: **N: Stonewall Drive S: Grapevine Drive**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Saturday, July 27, 2024**
Start Time: **11:00 AM**
End Time: **2:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Single-Unit Trucks

	Stonewall Drive from North					Mast Road from East					Grapevine Drive from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	0	2	3
12:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	1	2
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	1	0	0	1	3
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1	1	0	2	1	0	0	0	1	1	1	0	0	2	5
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
Grand Total	0	0	0	0	0	0	2	1	0	3	1	0	1	0	2	2	3	0	0	5	10
Approach %	0.0	0.0	0.0	0.0		0.0	66.7	33.3	0.0		50.0	0.0	50.0	0.0		40.0	60.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	20.0	10.0	0.0	30.0	10.0	0.0	10.0	0.0	20.0	20.0	30.0	0.0	0.0	50.0	
Exiting Leg Total					0					4					3					3	10

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

11:45 AM	Stonewall Drive from North					Mast Road from East					Grapevine Drive from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	1	2
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	1	0	0	1	3
Total Volume	0	0	0	0	0	0	1	1	0	2	1	0	0	0	1	1	1	0	0	2	5
% Approach Total	0.0	0.0	0.0	0.0		0.0	50.0	50.0	0.0		100.0	0.0	0.0	0.0		50.0	50.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.250	0.250	0.000	0.000	0.000	0.250	0.250	0.250	0.000	0.000	0.500	0.417
Entering Leg	0	0	0	0	0	0	1	1	0	2	1	0	0	0	1	1	1	0	0	2	5
Exiting Leg					0					2					2					1	5
Total					0					4					3					3	10

PDI File #: **240098 C**
Location: **N: Stonewall Drive S: Grapevine Drive**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Saturday, July 27, 2024**
Start Time: **11:00 AM**
End Time: **2:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class:

Articulated Trucks

	Stonewall Drive from North					Mast Road from East					Grapevine Drive from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					0					0					0					0	0

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

11:00 AM	Stonewall Drive from North					Mast Road from East					Grapevine Drive from South					Mast Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg					0					0					0					0	0
Total					0					0					0					0	0

PDI File #: **240098 C**
Location: **N: Stonewall Drive S: Grapevine Drive**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Saturday, July 27, 2024**
Start Time: **11:00 AM**
End Time: **2:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Class:

Bicycles (on Roadway and Crosswalks)

	Stonewall Drive from North							Mast Road from East							Grapevine Drive from South							Mast Road from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
12:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	2	3
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	3	0	0	0	0	3	4
Approach %	0.0	0.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	0.0	0.0	0.0	0.0	25.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	75.0	0.0	0.0	0.0	0.0	75.0	
Exiting Leg Total							0							3							0							1	4

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

11:30 AM	Stonewall Drive from North							Mast Road from East							Grapevine Drive from South							Mast Road from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
12:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2
Total Volume	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	3	0	0	0	0	3	4
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.375	0.000	0.000	0.000	0.000	0.375	0.500
Entering Leg	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	3	0	0	0	0	3	4
Exiting Leg							0							3							0							1	4
Total							0							4							0							4	8

PDI File #: **240098 C**
Location: **N: Stonewall Drive S: Grapevine Drive**
Location: **E: Mast Road W: Mast Road**
City, State: **Dover, NH**
Client: **TFMoran/J. Porter**
Site Code: **46001.32**
Count Date: **Saturday, July 27, 2024**
Start Time: **11:00 AM**
End Time: **2:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Pedestrians

	Stonewall Drive from North							Mast Road from East							Grapevine Drive from South							Mast Road from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
Approach %	0	0	0	0	0	0		0	0	0	0	0	100		0	0	0	0	100	0		0	0	0	0	0	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	0	50	50	0	0	0	0	50	0	50	0	0	0	0	0	0	0	
Exiting Leg Total							0							1							1							0	2

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

11:15 AM	Stonewall Drive from North							Mast Road from East							Grapevine Drive from South							Mast Road from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	100.0		0.0	0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
Exiting Leg							0							1							1							0	2
Total							0							2							2							0	4

APPENDIX L

Signal Timing Reference

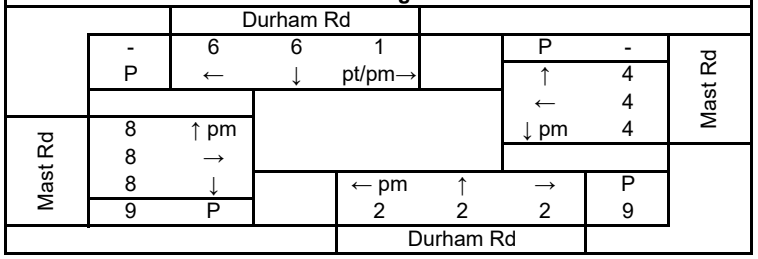
Existing Signal Timings: 10/27/2023
Durham Rd (Route 108) at Mast Rd
Dover, NH

SEBAGO TECHNICS
CIVIL ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE

Schedule

	Su	M	Tu	W	Th	F	Sa	DayPlan
1	x	x	x	x	x	x	x	1

Phase Assignment



Day Plan 1

Event	TOD	Action
1	00:00	254
2		
3		
4		
5		
6		

Day Plan -

Event	TOD	Action

Action Table

Action	Pattern
54	254

Sequence 1 / Ring & Barrier

1	2	4	9
	6	8	

P.Assignment Key

pt	Protected
pm	Permissive
ov	Overlap

Test Operation Mode: 0

Pattern Table

Pat	Cycle	Offset	Split	Seq
254	FREE	FREE	FREE	1

Phase Timings

Phase	1	2	3	4	5	6	7	8	9
Min Gr	4	4	0	4	0	4	0	4	7
GapExt	3	3	0	0	0	3	0	3	0
Max 1	8	22	0	16	0	32	0	16	23
Max 2	0	0	0	0	0	0	0	0	0
Yellow	4	4	0	4	4	4	0	4	3
Red	2	2	0	2	2	2	0	2	0
Walk	0	0	0	0	0	0	0	0	7
PedClr	0	0	0	0	0	0	0	0	16
Recall	NON	MIN	NON	NON	NON	MIN	NON	NON	NON
D.Entry	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF

Coordination Constants

Pat	Strat	F.Off	Trans	Mode
254	FREE	FREE	FREE	FREE

Split Table -

Phase	1	2	3	4	5	6	7	8
Time	-	-	-	-	-	-	-	-
Recall	NON	NON	NON	NON	NON	NON	NON	NON
C-Ph	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

Overlap

	Incl Ph	Type	Green	Yellow	Red

Split Table -

Phase	1	2	3	4	5	6	7	8
Time	-	-	-	-	-	-	-	-
Recall	NON	NON	NON	NON	NON	NON	NON	NON
C-Ph	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

Split Table -

Phase	1	2	3	4	5	6	7	8
Time	-	-	-	-	-	-	-	-
Recall	NON	NON	NON	NON	NON	NON	NON	NON
C-Ph	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

Split Table -

Phase	1	2	3	4	5	6	7	8
Time	-	-	-	-	-	-	-	-
Recall	NON	NON	NON	NON	NON	NON	NON	NON
C-Ph	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

Split Table -

Phase	1	2	3	4	5	6	7	8
Time	-	-	-	-	-	-	-	-
Recall	NON	NON	NON	NON	NON	NON	NON	NON
C-Ph	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

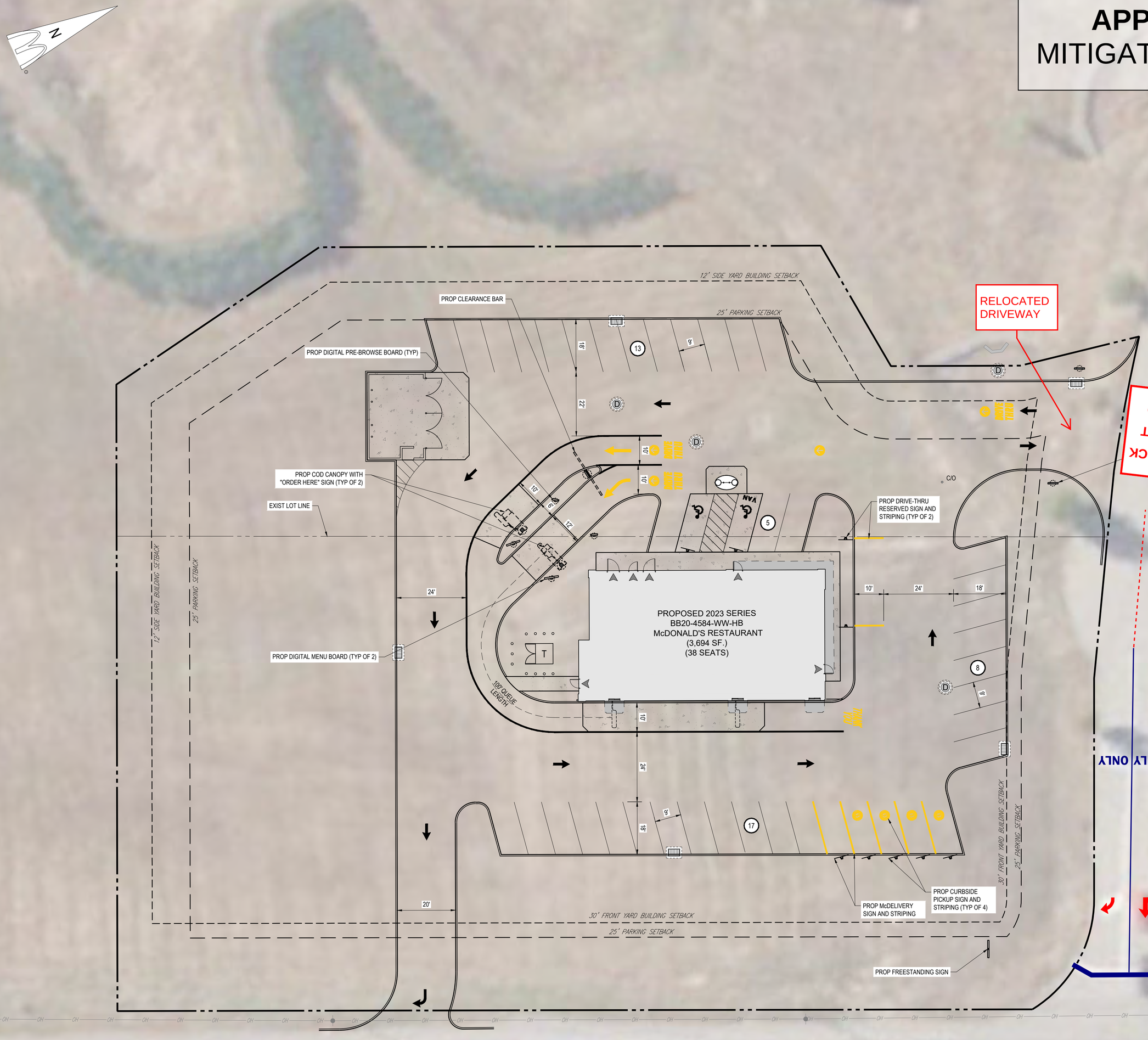
Prepared By: C.Thompson

APPENDIX M

Plan

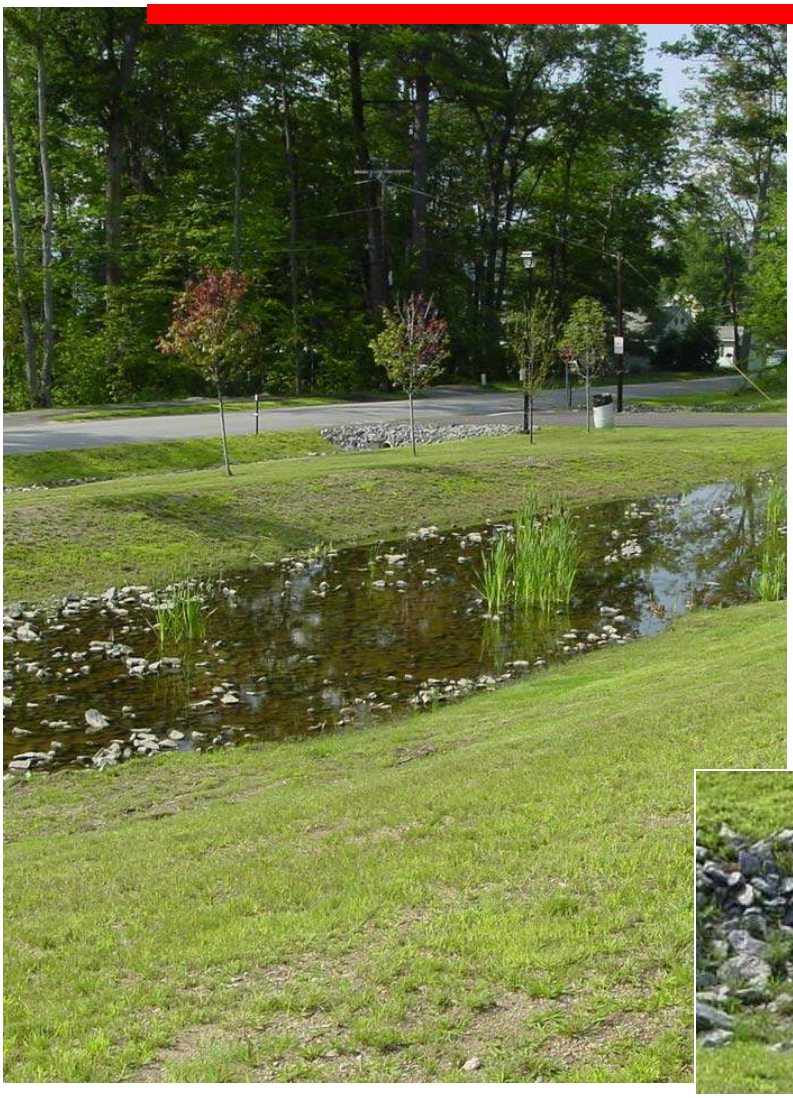
Mitigation Exhibit

APPENDIX M
MITIGATION EXHIBIT



DURHAM ROAD (NH ROUTE 108)

TFM Since 1968 BOHLER™



Stormwater Management Drainage Report

December 11, 2024



McDonald's®
Unit 4

Grapevine Drive and Durham Road (NH Route 108)
DOVER, NH 03820

Prepared for:

VC Dover Investments, LLC
48 Constitution Drive
Bedford, NH 03110

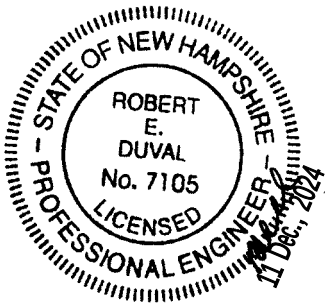
Prepared by:

TFMORAN INC.

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Land Planners
Landscape Architects

48 Constitution Avenue, Bedford, NH
(603) 647-2242 **www.tfmoran.com**

Bedford, NH | Portsmouth, NH



Dover Fields Units 4 – McDonald's:
VC Dover Investments, LLC
Grapevine Drive & Durham Road (NH Route 108), Dover, NH
11 December 2024

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  - Node listing for 10-yr, 25-yr, 50-yr

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  - Drainage Plans
- Post-Development HydroCAD Drainage Diagram
- Post-Development HydroCAD Drainage Calculations
  - Schematic, Area listing & Soil Listing
  - Node listing and Full summary for 2-yr
  - Node listing for 10-yr, 25-yr, 50-yr

Part 6 Inspection and Maintenance Manual

Part 7 Pre-development Drainage Plan

Part 8 Post-development Drainage Plan

Executive Summary

- VC Dover Investments, LLC. is proposing revisions to the previously permitted Dover Fields Mixed-Use Project, on tax map H lot 4-3 in Dover, NH, in conjunction with Bohler Engineering LLC to construct a McDonalds's® 3,700 sf fast food restaurant on Unit 4.

- The previously permitted design for a 2,500 sf fast food restaurant will be revised for a 3,700 sf fast food restaurant.

- The revised fast food restaurant layout will maintain drainage flow paths designed for the previously approved restaurant proposed for Unit 4, and provide treatment and recharge of stormwater runoff within the constructed systems.

- The previous AoT submission was for a Mixed-Use building on Unit 2 (with 49 residential units) and Taco Bell fast food restaurant on Unit 4. The application for Unit 2 was fully approved by both AoT and The City of Dover Planning Board, but has not yet been constructed. The Taco Bell Application on Unit 4 was approved by AoT but the Site Plan application to the City of Dover was withdrawn without being approved.

- Additional impervious surfaces are proposed (including proposed Unit 4, previously constructed surfaces on Unit 5, and 2,000 SF of additional impervious to account for widening of Grapevine Drive) which represents an increase of 2.9% of the impervious area originally approved.

- In post-development conditions for the 2-year, 10-year, 25- year, and 50-year storm events, there is no increase in the peak rate of runoff at the previously analyzed discharge point as compared to the pre-development conditions. Stormwater volume calculations reveal similar quantities to the approved design, thus maintaining the design intent.

- The site's constructed stormwater treatment and detention basins include sediment forebays, low marsh wetlands, high marsh wetlands, and deep water, and is similar to the current shallow wetland design. The existing stormwater system substantially meets the intent of the current design criteria, and has the capacity to accept the flow from the additional impervious area. Modifications to the system include filling part of the largest Stormwater Basin 100P to locate the proposed fast food restaurant's driveway further from Route 108 compared to the previously approved design to account for more traffic queueing.

- The proposed McDonald's site has a larger parking lot than the previously approved design for Unit 4. An additional underground StormTech system is proposed under the Unit 4 parking area to mitigate the impact of the proposed increased impervious area on Unit 4 and the decreased storage volume in Basin 100P. Also modifications to the outlet control structure for Basin 100AP are proposed to mitigate a decrease in freeboard (less than 1 foot) resulting from increased runoff volumes and increased rainfall depths. The original 2007 design used NRCS Technical Paper-60 derived rainfall estimates, while this report utilizes Northeast Regional Climate Center (NRCC) rainfall estimates.

Description of Project

VC Dover is proposing revisions to the previously permitted Dover Fields Mixed-Use Project, Commercial Phase on tax map H lot 4-3 near the intersection of Mast Road and Route 108 in Dover, NH. The changes included in the application include a larger fast food restaurant on Unit 4 and a slight widening of Grapevine Drive to accommodate a turning lane into the proposed McDonald's fast food restaurant proposed on Unit 4. The previously approved designs for Unit 4 (original approval in 2007 and partially permitted proposed Taco Bell in 2023) were not constructed.

Grapevine Drive is private street serving the Dover Fields Development, located on common land of the development and established by easements and commercial condominium covenants.

The Dover Fields site is located within the I-4 and B-4 zoning districts and the RCM Overlay in the City of Dover. A portion of the Cielo Drive residential phase is in the General Residential and Agricultural district in the Town of Madbury.

Other areas of the site are completed, including a Hannaford grocery store on Unit 1, and the HINEC Congregate Care Senior Housing on the corner of Mast Road and Grapevine Drive (Unit 5). Currently under construction or completed are 121 units of age-restricted single family residential, with clubhouse, on tax map H lot 4 (Cielo & Windsor Drives). The Mixed-Use building on Unit 2 (on lot 4-3), consisting of 49 apartments and a fitness center (3,851 sf), and coffee shop (2,367 sf) has been approved and construction is currently expected to begin Spring of 2025. The project described herein refers to the proposed revisions which are only applicable to the Dover Fields portion of the project on lot 4-3, which involve a Mixed Use building on Lot 4-3 Unit 2, consisting of 49 apartments and a gym and coffee shop, and a proposed Taco Bell fast food restaurant on Lot 4-3 Unit 4. Note the Unit 2 mixed use building project also included adding an emergency generator to the site's sewer pump station.

Approval by the NHDES Alteration of Terrain Bureau was obtained in Nov. 2006 (Permit #WPS-7657E), and that permit has been kept current, as indicated by the documents in Appendix Part 1. Approval by the Dover Planning Board is needed for this site development project.

To be consistent with previous phases of the project, the intent of this report is to address the changes associated with the proposed congregate care facility and its associated impervious surfaces.

The intent of this report is: 1) to update the previous analysis with the proposed revisions to the residential development and compare the pre-development and post-development conditions and 2) to provide the appropriate stormwater management systems in accordance with the intent of the original design, and the requirements of NHDES and the City of Dover.

Storm Water Methodology

Pre-Development Conditions

(Taken from: Residential–Commercial Mixed Use Development Stormwater Management Drainage Report, previously revised August 26, 2010, with appropriate revisions to referenced appendixes)

The existing 55.7± acre development lot was analyzed in the pre-development condition to ensure that the development program would mitigate any stormwater impacts to the existing drainage infrastructure located on or adjacent to abutting property and Right-of-Ways. The most current version of the computer program HydroCAD was used to calculate the runoff from various design storms including the 2 and 10-year storms as required by the various permitting agencies. HydroCAD is a computer aided design program used for modeling the hydrology of stormwater runoff that is based on the SCS TR-20 technique.

According to the SCS Soil Surveys of Strafford County this site contains Windsor loamy sand (WdA, WdB), Hinckley (HaB), Elmwood (EaA), Windsor clay subsoil variant (WfB) and Swanton (SwA). Windsor loamy sand consists of excessively drained soils. Hinckley loamy sand consists of excessively drained soils that formed in thick deposits of stratified sand and gravel. Elmwood fine sandy loam consists of moderately well drained soils. Windsor loamy fine sand, clay subsoil variant consists of well drained soils. Swanton fine sandy loam consists of poorly drained soils. Even though these soils offer varying permeability's, it can be concluded that a portion of the stormwater flows infiltrate on-site.

The site's watershed was analyzed as nine (9) distinct drainage area basins which were split along slight ridgelines located in various sections of the site or they were created to more accurately compare pre and post development flows. Stormwater runoff from the northeasterly and easterly portion of the site (Subcatchment 1) generally develops from the crown of Mast Road which is conveyed through sheet and shallow concentrated flow courses along Mast Road to the Durham Road (NH Route 108) (Subcatchment 13) intersection and into the ditch line along Durham Road (NH Route 108) which outlets into the easterly side of a wetland area referenced as Wetland Area 1 (Subcatchment 12).

Wetland Area 1 is located in the southeast corner of the property adjacent to Durham Road (NH Route 108) and the existing 165' wide P.S.N.H. easement with overhead electrical transmission lines. Wetland Area 1 is primarily an open field that was once used for agriculture. This open area was actively being cut during the spring, summer and fall months, prior to 2006. The remainder of the wetland is forested and lies adjacent to the PSNH easement. The total area of this wetland on the development lot is approximately greater than 1.0 acre. This wetland area continues in a southerly direction onto the abutting property to the south. The abutting land use surrounding this wetland is a mixture of forested and open space areas. Vegetation noted in the open area was primarily a mixture of various types of grasses. This is a result of being continually mowed. Wetland Area 1 is also unique in that as runoff from multiple subcatchments reaches this wetland area, which is the lowest elevation on the development lot, runoff accumulates because it is not able to flow freely through the lowest of three natural watercourses across the PSNH easement. The natural watercourses convey the runoff across the PSNH Easement onto Lot H-2 where they eventually converge into an existing channel.

Runoff from the middle of the property (Subcatchment 2) is conveyed across the property through sheet and shallow concentrated flow courses into the westerly side of Wetland Area 1 (Subcatchment 11). Runoff from the middle section of the development lot (Subcatchment 3)

starts form the crown in Mast Road and is conveyed in sheet and shallow concentrated flow courses to a small isolated wetland area referenced as Wetland Area 2.

Wetland Area 2 is a small isolated wet area lying along the southern boundary of the property and within the existing P.S.N.H. easement approximately 900 linear feet west of Durham Road (NH Route 108). The adjacent land use surrounding this wetland is a mixture of forested and open space associated with the P.S.N.H. easement.

Runoff from the central western portion of the development lot (Subcatchment 4) starts from the crown in Mast Road and is conveyed in sheet and shallow concentrated flow courses to a larger wetland area referenced as Wetland Area 3. Wetland Area 3 lies along the southern boundary of the property and within the existing P.S.N.H. easement approximately 1,200 linear feet west of Durham Road (NH Route 108). Runoff from the westerly portion of the development lot (Subcatchment 5) starts from the crown in Mast Road and is conveyed in sheet and shallow concentrated flow courses to abutting lot H-2A where it enters into Wetland Area 3.

Wetland Area 3 slowly drains easterly toward Durham Road (NH Route 108) where it crosses an all-terrain vehicle (ATV)/Snowmobile trail. Wetland Area 2 slowly drains southerly toward Freshet Road where it flows along the ATV/Snowmobile trail. As these flows converge, they create a small stream that flows southeasterly toward Durham Road (NH Route 108). As this stream flows toward Durham Road (NH Route 108), a few more water courses enter this stream from the north, specifically from the westerly end of Wetland Area 1. This stream eventually converges with the easterly water courses of Wetland Area 1 which flows to an existing 48" Reinforced Concrete Pipe (RCP) that crosses Durham Road (NH Route 108). This stream continues easterly where it intersects with Johnson's Creek. Johnson's Creek flows in a southerly direction into the tidal flats of the Oyster River. From here, the Oyster River flows in an easterly direction into Little Bay, Little Bay outlets into the Piscataqua River near Dover Point before continuing on to Portsmouth.

In addition to reviewing the SCS Soil Survey of Strafford County, TFM also performed several test pits to more accurately classify the types of soils on this property. TFM was able to determine that there were mainly two types of soils on the property by performing the test pits in various locations throughout the development lot. On the eastern third of the lot, the underlying soils are composed of silt, silty clay loam and clay. As such, the rates of runoff are higher in this area because stormwater is more likely to flow along the surface rather than percolate through the deeper soils. However, on the westerly two-thirds of the lot, the underlying soils are composed of sand and sandy loam. As such, the rates of runoff are minimal as most of the stormwater percolates easily into the deeper sandy soils. This theory is further supported as this site is in close proximity to the sand pit operations that abut this project.

TFM also reviewed the entire watershed for the existing 48" RCP culvert that crosses Durham Road (NH Route 108). Additional subcatchments (Subcatchments 14 and 15) were added to the pre-development model to complete the culvert's watershed. The culvert was analyzed with its entire watershed to ensure that the culvert has sufficient capacity in the pre-development condition. This information will also be used in the post-development condition to verify that the post-development hydrology would not adversely impact the existing culvert.

Rainfall

A previous project on this site (conversion of the medical office building to a congregate care facility at Unit 5) was constructed in 2010 and was the first project on this site to use newer NRCC rainfall amounts. At that time, like most projects in the State of New Hampshire at that time, was still relying on NRCS Technical Paper 60 for rainfall data. In the intervening years newer and more rigorous sourced from the Northeast Regional Climate Center at Cornell University has come into common use and is now recommended by NH DES Stormwater Management Manual, Volume 2, Appendix A and required by City of Dover Site Review Regulations 149-14.A.(3)(b)(iii). This project reuses existing BMP's designed for full buildout of all Units under the old rainfall data, but checked in this report using the new rainfall data. A rainfall comparison follows:

Storm Average Recurrence Interval	Old NRCS TP-60 24- Hr. Rainfall (No longer used) (in.)	NRCC 24- Hr. Rainfall (in.)	NOAA Atlas 14 24- Hr. Rainfall (Not Used) (in.)
2-Year	3.0	3.14	3.28
10-Year	4.3	4.74	5.26
25 -Year	5.2	6.01	6.50
50-Year	5.7	7.18	7.41
100 -Year	6.4	8.59	8.41

The NCRS Type III rainfall distribution curves are still used per Volume 1 Section 2.1 of the NH Stormwater Manual, consistent with the original thru 2023 projects on this site.

Post-Development Conditions

The objectives for the post-development drainage design are to manage stormwater in a manner consistent with the systems designed and approved for the proposed mixed use residential and retail building, while also meeting the requirements of the City of Dover and NHDES Alteration of Terrain Bureau.

The stormwater design for the McDonald's site proposes a closed drainage system, consistent with the design for the previously approved smaller fast restaurant on Unit 4. There are some minor changes to the impervious areas. The 1.91-acre Unit 4 McDonald's site is proposed to have 34,010 SF of impervious surface or 40.8% impervious. This drainage analysis includes 2,000 SF of added impervious area in subcatchment 310S to account for proposed widening of Grapevine Drive. This drainage analysis includes 15,128 SF of impervious area on Unit 3 which has not yet been constructed. When the Unit 2 site gets constructed, it will have an impervious area of 71,747 sf (including existing road surface) which is included in this analysis. The total proposed paved and gravel area in this study area is 24.377. The total paved and gravel area in the original study area is 23.254 acres. Thus 48,920 sf (1.123 acres) of additional impervious areas are proposed (including previously approved surfaces on Units 2 and 5) which represent an increase of 4.8% of the impervious area originally (2007) approved, compared to a 2.9% increase in the previously approved 2023 AoT amendment.

The current proposal fills over the northeast forebay area of basin 100P, reducing available the storage volume in the basin. The forebay is proposed to be reconstructed further into the basin.

This fill is required to move the proposed driveway for the proposed McDonald's westward (compared to the original 2007 design) further from Route 108 to allow for more traffic queuing space for the turning movements onto Route 108, as recommended by NH DOT staff in Driveway permitting discussions. TFM looked at compensatory excavation, including moving the berm embankment of basin 100P to restore its volume. However, enlarging the proposed StormTech under the McDonalds parking area, and modifying the outlet structure of basin 100AP were found to be more effective options, compared to compensatory storage excavation.

The area being developed for this phase of the project drains to the approved stormwater treatment and detention system that was previously constructed for the overall mixed-use project. This system includes sediment forebays, low marsh wetlands, high marsh wetlands, and deep water, and is similar to the current shallow wetland design. Since the constructed system substantially meets the intent of the current criteria, and has the capacity to accept the flow from the additional impervious area, we do not recommend making any changes to the system.

The post-development drainage model represents the site divided into multiple subcatchments based on the layout of the proposed stormwater collection system. Pre-development discharge points previously analyzed as part of the original report have been re-analyzed in post-development conditions with the proposed revisions.

The freeboard at each detention basin for the 50-year storm event is given below in Table 1. The minimum required freeboard is 1.0'. Without alterations to the outlet control structure, the freeboard at basin at 100AP would be 0.80 feet. which is less than the required 1.0 feet, primarily due to the increased rainfall volume relative to the previously designed rainfall volume. The previous AoT permit Amendment for this site requested a waiver of this requirement for reduced freeboard at basin 100AP. This amendment finds that fixing the freeboard issue also improves stormwater attenuation rates in basin 100AP and 100P.

Basin ID	Top of berm	Water Surface Elevation	**Freeboard**	Check
100P	106.0	104.94	1.06	Okay
100AP	104.0	103.00	1.00	Okay
801P	105.0	102.95	2.05	Okay
600P	101.0	99.96	1.04	Okay

Stormwater Treatment

Stormwater treatment will be accomplished downstream of the Mixed Use Development Unit sites within the Best Management Practices constructed for the overall development on common land, including the wet basins on site. Within the McDonald's development itself, 4' deep catch basin sumps and outlet hoods allow sediment to settle out of the stormwater and floatables to be captured within the structure, providing required pretreatment. In addition the proposed StormTech system has an isolator row which provides additional sediment and floatable trash capture and storage capacity.

Erosion Control Measures

Erosion Control Measures are found on the Storm Water Management Plan within the plan set. The erosion control notes and construction sequence notes on the Detail Sheets contain specifications for stabilizing disturbed areas and limiting the length of time these areas are exposed.

Temporary Erosion Control Measures

Compost filter socks are proposed along the edges of downstream site work to prevent sediment from leaving the project area. Stabilized construction entrances are proposed at the driveways along Grapevine Drive and Route 108 to keep sediment from being tracked onto the street during construction. Catch Basin Erosion Protection is also proposed to keep sediment out of the closed drainage system until the site reaches final stabilization. Blanket slope protection is proposed on slopes greater than 3:1.

Permanent Erosion Control Measures

A combination of an open and closed drainage system is proposed on the site to capture the runoff from the project. Slope stabilizations measures are also proposed to prevent erosion on slopes greater than 3:1

Flood Protection

Examination of the Flood Insurance Rate Map for Strafford County, New Hampshire, Panel 320 of 405, Map Number 33017C0320D, Effective Date: May 17, 2005, indicates that the subject parcel is not located within a Flood Hazard Area.

Conclusion

1. 48,920 sf (1.123 acres) of additional impervious areas are proposed (including previously approved surfaces on Units 2 and 5) which represent an increase of 4.8% of the impervious area originally approved (compared to a 2.9% increase in the previously approved 2023 AoT amendment).

2. Stormwater is being discharged to the constructed stormwater detention and treatment system, maintaining similar peak discharge flow rates and volumes for all design storms in comparison to the previously approved project.

3. There is a reduction in the peak rate of runoff leaving the site for the 10, 25, and 50 year storm events in comparison to the pre-development conditions. The peak rate of runoff leaving the site is matched for the two year storm event.

5. The constructed stormwater treatment and detention system includes deep sump hooded catch basins, sediment forebays, low marsh wetlands, high marsh wetlands, and deep water, and is similar to the current shallow wetland design. Since the constructed system substantially meets the intent of the current criteria, and has the capacity to accept the flow from the additional impervious area, we do not recommend making any changes to the system.

6. The site redevelopment will maintain the quality of the runoff proposed by the previous project.

Discharge Point Summary

Discharge	**PRE-DEVELOPMENT**				**POST-DEVELOPMENT (proposed 2022)**			
Point	**2-yr**	**10-yr**	**25-yr**	**50-yr**	**2-yr**	**10-yr**	**25-yr**	**50-yr**
10P								
Qout (cfs)	7.0	24.8	56.6	93.3	6.8	15.7	39.3	68.0
Volume (af)	1.42	5.23	9.86	15.14	2.79	7.07	12.03	17.70

*** NOTE: This chart does not match originally approved report charts because we are using different rainfall amounts. As noted above, previous projects on the site used NRCS Technical Paper 60 Rainfall data. This project is using more recent NRCC rainfall data.

The State of New Hampshire
Department of Environmental Services

Robert R. Scott, Commissioner

April 26, 2023

VC Dover Investments, LLC
Attn: Dylan Cruess
48 Constitution Drive
Bedford, NH 03110

Re: Dover Fields - Mixed Use Development
Tax Map H, Lot 4-3, Unit 2, Dover, NH

Permit: WPS-7657F
Original Permit Issuance: November 22, 2006

Dear Applicant:

Based upon a recent request, we are hereby amending RSA 485-A:17 Alteration of Terrain Permit WPS-7657E. **The amendment consists of plan modifications for development of a parcel identified as Unit 2 for construction of 49 apartment units, a fitness center, coffee shop, and associated access and parking facilities, as shown on plans by TFMoran, Inc., entitled "Mixed Use Development, Residential Phase, Dover Fields", dated October 18, 2022, latest revision dated February 28, 2023 .** As part of the processing of this amendment, DES granted approval to waiving specific requirements of Env-Wq 1503.22(c)(4), finding the increase in project impervious area of greater than 10,000 square feet could be addressed through the permit amendment process, and finding that granting the waiver would not have an adverse impact on the environment, public health, public safety, or abutting properties, and that granting the request is consistent with the intent and purpose of the rules waived. Additional documentation relative to the waiver request is contained within the file. The amended permit number is WPS-7657F and is subject to the following conditions:

1. Activities shall not cause or contribute to violations of the surface water quality standards established in Administrative Rule Env-Wq 1700.

2. Revised plans shall be submitted for permit amendment prior to any changes in construction details or sequences. The Department must be notified in writing within ten days of a change in ownership.

3. You must notify the Department in writing upon completion of construction. Forms are available at: https://www.des.nh.gov/land/land-development.

4. The approved plans and supporting documentation in the permit file are a part of this approval.

5. This permit expires on **November 22, 2025**. No earth moving activities shall occur on the project after this expiration date unless the permit has been extended by the Department. If requesting an extension, the request must be received by the department before the permit expires. The Amendment Request form is available at: https://www.des.nh.gov/land/land-development.

6. **All stormwater practices shall be inspected and maintained in accordance with Env-Wq 1507.08 and the project Inspection and Maintenance (I&M) Manual**. All record keeping required by the I&M Manual shall be maintained by the identified responsible party and be made available to the department upon request.

7. **Upon completion of construction, a written notice signed by the permit holder and a qualified engineer shall be submitted to the Department, in accordance with Env-Wq 1503.21(c)(1), stating that the project was completed in accordance with the approved plans and specifications**. If deviations were made, the permit holder shall review the requirements in Env-Wq 1503.21(c)(2).

8. This permit does not relieve the applicant from the obligation to obtain other local, state or federal permits that may be required (e.g. from US EPA, US Army Corps of Engineers, etc.) Projects disturbing over 1 acre require a federal stormwater permit from EPA. Information regarding this permitting process can be obtained through the following e-mail address: https://www.epa.gov/npdes/2022-construction-general-permit-cgp

9. This project has been screened for potential impact to known occurrences of protected species and exemplary natural communities in the immediate area. Since many areas have never been surveyed, or only cursory surveys have been performed, unidentified sensitive species or communities may be present. This permit does not absolve the permittee from due diligence in regard to state, local or federal laws regarding such communities or species. This permit does not authorize in any way the take of threatened or endangered species, as defined by RSA 212-A:2, or of any protected species or exemplary natural communities, as defined in RSA 217-A:3.

Sincerely,



Ridgely Mauck, P.E.
Alteration of Terrain Bureau

cc: Dover Planning Board
ec: TFMoran, Inc.

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Planners

July 3, 2012

Ridgely Mauck, P.E.
NHDES – Alteration of Terrain
29 Hazen Drive, PO Box 95
Concord, NH 03302-0095

Re: NHDES Amended Alteration of Terrain Application
WPS-7657B
Senior Housing Project
Grapevine Drive, Dover, NH

Dear Ridge:

On behalf of our client, Housing Initiatives of New England Corp., and the property owner, VC Dover Investments, LLC, of 48 Constitution Drive, Bedford, NH 03110, we respectfully request the following waivers from the following Administrative Rules:

- Env-Wq 1503.22(c)(4) for increase in total impervious area >10,000 sf
- Env-Wq 1504.14(b) for field measurement of infiltration rate in Hinckley soils
- Env-Wq 1507.05(b)(1)(a) for volume increase >0.1 acre-feet
- Env-Wq 1508.06(a)(2) for a filtering practice without a liner in group A soils

Env-Wq 1503.22(c)(4)

A waiver is requested to allow this application to be processed as an amendment to the previous approval. The total increase in impervious area being proposed is 11,282 sf (only slightly more than the 10,000 sf threshold). Of this area, an additional 9,510 sf of roof area is associated with the larger building, with the remaining 1,772 sf being additional sidewalks and parking lot pavement. It is also noted that 3,342 sf of permeable sidewalk is now being proposed, resulting in a net reduction in the amount of non-permeable pavement on the site. Therefore, the intent of the rule is being met in that the amount of impervious area is minimal compared to the size of the development. This increase represents a difference of only 1.1%, where the rule allows up to 10%. Furthermore, the overall mixed-use development is a phased project being constructed by multiple developers, and the intent of the original design is being maintained. There are no changes proposed to the portion of the drainage system that has been constructed.

48 Constitution Drive
Bedford, NH 03110
Phone (603) 472-4488
Fax (603) 472-9747
www.tfmoran.com

Env-Wq 1504.14(b)
A waiver is requested from the requirement for field measurement of the infiltration rate for Hinckley soils. A test pit conducted at the site revealed a depth to groundwater of greater than 120" (10'). Given this separation between the filtration practice (permeable pavement) and groundwater, adequate treatment will be provided by the underlying soils prior to intercepting groundwater. The following calculations are provided in support of this request:

Treatment time required: (0.10 hr/in x 12 in/1 ft x 1 ft) = 1.2 hours

"Worst Case" infiltration rate to achieve required treatment time:

Existing elevation 122.0
Groundwater Elevation = 112.0 (based on Test Pit #10)
Proposed surface elevation 117.7
Bottom of practice elevation = 115.95
Separation to groundwater proposed = 115.95 – 112.0 = 3.95'
Infiltration rate required = 1.2 hr/(12 in/1 ft x 3.95 ft) = 0.025 hr/in = 40 in/hr

As shown in the soils report, this infiltration rate can easily be met by the Hinckley soils, which are expected to be between 6 and 20 in/hr.

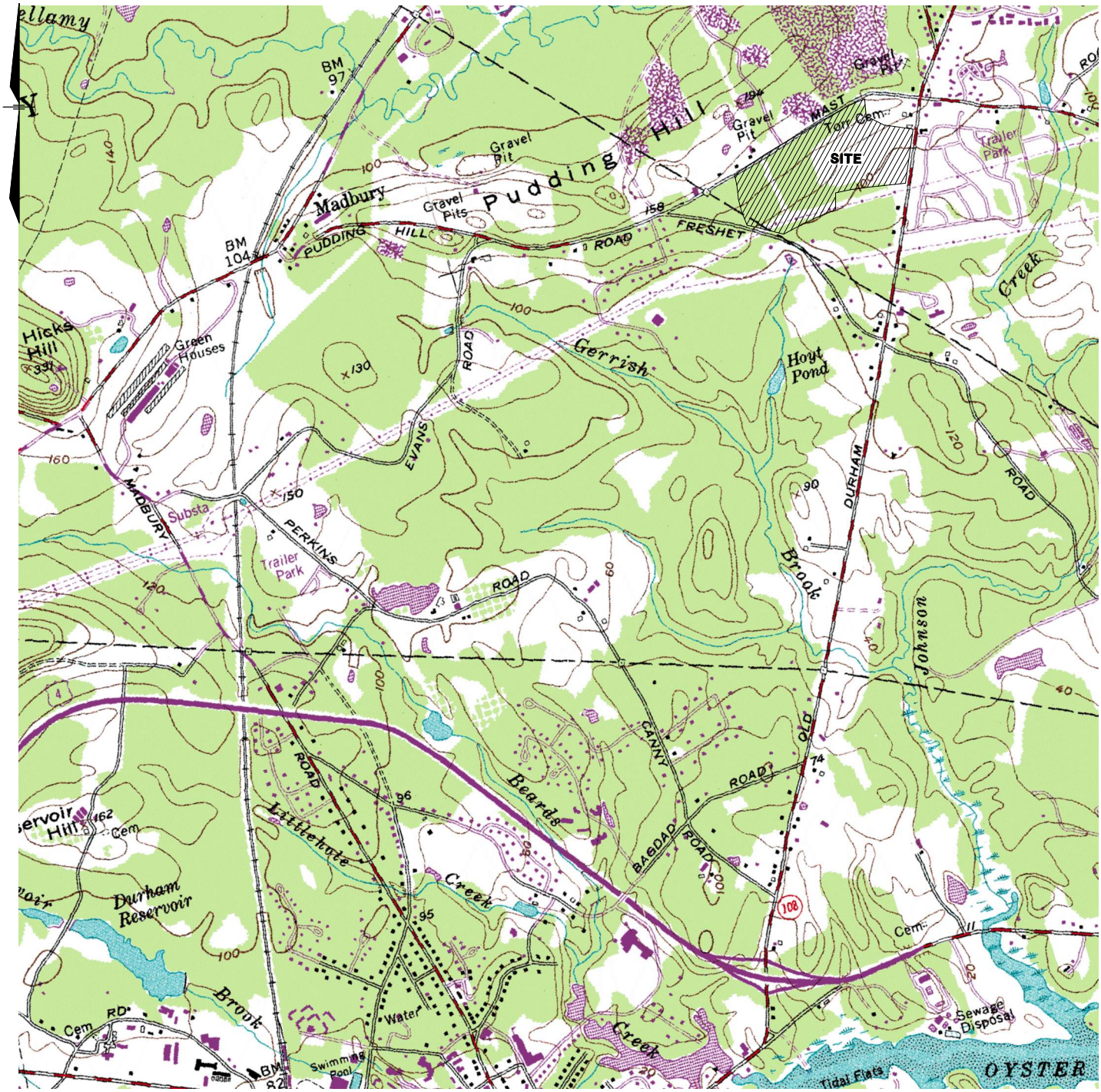
Env-Wq 1507.05(b)(1)(a)
A waiver is requested to allow a 2 year, 24 hour volume increase greater than 0.1 acre-feet. The original approval was granted prior to the current version of the rules being adopted. The approved application included a volume increase from 1.195 af to 2.522 af. The design that is currently proposed maintains the intent of the original design and its associated detention and treatment systems, and proposes a volume increase of 0.066 af, which is less than 0.1 af compared to the approved design. In addition, the peak runoff rates are matched or are significantly reduced in each of the three storms compared to pre-development conditions.

Env-Wq 1508.06(a)(2)
A waiver is requested to allow a filtering practice to be constructed in an area of group A soils without a sidewall liner. Based on the calculations provided above, adequate treatment will be accomplished prior to the stormwater intercepting groundwater; thus, the sidewall liner is unnecessary in this instance.

If you have any questions, please contact either myself or Jeff Kevan at 472-4488.

Sincerely,
TFMORAN INC.

Michael T. O'Donnell, P.E.
Project Manager



U.S.G.S. LOCUS MAP

SCALE: 1"=2,000'

TFM

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects

48 Constitution Dr
Bedford, NH 03110
Phone (603) 472-4488

www.tfmoran.com

Bedford, NH

TAX MAP H LOT 4

MIXED USE DEVELOPMENT

DOVER, NH

PREPARED FOR:

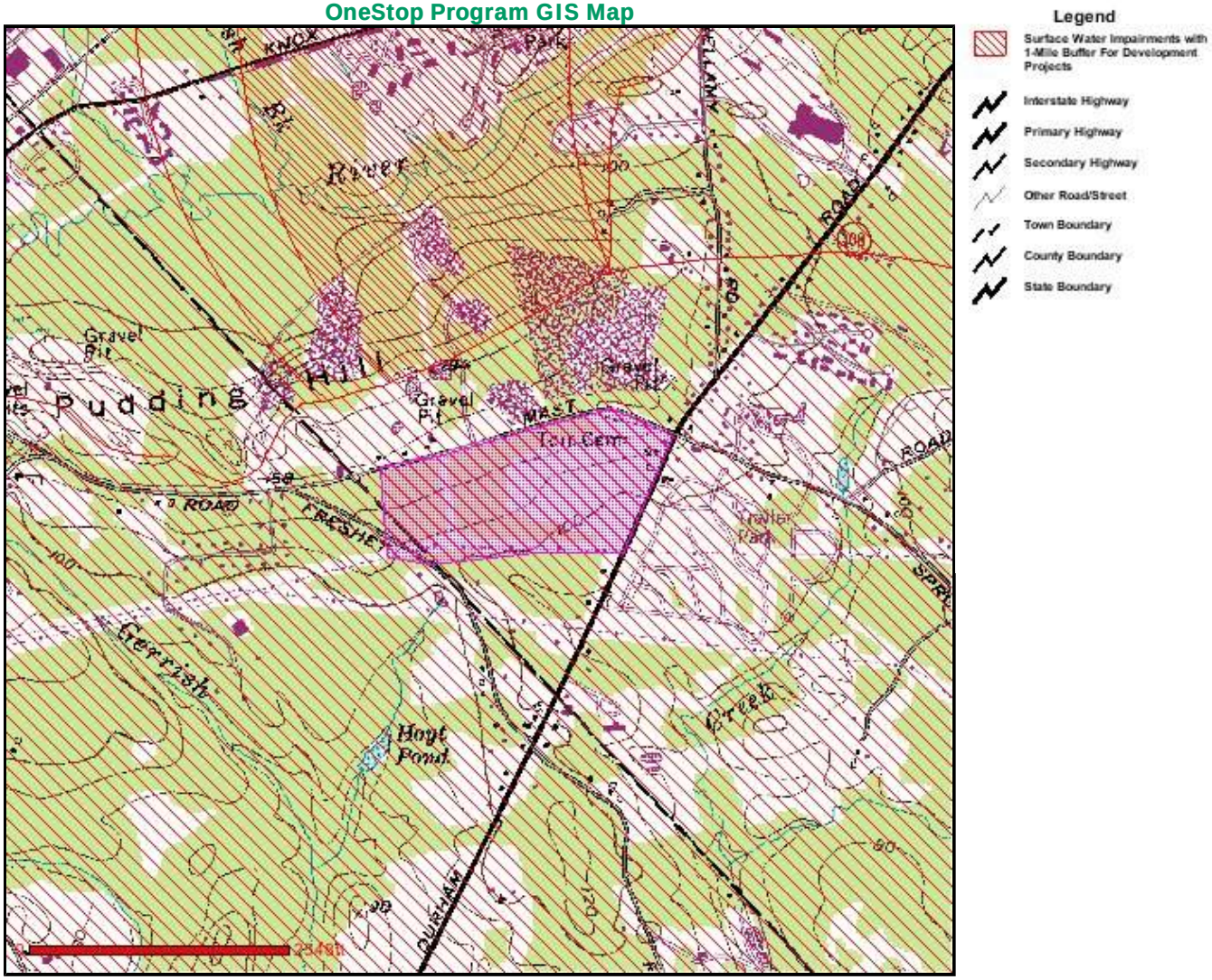
VC DOVER INVESTMENTS LLC

FILE	46001.31	DATE	10/24/22	SHEET 1 OF 1
		CADFILE	USGS	

New Hampshire Department of Environmental Services

OneStop Program GIS

OneStop Program GIS Map



Map Scale = 1 : 22888 (1" = 1907 feet or 0.4 miles)

The information contained in the OneStop Program GIS is the best available according to the procedures and standards of each of the contributing programs and of the GIS. The different programs are regularly maintaining the information in their databases. As a result, the GIS may not always provide access to all existing information, and it may occasionally contain unintentional inaccuracies. The Department can not be responsible for the misuse or misinterpretation of the information presented by this system.

Map prepared 9/8/2010 4:53:53 PM

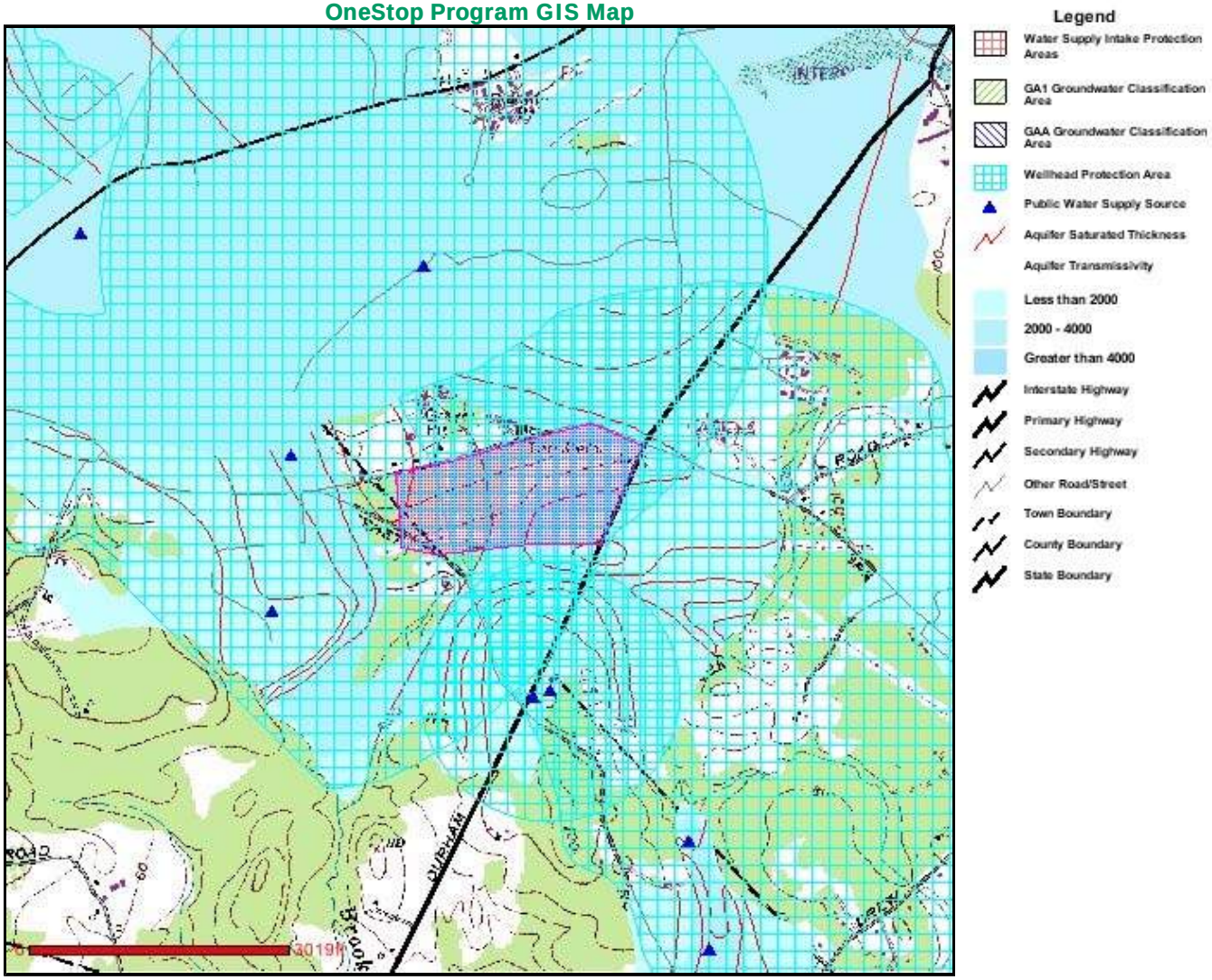
GRANIT Complex Systems Research Center

Developed in cooperation with NH GRANIT

New Hampshire Department of Environmental Services

OneStop Program GIS

OneStop Program GIS Map



Map Scale = 1 : 27126 (1" = 2261 feet or 0.4 miles)

The information contained in the OneStop Program GIS is the best available according to the procedures and standards of each of the contributing programs and of the GIS. The different programs are regularly maintaining the information in their databases. As a result, the GIS may not always provide access to all existing information, and it may occasionally contain unintentional inaccuracies. The Department can not be responsible for the misuse or misinterpretation of the information presented by this system.

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GRANIT Complex Systems Research Center

Developed in cooperation with NH GRANIT

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Strafford County, New Hampshire



August 23, 2010

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://soils.usda.gov/sqi/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:6,260 if printed on A size (8.5" x 11") sheet.

N

Meters
0 50 100 200 300

Feet
0 300 600 1,200 1,800

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:6,260 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 19N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Strafford County, New Hampshire
Survey Area Data: Version 10, Oct 27, 2009

Date(s) aerial images were photographed: 8/23/2003

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Strafford County, New Hampshire (NH017)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
BzB	Buxton silt loam, 3 to 8 percent slopes	0.7	0.6%
EaA	Elmwood fine sandy loam, 0 to 3 percent slopes	10.8	9.5%
HaB	Hinckley loamy sand, 3 to 8 percent slopes	41.9	36.7%
ScA	Scantic silt loam, 0 to 3 percent slopes	0.7	0.7%
SwA	Swanton fine sandy loam, 0 to 3 percent slopes	7.9	6.9%
WdA	Windsor loamy sand, 0 to 3 percent slopes	8.4	7.3%
WdB	Windsor loamy sand, 3 to 8 percent slopes	31.5	27.6%
WfB	Windsor loamy fine sand, clay subsoil variant, 0 to 8 percent slopes	12.2	10.7%
Totals for Area of Interest		**114.1**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the

contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Strafford County, New Hampshire

BzB—Buxton silt loam, 3 to 8 percent slopes

Map Unit Composition

Buxton and similar soils: 85 percent
Minor components: 15 percent

Description of Buxton

Setting

Parent material: Glaciomarine

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None

Interpretive groups

Land capability (nonirrigated): 2e

Minor Components

Elmwood

Percent of map unit: 10 percent

Not named

Percent of map unit: 5 percent

EaA—Elmwood fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

Elevation: 0 to 1,000 feet
Mean annual precipitation: 28 to 55 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 120 to 200 days

Map Unit Composition

Elmwood and similar soils: 85 percent
Minor components: 15 percent

Description of Elmwood

Setting

Parent material: Glaciomarine

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None

Interpretive groups
Land capability (nonirrigated): 2w

Minor Components

Deerfield
Percent of map unit: 5 percent

Not named
Percent of map unit: 5 percent

Swanton
Percent of map unit: 5 percent
Landform: Marine terraces

HaB—Hinckley loamy sand, 3 to 8 percent slopes

Map Unit Setting
Elevation: 0 to 1,000 feet
Mean annual precipitation: 40 to 50 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 200 days

Map Unit Composition
Hinckley and similar soils: 85 percent
Minor components: 15 percent

Description of Hinckley

Setting
Parent material: Stratified sandy and gravelly outwash

Properties and qualities
Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Interpretive groups
Land capability (nonirrigated): 3s

Minor Components

Not named
Percent of map unit: 10 percent

Windsor
Percent of map unit: 5 percent

ScA—Scantic silt loam, 0 to 3 percent slopes

Map Unit Composition
Scantic and similar soils: 85 percent
Minor components: 15 percent

Description of Scantic

Setting
Landform: Marine terraces

Properties and qualities
Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None

Interpretive groups
Land capability (nonirrigated): 4w

Minor Components

Biddeford
Percent of map unit: 5 percent
Landform: Marine terraces

Not named wet
Percent of map unit: 5 percent
Landform: Marine terraces

Swanton
Percent of map unit: 5 percent
Landform: Marine terraces

SwA—Swanton fine sandy loam, 0 to 3 percent slopes

Map Unit Composition

Swanton and similar soils: 85 percent
Minor components: 15 percent

Description of Swanton

Setting

Landform: Marine terraces

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None

Interpretive groups

Land capability (nonirrigated): 4w

Minor Components

Not named wet

Percent of map unit: 10 percent
Landform: Marine terraces

Scantic

Percent of map unit: 5 percent
Landform: Marine terraces

WdA—Windsor loamy sand, 0 to 3 percent slopes

Map Unit Setting

Elevation: 0 to 1,000 feet
Mean annual precipitation: 28 to 55 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 120 to 200 days

Map Unit Composition

Windsor and similar soils: 85 percent
Minor components: 15 percent

Description of Windsor

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Interpretive groups

Land capability (nonirrigated): 3s

Minor Components

Deerfield

Percent of map unit: 5 percent

Hinckley

Percent of map unit: 5 percent

Not named

Percent of map unit: 5 percent

WdB—Windsor loamy sand, 3 to 8 percent slopes

Map Unit Setting

Elevation: 0 to 1,000 feet
Mean annual precipitation: 28 to 55 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 120 to 200 days

Map Unit Composition

Windsor and similar soils: 85 percent
Minor components: 15 percent

Description of Windsor

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Interpretive groups
Land capability (nonirrigated): 3s

Minor Components

Deerfield
Percent of map unit: 5 percent

Hinckley
Percent of map unit: 5 percent

Not named
Percent of map unit: 5 percent

WfB—Windsor loamy fine sand, clay subsoil variant, 0 to 8 percent slopes

Map Unit Composition
Windsor variant and similar soils: 85 percent
Minor components: 15 percent

Description of Windsor Variant

Properties and qualities
Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None

Interpretive groups
Land capability (nonirrigated): 3s

Minor Components

Not named
Percent of map unit: 15 percent

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

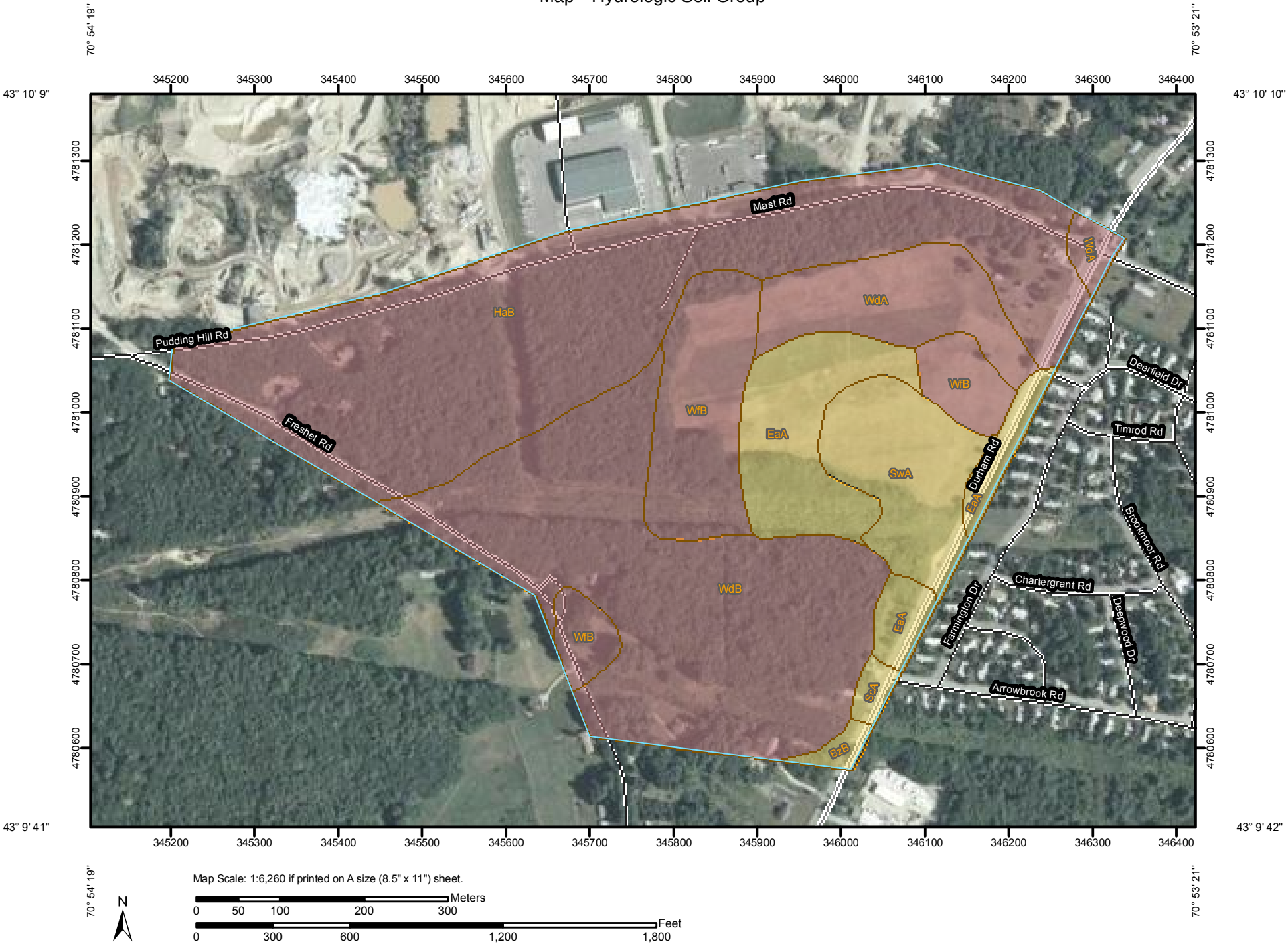
Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Custom Soil Resource Report
Map—Hydrologic Soil Group



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Political Features

Cities

Water Features

Oceans

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

MAP INFORMATION

Map Scale: 1:6,260 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 19N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Strafford County, New Hampshire
Survey Area Data: Version 10, Oct 27, 2009

Date(s) aerial images were photographed: 8/23/2003

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Strafford County, New Hampshire				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
BzB	Buxton silt loam, 3 to 8 percent slopes	C	0.7	0.6%
EaA	Elmwood fine sandy loam, 0 to 3 percent slopes	C	10.8	9.5%
HaB	Hinckley loamy sand, 3 to 8 percent slopes	A	41.9	36.7%
ScA	Scantic silt loam, 0 to 3 percent slopes	C	0.7	0.7%
SwA	Swanton fine sandy loam, 0 to 3 percent slopes	C	7.9	6.9%
WdA	Windsor loamy sand, 0 to 3 percent slopes	A	8.4	7.3%
WdB	Windsor loamy sand, 3 to 8 percent slopes	A	31.5	27.6%
WfB	Windsor loamy fine sand, clay subsoil variant, 0 to 8 percent slopes	A	12.2	10.7%
Totals for Area of Interest			**114.1**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

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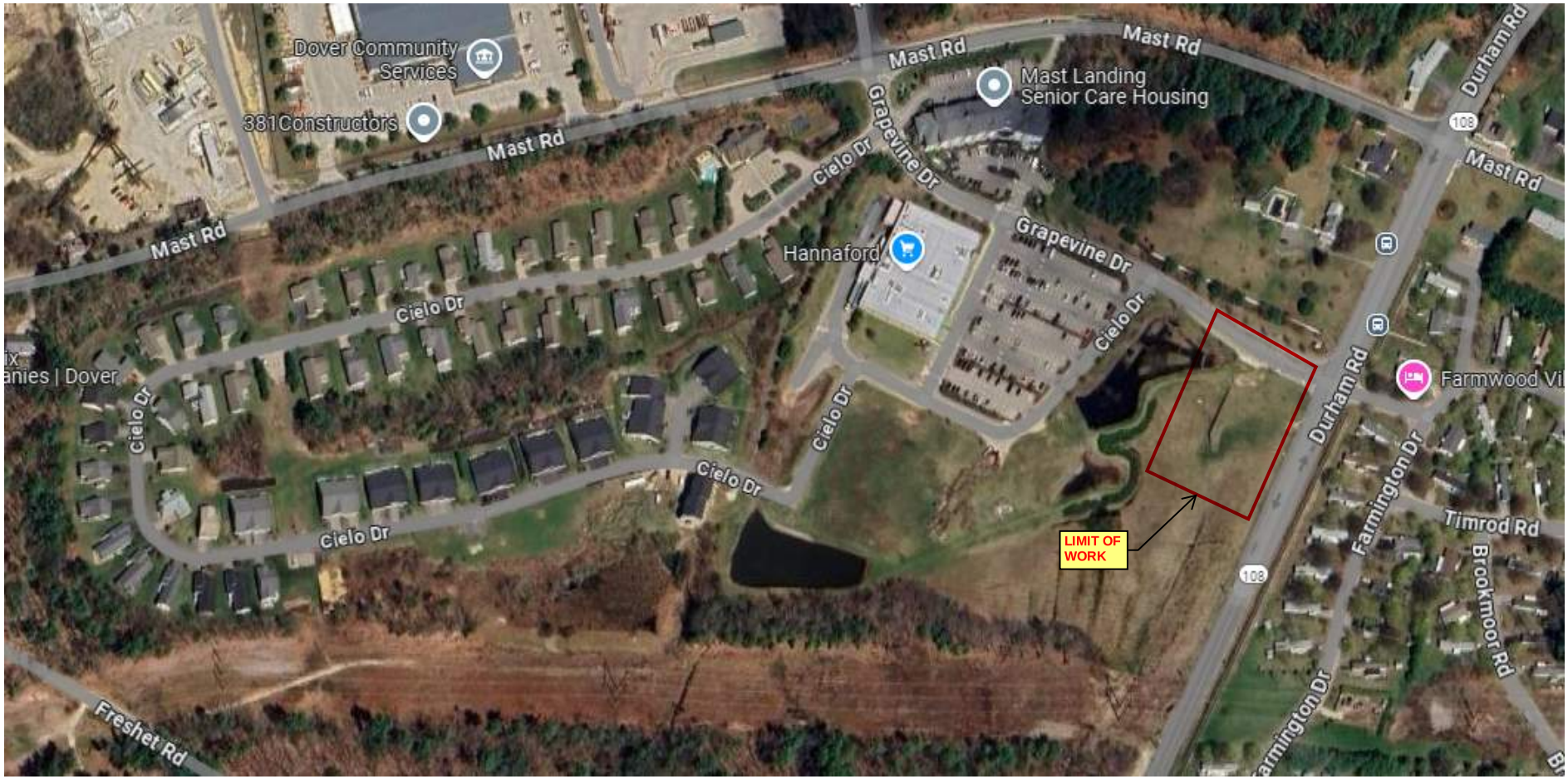
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Dover Community Services
381Constructors
Mast Rd
Mast Rd
Mast Landing Senior Care Housing
Durham Rd
Mast Rd
Mast Rd
Cielo Dr
Grapevine Dr
Hannaford
Grapevine Dr
Cielo Dr
Cielo Dr
Cielo Dr
Cielo Dr
Cielo Dr
Durham Rd
Farmwood Vi
Farmington Dr
Timrod Rd
Brookmoor Rd
LIMIT OF WORK
Freshet Rd
108
108

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

Project #46001.33

Site Photos

Of

Dover Fields - Unit 4
McDonald's Site

Photo #1 – Looking west across site and Grapevine Drive and Durham Road (Route 108) intersection.



© credits Google Street View Image 2024

Photo #2 – Looking northwest across site from Durham Road (Route 108).



© credits Google Street View Image 2024

` Photo #3 – Looking north across site from Durham Road (Route 108).



© credits Google Street View Image 2024

Photo #4 – Looking north along site’s Durham Road (Route 108).frontage.



© credits Google Street View Image 2024

Photo #5 - Looking northeast across main wet basin (100P) at Grapevine Drive.



Please mail the completed form and required material to:

New Hampshire Division of Historical Resources
State Historic Preservation Office
Attention: Review & Compliance
19 Pillsbury Street, Concord, NH 03301-3570

RECEIVED NOV 0 3 2022

DHR Use Only	
R&C #	14388
Log In Date	11/3/22
Response Date	11/17/22
Sent Date	11/29/22

Request for Project Review by the New Hampshire Division of Historical Resources

RECEIVED
DEC 0 1 2022

☒ This is a new submittal
☐ This is additional information relating to DHR Review & Compliance (R&C) #:

GENERAL PROJECT INFORMATION

Project Title Mixed Use Development

Project Location Grapevine Dr and Mast Road

City/Town Dover Tax Map H Lot # 4-3

NH State Plane - Feet Geographic Coordinates: Easting 1190165 Northing 243725
(See RPR Instructions and R&C FAQs for guidance.)

Lead Federal Agency and Contact *(if applicable)*
(Agency providing funds, licenses, or permits)
Permit Type and Permit or Job Reference #

State Agency and Contact *(if applicable)* NHDES

Permit Type and Permit or Job Reference # AoT

APPLICANT INFORMATION

Applicant Name VC Dover Investments, LLC c/o Alex Vailas

Mailing Address 48 Constituiton Dr Phone Number 603-472-4488

City Bedford State NH Zip 03310 Email alexvailasllc@aol.com

CONTACT PERSON TO RECEIVE RESPONSE

Name/Company James Robinson, TF Moran, Inc.

Mailing Address 48 Constituiton Phone Number 6034724488

City Bedford State NH Zip 03310 Email jrobinson@tfmoran.com

This form is updated periodically. Please download the current form at www.nh.gov/nhdhr/review. *Please refer to the Request for Project Review Instructions for direction on completing this form.* Submit one copy of this project review form for each project for which review is requested. Please include a self-addressed stamped envelope. Project submissions will not be accepted via facsimile or e-mail. This form is required. Review request form must be complete for review to begin. Incomplete forms will be sent back to the applicant without comment. Please be aware that this form may only initiate consultation. For some projects, additional information will be needed to complete the Section 106 review. All items and supporting documentation submitted with a review request, including photographs and publications, will be retained by the DHR as part of its review records. Items to be kept confidential should be clearly identified. For questions regarding the DHR review process and the DHR's role in it, please visit our website at: www.nh.gov/nhdhr/review or contact the R&C Specialist at marika.s.labash@dncr.nh.gov or 603.271.3558.

PROJECTS CANNOT BE PROCESSED WITHOUT THIS INFORMATION

Project Boundaries and Description

- ☒ Attach the Project Mapping ***using EMMIT or relevant portion of a 7.5' USGS Map.*** *(See RPR Instructions and R&C FAQs for guidance.)*
- ☒ Attach a detailed narrative description of the proposed project.
- ☒ Attach a site plan. The site plan should include the project boundaries and areas of proposed excavation.
- ☒ Attach photos of the project area (overview of project location and area adjacent to project location, and specific areas of proposed impacts and disturbances.) *(Informative photo captions are requested.)*
- ☒ A DHR records search must be conducted to identify properties within or adjacent to the project area. Provide records search results via EMMIT or in **Table 1**. *(Blank table forms are available on the DHR website.)* Please note, using EMMIT Guest View for an RPR records search does not provide the necessary information needed for DHR review.
  EMMIT or in-house records search conducted on 10/24/2022.

Architecture

Are there any buildings, structures (bridges, walls, culverts, etc.) objects, districts or landscapes within the project area? ☐ Yes ☒ No
If no, skip to Archaeology section. If yes, submit all of the following information:

Approximate age(s):

- ☒ Photographs of ***each*** resource or streetscape located within the project area, with captions, along with a mapped photo key. (Digital photographs are accepted. All photographs must be clear, crisp and focused.)
- ☐ If the project involves rehabilitation, demolition, additions, or alterations to existing buildings or structures, provide additional photographs showing detailed project work locations. (i.e. Detail photo of windows if window replacement is proposed.)

Archaeology

Does the proposed undertaking involve ground-disturbing activity? ☒ Yes ☐ No
If yes, submit all of the following information:

- ☒ Description of current and previous land use and disturbances.
- ☐ Available information concerning known or suspected archaeological resources within the project area (such as cellar holes, wells, foundations, dams, etc.)

Please note that for many projects an architectural and/or archaeological survey or other additional information may be needed to complete the Section 106 process.

DHR Comment/Finding Recommendation *This Space for Division of Historical Resources Use Only*

☐ Insufficient information to initiate review. ☐ Additional information is needed in order to complete review.

☐ No Potential to cause Effects ☑ No Historic Properties Affected ☐ No Adverse Effect ☐ Adverse Effect

Comments: _____

If plans change or resources are discovered in the course of this project, you must contact the Division of Historical Resources as required by federal law and regulation.

Authorized Signature: Jamie Nucci, DSHPO Date: 11/17/22

Memo

NH Natural Heritage Bureau
NHB DataCheck Results Letter

Please note: portions of this document are confidential.
Maps and NHB record pages are confidential and should be redacted from public documents.

To: Jonathan Devine
48 constitutional dr
Bedford, NH 03110

From: NHB Review, NH Natural Heritage Bureau
Date: 11/1/2022 (valid until 11/01/2023)
Re: Review by NH Natural Heritage Bureau
Permits: MUNICIPAL POR - Dover, NHDES - Alteration of Terrain Permit, USACE - General Permit, USEPA - Stormwater Pollution Prevention

NHB ID: **NHB22-3411** Town: Dover Location: Grapevine Drive
Description: The project is a mixed-use development next to the Hannaford's. Constuction start contingent of permitting schedule.

As requested, I have searched our database for records of rare species and exemplary natural communities, with the following results.

Comments **NHB: Please provide representative photos of all proposed impact areas during the growing season. Please provide aerial overlay with proposed limits of disturbance.**
F&G: No comments at this time.

Plant species	State[1]	Federal	Notes
greater fringed-gentian (*Gentianopsis crinita*)*	T	--	Vulnerable to shading by invading trees and to disturbances that destroy plants or impede their ability to reproduce (such as mowing in the mid-summer while the plants are in bloom).
lopsided rush (*Juncus secundus*)*	E	--	Occurs on talus slopes, cliffs/ledges, sandplains/disturbed openings, and dry forests/thin woods. Threats would include recreational or development activities that would trample the plants or disturb their habitat.

[1]Codes: "E" = Endangered, "T" = Threatened, "SC" = Special Concern, "--" = an exemplary natural community, or a rare species tracked by NH Natural Heritage that has not yet been added to the official state list. An asterisk (*) indicates that the most recent report for that occurrence was more than 20 years ago.

Disclaimer: A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed

Department of Natural and Cultural Resources
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DNCR/NHB
172 Pembroke Rd.
Concord, NH 03301

Please note: portions of this document are confidential.
Maps and NHB record pages are confidential and should be redacted from public documents.

for certain species. An on-site survey would provide better information on what species and communities are indeed present.

IMPORTANT: NHFG Consultation

If this NHB Datacheck letter DOES NOT include ANY wildlife species records, then, based on the information submitted, no further consultation with the NH Fish and Game Department pursuant to Fis 1004 is required.

If this NHB Datacheck letter includes a record for a threatened (T) or endangered (E) wildlife species, consultation with the New Hampshire Fish and Game Department under Fis 1004 may be required. To review the Fis 1000 rules (effective February 3, 2022), please go to https://wildlife.state.nh.us/wildlife/environmental-review.html. All requests for consultation and submittals should be sent via email to NHFGreview@wildlife.nh.gov or can be sent by mail, and **must include the NHB Datacheck results letter number and "Fis 1004 consultation request" in the subject line.**

If the NHB DataCheck response letter does not include a threatened or endangered wildlife species but includes other wildlife species (e.g., Species of Special Concern), consultation under Fis 1004 is not required; however, some species are protected under other state laws or rules, so coordination with NH Fish & Game is highly recommended or may be required for certain permits. While some permitting processes are exempt from required consultation under Fis 1004 (e.g., *statutory permit by notification, permit by rule, permit by notification, routine roadway registration, docking structure registration, or conditional authorization by rule)*, coordination with NH Fish & Game may still be required under the rules governing those specific permitting processes, and it is recommended you contact the applicable permitting agency. For projects not requiring consultation under Fis 1004, but where additional coordination with NH Fish and Game is requested, please email: Kim Tuttle *kim.tuttle@wildlife.nh.gov* with a copy to NHFGreview@wildlife.nh.gov, and include the NHB Datacheck results letter number and "review request" in the email subject line.

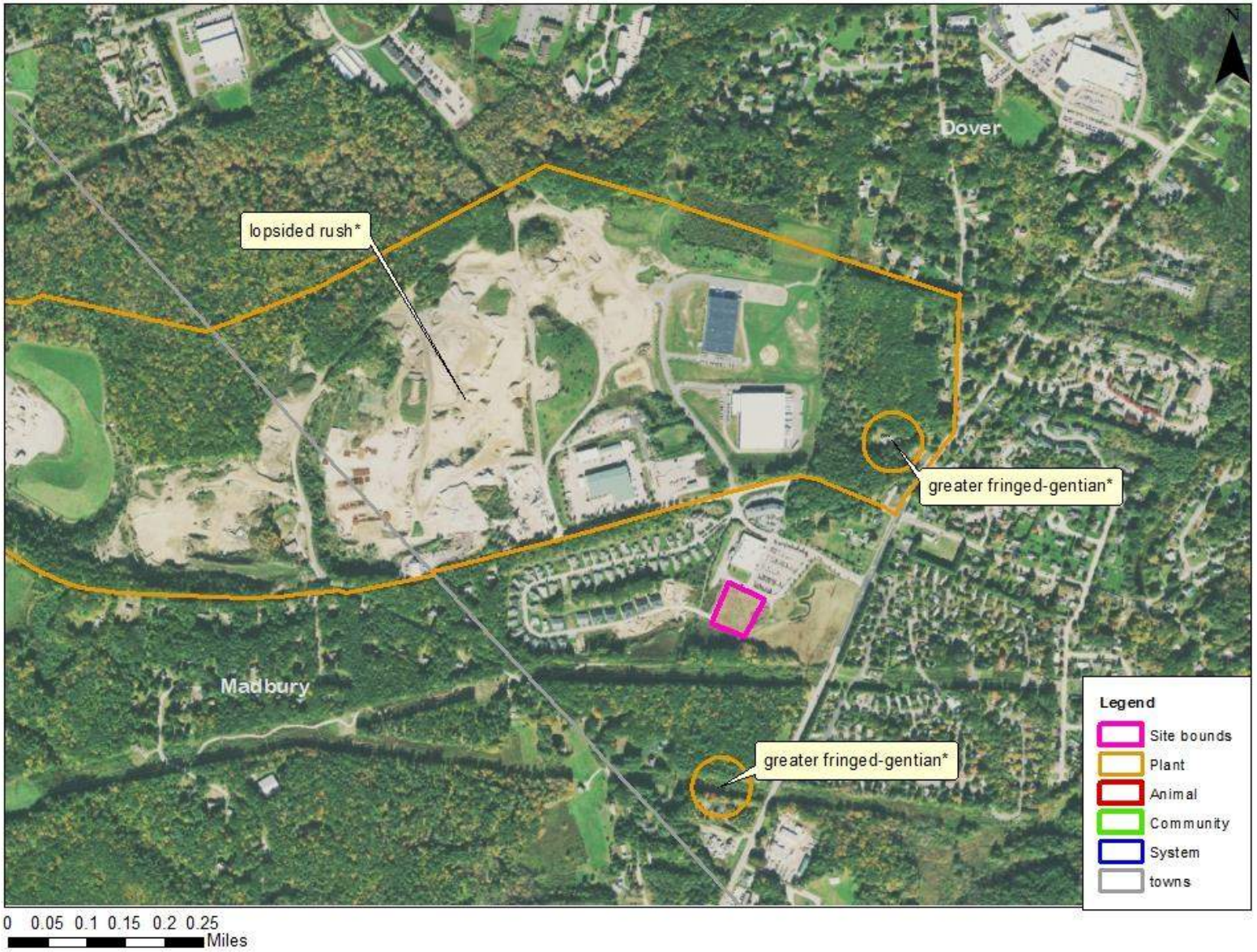
Contact NH Fish & Game at (603) 271-0467 with questions.

Department of Natural and Cultural Resources
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DNCR/NHB
172 Pembroke Rd.
Concord, NH 03301

CONFIDENTIAL – NH Dept. of Environmental Services review

NHB22-3411



New Hampshire Natural Heritage Bureau - Plant Record

greater fringed-gentian (*Gentianopsis crinita*)

Legal Status

Federal: Not listed
State: Listed Threatened

Conservation Status

Global: Demonstrably widespread, abundant, and secure
State: Imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 1985: Between 51-100 plants in leaf, bud, flower, fruit, and seed dispersing. Population area full of large, mature specimens at every stage of growth. Specimen collected.
General Area: 1985: Moist, flat, open light. Associated species include *Aster umbellatus* (tall flat-topped white aster) and *Aster novae-angliae* (New England aster).
General Comments: --
Management Comments: --

Location

Survey Site Name: Dover Gentian
Managed By:

County: Strafford
Town(s): Dover
Size: 2.8 acres
Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: Southwest of Dover, north of Rte. 108.

Dates documented

First reported: 1985
Last reported: 1985

CONFIDENTIAL – NH Dept. of Environmental Services review

New Hampshire Natural Heritage Bureau - Plant Record

greater fringed-gentian (*Gentianopsis crinita*)

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Demonstrably widespread, abundant, and secure
State:	Listed Threatened	State:	Imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank:	Excellent quality, condition and landscape context ('A' on a scale of A-D).
Comments on Rank:	Excellent population and site.
Detailed Description:	1987: ca. 1,000 vigorous flowering, fruiting and vegetative plants. Specimen collected.
General Area:	1987: Field: moist, flat, and open. With *Spiranthes cernua* (nodding ladies'-tresses), Eriophorum sp. (cotton-grass), *Pycnanthemum tenuifolium* (narrow-leaved mountain mint), and other wet meadow plants.
General Comments:	--
Management Comments:	1987: Needs periodic mowing.

Location

Survey Site Name: Rte. 108 Powerline
Managed By:

County: Strafford
Town(s): Dover
Size: 2.8 acres Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: At junction of Rte. 108 and powerline, ca. 0.5 miles northeast of Hoyt Pond.

Dates documented

First reported: 1987-09-01 Last reported: 1987-09-01

CONFIDENTIAL – NH Dept. of Environmental Services review

New Hampshire Natural Heritage Bureau - Plant Record

lopsided rush (*Juncus secundus*)

Legal Status

Federal: Not listed
State: Listed Endangered

Conservation Status

Global: Demonstrably widespread, abundant, and secure
State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 1966: Specimen collected.
General Area: 1966: Gravel pit.
General Comments: --
Management Comments: --

Location

Survey Site Name: Madbury Gravel Pit
Managed By: Griffin Well

County: Strafford
Town(s): Dover
Size: 348.5 acres
Elevation:

Precision: Within 1.5 miles of the area indicated on the map (location information is vague or uncertain).

Directions: Madbury. Gravel pit.

Dates documented

First reported: 1966-08-09
Last reported: 1966-08-09

CONFIDENTIAL – NH Dept. of Environmental Services review

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	New Hampshire
Location	
Longitude	70.894 degrees West
Latitude	43.167 degrees North
Elevation	0 feet
Date/Time	Fri, 01 Jul 2022 08:46:21 -0400

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.65	0.81	1.03	**1yr**	0.70	0.98	1.20	1.55	2.00	2.60	2.85	**1yr**	2.30	2.75	3.14	3.87	4.44	**1yr**
2yr	0.32	0.49	0.61	0.81	1.01	1.29	**2yr**	0.88	1.17	1.50	1.91	2.45	3.14	3.49	**2yr**	2.78	3.36	3.85	4.58	5.22	**2yr**
5yr	0.37	0.57	0.72	0.96	1.23	1.58	**5yr**	1.06	1.44	1.85	2.38	3.07	3.97	4.47	**5yr**	3.52	4.30	4.92	5.79	6.55	**5yr**
10yr	0.40	0.63	0.80	1.09	1.42	1.84	**10yr**	1.22	1.69	2.18	2.82	3.66	4.74	5.40	**10yr**	4.20	5.19	5.92	6.92	7.79	**10yr**
25yr	0.46	0.74	0.94	1.29	1.72	2.26	**25yr**	1.48	2.09	2.69	3.52	4.60	6.01	6.92	**25yr**	5.32	6.66	7.56	8.75	9.79	**25yr**
50yr	0.51	0.83	1.06	1.48	1.99	2.66	**50yr**	1.72	2.46	3.17	4.18	5.49	7.18	8.36	**50yr**	6.36	8.04	9.11	10.47	11.65	**50yr**
100yr	0.58	0.93	1.20	1.70	2.31	3.11	**100yr**	2.00	2.88	3.74	4.95	6.53	8.59	10.11	**100yr**	7.60	9.72	10.98	12.52	13.87	**100yr**
200yr	0.64	1.04	1.35	1.94	2.69	3.66	**200yr**	2.32	3.39	4.41	5.88	7.79	10.28	12.22	**200yr**	9.10	11.75	13.23	14.98	16.51	**200yr**
500yr	0.75	1.24	1.61	2.34	3.28	4.52	**500yr**	2.83	4.21	5.48	7.36	9.82	13.04	15.71	**500yr**	11.54	15.10	16.94	18.99	20.82	**500yr**

Lower Confidence Limits

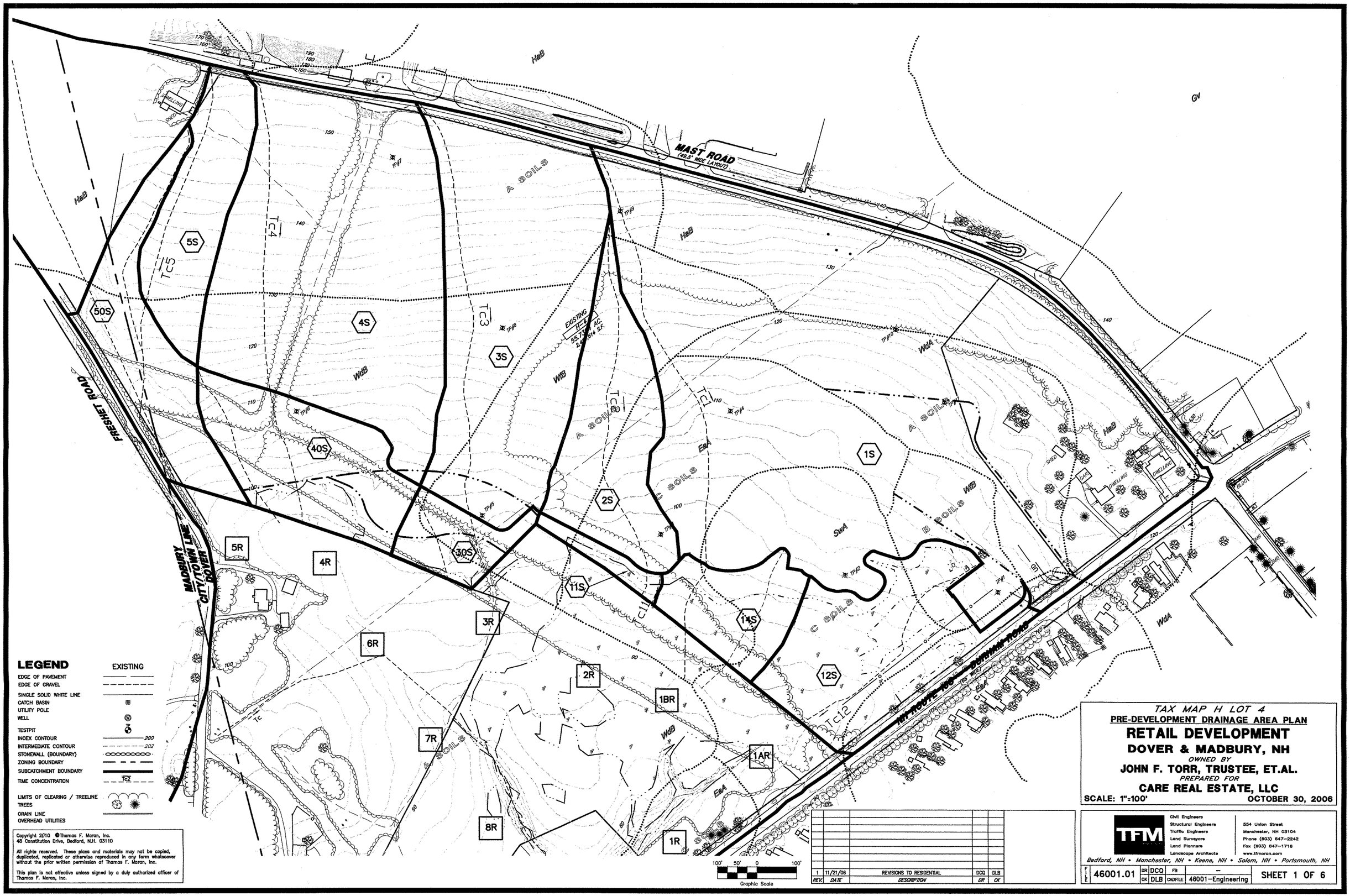
	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.24	0.37	0.45	0.60	0.74	0.90	**1yr**	0.64	0.88	0.91	1.26	1.57	2.08	2.48	**1yr**	1.84	2.38	2.90	3.32	4.02	**1yr**
2yr	0.31	0.49	0.60	0.81	1.00	1.18	**2yr**	0.86	1.16	1.36	1.83	2.36	3.04	3.39	**2yr**	2.69	3.26	3.74	4.46	5.05	**2yr**
5yr	0.35	0.54	0.67	0.91	1.16	1.40	**5yr**	1.00	1.37	1.61	2.15	2.78	3.71	4.12	**5yr**	3.28	3.96	4.60	5.41	6.11	**5yr**
10yr	0.38	0.59	0.73	1.02	1.31	1.60	**10yr**	1.13	1.56	1.82	2.45	3.13	4.27	4.79	**10yr**	3.78	4.60	5.31	6.25	7.02	**10yr**
25yr	0.44	0.66	0.83	1.18	1.55	1.91	**25yr**	1.34	1.87	2.11	2.85	3.66	4.98	5.80	**25yr**	4.41	5.58	6.49	7.58	8.45	**25yr**
50yr	0.48	0.73	0.91	1.31	1.76	2.19	**50yr**	1.52	2.14	2.35	3.20	4.11	5.69	6.70	**50yr**	5.04	6.44	7.54	8.76	9.71	**50yr**
100yr	0.54	0.81	1.01	1.47	2.01	2.50	**100yr**	1.74	2.45	2.63	3.59	4.59	6.50	7.74	**100yr**	5.75	7.44	8.77	10.12	11.13	**100yr**
200yr	0.59	0.90	1.13	1.64	2.29	2.86	**200yr**	1.98	2.80	2.94	4.01	5.13	7.41	8.93	**200yr**	6.56	8.59	10.19	11.71	12.79	**200yr**
500yr	0.69	1.03	1.33	1.93	2.74	3.45	**500yr**	2.37	3.37	3.40	4.65	5.96	8.79	10.79	**500yr**	7.78	10.38	12.43	14.21	15.31	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.43	0.53	0.71	0.87	1.08	**1yr**	0.75	1.05	1.24	1.74	2.22	2.86	3.06	**1yr**	2.53	2.94	3.40	4.20	4.79	**1yr**
2yr	0.33	0.51	0.62	0.85	1.04	1.25	**2yr**	0.90	1.22	1.48	1.96	2.51	3.27	3.60	**2yr**	2.90	3.46	3.97	4.73	5.42	**2yr**
5yr	0.39	0.60	0.75	1.03	1.31	1.58	**5yr**	1.13	1.55	1.85	2.50	3.20	4.23	4.82	**5yr**	3.74	4.63	5.25	6.20	6.96	**5yr**
10yr	0.46	0.70	0.87	1.21	1.57	1.92	**10yr**	1.35	1.88	2.23	3.05	3.85	5.21	6.01	**10yr**	4.61	5.78	6.58	7.60	8.49	**10yr**
25yr	0.55	0.84	1.05	1.50	1.97	2.47	**25yr**	1.70	2.42	2.88	3.96	4.95	7.04	8.06	**25yr**	6.23	7.75	8.78	10.01	11.06	**25yr**
50yr	0.64	0.97	1.21	1.74	2.34	2.99	**50yr**	2.02	2.92	3.49	4.83	6.01	8.70	10.09	**50yr**	7.70	9.70	10.94	12.30	13.53	**50yr**
100yr	0.74	1.12	1.41	2.03	2.79	3.61	**100yr**	2.41	3.53	4.23	5.91	7.30	10.76	12.62	**100yr**	9.52	12.14	13.62	15.15	16.55	**100yr**
200yr	0.86	1.30	1.64	2.38	3.32	4.38	**200yr**	2.86	4.28	5.15	7.24	8.86	13.34	15.82	**200yr**	11.81	15.21	16.96	18.64	20.28	**200yr**
500yr	1.05	1.57	2.01	2.93	4.16	5.62	**500yr**	3.59	5.50	6.65	9.47	11.47	17.76	21.32	**500yr**	15.71	20.50	22.70	24.55	26.55	**500yr**

Powered by ACIS Northeast Regional Climate Center

4



LEGEND

	EXISTING
EDGE OF PAVEMENT	
EDGE OF GRAVEL	
SINGLE SOLID WHITE LINE	
CATCH BASIN	
UTILITY POLE	
WELL	W
TESTPIT	TP
INDEX CONTOUR	200
INTERMEDIATE CONTOUR	202
STONEWALL (BOUNDARY)	
ZONING BOUNDARY	
SUBCATCHMENT BOUNDARY	
TIME CONCENTRATION	Tc2
LIMITS OF CLEARING / TREELINE	
TREES	
DRAIN LINE	
OVERHEAD UTILITIES	

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48 Constitution Drive, Bedford, N.H. 03110

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This plan is not effective unless signed by a duly authorized officer of Thomas F. Moran, Inc.

REV.	DATE	DESCRIPTION	DR	CK
1	11/21/06	REVISIONS TO RESIDENTIAL	DCQ	DLB

TAX MAP H LOT 4

PRE-DEVELOPMENT DRAINAGE AREA PLAN

RETAIL DEVELOPMENT

DOVER & MADBURY, NH

OWNED BY

JOHN F. TORR, TRUSTEE, ET.AL.

PREPARED FOR

CARE REAL ESTATE, LLC

SCALE: 1"=100' **OCTOBER 30, 2006**

TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Land Planners
Landscape Architects
554 Union Street
Manchester, NH 03104
Phone (603) 647-2242
Fax (603) 647-1716
www.tfmoran.com
Bedford, NH • Manchester, NH • Keene, NH • Salem, NH • Portsmouth, NH

PROJECT	DR	DCQ	FB	–	SHEET 1 OF 6
46001.01	CK	DLB	CADFILE	46001-Engineering	

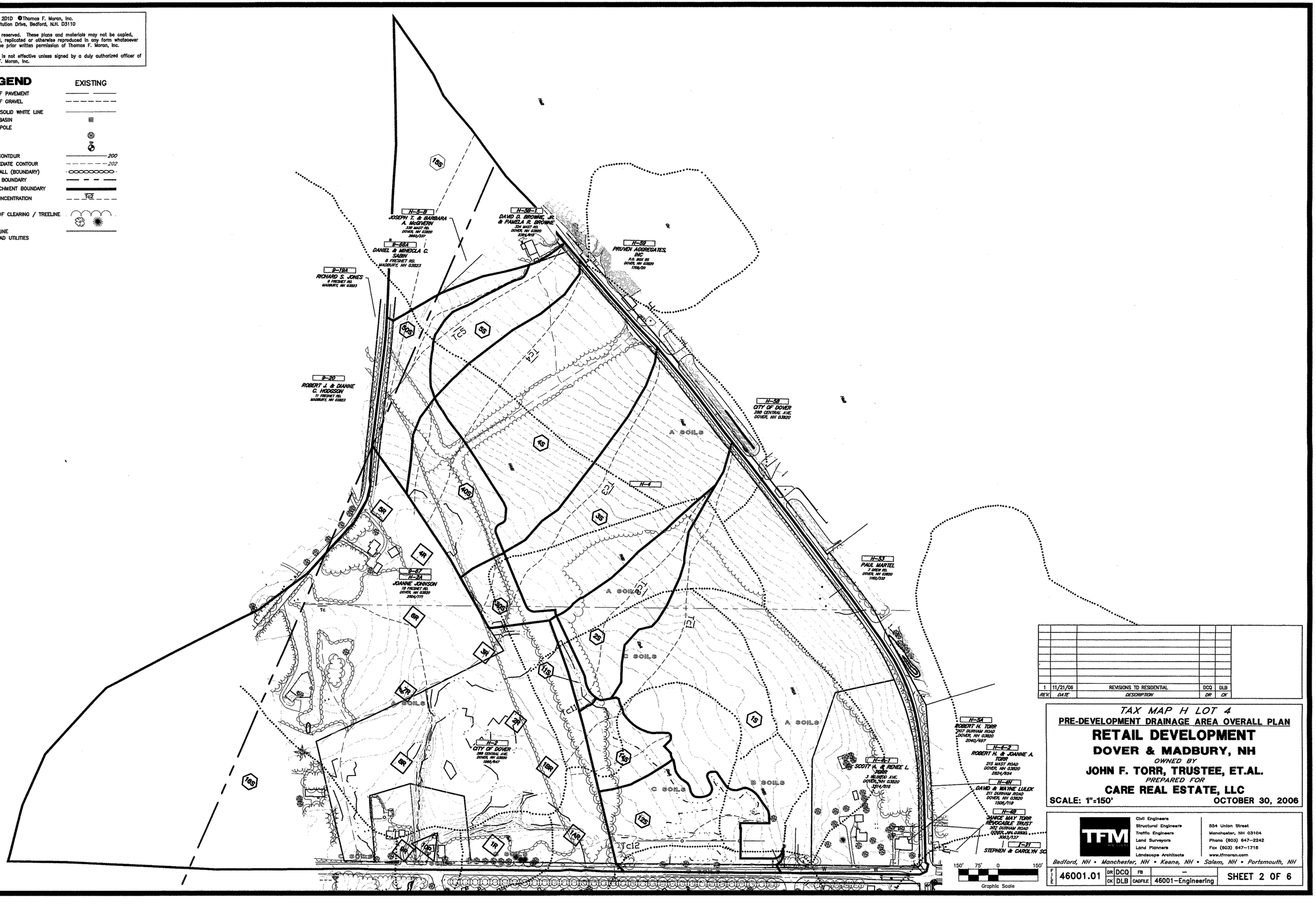
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This plan is not effective unless signed by a duly authorized officer of Thomas F. Moran, Inc.

LEGEND

	EXISTING
EDGE OF PAVEMENT	
EDGE OF GRAVEL	
SINGLE SOLID WHITE LINE	
CATCH BASIN	
UTILITY POLE	
WELL	
TESTPIT	
INDEX CONTOUR	200
INTERMEDIATE CONTOUR	202
STONEWALL (BOUNDARY)	
ZONING BOUNDARY	
SUBCATCHMENT BOUNDARY	
TIME CONCENTRATION	Tc2
LIMITS OF CLEARING / TREELINE	
TREES	
DRAIN LINE	
OVERHEAD UTILITIES	



REV.	DATE	DESCRIPTION	DR	CK
1	11/21/06	REVISIONS TO RESIDENTIAL	DCQ	DLB

TAX MAP H LOT 4

PRE-DEVELOPMENT DRAINAGE AREA OVERALL PLAN

RETAIL DEVELOPMENT

DOVER & MADBURY, NH

OWNED BY

JOHN F. TORR, TRUSTEE, ET.AL.

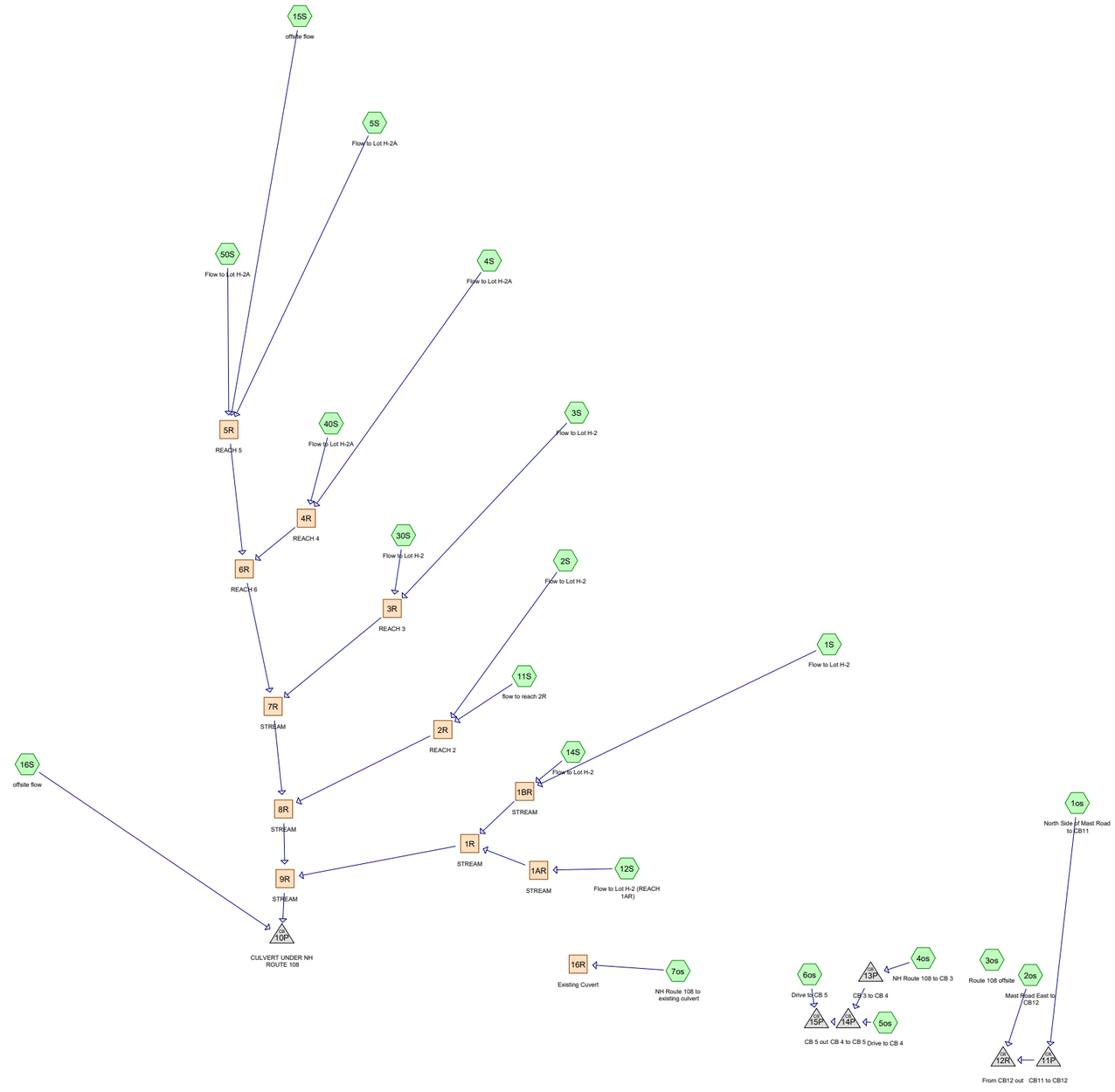
PREPARED FOR

CARE REAL ESTATE, LLC

SCALE: 1"=150' OCTOBER 30, 2006

TFM Moran
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Land Planners
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FILE	DR	CK	FB	CADFILE		
46001.01	DCQ	DLB	–	46001-Engineering	SHEET 2 OF 6	

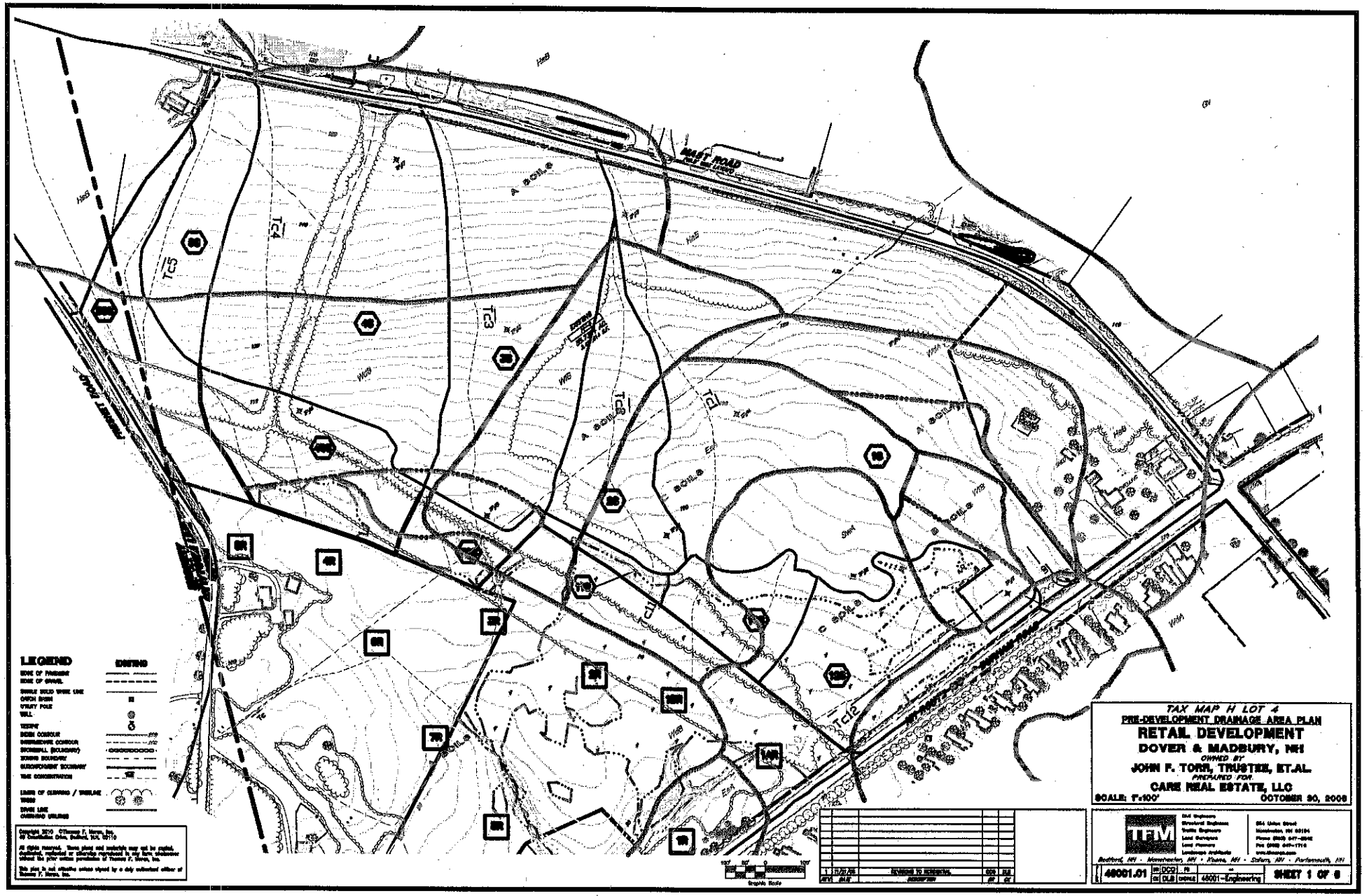


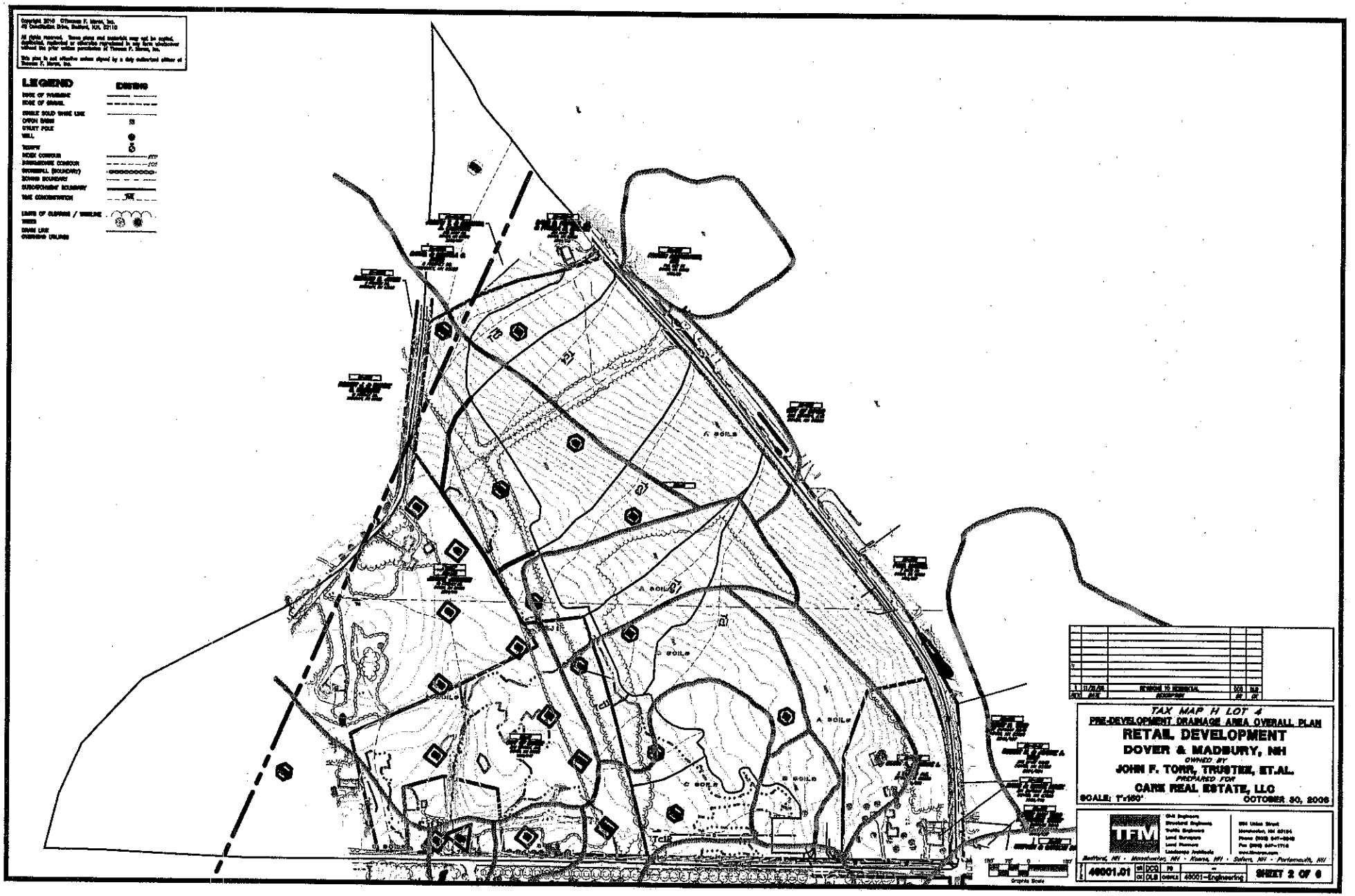
Subcat Reach Pond Link

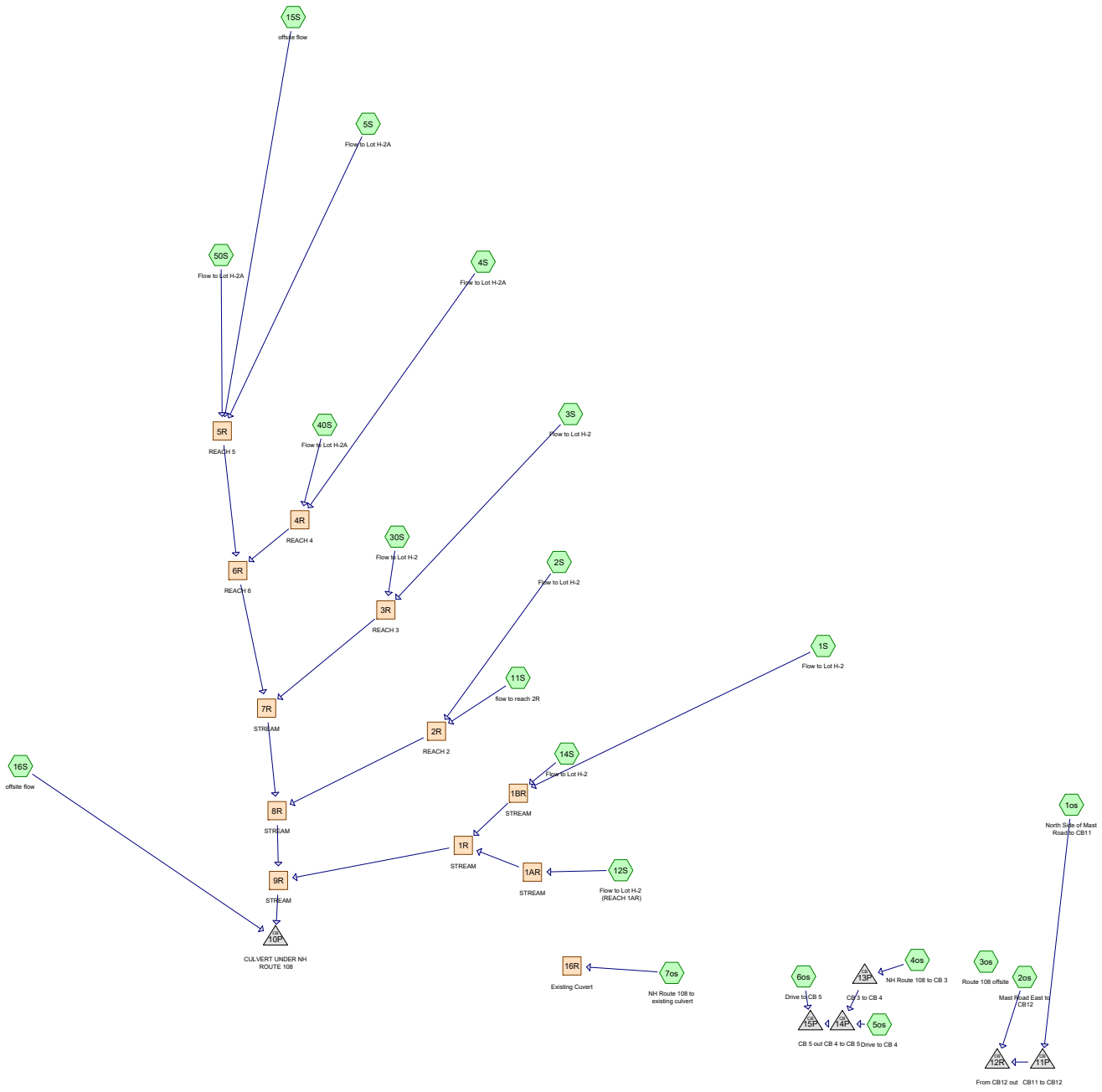
Routing Diagram for 46001.31 Pre Dev

Prepared by TF Moran, Inc., Printed 12/5/2022

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MAST ROAD
TC-1
TC-2
TC-3
TC-4
TC-5
A SOILS
B SOILS
C SOILS
LEGEND
EXISTING
TAX MAP H LOT 4
PRE-DEVELOPMENT DRAINAGE AREA PLAN
RETAIL DEVELOPMENT
DOVER & MADBURY, NH
OWNED BY
JOHN F. TORR, TRUSTEE, ET.AL.
PREPARED FOR
CARE REAL ESTATE, LLC
SCALE: 1"=100'
OCTOBER 30, 2008
46001.01
46001-Engineering
SHEET 1 OF 8


LEGEND
EXISTING
A SOILS
B SOILS
C SOILS
D SOILS
TAX MAP H LOT 4
PRE-DEVELOPMENT DRAINAGE AREA OVERALL PLAN
RETAIL DEVELOPMENT
DOVER & MADBURY, NH
OWNED BY
JOHN F. TORR, TRUSTEE, ET.AL.
PREPARED FOR
CARR REAL ESTATE, LLC
SCALE: 1"=100'
OCTOBER 30, 2006
TFM
Bedford, NH · Manchester, NH · Keene, NH · Salem, NH · Portsmouth, NH
46001.01
SHEET 2 OF 6



Routing Diagram for 46001.31 Pre Dev
Prepared by TF Moran, Inc., Printed 12/5/2022
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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
9.013	39	>75% Grass cover, Good, HSG A (1os, 2os, 3os, 4os, 15S, 16S)
1.814	74	>75% Grass cover, Good, HSG C (4os, 7os, 16S)
0.374	80	>75% Grass cover, Good, HSG D (16S)
3.397	35	Brush, Fair, HSG A (4S, 16S, 40S, 50S)
0.645	56	Brush, Fair, HSG B (30S, 40S)
1.516	70	Brush, Fair, HSG C (16S, 30S, 40S)
0.933	77	Brush, Fair, HSG D (12S, 16S)
0.343	76	Gravel roads, HSG A (4S, 40S, 50S)
0.067	85	Gravel roads, HSG B (30S, 40S)
0.025	89	Gravel roads, HSG C (30S)
1.143	98	Impervious (1S, 3S, 4S, 5S, 12S, 50S)
0.702	79	Pasture/grassland/range, Fair, HSG C (16S)
9.303	39	Pasture/grassland/range, Good, HSG A (1S, 2S, 3S)
2.443	61	Pasture/grassland/range, Good, HSG B (1S)
8.169	74	Pasture/grassland/range, Good, HSG C (1S, 2S, 12S, 14S)
6.200	80	Pasture/grassland/range, Good, HSG D (1S, 12S, 14S, 16S)
4.511	98	Paved parking & roofs (1S, 15S, 16S)
1.375	98	Paved roads w/curbs & sewers (1os, 2os, 3os, 4os, 5os, 6os, 7os)
59.619	30	Woods, Good, HSG A (1os, 1S, 2S, 3S, 4S, 5S, 11S, 15S, 16S, 30S, 40S, 50S)
0.789	55	Woods, Good, HSG B (1S, 3S, 4S, 30S, 40S)
8.714	70	Woods, Good, HSG C (2S, 11S, 12S, 14S, 16S, 30S, 40S)
0.800	77	Woods, Good, HSG D (12S, 14S, 16S)
121.897	**47**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
81.675	HSG A	1os, 1S, 2os, 2S, 3os, 3S, 4os, 4S, 5S, 11S, 15S, 16S, 30S, 40S, 50S
3.944	HSG B	1S, 3S, 4S, 30S, 40S
20.941	HSG C	1S, 2S, 4os, 7os, 11S, 12S, 14S, 16S, 30S, 40S
8.308	HSG D	1S, 12S, 14S, 16S
7.029	Other	1os, 1S, 2os, 3os, 3S, 4os, 4S, 5os, 5S, 6os, 7os, 12S, 15S, 16S, 50S
121.897		**TOTAL AREA**

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1os: North Side of Mast Runoff Area=45,066 sf 48.76% Impervious Runoff Depth=0.66"
Tc=5.0 min CN=67 Runoff=0.68 cfs 0.057 af

Subcatchment 1S: Flow to Lot H-2 Runoff Area=1,111,987 sf 4.32% Impervious Runoff Depth=0.16"
Flow Length=1,432' Tc=24.2 min CN=52 Runoff=0.82 cfs 0.338 af

Subcatchment 2os: Mast Road East to CB12 Runoff Area=9,930 sf 98.00% Impervious Runoff Depth=2.80"
Tc=5.0 min CN=97 Runoff=0.71 cfs 0.053 af

Subcatchment 2S: Flow to Lot H-2 Runoff Area=150,958 sf 0.00% Impervious Runoff Depth=0.16"
Flow Length=1,010' Tc=20.6 min CN=52 Runoff=0.12 cfs 0.046 af

Subcatchment 3os: Route 108 offsite Runoff Area=2,934 sf 71.71% Impervious Runoff Depth=1.42"
Tc=5.0 min CN=81 Runoff=0.12 cfs 0.008 af

Subcatchment 3S: Flow to Lot H-2 Runoff Area=360,829 sf 1.36% Impervious Runoff Depth=0.00"
Flow Length=1,229' Tc=29.2 min CN=33 Runoff=0.00 cfs 0.000 af

Subcatchment 4os: NH Route 108 to CB 3 Runoff Area=13,932 sf 52.00% Impervious Runoff Depth=1.11"
Tc=5.0 min CN=76 Runoff=0.42 cfs 0.030 af

Subcatchment 4S: Flow to Lot H-2A Runoff Area=452,681 sf 1.02% Impervious Runoff Depth=0.00"
Flow Length=1,166' Tc=23.8 min CN=32 Runoff=0.00 cfs 0.000 af

Subcatchment 5os: Drive to CB 4 Runoff Area=1,717 sf 100.00% Impervious Runoff Depth=2.91"
Tc=5.0 min CN=98 Runoff=0.12 cfs 0.010 af

Subcatchment 5S: Flow to Lot H-2A Runoff Area=107,760 sf 0.62% Impervious Runoff Depth=0.00"
Flow Length=1,116' Tc=26.8 min CN=30 Runoff=0.00 cfs 0.000 af

Subcatchment 6os: Drive to CB 5 Runoff Area=3,747 sf 100.00% Impervious Runoff Depth=2.91"
Tc=5.0 min CN=98 Runoff=0.27 cfs 0.021 af

Subcatchment 7os: NH Route 108 to Runoff Area=24,418 sf 54.75% Impervious Runoff Depth=1.86"
Tc=5.0 min CN=87 Runoff=1.27 cfs 0.087 af

Subcatchment 11S: flow to reach 2R Runoff Area=17,367 sf 0.00% Impervious Runoff Depth=0.42"
Flow Length=79' Tc=10.3 min CN=61 Runoff=0.10 cfs 0.014 af

Subcatchment 12S: Flow to Lot H-2 Runoff Area=191,637 sf 5.59% Impervious Runoff Depth=1.29"
Flow Length=645' Tc=10.0 min CN=79 Runoff=5.71 cfs 0.474 af

Subcatchment 14S: Flow to Lot H-2 Runoff Area=76,123 sf 0.00% Impervious Runoff Depth=1.11"
Flow Length=416' Tc=10.4 min CN=76 Runoff=1.88 cfs 0.162 af

Subcatchment 15S: offsite flow Runoff Area=358,058 sf 1.70% Impervious Runoff Depth=0.00"
Flow Length=1,260' Tc=27.5 min CN=32 Runoff=0.00 cfs 0.000 af

Subcatchment 16S: offsite flow Runoff Area=2,052,474 sf 8.08% Impervious Runoff Depth=0.08"
Flow Length=1,412' Tc=34.3 min CN=48 Runoff=0.50 cfs 0.315 af

Subcatchment 30S: Flow to Lot H-2 Runoff Area=48,198 sf 0.00% Impervious Runoff Depth=0.53"
Flow Length=250' Slope=0.0200 '/' Tc=17.4 min CN=64 Runoff=0.36 cfs 0.049 af

Subcatchment 40S: Flow to Lot H-2A Runoff Area=144,239 sf 0.00% Impervious Runoff Depth=0.06"
Flow Length=452' Tc=14.5 min CN=47 Runoff=0.03 cfs 0.018 af

Subcatchment 50S: Flow to Lot H-2A Runoff Area=135,787 sf 4.02% Impervious Runoff Depth=0.00"
Flow Length=987' Tc=24.8 min CN=34 Runoff=0.00 cfs 0.000 af

Reach 1AR: STREAM Avg. Flow Depth=0.42' Max Vel=2.57 fps Inflow=5.71 cfs 0.474 af
n=0.050 L=370.0' S=0.0314 '/' Capacity=108.07 cfs Outflow=5.52 cfs 0.474 af

Reach 1BR: STREAM Avg. Flow Depth=0.21' Max Vel=1.90 fps Inflow=1.88 cfs 0.500 af
n=0.050 L=310.0' S=0.0384 '/' Capacity=119.58 cfs Outflow=1.81 cfs 0.500 af

Reach 1R: STREAM Avg. Flow Depth=0.58' Max Vel=2.22 fps Inflow=7.33 cfs 0.974 af
n=0.050 L=380.0' S=0.0166 '/' Capacity=78.59 cfs Outflow=7.02 cfs 0.974 af

Reach 2R: REACH 2 Avg. Flow Depth=0.06' Max Vel=0.61 fps Inflow=0.17 cfs 0.060 af
n=0.050 L=560.0' S=0.0193 '/' Capacity=42.77 cfs Outflow=0.14 cfs 0.060 af

Reach 3R: REACH 3 Avg. Flow Depth=0.08' Max Vel=0.78 fps Inflow=0.36 cfs 0.049 af
n=0.050 L=340.0' S=0.0200 '/' Capacity=24.05 cfs Outflow=0.33 cfs 0.049 af

Reach 4R: REACH 4 Avg. Flow Depth=0.02' Max Vel=0.23 fps Inflow=0.03 cfs 0.018 af
n=0.050 L=255.0' S=0.0149 '/' Capacity=468.29 cfs Outflow=0.03 cfs 0.018 af

Reach 5R: REACH 5 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.050 L=540.0' S=0.0231 '/' Capacity=409.57 cfs Outflow=0.00 cfs 0.000 af

Reach 6R: REACH 6 Avg. Flow Depth=0.03' Max Vel=0.22 fps Inflow=0.03 cfs 0.018 af
n=0.050 L=278.0' S=0.0126 '/' Capacity=131.20 cfs Outflow=0.03 cfs 0.018 af

Reach 7R: STREAM Avg. Flow Depth=0.08' Max Vel=0.93 fps Inflow=0.33 cfs 0.067 af
n=0.050 L=194.0' S=0.0284 '/' Capacity=92.22 cfs Outflow=0.33 cfs 0.067 af

Reach 8R: STREAM Avg. Flow Depth=0.10' Max Vel=0.97 fps Inflow=0.43 cfs 0.127 af
n=0.050 L=512.0' S=0.0258 '/' Capacity=98.00 cfs Outflow=0.40 cfs 0.127 af

Reach 9R: STREAM Avg. Flow Depth=0.56' Max Vel=2.33 fps Inflow=7.03 cfs 1.100 af
n=0.050 L=100.0' S=0.0190 '/' Capacity=84.13 cfs Outflow=7.01 cfs 1.100 af

Reach 16R: Existing Cuvert Avg. Flow Depth=0.35' Max Vel=4.53 fps Inflow=1.27 cfs 0.087 af
15.0" Round Pipe n=0.012 L=45.0' S=0.0113 '/' Capacity=7.45 cfs Outflow=1.27 cfs 0.087 af

Pond 10P: CULVERT UNDER NH ROUTE 108 Peak Elev=68.91' Inflow=7.01 cfs 1.415 af
48.0" Round Culvert n=0.013 L=63.0' S=0.0063 '/' Outflow=7.01 cfs 1.415 af

Pond 11P: CB11 to CB12 Peak Elev=105.59' Inflow=0.68 cfs 0.057 af
12.0" Round Culvert n=0.010 L=19.0' S=0.0132 '/' Outflow=0.68 cfs 0.057 af

Pond 12R: From CB12 out Peak Elev=105.36' Inflow=1.38 cfs 0.110 af
12.0" Round Culvert n=0.010 L=20.0' S=0.0050 '/' Outflow=1.38 cfs 0.110 af

Pond 13P: CB 3 to CB 4 Peak Elev=106.95' Inflow=0.42 cfs 0.030 af
12.0" Round Culvert n=0.013 L=98.0' S=0.0101 '/' Outflow=0.42 cfs 0.030 af

Pond 14P: CB 4 to CB 5 Peak Elev=105.98' Inflow=0.54 cfs 0.039 af
12.0" Round Culvert n=0.013 L=25.0' S=0.0484 '/' Outflow=0.54 cfs 0.039 af

Pond 15P: CB 5 out Peak Elev=104.86' Inflow=0.81 cfs 0.060 af
12.0" Round Culvert n=0.013 L=10.0' S=0.0100 '/' Outflow=0.81 cfs 0.060 af

Total Runoff Area = 121.897 ac Runoff Volume = 1.680 af Average Runoff Depth = 0.17"
94.23% Pervious = 114.868 ac 5.77% Impervious = 7.029 ac

Summary for Subcatchment 1os: North Side of Mast Road to CB11

Runoff = 0.68 cfs @ 12.09 hrs, Volume= 0.057 af, Depth= 0.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
21,973	98	Paved roads w/curbs & sewers
5,800	30	Woods, Good, HSG A
17,293	39	>75% Grass cover, Good, HSG A
45,066	67	Weighted Average
23,093		51.24% Pervious Area
21,973		48.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 1S: Flow to Lot H-2

Runoff = 0.82 cfs @ 12.71 hrs, Volume= 0.338 af, Depth= 0.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
23,422	98	Impervious
335,880	30	Woods, Good, HSG A
215,930	39	Pasture/grassland/range, Good, HSG A
148,379	74	Pasture/grassland/range, Good, HSG C
41,694	80	Pasture/grassland/range, Good, HSG D
71,102	74	Pasture/grassland/range, Good, HSG C
70,496	80	Pasture/grassland/range, Good, HSG D
25,455	39	Pasture/grassland/range, Good, HSG A
106,398	61	Pasture/grassland/range, Good, HSG B
470	55	Woods, Good, HSG B
44,985	39	Pasture/grassland/range, Good, HSG A
274	74	Pasture/grassland/range, Good, HSG C
24,572	98	Paved parking & roofs
2,930	30	Woods, Good, HSG A
1,111,987	52	Weighted Average
1,063,993		95.68% Pervious Area
47,994		4.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.97		**Sheet Flow, FLOW OVER PAVEMENT** Smooth surfaces n= 0.011 P2= 3.00"
5.0	30	0.0730	0.10		**Sheet Flow, FLOW THROUGH WOODS** Woods: Light underbrush n= 0.400 P2= 3.00"
4.3	325	0.0630	1.25		**Shallow Concentrated Flow, FLOW THROUGH WOODS** Woodland Kv= 5.0 fps
10.3	833	0.0370	1.35		**Shallow Concentrated Flow, FLOW THROUGH PASTURE** Short Grass Pasture Kv= 7.0 fps
4.3	224	0.0300	0.87		**Shallow Concentrated Flow, FLOW THROUGH WOODS** Woodland Kv= 5.0 fps
24.2	1,432	Total			

Summary for Subcatchment 2os: Mast Road East to CB12

Runoff = 0.71 cfs @ 12.07 hrs, Volume= 0.053 af, Depth= 2.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
9,731	98	Paved roads w/curbs & sewers
199	39	>75% Grass cover, Good, HSG A
9,930	97	Weighted Average
199		2.00% Pervious Area
9,731		98.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 2S: Flow to Lot H-2

Runoff = 0.12 cfs @ 12.65 hrs, Volume= 0.046 af, Depth= 0.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
10,946	30	Woods, Good, HSG A
77,737	39	Pasture/grassland/range, Good, HSG A
259	30	Woods, Good, HSG A
53,984	74	Pasture/grassland/range, Good, HSG C
8,032	70	Woods, Good, HSG C
150,958	52	Weighted Average
150,958		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	50	0.0540	0.10		**Sheet Flow, FLOW THROUGH WOODS** Woods: Light underbrush n= 0.400 P2= 3.00"
1.2	101	0.0790	1.41		**Shallow Concentrated Flow, FLOW THROUGH WOODS** Woodland Kv= 5.0 fps
8.7	744	0.0417	1.43		**Shallow Concentrated Flow, FLOW THROUGH PASTURE** Short Grass Pasture Kv= 7.0 fps
2.1	115	0.0322	0.90		**Shallow Concentrated Flow, FLOW THROUGH WOODS** Woodland Kv= 5.0 fps
20.6	1,010	Total			

Summary for Subcatchment 3os: Route 108 offsite

Runoff = 0.12 cfs @ 12.07 hrs, Volume= 0.008 af, Depth= 1.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
2,104	98	Paved roads w/curbs & sewers
830	39	>75% Grass cover, Good, HSG A
2,934	81	Weighted Average
830		28.29% Pervious Area
2,104		71.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 3S: Flow to Lot H-2

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
41,153	39	Pasture/grassland/range, Good, HSG A
4,922	98	Impervious
20,887	55	Woods, Good, HSG B
293,867	30	Woods, Good, HSG A
360,829	33	Weighted Average
355,907		98.64% Pervious Area
4,922		1.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	14	0.0200	0.90		**Sheet Flow, FLOW OVER PAVEMENT** Smooth surfaces n= 0.011 P2= 3.00"
10.0	36	0.0190	0.06		**Sheet Flow, FLOW THROUGH WOODS** Woods: Light underbrush n= 0.400 P2= 3.00"
12.9	910	0.0550	1.17		**Shallow Concentrated Flow, FLOW THROUGH WOODS** Woodland Kv= 5.0 fps
3.0	147	0.0270	0.82		**Shallow Concentrated Flow, FLOW THROUGH WOODS** Woodland Kv= 5.0 fps
3.0	122	0.0189	0.69		**Shallow Concentrated Flow, FLOW THROUGH BRUSH** Woodland Kv= 5.0 fps
29.2	1,229	Total			

Summary for Subcatchment 4os: NH Route 108 to CB 3

Runoff = 0.42 cfs @ 12.08 hrs, Volume= 0.030 af, Depth= 1.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
7,244	98	Paved roads w/curbs & sewers
2,648	74	>75% Grass cover, Good, HSG C
4,040	39	>75% Grass cover, Good, HSG A
13,932	76	Weighted Average
6,688		48.00% Pervious Area
7,244		52.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 4S: Flow to Lot H-2A

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
384,995	30	Woods, Good, HSG A
7,520	76	Gravel roads, HSG A
4,607	98	Impervious
1,641	55	Woods, Good, HSG B
53,918	35	Brush, Fair, HSG A
452,681	32	Weighted Average
448,074		98.98% Pervious Area
4,607		1.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	16	0.0200	0.92		**Sheet Flow, FLOW OVER PAVEMENT** Smooth surfaces n= 0.011 P2= 3.00"
6.8	34	0.0440	0.08		**Sheet Flow, FLOW THROUGH WOODS** Woods: Light underbrush n= 0.400 P2= 3.00"
10.7	731	0.0520	1.14		**Shallow Concentrated Flow, FLOW THROUGH WOODS** Woodland Kv= 5.0 fps
4.5	302	0.0510	1.13		**Shallow Concentrated Flow, FLOW THROUGH BRUSH** Woodland Kv= 5.0 fps
1.5	83	0.0360	0.95		**Shallow Concentrated Flow, FLOW THROUGH WOODS** Woodland Kv= 5.0 fps
23.8	1,166	Total			

Summary for Subcatchment 5os: Drive to CB 4

Runoff = 0.12 cfs @ 12.07 hrs, Volume= 0.010 af, Depth= 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
1,717	98	Paved roads w/curbs & sewers
1,717		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 5S: Flow to Lot H-2A

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
670	98	Impervious
107,090	30	Woods, Good, HSG A
107,760	30	Weighted Average
107,090		99.38% Pervious Area
670		0.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	5	0.0200	0.73		**Sheet Flow, FLOW OVER PAVEMENT** Smooth surfaces n= 0.011 P2= 3.00"
8.9	45	0.0400	0.08		**Sheet Flow, FLOW THROUGH WOODS** Woods: Light underbrush n= 0.400 P2= 3.00"
11.1	739	0.0490	1.11		**Shallow Concentrated Flow, FLOW THROUGH WOODS** Woodland Kv= 5.0 fps
0.3	33	0.1818	2.13		**Shallow Concentrated Flow, FLOW THROUGH WOODS** Woodland Kv= 5.0 fps
3.0	117	0.0171	0.65		**Shallow Concentrated Flow, FLOW THROUGH WOODS** Woodland Kv= 5.0 fps
3.4	177	0.0300	0.87		**Shallow Concentrated Flow, FLOW THROUGH WOODS** Woodland Kv= 5.0 fps
26.8	1,116	Total			

Summary for Subcatchment 6os: Drive to CB 5

Runoff = 0.27 cfs @ 12.07 hrs, Volume= 0.021 af, Depth= 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
3,747	98	Paved roads w/curbs & sewers
3,747		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 7os: NH Route 108 to existing culvert

Runoff = 1.27 cfs @ 12.07 hrs, Volume= 0.087 af, Depth= 1.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
13,369	98	Paved roads w/curbs & sewers
11,049	74	>75% Grass cover, Good, HSG C
24,418	87	Weighted Average
11,049		45.25% Pervious Area
13,369		54.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 11S: flow to reach 2R

Runoff = 0.10 cfs @ 12.20 hrs, Volume= 0.014 af, Depth= 0.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
3,803	30	Woods, Good, HSG A
13,564	70	Woods, Good, HSG C
17,367	61	Weighted Average
17,367		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	50	0.0400	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.00"
0.6	29	0.0241	0.78		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.3	79	Total			

Summary for Subcatchment 12S: Flow to Lot H-2 (REACH 1AR)

Runoff = 5.71 cfs @ 12.14 hrs, Volume= 0.474 af, Depth= 1.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
551	70	Woods, Good, HSG C
37,556	74	Pasture/grassland/range, Good, HSG C
701	70	Woods, Good, HSG C
19,528	74	Pasture/grassland/range, Good, HSG C
7,813	74	Pasture/grassland/range, Good, HSG C
8,566	77	Woods, Good, HSG D
120	77	Brush, Fair, HSG D
82,531	80	Pasture/grassland/range, Good, HSG D
23,565	80	Pasture/grassland/range, Good, HSG D
10,706	98	Impervious
191,637	79	Weighted Average
180,931		94.41% Pervious Area
10,706		5.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	50	0.0800	0.17		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.00"
3.6	263	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	332	0.0250	3.59	334.67	**Parabolic Channel,** W=140.00' D=1.00' Area=93.3 sf Perim=140.0' n= 0.050
10.0	645	Total			

Summary for Subcatchment 14S: Flow to Lot H-2

Runoff = 1.88 cfs @ 12.15 hrs, Volume= 0.162 af, Depth= 1.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
17,221	74	Pasture/grassland/range, Good, HSG C
36,737	80	Pasture/grassland/range, Good, HSG D
18,706	70	Woods, Good, HSG C
3,459	77	Woods, Good, HSG D
76,123	76	Weighted Average
76,123		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	50	0.0220	0.10		**Sheet Flow, FLOW THROUGH PASTURE** Grass: Dense n= 0.240 P2= 3.00"
0.8	74	0.0439	1.47		**Shallow Concentrated Flow, FLOW THROUGH PASTURE** Short Grass Pasture Kv= 7.0 fps
0.7	152	0.0310	3.44	220.23	**Parabolic Channel,** W=120.00' D=0.80' Area=64.0 sf Perim=120.0' n= 0.050
0.8	140	0.0236	3.00	192.15	**Parabolic Channel,** W=120.00' D=0.80' Area=64.0 sf Perim=120.0' n= 0.050
10.4	416	Total			

Summary for Subcatchment 15S: offsite flow

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
308,398	30	Woods, Good, HSG A
6,100	98	Paved parking & roofs
43,560	39	>75% Grass cover, Good, HSG A
358,058	32	Weighted Average
351,958		98.30% Pervious Area
6,100		1.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
7.6	38	0.0420	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.00"
19.7	1,210	0.0420	1.02		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
27.5	1,260	Total			

Summary for Subcatchment 16S: offsite flow

Runoff = 0.50 cfs @ 15.05 hrs, Volume= 0.315 af, Depth= 0.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
9,858	30	Woods, Good, HSG A
13,459	35	Brush, Fair, HSG A
25,519	70	Woods, Good, HSG C
28,002	70	Brush, Fair, HSG C
40,537	77	Brush, Fair, HSG D
15,070	80	Pasture/grassland/range, Good, HSG D
12,170	77	Woods, Good, HSG D
4,441	98	Paved parking & roofs
32,048	70	Woods, Good, HSG C
30,577	79	Pasture/grassland/range, Fair, HSG C
5,334	98	Paved parking & roofs
16,304	80	>75% Grass cover, Good, HSG D
10,644	77	Woods, Good, HSG D
9,584	98	Paved parking & roofs
58,128	98	Paved parking & roofs
65,340	74	>75% Grass cover, Good, HSG C
260,648	70	Woods, Good, HSG C
999,761	30	Woods, Good, HSG A
326,700	39	>75% Grass cover, Good, HSG A
88,350	98	Paved parking & roofs
2,052,474	48	Weighted Average
1,886,637		91.92% Pervious Area
165,837		8.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.9	100	0.0150	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.00"
7.6	370	0.0260	0.81		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	136	0.0126	6.06	262.50	**Parabolic Channel,** W=50.00' D=1.30' Area=43.3 sf Perim=50.1' n= 0.025
0.3	194	0.0284	9.61	153.83	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=2.00' Z= 2.0 '/' Top.W=12.00' n= 0.030
0.9	512	0.0258	9.08	163.39	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=2.00' Z= 2.5 '/' Top.W=14.00' n= 0.030
0.2	100	0.0190	7.79	140.22	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=2.00' Z= 2.5 '/' Top.W=14.00' n= 0.030
34.3	1,412	Total			

Summary for Subcatchment 30S: Flow to Lot H-2

Runoff = 0.36 cfs @ 12.31 hrs, Volume= 0.049 af, Depth= 0.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
215	30	Woods, Good, HSG A
1,600	85	Gravel roads, HSG B
1,110	89	Gravel roads, HSG C
10,188	55	Woods, Good, HSG B
1,310	70	Woods, Good, HSG C
22,056	70	Brush, Fair, HSG C
11,719	56	Brush, Fair, HSG B
48,198	64	Weighted Average
48,198		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	50	0.0200	0.07		**Sheet Flow, FLOW THROUGH WOODS** Woods: Light underbrush n= 0.400 P2= 3.00"
4.7	200	0.0200	0.71		**Shallow Concentrated Flow, FLOW THROUGH WOODS** Woodland Kv= 5.0 fps
17.4	250	Total			

Summary for Subcatchment 40S: Flow to Lot H-2A

Runoff = 0.03 cfs @ 15.06 hrs, Volume= 0.018 af, Depth= 0.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
18,496	70	Woods, Good, HSG C
15,979	70	Brush, Fair, HSG C
16,386	56	Brush, Fair, HSG B
1,188	55	Woods, Good, HSG B
1,320	85	Gravel roads, HSG B
30,854	30	Woods, Good, HSG A
5,490	76	Gravel roads, HSG A
1,978	30	Woods, Good, HSG A
52,548	35	Brush, Fair, HSG A
144,239	47	Weighted Average
144,239		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.0560	0.10		**Sheet Flow, FLOW THROUGH WOODS** Woods: Light underbrush n= 0.400 P2= 3.00"
6.1	402	0.0490	1.11		**Shallow Concentrated Flow, FLOW THROUGH WOODS** Woodland Kv= 5.0 fps
14.5	452	Total			

Summary for Subcatchment 50S: Flow to Lot H-2A

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
100,348	30	Woods, Good, HSG A
5,456	98	Impervious
1,920	76	Gravel roads, HSG A
28,063	35	Brush, Fair, HSG A
135,787	34	Weighted Average
130,331		95.98% Pervious Area
5,456		4.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	50	0.0500	0.09		**Sheet Flow, FLOW THROUGH WOODS** Woods: Light underbrush n= 0.400 P2= 3.00"
9.3	610	0.0479	1.09		**Shallow Concentrated Flow, FLOW THROUGH WOODS** Woodland Kv= 5.0 fps
0.3	33	0.1818	2.13		**Shallow Concentrated Flow, FLOW THROUGH WOODS** Woodland Kv= 5.0 fps
3.0	117	0.0171	0.65		**Shallow Concentrated Flow, FLOW THROUGH WOODS** Woodland Kv= 5.0 fps
3.4	177	0.0300	0.87		**Shallow Concentrated Flow, FLOW THROUGH WOODS** Woodland Kv= 5.0 fps
24.8	987	Total			

Summary for Reach 1AR: STREAM

Inflow Area = 4.399 ac, 5.59% Impervious, Inflow Depth = 1.29" for 2 YR event
Inflow = 5.71 cfs @ 12.14 hrs, Volume= 0.474 af
Outflow = 5.52 cfs @ 12.17 hrs, Volume= 0.474 af, Atten= 3%, Lag= 1.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.57 fps, Min. Travel Time= 2.4 min
Avg. Velocity = 0.81 fps, Avg. Travel Time= 7.6 min

Peak Storage= 794 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.42'
Bank-Full Depth= 2.00' Flow Area= 18.0 sf, Capacity= 108.07 cfs

4.00' x 2.00' deep channel, n= 0.050
Side Slope Z-value= 2.5 '/' Top Width= 14.00'
Length= 370.0' Slope= 0.0314 '/'
Inlet Invert= 87.70', Outlet Invert= 76.10'



Summary for Reach 1BR: STREAM

Inflow Area = 27.275 ac, 4.04% Impervious, Inflow Depth = 0.22" for 2 YR event
Inflow = 1.88 cfs @ 12.15 hrs, Volume= 0.500 af
Outflow = 1.81 cfs @ 12.18 hrs, Volume= 0.500 af, Atten= 4%, Lag= 1.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.90 fps, Min. Travel Time= 2.7 min
Avg. Velocity = 0.99 fps, Avg. Travel Time= 5.2 min

Peak Storage= 296 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 2.00' Flow Area= 18.0 sf, Capacity= 119.58 cfs

4.00' x 2.00' deep channel, n= 0.050
Side Slope Z-value= 2.5 '/' Top Width= 14.00'
Length= 310.0' Slope= 0.0384 '/'
Inlet Invert= 88.00', Outlet Invert= 76.10'



Summary for Reach 1R: STREAM

[62] Hint: Exceeded Reach 1AR OUTLET depth by 0.18' @ 12.26 hrs
[62] Hint: Exceeded Reach 1BR OUTLET depth by 0.37' @ 12.22 hrs

Inflow Area = 31.675 ac, 4.25% Impervious, Inflow Depth = 0.37" for 2 YR event
Inflow = 7.33 cfs @ 12.17 hrs, Volume= 0.974 af
Outflow = 7.02 cfs @ 12.21 hrs, Volume= 0.974 af, Atten= 4%, Lag= 2.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.22 fps, Min. Travel Time= 2.8 min
Avg. Velocity = 0.84 fps, Avg. Travel Time= 7.5 min

Peak Storage= 1,199 cf @ 12.21 hrs
Average Depth at Peak Storage= 0.58'
Bank-Full Depth= 2.00' Flow Area= 18.0 sf, Capacity= 78.59 cfs

4.00' x 2.00' deep channel, n= 0.050
Side Slope Z-value= 2.5 '/' Top Width= 14.00'
Length= 380.0' Slope= 0.0166 '/'
Inlet Invert= 76.10', Outlet Invert= 69.80'



Summary for Reach 2R: REACH 2

Inflow Area = 3.864 ac, 0.00% Impervious, Inflow Depth = 0.19" for 2 YR event
Inflow = 0.17 cfs @ 12.56 hrs, Volume= 0.060 af
Outflow = 0.14 cfs @ 12.76 hrs, Volume= 0.060 af, Atten= 13%, Lag= 12.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.61 fps, Min. Travel Time= 15.4 min
Avg. Velocity = 0.37 fps, Avg. Travel Time= 24.9 min

Peak Storage= 134 cf @ 12.76 hrs
Average Depth at Peak Storage= 0.06'
Bank-Full Depth= 1.50' Flow Area= 10.5 sf, Capacity= 42.77 cfs

4.00' x 1.50' deep channel, n= 0.050
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 560.0' Slope= 0.0193 '/'
Inlet Invert= 93.80', Outlet Invert= 83.00'



Summary for Reach 3R: REACH 3

Inflow Area = 9.390 ac, 1.20% Impervious, Inflow Depth = 0.06" for 2 YR event
Inflow = 0.36 cfs @ 12.31 hrs, Volume= 0.049 af
Outflow = 0.33 cfs @ 12.42 hrs, Volume= 0.049 af, Atten= 8%, Lag= 6.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.78 fps, Min. Travel Time= 7.3 min
Avg. Velocity = 0.31 fps, Avg. Travel Time= 18.4 min

Peak Storage= 145 cf @ 12.42 hrs
Average Depth at Peak Storage= 0.08'
Bank-Full Depth= 1.00' Flow Area= 7.0 sf, Capacity= 24.05 cfs

5.00' x 1.00' deep channel, n= 0.050
Side Slope Z-value= 2.0 '/' Top Width= 9.00'
Length= 340.0' Slope= 0.0200 '/'
Inlet Invert= 95.30', Outlet Invert= 88.50'



‡

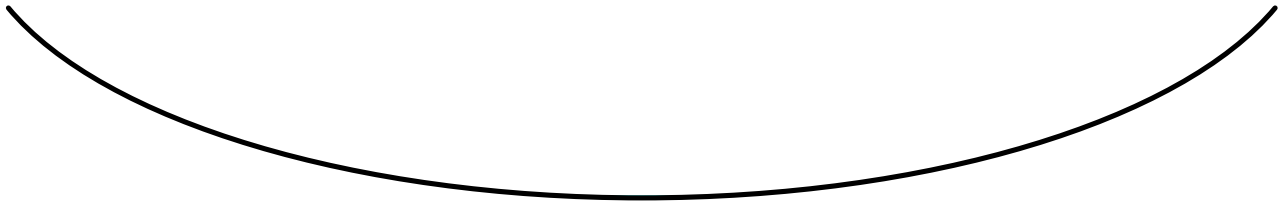
Summary for Reach 4R: REACH 4

Inflow Area = 13.703 ac, 0.77% Impervious, Inflow Depth = 0.02" for 2 YR event
Inflow = 0.03 cfs @ 15.06 hrs, Volume= 0.018 af
Outflow = 0.03 cfs @ 15.23 hrs, Volume= 0.018 af, Atten= 1%, Lag= 10.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.23 fps, Min. Travel Time= 18.6 min
Avg. Velocity = 0.21 fps, Avg. Travel Time= 20.5 min

Peak Storage= 31 cf @ 15.23 hrs
Average Depth at Peak Storage= 0.02'
Bank-Full Depth= 2.00' Flow Area= 106.7 sf, Capacity= 468.29 cfs

80.00' x 2.00' deep Parabolic Channel, n= 0.050
Length= 255.0' Slope= 0.0149 '/'
Inlet Invert= 95.80', Outlet Invert= 92.00'



‡

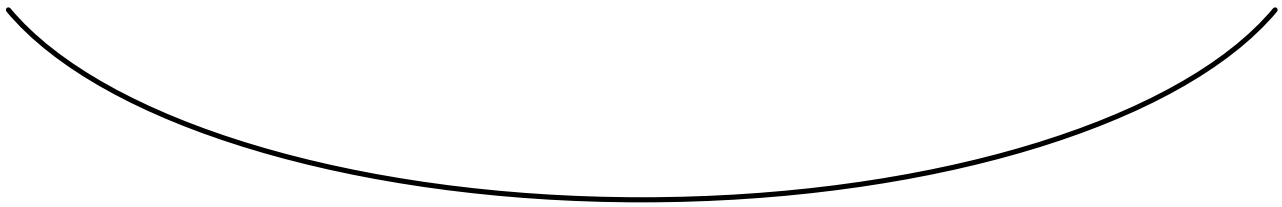
Summary for Reach 5R: REACH 5

Inflow Area = 13.811 ac, 2.03% Impervious, Inflow Depth = 0.00" for 2 YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.30' Flow Area= 99.7 sf, Capacity= 409.57 cfs

115.00' x 1.30' deep Parabolic Channel, n= 0.050
Length= 540.0' Slope= 0.0231 '/'
Inlet Invert= 104.50', Outlet Invert= 92.00'



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Summary for Reach 6R: REACH 6

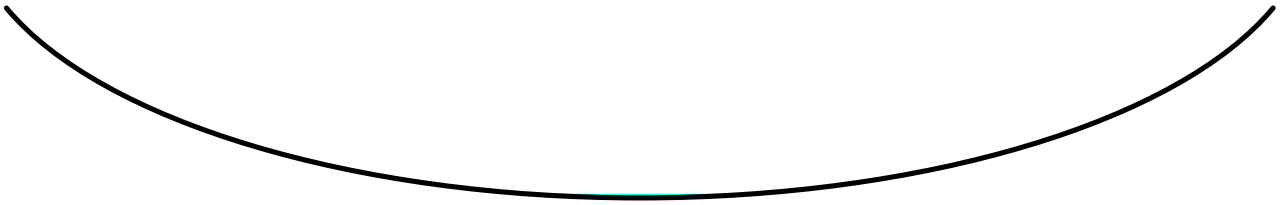
[62] Hint: Exceeded Reach 4R OUTLET depth by 0.01' @ 24.76 hrs
[62] Hint: Exceeded Reach 5R OUTLET depth by 0.03' @ 15.51 hrs

Inflow Area = 27.514 ac, 1.40% Impervious, Inflow Depth = 0.01" for 2 YR event
Inflow = 0.03 cfs @ 15.23 hrs, Volume= 0.018 af
Outflow = 0.03 cfs @ 15.51 hrs, Volume= 0.018 af, Atten= 1%, Lag= 16.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.22 fps, Min. Travel Time= 20.6 min
Avg. Velocity = 0.19 fps, Avg. Travel Time= 24.9 min

Peak Storage= 34 cf @ 15.51 hrs
Average Depth at Peak Storage= 0.03'
Bank-Full Depth= 1.30' Flow Area= 43.3 sf, Capacity= 131.20 cfs

50.00' x 1.30' deep Parabolic Channel, n= 0.050
Length= 278.0' Slope= 0.0126 '/'
Inlet Invert= 92.00', Outlet Invert= 88.50'



‡

Summary for Reach 7R: STREAM

[62] Hint: Exceeded Reach 3R OUTLET depth by 0.01' @ 15.71 hrs
[62] Hint: Exceeded Reach 6R OUTLET depth by 0.08' @ 12.47 hrs

Inflow Area = 36.904 ac, 1.35% Impervious, Inflow Depth = 0.02" for 2 YR event
Inflow = 0.33 cfs @ 12.42 hrs, Volume= 0.067 af
Outflow = 0.33 cfs @ 12.47 hrs, Volume= 0.067 af, Atten= 1%, Lag= 2.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.93 fps, Min. Travel Time= 3.5 min
Avg. Velocity = 0.45 fps, Avg. Travel Time= 7.1 min

Peak Storage= 68 cf @ 12.47 hrs
Average Depth at Peak Storage= 0.08'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 92.22 cfs

4.00' x 2.00' deep channel, n= 0.050
Side Slope Z-value= 2.0 '/' Top Width= 12.00'
Length= 194.0' Slope= 0.0284 '/'
Inlet Invert= 88.50', Outlet Invert= 83.00'



Summary for Reach 8R: STREAM

[62] Hint: Exceeded Reach 2R OUTLET depth by 0.04' @ 12.60 hrs
[62] Hint: Exceeded Reach 7R OUTLET depth by 0.03' @ 12.96 hrs

Inflow Area = 40.769 ac, 1.23% Impervious, Inflow Depth = 0.04" for 2 YR event
Inflow = 0.43 cfs @ 12.55 hrs, Volume= 0.127 af
Outflow = 0.40 cfs @ 12.67 hrs, Volume= 0.127 af, Atten= 6%, Lag= 7.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.97 fps, Min. Travel Time= 8.8 min
Avg. Velocity = 0.53 fps, Avg. Travel Time= 16.1 min

Peak Storage= 212 cf @ 12.67 hrs
Average Depth at Peak Storage= 0.10'
Bank-Full Depth= 2.00' Flow Area= 18.0 sf, Capacity= 98.00 cfs

4.00' x 2.00' deep channel, n= 0.050
Side Slope Z-value= 2.5 '/' Top Width= 14.00'
Length= 512.0' Slope= 0.0258 '/'
Inlet Invert= 83.00', Outlet Invert= 69.80'



Summary for Reach 9R: STREAM

[62] Hint: Exceeded Reach 1R OUTLET depth by 0.02' @ 12.74 hrs
[62] Hint: Exceeded Reach 8R OUTLET depth by 0.55' @ 12.21 hrs

Inflow Area = 72.443 ac, 2.55% Impervious, Inflow Depth = 0.18" for 2 YR event
Inflow = 7.03 cfs @ 12.21 hrs, Volume= 1.100 af
Outflow = 7.01 cfs @ 12.22 hrs, Volume= 1.100 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.33 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 0.87 fps, Avg. Travel Time= 1.9 min

Peak Storage= 301 cf @ 12.22 hrs
Average Depth at Peak Storage= 0.56'
Bank-Full Depth= 2.00' Flow Area= 18.0 sf, Capacity= 84.13 cfs

4.00' x 2.00' deep channel, n= 0.050
Side Slope Z-value= 2.5 '/' Top Width= 14.00'
Length= 100.0' Slope= 0.0190 '/'
Inlet Invert= 69.80', Outlet Invert= 67.90'



Summary for Reach 16R: Existing Cuvert

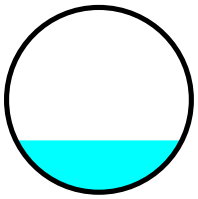
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.561 ac, 54.75% Impervious, Inflow Depth = 1.86" for 2 YR event
Inflow = 1.27 cfs @ 12.07 hrs, Volume= 0.087 af
Outflow = 1.27 cfs @ 12.07 hrs, Volume= 0.087 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.53 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.55 fps, Avg. Travel Time= 0.5 min

Peak Storage= 13 cf @ 12.07 hrs
Average Depth at Peak Storage= 0.35'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 7.45 cfs

15.0" Round Pipe
n= 0.012 Concrete pipe, finished
Length= 45.0' Slope= 0.0113 '/'
Inlet Invert= 90.05', Outlet Invert= 89.54'



Summary for Pond 10P: CULVERT UNDER NH ROUTE 108

[62] Hint: Exceeded Reach 9R OUTLET depth by 0.46' @ 12.22 hrs

Inflow Area = 119.561 ac, 4.73% Impervious, Inflow Depth = 0.14" for 2 YR event
Inflow = 7.01 cfs @ 12.22 hrs, Volume= 1.415 af
Outflow = 7.01 cfs @ 12.22 hrs, Volume= 1.415 af, Atten= 0%, Lag= 0.0 min
Primary = 7.01 cfs @ 12.22 hrs, Volume= 1.415 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 68.91' @ 12.22 hrs
Flood Elev= 74.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	67.90'	**48.0" Round Culvert** L= 63.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 67.90' / 67.50' S= 0.0063 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf

Primary OutFlow Max=7.01 cfs @ 12.22 hrs HW=68.91' (Free Discharge)
↑**1=Culvert** (Barrel Controls 7.01 cfs @ 4.21 fps)

Summary for Pond 11P: CB11 to CB12

[57] Hint: Peaked at 105.59' (Flood elevation advised)

Inflow Area = 1.035 ac, 48.76% Impervious, Inflow Depth = 0.66" for 2 YR event
Inflow = 0.68 cfs @ 12.09 hrs, Volume= 0.057 af
Outflow = 0.68 cfs @ 12.09 hrs, Volume= 0.057 af, Atten= 0%, Lag= 0.0 min
Primary = 0.68 cfs @ 12.09 hrs, Volume= 0.057 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 105.59' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	105.11'	**12.0" Round Culvert** L= 19.0' Ke= 0.500 Inlet / Outlet Invert= 105.11' / 104.86' S= 0.0132 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.69 cfs @ 12.09 hrs HW=105.58' TW=105.35' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 0.69 cfs @ 2.73 fps)

Summary for Pond 12R: From CB12 out

Inflow Area = 1.263 ac, 57.65% Impervious, Inflow Depth = 1.04" for 2 YR event
Inflow = 1.38 cfs @ 12.08 hrs, Volume= 0.110 af
Outflow = 1.38 cfs @ 12.08 hrs, Volume= 0.110 af, Atten= 0%, Lag= 0.0 min
Primary = 1.38 cfs @ 12.08 hrs, Volume= 0.110 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 105.36' @ 12.08 hrs
Flood Elev= 109.68'

Device	Routing	Invert	Outlet Devices
#1	Primary	104.63'	**12.0" Round Culvert** L= 20.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 104.63' / 104.53' S= 0.0050 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.37 cfs @ 12.08 hrs HW=105.36' (Free Discharge)
↑**1=Culvert** (Barrel Controls 1.37 cfs @ 3.14 fps)

Summary for Pond 13P: CB 3 to CB 4

[57] Hint: Peaked at 106.95' (Flood elevation advised)

Inflow Area = 0.320 ac, 52.00% Impervious, Inflow Depth = 1.11" for 2 YR event
Inflow = 0.42 cfs @ 12.08 hrs, Volume= 0.030 af
Outflow = 0.42 cfs @ 12.08 hrs, Volume= 0.030 af, Atten= 0%, Lag= 0.0 min
Primary = 0.42 cfs @ 12.08 hrs, Volume= 0.030 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 106.95' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	106.63'	**12.0" Round Culvert** L= 98.0' Ke= 0.500 Inlet / Outlet Invert= 106.63' / 105.64' S= 0.0101 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=0.41 cfs @ 12.08 hrs HW=106.95' TW=105.98' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.41 cfs @ 2.81 fps)

Summary for Pond 14P: CB 4 to CB 5

[57] Hint: Peaked at 105.98' (Flood elevation advised)

Inflow Area = 0.359 ac, 57.26% Impervious, Inflow Depth = 1.31" for 2 YR event
Inflow = 0.54 cfs @ 12.07 hrs, Volume= 0.039 af
Outflow = 0.54 cfs @ 12.07 hrs, Volume= 0.039 af, Atten= 0%, Lag= 0.0 min
Primary = 0.54 cfs @ 12.07 hrs, Volume= 0.039 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 105.98' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	105.61'	**12.0" Round Culvert** L= 25.0' Ke= 0.500 Inlet / Outlet Invert= 105.61' / 104.40' S= 0.0484 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=0.54 cfs @ 12.07 hrs HW=105.98' TW=104.86' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.54 cfs @ 2.06 fps)

Summary for Pond 15P: CB 5 out

[57] Hint: Peaked at 104.86' (Flood elevation advised)

Inflow Area = 0.445 ac, 65.52% Impervious, Inflow Depth = 1.62" for 2 YR event
Inflow = 0.81 cfs @ 12.07 hrs, Volume= 0.060 af
Outflow = 0.81 cfs @ 12.07 hrs, Volume= 0.060 af, Atten= 0%, Lag= 0.0 min
Primary = 0.81 cfs @ 12.07 hrs, Volume= 0.060 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 104.86' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	104.33'	**12.0" Round Culvert** L= 10.0' Ke= 0.500 Inlet / Outlet Invert= 104.33' / 104.23' S= 0.0100 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=0.81 cfs @ 12.07 hrs HW=104.86' (Free Discharge)
1=Culvert (Barrel Controls 0.81 cfs @ 2.81 fps)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1os: North Side of Mast Runoff Area=45,066 sf 48.76% Impervious Runoff Depth=1.62"
Tc=5.0 min CN=67 Runoff=1.96 cfs 0.140 af

Subcatchment 1S: Flow to Lot H-2 Runoff Area=1,111,987 sf 4.32% Impervious Runoff Depth=0.69"
Flow Length=1,432' Tc=24.2 min CN=52 Runoff=8.88 cfs 1.469 af

Subcatchment 2os: Mast Road East to CB12 Runoff Area=9,930 sf 98.00% Impervious Runoff Depth=4.39"
Tc=5.0 min CN=97 Runoff=1.09 cfs 0.083 af

Subcatchment 2S: Flow to Lot H-2 Runoff Area=150,958 sf 0.00% Impervious Runoff Depth=0.69"
Flow Length=1,010' Tc=20.6 min CN=52 Runoff=1.27 cfs 0.199 af

Subcatchment 3os: Route 108 offsite Runoff Area=2,934 sf 71.71% Impervious Runoff Depth=2.76"
Tc=5.0 min CN=81 Runoff=0.23 cfs 0.015 af

Subcatchment 3S: Flow to Lot H-2 Runoff Area=360,829 sf 1.36% Impervious Runoff Depth=0.02"
Flow Length=1,229' Tc=29.2 min CN=33 Runoff=0.02 cfs 0.015 af

Subcatchment 4os: NH Route 108 to CB 3 Runoff Area=13,932 sf 52.00% Impervious Runoff Depth=2.32"
Tc=5.0 min CN=76 Runoff=0.90 cfs 0.062 af

Subcatchment 4S: Flow to Lot H-2A Runoff Area=452,681 sf 1.02% Impervious Runoff Depth=0.01"
Flow Length=1,166' Tc=23.8 min CN=32 Runoff=0.02 cfs 0.010 af

Subcatchment 5os: Drive to CB 4 Runoff Area=1,717 sf 100.00% Impervious Runoff Depth=4.50"
Tc=5.0 min CN=98 Runoff=0.19 cfs 0.015 af

Subcatchment 5S: Flow to Lot H-2A Runoff Area=107,760 sf 0.62% Impervious Runoff Depth=0.00"
Flow Length=1,116' Tc=26.8 min CN=30 Runoff=0.00 cfs 0.000 af

Subcatchment 6os: Drive to CB 5 Runoff Area=3,747 sf 100.00% Impervious Runoff Depth=4.50"
Tc=5.0 min CN=98 Runoff=0.41 cfs 0.032 af

Subcatchment 7os: NH Route 108 to Runoff Area=24,418 sf 54.75% Impervious Runoff Depth=3.32"
Tc=5.0 min CN=87 Runoff=2.23 cfs 0.155 af

Subcatchment 11S: flow to reach 2R Runoff Area=17,367 sf 0.00% Impervious Runoff Depth=1.22"
Flow Length=79' Tc=10.3 min CN=61 Runoff=0.44 cfs 0.040 af

Subcatchment 12S: Flow to Lot H-2 Runoff Area=191,637 sf 5.59% Impervious Runoff Depth=2.58"
Flow Length=645' Tc=10.0 min CN=79 Runoff=11.63 cfs 0.946 af

Subcatchment 14S: Flow to Lot H-2 Runoff Area=76,123 sf 0.00% Impervious Runoff Depth=2.32"
Flow Length=416' Tc=10.4 min CN=76 Runoff=4.09 cfs 0.338 af

Subcatchment 15S: offsite flow Runoff Area=358,058 sf 1.70% Impervious Runoff Depth=0.01"
Flow Length=1,260' Tc=27.5 min CN=32 Runoff=0.02 cfs 0.008 af

Subcatchment 16S: offsite flow Runoff Area=2,052,474 sf 8.08% Impervious Runoff Depth=0.49"
Flow Length=1,412' Tc=34.3 min CN=48 Runoff=8.26 cfs 1.939 af

Subcatchment 30S: Flow to Lot H-2 Runoff Area=48,198 sf 0.00% Impervious Runoff Depth=1.41"
Flow Length=250' Slope=0.0200 '/' Tc=17.4 min CN=64 Runoff=1.21 cfs 0.130 af

Subcatchment 40S: Flow to Lot H-2A Runoff Area=144,239 sf 0.00% Impervious Runoff Depth=0.45"
Flow Length=452' Tc=14.5 min CN=47 Runoff=0.64 cfs 0.124 af

Subcatchment 50S: Flow to Lot H-2A Runoff Area=135,787 sf 4.02% Impervious Runoff Depth=0.04"
Flow Length=987' Tc=24.8 min CN=34 Runoff=0.01 cfs 0.009 af

Reach 1AR: STREAM Avg. Flow Depth=0.63' Max Vel=3.21 fps Inflow=11.63 cfs 0.946 af
n=0.050 L=370.0' S=0.0314 '/' Capacity=108.07 cfs Outflow=11.36 cfs 0.946 af

Reach 1BR: STREAM Avg. Flow Depth=0.58' Max Vel=3.38 fps Inflow=10.69 cfs 1.808 af
n=0.050 L=310.0' S=0.0384 '/' Capacity=119.58 cfs Outflow=10.66 cfs 1.808 af

Reach 1R: STREAM Avg. Flow Depth=0.94' Max Vel=2.90 fps Inflow=17.68 cfs 2.753 af
n=0.050 L=380.0' S=0.0166 '/' Capacity=78.59 cfs Outflow=17.42 cfs 2.753 af

Reach 2R: REACH 2 Avg. Flow Depth=0.23' Max Vel=1.43 fps Inflow=1.54 cfs 0.240 af
n=0.050 L=560.0' S=0.0193 '/' Capacity=42.77 cfs Outflow=1.46 cfs 0.240 af

Reach 3R: REACH 3 Avg. Flow Depth=0.17' Max Vel=1.24 fps Inflow=1.21 cfs 0.146 af
n=0.050 L=340.0' S=0.0200 '/' Capacity=24.05 cfs Outflow=1.16 cfs 0.146 af

Reach 4R: REACH 4 Avg. Flow Depth=0.09' Max Vel=0.57 fps Inflow=0.64 cfs 0.133 af
n=0.050 L=255.0' S=0.0149 '/' Capacity=468.29 cfs Outflow=0.60 cfs 0.133 af

Reach 5R: REACH 5 Avg. Flow Depth=0.01' Max Vel=0.22 fps Inflow=0.03 cfs 0.017 af
n=0.050 L=540.0' S=0.0231 '/' Capacity=409.57 cfs Outflow=0.03 cfs 0.017 af

Reach 6R: REACH 6 Avg. Flow Depth=0.10' Max Vel=0.56 fps Inflow=0.60 cfs 0.150 af
n=0.050 L=278.0' S=0.0126 '/' Capacity=131.20 cfs Outflow=0.54 cfs 0.150 af

Reach 7R: STREAM Avg. Flow Depth=0.20' Max Vel=1.58 fps Inflow=1.36 cfs 0.296 af
n=0.050 L=194.0' S=0.0284 '/' Capacity=92.22 cfs Outflow=1.36 cfs 0.296 af

Reach 8R: STREAM Avg. Flow Depth=0.30' Max Vel=1.93 fps Inflow=2.82 cfs 0.536 af
n=0.050 L=512.0' S=0.0258 '/' Capacity=98.00 cfs Outflow=2.78 cfs 0.536 af

Reach 9R: STREAM Avg. Flow Depth=0.95' Max Vel=3.13 fps Inflow=19.05 cfs 3.289 af
n=0.050 L=100.0' S=0.0190 '/' Capacity=84.13 cfs Outflow=19.05 cfs 3.289 af

Reach 16R: Existing Cuvert Avg. Flow Depth=0.47' Max Vel=5.30 fps Inflow=2.23 cfs 0.155 af
15.0" Round Pipe n=0.012 L=45.0' S=0.0113 '/' Capacity=7.45 cfs Outflow=2.23 cfs 0.155 af

Pond 10P: CULVERT UNDER NH ROUTE 108 Peak Elev=69.95' Inflow=24.79 cfs 5.228 af
48.0" Round Culvert n=0.013 L=63.0' S=0.0063 '/' Outflow=24.79 cfs 5.228 af

Pond 11P: CB11 to CB12 Peak Elev=106.21' Inflow=1.96 cfs 0.140 af
12.0" Round Culvert n=0.010 L=19.0' S=0.0132 '/' Outflow=1.96 cfs 0.140 af

Pond 12R: From CB12 out Peak Elev=105.94' Inflow=3.04 cfs 0.223 af
12.0" Round Culvert n=0.010 L=20.0' S=0.0050 '/' Outflow=3.04 cfs 0.223 af

Pond 13P: CB 3 to CB 4 Peak Elev=107.13' Inflow=0.90 cfs 0.062 af
12.0" Round Culvert n=0.013 L=98.0' S=0.0101 '/' Outflow=0.90 cfs 0.062 af

Pond 14P: CB 4 to CB 5 Peak Elev=106.15' Inflow=1.09 cfs 0.077 af
12.0" Round Culvert n=0.013 L=25.0' S=0.0484 '/' Outflow=1.09 cfs 0.077 af

Pond 15P: CB 5 out Peak Elev=105.09' Inflow=1.50 cfs 0.109 af
12.0" Round Culvert n=0.013 L=10.0' S=0.0100 '/' Outflow=1.50 cfs 0.109 af

Total Runoff Area = 121.897 ac Runoff Volume = 5.732 af Average Runoff Depth = 0.56"
94.23% Pervious = 114.868 ac 5.77% Impervious = 7.029 ac

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1os: North Side of Mast Runoff Area=45,066 sf 48.76% Impervious Runoff Depth=2.54"
Tc=5.0 min CN=67 Runoff=3.15 cfs 0.219 af

Subcatchment 1S: Flow to Lot H-2 Runoff Area=1,111,987 sf 4.32% Impervious Runoff Depth=1.29"
Flow Length=1,432' Tc=24.2 min CN=52 Runoff=20.18 cfs 2.754 af

Subcatchment 2os: Mast Road East to CB12 Runoff Area=9,930 sf 98.00% Impervious Runoff Depth=5.65"
Tc=5.0 min CN=97 Runoff=1.38 cfs 0.107 af

Subcatchment 2S: Flow to Lot H-2 Runoff Area=150,958 sf 0.00% Impervious Runoff Depth=1.29"
Flow Length=1,010' Tc=20.6 min CN=52 Runoff=2.91 cfs 0.374 af

Subcatchment 3os: Route 108 offsite Runoff Area=2,934 sf 71.71% Impervious Runoff Depth=3.89"
Tc=5.0 min CN=81 Runoff=0.32 cfs 0.022 af

Subcatchment 3S: Flow to Lot H-2 Runoff Area=360,829 sf 1.36% Impervious Runoff Depth=0.17"
Flow Length=1,229' Tc=29.2 min CN=33 Runoff=0.19 cfs 0.118 af

Subcatchment 4os: NH Route 108 to CB 3 Runoff Area=13,932 sf 52.00% Impervious Runoff Depth=3.39"
Tc=5.0 min CN=76 Runoff=1.32 cfs 0.090 af

Subcatchment 4S: Flow to Lot H-2A Runoff Area=452,681 sf 1.02% Impervious Runoff Depth=0.13"
Flow Length=1,166' Tc=23.8 min CN=32 Runoff=0.19 cfs 0.117 af

Subcatchment 5os: Drive to CB 4 Runoff Area=1,717 sf 100.00% Impervious Runoff Depth=5.77"
Tc=5.0 min CN=98 Runoff=0.24 cfs 0.019 af

Subcatchment 5S: Flow to Lot H-2A Runoff Area=107,760 sf 0.62% Impervious Runoff Depth=0.07"
Flow Length=1,116' Tc=26.8 min CN=30 Runoff=0.02 cfs 0.015 af

Subcatchment 6os: Drive to CB 5 Runoff Area=3,747 sf 100.00% Impervious Runoff Depth=5.77"
Tc=5.0 min CN=98 Runoff=0.52 cfs 0.041 af

Subcatchment 7os: NH Route 108 to Runoff Area=24,418 sf 54.75% Impervious Runoff Depth=4.53"
Tc=5.0 min CN=87 Runoff=2.99 cfs 0.211 af

Subcatchment 11S: flow to reach 2R Runoff Area=17,367 sf 0.00% Impervious Runoff Depth=2.01"
Flow Length=79' Tc=10.3 min CN=61 Runoff=0.77 cfs 0.067 af

Subcatchment 12S: Flow to Lot H-2 Runoff Area=191,637 sf 5.59% Impervious Runoff Depth=3.69"
Flow Length=645' Tc=10.0 min CN=79 Runoff=16.59 cfs 1.352 af

Subcatchment 14S: Flow to Lot H-2 Runoff Area=76,123 sf 0.00% Impervious Runoff Depth=3.39"
Flow Length=416' Tc=10.4 min CN=76 Runoff=6.00 cfs 0.493 af

Subcatchment 15S: offsite flow Runoff Area=358,058 sf 1.70% Impervious Runoff Depth=0.13"
Flow Length=1,260' Tc=27.5 min CN=32 Runoff=0.15 cfs 0.092 af

Subcatchment 16S: offsite flow Runoff Area=2,052,474 sf 8.08% Impervious Runoff Depth=1.01"
Flow Length=1,412' Tc=34.3 min CN=48 Runoff=22.36 cfs 3.952 af

Subcatchment 30S: Flow to Lot H-2 Runoff Area=48,198 sf 0.00% Impervious Runoff Depth=2.27"
Flow Length=250' Slope=0.0200 '/' Tc=17.4 min CN=64 Runoff=2.03 cfs 0.209 af

Subcatchment 40S: Flow to Lot H-2A Runoff Area=144,239 sf 0.00% Impervious Runoff Depth=0.94"
Flow Length=452' Tc=14.5 min CN=47 Runoff=1.92 cfs 0.259 af

Subcatchment 50S: Flow to Lot H-2A Runoff Area=135,787 sf 4.02% Impervious Runoff Depth=0.21"
Flow Length=987' Tc=24.8 min CN=34 Runoff=0.09 cfs 0.055 af

Reach 1AR: STREAM Avg. Flow Depth=0.77' Max Vel=3.57 fps Inflow=16.59 cfs 1.352 af
n=0.050 L=370.0' S=0.0314 '/' Capacity=108.07 cfs Outflow=16.28 cfs 1.352 af

Reach 1BR: STREAM Avg. Flow Depth=0.88' Max Vel=4.25 fps Inflow=23.10 cfs 3.247 af
n=0.050 L=310.0' S=0.0384 '/' Capacity=119.58 cfs Outflow=23.07 cfs 3.247 af

Reach 1R: STREAM Avg. Flow Depth=1.29' Max Vel=3.44 fps Inflow=32.27 cfs 4.599 af
n=0.050 L=380.0' S=0.0166 '/' Capacity=78.59 cfs Outflow=32.24 cfs 4.599 af

Reach 2R: REACH 2 Avg. Flow Depth=0.37' Max Vel=1.89 fps Inflow=3.40 cfs 0.441 af
n=0.050 L=560.0' S=0.0193 '/' Capacity=42.77 cfs Outflow=3.29 cfs 0.441 af

Reach 3R: REACH 3 Avg. Flow Depth=0.24' Max Vel=1.51 fps Inflow=2.03 cfs 0.327 af
n=0.050 L=340.0' S=0.0200 '/' Capacity=24.05 cfs Outflow=1.97 cfs 0.327 af

Reach 4R: REACH 4 Avg. Flow Depth=0.15' Max Vel=0.79 fps Inflow=1.92 cfs 0.375 af
n=0.050 L=255.0' S=0.0149 '/' Capacity=468.29 cfs Outflow=1.78 cfs 0.375 af

Reach 5R: REACH 5 Avg. Flow Depth=0.04' Max Vel=0.43 fps Inflow=0.25 cfs 0.162 af
n=0.050 L=540.0' S=0.0231 '/' Capacity=409.57 cfs Outflow=0.25 cfs 0.162 af

Reach 6R: REACH 6 Avg. Flow Depth=0.17' Max Vel=0.79 fps Inflow=1.78 cfs 0.537 af
n=0.050 L=278.0' S=0.0126 '/' Capacity=131.20 cfs Outflow=1.68 cfs 0.537 af

Reach 7R: STREAM Avg. Flow Depth=0.33' Max Vel=2.16 fps Inflow=3.38 cfs 0.865 af
n=0.050 L=194.0' S=0.0284 '/' Capacity=92.22 cfs Outflow=3.37 cfs 0.865 af

Reach 8R: STREAM Avg. Flow Depth=0.49' Max Vel=2.54 fps Inflow=6.66 cfs 1.305 af
n=0.050 L=512.0' S=0.0258 '/' Capacity=98.00 cfs Outflow=6.55 cfs 1.305 af

Reach 9R: STREAM Avg. Flow Depth=1.36' Max Vel=3.79 fps Inflow=38.21 cfs 5.904 af
n=0.050 L=100.0' S=0.0190 '/' Capacity=84.13 cfs Outflow=38.21 cfs 5.904 af

Reach 16R: Existing Cuvert Avg. Flow Depth=0.55' Max Vel=5.74 fps Inflow=2.99 cfs 0.211 af
15.0" Round Pipe n=0.012 L=45.0' S=0.0113 '/' Capacity=7.45 cfs Outflow=2.99 cfs 0.211 af

Pond 10P: CULVERT UNDER NH ROUTE 108 Peak Elev=71.28' Inflow=56.60 cfs 9.856 af
48.0" Round Culvert n=0.013 L=63.0' S=0.0063 '/' Outflow=56.60 cfs 9.856 af

Pond 11P: CB11 to CB12 Peak Elev=107.25' Inflow=3.15 cfs 0.219 af
12.0" Round Culvert n=0.010 L=19.0' S=0.0132 '/' Outflow=3.15 cfs 0.219 af

Pond 12R: From CB12 out Peak Elev=106.56' Inflow=4.53 cfs 0.326 af
12.0" Round Culvert n=0.010 L=20.0' S=0.0050 '/' Outflow=4.53 cfs 0.326 af

Pond 13P: CB 3 to CB 4 Peak Elev=107.26' Inflow=1.32 cfs 0.090 af
12.0" Round Culvert n=0.013 L=98.0' S=0.0101 '/' Outflow=1.32 cfs 0.090 af

Pond 14P: CB 4 to CB 5 Peak Elev=106.28' Inflow=1.56 cfs 0.109 af
12.0" Round Culvert n=0.013 L=25.0' S=0.0484 '/' Outflow=1.56 cfs 0.109 af

Pond 15P: CB 5 out Peak Elev=105.27' Inflow=2.08 cfs 0.151 af
12.0" Round Culvert n=0.013 L=10.0' S=0.0100 '/' Outflow=2.08 cfs 0.151 af

Total Runoff Area = 121.897 ac Runoff Volume = 10.566 af Average Runoff Depth = 1.04"
94.23% Pervious = 114.868 ac 5.77% Impervious = 7.029 ac

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1os: North Side of Mast Runoff Area=45,066 sf 48.76% Impervious Runoff Depth=3.45"
Tc=5.0 min CN=67 Runoff=4.33 cfs 0.298 af

Subcatchment 1S: Flow to Lot H-2 Runoff Area=1,111,987 sf 4.32% Impervious Runoff Depth=1.95"
Flow Length=1,432' Tc=24.2 min CN=52 Runoff=32.85 cfs 4.155 af

Subcatchment 2os: Mast Road East to CB12 Runoff Area=9,930 sf 98.00% Impervious Runoff Depth=6.82"
Tc=5.0 min CN=97 Runoff=1.66 cfs 0.130 af

Subcatchment 2S: Flow to Lot H-2 Runoff Area=150,958 sf 0.00% Impervious Runoff Depth=1.95"
Flow Length=1,010' Tc=20.6 min CN=52 Runoff=4.76 cfs 0.564 af

Subcatchment 3os: Route 108 offsite Runoff Area=2,934 sf 71.71% Impervious Runoff Depth=4.97"
Tc=5.0 min CN=81 Runoff=0.40 cfs 0.028 af

Subcatchment 3S: Flow to Lot H-2 Runoff Area=360,829 sf 1.36% Impervious Runoff Depth=0.42"
Flow Length=1,229' Tc=29.2 min CN=33 Runoff=0.77 cfs 0.287 af

Subcatchment 4os: NH Route 108 to CB 3 Runoff Area=13,932 sf 52.00% Impervious Runoff Depth=4.42"
Tc=5.0 min CN=76 Runoff=1.71 cfs 0.118 af

Subcatchment 4S: Flow to Lot H-2A Runoff Area=452,681 sf 1.02% Impervious Runoff Depth=0.36"
Flow Length=1,166' Tc=23.8 min CN=32 Runoff=0.73 cfs 0.307 af

Subcatchment 5os: Drive to CB 4 Runoff Area=1,717 sf 100.00% Impervious Runoff Depth=6.94"
Tc=5.0 min CN=98 Runoff=0.29 cfs 0.023 af

Subcatchment 5S: Flow to Lot H-2A Runoff Area=107,760 sf 0.62% Impervious Runoff Depth=0.24"
Flow Length=1,116' Tc=26.8 min CN=30 Runoff=0.08 cfs 0.050 af

Subcatchment 6os: Drive to CB 5 Runoff Area=3,747 sf 100.00% Impervious Runoff Depth=6.94"
Tc=5.0 min CN=98 Runoff=0.63 cfs 0.050 af

Subcatchment 7os: NH Route 108 to Runoff Area=24,418 sf 54.75% Impervious Runoff Depth=5.65"
Tc=5.0 min CN=87 Runoff=3.70 cfs 0.264 af

Subcatchment 11S: flow to reach 2R Runoff Area=17,367 sf 0.00% Impervious Runoff Depth=2.83"
Flow Length=79' Tc=10.3 min CN=61 Runoff=1.12 cfs 0.094 af

Subcatchment 12S: Flow to Lot H-2 Runoff Area=191,637 sf 5.59% Impervious Runoff Depth=4.75"
Flow Length=645' Tc=10.0 min CN=79 Runoff=21.25 cfs 1.741 af

Subcatchment 14S: Flow to Lot H-2 Runoff Area=76,123 sf 0.00% Impervious Runoff Depth=4.42"
Flow Length=416' Tc=10.4 min CN=76 Runoff=7.80 cfs 0.643 af

Subcatchment 15S: offsite flow Runoff Area=358,058 sf 1.70% Impervious Runoff Depth=0.36"
Flow Length=1,260' Tc=27.5 min CN=32 Runoff=0.55 cfs 0.243 af

Subcatchment 16S: offsite flow Runoff Area=2,052,474 sf 8.08% Impervious Runoff Depth=1.59"
Flow Length=1,412' Tc=34.3 min CN=48 Runoff=39.62 cfs 6.228 af

Subcatchment 30S: Flow to Lot H-2 Runoff Area=48,198 sf 0.00% Impervious Runoff Depth=3.14"
Flow Length=250' Slope=0.0200 '/' Tc=17.4 min CN=64 Runoff=2.86 cfs 0.289 af

Subcatchment 40S: Flow to Lot H-2A Runoff Area=144,239 sf 0.00% Impervious Runoff Depth=1.50"
Flow Length=452' Tc=14.5 min CN=47 Runoff=3.62 cfs 0.413 af

Subcatchment 50S: Flow to Lot H-2A Runoff Area=135,787 sf 4.02% Impervious Runoff Depth=0.48"
Flow Length=987' Tc=24.8 min CN=34 Runoff=0.42 cfs 0.124 af

Reach 1AR: STREAM Avg. Flow Depth=0.88' Max Vel=3.84 fps Inflow=21.25 cfs 1.741 af
n=0.050 L=370.0' S=0.0314 '/' Capacity=108.07 cfs Outflow=20.90 cfs 1.741 af

Reach 1BR: STREAM Avg. Flow Depth=1.12' Max Vel=4.84 fps Inflow=36.84 cfs 4.799 af
n=0.050 L=310.0' S=0.0384 '/' Capacity=119.58 cfs Outflow=36.80 cfs 4.799 af

Reach 1R: STREAM Avg. Flow Depth=1.59' Max Vel=3.85 fps Inflow=48.78 cfs 6.540 af
n=0.050 L=380.0' S=0.0166 '/' Capacity=78.59 cfs Outflow=48.71 cfs 6.540 af

Reach 2R: REACH 2 Avg. Flow Depth=0.49' Max Vel=2.21 fps Inflow=5.49 cfs 0.658 af
n=0.050 L=560.0' S=0.0193 '/' Capacity=42.77 cfs Outflow=5.35 cfs 0.658 af

Reach 3R: REACH 3 Avg. Flow Depth=0.29' Max Vel=1.71 fps Inflow=2.89 cfs 0.576 af
n=0.050 L=340.0' S=0.0200 '/' Capacity=24.05 cfs Outflow=2.82 cfs 0.576 af

Reach 4R: REACH 4 Avg. Flow Depth=0.21' Max Vel=0.97 fps Inflow=3.62 cfs 0.721 af
n=0.050 L=255.0' S=0.0149 '/' Capacity=468.29 cfs Outflow=3.43 cfs 0.721 af

Reach 5R: REACH 5 Avg. Flow Depth=0.08' Max Vel=0.62 fps Inflow=0.98 cfs 0.418 af
n=0.050 L=540.0' S=0.0231 '/' Capacity=409.57 cfs Outflow=0.87 cfs 0.418 af

Reach 6R: REACH 6 Avg. Flow Depth=0.24' Max Vel=0.97 fps Inflow=3.43 cfs 1.139 af
n=0.050 L=278.0' S=0.0126 '/' Capacity=131.20 cfs Outflow=3.28 cfs 1.139 af

Reach 7R: STREAM Avg. Flow Depth=0.46' Max Vel=2.60 fps Inflow=5.95 cfs 1.715 af
n=0.050 L=194.0' S=0.0284 '/' Capacity=92.22 cfs Outflow=5.94 cfs 1.715 af

Reach 8R: STREAM Avg. Flow Depth=0.66' Max Vel=2.98 fps Inflow=11.28 cfs 2.373 af
n=0.050 L=512.0' S=0.0258 '/' Capacity=98.00 cfs Outflow=11.13 cfs 2.373 af

Reach 9R: STREAM Avg. Flow Depth=1.69' Max Vel=4.26 fps Inflow=59.37 cfs 8.913 af
n=0.050 L=100.0' S=0.0190 '/' Capacity=84.13 cfs Outflow=59.36 cfs 8.913 af

Reach 16R: Existing Cuvert Avg. Flow Depth=0.62' Max Vel=6.06 fps Inflow=3.70 cfs 0.264 af
15.0" Round Pipe n=0.012 L=45.0' S=0.0113 '/' Capacity=7.45 cfs Outflow=3.70 cfs 0.264 af

Pond 10P: CULVERT UNDER NH ROUTE 108 Peak Elev=72.79' Inflow=93.34 cfs 15.141 af
48.0" Round Culvert n=0.013 L=63.0' S=0.0063 '/' Outflow=93.34 cfs 15.141 af

Pond 11P: CB11 to CB12 Peak Elev=108.93' Inflow=4.33 cfs 0.298 af
12.0" Round Culvert n=0.010 L=19.0' S=0.0132 '/' Outflow=4.33 cfs 0.298 af

Pond 12R: From CB12 out Peak Elev=107.63' Inflow=5.98 cfs 0.427 af
12.0" Round Culvert n=0.010 L=20.0' S=0.0050 '/' Outflow=5.98 cfs 0.427 af

Pond 13P: CB 3 to CB 4 Peak Elev=107.37' Inflow=1.71 cfs 0.118 af
12.0" Round Culvert n=0.013 L=98.0' S=0.0101 '/' Outflow=1.71 cfs 0.118 af

Pond 14P: CB 4 to CB 5 Peak Elev=106.40' Inflow=2.00 cfs 0.141 af
12.0" Round Culvert n=0.013 L=25.0' S=0.0484 '/' Outflow=2.00 cfs 0.141 af

Pond 15P: CB 5 out Peak Elev=105.45' Inflow=2.63 cfs 0.190 af
12.0" Round Culvert n=0.013 L=10.0' S=0.0100 '/' Outflow=2.63 cfs 0.190 af

Total Runoff Area = 121.897 ac Runoff Volume = 16.050 af Average Runoff Depth = 1.58"
94.23% Pervious = 114.868 ac 5.77% Impervious = 7.029 ac



LEGEND

- DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION
- (5) SUBCATCHMENT
- (1) POND
- (9) REACH
- (A) DISCHARGE POINT

Graphic Scale 30 15 0 30

REV.	DATE	DESCRIPTION	DR	CK

TAX MAP H LOT 4–3

POST-DEVELOPMENT DRAINAGE AREA PLAN

MCDONALD'S

NH ROUTE 108 AND GRAPEVINE DRIVE
DOVER, NEW HAMPSHIRE

OWNER OF RECORD	*AND*	*APPLICANT/DEVELOPER*
n/f VC DOVER INVESTMENTS, LLC 48 CONSTITUTION DRIVE BEDFORD, NH 03110		BOHLER ENGINEERING, LLC 352 TURNPIKE RD, 3RD FLOOR SOUTHBOROUGH, MA 01772

SCALE: 1"=100' **DECEMBER 5, 2024**

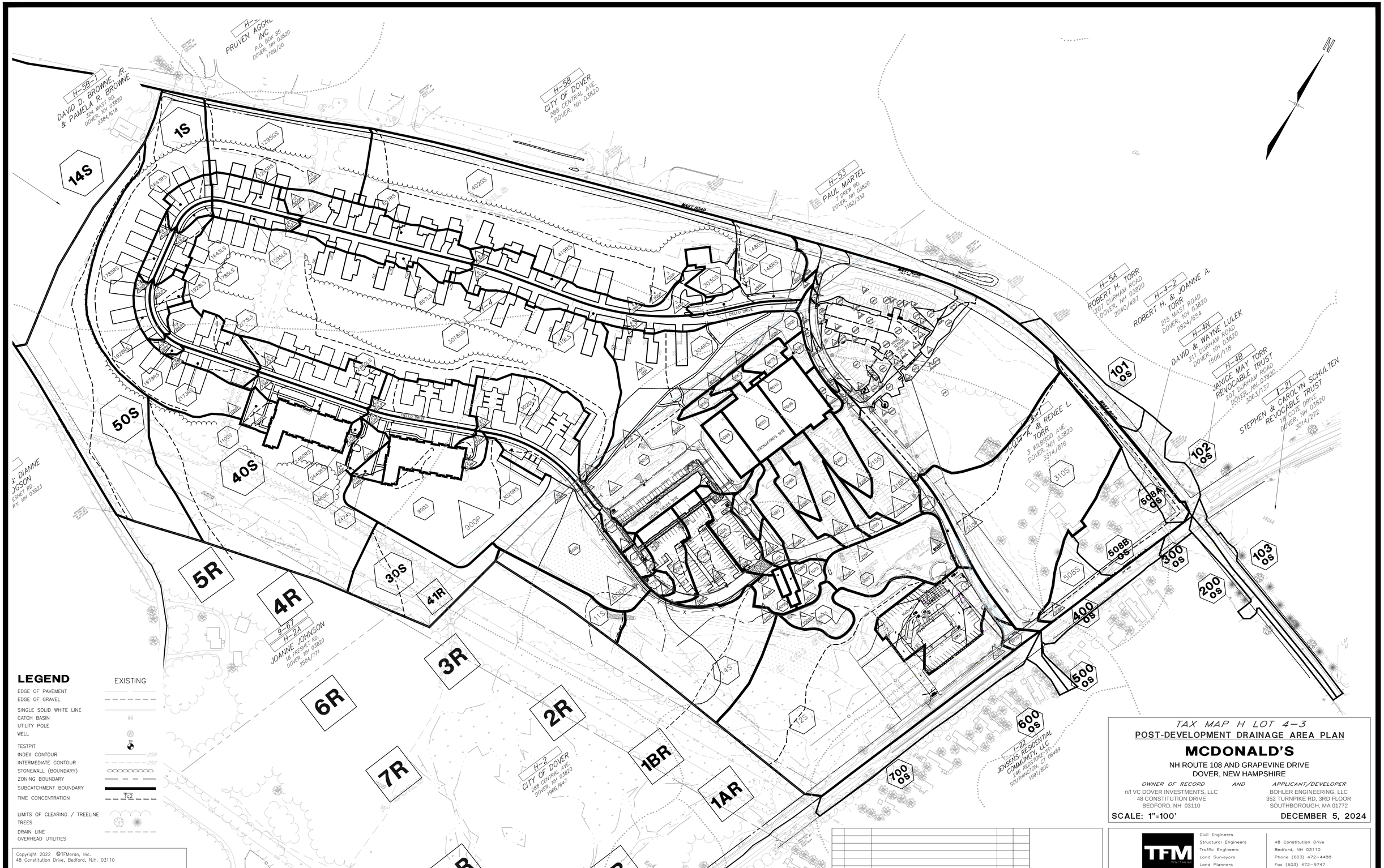
TFM
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Bedford, NH • Portsmouth, NH

FILE	46001.33	DR	JMR	FB	–	SHEET 3 OF 4
		CK	RED	CADFILE	46001.33 DRAINAGE	

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LEGEND

EXISTING

- EDGE OF PAVEMENT
- EDGE OF GRAVEL
- SINGLE SOLID WHITE LINE
- CATCH BASIN
- UTILITY POLE
- WELL
- TESTPIT
- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- STONEWALL (BOUNDARY)
- ZONING BOUNDARY
- SUBCATCHMENT BOUNDARY
- TIME CONCENTRATION
- LIMITS OF CLEARING / TREELINE
- TREES
- DRAIN LINE
- OVERHEAD UTILITIES

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Graphic Scale 100' 50' 0 100'

REV.	DATE	DESCRIPTION	DR	CK

TAX MAP H LOT 4–3

POST-DEVELOPMENT DRAINAGE AREA PLAN

MCDONALD'S

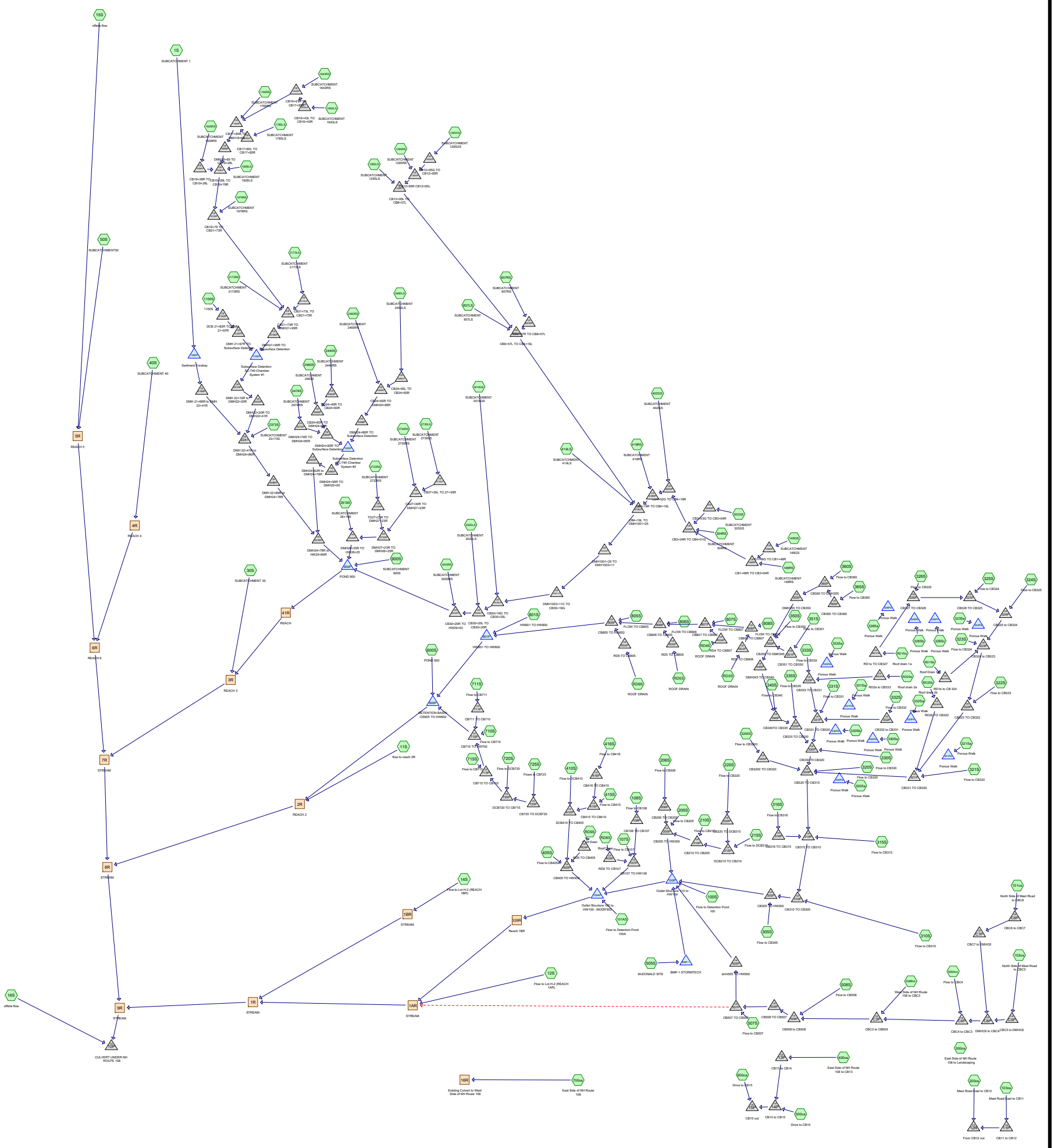
NH ROUTE 108 AND GRAPEVINE DRIVE
DOVER, NEW HAMPSHIRE

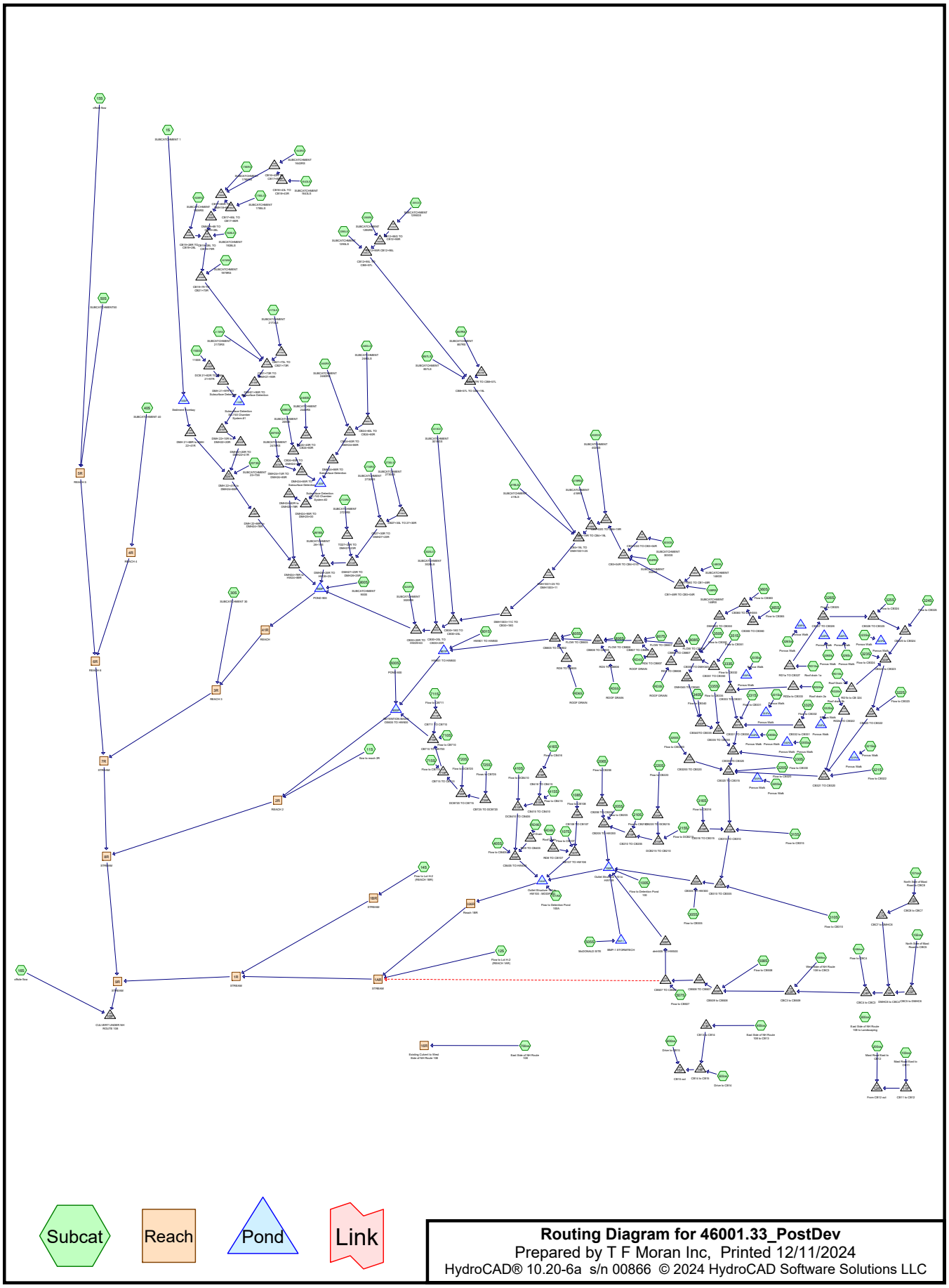
OWNER OF RECORD	AND	APPLICANT/DEVELOPER
n/f VC DOVER INVESTMENTS, LLC 48 CONSTITUTION DRIVE BEDFORD, NH 03110		BOHLER ENGINEERING, LLC 352 TURNPIKE RD, 3RD FLOOR SOUTHBOROUGH, MA 01772

SCALE: 1"=100' DECEMBER 5, 2024

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PROJECT #	46001.33	DR	JMR	FB	–	SHEET 4 OF 4
		CK	RED	CADFILE	46001.33 DRAINAGE	


1SS
offsite flow
1S
SUBCATCHMENT 1
50S
SUBCATCHMENT50
5R
REACH 5
40S
SUBCATCHMENT 40
4R
REACH 4
6R
REACH 6
30S
SUBCATCHMENT 30
41R
REACH
3R
REACH 3
7R
STREAM
2R
REACH 2
8R
STREAM
1R
STREAM
1AR
STREAM
1BR
STREAM
9R
STREAM
16S
offsite flow
16R
CULVERT UNDER NH ROUTE 108
Existing Culvert to West Side of NH Route 108
East Side of NH Route 108
12S
Flow to Lot H-2 (REACH 1AR)
14S
Flow to Lot H-2 (REACH 1BR)
Reach 1BR
Sediment Forebay
Subsurface Detention 57-740 Chamber System #1
Subsurface Detention 57-740 Chamber System #2
POND 900
RETENTION BASIN OS605 TO HW600
Outlet Structure 100 to HW100 - MODIFIED
Outlet Structure 100 to HW106
Flow to Detention Pond 100A
Flow to Detention Pond 100
McDONALD SITE
BMP-1 STORMTECH
dmh500 to HW500
CB507 TO CB508
CB508 TO CB507
CB509 TO CB508
CB3 to CB509
CBC4 to CBC3
DMH05 to CBC4
CBC5 to DMH05
CBC6 to CBC7
CBC7 to DMH05
CB15 out
CB14 to CB15
CB13 to CB14
From CB12 out
CB11 to CB12
East Side of NH Route 108 to CB13
West Side of NH Route 108 to CBC3
East Side of NH Route 108 to Landscaping
Meet Road East to CB12
Meet Road East to CB11
North Side of Meet Road to CBC5
Drive to CB15
Drive to CB14
Flow to CB508
Flow to CB507
Flow to CB305
Flow to CB310
Flow to CB315
Flow to CB320
Flow to CB330
Flow to CB332
Flow to CB333
Flow to CB324
Flow to CB325
Flow to CB323
Flow to CB322
Flow to CB360
Flow to CB365
Flow to CB351
Flow to CB335
Flow to CB340
Flow to CB711
Flow to CB710
Flow to CB720
Flow to CB725
Flow to CB415
Flow to CB410
Flow to CB108
Flow to CB206
Flow to CB205
Flow to CB220
Flow to CB316
Flow to DCB215
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Flow to DCB324
Flow to DCB325
Flow to DCB323
Flow to DCB322
Flow to DCB360
Flow to DCB365
Flow to DCB351
Flow to DCB335
Flow to DCB340
SUBCATCHMENT 1643RS
SUBCATCHMENT 1643LS
SUBCATCHMENT 1708RS
SUBCATCHMENT 1708LS
SUBCATCHMENT 1928RS
SUBCATCHMENT 1928LS
SUBCATCHMENT 1978RS
SUBCATCHMENT 1978LS
SUBCATCHMENT 2173RS
SUBCATCHMENT 2173LS
SUBCATCHMENT 2273RS
SUBCATCHMENT 2273LS
SUBCATCHMENT 2473RS
SUBCATCHMENT 2473LS
SUBCATCHMENT 2473RS
SUBCATCHMENT 2473LS
SUBCATCHMENT 2573RS
SUBCATCHMENT 2573LS
SUBCATCHMENT 2573RS
SUBCATCHMENT 2573LS
SUBCATCHMENT 2773RS
SUBCATCHMENT 2773LS
SUBCATCHMENT 3073RS
SUBCATCHMENT 3073LS
SUBCATCHMENT 3273RS
SUBCATCHMENT 3273LS
SUBCATCHMENT 3473RS
SUBCATCHMENT 3473LS
SUBCATCHMENT 3673RS
SUBCATCHMENT 3673LS
SUBCATCHMENT 3873RS
SUBCATCHMENT 3873LS
SUBCATCHMENT 4073RS
SUBCATCHMENT 4073LS
SUBCATCHMENT 4273RS
SUBCATCHMENT 4273LS
SUBCATCHMENT 4473RS
SUBCATCHMENT 4473LS
SUBCATCHMENT 4673RS
SUBCATCHMENT 4673LS
SUBCATCHMENT 4873RS
SUBCATCHMENT 4873LS
SUBCATCHMENT



Routing Diagram for 46001.33_PostDev
Prepared by T F Moran Inc, Printed 12/11/2024
HydroCAD® 10.20-6a s/n 00866 © 2024 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
29.094	39	>75% Grass cover, Good, HSG A (1S, 11S, 12S, 14S, 15S, 16S, 30S, 40S, 101os, 102os, 148GS, 148RS, 215S, 220S, 300os, 303GS, 304RS, 315S, 316S, 320S, 321S, 322S, 323S, 326S, 326Sa, 330S, 330Sa, 330Sb, 331S, 331Sa, 332S, 332Sa, 333S, 333Sa, 335S, 340S, 350S, 351S, 402GS, 419LS, 419RS, 508Aos, 508Bos, 508S, 600S, 801S, 805S, 806S, 807S, 808S, 857LS, 857RS, 900S, 1100S, 1295GS, 1295LS, 1295RS, 1643LS, 1643RS, 1785LS, 1785RS, 1928LS, 1928RS, 1979RS, 2173LS, 2173RS, 2440S, 2460LS, 2460RS, 2460S, 2474S, 2723RS, 2730LS, 2730RS, 3018GS, 3020LS, 3020RS, 3200S)
1.799	61	>75% Grass cover, Good, HSG B (12S, 14S, 30S, 40S, 100S, 210S, 215S, 220S, 305S, 310S, 316S, 505S)
4.698	74	>75% Grass cover, Good, HSG C (11S, 12S, 16S, 100S, 108S, 205S, 206S, 210S, 215S, 220S, 310S, 400os, 410S, 416S, 505S, 507S, 508S, 600S, 700os, 710S, 711S, 715S, 720S, 725S, 801S, 805S, 3018GS, 3020LS, 3020RS)
1.173	80	>75% Grass cover, Good, HSG D (12S, 16S, 100S, 101AS, 107S, 108S, 205S, 206S, 405S, 410S, 415S, 416S, 715S, 720S, 725S)
2.336	35	Brush, Fair, HSG A (16S, 40S, 50S, 1295GS)
0.630	56	Brush, Fair, HSG B (30S, 40S)
1.521	70	Brush, Fair, HSG C (16S, 30S, 40S)
0.933	77	Brush, Fair, HSG D (12S, 16S)
0.170	76	Gravel roads, HSG A (40S, 50S)
0.068	85	Gravel roads, HSG B (30S, 40S)
0.036	89	Gravel roads, HSG C (30S, 801S)
0.009	91	Gravel roads, HSG D (101AS)
0.020	76	Gravel, HSG A (419LS, 600S, 1295GS, 3020RS)
0.044	85	Gravel, HSG B (100S)
0.026	89	Gravel, HSG C (11S, 100S, 600S)
0.016	91	Gravel, HSG D (12S, 108S)
6.725	98	Impervious (12S, 50S, 101AS, 107S, 148GS, 215S, 303GS, 305S, 402GS, 405S, 419RS, 507S, 600S, 857LS, 857RS, 900S, 1295GS, 1295LS, 1643LS, 1643RS, 1785LS, 1785RS, 1928LS, 1928RS, 2173LS, 2173RS, 2440S, 2460RS, 2460S, 2474S, 2723RS, 2730LS, 2730RS, 3018GS, RD4S, RD5S, RD6S, RD8S, RD9S)
0.702	79	Pasture/grassland/range, Fair, HSG C (16S)
1.712	39	Pasture/grassland/range, Good, HSG A (310S)
0.076	61	Pasture/grassland/range, Good, HSG B (310S)
1.478	74	Pasture/grassland/range, Good, HSG C (12S, 14S)
2.928	80	Pasture/grassland/range, Good, HSG D (12S, 14S, 16S)
0.696	98	Paved parking (505S)
11.731	98	Paved parking & roofs (15S, 16S, 108S, 148RS, 205S, 206S, 210S, 220S, 300os, 303GS, 304RS, 310S, 320S, 400os, 410S, 415S, 416S, 508Bos, 508S, 710S, 711S, 720S, 725S, 801S, 805S, 806S, 807S, 1295RS, 2460LS, 3020LS, 3020RS, RD1Sa, RD1Sb, RD2Sa, RD2Sb, RD3S)
0.594	98	Paved parking, HSG A (1S, 320S, 330S, 1100S, 1979RS)

Area Listing (all nodes) (continued)

Area (acres)	CN	Description (subcatchment-numbers)
2.429	98	Paved roads w/curbs & sewers (101os, 102os, 103os, 200os, 316S, 325S, 335S, 340S, 350S, 351S, 360S, 365S, 419LS, 500os, 508Aos, 600os, 700os, 715S)
1.010	98	Paved roads w/curbs & sewers, HSG A (315S, 320S, 320Sa, 321Sa, 323Sa, 324S, 326S, 326Sa, 326Sb, 326Sc, 330S, 330Sa, 330Sb, 331S, 331Sa, 332S, 332Sa, 333Sa)
0.085	98	Roofs (505S)
0.718	98	Roofs, HSG A (320Sa, 2373S, 2619S)
39.264	30	Woods, Good, HSG A (1S, 11S, 15S, 16S, 40S, 50S, 101os, 148GS, 303GS, 310S, 315S, 402GS, 508Aos, 508Bos, 600S, 900S, 1295GS, 3018GS)
0.029	55	Woods, Good, HSG B (30S, 310S)
8.357	70	Woods, Good, HSG C (11S, 12S, 14S, 16S, 30S, 40S)
0.788	77	Woods, Good, HSG D (12S, 14S, 16S)
121.896	**55**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
74.920	HSG A	1S, 11S, 12S, 14S, 15S, 16S, 30S, 40S, 50S, 101os, 102os, 148GS, 148RS, 215S, 220S, 300os, 303GS, 304RS, 310S, 315S, 316S, 320S, 320Sa, 321S, 321Sa, 322S, 323S, 323Sa, 324S, 326S, 326Sa, 326Sb, 326Sc, 330S, 330Sa, 330Sb, 331S, 331Sa, 332S, 332Sa, 333S, 333Sa, 335S, 340S, 350S, 351S, 402GS, 419LS, 419RS, 508Aos, 508Bos, 508S, 600S, 801S, 805S, 806S, 807S, 808S, 857LS, 857RS, 900S, 1100S, 1295GS, 1295LS, 1295RS, 1643LS, 1643RS, 1785LS, 1785RS, 1928LS, 1928RS, 1979RS, 2173LS, 2173RS, 2373S, 2440S, 2460LS, 2460RS, 2460S, 2474S, 2619S, 2723RS, 2730LS, 2730RS, 3018GS, 3020LS, 3020RS, 3200S
2.646	HSG B	12S, 14S, 30S, 40S, 100S, 210S, 215S, 220S, 305S, 310S, 316S, 505S
16.818	HSG C	11S, 12S, 14S, 16S, 30S, 40S, 100S, 108S, 205S, 206S, 210S, 215S, 220S, 310S, 400os, 410S, 416S, 505S, 507S, 508S, 600S, 700os, 710S, 711S, 715S, 720S, 725S, 801S, 805S, 3018GS, 3020LS, 3020RS
5.846	HSG D	12S, 14S, 16S, 100S, 101AS, 107S, 108S, 205S, 206S, 405S, 410S, 415S, 416S, 715S, 720S, 725S
21.666	Other	12S, 15S, 16S, 50S, 101AS, 101os, 102os, 103os, 107S, 108S, 148GS, 148RS, 200os, 205S, 206S, 210S, 215S, 220S, 300os, 303GS, 304RS, 305S, 310S, 316S, 320S, 325S, 335S, 340S, 350S, 351S, 360S, 365S, 400os, 402GS, 405S, 410S, 415S, 416S, 419LS, 419RS, 500os, 505S, 507S, 508Aos, 508Bos, 508S, 600os, 600S, 700os, 710S, 711S, 715S, 720S, 725S, 801S, 805S, 806S, 807S, 857LS, 857RS, 900S, 1295GS, 1295LS, 1295RS, 1643LS, 1643RS, 1785LS, 1785RS, 1928LS, 1928RS, 2173LS, 2173RS, 2440S, 2460LS, 2460RS, 2460S, 2474S, 2723RS, 2730LS, 2730RS, 3018GS, 3020LS, 3020RS, RD1Sa, RD1Sb, RD2Sa, RD2Sb, RD3S, RD4S, RD5S, RD6S, RD8S, RD9S
121.896		**TOTAL AREA**

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: SUBCATCHMENT1 Runoff Area=116,725 sf 15.99% Impervious Runoff Depth=0.06"
Flow Length=928' Tc=34.5 min CN=47 Runoff=0.02 cfs 0.014 af

Subcatchment 11S: flow to reach 2R Runoff Area=17,367 sf 0.00% Impervious Runoff Depth=0.49"
Flow Length=80' Tc=8.0 min CN=63 Runoff=0.15 cfs 0.016 af

Subcatchment 12S: Flow to Lot H-2 Runoff Area=176,844 sf 9.99% Impervious Runoff Depth=1.29"
Flow Length=645' Tc=9.0 min CN=79 Runoff=5.44 cfs 0.437 af

Subcatchment 14S: Flow to Lot H-2 (REACH Runoff Area=76,548 sf 0.00% Impervious Runoff Depth=0.89"
Flow Length=416' Tc=9.0 min CN=72 Runoff=1.52 cfs 0.131 af

Subcatchment 15S: offsite flow Runoff Area=358,058 sf 1.70% Impervious Runoff Depth=0.00"
Flow Length=1,260' Tc=27.5 min CN=32 Runoff=0.00 cfs 0.000 af

Subcatchment 16S: offsite flow Runoff Area=2,052,474 sf 8.08% Impervious Runoff Depth=0.08"
Flow Length=1,412' Tc=34.3 min CN=48 Runoff=0.50 cfs 0.315 af

Subcatchment 30S: SUBCATCHMENT30 Runoff Area=48,198 sf 0.00% Impervious Runoff Depth=0.57"
Flow Length=154' Slope=0.0200 '/' Tc=23.5 min CN=65 Runoff=0.36 cfs 0.053 af

Subcatchment 40S: SUBCATCHMENT40 Runoff Area=152,210 sf 0.00% Impervious Runoff Depth=0.06"
Flow Length=452' Tc=14.5 min CN=47 Runoff=0.03 cfs 0.019 af

Subcatchment 50S: SUBCATCHMENT50 Runoff Area=125,909 sf 4.33% Impervious Runoff Depth=0.00"
Flow Length=987' Tc=24.8 min CN=35 Runoff=0.00 cfs 0.000 af

Subcatchment 100S: Flow to Detention Runoff Area=42,732 sf 0.00% Impervious Runoff Depth=0.79"
Tc=5.0 min CN=70 Runoff=0.84 cfs 0.065 af

Subcatchment 101AS: Flow to Detention Runoff Area=12,152 sf 1.03% Impervious Runoff Depth=1.42"
Tc=5.0 min CN=81 Runoff=0.48 cfs 0.033 af

Subcatchment 101os: North Side of Mast Runoff Area=17,404 sf 27.18% Impervious Runoff Depth=0.18"
Tc=5.0 min CN=53 Runoff=0.02 cfs 0.006 af

Subcatchment 102os: North Side of Mast Runoff Area=15,661 sf 51.62% Impervious Runoff Depth=0.75"
Tc=5.0 min CN=69 Runoff=0.28 cfs 0.022 af

Subcatchment 103os: Mast Road East to Runoff Area=12,002 sf 100.00% Impervious Runoff Depth=2.91"
Tc=5.0 min CN=98 Runoff=0.87 cfs 0.067 af

Subcatchment 107S: Flow to CB107 Runoff Area=7,160 sf 86.56% Impervious Runoff Depth=2.69"
Tc=5.0 min CN=96 Runoff=0.50 cfs 0.037 af

Subcatchment 108S: Flow to CB108 Runoff Area=20,254 sf 84.37% Impervious Runoff Depth=2.59"
Tc=5.0 min CN=95 Runoff=1.38 cfs 0.100 af

Subcatchment148GS: SUBCATCHMENT Runoff Area=24,508 sf 16.32% Impervious Runoff Depth=0.03"
Flow Length=178' Tc=6.3 min CN=44 Runoff=0.00 cfs 0.001 af

Subcatchment148RS: SUBCATCHMENT Runoff Area=4,316 sf 70.81% Impervious Runoff Depth=1.42"
Tc=5.0 min CN=81 Runoff=0.17 cfs 0.012 af

Subcatchment200os: Mast Road East to Runoff Area=9,931 sf 100.00% Impervious Runoff Depth=2.91"
Tc=5.0 min CN=98 Runoff=0.72 cfs 0.055 af

Subcatchment205S: Flow to CB205 Runoff Area=21,237 sf 94.10% Impervious Runoff Depth=2.80"
Tc=5.0 min CN=97 Runoff=1.51 cfs 0.114 af

Subcatchment206S: Flow to CB206 Runoff Area=10,095 sf 95.84% Impervious Runoff Depth=2.80"
Tc=5.0 min CN=97 Runoff=0.72 cfs 0.054 af

Subcatchment210S: Flow to CB210 Runoff Area=7,732 sf 75.04% Impervious Runoff Depth=2.20"
Tc=5.0 min CN=91 Runoff=0.47 cfs 0.033 af

Subcatchment215S: Flow to DCB215 Runoff Area=28,399 sf 86.64% Impervious Runoff Depth=2.39"
Tc=5.0 min CN=93 Runoff=1.83 cfs 0.130 af

Subcatchment220S: Flow to CB220 Runoff Area=15,024 sf 95.13% Impervious Runoff Depth=2.69"
Tc=5.0 min CN=96 Runoff=1.05 cfs 0.077 af

Subcatchment300os: East Side of NH Runoff Area=2,933 sf 81.69% Impervious Runoff Depth=1.86"
Tc=5.0 min CN=87 Runoff=0.15 cfs 0.010 af

Subcatchment303GS: SUBCATCHMENT Runoff Area=10,545 sf 75.15% Impervious Runoff Depth=1.56"
Tc=5.0 min CN=83 Runoff=0.46 cfs 0.031 af

Subcatchment304RS: SUBCATCHMENT Runoff Area=5,196 sf 51.33% Impervious Runoff Depth=0.75"
Tc=5.0 min CN=69 Runoff=0.09 cfs 0.007 af

Subcatchment305S: Flow to CB305 Runoff Area=7,928 sf 84.02% Impervious Runoff Depth=2.29"
Tc=5.0 min CN=92 Runoff=0.50 cfs 0.035 af

Subcatchment310S: Flow to CB310 Runoff Area=145,473 sf 12.09% Impervious Runoff Depth=0.06"
Flow Length=469' Tc=13.1 min CN=47 Runoff=0.03 cfs 0.018 af

Subcatchment315S: Flow to CB315 Runoff Area=116,325 sf 6.81% Impervious Runoff Depth=0.00"
Flow Length=537' Tc=9.9 min CN=39 Runoff=0.00 cfs 0.000 af

Subcatchment316S: Flow to CB316 Runoff Area=3,776 sf 88.61% Impervious Runoff Depth=2.49"
Tc=5.0 min CN=94 Runoff=0.25 cfs 0.018 af

Subcatchment320S: Flow to CB320 Runoff Area=3,127 sf 97.95% Impervious Runoff Depth=2.80"
Tc=5.0 min CN=97 Runoff=0.22 cfs 0.017 af

Subcatchment320Sa: Porous Walk Runoff Area=404 sf 100.00% Impervious Runoff Depth=2.91"
Tc=5.0 min CN=98 Runoff=0.03 cfs 0.002 af

Subcatchment321S: Flow to CB322 Runoff Area=1,903 sf 0.00% Impervious Runoff Depth=0.00"
Tc=5.0 min CN=39 Runoff=0.00 cfs 0.000 af

Subcatchment 321Sa: Porous Walk Runoff Area=456 sf 100.00% Impervious Runoff Depth=2.91"
Tc=5.0 min CN=98 Runoff=0.03 cfs 0.003 af

Subcatchment 322S: Flow to CB323 Runoff Area=4,253 sf 0.00% Impervious Runoff Depth=0.00"
Tc=5.0 min CN=39 Runoff=0.00 cfs 0.000 af

Subcatchment 323S: Flow to CB324 Runoff Area=1,844 sf 0.00% Impervious Runoff Depth=0.00"
Tc=5.0 min CN=39 Runoff=0.00 cfs 0.000 af

Subcatchment 323Sa: Porous Walk Runoff Area=498 sf 100.00% Impervious Runoff Depth=2.91"
Tc=5.0 min CN=98 Runoff=0.04 cfs 0.003 af

Subcatchment 324S: Flow to CB325 Runoff Area=2,213 sf 100.00% Impervious Runoff Depth=2.91"
Tc=5.0 min CN=98 Runoff=0.16 cfs 0.012 af

Subcatchment 325S: Flow to CB324 Runoff Area=1,665 sf 100.00% Impervious Runoff Depth=2.91"
Tc=5.0 min CN=98 Runoff=0.12 cfs 0.009 af

Subcatchment 326S: Flow to CB325 Runoff Area=34,308 sf 60.15% Impervious Runoff Depth=1.00"
Tc=5.0 min CN=74 Runoff=0.90 cfs 0.066 af

Subcatchment 326Sa: Porous Walk Runoff Area=1,787 sf 44.21% Impervious Runoff Depth=0.57"
Tc=5.0 min CN=65 Runoff=0.02 cfs 0.002 af

Subcatchment 326Sb: Porous Walk Runoff Area=57 sf 100.00% Impervious Runoff Depth=2.91"
Tc=5.0 min CN=98 Runoff=0.00 cfs 0.000 af

Subcatchment 326Sc: Porous Walk Runoff Area=53 sf 100.00% Impervious Runoff Depth=2.91"
Tc=5.0 min CN=98 Runoff=0.00 cfs 0.000 af

Subcatchment 330S: Flow to CB330 Runoff Area=3,294 sf 94.11% Impervious Runoff Depth=2.59"
Tc=5.0 min CN=95 Runoff=0.22 cfs 0.016 af

Subcatchment 330Sa: Porous Walk Runoff Area=450 sf 41.33% Impervious Runoff Depth=0.49"
Tc=5.0 min CN=63 Runoff=0.00 cfs 0.000 af

Subcatchment 330Sb: Porous Walk Runoff Area=218 sf 39.91% Impervious Runoff Depth=0.49"
Tc=5.0 min CN=63 Runoff=0.00 cfs 0.000 af

Subcatchment 331S: Flow to CB331 Runoff Area=10,020 sf 66.41% Impervious Runoff Depth=1.23"
Tc=5.0 min CN=78 Runoff=0.34 cfs 0.024 af

Subcatchment 331Sa: Porous Walk Runoff Area=1,084 sf 44.83% Impervious Runoff Depth=0.57"
Tc=5.0 min CN=65 Runoff=0.01 cfs 0.001 af

Subcatchment 332S: Flow to CB332 Runoff Area=1,679 sf 74.75% Impervious Runoff Depth=1.56"
Tc=5.0 min CN=83 Runoff=0.07 cfs 0.005 af

Subcatchment 332Sa: Porous Walk Runoff Area=1,526 sf 62.19% Impervious Runoff Depth=1.11"
Tc=5.0 min CN=76 Runoff=0.05 cfs 0.003 af

Subcatchment 333S: Flow to CB332 Runoff Area=2,063 sf 0.00% Impervious Runoff Depth=0.00"
Tc=5.0 min CN=39 Runoff=0.00 cfs 0.000 af

Subcatchment 333Sa: Porous Walk Runoff Area=1,005 sf 32.34% Impervious Runoff Depth=0.32"
Tc=5.0 min CN=58 Runoff=0.00 cfs 0.001 af

Subcatchment 335S: Flow to CB335 Runoff Area=4,263 sf 62.80% Impervious Runoff Depth=1.11"
Tc=5.0 min CN=76 Runoff=0.13 cfs 0.009 af

Subcatchment 340S: Flow to CB340 Runoff Area=2,616 sf 72.90% Impervious Runoff Depth=1.49"
Tc=5.0 min CN=82 Runoff=0.11 cfs 0.007 af

Subcatchment 350S: Flow to CB350 Runoff Area=3,138 sf 83.08% Impervious Runoff Depth=1.94"
Tc=5.0 min CN=88 Runoff=0.17 cfs 0.012 af

Subcatchment 351S: Flow to CB351 Runoff Area=2,600 sf 93.15% Impervious Runoff Depth=2.49"
Tc=5.0 min CN=94 Runoff=0.17 cfs 0.012 af

Subcatchment 360S: Flow to CB360 Runoff Area=3,507 sf 100.00% Impervious Runoff Depth=2.91"
Tc=5.0 min CN=98 Runoff=0.25 cfs 0.020 af

Subcatchment 365S: Flow to CB365 Runoff Area=3,724 sf 100.00% Impervious Runoff Depth=2.91"
Tc=5.0 min CN=98 Runoff=0.27 cfs 0.021 af

Subcatchment 400os: East Side of NH Runoff Area=13,932 sf 55.92% Impervious Runoff Depth=1.86"
Tc=5.0 min CN=87 Runoff=0.72 cfs 0.050 af

Subcatchment 402GS: SUBCATCHMENT Runoff Area=196,506 sf 11.43% Impervious Runoff Depth=0.01"
Flow Length=919' Tc=16.0 min CN=42 Runoff=0.01 cfs 0.004 af

Subcatchment 405S: Flow to CB405 Runoff Area=6,080 sf 83.22% Impervious Runoff Depth=2.59"
Tc=5.0 min CN=95 Runoff=0.42 cfs 0.030 af

Subcatchment 410S: Flow to DCB410 Runoff Area=16,744 sf 86.87% Impervious Runoff Depth=2.69"
Tc=5.0 min CN=96 Runoff=1.17 cfs 0.086 af

Subcatchment 415S: Flow to CB415 Runoff Area=5,205 sf 79.02% Impervious Runoff Depth=2.49"
Tc=5.0 min CN=94 Runoff=0.35 cfs 0.025 af

Subcatchment 416S: Flow to CB416 Runoff Area=7,343 sf 80.88% Impervious Runoff Depth=2.49"
Tc=5.0 min CN=94 Runoff=0.49 cfs 0.035 af

Subcatchment 419LS: SUBCATCHMENT Runoff Area=32,282 sf 58.86% Impervious Runoff Depth=1.00"
Tc=5.0 min CN=74 Runoff=0.85 cfs 0.062 af

Subcatchment 419RS: SUBCATCHMENT Runoff Area=27,019 sf 48.53% Impervious Runoff Depth=0.70"
Tc=5.0 min CN=68 Runoff=0.45 cfs 0.036 af

Subcatchment 500os: Drive to CB14 Runoff Area=1,717 sf 100.00% Impervious Runoff Depth=2.91"
Tc=5.0 min CN=98 Runoff=0.12 cfs 0.010 af

Subcatchment 505S: McDONALD SITE Runoff Area=40,980 sf 82.99% Impervious Runoff Depth=2.29"
Tc=0.0 min CN=92 Runoff=3.00 cfs 0.180 af

Subcatchment 507S: Flow to CB507 Runoff Area=3,338 sf 99.70% Impervious Runoff Depth=2.91"
Tc=5.0 min CN=98 Runoff=0.24 cfs 0.019 af

Subcatchment 508Aos: Flow to CBC4 Runoff Area=17,911 sf 52.06% Impervious Runoff Depth=0.75"
Tc=5.0 min CN=69 Runoff=0.32 cfs 0.026 af

Subcatchment 508Bos: West Side of NH Runoff Area=39,695 sf 30.84% Impervious Runoff Depth=0.29"
Tc=5.0 min CN=57 Runoff=0.12 cfs 0.022 af

Subcatchment 508S: Flow to CB508 Runoff Area=15,987 sf 41.84% Impervious Runoff Depth=0.53"
Tc=5.0 min CN=64 Runoff=0.17 cfs 0.016 af

Subcatchment 600os: Drive to CB15 Runoff Area=3,747 sf 100.00% Impervious Runoff Depth=2.91"
Tc=5.0 min CN=98 Runoff=0.27 cfs 0.021 af

Subcatchment 600S: POND 600 Runoff Area=58,507 sf 0.88% Impervious Runoff Depth=0.46"
Tc=5.0 min CN=62 Runoff=0.49 cfs 0.051 af

Subcatchment 700os: East Side of NH Runoff Area=24,418 sf 54.75% Impervious Runoff Depth=1.86"
Tc=5.0 min CN=87 Runoff=1.27 cfs 0.087 af

Subcatchment 710S: Flow to CB710 Runoff Area=4,542 sf 89.56% Impervious Runoff Depth=2.59"
Tc=5.0 min CN=95 Runoff=0.31 cfs 0.022 af

Subcatchment 711S: Flow to CB711 Runoff Area=4,357 sf 88.02% Impervious Runoff Depth=2.59"
Tc=5.0 min CN=95 Runoff=0.30 cfs 0.022 af

Subcatchment 715S: Flow to CB715 Runoff Area=3,324 sf 61.88% Impervious Runoff Depth=2.11"
Tc=5.0 min CN=90 Runoff=0.19 cfs 0.013 af

Subcatchment 720S: Flow to DCB720 Runoff Area=17,720 sf 87.10% Impervious Runoff Depth=2.59"
Tc=5.0 min CN=95 Runoff=1.21 cfs 0.088 af

Subcatchment 725S: Flows to CB725 Runoff Area=27,585 sf 84.41% Impervious Runoff Depth=2.59"
Tc=5.0 min CN=95 Runoff=1.88 cfs 0.136 af

Subcatchment 801S: HW801 TO HW800 Runoff Area=150,892 sf 30.25% Impervious Runoff Depth=0.66"
Tc=5.0 min CN=67 Runoff=2.28 cfs 0.189 af

Subcatchment 805S: FLOW TO CB805 Runoff Area=4,093 sf 91.91% Impervious Runoff Depth=2.69"
Tc=5.0 min CN=96 Runoff=0.29 cfs 0.021 af

Subcatchment 806S: FLOW TO CB806 Runoff Area=3,812 sf 92.10% Impervious Runoff Depth=2.39"
Tc=5.0 min CN=93 Runoff=0.25 cfs 0.017 af

Subcatchment 807S: FLOW TO CB807 Runoff Area=5,559 sf 76.47% Impervious Runoff Depth=1.63"
Tc=5.0 min CN=84 Runoff=0.25 cfs 0.017 af

Subcatchment 808S: FLOW TO CB808 Runoff Area=3,999 sf 0.00% Impervious Runoff Depth=0.00"
Tc=5.0 min CN=39 Runoff=0.00 cfs 0.000 af

Subcatchment 857LS: SUBCATCHMENT Runoff Area=16,981 sf 62.84% Impervious Runoff Depth=1.11"
Tc=5.0 min CN=76 Runoff=0.51 cfs 0.036 af

Subcatchment 857RS: SUBCATCHMENT Runoff Area=31,969 sf 20.90% Impervious Runoff Depth=0.14"
Tc=5.0 min CN=51 Runoff=0.02 cfs 0.008 af

Subcatchment 900S: SUBCATCHMENT 900S Runoff Area=78,149 sf 2.46% Impervious Runoff Depth=0.00"
Flow Length=171' Tc=12.4 min CN=40 Runoff=0.00 cfs 0.000 af

Subcatchment 1100S: 1100S Runoff Area=6,092 sf 52.35% Impervious Runoff Depth=0.79"
Flow Length=100' Tc=2.6 min CN=70 Runoff=0.13 cfs 0.009 af

Subcatchment 1295GS: SUBCATCHMENT Runoff Area=70,690 sf 33.46% Impervious Runoff Depth=0.26"
Flow Length=466' Tc=10.6 min CN=56 Runoff=0.18 cfs 0.035 af

Subcatchment 1295LS: SUBCATCHMENT Runoff Area=8,078 sf 65.64% Impervious Runoff Depth=1.23"
Tc=5.0 min CN=78 Runoff=0.27 cfs 0.019 af

Subcatchment 1295RS: SUBCATCHMENT Runoff Area=12,955 sf 51.46% Impervious Runoff Depth=0.75"
Tc=5.0 min CN=69 Runoff=0.23 cfs 0.018 af

Subcatchment 1643LS: SUBCATCHMENT Runoff Area=1,696 sf 35.38% Impervious Runoff Depth=0.39"
Flow Length=125' Tc=5.2 min CN=60 Runoff=0.01 cfs 0.001 af

Subcatchment 1643RS: SUBCATCHMENT Runoff Area=8,214 sf 54.11% Impervious Runoff Depth=0.84"
Flow Length=163' Tc=7.5 min CN=71 Runoff=0.16 cfs 0.013 af

Subcatchment 1785LS: SUBCATCHMENT Runoff Area=9,115 sf 28.75% Impervious Runoff Depth=0.26"
Flow Length=231' Tc=8.1 min CN=56 Runoff=0.02 cfs 0.005 af

Subcatchment 1785RS: SUBCATCHMENT Runoff Area=5,957 sf 51.59% Impervious Runoff Depth=0.75"
Flow Length=185' Tc=3.9 min CN=69 Runoff=0.11 cfs 0.009 af

Subcatchment 1928LS: SUBCATCHMENT Runoff Area=8,001 sf 41.78% Impervious Runoff Depth=0.53"
Flow Length=173' Tc=6.7 min CN=64 Runoff=0.08 cfs 0.008 af

Subcatchment 1928RS: SUBCATCHMENT Runoff Area=6,211 sf 51.15% Impervious Runoff Depth=0.75"
Flow Length=177' Tc=4.1 min CN=69 Runoff=0.12 cfs 0.009 af

Subcatchment 1979RS: SUBCATCHMENT Runoff Area=2,259 sf 47.94% Impervious Runoff Depth=0.66"
Flow Length=93' Tc=4.4 min CN=67 Runoff=0.03 cfs 0.003 af

Subcatchment 2173LS: SUBCATCHMENT Runoff Area=18,794 sf 40.92% Impervious Runoff Depth=0.49"
Flow Length=205' Tc=6.3 min CN=63 Runoff=0.17 cfs 0.018 af

Subcatchment 2173RS: SUBCATCHMENT Runoff Area=8,515 sf 55.89% Impervious Runoff Depth=0.89"
Flow Length=126' Tc=6.5 min CN=72 Runoff=0.18 cfs 0.015 af

Subcatchment 2373S: SUBCATCHMENT Runoff Area=15,629 sf 100.00% Impervious Runoff Depth=2.91"
Tc=5.0 min CN=98 Runoff=1.13 cfs 0.087 af

Subcatchment 2440S: SUBCATCHMENT Runoff Area=1,462 sf 42.82% Impervious Runoff Depth=0.53"
Flow Length=61' Tc=3.4 min CN=64 Runoff=0.02 cfs 0.001 af

Subcatchment 2460LS: SUBCATCHMENT Runoff Area=26,630 sf 47.56% Impervious Runoff Depth=0.66"
Flow Length=378' Tc=10.9 min CN=67 Runoff=0.33 cfs 0.033 af

Subcatchment 2460RS: SUBCATCHMENT Runoff Area=13,923 sf 51.40% Impervious Runoff Depth=0.75"
Flow Length=261' Tc=3.4 min CN=69 Runoff=0.27 cfs 0.020 af

Subcatchment 2460S: SUBCATCHMENT Runoff Area=6,810 sf 74.21% Impervious Runoff Depth=1.56"
Flow Length=138' Tc=1.6 min CN=83 Runoff=0.33 cfs 0.020 af

Subcatchment 2474S: SUBCATCHMENT Runoff Area=4,253 sf 43.00% Impervious Runoff Depth=0.53"
Flow Length=76' Tc=3.7 min CN=64 Runoff=0.05 cfs 0.004 af

Subcatchment 2619S: SUBCATCHMENT Runoff Area=15,629 sf 100.00% Impervious Runoff Depth=2.91"
Tc=5.0 min CN=98 Runoff=1.13 cfs 0.087 af

Subcatchment 2723RS: SUBCATCHMENT Runoff Area=4,476 sf 61.44% Impervious Runoff Depth=1.05"
Flow Length=85' Tc=4.4 min CN=75 Runoff=0.13 cfs 0.009 af

Subcatchment 2730LS: SUBCATCHMENT Runoff Area=24,016 sf 49.95% Impervious Runoff Depth=0.70"
Flow Length=462' Tc=10.0 min CN=68 Runoff=0.33 cfs 0.032 af

Subcatchment 2730RS: SUBCATCHMENT Runoff Area=12,056 sf 52.21% Impervious Runoff Depth=0.79"
Flow Length=261' Tc=3.9 min CN=70 Runoff=0.25 cfs 0.018 af

Subcatchment 3018GS: SUBCATCHMENT Runoff Area=270,071 sf 12.90% Impervious Runoff Depth=0.04"
Flow Length=1,138' Tc=26.5 min CN=45 Runoff=0.03 cfs 0.019 af

Subcatchment 3020LS: SUBCATCHMENT Runoff Area=43,038 sf 52.99% Impervious Runoff Depth=0.79"
Flow Length=349' Tc=10.3 min CN=70 Runoff=0.70 cfs 0.065 af

Subcatchment 3020RS: SUBCATCHMENT Runoff Area=10,119 sf 60.96% Impervious Runoff Depth=1.23"
Flow Length=204' Tc=6.3 min CN=78 Runoff=0.32 cfs 0.024 af

Subcatchment 3200S: Flow to CB3200 Runoff Area=3,537 sf 0.00% Impervious Runoff Depth=0.00"
Tc=5.0 min CN=39 Runoff=0.00 cfs 0.000 af

Subcatchment RD1Sa: Roof drain 1a Runoff Area=5,231 sf 100.00% Impervious Runoff Depth=2.91"
Tc=5.0 min CN=98 Runoff=0.38 cfs 0.029 af

Subcatchment RD1Sb: Roof Drain 1b Runoff Area=3,703 sf 100.00% Impervious Runoff Depth=2.91"
Tc=5.0 min CN=98 Runoff=0.27 cfs 0.021 af

Subcatchment RD2Sa: Roof drain 2a Runoff Area=4,238 sf 100.00% Impervious Runoff Depth=2.91"
Tc=5.0 min CN=98 Runoff=0.31 cfs 0.024 af

Subcatchment RD2Sb: Roof drain 2b Runoff Area=4,138 sf 100.00% Impervious Runoff Depth=2.91"
Tc=5.0 min CN=98 Runoff=0.30 cfs 0.023 af

Subcatchment RD3S: ROOF DRAIN Runoff Area=18,273 sf 100.00% Impervious Runoff Depth=2.91"
Tc=5.0 min CN=98 Runoff=1.32 cfs 0.102 af

Subcatchment RD4S: ROOF DRAIN Runoff Area=504 sf 100.00% Impervious Runoff Depth=2.91"
Tc=5.0 min CN=98 Runoff=0.04 cfs 0.003 af

Subcatchment RD5S: ROOF DRAIN Runoff Area=18,667 sf 100.00% Impervious Runoff Depth=2.91"
Tc=5.0 min CN=98 Runoff=1.35 cfs 0.104 af

Subcatchment RD6S: ROOF DRAIN Runoff Area=9,690 sf 100.00% Impervious Runoff Depth=2.91"
Tc=5.0 min CN=98 Runoff=0.70 cfs 0.054 af

Subcatchment RD8S: Roof Drain Runoff Area=2,295 sf 100.00% Impervious Runoff Depth=2.91"
Tc=5.0 min CN=98 Runoff=0.17 cfs 0.013 af

Subcatchment RD9S: Roof Drain Runoff Area=1,575 sf 100.00% Impervious Runoff Depth=2.91"
Tc=5.0 min CN=98 Runoff=0.11 cfs 0.009 af

Reach 1AR: STREAM Avg. Flow Depth=0.43' Max Vel=2.59 fps Inflow=5.83 cfs 1.844 af
n=0.050 L=370.0' S=0.0314 '/' Capacity=108.07 cfs Outflow=5.64 cfs 1.844 af

Reach 1BR: STREAM Avg. Flow Depth=0.18' Max Vel=1.75 fps Inflow=1.52 cfs 0.131 af
n=0.050 L=310.0' S=0.0384 '/' Capacity=119.58 cfs Outflow=1.44 cfs 0.131 af

Reach 1R: STREAM Avg. Flow Depth=0.57' Max Vel=2.20 fps Inflow=7.07 cfs 1.975 af
n=0.050 L=380.0' S=0.0166 '/' Capacity=78.59 cfs Outflow=6.76 cfs 1.974 af

Reach 2R: REACH 2 Avg. Flow Depth=0.06' Max Vel=0.61 fps Inflow=0.18 cfs 0.437 af
n=0.050 L=560.0' S=0.0193 '/' Capacity=42.77 cfs Outflow=0.15 cfs 0.435 af

Reach 3R: REACH 3 Avg. Flow Depth=0.08' Max Vel=0.79 fps Inflow=0.36 cfs 0.053 af
n=0.050 L=340.0' S=0.0200 '/' Capacity=24.05 cfs Outflow=0.34 cfs 0.053 af

Reach 4R: REACH 4 Avg. Flow Depth=0.02' Max Vel=0.23 fps Inflow=0.03 cfs 0.019 af
n=0.050 L=255.0' S=0.0149 '/' Capacity=468.29 cfs Outflow=0.03 cfs 0.019 af

Reach 5R: REACH 5 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.050 L=540.0' S=0.0231 '/' Capacity=409.57 cfs Outflow=0.00 cfs 0.000 af

Reach 6R: REACH 6 Avg. Flow Depth=0.03' Max Vel=0.23 fps Inflow=0.03 cfs 0.019 af
n=0.050 L=278.0' S=0.0126 '/' Capacity=131.20 cfs Outflow=0.03 cfs 0.019 af

Reach 7R: STREAM Avg. Flow Depth=0.09' Max Vel=0.95 fps Inflow=0.34 cfs 0.071 af
n=0.050 L=194.0' S=0.0284 '/' Capacity=92.22 cfs Outflow=0.34 cfs 0.071 af

Reach 8R: STREAM Avg. Flow Depth=0.10' Max Vel=1.01 fps Inflow=0.48 cfs 0.507 af
n=0.050 L=512.0' S=0.0258 '/' Capacity=98.00 cfs Outflow=0.45 cfs 0.505 af

Reach 9R: STREAM Avg. Flow Depth=0.55' Max Vel=2.31 fps Inflow=6.79 cfs 2.479 af
n=0.050 L=100.0' S=0.0190 '/' Capacity=84.13 cfs Outflow=6.77 cfs 2.479 af

Reach 16R: Existing Culvert to West Avg. Flow Depth=0.35' Max Vel=4.53 fps Inflow=1.27 cfs 0.087 af
15.0" Round Pipe n=0.012 L=45.0' S=0.0113 '/' Capacity=7.45 cfs Outflow=1.27 cfs 0.087 af

Reach 41R: REACH Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.050 L=147.0' S=0.0184 '/' Capacity=23.05 cfs Outflow=0.00 cfs 0.000 af

Reach 326R: Reach 1BR Avg. Flow Depth=0.16' Max Vel=1.15 fps Inflow=0.86 cfs 1.408 af
n=0.050 L=358.0' S=0.0288 '/' Capacity=26.39 cfs Outflow=0.86 cfs 1.407 af

Pond 10P: CULVERT UNDER NH ROUTE 108 Peak Elev=68.90' Inflow=6.77 cfs 2.794 af
48.0" Round Culvert n=0.013 L=63.0' S=0.0063 '/' Outflow=6.77 cfs 2.794 af

Pond 11P: CB11 to CB12 Peak Elev=105.66' Inflow=0.87 cfs 0.067 af
12.0" Round Culvert n=0.010 L=19.0' S=0.0132 '/' Outflow=0.87 cfs 0.067 af

Pond 12R: From CB12 out Peak Elev=105.43' Inflow=1.59 cfs 0.122 af
12.0" Round Culvert n=0.010 L=20.0' S=0.0050 '/' Outflow=1.59 cfs 0.122 af

Pond 13P: CB13 to CB14 Peak Elev=107.07' Inflow=0.72 cfs 0.050 af
12.0" Round Culvert n=0.013 L=98.0' S=0.0101 '/' Outflow=0.72 cfs 0.050 af

Pond 14P: CB14 to CB15 Peak Elev=106.08' Inflow=0.85 cfs 0.059 af
12.0" Round Culvert n=0.013 L=25.0' S=0.0484 '/' Outflow=0.85 cfs 0.059 af

Pond 15P: CB15 out Peak Elev=104.97' Inflow=1.12 cfs 0.080 af
12.0" Round Culvert n=0.013 L=10.0' S=0.0100 '/' Outflow=1.12 cfs 0.080 af

Pond 100AP: Outlet Structure 105 to Peak Elev=101.56' Storage=19,977 cf Inflow=5.85 cfs 1.434 af
Outflow=0.86 cfs 1.408 af

Pond 100P: Outlet Structure 110 to HW109 Peak Elev=102.28' Storage=19,941 cf Inflow=12.89 cfs 1.066 af
Outflow=1.05 cfs 1.066 af

Pond 107P: CB107 TO HW106 Peak Elev=101.73' Inflow=2.05 cfs 0.150 af
15.0" Round Culvert n=0.009 L=20.0' S=0.0050 '/' Outflow=2.05 cfs 0.150 af

Pond 108P: CB108 TO CB107 Peak Elev=102.21' Inflow=1.38 cfs 0.100 af
15.0" Round Culvert n=0.009 L=106.0' S=0.0052 '/' Outflow=1.38 cfs 0.100 af

Pond 148GP: CB1+48G TO CB1+48R Peak Elev=126.47' Inflow=0.00 cfs 0.001 af
15.0" Round Culvert n=0.011 L=20.0' S=0.0050 '/' Outflow=0.00 cfs 0.001 af

Pond 148RP: CB1+48R TO CB3+04R Peak Elev=126.46' Inflow=0.17 cfs 0.013 af
15.0" Round Culvert n=0.011 L=153.0' S=0.0101 '/' Outflow=0.17 cfs 0.013 af

Pond 205P: CB205 TO HW200 Peak Elev=103.59' Inflow=5.59 cfs 0.407 af
24.0" Round Culvert n=0.013 L=54.0' S=0.0056 '/' Outflow=5.59 cfs 0.407 af

Pond 206P: CB206 TO CB205 Peak Elev=104.12' Inflow=0.72 cfs 0.054 af
15.0" Round Culvert n=0.013 L=50.0' S=0.0110 '/' Outflow=0.72 cfs 0.054 af

Pond 210P: CB210 TO CB205 Peak Elev=104.25' Inflow=3.35 cfs 0.240 af
18.0" Round Culvert n=0.013 L=65.0' S=0.0054 '/' Outflow=3.35 cfs 0.240 af

Pond 215P: DCB215 TO CB210 Peak Elev=104.74' Inflow=2.88 cfs 0.207 af
18.0" Round Culvert n=0.013 L=75.0' S=0.0053 '/' Outflow=2.88 cfs 0.207 af

Pond 220P: CB220 TO DCB215 Peak Elev=105.10' Inflow=1.05 cfs 0.077 af
15.0" Round Culvert n=0.013 L=60.0' S=0.0083 '/' Outflow=1.05 cfs 0.077 af

Pond 303GP: CB3+03G TO CB3+04R Peak Elev=126.45' Inflow=0.46 cfs 0.031 af
15.0" Round Culvert n=0.011 L=60.0' S=0.0233 '/' Outflow=0.46 cfs 0.031 af

Pond 304RP: CB3+04R TO CB4+01G Peak Elev=125.05' Inflow=0.72 cfs 0.052 af
15.0" Round Culvert n=0.011 L=94.0' S=0.0197 '/' Outflow=0.72 cfs 0.052 af

Pond 305P: CB305 TO HW300 Peak Elev=104.40' Inflow=5.13 cfs 0.396 af
24.0" Round Culvert n=0.009 L=16.0' S=0.0062 '/' Outflow=5.13 cfs 0.396 af

Pond 310P: CB310 TO CB305 Peak Elev=104.72' Inflow=4.64 cfs 0.362 af
24.0" Round Culvert n=0.013 L=28.0' S=0.0054 '/' Outflow=4.64 cfs 0.362 af

Pond 315P: CB315 TO CB310 Peak Elev=106.23' Inflow=4.64 cfs 0.344 af
18.0" Round Culvert n=0.009 L=185.0' S=0.0054 '/' Outflow=4.64 cfs 0.344 af

Pond 316P: CB316 TO CB315 Peak Elev=106.24' Inflow=0.25 cfs 0.018 af
15.0" Round Culvert n=0.009 L=24.0' S=0.0063 '/' Outflow=0.25 cfs 0.018 af

Pond 320P: CB320 TO CB315 Peak Elev=108.64' Inflow=4.39 cfs 0.326 af
18.0" Round Culvert n=0.009 L=213.0' S=0.0110 '/' Outflow=4.39 cfs 0.326 af

Pond 320Pa: Porous Walk Peak Elev=111.86' Storage=1 cf Inflow=0.03 cfs 0.002 af
Outflow=0.03 cfs 0.002 af

Pond 321P: CB321 TO CB320 Peak Elev=113.00' Inflow=2.12 cfs 0.160 af
15.0" Round Culvert n=0.013 L=114.0' S=0.0243 '/' Outflow=2.12 cfs 0.160 af

Pond 321Pa: Porous Walk Peak Elev=116.65' Storage=0 cf Inflow=0.03 cfs 0.003 af
Outflow=0.03 cfs 0.003 af

Pond 322P: CB323 TO CB322 Peak Elev=118.63' Inflow=1.83 cfs 0.137 af
15.0" Round Culvert n=0.013 L=70.0' S=0.0800 '/' Outflow=1.83 cfs 0.137 af

Pond 323P: CB324 to CB323 Peak Elev=121.82' Inflow=1.83 cfs 0.137 af
15.0" Round Culvert n=0.013 L=37.0' S=0.0100 '/' Outflow=1.83 cfs 0.137 af

Pond 323Pa: Porous Walk Peak Elev=129.25' Storage=0 cf Inflow=0.04 cfs 0.003 af
Outflow=0.03 cfs 0.003 af

Pond 324P: CB325 to CB324 Peak Elev=122.39' Inflow=1.56 cfs 0.116 af
15.0" Round Culvert n=0.013 L=57.0' S=0.0100 '/' Outflow=1.56 cfs 0.116 af

Pond 325P: CB326 TO CB325 Peak Elev=123.25' Inflow=1.40 cfs 0.104 af
15.0" Round Culvert n=0.013 L=67.0' S=0.0115 '/' Outflow=1.40 cfs 0.104 af

Pond 326P: CB327 TO CB326 Peak Elev=124.42' Inflow=1.28 cfs 0.095 af
15.0" Round Culvert n=0.013 L=120.0' S=0.0100 '/' Outflow=1.28 cfs 0.095 af

Pond 326Pa: Porous Walk Peak Elev=127.95' Storage=0 cf Inflow=0.02 cfs 0.002 af
Outflow=0.02 cfs 0.002 af

Pond 326Pb: Porous Walk Peak Elev=129.05' Storage=0 cf Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Pond 326Pc: Porous Walk Peak Elev=129.65' Storage=0 cf Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Pond 330P: CB330 T0 CB320 Peak Elev=109.51' Inflow=2.04 cfs 0.149 af
15.0" Round Culvert n=0.009 L=35.0' S=0.0286 '/' Outflow=2.04 cfs 0.149 af

Pond 330Pa: Porous Walk Peak Elev=114.25' Storage=0 cf Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Pond 330Pb: Porous Walk Peak Elev=112.65' Storage=0 cf Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Pond 331P: CB331 TO CB330 Peak Elev=110.49' Inflow=0.72 cfs 0.052 af
15.0" Round Culvert n=0.013 L=12.0' S=0.0100 '/' Outflow=0.72 cfs 0.052 af

Pond 331Pa: Porous Walk Peak Elev=116.25' Storage=0 cf Inflow=0.01 cfs 0.001 af
Outflow=0.01 cfs 0.001 af

Pond 332P: CB332 to CB331 Peak Elev=111.09' Inflow=0.07 cfs 0.005 af
15.0" Round Culvert n=0.013 L=50.0' S=0.0166 '/' Outflow=0.07 cfs 0.005 af

Pond 332Pa: Porous Walk Peak Elev=116.35' Storage=0 cf Inflow=0.05 cfs 0.003 af
Outflow=0.05 cfs 0.003 af

Pond 333P: CB333 TO CB331 Peak Elev=113.01' Inflow=0.31 cfs 0.024 af
15.0" Round Culvert n=0.013 L=135.0' S=0.0193 '/' Outflow=0.31 cfs 0.024 af

Pond 333Pa: Porous Walk Peak Elev=128.65' Storage=0 cf Inflow=0.00 cfs 0.001 af
Outflow=0.00 cfs 0.001 af

Pond 335P: CB335 TO CB330 Peak Elev=110.37' Inflow=1.10 cfs 0.081 af
15.0" Round Culvert n=0.009 L=29.0' S=0.0345 '/' Outflow=1.10 cfs 0.081 af

Pond 340P: CB340TO CB335 Peak Elev=111.93' Inflow=0.97 cfs 0.072 af
15.0" Round Culvert n=0.009 L=31.0' S=0.0355 '/' Outflow=0.97 cfs 0.072 af

Pond 345P: DMH345 TO CB340 Peak Elev=114.10' Inflow=0.87 cfs 0.064 af
15.0" Round Culvert n=0.009 L=59.0' S=0.0356 '/' Outflow=0.87 cfs 0.064 af

Pond 350P: CB350 TO DMH345 Peak Elev=119.10' Inflow=0.87 cfs 0.064 af
15.0" Round Culvert n=0.009 L=64.0' S=0.0344 '/' Outflow=0.87 cfs 0.064 af

Pond 351P: CB351 TO CB350 Peak Elev=120.71' Inflow=0.17 cfs 0.012 af
15.0" Round Culvert n=0.009 L=24.0' S=0.0063 '/' Outflow=0.17 cfs 0.012 af

Pond 355P: DMH355 TO CB350 Peak Elev=124.18' Inflow=0.52 cfs 0.040 af
15.0" Round Culvert n=0.009 L=84.0' S=0.0351 '/' Outflow=0.52 cfs 0.040 af

Pond 360P: CB360 TO DMH355 Peak Elev=131.68' Inflow=0.52 cfs 0.040 af
15.0" Round Culvert n=0.009 L=95.0' S=0.0347 '/' Outflow=0.52 cfs 0.040 af

Pond 365P: CB365 TO CB360 Peak Elev=132.92' Inflow=0.27 cfs 0.021 af
15.0" Round Culvert n=0.009 L=36.0' S=0.0056 '/' Outflow=0.27 cfs 0.021 af

Pond 402GP: CB4+02G TO CB4+19R Peak Elev=123.19' Inflow=0.72 cfs 0.056 af
15.0" Round Culvert n=0.011 L=26.0' S=0.0058 '/' Outflow=0.72 cfs 0.056 af

Pond 405P: CB405 TO HW400 Peak Elev=102.11' Inflow=2.53 cfs 0.185 af
18.0" Round Culvert n=0.013 L=33.0' S=0.0061 '/' Outflow=2.53 cfs 0.185 af

Pond 410P: DCB410 TO CB405 Peak Elev=102.90' Inflow=2.00 cfs 0.146 af
15.0" Round Culvert n=0.013 L=119.0' S=0.0050 '/' Outflow=2.00 cfs 0.146 af

Pond 415P: CB415 TO CB410 Peak Elev=103.09' Inflow=0.83 cfs 0.060 af
15.0" Round Culvert n=0.013 L=50.0' S=0.0054 '/' Outflow=0.83 cfs 0.060 af

Pond 416P: CB416 TO CB415 Peak Elev=103.28' Inflow=0.49 cfs 0.035 af
15.0" Round Culvert n=0.013 L=50.0' S=0.0052 '/' Outflow=0.49 cfs 0.035 af

Pond 419LP: CB4+19L TO DMH1001+25 Peak Elev=117.73' Inflow=3.04 cfs 0.271 af
24.0" Round Culvert n=0.011 L=114.0' S=0.0202 '/' Outflow=3.04 cfs 0.271 af

Pond 419RP: CB4+19R TO CB4+19L Peak Elev=123.01' Inflow=1.17 cfs 0.092 af
15.0" Round Culvert n=0.011 L=22.0' S=0.0068 '/' Outflow=1.17 cfs 0.092 af

Pond 505P: dmh505 TO HW500 Peak Elev=104.19' Inflow=1.10 cfs 0.111 af
18.0" Round Culvert n=0.013 L=12.0' S=0.0083 '/' Outflow=1.10 cfs 0.111 af

Pond 507P: CB507 TO CB505 Peak Elev=105.23' Inflow=1.10 cfs 0.111 af
Primary=1.10 cfs 0.111 af Secondary=0.00 cfs 0.000 af Outflow=1.10 cfs 0.111 af

Pond 508P: CB508 TO CB507 Peak Elev=107.47' Inflow=0.87 cfs 0.092 af
18.0" Round Culvert n=0.009 L=77.0' S=0.0286 '/' Outflow=0.87 cfs 0.092 af

Pond 509P: CB509 to CB508 Peak Elev=108.81' Inflow=0.87 cfs 0.092 af
18.0" Round Culvert n=0.009 L=34.0' S=0.0382 '/' Outflow=0.87 cfs 0.092 af

Pond 600P: DETENTION BASIN OS605 TO Peak Elev=98.58' Storage=44,079 cf Inflow=7.45 cfs 0.835 af
Outflow=0.14 cfs 0.421 af

Pond 710P: CB710 TO HW700 Peak Elev=100.76' Inflow=3.89 cfs 0.282 af
18.0" Round Culvert n=0.009 L=109.0' S=0.0055 '/' Outflow=3.89 cfs 0.282 af

Pond 711P: CB711 TO CB710 Peak Elev=103.45' Inflow=0.30 cfs 0.022 af
15.0" Round Culvert n=0.009 L=52.0' S=0.0135 '/' Outflow=0.30 cfs 0.022 af

Pond 715P: CB715 TO CB710 Peak Elev=101.23' Inflow=3.29 cfs 0.238 af
18.0" Round Culvert n=0.009 L=65.0' S=0.0054 '/' Outflow=3.29 cfs 0.238 af

Pond 720P: DCB720 TO CB715 Peak Elev=101.69' Inflow=3.09 cfs 0.224 af
18.0" Round Culvert n=0.009 L=53.0' S=0.0066 '/' Outflow=3.09 cfs 0.224 af

Pond 725P: CB725 TO DCB720 Peak Elev=102.15' Inflow=1.88 cfs 0.136 af
15.0" Round Culvert n=0.009 L=75.0' S=0.0060 '/' Outflow=1.88 cfs 0.136 af

Pond 801P: HW801 TO HW800 Peak Elev=101.43' Storage=3,062 cf Inflow=6.43 cfs 0.507 af
15.0" Round Culvert n=0.013 L=65.0' S=0.0215 '/' Outflow=3.72 cfs 0.502 af

Pond 805P: CB805 TO HW802 Peak Elev=102.17' Inflow=4.20 cfs 0.318 af
18.0" Round Culvert n=0.009 L=68.0' S=0.0051 '/' Outflow=4.20 cfs 0.318 af

Pond 806P: CB806 TO CB805 Peak Elev=103.80' Inflow=3.21 cfs 0.243 af
18.0" Round Culvert n=0.009 L=100.0' S=0.0175 '/' Outflow=3.21 cfs 0.243 af

Pond 807P: CB807 TO CB806 Peak Elev=105.85' Inflow=1.61 cfs 0.122 af
18.0" Round Culvert n=0.009 L=100.0' S=0.0215 '/' Outflow=1.61 cfs 0.122 af

Pond 808P: CB808 TO CB807 Peak Elev=106.73' Inflow=1.32 cfs 0.102 af
15.0" Round Culvert n=0.009 L=128.0' S=0.0051 '/' Outflow=1.32 cfs 0.102 af

Pond 857LP: CB8+57L TO CB4+19L Peak Elev=133.20' Inflow=1.02 cfs 0.117 af
15.0" Round Culvert n=0.011 L=439.0' S=0.0237 '/' Outflow=1.02 cfs 0.117 af

Pond 857RP: CB8+57R TO CB8+57L Peak Elev=133.17' Inflow=0.02 cfs 0.008 af
15.0" Round Culvert n=0.011 L=22.0' S=0.0068 '/' Outflow=0.02 cfs 0.008 af

Pond 900P: POND 900 Peak Elev=98.60' Storage=18,162 cf Inflow=6.72 cfs 0.627 af
Discarded=0.24 cfs 0.554 af Primary=0.00 cfs 0.000 af Outflow=0.24 cfs 0.554 af

Pond 1000P: Sediment Forebay Peak Elev=111.50' Storage=6 cf Inflow=0.02 cfs 0.014 af
Outflow=0.02 cfs 0.014 af

Pond 1100P: Subsurface Detention SC-740 Peak Elev=117.31' Storage=1,137 cf Inflow=0.95 cfs 0.089 af
Discarded=0.13 cfs 0.089 af Primary=0.00 cfs 0.000 af Outflow=0.13 cfs 0.089 af

Pond 1200P: Subsurface Detention SC-740 Peak Elev=109.81' Storage=994 cf Inflow=0.79 cfs 0.079 af
Discarded=0.13 cfs 0.079 af Primary=0.00 cfs 0.000 af Outflow=0.13 cfs 0.079 af

Pond 1295GP: CB12+95G TO CB12+95R Peak Elev=137.12' Inflow=0.18 cfs 0.035 af
15.0" Round Culvert n=0.011 L=11.0' S=0.0091 '/' Outflow=0.18 cfs 0.035 af

Pond 1295LP: CB12+95L TO CB8+57L Peak Elev=136.78' Inflow=0.52 cfs 0.073 af
15.0" Round Culvert n=0.011 L=438.0' S=0.0083 '/' Outflow=0.52 cfs 0.073 af

Pond 1295RP: CB12+95R CB12+95L Peak Elev=136.98' Inflow=0.28 cfs 0.054 af
15.0" Round Culvert n=0.011 L=22.0' S=0.0091 '/' Outflow=0.28 cfs 0.054 af

Pond 1643LP: CB16+43L TO CB16+43R Peak Elev=137.70' Inflow=0.01 cfs 0.001 af
12.0" Round Culvert n=0.011 L=22.0' S=0.0068 '/' Outflow=0.01 cfs 0.001 af

Pond 1643RP: CB16+43R TO CB17+85R Peak Elev=136.33' Inflow=0.17 cfs 0.014 af
12.0" Round Culvert n=0.011 L=143.0' S=0.0346 '/' Outflow=0.17 cfs 0.014 af

Pond 1785LP: CB17+85L TO CB17+85R Peak Elev=131.38' Inflow=0.02 cfs 0.005 af
12.0" Round Culvert n=0.011 L=22.0' S=0.0068 '/' Outflow=0.02 cfs 0.005 af

Pond 1785RP: CB17+85R TO DMH18+69 Peak Elev=130.29' Inflow=0.28 cfs 0.028 af
12.0" Round Culvert n=0.011 L=86.0' S=0.0337 '/' Outflow=0.28 cfs 0.028 af

Pond 1869P: DMH18+69 TO CB19+28L Peak Elev=127.26' Inflow=0.28 cfs 0.028 af
12.0" Round Culvert n=0.011 L=55.0' S=0.0345 '/' Outflow=0.28 cfs 0.028 af

Pond 1928LP: CB19+28L TO CB19+79R Peak Elev=123.63' Inflow=0.46 cfs 0.045 af
12.0" Round Culvert n=0.011 L=55.0' S=0.0282 '/' Outflow=0.46 cfs 0.045 af

Pond 1928RP: CB19+28R TO CB19+28L Peak Elev=125.59' Inflow=0.12 cfs 0.009 af
12.0" Round Culvert n=0.011 L=22.0' S=0.0068 '/' Outflow=0.12 cfs 0.009 af

Pond 1979RP: CB19+79 TO CB21+73R Peak Elev=121.95' Inflow=0.50 cfs 0.047 af
12.0" Round Culvert n=0.011 L=190.0' S=0.0191 '/' Outflow=0.50 cfs 0.047 af

Pond 2168P: DMH 21+68R to DMH 22+41R Peak Elev=105.85' Inflow=0.02 cfs 0.014 af
12.0" Round Culvert n=0.012 L=76.0' S=0.0150 '/' Outflow=0.02 cfs 0.014 af

Pond 2173LP: CB21+73L TO CB21+73R Peak Elev=118.70' Inflow=0.17 cfs 0.018 af
12.0" Round Culvert n=0.011 L=22.0' S=0.0114 '/' Outflow=0.17 cfs 0.018 af

Pond 2173RP: CB21+73R TO DMH21+95R Peak Elev=118.33' Inflow=0.85 cfs 0.080 af
18.0" Round Culvert n=0.011 L=30.0' S=0.0357 '/' Outflow=0.85 cfs 0.080 af

Pond 2182P: DCB 21+82R TO DMH 21+97R Peak Elev=117.31' Inflow=0.13 cfs 0.009 af
12.0" Round Culvert n=0.011 L=10.0' S=0.0100 '/' Outflow=0.13 cfs 0.009 af

Pond 2195P: DMH21+95R TO Subsurface Detention Peak Elev=117.31' Inflow=0.85 cfs 0.080 af
24.0" Round Culvert n=0.011 L=8.0' S=0.0000 '/' Outflow=0.85 cfs 0.080 af

Pond 2197P: DMH 21+97R TO Subsurface Detention Peak Elev=117.31' Inflow=0.13 cfs 0.009 af
12.0" Round Culvert n=0.011 L=10.0' S=0.0000 '/' Outflow=0.13 cfs 0.009 af

Pond 2210P: DMH 22+10R to DMH22+20R Peak Elev=116.80' Inflow=0.00 cfs 0.000 af
12.0" Round Culvert n=0.011 L=5.0' S=0.0200 '/' Outflow=0.00 cfs 0.000 af

Pond 2220P: DMH22+20R TO DMH22+41R Peak Elev=108.60' Inflow=0.00 cfs 0.000 af
12.0" Round Culvert n=0.011 L=53.0' S=0.0747 '/' Outflow=0.00 cfs 0.000 af

Pond 2241: DMH 22+41R to DMH24+86R Peak Elev=105.09' Inflow=1.13 cfs 0.101 af
12.0" Round Culvert n=0.012 L=188.0' S=0.0150 '/' Outflow=1.13 cfs 0.101 af

Pond 2286P: DMH 22+86R to DMH24+78R Peak Elev=102.17' Inflow=1.13 cfs 0.101 af
12.0" Round Culvert n=0.012 L=54.0' S=0.0150 '/' Outflow=1.13 cfs 0.101 af

Pond 2440P: TD24+40R TO CB24+60R Peak Elev=111.97' Inflow=0.02 cfs 0.001 af
12.0" Round Culvert n=0.011 L=62.0' S=0.0323 '/' Outflow=0.02 cfs 0.001 af

Pond 2460LP: CB24+60L TO CB24+60R Peak Elev=113.69' Inflow=0.33 cfs 0.033 af
12.0" Round Culvert n=0.011 L=22.0' S=0.0100 '/' Outflow=0.33 cfs 0.033 af

Pond 2460P: CB24+60R TO DMH24+85R Peak Elev=110.09' Inflow=0.35 cfs 0.022 af
12.0" Round Culvert n=0.011 L=28.0' S=0.0107 '/' Outflow=0.35 cfs 0.022 af

Pond 2460RP: CB24+60R TO DMH24+86R Peak Elev=113.43' Inflow=0.49 cfs 0.053 af
12.0" Round Culvert n=0.011 L=58.0' S=0.0617 '/' Outflow=0.49 cfs 0.053 af

Pond 2468P: DMH24+86R TO Subsurface Detention Peak Elev=109.81' Inflow=0.49 cfs 0.053 af
24.0" Round Culvert n=0.011 L=8.0' S=0.0000 '/' Outflow=0.49 cfs 0.053 af

Pond 2474P: DMH24+74R TO DMH24+85R Peak Elev=110.01' Inflow=0.05 cfs 0.004 af
12.0" Round Culvert n=0.011 L=12.0' S=0.0333 '/' Outflow=0.05 cfs 0.004 af

Pond 2478P: DMH24+78R to HW24+89R Peak Elev=101.29' Inflow=1.13 cfs 0.101 af
12.0" Round Culvert n=0.012 L=14.0' S=0.0150 '/' Outflow=1.13 cfs 0.101 af

Pond 2485P: DMH24+85R TO Subsurface Detention Peak Elev=109.81' Inflow=0.38 cfs 0.026 af
24.0" Round Culvert n=0.011 L=6.0' S=0.0000 '/' Outflow=0.38 cfs 0.026 af

Pond 2495P: DMH24+95R TO DMH25+00 Peak Elev=109.40' Inflow=0.00 cfs 0.000 af
12.0" Round Culvert n=0.011 L=10.0' S=0.0200 '/' Outflow=0.00 cfs 0.000 af

Pond 2505P: DMH24+82R to DMH24+78R Peak Elev=103.60' Inflow=0.00 cfs 0.000 af
12.0" Round Culvert n=0.011 L=43.0' S=0.0649 '/' Outflow=0.00 cfs 0.000 af

Pond 2625RP: DMH26+25R TO HW26+25 Peak Elev=101.52' Inflow=1.73 cfs 0.146 af
12.0" Round Culvert n=0.011 L=15.0' S=0.0200 '/' Outflow=1.73 cfs 0.146 af

Pond 2723P: DMH27+23R TO DMH26+25R Peak Elev=102.80' Inflow=0.63 cfs 0.059 af
12.0" Round Culvert n=0.011 L=93.0' S=0.0161 '/' Outflow=0.63 cfs 0.059 af

Pond 2723RP: TD27+23R TO DMH27+23R Peak Elev=104.77' Inflow=0.13 cfs 0.009 af
12.0" Round Culvert n=0.011 L=39.0' S=0.0538 '/' Outflow=0.13 cfs 0.009 af

Pond 2730LP: CB27+30L TO 27+30R Peak Elev=109.70' Inflow=0.33 cfs 0.032 af
12.0" Round Culvert n=0.011 L=22.0' S=0.0100 '/' Outflow=0.33 cfs 0.032 af

Pond 2730RP: CB27+30R TO DMH27+23R Peak Elev=109.44' Inflow=0.51 cfs 0.050 af
12.0" Round Culvert n=0.011 L=125.0' S=0.0526 '/' Outflow=0.51 cfs 0.050 af

Pond 3018GP: CB30+18G TO CB30+20L Peak Elev=103.21' Inflow=3.04 cfs 0.290 af
24.0" Round Culvert n=0.011 L=10.0' S=0.0100 '/' Outflow=3.04 cfs 0.290 af

Pond 3020LP: CB30+20L TO CB30+20R Peak Elev=102.96' Inflow=3.57 cfs 0.355 af
24.0" Round Culvert n=0.011 L=22.0' S=0.0091 '/' Outflow=3.57 cfs 0.355 af

Pond 3020RP: CB30+20R TO HW29+63 Peak Elev=102.54' Inflow=3.89 cfs 0.379 af
24.0" Round Culvert n=0.011 L=135.0' S=0.0089 '/' Outflow=3.89 cfs 0.379 af

Pond 3200P: CB3200 TO CB320 Peak Elev=108.63' Inflow=0.00 cfs 0.000 af
15.0" Round Culvert n=0.009 L=90.0' S=0.0050 '/' Outflow=0.00 cfs 0.000 af

Pond 100125P: DMH1001+25 TO DMH1003+11 Peak Elev=108.33' Inflow=3.04 cfs 0.271 af
24.0" Round Culvert n=0.011 L=194.0' S=0.0201 '/' Outflow=3.04 cfs 0.271 af

Pond 100311P: DMH1003+11C TO CB30+18G Peak Elev=104.33' Inflow=3.04 cfs 0.271 af
24.0" Round Culvert n=0.011 L=130.0' S=0.0092 '/' Outflow=3.04 cfs 0.271 af

Pond BMP-1: BMP-1 STORMTECH Peak Elev=105.53' Storage=3,480 cf Inflow=3.00 cfs 0.180 af
Discarded=0.01 cfs 0.057 af Primary=1.03 cfs 0.087 af Outflow=1.04 cfs 0.143 af

Pond C3P: CBC3 to CB509 Peak Elev=114.23' Inflow=0.70 cfs 0.076 af
18.0" Round Culvert n=0.009 L=183.0' S=0.0295 '/' Outflow=0.70 cfs 0.076 af

Pond C4P: CBC4 to CBC3 Peak Elev=116.46' Inflow=0.61 cfs 0.054 af
15.0" Round Culvert n=0.009 L=212.0' S=0.0092 '/' Outflow=0.61 cfs 0.054 af

Pond C5P: CBC5 to DMHC6 Peak Elev=118.25' Inflow=0.28 cfs 0.022 af
15.0" Round Culvert n=0.013 L=66.0' S=0.0091 '/' Outflow=0.28 cfs 0.022 af

Pond C6P: DMHC6 to CBC4 Peak Elev=117.14' Inflow=0.28 cfs 0.028 af
15.0" Round Culvert n=0.013 L=32.0' S=0.0219 '/' Outflow=0.28 cfs 0.028 af

Pond C7P: CBC7 to DMHC6 Peak Elev=118.63' Inflow=0.02 cfs 0.006 af
15.0" Round Culvert n=0.013 L=189.0' S=0.0082 '/' Outflow=0.02 cfs 0.006 af

Pond C8P: CBC8 to CBC7 Peak Elev=119.07' Inflow=0.02 cfs 0.006 af
15.0" Round Culvert n=0.013 L=33.0' S=0.0106 '/' Outflow=0.02 cfs 0.006 af

Pond RD1Pa: RD1a TO CB327 Peak Elev=125.34' Inflow=0.38 cfs 0.029 af
12.0" Round Culvert n=0.013 L=43.0' S=0.0200 '/' Outflow=0.38 cfs 0.029 af

Pond RD1Pb: RD1b to CB 324 Peak Elev=123.79' Inflow=0.27 cfs 0.021 af
12.0" Round Culvert n=0.013 L=10.0' S=0.0800 '/' Outflow=0.27 cfs 0.021 af

Pond RD2Pa: RD2a to CB333 Peak Elev=113.51' Inflow=0.31 cfs 0.024 af
12.0" Round Culvert n=0.013 L=23.0' S=0.0100 '/' Outflow=0.31 cfs 0.024 af

Pond RD2Pb: RD2b TO CB322 Peak Elev=113.50' Inflow=0.30 cfs 0.023 af
12.0" Round Culvert n=0.013 L=20.0' S=0.0340 '/' Outflow=0.30 cfs 0.023 af

Pond RD3P: RD3 TO CB808 Peak Elev=107.20' Inflow=1.32 cfs 0.102 af
12.0" Round Culvert n=0.009 L=7.0' S=0.0214 '/' Outflow=1.32 cfs 0.102 af

Pond RD4P: RD4 TO CB807 Peak Elev=108.10' Inflow=0.04 cfs 0.003 af
12.0" Round Culvert n=0.009 L=34.0' S=0.0441 '/' Outflow=0.04 cfs 0.003 af

Pond RD5P: RD5 TO CB806 Peak Elev=106.71' Inflow=1.35 cfs 0.104 af
12.0" Round Culvert n=0.009 L=45.0' S=0.0567 '/' Outflow=1.35 cfs 0.104 af

Pond RD6P: RD6 TO CB805 Peak Elev=103.48' Inflow=0.70 cfs 0.054 af
12.0" Round Culvert n=0.009 L=60.0' S=0.0233 '/' Outflow=0.70 cfs 0.054 af

Pond RD8P: RD8 TO CB107 Peak Elev=102.05' Inflow=0.17 cfs 0.013 af
8.0" Round Culvert n=0.009 L=28.0' S=0.0107 '/' Outflow=0.17 cfs 0.013 af

Pond RD9P: RD9 TO CB405 Peak Elev=102.51' Inflow=0.11 cfs 0.009 af
8.0" Round Culvert n=0.009 L=32.0' S=0.0094 '/' Outflow=0.11 cfs 0.009 af

Total Runoff Area = 121.896 ac Runoff Volume = 4.448 af Average Runoff Depth = 0.44"
80.32% Pervious = 97.907 ac 19.68% Impervious = 23.989 ac

Summary for Subcatchment 1S: SUBCATCHMENT 1

Runoff = 0.02 cfs @ 15.37 hrs, Volume= 0.014 af, Depth= 0.06"
Routed to Pond 1000P : Sediment Forebay

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
15,841	30	Woods, Good, HSG A
82,224	39	>75% Grass cover, Good, HSG A
18,660	98	Paved parking, HSG A
116,725	47	Weighted Average
98,065		84.01% Pervious Area
18,660		15.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	100	0.0312	0.09		**Sheet Flow, Segment 1** Woods: Light underbrush n= 0.400 P2= 3.00"
11.3	54	0.0312	0.08		**Sheet Flow, Segment 2** Woods: Light underbrush n= 0.400 P2= 3.00"
0.0	20	0.3330	9.29		**Shallow Concentrated Flow, Segment 3** Unpaved Kv= 16.1 fps
1.9	390	0.0500	3.35		**Shallow Concentrated Flow, Segment 4** Grassed Waterway Kv= 15.0 fps
2.1	240	0.0168	1.94		**Shallow Concentrated Flow, Segment 5** Grassed Waterway Kv= 15.0 fps
0.6	124	0.0500	3.35		**Shallow Concentrated Flow, Segment 6** Grassed Waterway Kv= 15.0 fps
34.5	928	Total			

Summary for Subcatchment 11S: flow to reach 2R

Runoff = 0.15 cfs @ 12.14 hrs, Volume= 0.016 af, Depth= 0.49"
Routed to Reach 2R : REACH 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
1,674	39	>75% Grass cover, Good, HSG A
2,356	30	Woods, Good, HSG A
7,731	70	Woods, Good, HSG C
5,518	74	>75% Grass cover, Good, HSG C
88	89	Gravel, HSG C
17,367	63	Weighted Average
17,367		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	4	0.0100	0.07		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
0.7	15	0.3333	0.35		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
1.2	9	0.0333	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
4.6	22	0.0500	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.00"
0.5	30	0.0370	0.96		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.0	80	Total			

Summary for Subcatchment 12S: Flow to Lot H-2 (REACH 1AR)

+3420 MPERV FROM MCDONALDS

Runoff = 5.44 cfs @ 12.13 hrs, Volume= 0.437 af, Depth= 1.29"
Routed to Reach 1AR : STREAM

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
661	70	Woods, Good, HSG C
26,644	74	Pasture/grassland/range, Good, HSG C
8,615	61	>75% Grass cover, Good, HSG B
17,674	98	Impervious
120	77	Brush, Fair, HSG D
8,038	77	Woods, Good, HSG D
87,918	80	Pasture/grassland/range, Good, HSG D
466	61	>75% Grass cover, Good, HSG B
1,222	39	>75% Grass cover, Good, HSG A
756	74	>75% Grass cover, Good, HSG C
1,938	74	>75% Grass cover, Good, HSG C
21,858	74	Pasture/grassland/range, Good, HSG C
447	91	Gravel, HSG D
487	80	>75% Grass cover, Good, HSG D
176,844	79	Weighted Average
159,170		90.01% Pervious Area
17,674		9.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	3	0.0200	0.66		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
1.0	22	0.3333	0.37		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
2.8	25	0.0800	0.15		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.00"
3.6	263	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	332	0.0250	3.59	334.67	**Parabolic Channel,** W=140.00' D=1.00' Area=93.3 sf Perim=140.0' n= 0.050
9.0	645	Total			

Summary for Subcatchment 14S: Flow to Lot H-2 (REACH 1BR)

Runoff = 1.52 cfs @ 12.13 hrs, Volume= 0.131 af, Depth= 0.89"
Routed to Reach 1BR : STREAM

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
410	39	>75% Grass cover, Good, HSG A
14,327	61	>75% Grass cover, Good, HSG B
15,863	74	Pasture/grassland/range, Good, HSG C
24,534	80	Pasture/grassland/range, Good, HSG D
17,955	70	Woods, Good, HSG C
3,459	77	Woods, Good, HSG D
76,548	72	Weighted Average
76,548		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	50	0.0125	0.12		**Sheet Flow, FLOW THROUGH GRASS** Grass: Short n= 0.150 P2= 3.00"
0.1	6	0.0125	1.68		**Shallow Concentrated Flow, FLOW THROUGH GRASS** Grassed Waterway Kv= 15.0 fps
0.0	19	0.3333	8.66		**Shallow Concentrated Flow, FLOW THROUGH GRASS** Grassed Waterway Kv= 15.0 fps
0.1	20	0.1000	4.74		**Shallow Concentrated Flow, FLOW THROUGH GRASS** Grassed Waterway Kv= 15.0 fps
0.3	29	0.0690	1.84		**Shallow Concentrated Flow, FLOW THROUGH PASTURE** Short Grass Pasture Kv= 7.0 fps
0.7	152	0.0310	3.44	220.23	**Parabolic Channel,** W=120.00' D=0.80' Area=64.0 sf Perim=120.0' n= 0.050
0.8	140	0.0236	3.00	192.15	**Parabolic Channel,** W=120.00' D=0.80' Area=64.0 sf Perim=120.0' n= 0.050
9.0	416	Total			

Summary for Subcatchment 15S: offsite flow

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Reach 5R : REACH 5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
308,398	30	Woods, Good, HSG A
6,100	98	Paved parking & roofs
43,560	39	>75% Grass cover, Good, HSG A
358,058	32	Weighted Average
351,958		98.30% Pervious Area
6,100		1.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
7.6	38	0.0420	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.00"
19.7	1,210	0.0420	1.02		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
27.5	1,260	Total			

Summary for Subcatchment 16S: offsite flow

Runoff = 0.50 cfs @ 15.05 hrs, Volume= 0.315 af, Depth= 0.08"
Routed to Pond 10P : CULVERT UNDER NH ROUTE 108

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
9,858	30	Woods, Good, HSG A
13,459	35	Brush, Fair, HSG A
25,519	70	Woods, Good, HSG C
28,002	70	Brush, Fair, HSG C
40,537	77	Brush, Fair, HSG D
15,070	80	Pasture/grassland/range, Good, HSG D
12,170	77	Woods, Good, HSG D
4,441	98	Paved parking & roofs
32,048	70	Woods, Good, HSG C
30,577	79	Pasture/grassland/range, Fair, HSG C
5,334	98	Paved parking & roofs
16,304	80	>75% Grass cover, Good, HSG D
10,644	77	Woods, Good, HSG D
9,584	98	Paved parking & roofs
58,128	98	Paved parking & roofs
65,340	74	>75% Grass cover, Good, HSG C
260,648	70	Woods, Good, HSG C
999,761	30	Woods, Good, HSG A
326,700	39	>75% Grass cover, Good, HSG A
88,350	98	Paved parking & roofs
2,052,474	48	Weighted Average
1,886,637		91.92% Pervious Area
165,837		8.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.9	100	0.0150	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.00"
7.6	370	0.0260	0.81		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	136	0.0126	6.06	262.50	**Parabolic Channel,** W=50.00' D=1.30' Area=43.3 sf Perim=50.1' n= 0.025
0.3	194	0.0284	9.61	153.83	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=2.00' Z= 2.0 '/' Top.W=12.00' n= 0.030
0.9	512	0.0258	9.08	163.39	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=2.00' Z= 2.5 '/' Top.W=14.00' n= 0.030
0.2	100	0.0190	7.79	140.22	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=2.00' Z= 2.5 '/' Top.W=14.00' n= 0.030
34.3	1,412	Total			

Summary for Subcatchment 30S: SUBCATCHMENT 30

Runoff = 0.36 cfs @ 12.40 hrs, Volume= 0.053 af, Depth= 0.57"
Routed to Reach 3R : REACH 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
1,130	55	Woods, Good, HSG B
9,811	61	>75% Grass cover, Good, HSG B
1,630	85	Gravel roads, HSG B
11,050	56	Brush, Fair, HSG B
1,080	89	Gravel roads, HSG C
22,291	70	Brush, Fair, HSG C
991	70	Woods, Good, HSG C
215	39	>75% Grass cover, Good, HSG A
48,198	65	Weighted Average
48,198		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	100	0.0200	0.08		**Sheet Flow, Segment 1** Woods: Light underbrush n= 0.400 P2= 3.00"
1.3	54	0.0200	0.71		**Shallow Concentrated Flow, Segment 2** Woodland Kv= 5.0 fps
23.5	154	Total			

Summary for Subcatchment 40S: SUBCATCHMENT 40

Runoff = 0.03 cfs @ 15.06 hrs, Volume= 0.019 af, Depth= 0.06"
Routed to Reach 4R : REACH 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
18,496	70	Woods, Good, HSG C
15,979	70	Brush, Fair, HSG C
16,386	56	Brush, Fair, HSG B
1,188	61	>75% Grass cover, Good, HSG B
1,320	85	Gravel roads, HSG B
30,854	30	Woods, Good, HSG A
5,490	76	Gravel roads, HSG A
9,949	39	>75% Grass cover, Good, HSG A
52,548	35	Brush, Fair, HSG A
152,210	47	Weighted Average
152,210		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.0560	0.10		**Sheet Flow, FLOW THROUGH WOODS** Woods: Light underbrush n= 0.400 P2= 3.00"
6.1	402	0.0490	1.11		**Shallow Concentrated Flow, FLOW THROUGH WOODS** Woodland Kv= 5.0 fps
14.5	452	Total			

Summary for Subcatchment 50S: SUBCATCHMENT50

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Reach 5R : REACH 5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
88,032	30	Woods, Good, HSG A
5,456	98	Impervious
1,920	76	Gravel roads, HSG A
30,501	35	Brush, Fair, HSG A
125,909	35	Weighted Average
120,453		95.67% Pervious Area
5,456		4.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	50	0.0500	0.09		**Sheet Flow, FLOW THROUGH WOODS** Woods: Light underbrush n= 0.400 P2= 3.00"
9.3	610	0.0479	1.09		**Shallow Concentrated Flow, FLOW THROUGH WOODS** Woodland Kv= 5.0 fps
0.3	33	0.1818	2.13		**Shallow Concentrated Flow, FLOW THROUGH WOODS** Woodland Kv= 5.0 fps
3.0	117	0.0171	0.65		**Shallow Concentrated Flow, FLOW THROUGH WOODS** Woodland Kv= 5.0 fps
3.4	177	0.0300	0.87		**Shallow Concentrated Flow, FLOW THROUGH WOODS** Woodland Kv= 5.0 fps
24.8	987	Total			

Summary for Subcatchment 100S: Flow to Detention Pond 100

Runoff = 0.84 cfs @ 12.08 hrs, Volume= 0.065 af, Depth= 0.79"
Routed to Pond 100P : Outlet Structure 110 to HW109

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
14,772	74	>75% Grass cover, Good, HSG C
17,373	61	>75% Grass cover, Good, HSG B
416	74	>75% Grass cover, Good, HSG C
6,983	80	>75% Grass cover, Good, HSG D
119	89	Gravel, HSG C
1,899	85	Gravel, HSG B
1,170	80	>75% Grass cover, Good, HSG D
42,732	70	Weighted Average
42,732		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 101AS: Flow to Detention Pond 100A

Runoff = 0.48 cfs @ 12.07 hrs, Volume= 0.033 af, Depth= 1.42"
Routed to Pond 100AP : Outlet Structure 105 to HW100 - MODIFIED

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
385	91	Gravel roads, HSG D
125	98	Impervious
11,642	80	>75% Grass cover, Good, HSG D
12,152	81	Weighted Average
12,027		98.97% Pervious Area
125		1.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 101os: North Side of Mast Road to CBC8

Runoff = 0.02 cfs @ 12.37 hrs, Volume= 0.006 af, Depth= 0.18"
Routed to Pond C8P : CBC8 to CBC7

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
4,731	98	Paved roads w/curbs & sewers
3,000	30	Woods, Good, HSG A
9,673	39	>75% Grass cover, Good, HSG A
17,404	53	Weighted Average
12,673		72.82% Pervious Area
4,731		27.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 102os: North Side of Mast Road to CBC5

Runoff = 0.28 cfs @ 12.08 hrs, Volume= 0.022 af, Depth= 0.75"
Routed to Pond C5P : CBC5 to DMHC6

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
8,084	98	Paved roads w/curbs & sewers
7,577	39	>75% Grass cover, Good, HSG A
15,661	69	Weighted Average
7,577		48.38% Pervious Area
8,084		51.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 103os: Mast Road East to CB11

Runoff = 0.87 cfs @ 12.07 hrs, Volume= 0.067 af, Depth= 2.91"
Routed to Pond 11P : CB11 to CB12

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
12,002	98	Paved roads w/curbs & sewers
12,002		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 107S: Flow to CB107

Runoff = 0.50 cfs @ 12.07 hrs, Volume= 0.037 af, Depth= 2.69"
Routed to Pond 107P : CB107 TO HW106

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
962	80	>75% Grass cover, Good, HSG D
6,198	98	Impervious
7,160	96	Weighted Average
962		13.44% Pervious Area
6,198		86.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 108S: Flow to CB108

Runoff = 1.38 cfs @ 12.07 hrs, Volume= 0.100 af, Depth= 2.59"
Routed to Pond 108P : CB108 TO CB107

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
2,335	80	>75% Grass cover, Good, HSG D
594	74	>75% Grass cover, Good, HSG C
17,088	98	Paved parking & roofs
237	91	Gravel, HSG D
20,254	95	Weighted Average
3,166		15.63% Pervious Area
17,088		84.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 148GS: SUBCATCHMENT 148GS

Runoff = 0.00 cfs @ 16.90 hrs, Volume= 0.001 af, Depth= 0.03"
Routed to Pond 148GP : CB1+48G TO CB1+48R

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
11,945	30	Woods, Good, HSG A
8,563	39	>75% Grass cover, Good, HSG A
4,000	98	Impervious
24,508	44	Weighted Average
20,508		83.68% Pervious Area
4,000		16.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	25	0.0200	1.01		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
4.2	25	0.0800	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.00"
1.7	128	0.0664	1.29		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.3	178	Total			

Summary for Subcatchment 148RS: SUBCATCHMENT 148RS

Runoff = 0.17 cfs @ 12.07 hrs, Volume= 0.012 af, Depth= 1.42"
Routed to Pond 148RP : CB1+48R TO CB3+04R

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
581	39	>75% Grass cover, Good, HSG A
3,056	98	Paved parking & roofs
679	39	>75% Grass cover, Good, HSG A
4,316	81	Weighted Average
1,260		29.19% Pervious Area
3,056		70.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 200os: Mast Road East to CB12

Runoff = 0.72 cfs @ 12.07 hrs, Volume= 0.055 af, Depth= 2.91"
Routed to Pond 12R : From CB12 out

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
9,931	98	Paved roads w/curbs & sewers
9,931		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 205S: Flow to CB205

Runoff = 1.51 cfs @ 12.07 hrs, Volume= 0.114 af, Depth= 2.80"
Routed to Pond 205P : CB205 TO HW200

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
140	74	>75% Grass cover, Good, HSG C
687	74	>75% Grass cover, Good, HSG C
427	80	>75% Grass cover, Good, HSG D
19,983	98	Paved parking & roofs
21,237	97	Weighted Average
1,254		5.90% Pervious Area
19,983		94.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 206S: Flow to CB206

Runoff = 0.72 cfs @ 12.07 hrs, Volume= 0.054 af, Depth= 2.80"
Routed to Pond 206P : CB206 TO CB205

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
368	74	>75% Grass cover, Good, HSG C
9,675	98	Paved parking & roofs
52	80	>75% Grass cover, Good, HSG D
10,095	97	Weighted Average
420		4.16% Pervious Area
9,675		95.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 210S: Flow to CB210

Runoff = 0.47 cfs @ 12.07 hrs, Volume= 0.033 af, Depth= 2.20"
Routed to Pond 210P : CB210 TO CB205

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
1,010	74	>75% Grass cover, Good, HSG C
55	74	>75% Grass cover, Good, HSG C
865	61	>75% Grass cover, Good, HSG B
5,802	98	Paved parking & roofs
7,732	91	Weighted Average
1,930		24.96% Pervious Area
5,802		75.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 215S: Flow to DCB215

Runoff = 1.83 cfs @ 12.07 hrs, Volume= 0.130 af, Depth= 2.39"
Routed to Pond 215P : DCB215 TO CB210

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
672	39	>75% Grass cover, Good, HSG A
2,927	61	>75% Grass cover, Good, HSG B
195	74	>75% Grass cover, Good, HSG C
24,605	98	Impervious
28,399	93	Weighted Average
3,794		13.36% Pervious Area
24,605		86.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 220S: Flow to CB220

Runoff = 1.05 cfs @ 12.07 hrs, Volume= 0.077 af, Depth= 2.69"
Routed to Pond 220P : CB220 TO DCB215

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
216	39	>75% Grass cover, Good, HSG A
303	74	>75% Grass cover, Good, HSG C
14,293	98	Paved parking & roofs
212	61	>75% Grass cover, Good, HSG B
15,024	96	Weighted Average
731		4.87% Pervious Area
14,293		95.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 300os: East Side of NH Route 108 to Landscaping

Runoff = 0.15 cfs @ 12.07 hrs, Volume= 0.010 af, Depth= 1.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
537	39	>75% Grass cover, Good, HSG A
2,396	98	Paved parking & roofs
2,933	87	Weighted Average
537		18.31% Pervious Area
2,396		81.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 303GS: SUBCATCHMENT 303GS

Runoff = 0.46 cfs @ 12.07 hrs, Volume= 0.031 af, Depth= 1.56"
Routed to Pond 303GP : CB3+03G TO CB3+04R

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
1,863	39	>75% Grass cover, Good, HSG A
757	30	Woods, Good, HSG A
5,385	98	Paved parking & roofs
2,540	98	Impervious
10,545	83	Weighted Average
2,620		24.85% Pervious Area
7,925		75.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 304RS: SUBCATCHMENT 304RS

Runoff = 0.09 cfs @ 12.08 hrs, Volume= 0.007 af, Depth= 0.75"
Routed to Pond 304RP : CB3+04R TO CB4+01G

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
1,436	39	>75% Grass cover, Good, HSG A
2,667	98	Paved parking & roofs
1,093	39	>75% Grass cover, Good, HSG A
5,196	69	Weighted Average
2,529		48.67% Pervious Area
2,667		51.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 305S: Flow to CB305

Runoff = 0.50 cfs @ 12.07 hrs, Volume= 0.035 af, Depth= 2.29"
Routed to Pond 305P : CB305 TO HW300

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
1,267	61	>75% Grass cover, Good, HSG B
6,661	98	Impervious
7,928	92	Weighted Average
1,267		15.98% Pervious Area
6,661		84.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 310S: Flow to CB310

CONVERTED 2,000 SF OF B GRASS TO PAVED TO ACCOUNT FOR MECDONALD'S WIDENING OF GRAPEVINE DRIVE

Runoff = 0.03 cfs @ 15.03 hrs, Volume= 0.018 af, Depth= 0.06"
Routed to Pond 310P : CB310 TO CB305

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
74,593	39	Pasture/grassland/range, Good, HSG A
32,172	30	Woods, Good, HSG A
16,280	61	>75% Grass cover, Good, HSG B
1,363	74	>75% Grass cover, Good, HSG C
17,590	98	Paved parking & roofs
150	55	Woods, Good, HSG B
3,325	61	Pasture/grassland/range, Good, HSG B
145,473	47	Weighted Average
127,883		87.91% Pervious Area
17,590		12.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0600	0.10		**Sheet Flow, FLOW THROUGH WOODS** Woods: Light underbrush n= 0.400 P2= 3.00"
2.0	127	0.0470	1.08		**Shallow Concentrated Flow, FLOW THROUGH WOODS** Woodland Kv= 5.0 fps
2.9	265	0.0490	1.55		**Shallow Concentrated Flow, FLOW THROUGH PASTURE** Short Grass Pasture Kv= 7.0 fps
0.0	22	0.3333	8.66		**Shallow Concentrated Flow, FLOW OVER GRASS** Grassed Waterway Kv= 15.0 fps
0.0	5	0.0150	2.49		**Shallow Concentrated Flow, FLOW OVER PAVEMENT** Paved Kv= 20.3 fps
13.1	469	Total			

Summary for Subcatchment 315S: Flow to CB315

Runoff = 0.00 cfs @ 24.05 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond 315P : CB315 TO CB310

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
1,071	98	Paved roads w/curbs & sewers, HSG A
31	39	>75% Grass cover, Good, HSG A
11,960	30	Woods, Good, HSG A
1,455	39	>75% Grass cover, Good, HSG A
10,842	39	>75% Grass cover, Good, HSG A
4,446	98	Paved roads w/curbs & sewers, HSG A
108	98	Paved roads w/curbs & sewers, HSG A
35,478	39	>75% Grass cover, Good, HSG A
4,012	39	>75% Grass cover, Good, HSG A
36,179	30	Woods, Good, HSG A
1,259	30	Woods, Good, HSG A
512	30	Woods, Good, HSG A
690	39	>75% Grass cover, Good, HSG A
1,914	39	>75% Grass cover, Good, HSG A
2,294	98	Paved roads w/curbs & sewers, HSG A
3,240	39	>75% Grass cover, Good, HSG A
314	39	>75% Grass cover, Good, HSG A
520	39	>75% Grass cover, Good, HSG A
116,325	39	Weighted Average
108,406		93.19% Pervious Area
7,919		6.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	25	0.0200	1.01		**Sheet Flow, FLOW OVER PAVEMENT** Smooth surfaces n= 0.011 P2= 3.00"
4.7	25	0.0600	0.09		**Sheet Flow, FLOW THROUGH WOODS** Woods: Light underbrush n= 0.400 P2= 3.00"
2.6	198	0.0660	1.28		**Shallow Concentrated Flow, FLOW THROUGH WOODS** Woodland Kv= 5.0 fps
1.3	143	0.0660	1.80		**Shallow Concentrated Flow, FLOW THROUGH PASTURE** Short Grass Pasture Kv= 7.0 fps
0.0	19	0.3333	8.66		**Shallow Concentrated Flow, FLOW OVER GRASS** Grassed Waterway Kv= 15.0 fps
0.9	127	0.0150	2.49		**Shallow Concentrated Flow, FLOW OVER PAVEMENT** Paved Kv= 20.3 fps
9.9	537	Total			

Summary for Subcatchment 316S: Flow to CB316

Runoff = 0.25 cfs @ 12.07 hrs, Volume= 0.018 af, Depth= 2.49"
Routed to Pond 316P : CB316 TO CB315

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
47	39	>75% Grass cover, Good, HSG A
3,346	98	Paved roads w/curbs & sewers
383	61	>75% Grass cover, Good, HSG B
3,776	94	Weighted Average
430		11.39% Pervious Area
3,346		88.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 320S: Flow to CB320

Runoff = 0.22 cfs @ 12.07 hrs, Volume= 0.017 af, Depth= 2.80"
Routed to Pond 320P : CB320 TO CB315

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
64	39	>75% Grass cover, Good, HSG A
2,137	98	Paved parking & roofs
365	98	Paved roads w/curbs & sewers, HSG A
35	98	Paved roads w/curbs & sewers, HSG A
526	98	Paved parking, HSG A
3,127	97	Weighted Average
64		2.05% Pervious Area
3,063		97.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 320Sa: Porous Walk

Runoff = 0.03 cfs @ 12.07 hrs, Volume= 0.002 af, Depth= 2.91"
Routed to Pond 320Pa : Porous Walk

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
25	98	Roofs, HSG A
379	98	Paved roads w/curbs & sewers, HSG A
404	98	Weighted Average
404		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 321S: Flow to CB322

Runoff = 0.00 cfs @ 24.02 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond 321P : CB321 TO CB320

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
1,903	39	>75% Grass cover, Good, HSG A
1,903		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 321Sa: Porous Walk

Runoff = 0.03 cfs @ 12.07 hrs, Volume= 0.003 af, Depth= 2.91"
Routed to Pond 321Pa : Porous Walk

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
456	98	Paved roads w/curbs & sewers, HSG A
456		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 322S: Flow to CB323

Runoff = 0.00 cfs @ 24.02 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond 322P : CB323 TO CB322

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
4,155	39	>75% Grass cover, Good, HSG A
98	39	>75% Grass cover, Good, HSG A
4,253	39	Weighted Average
4,253		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 323S: Flow to CB324

Runoff = 0.00 cfs @ 24.02 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond 323P : CB324 to CB323

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
1,844	39	>75% Grass cover, Good, HSG A
1,844		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 323Sa: Porous Walk

Runoff = 0.04 cfs @ 12.07 hrs, Volume= 0.003 af, Depth= 2.91"
Routed to Pond 323Pa : Porous Walk

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
498	98	Paved roads w/curbs & sewers, HSG A
498		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 324S: Flow to CB325

Runoff = 0.16 cfs @ 12.07 hrs, Volume= 0.012 af, Depth= 2.91"
Routed to Pond 324P : CB325 to CB324

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
815	98	Paved roads w/curbs & sewers, HSG A
323	98	Paved roads w/curbs & sewers, HSG A
1,075	98	Paved roads w/curbs & sewers, HSG A
2,213	98	Weighted Average
2,213		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 325S: Flow to CB324

Runoff = 0.12 cfs @ 12.07 hrs, Volume= 0.009 af, Depth= 2.91"
Routed to Pond 325P : CB326 TO CB325

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
1,665	98	Paved roads w/curbs & sewers
1,665		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 326S: Flow to CB325

Runoff = 0.90 cfs @ 12.08 hrs, Volume= 0.066 af, Depth= 1.00"
Routed to Pond 326P : CB327 TO CB326

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
6,205	98	Paved roads w/curbs & sewers, HSG A
2,134	39	>75% Grass cover, Good, HSG A
10,791	39	>75% Grass cover, Good, HSG A
2,364	98	Paved roads w/curbs & sewers, HSG A
126	39	>75% Grass cover, Good, HSG A
126	39	>75% Grass cover, Good, HSG A
98	39	>75% Grass cover, Good, HSG A
309	39	>75% Grass cover, Good, HSG A
12,068	98	Paved roads w/curbs & sewers, HSG A
87	39	>75% Grass cover, Good, HSG A
34,308	74	Weighted Average
13,671		39.85% Pervious Area
20,637		60.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 326Sa: Porous Walk

Runoff = 0.02 cfs @ 12.09 hrs, Volume= 0.002 af, Depth= 0.57"
Routed to Pond 326Pa : Porous Walk

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
937	39	>75% Grass cover, Good, HSG A
790	98	Paved roads w/curbs & sewers, HSG A
60	39	>75% Grass cover, Good, HSG A
1,787	65	Weighted Average
997		55.79% Pervious Area
790		44.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 326Sb: Porous Walk

Runoff = 0.00 cfs @ 12.07 hrs, Volume= 0.000 af, Depth= 2.91"
Routed to Pond 326Pb : Porous Walk

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
57	98	Paved roads w/curbs & sewers, HSG A
57		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 326Sc: Porous Walk

Runoff = 0.00 cfs @ 12.07 hrs, Volume= 0.000 af, Depth= 2.91"
Routed to Pond 326Pc : Porous Walk

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
53	98	Paved roads w/curbs & sewers, HSG A
53		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 330S: Flow to CB330

Runoff = 0.22 cfs @ 12.07 hrs, Volume= 0.016 af, Depth= 2.59"
Routed to Pond 330P : CB330 T0 CB320

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
662	98	Paved roads w/curbs & sewers, HSG A
2,438	98	Paved parking, HSG A
46	39	>75% Grass cover, Good, HSG A
102	39	>75% Grass cover, Good, HSG A
46	39	>75% Grass cover, Good, HSG A
3,294	95	Weighted Average
194		5.89% Pervious Area
3,100		94.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 330Sa: Porous Walk

Runoff = 0.00 cfs @ 12.10 hrs, Volume= 0.000 af, Depth= 0.49"
Routed to Pond 330Pa : Porous Walk

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
186	98	Paved roads w/curbs & sewers, HSG A
208	39	>75% Grass cover, Good, HSG A
56	39	>75% Grass cover, Good, HSG A
450	63	Weighted Average
264		58.67% Pervious Area
186		41.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 330Sb: Porous Walk

Runoff = 0.00 cfs @ 12.10 hrs, Volume= 0.000 af, Depth= 0.49"
Routed to Pond 330Pb : Porous Walk

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
131	39	>75% Grass cover, Good, HSG A
87	98	Paved roads w/curbs & sewers, HSG A
218	63	Weighted Average
131		60.09% Pervious Area
87		39.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 331S: Flow to CB331

Runoff = 0.34 cfs @ 12.07 hrs, Volume= 0.024 af, Depth= 1.23"
Routed to Pond 331P : CB331 TO CB330

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
201	39	>75% Grass cover, Good, HSG A
6,654	98	Paved roads w/curbs & sewers, HSG A
200	39	>75% Grass cover, Good, HSG A
249	39	>75% Grass cover, Good, HSG A
2,283	39	>75% Grass cover, Good, HSG A
433	39	>75% Grass cover, Good, HSG A
10,020	78	Weighted Average
3,366		33.59% Pervious Area
6,654		66.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 331Sa: Porous Walk

Runoff = 0.01 cfs @ 12.09 hrs, Volume= 0.001 af, Depth= 0.57"
Routed to Pond 331Pa : Porous Walk

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
598	39	>75% Grass cover, Good, HSG A
486	98	Paved roads w/curbs & sewers, HSG A
1,084	65	Weighted Average
598		55.17% Pervious Area
486		44.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 332S: Flow to CB332

Runoff = 0.07 cfs @ 12.07 hrs, Volume= 0.005 af, Depth= 1.56"
Routed to Pond 332P : CB332 to CB331

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
1,255	98	Paved roads w/curbs & sewers, HSG A
296	39	>75% Grass cover, Good, HSG A
128	39	>75% Grass cover, Good, HSG A
1,679	83	Weighted Average
424		25.25% Pervious Area
1,255		74.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 332Sa: Porous Walk

Runoff = 0.05 cfs @ 12.08 hrs, Volume= 0.003 af, Depth= 1.11"
Routed to Pond 332Pa : Porous Walk

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
701	98	Paved roads w/curbs & sewers, HSG A
34	98	Paved roads w/curbs & sewers, HSG A
214	98	Paved roads w/curbs & sewers, HSG A
126	39	>75% Grass cover, Good, HSG A
451	39	>75% Grass cover, Good, HSG A
1,526	76	Weighted Average
577		37.81% Pervious Area
949		62.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 333S: Flow to CB332

Runoff = 0.00 cfs @ 24.02 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond 333P : CB333 TO CB331

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
2,063	39	>75% Grass cover, Good, HSG A
2,063		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 333Sa: Porous Walk

Runoff = 0.00 cfs @ 12.13 hrs, Volume= 0.001 af, Depth= 0.32"
Routed to Pond 333Pa : Porous Walk

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
428	39	>75% Grass cover, Good, HSG A
252	39	>75% Grass cover, Good, HSG A
325	98	Paved roads w/curbs & sewers, HSG A
1,005	58	Weighted Average
680		67.66% Pervious Area
325		32.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 335S: Flow to CB335

Runoff = 0.13 cfs @ 12.08 hrs, Volume= 0.009 af, Depth= 1.11"
Routed to Pond 335P : CB335 TO CB330

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
1,586	39	>75% Grass cover, Good, HSG A
2,677	98	Paved roads w/curbs & sewers
4,263	76	Weighted Average
1,586		37.20% Pervious Area
2,677		62.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 340S: Flow to CB340

Runoff = 0.11 cfs @ 12.07 hrs, Volume= 0.007 af, Depth= 1.49"
Routed to Pond 340P : CB340TO CB335

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
709	39	>75% Grass cover, Good, HSG A
1,907	98	Paved roads w/curbs & sewers
2,616	82	Weighted Average
709		27.10% Pervious Area
1,907		72.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 350S: Flow to CB350

Runoff = 0.17 cfs @ 12.07 hrs, Volume= 0.012 af, Depth= 1.94"
Routed to Pond 350P : CB350 TO DMH345

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
531	39	>75% Grass cover, Good, HSG A
2,607	98	Paved roads w/curbs & sewers
3,138	88	Weighted Average
531		16.92% Pervious Area
2,607		83.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 351S: Flow to CB351

Runoff = 0.17 cfs @ 12.07 hrs, Volume= 0.012 af, Depth= 2.49"
Routed to Pond 351P : CB351 TO CB350

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
178	39	>75% Grass cover, Good, HSG A
2,422	98	Paved roads w/curbs & sewers
2,600	94	Weighted Average
178		6.85% Pervious Area
2,422		93.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 360S: Flow to CB360

Runoff = 0.25 cfs @ 12.07 hrs, Volume= 0.020 af, Depth= 2.91"
Routed to Pond 360P : CB360 TO DMH355

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
3,507	98	Paved roads w/curbs & sewers
3,507		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 365S: Flow to CB365

Runoff = 0.27 cfs @ 12.07 hrs, Volume= 0.021 af, Depth= 2.91"
Routed to Pond 365P : CB365 TO CB360

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
3,724	98	Paved roads w/curbs & sewers
3,724		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 400os: East Side of NH Route 108 to CB13

Runoff = 0.72 cfs @ 12.07 hrs, Volume= 0.050 af, Depth= 1.86"
Routed to Pond 13P : CB13 to CB14

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
6,141	74	>75% Grass cover, Good, HSG C
7,791	98	Paved parking & roofs
13,932	87	Weighted Average
6,141		44.08% Pervious Area
7,791		55.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 402GS: SUBCATCHMENT 402GS

Runoff = 0.01 cfs @ 22.20 hrs, Volume= 0.004 af, Depth= 0.01"
Routed to Pond 402GP : CB4+02G TO CB4+19R

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
22,451	98	Impervious
71,415	30	Woods, Good, HSG A
102,640	39	>75% Grass cover, Good, HSG A
196,506	42	Weighted Average
174,055		88.57% Pervious Area
22,451		11.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	21	0.0200	0.97		**Sheet Flow, FLOW OVER PAVEMENT** Smooth surfaces n= 0.011 P2= 3.00"
8.1	29	0.0210	0.06		**Sheet Flow, FLOW THROUGH WOODS** Woods: Light underbrush n= 0.400 P2= 3.00"
1.6	88	0.0341	0.92		**Shallow Concentrated Flow, FLOW THROUGH WOODS** Woodland Kv= 5.0 fps
0.0	18	0.3333	8.66		**Shallow Concentrated Flow, FLOW OVER GRASS** Grassed Waterway Kv= 15.0 fps
4.7	616	0.0211	2.18		**Shallow Concentrated Flow, FLOW OVER GRASS** Grassed Waterway Kv= 15.0 fps
1.2	147	0.0200	2.12		**Shallow Concentrated Flow, FLOW OVER GRASS** Grassed Waterway Kv= 15.0 fps
16.0	919	Total			

Summary for Subcatchment 405S: Flow to CB405

Runoff = 0.42 cfs @ 12.07 hrs, Volume= 0.030 af, Depth= 2.59"
Routed to Pond 405P : CB405 TO HW400

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
1,020	80	>75% Grass cover, Good, HSG D
5,060	98	Impervious
6,080	95	Weighted Average
1,020		16.78% Pervious Area
5,060		83.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 410S: Flow to DCB410

Runoff = 1.17 cfs @ 12.07 hrs, Volume= 0.086 af, Depth= 2.69"
Routed to Pond 410P : DCB410 TO CB405

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
63	74	>75% Grass cover, Good, HSG C
2,135	80	>75% Grass cover, Good, HSG D
14,546	98	Paved parking & roofs
16,744	96	Weighted Average
2,198		13.13% Pervious Area
14,546		86.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 415S: Flow to CB415

Runoff = 0.35 cfs @ 12.07 hrs, Volume= 0.025 af, Depth= 2.49"
Routed to Pond 415P : CB415 TO CB410

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
1,092	80	>75% Grass cover, Good, HSG D
4,113	98	Paved parking & roofs
5,205	94	Weighted Average
1,092		20.98% Pervious Area
4,113		79.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 416S: Flow to CB416

Runoff = 0.49 cfs @ 12.07 hrs, Volume= 0.035 af, Depth= 2.49"
Routed to Pond 416P : CB416 TO CB415

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
480	74	>75% Grass cover, Good, HSG C
924	80	>75% Grass cover, Good, HSG D
5,939	98	Paved parking & roofs
7,343	94	Weighted Average
1,404		19.12% Pervious Area
5,939		80.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 419LS: SUBCATCHMENT 419LS

Runoff = 0.85 cfs @ 12.08 hrs, Volume= 0.062 af, Depth= 1.00"
Routed to Pond 419LP : CB4+19L TO DMH1001+25

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
19,001	98	Paved roads w/curbs & sewers
26	76	Gravel, HSG A
13,255	39	>75% Grass cover, Good, HSG A
32,282	74	Weighted Average
13,281		41.14% Pervious Area
19,001		58.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 419RS: SUBCATCHMENT 419RS

Runoff = 0.45 cfs @ 12.08 hrs, Volume= 0.036 af, Depth= 0.70"
Routed to Pond 419RP : CB4+19R TO CB4+19L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
13,113	98	Impervious
13,906	39	>75% Grass cover, Good, HSG A
27,019	68	Weighted Average
13,906		51.47% Pervious Area
13,113		48.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 500os: Drive to CB14

Runoff = 0.12 cfs @ 12.07 hrs, Volume= 0.010 af, Depth= 2.91"
Routed to Pond 14P : CB14 to CB15

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
1,717	98	Paved roads w/curbs & sewers
1,717		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 505S: McDONALD SITE

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 3.00 cfs @ 12.00 hrs, Volume= 0.180 af, Depth= 2.29"
Routed to Pond BMP-1 : BMP-1 STORMTECH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

	Area (sf)	CN	Description
	4,670	61	>75% Grass cover, Good, HSG B
	2,300	74	>75% Grass cover, Good, HSG C
	0	80	>75% Grass cover, Good, HSG D
*	30,316	98	Paved parking
*	3,694	98	Roofs
	40,980	92	Weighted Average
	6,970		17.01% Pervious Area
	34,010		82.99% Impervious Area

Summary for Subcatchment 507S: Flow to CB507

Runoff = 0.24 cfs @ 12.07 hrs, Volume= 0.019 af, Depth= 2.91"
Routed to Pond 507P : CB507 TO CB505

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
10	74	>75% Grass cover, Good, HSG C
3,328	98	Impervious
3,338	98	Weighted Average
10		0.30% Pervious Area
3,328		99.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 508Aos: Flow to CBC4

Runoff = 0.32 cfs @ 12.08 hrs, Volume= 0.026 af, Depth= 0.75"
Routed to Pond C4P : CBC4 to CBC3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
9,324	98	Paved roads w/curbs & sewers
6,858	39	>75% Grass cover, Good, HSG A
1,729	30	Woods, Good, HSG A
17,911	69	Weighted Average
8,587		47.94% Pervious Area
9,324		52.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 508Bos: West Side of NH Route 108 to CBC3

Runoff = 0.12 cfs @ 12.27 hrs, Volume= 0.022 af, Depth= 0.29"
Routed to Pond C3P : CBC3 to CB509

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
717	30	Woods, Good, HSG A
26,736	39	>75% Grass cover, Good, HSG A
12,242	98	Paved parking & roofs
39,695	57	Weighted Average
27,453		69.16% Pervious Area
12,242		30.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 508S: Flow to CB508

Runoff = 0.17 cfs @ 12.09 hrs, Volume= 0.016 af, Depth= 0.53"
Routed to Pond 509P : CB509 to CB508

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
9,086	39	>75% Grass cover, Good, HSG A
212	74	>75% Grass cover, Good, HSG C
6,689	98	Paved parking & roofs
15,987	64	Weighted Average
9,298		58.16% Pervious Area
6,689		41.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 600os: Drive to CB15

Runoff = 0.27 cfs @ 12.07 hrs, Volume= 0.021 af, Depth= 2.91"
Routed to Pond 15P : CB15 out

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
3,747	98	Paved roads w/curbs & sewers
3,747		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 600S: POND 600

Runoff = 0.49 cfs @ 12.10 hrs, Volume= 0.051 af, Depth= 0.46"
Routed to Pond 600P : DETENTION BASIN OS605 TO HW600

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
36,757	74	>75% Grass cover, Good, HSG C
18,616	39	>75% Grass cover, Good, HSG A
515	98	Impervious
936	89	Gravel, HSG C
72	76	Gravel, HSG A
1,611	30	Woods, Good, HSG A
58,507	62	Weighted Average
57,992		99.12% Pervious Area
515		0.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 700os: East Side of NH Route 108

Runoff = 1.27 cfs @ 12.07 hrs, Volume= 0.087 af, Depth= 1.86"
Routed to Reach 16R : Existing Culvert to West Side of NH Route 108

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
13,369	98	Paved roads w/curbs & sewers
11,049	74	>75% Grass cover, Good, HSG C
24,418	87	Weighted Average
11,049		45.25% Pervious Area
13,369		54.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 710S: Flow to CB710

Runoff = 0.31 cfs @ 12.07 hrs, Volume= 0.022 af, Depth= 2.59"
Routed to Pond 710P : CB710 TO HW700

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
474	74	>75% Grass cover, Good, HSG C
4,068	98	Paved parking & roofs
4,542	95	Weighted Average
474		10.44% Pervious Area
4,068		89.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 711S: Flow to CB711

Runoff = 0.30 cfs @ 12.07 hrs, Volume= 0.022 af, Depth= 2.59"
Routed to Pond 711P : CB711 TO CB710

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
522	74	>75% Grass cover, Good, HSG C
3,835	98	Paved parking & roofs
4,357	95	Weighted Average
522		11.98% Pervious Area
3,835		88.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 715S: Flow to CB715

Runoff = 0.19 cfs @ 12.07 hrs, Volume= 0.013 af, Depth= 2.11"
Routed to Pond 715P : CB715 TO CB710

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
835	74	>75% Grass cover, Good, HSG C
432	80	>75% Grass cover, Good, HSG D
2,057	98	Paved roads w/curbs & sewers
3,324	90	Weighted Average
1,267		38.12% Pervious Area
2,057		61.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 720S: Flow to DCB720

Runoff = 1.21 cfs @ 12.07 hrs, Volume= 0.088 af, Depth= 2.59"
Routed to Pond 720P : DCB720 TO CB715

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
1,188	74	>75% Grass cover, Good, HSG C
1,098	80	>75% Grass cover, Good, HSG D
15,434	98	Paved parking & roofs
17,720	95	Weighted Average
2,286		12.90% Pervious Area
15,434		87.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 725S: Flows to CB725

Runoff = 1.88 cfs @ 12.07 hrs, Volume= 0.136 af, Depth= 2.59"
Routed to Pond 725P : CB725 TO DCB720

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
270	74	>75% Grass cover, Good, HSG C
4,030	80	>75% Grass cover, Good, HSG D
23,285	98	Paved parking & roofs
27,585	95	Weighted Average
4,300		15.59% Pervious Area
23,285		84.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 801S: HW801 TO HW800

Runoff = 2.28 cfs @ 12.09 hrs, Volume= 0.189 af, Depth= 0.66"
Routed to Pond 801P : HW801 TO HW800

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
60,146	39	>75% Grass cover, Good, HSG A
44,610	74	>75% Grass cover, Good, HSG C
490	89	Gravel roads, HSG C
45,646	98	Paved parking & roofs
150,892	67	Weighted Average
105,246		69.75% Pervious Area
45,646		30.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 805S: FLOW TO CB805

Runoff = 0.29 cfs @ 12.07 hrs, Volume= 0.021 af, Depth= 2.69"
Routed to Pond 805P : CB805 TO HW802

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
53	39	>75% Grass cover, Good, HSG A
278	74	>75% Grass cover, Good, HSG C
3,762	98	Paved parking & roofs
4,093	96	Weighted Average
331		8.09% Pervious Area
3,762		91.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 806S: FLOW TO CB806

Runoff = 0.25 cfs @ 12.07 hrs, Volume= 0.017 af, Depth= 2.39"
Routed to Pond 806P : CB806 TO CB805

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
301	39	>75% Grass cover, Good, HSG A
3,511	98	Paved parking & roofs
3,812	93	Weighted Average
301		7.90% Pervious Area
3,511		92.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 807S: FLOW TO CB807

Runoff = 0.25 cfs @ 12.07 hrs, Volume= 0.017 af, Depth= 1.63"
Routed to Pond 807P : CB807 TO CB806

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
1,308	39	>75% Grass cover, Good, HSG A
4,251	98	Paved parking & roofs
5,559	84	Weighted Average
1,308		23.53% Pervious Area
4,251		76.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 808S: FLOW TO CB808

Runoff = 0.00 cfs @ 24.02 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond 808P : CB808 TO CB807

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
3,999	39	>75% Grass cover, Good, HSG A
3,999		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 857LS: SUBCATCHMENT 857LS

Runoff = 0.51 cfs @ 12.08 hrs, Volume= 0.036 af, Depth= 1.11"
Routed to Pond 857LP : CB8+57L TO CB4+19L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
10,671	98	Impervious
6,310	39	>75% Grass cover, Good, HSG A
16,981	76	Weighted Average
6,310		37.16% Pervious Area
10,671		62.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 857RS: SUBCATCHMENT 857RS

Runoff = 0.02 cfs @ 12.43 hrs, Volume= 0.008 af, Depth= 0.14"
Routed to Pond 857RP : CB8+57R TO CB8+57L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
6,683	98	Impervious
25,286	39	>75% Grass cover, Good, HSG A
31,969	51	Weighted Average
25,286		79.10% Pervious Area
6,683		20.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 900S: SUBCATCHMENT 900S

Runoff = 0.00 cfs @ 24.01 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond 900P : POND 900

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

	Area (sf)	CN	Description
*	1,920	98	Impervious
	74,022	39	>75% Grass cover, Good, HSG A
	2,207	30	Woods, Good, HSG A
	78,149	40	Weighted Average
	76,229		97.54% Pervious Area
	1,920		2.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0714	0.27		**Sheet Flow, Segment 11** Grass: Short n= 0.150 P2= 3.00"
0.1	35	0.3330	9.29		**Shallow Concentrated Flow, Segment 2** Unpaved Kv= 16.1 fps
5.8	28	0.0450	0.08		**Sheet Flow, Segment 3** Woods: Light underbrush n= 0.400 P2= 3.00"
0.4	8	0.3330	0.31		**Sheet Flow, Segment 4** Grass: Short n= 0.150 P2= 3.00"
12.4	171	Total			

Summary for Subcatchment 1100S: 1100S

Runoff = 0.13 cfs @ 12.04 hrs, Volume= 0.009 af, Depth= 0.79"
Routed to Pond 2182P : DCB 21+82R TO DMH 21+97R

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
3,189	98	Paved parking, HSG A
2,903	39	>75% Grass cover, Good, HSG A
6,092	70	Weighted Average
2,903		47.65% Pervious Area
3,189		52.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	22	0.0454	0.17		**Sheet Flow, Segment 1** Grass: Short n= 0.150 P2= 3.00"
0.1	5	0.0200	0.73		**Sheet Flow, Segment 2** Smooth surfaces n= 0.011 P2= 3.00"
0.3	73	0.0333	3.70		**Shallow Concentrated Flow, Segment 3** Paved Kv= 20.3 fps
2.6	100	Total			

Summary for Subcatchment 1295GS: SUBCATCHMENT 1295GS

Runoff = 0.18 cfs @ 12.39 hrs, Volume= 0.035 af, Depth= 0.26"
Routed to Pond 1295GP : CB12+95G TO CB12+95R

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
630	76	Gravel, HSG A
5,236	35	Brush, Fair, HSG A
23,655	98	Impervious
22,746	39	>75% Grass cover, Good, HSG A
18,423	30	Woods, Good, HSG A
70,690	56	Weighted Average
47,035		66.54% Pervious Area
23,655		33.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	16	0.0200	0.92		**Sheet Flow, FLOW OVER PAVEMENT** Smooth surfaces n= 0.011 P2= 3.00"
6.1	34	0.0588	0.09		**Sheet Flow, FLOW THROUGH WOODS** Woods: Light underbrush n= 0.400 P2= 3.00"
0.9	61	0.0557	1.18		**Shallow Concentrated Flow, FLOW THROUGH WOODS** Woodland Kv= 5.0 fps
0.0	12	0.3333	8.66		**Shallow Concentrated Flow, FLOW OVER GRASS** Grassed Waterway Kv= 15.0 fps
3.3	343	0.0134	1.74		**Shallow Concentrated Flow, FLOW OVER GRASS** Grassed Waterway Kv= 15.0 fps
10.6	466	Total			

Summary for Subcatchment 1295LS: SUBCATCHMENT 1295LS

Runoff = 0.27 cfs @ 12.07 hrs, Volume= 0.019 af, Depth= 1.23"
Routed to Pond 1295LP : CB12+95L TO CB8+57L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
5,302	98	Impervious
2,776	39	>75% Grass cover, Good, HSG A
8,078	78	Weighted Average
2,776		34.36% Pervious Area
5,302		65.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 1295RS: SUBCATCHMENT 1295RS

Runoff = 0.23 cfs @ 12.08 hrs, Volume= 0.018 af, Depth= 0.75"
Routed to Pond 1295RP : CB12+95R CB12+95L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
6,666	98	Paved parking & roofs
6,289	39	>75% Grass cover, Good, HSG A
12,955	69	Weighted Average
6,289		48.54% Pervious Area
6,666		51.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 1643LS: SUBCATCHMENT 1643LS

Runoff = 0.01 cfs @ 12.11 hrs, Volume= 0.001 af, Depth= 0.39"
Routed to Pond 1643LP : CB16+43L TO CB16+43R

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
600	98	Impervious
1,096	39	>75% Grass cover, Good, HSG A
1,696	60	Weighted Average
1,096		64.62% Pervious Area
600		35.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	34	0.0150	0.12		**Sheet Flow, Segment 1** Grass: Short n= 0.150 P2= 3.00"
0.4	91	0.0280	3.40		**Shallow Concentrated Flow, Segment 2** Paved Kv= 20.3 fps
5.2	125	Total			

Summary for Subcatchment 1643RS: SUBCATCHMENT 1643RS

Runoff = 0.16 cfs @ 12.12 hrs, Volume= 0.013 af, Depth= 0.84"
Routed to Pond 1643RP : CB16+43R TO CB17+85R

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
4,445	98	Impervious
3,769	39	>75% Grass cover, Good, HSG A
8,214	71	Weighted Average
3,769		45.89% Pervious Area
4,445		54.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	58	0.0172	0.14		**Sheet Flow, Segment 1** Grass: Short n= 0.150 P2= 3.00"
0.5	105	0.0280	3.40		**Shallow Concentrated Flow, Segment 2** Paved Kv= 20.3 fps
7.5	163	Total			

Summary for Subcatchment 1785LS: SUBCATCHMENT 1785LS

Runoff = 0.02 cfs @ 12.35 hrs, Volume= 0.005 af, Depth= 0.26"
Routed to Pond 1785LP : CB17+85L TO CB17+85R

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
2,621	98	Impervious
6,494	39	>75% Grass cover, Good, HSG A
9,115	56	Weighted Average
6,494		71.25% Pervious Area
2,621		28.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	95	0.0368	0.21		**Sheet Flow, Segment 1** Grass: Short n= 0.150 P2= 3.00"
0.1	29	0.0350	3.80		**Shallow Concentrated Flow, Segment 2** Paved Kv= 20.3 fps
0.4	107	0.0429	4.20		**Shallow Concentrated Flow, Segment 3** Paved Kv= 20.3 fps
8.1	231	Total			

Summary for Subcatchment 1785RS: SUBCATCHMENT 1785RS

Runoff = 0.11 cfs @ 12.07 hrs, Volume= 0.009 af, Depth= 0.75"
Routed to Pond 1785RP : CB17+85R TO DMH18+69

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
3,073	98	Impervious
2,884	39	>75% Grass cover, Good, HSG A
5,957	69	Weighted Average
2,884		48.41% Pervious Area
3,073		51.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	40	0.0625	0.22		**Sheet Flow, Segment 1** Grass: Short n= 0.150 P2= 3.00"
0.3	23	0.0400	1.31		**Sheet Flow, Segment 2** Smooth surfaces n= 0.011 P2= 3.00"
0.5	122	0.0429	4.20		**Shallow Concentrated Flow, Segment 3** Paved Kv= 20.3 fps
3.9	185	Total			

Summary for Subcatchment 1928LS: SUBCATCHMENT 1928LS

Runoff = 0.08 cfs @ 12.12 hrs, Volume= 0.008 af, Depth= 0.53"
Routed to Pond 1928LP : CB19+28L TO CB19+79R

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
3,343	98	Impervious
4,658	39	>75% Grass cover, Good, HSG A
8,001	64	Weighted Average
4,658		58.22% Pervious Area
3,343		41.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	85	0.0470	0.22		**Sheet Flow, Segment 1** Grass: Short n= 0.150 P2= 3.00"
0.1	20	0.0500	4.54		**Shallow Concentrated Flow, Segment 2** Paved Kv= 20.3 fps
0.3	68	0.0428	4.20		**Shallow Concentrated Flow, Segment 3** Paved Kv= 20.3 fps
6.7	173	Total			

Summary for Subcatchment 1928RS: SUBCATCHMENT 1928RS

Runoff = 0.12 cfs @ 12.07 hrs, Volume= 0.009 af, Depth= 0.75"
Routed to Pond 1928RP : CB19+28R TO CB19+28L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
3,177	98	Impervious
3,034	39	>75% Grass cover, Good, HSG A
6,211	69	Weighted Average
3,034		48.85% Pervious Area
3,177		51.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	45	0.0555	0.21		**Sheet Flow, Segment 1** Grass: Short n= 0.150 P2= 3.00"
0.5	132	0.0429	4.20		**Shallow Concentrated Flow, Segment 2** Paved Kv= 20.3 fps
4.1	177	Total			

Summary for Subcatchment 1979RS: SUBCATCHMENT 1979RS

Runoff = 0.03 cfs @ 12.08 hrs, Volume= 0.003 af, Depth= 0.66"
Routed to Pond 1979RP : CB19+79 TO CB21+73R

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
1,083	98	Paved parking, HSG A
1,176	39	>75% Grass cover, Good, HSG A
2,259	67	Weighted Average
1,176		52.06% Pervious Area
1,083		47.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	48	0.0417	0.19		**Sheet Flow, Segment 1** Grass: Short n= 0.150 P2= 3.00"
0.2	45	0.0429	4.20		**Shallow Concentrated Flow, Segment 2** Paved Kv= 20.3 fps
4.4	93	Total			

Summary for Subcatchment 2173LS: SUBCATCHMENT 2173LS

Runoff = 0.17 cfs @ 12.11 hrs, Volume= 0.018 af, Depth= 0.49"
Routed to Pond 2173LP : CB21+73L TO CB21+73R

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
7,690	98	Impervious
11,104	39	>75% Grass cover, Good, HSG A
18,794	63	Weighted Average
11,104		59.08% Pervious Area
7,690		40.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	83	0.0602	0.25		**Sheet Flow, Segment 1** Grass: Short n= 0.150 P2= 3.00"
0.1	15	0.0500	4.54		**Shallow Concentrated Flow, Segment 2** Paved Kv= 20.3 fps
0.6	107	0.0187	2.78		**Shallow Concentrated Flow, Segment 2** Paved Kv= 20.3 fps
6.3	205	Total			

Summary for Subcatchment 2173RS: SUBCATCHMENT 2173RS

Runoff = 0.18 cfs @ 12.10 hrs, Volume= 0.015 af, Depth= 0.89"
Routed to Pond 2173RP : CB21+73R TO DMH21+95R

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
4,759	98	Impervious
3,756	39	>75% Grass cover, Good, HSG A
8,515	72	Weighted Average
3,756		44.11% Pervious Area
4,759		55.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	72	0.0347	0.19		**Sheet Flow, Segment 1** Grass: Short n= 0.150 P2= 3.00"
0.3	54	0.0187	2.78		**Shallow Concentrated Flow, Segment 2** Paved Kv= 20.3 fps
6.5	126	Total			

Summary for Subcatchment 2373S: SUBCATCHMENT 23+73S

Congregate Care Roof

Runoff = 1.13 cfs @ 12.07 hrs, Volume= 0.087 af, Depth= 2.91"
Routed to Pond 2241 : DMH 22+41R to DMH24+86R

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
15,629	98	Roofs, HSG A
15,629		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 2440S: SUBCATCHMENT 2440RS

Runoff = 0.02 cfs @ 12.07 hrs, Volume= 0.001 af, Depth= 0.53"
Routed to Pond 2440P : TD24+40R TO CB24+60R

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

	Area (sf)	CN	Description
*	626	98	Impervious
	836	39	>75% Grass cover, Good, HSG A
	1,462	64	Weighted Average
	836		57.18% Pervious Area
	626		42.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	42	0.0595	0.21		**Sheet Flow, Segment 1** Grass: Short n= 0.150 P2= 3.00"
0.0	7	0.0200	2.87		**Shallow Concentrated Flow, Segment 2** Paved Kv= 20.3 fps
0.1	12	0.0200	2.87		**Shallow Concentrated Flow, Segment 3** Paved Kv= 20.3 fps
3.4	61	Total			

Summary for Subcatchment 2460LS: SUBCATCHMENT 2460LS

Runoff = 0.33 cfs @ 12.17 hrs, Volume= 0.033 af, Depth= 0.66"
Routed to Pond 2460LP : CB24+60L TO CB24+60R

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
13,964	39	>75% Grass cover, Good, HSG A
12,666	98	Paved parking & roofs
26,630	67	Weighted Average
13,964		52.44% Pervious Area
12,666		47.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	100	0.0256	0.18		**Sheet Flow, Segment 1** Grass: Short n= 0.150 P2= 3.00"
0.2	25	0.0256	2.58		**Shallow Concentrated Flow, Segment 2** Unpaved Kv= 16.1 fps
1.5	253	0.0187	2.78		**Shallow Concentrated Flow, Segment 3** Paved Kv= 20.3 fps
10.9	378	Total			

Summary for Subcatchment 2460RS: SUBCATCHMENT 2460RS

Runoff = 0.27 cfs @ 12.06 hrs, Volume= 0.020 af, Depth= 0.75"
Routed to Pond 2460RP : CB24+60R TO DMH24+86R

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
7,157	98	Impervious
6,766	39	>75% Grass cover, Good, HSG A
13,923	69	Weighted Average
6,766		48.60% Pervious Area
7,157		51.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	21	0.0500	0.17		**Sheet Flow, Segment 1** Grass: Short n= 0.150 P2= 3.00"
0.0	5	0.0500	4.54		**Shallow Concentrated Flow, Segment 1** Paved Kv= 20.3 fps
0.1	20	0.0800	4.55		**Shallow Concentrated Flow, Segment 3** Unpaved Kv= 16.1 fps
1.3	215	0.0187	2.78		**Shallow Concentrated Flow, Segment 4** Paved Kv= 20.3 fps
3.4	261	Total			

Summary for Subcatchment 2460S: SUBCATCHMENT 2460S

Runoff = 0.33 cfs @ 12.02 hrs, Volume= 0.020 af, Depth= 1.56"
Routed to Pond 2460P : CB24+60R TO DMH24+85R

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

	Area (sf)	CN	Description
*	5,054	98	Impervious
	1,756	39	>75% Grass cover, Good, HSG A
	6,810	83	Weighted Average
	1,756		25.79% Pervious Area
	5,054		74.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	24	0.4166	0.42		**Sheet Flow, Segment 1** Grass: Short n= 0.150 P2= 3.00"
0.1	7	0.0200	0.78		**Sheet Flow, Segment 2** Smooth surfaces n= 0.011 P2= 3.00"
0.2	49	0.0333	3.70		**Shallow Concentrated Flow, Segment 3** Paved Kv= 20.3 fps
0.3	58	0.0333	2.94		**Shallow Concentrated Flow, Segment 4** Unpaved Kv= 16.1 fps
1.6	138	Total			

Summary for Subcatchment 2474S: SUBCATCHMENT 2474RS

Runoff = 0.05 cfs @ 12.07 hrs, Volume= 0.004 af, Depth= 0.53"
Routed to Pond 2474P : DMH24+74R TO DMH24+85R

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

	Area (sf)	CN	Description
*	1,829	98	Impervious
	2,424	39	>75% Grass cover, Good, HSG A
	4,253	64	Weighted Average
	2,424		57.00% Pervious Area
	1,829		43.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	12	0.0200	0.11		**Sheet Flow, Segment 1** Grass: Short n= 0.150 P2= 3.00"
0.4	8	0.3330	0.31		**Sheet Flow, Segment 2** Grass: Short n= 0.150 P2= 3.00"
1.1	10	0.0500	0.15		**Sheet Flow, Segment 3** Grass: Short n= 0.150 P2= 3.00"
0.1	9	0.0200	2.87		**Shallow Concentrated Flow, Segment 4** Paved Kv= 20.3 fps
0.1	17	0.0333	2.94		**Shallow Concentrated Flow, Segment 5** Unpaved Kv= 16.1 fps
0.1	20	0.0200	2.87		**Shallow Concentrated Flow, Segment 6** Paved Kv= 20.3 fps
3.7	76	Total			

Summary for Subcatchment 2619S: SUBCATCHMENT 26+19S

Congregate Care Roof

Runoff = 1.13 cfs @ 12.07 hrs, Volume= 0.087 af, Depth= 2.91"
Routed to Pond 2625RP : DMH26+25R TO HW26+25

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
15,629	98	Roofs, HSG A
15,629		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 2723RS: SUBCATCHMENT 2723RS

Runoff = 0.13 cfs @ 12.07 hrs, Volume= 0.009 af, Depth= 1.05"
Routed to Pond 2723RP : TD27+23R TO DMH27+23R

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

	Area (sf)	CN	Description
	1,726	39	>75% Grass cover, Good, HSG A
*	2,750	98	Impervious
	4,476	75	Weighted Average
	1,726		38.56% Pervious Area
	2,750		61.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	20	0.3330	0.37		**Sheet Flow, Segment 1** Grass: Short n= 0.150 P2= 3.00"
3.5	60	0.1000	0.28		**Sheet Flow, Segment 2** Grass: Short n= 0.150 P2= 3.00"
0.0	5	0.0500	4.54		**Shallow Concentrated Flow, Segment 3** Paved Kv= 20.3 fps
4.4	85	Total			

Summary for Subcatchment 2730LS: SUBCATCHMENT 2730LS

Runoff = 0.33 cfs @ 12.16 hrs, Volume= 0.032 af, Depth= 0.70"
Routed to Pond 2730LP : CB27+30L TO 27+30R

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

	Area (sf)	CN	Description
*	11,996	98	Impervious
	12,020	39	>75% Grass cover, Good, HSG A
	24,016	68	Weighted Average
	12,020		50.05% Pervious Area
	11,996		49.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	100	0.0400	0.22		**Sheet Flow, Segment 1** Grass: Short n= 0.150 P2= 3.00"
0.8	153	0.0400	3.22		**Shallow Concentrated Flow, Segment 2** Unpaved Kv= 16.1 fps
1.5	209	0.0125	2.27		**Shallow Concentrated Flow, Segment 3** Paved Kv= 20.3 fps
10.0	462	Total			

Summary for Subcatchment 2730RS: SUBCATCHMENT 2730RS

Runoff = 0.25 cfs @ 12.06 hrs, Volume= 0.018 af, Depth= 0.79"
Routed to Pond 2730RP : CB27+30R TO DMH27+23R

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

	Area (sf)	CN	Description
	5,762	39	>75% Grass cover, Good, HSG A
*	6,294	98	Impervious
	12,056	70	Weighted Average
	5,762		47.79% Pervious Area
	6,294		52.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	25	0.0500	0.18		**Sheet Flow, Segment 1** Grass: Short n= 0.150 P2= 3.00"
0.0	5	0.0500	3.60		**Shallow Concentrated Flow, Segment 2** Unpaved Kv= 16.1 fps
0.1	24	0.0500	3.60		**Shallow Concentrated Flow, Segment 3** Unpaved Kv= 16.1 fps
1.5	207	0.0125	2.27		**Shallow Concentrated Flow, Segment 4** Paved Kv= 20.3 fps
3.9	261	Total			

Summary for Subcatchment 3018GS: SUBCATCHMENT 3018GS

Runoff = 0.03 cfs @ 15.81 hrs, Volume= 0.019 af, Depth= 0.04"
Routed to Pond 3018GP : CB30+18G TO CB30+20L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
5,056	74	>75% Grass cover, Good, HSG C
61,349	30	Woods, Good, HSG A
168,836	39	>75% Grass cover, Good, HSG A
34,830	98	Impervious
270,071	45	Weighted Average
235,241		87.10% Pervious Area
34,830		12.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	100	0.0327	0.09		**Sheet Flow, Segment 1** Woods: Light underbrush n= 0.400 P2= 3.00"
1.2	64	0.0327	0.90		**Shallow Concentrated Flow, Segment 2** Woodland Kv= 5.0 fps
0.1	41	0.3330	8.66		**Shallow Concentrated Flow, Segment 3** Grassed Waterway Kv= 15.0 fps
4.8	614	0.0200	2.12		**Shallow Concentrated Flow, Segment 4** Grassed Waterway Kv= 15.0 fps
2.2	319	0.0250	2.37		**Shallow Concentrated Flow, Segment 5** Grassed Waterway Kv= 15.0 fps
26.5	1,138	Total			

Summary for Subcatchment 3020LS: SUBCATCHMENT 3020LS

Runoff = 0.70 cfs @ 12.16 hrs, Volume= 0.065 af, Depth= 0.79"
Routed to Pond 3020LP : CB30+20L TO CB30+20R

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
250	74	>75% Grass cover, Good, HSG C
22,804	98	Paved parking & roofs
19,984	39	>75% Grass cover, Good, HSG A
43,038	70	Weighted Average
20,234		47.01% Pervious Area
22,804		52.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	100	0.0300	0.19		**Sheet Flow, Segment 1** Grass: Short n= 0.150 P2= 3.00"
0.5	71	0.0211	2.34		**Shallow Concentrated Flow, Segment 2** Unpaved Kv= 16.1 fps
1.2	178	0.0160	2.57		**Shallow Concentrated Flow, Segment 3** Paved Kv= 20.3 fps
10.3	349	Total			

Summary for Subcatchment 3020RS: SUBCATCHMENT 3020RS

Runoff = 0.32 cfs @ 12.09 hrs, Volume= 0.024 af, Depth= 1.23"
Routed to Pond 3020RP : CB30+20R TO HW29+63

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
677	74	>75% Grass cover, Good, HSG C
6,169	98	Paved parking & roofs
3,116	39	>75% Grass cover, Good, HSG A
157	76	Gravel, HSG A
10,119	78	Weighted Average
3,950		39.04% Pervious Area
6,169		60.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	59	0.0339	0.18		**Sheet Flow, Segment 1** Grass: Short n= 0.150 P2= 3.00"
0.9	145	0.0159	2.56		**Shallow Concentrated Flow, Segment 2** Paved Kv= 20.3 fps
6.3	204	Total			

Summary for Subcatchment 3200S: Flow to CB3200

Runoff = 0.00 cfs @ 24.02 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond 3200P : CB3200 TO CB320

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
3,537	39	>75% Grass cover, Good, HSG A
3,537		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment RD1Sa: Roof drain 1a

Runoff = 0.38 cfs @ 12.07 hrs, Volume= 0.029 af, Depth= 2.91"
Routed to Pond RD1Pa : RD1a TO CB327

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
5,231	98	Paved parking & roofs
5,231		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment RD1Sb: Roof Drain 1b

Runoff = 0.27 cfs @ 12.07 hrs, Volume= 0.021 af, Depth= 2.91"
Routed to Pond RD1Pb : RD1b to CB 324

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

	Area (sf)	CN	Description
*	3,703	98	Paved parking & roofs
	3,703		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment RD2Sa: Roof drain 2a

Runoff = 0.31 cfs @ 12.07 hrs, Volume= 0.024 af, Depth= 2.91"
Routed to Pond RD2Pa : RD2a to CB333

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

	Area (sf)	CN	Description
*	4,238	98	Paved parking & roofs
	4,238		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment RD2Sb: Roof drain 2b

Runoff = 0.30 cfs @ 12.07 hrs, Volume= 0.023 af, Depth= 2.91"
Routed to Pond RD2Pb : RD2b TO CB322

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
4,138	98	Paved parking & roofs
4,138		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment RD3S: ROOF DRAIN

Runoff = 1.32 cfs @ 12.07 hrs, Volume= 0.102 af, Depth= 2.91"
Routed to Pond RD3P : RD3 TO CB808

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
18,273	98	Paved parking & roofs
18,273		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment RD4S: ROOF DRAIN

Runoff = 0.04 cfs @ 12.07 hrs, Volume= 0.003 af, Depth= 2.91"
Routed to Pond RD4P : RD4 TO CB807

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
504	98	Impervious
504		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment RD5S: ROOF DRAIN

Runoff = 1.35 cfs @ 12.07 hrs, Volume= 0.104 af, Depth= 2.91"
Routed to Pond RD5P : RD5 TO CB806

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
18,667	98	Impervious
18,667		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment RD6S: ROOF DRAIN

Runoff = 0.70 cfs @ 12.07 hrs, Volume= 0.054 af, Depth= 2.91"
Routed to Pond RD6P : RD6 TO CB805

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
9,690	98	Impervious
9,690		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment RD8S: Roof Drain

Runoff = 0.17 cfs @ 12.07 hrs, Volume= 0.013 af, Depth= 2.91"
Routed to Pond RD8P : RD8 TO CB107

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
2,295	98	Impervious
2,295		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment RD9S: Roof Drain

Runoff = 0.11 cfs @ 12.07 hrs, Volume= 0.009 af, Depth= 2.91"
Routed to Pond RD9P : RD9 TO CB405

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.14"

Area (sf)	CN	Description
1,575	98	Impervious
1,575		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Reach 1AR: STREAM

[62] Hint: Exceeded Reach 326R OUTLET depth by 0.31' @ 12.15 hrs

Inflow Area = 20.946 ac, 36.79% Impervious, Inflow Depth > 1.06" for 2 YR event
Inflow = 5.83 cfs @ 12.13 hrs, Volume= 1.844 af
Outflow = 5.64 cfs @ 12.16 hrs, Volume= 1.844 af, Atten= 3%, Lag= 1.7 min
Routed to Reach 1R : STREAM

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 2.59 fps, Min. Travel Time= 2.4 min
Avg. Velocity = 0.86 fps, Avg. Travel Time= 7.2 min

Peak Storage= 806 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.43' , Surface Width= 6.15'
Bank-Full Depth= 2.00' Flow Area= 18.0 sf, Capacity= 108.07 cfs

4.00' x 2.00' deep channel, n= 0.050
Side Slope Z-value= 2.5 '/' Top Width= 14.00'
Length= 370.0' Slope= 0.0314 '/'
Inlet Invert= 87.70', Outlet Invert= 76.10'



Summary for Reach 1BR: STREAM

Inflow Area = 1.757 ac, 0.00% Impervious, Inflow Depth = 0.89" for 2 YR event
Inflow = 1.52 cfs @ 12.13 hrs, Volume= 0.131 af
Outflow = 1.44 cfs @ 12.17 hrs, Volume= 0.131 af, Atten= 5%, Lag= 2.0 min
Routed to Reach 1R : STREAM

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 1.75 fps, Min. Travel Time= 2.9 min
Avg. Velocity = 0.60 fps, Avg. Travel Time= 8.6 min

Peak Storage= 255 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.18' , Surface Width= 4.92'
Bank-Full Depth= 2.00' Flow Area= 18.0 sf, Capacity= 119.58 cfs

4.00' x 2.00' deep channel, n= 0.050
Side Slope Z-value= 2.5 '/' Top Width= 14.00'
Length= 310.0' Slope= 0.0384 '/'
Inlet Invert= 88.00', Outlet Invert= 76.10'



Summary for Reach 1R: STREAM

[62] Hint: Exceeded Reach 1AR OUTLET depth by 0.16' @ 12.24 hrs
[62] Hint: Exceeded Reach 1BR OUTLET depth by 0.39' @ 12.21 hrs

Inflow Area = 22.703 ac, 33.94% Impervious, Inflow Depth > 1.04" for 2 YR event
Inflow = 7.07 cfs @ 12.16 hrs, Volume= 1.975 af
Outflow = 6.76 cfs @ 12.19 hrs, Volume= 1.974 af, Atten= 4%, Lag= 2.1 min
Routed to Reach 9R : STREAM

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 2.20 fps, Min. Travel Time= 2.9 min
Avg. Velocity = 0.70 fps, Avg. Travel Time= 9.0 min

Peak Storage= 1,168 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.57' , Surface Width= 6.84'
Bank-Full Depth= 2.00' Flow Area= 18.0 sf, Capacity= 78.59 cfs

4.00' x 2.00' deep channel, n= 0.050
Side Slope Z-value= 2.5 '/' Top Width= 14.00'
Length= 380.0' Slope= 0.0166 '/'
Inlet Invert= 76.10', Outlet Invert= 69.80'



Summary for Reach 2R: REACH 2

Inflow Area = 8.009 ac, 44.00% Impervious, Inflow Depth > 0.65" for 2 YR event
Inflow = 0.18 cfs @ 12.15 hrs, Volume= 0.437 af
Outflow = 0.15 cfs @ 22.58 hrs, Volume= 0.435 af, Atten= 18%, Lag= 626.2 min
Routed to Reach 8R : STREAM

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 0.61 fps, Min. Travel Time= 15.2 min
Avg. Velocity = 0.51 fps, Avg. Travel Time= 18.3 min

Peak Storage= 136 cf @ 22.58 hrs
Average Depth at Peak Storage= 0.06' , Surface Width= 4.24'
Bank-Full Depth= 1.50' Flow Area= 10.5 sf, Capacity= 42.77 cfs

4.00' x 1.50' deep channel, n= 0.050
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 560.0' Slope= 0.0193 '/'
Inlet Invert= 93.80', Outlet Invert= 83.00'



Summary for Reach 3R: REACH 3

[62] Hint: Exceeded Reach 41R OUTLET depth by 0.08' @ 12.50 hrs

Inflow Area = 27.711 ac, 26.77% Impervious, Inflow Depth = 0.02" for 2 YR event
Inflow = 0.36 cfs @ 12.40 hrs, Volume= 0.053 af
Outflow = 0.34 cfs @ 12.50 hrs, Volume= 0.053 af, Atten= 6%, Lag= 6.2 min
Routed to Reach 7R : STREAM

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 0.79 fps, Min. Travel Time= 7.2 min
Avg. Velocity = 0.31 fps, Avg. Travel Time= 18.1 min

Peak Storage= 148 cf @ 12.50 hrs
Average Depth at Peak Storage= 0.08' , Surface Width= 5.34'
Bank-Full Depth= 1.00' Flow Area= 7.0 sf, Capacity= 24.05 cfs

5.00' x 1.00' deep channel, n= 0.050
Side Slope Z-value= 2.0 '/' Top Width= 9.00'
Length= 340.0' Slope= 0.0200 '/'
Inlet Invert= 95.30', Outlet Invert= 88.50'



‡

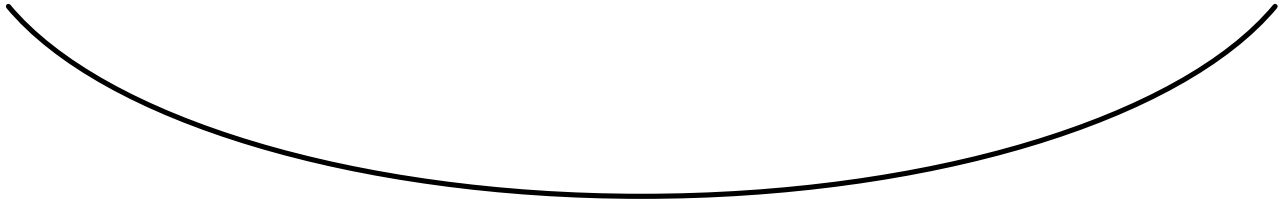
Summary for Reach 4R: REACH 4

Inflow Area = 3.494 ac, 0.00% Impervious, Inflow Depth = 0.06" for 2 YR event
Inflow = 0.03 cfs @ 15.06 hrs, Volume= 0.019 af
Outflow = 0.03 cfs @ 15.23 hrs, Volume= 0.019 af, Atten= 1%, Lag= 10.2 min
Routed to Reach 6R : REACH 6

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 0.23 fps, Min. Travel Time= 18.2 min
Avg. Velocity = 0.21 fps, Avg. Travel Time= 20.4 min

Peak Storage= 32 cf @ 15.23 hrs
Average Depth at Peak Storage= 0.02' , Surface Width= 8.41'
Bank-Full Depth= 2.00' Flow Area= 106.7 sf, Capacity= 468.29 cfs

80.00' x 2.00' deep Parabolic Channel, n= 0.050
Length= 255.0' Slope= 0.0149 '/'
Inlet Invert= 95.80', Outlet Invert= 92.00'



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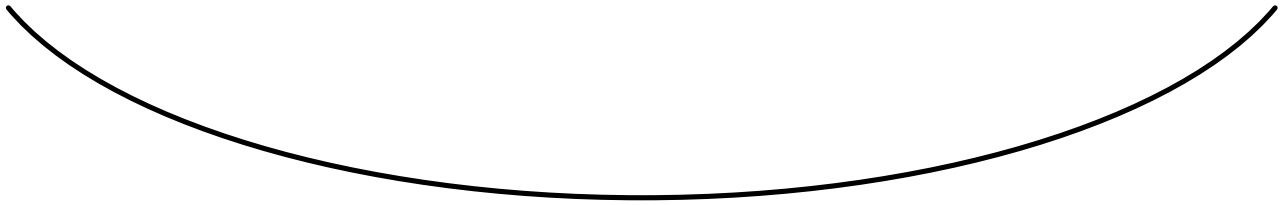
Summary for Reach 5R: REACH 5

Inflow Area = 11.110 ac, 2.39% Impervious, Inflow Depth = 0.00" for 2 YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 6R : REACH 6

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.30' Flow Area= 99.7 sf, Capacity= 409.57 cfs

115.00' x 1.30' deep Parabolic Channel, n= 0.050
Length= 540.0' Slope= 0.0231 '/'
Inlet Invert= 104.50', Outlet Invert= 92.00'



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Summary for Reach 6R: REACH 6

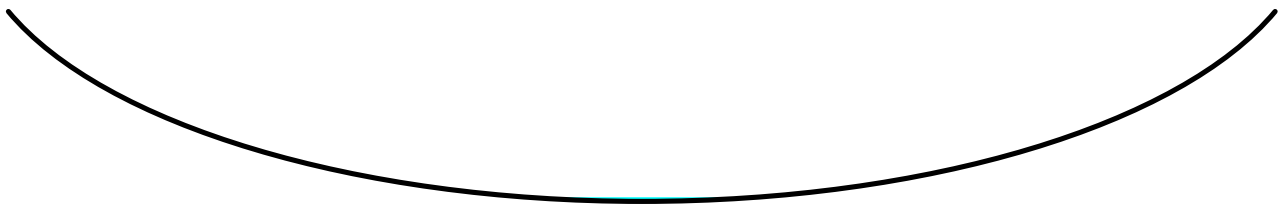
[62] Hint: Exceeded Reach 4R OUTLET depth by 0.01' @ 24.76 hrs
[62] Hint: Exceeded Reach 5R OUTLET depth by 0.03' @ 15.47 hrs

Inflow Area = 14.605 ac, 1.82% Impervious, Inflow Depth = 0.02" for 2 YR event
Inflow = 0.03 cfs @ 15.23 hrs, Volume= 0.019 af
Outflow = 0.03 cfs @ 15.47 hrs, Volume= 0.019 af, Atten= 1%, Lag= 14.3 min
Routed to Reach 7R : STREAM

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 0.23 fps, Min. Travel Time= 20.2 min
Avg. Velocity = 0.19 fps, Avg. Travel Time= 24.6 min

Peak Storage= 36 cf @ 15.47 hrs
Average Depth at Peak Storage= 0.03' , Surface Width= 7.17'
Bank-Full Depth= 1.30' Flow Area= 43.3 sf, Capacity= 131.20 cfs

50.00' x 1.30' deep Parabolic Channel, n= 0.050
Length= 278.0' Slope= 0.0126 '/'
Inlet Invert= 92.00', Outlet Invert= 88.50'



‡

Summary for Reach 7R: STREAM

[62] Hint: Exceeded Reach 3R OUTLET depth by 0.01' @ 15.68 hrs
[62] Hint: Exceeded Reach 6R OUTLET depth by 0.09' @ 12.55 hrs

Inflow Area = 42.315 ac, 18.16% Impervious, Inflow Depth = 0.02" for 2 YR event
Inflow = 0.34 cfs @ 12.50 hrs, Volume= 0.071 af
Outflow = 0.34 cfs @ 12.55 hrs, Volume= 0.071 af, Atten= 1%, Lag= 2.5 min
Routed to Reach 8R : STREAM

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 0.95 fps, Min. Travel Time= 3.4 min
Avg. Velocity = 0.46 fps, Avg. Travel Time= 7.0 min

Peak Storage= 69 cf @ 12.55 hrs
Average Depth at Peak Storage= 0.09' , Surface Width= 4.34'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 92.22 cfs

4.00' x 2.00' deep channel, n= 0.050
Side Slope Z-value= 2.0 '/' Top Width= 12.00'
Length= 194.0' Slope= 0.0284 '/'
Inlet Invert= 88.50', Outlet Invert= 83.00'



Summary for Reach 8R: STREAM

[62] Hint: Exceeded Reach 2R OUTLET depth by 0.05' @ 12.69 hrs
[62] Hint: Exceeded Reach 7R OUTLET depth by 0.05' @ 26.36 hrs

Inflow Area = 50.325 ac, 22.27% Impervious, Inflow Depth > 0.12" for 2 YR event
Inflow = 0.48 cfs @ 12.54 hrs, Volume= 0.507 af
Outflow = 0.45 cfs @ 12.66 hrs, Volume= 0.505 af, Atten= 7%, Lag= 7.3 min
Routed to Reach 9R : STREAM

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 1.01 fps, Min. Travel Time= 8.4 min
Avg. Velocity = 0.59 fps, Avg. Travel Time= 14.4 min

Peak Storage= 227 cf @ 12.66 hrs
Average Depth at Peak Storage= 0.10' , Surface Width= 4.52'
Bank-Full Depth= 2.00' Flow Area= 18.0 sf, Capacity= 98.00 cfs

4.00' x 2.00' deep channel, n= 0.050
Side Slope Z-value= 2.5 '/' Top Width= 14.00'
Length= 512.0' Slope= 0.0258 '/'
Inlet Invert= 83.00', Outlet Invert= 69.80'



Summary for Reach 9R: STREAM

[62] Hint: Exceeded Reach 1R OUTLET depth by 0.03' @ 59.99 hrs
[62] Hint: Exceeded Reach 8R OUTLET depth by 0.53' @ 12.20 hrs

Inflow Area = 73.028 ac, 25.90% Impervious, Inflow Depth > 0.41" for 2 YR event
Inflow = 6.79 cfs @ 12.19 hrs, Volume= 2.479 af
Outflow = 6.77 cfs @ 12.20 hrs, Volume= 2.479 af, Atten= 0%, Lag= 0.5 min
Routed to Pond 10P : CULVERT UNDER NH ROUTE 108

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 2.31 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 0.84 fps, Avg. Travel Time= 2.0 min

Peak Storage= 293 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.55' , Surface Width= 6.73'
Bank-Full Depth= 2.00' Flow Area= 18.0 sf, Capacity= 84.13 cfs

4.00' x 2.00' deep channel, n= 0.050
Side Slope Z-value= 2.5 '/' Top Width= 14.00'
Length= 100.0' Slope= 0.0190 '/'
Inlet Invert= 69.80', Outlet Invert= 67.90'



Summary for Reach 16R: Existing Culvert to West Side of NH Route 108

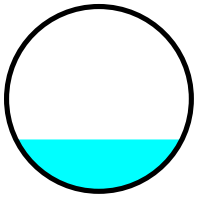
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.561 ac, 54.75% Impervious, Inflow Depth = 1.86" for 2 YR event
Inflow = 1.27 cfs @ 12.07 hrs, Volume= 0.087 af
Outflow = 1.27 cfs @ 12.07 hrs, Volume= 0.087 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 4.53 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.55 fps, Avg. Travel Time= 0.5 min

Peak Storage= 13 cf @ 12.07 hrs
Average Depth at Peak Storage= 0.35' , Surface Width= 1.12'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 7.45 cfs

15.0" Round Pipe
n= 0.012 Concrete pipe, finished
Length= 45.0' Slope= 0.0113 '/'
Inlet Invert= 90.05', Outlet Invert= 89.54'



Summary for Reach 41R: REACH

Inflow Area = 26.604 ac, 27.89% Impervious, Inflow Depth = 0.00" for 2 YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 3R : REACH 3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.00' Flow Area= 7.0 sf, Capacity= 23.05 cfs

5.00' x 1.00' deep channel, n= 0.050
Side Slope Z-value= 2.0 '/' Top Width= 9.00'
Length= 147.0' Slope= 0.0184 '/'
Inlet Invert= 98.00', Outlet Invert= 95.30'



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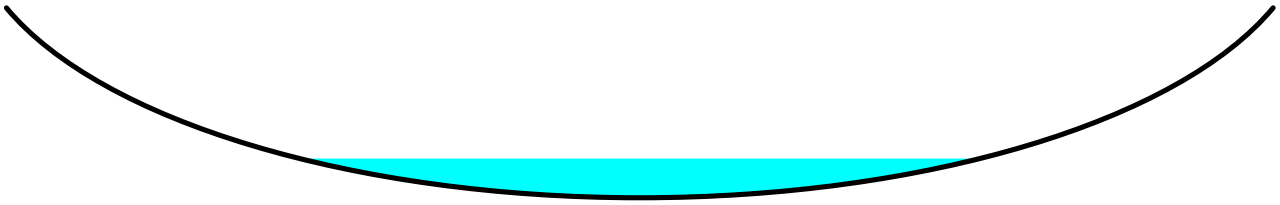
Summary for Reach 326R: Reach 1BR

Inflow Area = 16.886 ac, 43.23% Impervious, Inflow Depth > 1.00" for 2 YR event
Inflow = 0.86 cfs @ 16.51 hrs, Volume= 1.408 af
Outflow = 0.86 cfs @ 16.57 hrs, Volume= 1.407 af, Atten= 0%, Lag= 3.6 min
Routed to Reach 1AR : STREAM

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 1.15 fps, Min. Travel Time= 5.2 min
Avg. Velocity = 0.72 fps, Avg. Travel Time= 8.3 min

Peak Storage= 267 cf @ 16.57 hrs
Average Depth at Peak Storage= 0.16' , Surface Width= 6.80'
Bank-Full Depth= 0.80' Flow Area= 8.0 sf, Capacity= 26.39 cfs

15.00' x 0.80' deep Parabolic Channel, n= 0.050
Length= 358.0' Slope= 0.0288 '/'
Inlet Invert= 98.00', Outlet Invert= 87.70'



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Summary for Pond 10P: CULVERT UNDER NH ROUTE 108

[62] Hint: Exceeded Reach 9R OUTLET depth by 0.45' @ 12.20 hrs

Inflow Area = 120.147 ac, 18.91% Impervious, Inflow Depth > 0.28" for 2 YR event
Inflow = 6.77 cfs @ 12.20 hrs, Volume= 2.794 af
Outflow = 6.77 cfs @ 12.20 hrs, Volume= 2.794 af, Atten= 0%, Lag= 0.0 min
Primary = 6.77 cfs @ 12.20 hrs, Volume= 2.794 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 68.90' @ 12.20 hrs
Flood Elev= 74.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	67.90'	**48.0" Round Culvert** L= 63.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 67.90' / 67.50' S= 0.0063 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf

Primary OutFlow Max=6.76 cfs @ 12.20 hrs HW=68.90' (Free Discharge)
1=Culvert (Barrel Controls 6.76 cfs @ 4.18 fps)

Summary for Pond 11P: CB11 to CB12

Inflow Area = 0.276 ac,100.00% Impervious, Inflow Depth = 2.91" for 2 YR event
Inflow = 0.87 cfs @ 12.07 hrs, Volume= 0.067 af
Outflow = 0.87 cfs @ 12.07 hrs, Volume= 0.067 af, Atten= 0%, Lag= 0.0 min
Primary = 0.87 cfs @ 12.07 hrs, Volume= 0.067 af
Routed to Pond 12R : From CB12 out

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 105.66' @ 12.07 hrs
Flood Elev= 110.26'

Device	Routing	Invert	Outlet Devices
#1	Primary	105.11'	**12.0" Round Culvert** L= 19.0' Ke= 0.500 Inlet / Outlet Invert= 105.11' / 104.86' S= 0.0132 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.87 cfs @ 12.07 hrs HW=105.66' TW=105.42' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.87 cfs @ 2.82 fps)

Summary for Pond 12R: From CB12 out

Inflow Area = 0.504 ac,100.00% Impervious, Inflow Depth = 2.91" for 2 YR event
Inflow = 1.59 cfs @ 12.07 hrs, Volume= 0.122 af
Outflow = 1.59 cfs @ 12.07 hrs, Volume= 0.122 af, Atten= 0%, Lag= 0.0 min
Primary = 1.59 cfs @ 12.07 hrs, Volume= 0.122 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 105.43' @ 12.07 hrs
Flood Elev= 109.68'

Device	Routing	Invert	Outlet Devices
#1	Primary	104.63'	**12.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 104.63' / 104.53' S= 0.0050 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.59 cfs @ 12.07 hrs HW=105.42' (Free Discharge)
1=Culvert (Barrel Controls 1.59 cfs @ 3.25 fps)

Summary for Pond 13P: CB13 to CB14

[57] Hint: Peaked at 107.07' (Flood elevation advised)

Inflow Area = 0.320 ac, 55.92% Impervious, Inflow Depth = 1.86" for 2 YR event
Inflow = 0.72 cfs @ 12.07 hrs, Volume= 0.050 af
Outflow = 0.72 cfs @ 12.07 hrs, Volume= 0.050 af, Atten= 0%, Lag= 0.0 min
Primary = 0.72 cfs @ 12.07 hrs, Volume= 0.050 af
Routed to Pond 14P : CB14 to CB15

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 107.07' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	106.63'	**12.0" Round Culvert** L= 98.0' Ke= 0.500 Inlet / Outlet Invert= 106.63' / 105.64' S= 0.0101 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=0.72 cfs @ 12.07 hrs HW=107.07' TW=106.08' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.72 cfs @ 3.22 fps)

Summary for Pond 14P: CB14 to CB15

[57] Hint: Peaked at 106.08' (Flood elevation advised)

Inflow Area = 0.359 ac, 60.76% Impervious, Inflow Depth = 1.98" for 2 YR event
Inflow = 0.85 cfs @ 12.07 hrs, Volume= 0.059 af
Outflow = 0.85 cfs @ 12.07 hrs, Volume= 0.059 af, Atten= 0%, Lag= 0.0 min
Primary = 0.85 cfs @ 12.07 hrs, Volume= 0.059 af
Routed to Pond 15P : CB15 out

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 106.08' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	105.61'	**12.0" Round Culvert** L= 25.0' Ke= 0.500 Inlet / Outlet Invert= 105.61' / 104.40' S= 0.0484 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=0.85 cfs @ 12.07 hrs HW=106.08' TW=104.97' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.85 cfs @ 2.33 fps)

Summary for Pond 15P: CB15 out

[57] Hint: Peaked at 104.97' (Flood elevation advised)

Inflow Area = 0.445 ac, 68.34% Impervious, Inflow Depth = 2.16" for 2 YR event
Inflow = 1.12 cfs @ 12.07 hrs, Volume= 0.080 af
Outflow = 1.12 cfs @ 12.07 hrs, Volume= 0.080 af, Atten= 0%, Lag= 0.0 min
Primary = 1.12 cfs @ 12.07 hrs, Volume= 0.080 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 104.97' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	104.33'	**12.0" Round Culvert** L= 10.0' Ke= 0.500 Inlet / Outlet Invert= 104.33' / 104.23' S= 0.0100 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf

Primary OutFlow Max=1.12 cfs @ 12.07 hrs HW=104.97' (Free Discharge)
1=Culvert (Barrel Controls 1.12 cfs @ 3.02 fps)

Summary for Pond 100AP: Outlet Structure 105 to HW100 - MODIFIED

[80] Warning: Exceeded Pond 107P by 0.08' @ 24.18 hrs (0.02 cfs 0.000 af)

Inflow Area = 16.886 ac, 43.23% Impervious, Inflow Depth = 1.02" for 2 YR event
Inflow = 5.85 cfs @ 12.07 hrs, Volume= 1.434 af
Outflow = 0.86 cfs @ 16.51 hrs, Volume= 1.408 af, Atten= 85%, Lag= 266.6 min
Primary = 0.86 cfs @ 16.51 hrs, Volume= 1.408 af
Routed to Reach 326R : Reach 1BR

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 101.56' @ 16.51 hrs Surf.Area= 7,306 sf Storage= 19,977 cf
Flood Elev= 104.00' Surf.Area= 10,000 sf Storage= 40,899 cf

Plug-Flow detention time= 413.7 min calculated for 1.408 af (98% of inflow)
Center-of-Mass det. time= 390.1 min (1,448.8 - 1,058.7)

Volume	Invert	Avail.Storage	Storage Description
#1	98.00'	40,899 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
98.00	4,135	0	0
98.50	4,349	2,121	2,121
99.00	4,780	2,282	4,403
100.00	5,858	5,319	9,722
101.00	6,746	6,302	16,024
102.00	7,741	7,244	23,268
103.00	8,761	8,251	31,519
104.00	10,000	9,381	40,899

Device	Routing	Invert	Outlet Devices
#1	Primary	98.00'	**36.0" Round Culvert** L= 20.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 98.00' / 97.90' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 7.07 sf
#2	Device 1	98.00'	**0.5" W x 43.2" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	101.60'	**12.0" W x 15.6" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	102.90'	**48.0" x 60.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	101.70'	**8.0" Vert. Orifices (4) X 4.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.86 cfs @ 16.51 hrs HW=101.56' TW=98.16' (Dynamic Tailwater)
- **1=Culvert** (Passes 0.86 cfs of 41.80 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.86 cfs @ 6.05 fps)
  - **3=Orifice/Grate** (Controls 0.00 cfs)
  - **4=Grate** (Controls 0.00 cfs)
  - **5=Orifices (4)** (Controls 0.00 cfs)

Summary for Pond 100P: Outlet Structure 110 to HW109

Inflow Area = 15.077 ac, 39.74% Impervious, Inflow Depth = 0.85" for 2 YR event
Inflow = 12.89 cfs @ 12.08 hrs, Volume= 1.066 af
Outflow = 1.05 cfs @ 12.53 hrs, Volume= 1.066 af, Atten= 92%, Lag= 26.9 min
Primary = 1.05 cfs @ 12.53 hrs, Volume= 1.066 af
Routed to Pond 100AP : Outlet Structure 105 to HW100 - MODIFIED

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 102.28' @ 14.31 hrs Surf.Area= 10,090 sf Storage= 19,941 cf
Flood Elev= 106.00' Surf.Area= 33,480 sf Storage= 105,292 cf

Plug-Flow detention time= 340.9 min calculated for 1.066 af (100% of inflow)
Center-of-Mass det. time= 341.1 min (1,153.8 - 812.7)

Volume	Invert	Avail.Storage	Storage Description
#1	98.50'	105,292 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
98.50	0	0	0
99.00	483	121	121
100.00	5,808	3,146	3,266
101.00	6,872	6,340	9,606
102.00	8,510	7,691	17,297
103.00	14,070	11,290	28,587
104.00	24,830	19,450	48,037
105.00	28,100	26,465	74,502
106.00	33,480	30,790	105,292

Device	Routing	Invert	Outlet Devices
#1	Primary	98.50'	**30.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 98.50' / 98.30' S= 0.0050 '/' Cc= 0.900 n= 0.011, Flow Area= 4.91 sf
#2	Device 1	98.50'	**0.5" x 58.8" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	103.40'	**12.0" W x 15.6" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	104.70'	**48.0" x 60.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Primary	105.40'	**174.0 deg x 5.0' long x 0.40' rise Sharp-Crested Vee/Trap Weir** Cv= 2.46 (C= 3.08)

Primary OutFlow Max=1.05 cfs @ 12.53 hrs HW=102.06' TW=100.83' (Dynamic Tailwater)
- **1=Culvert** (Passes 1.05 cfs of 26.19 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 1.05 cfs @ 5.34 fps)
  - **3=Orifice/Grate** (Controls 0.00 cfs)
  - **4=Orifice/Grate** (Controls 0.00 cfs)
- **5=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Summary for Pond 107P: CB107 TO HW106

Inflow Area = 0.682 ac, 86.11% Impervious, Inflow Depth = 2.64" for 2 YR event
Inflow = 2.05 cfs @ 12.07 hrs, Volume= 0.150 af
Outflow = 2.05 cfs @ 12.07 hrs, Volume= 0.150 af, Atten= 0%, Lag= 0.0 min
Primary = 2.05 cfs @ 12.07 hrs, Volume= 0.150 af
Routed to Pond 100AP : Outlet Structure 105 to HW100 - MODIFIED

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 101.73' @ 12.07 hrs
Flood Elev= 106.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	100.90'	**15.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 100.90' / 100.80' S= 0.0050 '/' Cc= 0.900 n= 0.009, Flow Area= 1.23 sf

Primary OutFlow Max=2.05 cfs @ 12.07 hrs HW=101.72' TW=100.12' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 2.05 cfs @ 3.38 fps)

Summary for Pond 108P: CB108 TO CB107

Inflow Area = 0.465 ac, 84.37% Impervious, Inflow Depth = 2.59" for 2 YR event
Inflow = 1.38 cfs @ 12.07 hrs, Volume= 0.100 af
Outflow = 1.38 cfs @ 12.07 hrs, Volume= 0.100 af, Atten= 0%, Lag= 0.0 min
Primary = 1.38 cfs @ 12.07 hrs, Volume= 0.100 af
Routed to Pond 107P : CB107 TO HW106

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 102.21' @ 12.07 hrs
Flood Elev= 106.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.55'	**15.0" Round Culvert** L= 106.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 101.55' / 101.00' S= 0.0052 '/' Cc= 0.900 n= 0.009, Flow Area= 1.23 sf

Primary OutFlow Max=1.38 cfs @ 12.07 hrs HW=102.21' TW=101.72' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 1.38 cfs @ 3.05 fps)

Summary for Pond 148GP: CB1+48G TO CB1+48R

Inflow Area = 0.563 ac, 16.32% Impervious, Inflow Depth = 0.03" for 2 YR event
Inflow = 0.00 cfs @ 16.90 hrs, Volume= 0.001 af
Outflow = 0.00 cfs @ 16.90 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 16.90 hrs, Volume= 0.001 af
Routed to Pond 148RP : CB1+48R TO CB3+04R

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 126.47' @ 16.90 hrs
Flood Elev= 130.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	126.45'	**15.0" Round Culvert** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 126.45' / 126.35' S= 0.0050 '/' Cc= 0.900 n= 0.011, Flow Area= 1.23 sf

Primary OutFlow Max=0.00 cfs @ 16.90 hrs HW=126.47' TW=126.29' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.00 cfs @ 0.49 fps)

Summary for Pond 148RP: CB1+48R TO CB3+04R

[80] Warning: Exceeded Pond 148GP by 0.01' @ 12.07 hrs (0.00 cfs 0.000 af)

Inflow Area = 0.662 ac, 24.48% Impervious, Inflow Depth = 0.24" for 2 YR event
Inflow = 0.17 cfs @ 12.07 hrs, Volume= 0.013 af
Outflow = 0.17 cfs @ 12.07 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.0 min
Primary = 0.17 cfs @ 12.07 hrs, Volume= 0.013 af
Routed to Pond 304RP : CB3+04R TO CB4+01G

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 126.46' @ 12.07 hrs
Flood Elev= 132.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	126.25'	**15.0" Round Culvert** L= 153.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 126.25' / 124.70' S= 0.0101 '/' Cc= 0.900 n= 0.011, Flow Area= 1.23 sf

Primary OutFlow Max=0.17 cfs @ 12.07 hrs HW=126.46' TW=125.05' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.17 cfs @ 1.24 fps)

Summary for Pond 205P: CB205 TO HW200

Inflow Area = 1.894 ac, 90.15% Impervious, Inflow Depth = 2.58" for 2 YR event
Inflow = 5.59 cfs @ 12.07 hrs, Volume= 0.407 af
Outflow = 5.59 cfs @ 12.07 hrs, Volume= 0.407 af, Atten= 0%, Lag= 0.0 min
Primary = 5.59 cfs @ 12.07 hrs, Volume= 0.407 af
Routed to Pond 100P : Outlet Structure 110 to HW109

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 103.59' @ 12.07 hrs
Flood Elev= 106.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	102.40'	**24.0" Round Culvert** L= 54.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 102.40' / 102.10' S= 0.0056 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=5.57 cfs @ 12.07 hrs HW=103.58' TW=100.81' (Dynamic Tailwater)
1=Culvert (Barrel Controls 5.57 cfs @ 4.13 fps)

Summary for Pond 206P: CB206 TO CB205

Inflow Area = 0.232 ac, 95.84% Impervious, Inflow Depth = 2.80" for 2 YR event
Inflow = 0.72 cfs @ 12.07 hrs, Volume= 0.054 af
Outflow = 0.72 cfs @ 12.07 hrs, Volume= 0.054 af, Atten= 0%, Lag= 0.0 min
Primary = 0.72 cfs @ 12.07 hrs, Volume= 0.054 af
Routed to Pond 205P : CB205 TO HW200

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 104.12' @ 12.07 hrs
Flood Elev= 108.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	103.70'	**15.0" Round Culvert** L= 50.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 103.70' / 103.15' S= 0.0110 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=0.72 cfs @ 12.07 hrs HW=104.12' TW=103.58' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.72 cfs @ 2.98 fps)

Summary for Pond 210P: CB210 TO CB205

Inflow Area = 1.174 ac, 87.38% Impervious, Inflow Depth = 2.45" for 2 YR event
Inflow = 3.35 cfs @ 12.07 hrs, Volume= 0.240 af
Outflow = 3.35 cfs @ 12.07 hrs, Volume= 0.240 af, Atten= 0%, Lag= 0.0 min
Primary = 3.35 cfs @ 12.07 hrs, Volume= 0.240 af
Routed to Pond 205P : CB205 TO HW200

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 104.25' @ 12.07 hrs
Flood Elev= 107.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	103.25'	**18.0" Round Culvert** L= 65.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 103.25' / 102.90' S= 0.0054 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=3.34 cfs @ 12.07 hrs HW=104.25' TW=103.58' (Dynamic Tailwater)
1=Culvert (Barrel Controls 3.34 cfs @ 3.79 fps)

Summary for Pond 215P: DCB215 TO CB210

Inflow Area = 0.997 ac, 89.58% Impervious, Inflow Depth = 2.49" for 2 YR event
Inflow = 2.88 cfs @ 12.07 hrs, Volume= 0.207 af
Outflow = 2.88 cfs @ 12.07 hrs, Volume= 0.207 af, Atten= 0%, Lag= 0.0 min
Primary = 2.88 cfs @ 12.07 hrs, Volume= 0.207 af
Routed to Pond 210P : CB210 TO CB205

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 104.74' @ 12.07 hrs
Flood Elev= 108.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	103.75'	**18.0" Round Culvert** L= 75.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 103.75' / 103.35' S= 0.0053 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=2.88 cfs @ 12.07 hrs HW=104.74' TW=104.25' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 2.88 cfs @ 3.31 fps)

Summary for Pond 220P: CB220 TO DCB215

Inflow Area = 0.345 ac, 95.13% Impervious, Inflow Depth = 2.69" for 2 YR event
Inflow = 1.05 cfs @ 12.07 hrs, Volume= 0.077 af
Outflow = 1.05 cfs @ 12.07 hrs, Volume= 0.077 af, Atten= 0%, Lag= 0.0 min
Primary = 1.05 cfs @ 12.07 hrs, Volume= 0.077 af
Routed to Pond 215P : DCB215 TO CB210

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 105.10' @ 12.07 hrs
Flood Elev= 109.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	104.50'	**15.0" Round Culvert** L= 60.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 104.50' / 104.00' S= 0.0083 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=1.05 cfs @ 12.07 hrs HW=105.10' TW=104.74' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 1.05 cfs @ 2.62 fps)

Summary for Pond 303GP: CB3+03G TO CB3+04R

Inflow Area = 0.242 ac, 75.15% Impervious, Inflow Depth = 1.56" for 2 YR event
Inflow = 0.46 cfs @ 12.07 hrs, Volume= 0.031 af
Outflow = 0.46 cfs @ 12.07 hrs, Volume= 0.031 af, Atten= 0%, Lag= 0.0 min
Primary = 0.46 cfs @ 12.07 hrs, Volume= 0.031 af
Routed to Pond 304RP : CB3+04R TO CB4+01G

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 126.45' @ 12.07 hrs
Flood Elev= 130.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	126.10'	**15.0" Round Culvert** L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 126.10' / 124.70' S= 0.0233 '/' Cc= 0.900 n= 0.011, Flow Area= 1.23 sf

Primary OutFlow Max=0.46 cfs @ 12.07 hrs HW=126.45' TW=125.05' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 0.46 cfs @ 1.60 fps)

Summary for Pond 304RP: CB3+04R TO CB4+01G

Inflow Area = 1.023 ac, 39.60% Impervious, Inflow Depth = 0.61" for 2 YR event
Inflow = 0.72 cfs @ 12.07 hrs, Volume= 0.052 af
Outflow = 0.72 cfs @ 12.07 hrs, Volume= 0.052 af, Atten= 0%, Lag= 0.0 min
Primary = 0.72 cfs @ 12.07 hrs, Volume= 0.052 af
Routed to Pond 402GP : CB4+02G TO CB4+19R

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 125.05' @ 12.07 hrs
Flood Elev= 129.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	124.60'	**15.0" Round Culvert** L= 94.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 124.60' / 122.75' S= 0.0197 '/' Cc= 0.900 n= 0.011, Flow Area= 1.23 sf

Primary OutFlow Max=0.72 cfs @ 12.07 hrs HW=125.05' TW=123.19' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 0.72 cfs @ 1.81 fps)

Summary for Pond 305P: CB305 TO HW300

Inflow Area = 8.737 ac, 28.45% Impervious, Inflow Depth = 0.54" for 2 YR event
Inflow = 5.13 cfs @ 12.07 hrs, Volume= 0.396 af
Outflow = 5.13 cfs @ 12.07 hrs, Volume= 0.396 af, Atten= 0%, Lag= 0.0 min
Primary = 5.13 cfs @ 12.07 hrs, Volume= 0.396 af
Routed to Pond 100P : Outlet Structure 110 to HW109

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 104.40' @ 12.07 hrs
Flood Elev= 107.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	103.25'	**24.0" Round Culvert** L= 16.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 103.25' / 103.15' S= 0.0062 '/' Cc= 0.900 n= 0.009, Flow Area= 3.14 sf

Primary OutFlow Max=5.13 cfs @ 12.07 hrs HW=104.40' TW=100.83' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 5.13 cfs @ 3.94 fps)

Summary for Pond 310P: CB310 TO CB305

Inflow Area = 8.555 ac, 27.26% Impervious, Inflow Depth = 0.51" for 2 YR event
Inflow = 4.64 cfs @ 12.07 hrs, Volume= 0.362 af
Outflow = 4.64 cfs @ 12.07 hrs, Volume= 0.362 af, Atten= 0%, Lag= 0.0 min
Primary = 4.64 cfs @ 12.07 hrs, Volume= 0.362 af
Routed to Pond 305P : CB305 TO HW300

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 104.72' @ 12.07 hrs
Flood Elev= 107.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	103.50'	**24.0" Round Culvert** L= 28.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 103.50' / 103.35' S= 0.0054 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=4.63 cfs @ 12.07 hrs HW=104.72' TW=104.40' (Dynamic Tailwater)
1=Culvert (Outlet Controls 4.63 cfs @ 3.30 fps)

Summary for Pond 315P: CB315 TO CB310

Inflow Area = 5.215 ac, 36.98% Impervious, Inflow Depth = 0.79" for 2 YR event
Inflow = 4.64 cfs @ 12.07 hrs, Volume= 0.344 af
Outflow = 4.64 cfs @ 12.07 hrs, Volume= 0.344 af, Atten= 0%, Lag= 0.0 min
Primary = 4.64 cfs @ 12.07 hrs, Volume= 0.344 af
Routed to Pond 310P : CB310 TO CB305

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 106.23' @ 12.07 hrs
Flood Elev= 109.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	105.00'	**18.0" Round Culvert** L= 185.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 105.00' / 104.00' S= 0.0054 '/' Cc= 0.900 n= 0.009, Flow Area= 1.77 sf

Primary OutFlow Max=4.63 cfs @ 12.07 hrs HW=106.23' TW=104.72' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.63 cfs @ 2.98 fps)

Summary for Pond 316P: CB316 TO CB315

Inflow Area = 0.087 ac, 88.61% Impervious, Inflow Depth = 2.49" for 2 YR event
Inflow = 0.25 cfs @ 12.07 hrs, Volume= 0.018 af
Outflow = 0.25 cfs @ 12.07 hrs, Volume= 0.018 af, Atten= 0%, Lag= 0.0 min
Primary = 0.25 cfs @ 12.07 hrs, Volume= 0.018 af
Routed to Pond 315P : CB315 TO CB310

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 106.24' @ 12.07 hrs
Flood Elev= 109.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	105.40'	**15.0" Round Culvert** L= 24.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 105.40' / 105.25' S= 0.0063 '/' Cc= 0.900 n= 0.009, Flow Area= 1.23 sf

Primary OutFlow Max=0.25 cfs @ 12.07 hrs HW=106.24' TW=106.23' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.25 cfs @ 0.29 fps)

Summary for Pond 320P: CB320 TO CB315

[80] Warning: Exceeded Pond 3200P by 0.03' @ 12.03 hrs (0.15 cfs 0.001 af)

Inflow Area = 2.458 ac, 67.94% Impervious, Inflow Depth = 1.59" for 2 YR event
Inflow = 4.39 cfs @ 12.07 hrs, Volume= 0.326 af
Outflow = 4.39 cfs @ 12.07 hrs, Volume= 0.326 af, Atten= 0%, Lag= 0.0 min
Primary = 4.39 cfs @ 12.07 hrs, Volume= 0.326 af
Routed to Pond 315P : CB315 TO CB310

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 108.64' @ 12.07 hrs
Flood Elev= 112.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	107.45'	**18.0" Round Culvert** L= 213.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 107.45' / 105.10' S= 0.0110 '/' Cc= 0.900 n= 0.009, Flow Area= 1.77 sf

Primary OutFlow Max=4.38 cfs @ 12.07 hrs HW=108.64' TW=106.23' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.38 cfs @ 2.93 fps)

Summary for Pond 320Pa: Porous Walk

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=595)

Inflow Area = 0.009 ac,100.00% Impervious, Inflow Depth = 2.91" for 2 YR event
Inflow = 0.03 cfs @ 12.07 hrs, Volume= 0.002 af
Outflow = 0.03 cfs @ 12.08 hrs, Volume= 0.002 af, Atten= 10%, Lag= 0.9 min
Discarded = 0.03 cfs @ 12.08 hrs, Volume= 0.002 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 111.86' @ 12.10 hrs Surf.Area= 379 sf Storage= 1 cf
Flood Elev= 112.85' Surf.Area= 379 sf Storage= 38 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.1 min (755.7 - 755.6)

Volume	Invert	Avail.Storage	Storage Description
#1	111.85'	38 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
111.85	379	0.0	0	0
112.85	379	10.0	38	38

Device	Routing	Invert	Outlet Devices
#1	Discarded	111.85'	**3.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.03 cfs @ 12.08 hrs HW=111.86' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.03 cfs)

Summary for Pond 321P: CB321 TO CB320

Inflow Area = 1.360 ac, 63.43% Impervious, Inflow Depth = 1.41" for 2 YR event
Inflow = 2.12 cfs @ 12.07 hrs, Volume= 0.160 af
Outflow = 2.12 cfs @ 12.07 hrs, Volume= 0.160 af, Atten= 0%, Lag= 0.0 min
Primary = 2.12 cfs @ 12.07 hrs, Volume= 0.160 af
Routed to Pond 320P : CB320 TO CB315

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 113.00' @ 12.07 hrs
Flood Elev= 116.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	112.17'	**15.0" Round Culvert** L= 114.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 112.17' / 109.40' S= 0.0243 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.12 cfs @ 12.07 hrs HW=113.00' TW=108.64' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.12 cfs @ 2.45 fps)

Summary for Pond 321Pa: Porous Walk

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=590)

Inflow Area = 0.010 ac,100.00% Impervious, Inflow Depth = 2.91" for 2 YR event
Inflow = 0.03 cfs @ 12.07 hrs, Volume= 0.003 af
Outflow = 0.03 cfs @ 12.09 hrs, Volume= 0.003 af, Atten= 4%, Lag= 1.5 min
Discarded = 0.03 cfs @ 12.09 hrs, Volume= 0.003 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 116.65' @ 12.09 hrs Surf.Area= 456 sf Storage= 0 cf
Flood Elev= 117.65' Surf.Area= 456 sf Storage= 46 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (755.6 - 755.6)

Volume	Invert	Avail.Storage	Storage Description
#1	116.65'	46 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
116.65	456	0.0	0	0
117.65	456	10.0	46	46

Device	Routing	Invert	Outlet Devices
#1	Discarded	116.65'	**3.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.03 cfs @ 12.09 hrs HW=116.65' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.03 cfs)

Summary for Pond 322P: CB323 TO CB322

Inflow Area = 1.222 ac, 62.85% Impervious, Inflow Depth = 1.34" for 2 YR event
Inflow = 1.83 cfs @ 12.07 hrs, Volume= 0.137 af
Outflow = 1.83 cfs @ 12.07 hrs, Volume= 0.137 af, Atten= 0%, Lag= 0.0 min
Primary = 1.83 cfs @ 12.07 hrs, Volume= 0.137 af
Routed to Pond 321P : CB321 TO CB320

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 118.63' @ 12.07 hrs
Flood Elev= 125.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	117.87'	**15.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 117.87' / 112.27' S= 0.0800 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.82 cfs @ 12.07 hrs HW=118.63' TW=113.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.82 cfs @ 2.34 fps)

Summary for Pond 323P: CB324 to CB323

Inflow Area = 1.124 ac, 68.31% Impervious, Inflow Depth = 1.46" for 2 YR event
Inflow = 1.83 cfs @ 12.07 hrs, Volume= 0.137 af
Outflow = 1.83 cfs @ 12.07 hrs, Volume= 0.137 af, Atten= 0%, Lag= 0.0 min
Primary = 1.83 cfs @ 12.07 hrs, Volume= 0.137 af
Routed to Pond 322P : CB323 TO CB322

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 121.82' @ 12.07 hrs
Flood Elev= 127.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	121.06'	**15.0" Round Culvert** L= 37.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 121.06' / 120.69' S= 0.0100 '/' Cc= 0.900

n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.82 cfs @ 12.07 hrs HW=121.82' TW=118.63' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 1.82 cfs @ 2.34 fps)

Summary for Pond 323Pa: Porous Walk

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=590)

Inflow Area = 0.011 ac,100.00% Impervious, Inflow Depth = 2.91" for 2 YR event
Inflow = 0.04 cfs @ 12.07 hrs, Volume= 0.003 af
Outflow = 0.03 cfs @ 12.09 hrs, Volume= 0.003 af, Atten= 4%, Lag= 1.5 min
Discarded = 0.03 cfs @ 12.09 hrs, Volume= 0.003 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 129.25' @ 12.09 hrs Surf.Area= 498 sf Storage= 0 cf
Flood Elev= 130.25' Surf.Area= 498 sf Storage= 50 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (755.6 - 755.6)

Volume	Invert	Avail.Storage	Storage Description
#1	129.25'	50 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
129.25	498	0.0	0	0
130.25	498	10.0	50	50

Device	Routing	Invert	Outlet Devices
#1	Discarded	129.25'	**3.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.03 cfs @ 12.09 hrs HW=129.25' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Summary for Pond 324P: CB325 to CB324

Inflow Area = 0.997 ac, 68.51% Impervious, Inflow Depth = 1.40" for 2 YR event
Inflow = 1.56 cfs @ 12.07 hrs, Volume= 0.116 af
Outflow = 1.56 cfs @ 12.07 hrs, Volume= 0.116 af, Atten= 0%, Lag= 0.0 min
Primary = 1.56 cfs @ 12.07 hrs, Volume= 0.116 af
Routed to Pond 323P : CB324 to CB323

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 122.39' @ 12.07 hrs
Flood Elev= 132.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	121.73'	**15.0" Round Culvert** L= 57.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 121.73' / 121.16' S= 0.0100 '/' Cc= 0.900

n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.56 cfs @ 12.07 hrs HW=122.39' TW=121.82' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 1.56 cfs @ 3.43 fps)

Summary for Pond 325P: CB326 TO CB325

Inflow Area = 0.946 ac, 66.82% Impervious, Inflow Depth = 1.32" for 2 YR event
Inflow = 1.40 cfs @ 12.07 hrs, Volume= 0.104 af
Outflow = 1.40 cfs @ 12.07 hrs, Volume= 0.104 af, Atten= 0%, Lag= 0.0 min
Primary = 1.40 cfs @ 12.07 hrs, Volume= 0.104 af
Routed to Pond 324P : CB325 to CB324

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 123.25' @ 12.07 hrs
Flood Elev= 130.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	122.60'	**15.0" Round Culvert** L= 67.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 122.60' / 121.83' S= 0.0115 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.40 cfs @ 12.07 hrs HW=123.25' TW=122.39' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 1.40 cfs @ 2.17 fps)

Summary for Pond 326P: CB327 TO CB326

Inflow Area = 0.908 ac, 65.42% Impervious, Inflow Depth = 1.25" for 2 YR event
Inflow = 1.28 cfs @ 12.07 hrs, Volume= 0.095 af
Outflow = 1.28 cfs @ 12.07 hrs, Volume= 0.095 af, Atten= 0%, Lag= 0.0 min
Primary = 1.28 cfs @ 12.07 hrs, Volume= 0.095 af
Routed to Pond 325P : CB326 TO CB325

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 124.42' @ 12.07 hrs
Flood Elev= 128.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	123.80'	**15.0" Round Culvert** L= 120.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 123.80' / 122.60' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.28 cfs @ 12.07 hrs HW=124.42' TW=123.25' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 1.28 cfs @ 2.11 fps)

Summary for Pond 326Pa: Porous Walk

Inflow Area = 0.041 ac, 44.21% Impervious, Inflow Depth = 0.57" for 2 YR event
Inflow = 0.02 cfs @ 12.09 hrs, Volume= 0.002 af
Outflow = 0.02 cfs @ 12.09 hrs, Volume= 0.002 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.02 cfs @ 12.09 hrs, Volume= 0.002 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 127.95' @ 0.00 hrs Surf.Area= 790 sf Storage= 0 cf
Flood Elev= 128.95' Surf.Area= 790 sf Storage= 79 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (896.0 - 896.0)

Volume	Invert	Avail.Storage	Storage Description
#1	127.95'	79 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
127.95	790	0.0	0	0
128.95	790	10.0	79	79

Device	Routing	Invert	Outlet Devices
#1	Discarded	127.95'	**3.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=127.95' (Free Discharge)
↑—**1=Exfiltration** (Passes 0.00 cfs of 0.05 cfs potential flow)

Summary for Pond 326Pb: Porous Walk

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=590)

Inflow Area = 0.001 ac,100.00% Impervious, Inflow Depth = 2.91" for 2 YR event
Inflow = 0.00 cfs @ 12.07 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 12.09 hrs, Volume= 0.000 af, Atten= 4%, Lag= 1.5 min
Discarded = 0.00 cfs @ 12.09 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 129.05' @ 12.09 hrs Surf.Area= 57 sf Storage= 0 cf
Flood Elev= 130.05' Surf.Area= 57 sf Storage= 6 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (755.6 - 755.6)

Volume	Invert	Avail.Storage	Storage Description
#1	129.05'	6 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
129.05	57	0.0	0	0
130.05	57	10.0	6	6

Device	Routing	Invert	Outlet Devices
#1	Discarded	129.05'	**3.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=129.05' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Summary for Pond 326Pc: Porous Walk

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=590)

Inflow Area = 0.001 ac,100.00% Impervious, Inflow Depth = 2.91" for 2 YR event
Inflow = 0.00 cfs @ 12.07 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 12.09 hrs, Volume= 0.000 af, Atten= 4%, Lag= 1.5 min
Discarded = 0.00 cfs @ 12.09 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 129.65' @ 12.09 hrs Surf.Area= 53 sf Storage= 0 cf
Flood Elev= 129.65' Surf.Area= 53 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (755.6 - 755.6)

Volume	Invert	Avail.Storage	Storage Description
#1	129.65'	5 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
129.65	53	0.0	0	0
130.65	53	10.0	5	5

Device	Routing	Invert	Outlet Devices
#1	Discarded	129.65'	**3.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=129.65' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Summary for Pond 330P: CB330 T0 CB320

Inflow Area = 0.944 ac, 78.00% Impervious, Inflow Depth = 1.90" for 2 YR event
Inflow = 2.04 cfs @ 12.07 hrs, Volume= 0.149 af
Outflow = 2.04 cfs @ 12.07 hrs, Volume= 0.149 af, Atten= 0%, Lag= 0.0 min
Primary = 2.04 cfs @ 12.07 hrs, Volume= 0.149 af
Routed to Pond 320P : CB320 TO CB315

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 109.51' @ 12.07 hrs
Flood Elev= 113.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	108.70'	**15.0" Round Culvert**

L= 35.0' CPP, projecting, no headwall, Ke= 0.900
Inlet / Outlet Invert= 108.70' / 107.70' S= 0.0286 '/' Cc= 0.900
n= 0.009, Flow Area= 1.23 sf

Primary OutFlow Max=2.04 cfs @ 12.07 hrs HW=109.51' TW=108.64' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.04 cfs @ 2.42 fps)

Summary for Pond 330Pa: Porous Walk

Inflow Area = 0.010 ac, 41.33% Impervious, Inflow Depth = 0.49" for 2 YR event
Inflow = 0.00 cfs @ 12.10 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 12.10 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 12.10 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 114.25' @ 0.00 hrs Surf.Area= 186 sf Storage= 0 cf
Flood Elev= 115.25' Surf.Area= 186 sf Storage= 19 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (905.5 - 905.5)

Volume	Invert	Avail.Storage	Storage Description
#1	114.25'	19 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
114.25	186	0.0	0	0
115.25	186	10.0	19	19

Device	Routing	Invert	Outlet Devices
#1	Discarded	114.25'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 12.10 hrs HW=114.25' (Free Discharge)
1=Exfiltration (Passes 0.00 cfs of 0.02 cfs potential flow)

Summary for Pond 330Pb: Porous Walk

Inflow Area = 0.005 ac, 39.91% Impervious, Inflow Depth = 0.49" for 2 YR event
Inflow = 0.00 cfs @ 12.10 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 12.10 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 12.10 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 112.65' @ 0.00 hrs Surf.Area= 87 sf Storage= 0 cf
Flood Elev= 113.65' Surf.Area= 87 sf Storage= 9 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (905.5 - 905.5)

Volume	Invert	Avail.Storage	Storage Description
#1	112.65'	9 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
112.65	87	0.0	0	0
113.65	87	10.0	9	9

Device	Routing	Invert	Outlet Devices
#1	Discarded	112.65'	**3.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 12.10 hrs HW=112.65' (Free Discharge)
1=Exfiltration (Passes 0.00 cfs of 0.01 cfs potential flow)

Summary for Pond 331P: CB331 TO CB330

Inflow Area = 0.413 ac, 67.48% Impervious, Inflow Depth = 1.51" for 2 YR event
Inflow = 0.72 cfs @ 12.07 hrs, Volume= 0.052 af
Outflow = 0.72 cfs @ 12.07 hrs, Volume= 0.052 af, Atten= 0%, Lag= 0.0 min
Primary = 0.72 cfs @ 12.07 hrs, Volume= 0.052 af
Routed to Pond 330P : CB330 T0 CB320

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 110.49' @ 12.07 hrs
Flood Elev= 117.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	110.02'	**15.0" Round Culvert** L= 12.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 110.02' / 109.90' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.72 cfs @ 12.07 hrs HW=110.49' TW=109.51' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.72 cfs @ 2.52 fps)

Summary for Pond 331Pa: Porous Walk

Inflow Area = 0.025 ac, 44.83% Impervious, Inflow Depth = 0.57" for 2 YR event
Inflow = 0.01 cfs @ 12.09 hrs, Volume= 0.001 af
Outflow = 0.01 cfs @ 12.09 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.01 cfs @ 12.09 hrs, Volume= 0.001 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 116.25' @ 0.00 hrs Surf.Area= 486 sf Storage= 0 cf
Flood Elev= 117.25' Surf.Area= 486 sf Storage= 49 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (896.0 - 896.0)

Volume	Invert	Avail.Storage	Storage Description
#1	116.25'	49 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
116.25	486	0.0	0	0
117.25	486	10.0	49	49

Device	Routing	Invert	Outlet Devices
#1	Discarded	116.25'	**3.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=116.25' (Free Discharge)
└**1=Exfiltration** (Passes 0.00 cfs of 0.03 cfs potential flow)

Summary for Pond 332P: CB332 to CB331

Inflow Area = 0.039 ac, 74.75% Impervious, Inflow Depth = 1.56" for 2 YR event
Inflow = 0.07 cfs @ 12.07 hrs, Volume= 0.005 af
Outflow = 0.07 cfs @ 12.07 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min
Primary = 0.07 cfs @ 12.07 hrs, Volume= 0.005 af
Routed to Pond 331P : CB331 TO CB330

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 111.09' @ 12.07 hrs
Flood Elev= 115.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	110.95'	**15.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 110.95' / 110.12' S= 0.0166 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.07 cfs @ 12.07 hrs HW=111.09' TW=110.49' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 0.07 cfs @ 1.00 fps)

Summary for Pond 332Pa: Porous Walk

Inflow Area = 0.035 ac, 62.19% Impervious, Inflow Depth = 1.11" for 2 YR event
Inflow = 0.05 cfs @ 12.08 hrs, Volume= 0.003 af
Outflow = 0.05 cfs @ 12.08 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.05 cfs @ 12.08 hrs, Volume= 0.003 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 116.35' @ 12.08 hrs Surf.Area= 949 sf Storage= 0 cf
Flood Elev= 117.35' Surf.Area= 949 sf Storage= 95 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (855.5 - 855.5)

Volume	Invert	Avail.Storage	Storage Description
#1	116.35'	95 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
116.35	949	0.0	0	0
117.35	949	10.0	95	95

Device	Routing	Invert	Outlet Devices
#1	Discarded	116.35'	**3.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.07 cfs @ 12.08 hrs HW=116.35' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.07 cfs)

Summary for Pond 333P: CB333 TO CB331

Inflow Area = 0.145 ac, 67.26% Impervious, Inflow Depth = 1.96" for 2 YR event
Inflow = 0.31 cfs @ 12.07 hrs, Volume= 0.024 af
Outflow = 0.31 cfs @ 12.07 hrs, Volume= 0.024 af, Atten= 0%, Lag= 0.0 min
Primary = 0.31 cfs @ 12.07 hrs, Volume= 0.024 af
Routed to Pond 331P : CB331 TO CB330

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 113.01' @ 12.07 hrs
Flood Elev= 117.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	112.72'	**15.0" Round Culvert** L= 135.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 112.72' / 110.12' S= 0.0193 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.31 cfs @ 12.07 hrs HW=113.01' TW=110.49' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.31 cfs @ 1.44 fps)

Summary for Pond 333Pa: Porous Walk

Inflow Area = 0.023 ac, 32.34% Impervious, Inflow Depth = 0.32" for 2 YR event
Inflow = 0.00 cfs @ 12.13 hrs, Volume= 0.001 af
Outflow = 0.00 cfs @ 12.13 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 12.13 hrs, Volume= 0.001 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 128.65' @ 0.00 hrs Surf.Area= 325 sf Storage= 0 cf
Flood Elev= 129.65' Surf.Area= 325 sf Storage= 33 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (934.7 - 934.7)

Volume	Invert	Avail.Storage	Storage Description
#1	128.65'	33 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
128.65	325	0.0	0	0
129.65	325	10.0	33	33

Device	Routing	Invert	Outlet Devices
#1	Discarded	128.65'	**3.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 12.13 hrs HW=128.65' (Free Discharge)
1=Exfiltration (Passes 0.00 cfs of 0.02 cfs potential flow)

Summary for Pond 335P: CB335 TO CB330

Inflow Area = 0.456 ac, 84.86% Impervious, Inflow Depth = 2.13" for 2 YR event
Inflow = 1.10 cfs @ 12.07 hrs, Volume= 0.081 af
Outflow = 1.10 cfs @ 12.07 hrs, Volume= 0.081 af, Atten= 0%, Lag= 0.0 min
Primary = 1.10 cfs @ 12.07 hrs, Volume= 0.081 af
Routed to Pond 330P : CB330 T0 CB320

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 110.37' @ 12.07 hrs
Flood Elev= 114.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	109.80'	**15.0" Round Culvert** L= 29.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 109.80' / 108.80' S= 0.0345 '/' Cc= 0.900 n= 0.009, Flow Area= 1.23 sf

Primary OutFlow Max=1.10 cfs @ 12.07 hrs HW=110.37' TW=109.51' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.10 cfs @ 2.03 fps)

Summary for Pond 340P: CB340TO CB335

Inflow Area = 0.358 ac, 90.90% Impervious, Inflow Depth = 2.41" for 2 YR event
Inflow = 0.97 cfs @ 12.07 hrs, Volume= 0.072 af
Outflow = 0.97 cfs @ 12.07 hrs, Volume= 0.072 af, Atten= 0%, Lag= 0.0 min
Primary = 0.97 cfs @ 12.07 hrs, Volume= 0.072 af
Routed to Pond 335P : CB335 TO CB330

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 111.93' @ 12.07 hrs
Flood Elev= 116.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	111.40'	**15.0" Round Culvert** L= 31.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 111.40' / 110.30' S= 0.0355 '/' Cc= 0.900

n= 0.009, Flow Area= 1.23 sf

Primary OutFlow Max=0.97 cfs @ 12.07 hrs HW=111.93' TW=110.37' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.97 cfs @ 1.96 fps)

Summary for Pond 345P: DMH345 TO CB340

Inflow Area = 0.298 ac, 94.53% Impervious, Inflow Depth = 2.59" for 2 YR event
Inflow = 0.87 cfs @ 12.07 hrs, Volume= 0.064 af
Outflow = 0.87 cfs @ 12.07 hrs, Volume= 0.064 af, Atten= 0%, Lag= 0.0 min
Primary = 0.87 cfs @ 12.07 hrs, Volume= 0.064 af
Routed to Pond 340P : CB340TO CB335

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 114.10' @ 12.07 hrs
Flood Elev= 120.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	113.60'	**15.0" Round Culvert** L= 59.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 113.60' / 111.50' S= 0.0356 '/' Cc= 0.900 n= 0.009, Flow Area= 1.23 sf

Primary OutFlow Max=0.86 cfs @ 12.07 hrs HW=114.10' TW=111.93' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.86 cfs @ 1.90 fps)

Summary for Pond 350P: CB350 TO DMH345

Inflow Area = 0.298 ac, 94.53% Impervious, Inflow Depth = 2.59" for 2 YR event
Inflow = 0.87 cfs @ 12.07 hrs, Volume= 0.064 af
Outflow = 0.87 cfs @ 12.07 hrs, Volume= 0.064 af, Atten= 0%, Lag= 0.0 min
Primary = 0.87 cfs @ 12.07 hrs, Volume= 0.064 af
Routed to Pond 345P : DMH345 TO CB340

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 119.10' @ 12.07 hrs
Flood Elev= 125.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	118.60'	**15.0" Round Culvert** L= 64.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 118.60' / 116.40' S= 0.0344 '/' Cc= 0.900 n= 0.009, Flow Area= 1.23 sf

Primary OutFlow Max=0.86 cfs @ 12.07 hrs HW=119.10' TW=114.10' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.86 cfs @ 1.90 fps)

Summary for Pond 351P: CB351 TO CB350

Inflow Area = 0.060 ac, 93.15% Impervious, Inflow Depth = 2.49" for 2 YR event
Inflow = 0.17 cfs @ 12.07 hrs, Volume= 0.012 af
Outflow = 0.17 cfs @ 12.07 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.0 min
Primary = 0.17 cfs @ 12.07 hrs, Volume= 0.012 af
Routed to Pond 350P : CB350 TO DMH345

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 120.71' @ 12.07 hrs
Flood Elev= 125.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	120.50'	**15.0" Round Culvert** L= 24.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 120.50' / 120.35' S= 0.0063 '/' Cc= 0.900 n= 0.009, Flow Area= 1.23 sf

Primary OutFlow Max=0.17 cfs @ 12.07 hrs HW=120.71' TW=119.10' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.17 cfs @ 1.24 fps)

Summary for Pond 355P: DMH355 TO CB350

Inflow Area = 0.166 ac,100.00% Impervious, Inflow Depth = 2.91" for 2 YR event
Inflow = 0.52 cfs @ 12.07 hrs, Volume= 0.040 af
Outflow = 0.52 cfs @ 12.07 hrs, Volume= 0.040 af, Atten= 0%, Lag= 0.0 min
Primary = 0.52 cfs @ 12.07 hrs, Volume= 0.040 af
Routed to Pond 350P : CB350 TO DMH345

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 124.18' @ 12.07 hrs
Flood Elev= 132.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	123.80'	**15.0" Round Culvert** L= 84.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 123.80' / 120.85' S= 0.0351 '/' Cc= 0.900 n= 0.009, Flow Area= 1.23 sf

Primary OutFlow Max=0.52 cfs @ 12.07 hrs HW=124.18' TW=119.10' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.52 cfs @ 1.66 fps)

Summary for Pond 360P: CB360 TO DMH355

Inflow Area = 0.166 ac,100.00% Impervious, Inflow Depth = 2.91" for 2 YR event
Inflow = 0.52 cfs @ 12.07 hrs, Volume= 0.040 af
Outflow = 0.52 cfs @ 12.07 hrs, Volume= 0.040 af, Atten= 0%, Lag= 0.0 min
Primary = 0.52 cfs @ 12.07 hrs, Volume= 0.040 af
Routed to Pond 355P : DMH355 TO CB350

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 131.68' @ 12.07 hrs
Flood Elev= 136.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	131.30'	**15.0" Round Culvert** L= 95.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 131.30' / 128.00' S= 0.0347 '/' Cc= 0.900 n= 0.009, Flow Area= 1.23 sf

Primary OutFlow Max=0.52 cfs @ 12.07 hrs HW=131.68' TW=124.18' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.52 cfs @ 1.66 fps)

Summary for Pond 365P: CB365 TO CB360

Inflow Area = 0.085 ac,100.00% Impervious, Inflow Depth = 2.91" for 2 YR event
Inflow = 0.27 cfs @ 12.07 hrs, Volume= 0.021 af
Outflow = 0.27 cfs @ 12.07 hrs, Volume= 0.021 af, Atten= 0%, Lag= 0.0 min
Primary = 0.27 cfs @ 12.07 hrs, Volume= 0.021 af
Routed to Pond 360P : CB360 TO DMH355

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 132.92' @ 12.07 hrs
Flood Elev= 137.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	132.65'	**15.0" Round Culvert** L= 36.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 132.65' / 132.45' S= 0.0056 '/' Cc= 0.900 n= 0.009, Flow Area= 1.23 sf

Primary OutFlow Max=0.27 cfs @ 12.07 hrs HW=132.92' TW=131.68' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.27 cfs @ 1.39 fps)

Summary for Pond 402GP: CB4+02G TO CB4+19R

Inflow Area = 5.534 ac, 16.63% Impervious, Inflow Depth = 0.12" for 2 YR event
Inflow = 0.72 cfs @ 12.07 hrs, Volume= 0.056 af
Outflow = 0.72 cfs @ 12.07 hrs, Volume= 0.056 af, Atten= 0%, Lag= 0.0 min
Primary = 0.72 cfs @ 12.07 hrs, Volume= 0.056 af
Routed to Pond 419RP : CB4+19R TO CB4+19L

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 123.19' @ 12.08 hrs
Flood Elev= 128.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	122.65'	**15.0" Round Culvert** L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 122.65' / 122.50' S= 0.0058 '/' Cc= 0.900 n= 0.011, Flow Area= 1.23 sf

Primary OutFlow Max=0.72 cfs @ 12.07 hrs HW=123.19' TW=123.01' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.72 cfs @ 2.11 fps)

Summary for Pond 405P: CB405 TO HW400

Inflow Area = 0.848 ac, 84.53% Impervious, Inflow Depth = 2.61" for 2 YR event
Inflow = 2.53 cfs @ 12.07 hrs, Volume= 0.185 af
Outflow = 2.53 cfs @ 12.07 hrs, Volume= 0.185 af, Atten= 0%, Lag= 0.0 min
Primary = 2.53 cfs @ 12.07 hrs, Volume= 0.185 af
Routed to Pond 100AP : Outlet Structure 105 to HW100 - MODIFIED

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 102.11' @ 12.07 hrs
Flood Elev= 106.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.25'	**18.0" Round Culvert** L= 33.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.25' / 101.05' S= 0.0061 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=2.53 cfs @ 12.07 hrs HW=102.11' TW=100.12' (Dynamic Tailwater)
1=Culvert (Barrel Controls 2.53 cfs @ 3.49 fps)

Summary for Pond 410P: DCB410 TO CB405

Inflow Area = 0.672 ac, 83.98% Impervious, Inflow Depth = 2.60" for 2 YR event
Inflow = 2.00 cfs @ 12.07 hrs, Volume= 0.146 af
Outflow = 2.00 cfs @ 12.07 hrs, Volume= 0.146 af, Atten= 0%, Lag= 0.0 min
Primary = 2.00 cfs @ 12.07 hrs, Volume= 0.146 af
Routed to Pond 405P : CB405 TO HW400

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 102.90' @ 12.07 hrs
Flood Elev= 105.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	102.10'	**15.0" Round Culvert** L= 119.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 102.10' / 101.50' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=2.00 cfs @ 12.07 hrs HW=102.90' TW=102.11' (Dynamic Tailwater)
1=Culvert (Outlet Controls 2.00 cfs @ 3.42 fps)

Summary for Pond 415P: CB415 TO CB410

Inflow Area = 0.288 ac, 80.11% Impervious, Inflow Depth = 2.49" for 2 YR event
Inflow = 0.83 cfs @ 12.07 hrs, Volume= 0.060 af
Outflow = 0.83 cfs @ 12.07 hrs, Volume= 0.060 af, Atten= 0%, Lag= 0.0 min
Primary = 0.83 cfs @ 12.07 hrs, Volume= 0.060 af
Routed to Pond 410P : DCB410 TO CB405

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 103.09' @ 12.07 hrs
Flood Elev= 105.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	102.47'	**15.0" Round Culvert** L= 50.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 102.47' / 102.20' S= 0.0054 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=0.83 cfs @ 12.07 hrs HW=103.09' TW=102.90' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.83 cfs @ 2.00 fps)

Summary for Pond 416P: CB416 TO CB415

Inflow Area = 0.169 ac, 80.88% Impervious, Inflow Depth = 2.49" for 2 YR event
Inflow = 0.49 cfs @ 12.07 hrs, Volume= 0.035 af
Outflow = 0.49 cfs @ 12.07 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.0 min
Primary = 0.49 cfs @ 12.07 hrs, Volume= 0.035 af
Routed to Pond 415P : CB415 TO CB410

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 103.28' @ 12.07 hrs
Flood Elev= 107.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	102.83'	**15.0" Round Culvert** L= 50.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 102.83' / 102.57' S= 0.0052 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=0.49 cfs @ 12.07 hrs HW=103.28' TW=103.09' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.49 cfs @ 1.82 fps)

Summary for Pond 419LP: CB4+19L TO DMH1001+25

Inflow Area = 10.125 ac, 28.38% Impervious, Inflow Depth = 0.32" for 2 YR event
Inflow = 3.04 cfs @ 12.08 hrs, Volume= 0.271 af
Outflow = 3.04 cfs @ 12.08 hrs, Volume= 0.271 af, Atten= 0%, Lag= 0.0 min
Primary = 3.04 cfs @ 12.08 hrs, Volume= 0.271 af
Routed to Pond 100125P : DMH1001+25 TO DMH1003+11

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 117.73' @ 12.08 hrs
Flood Elev= 128.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	116.90'	**24.0" Round Culvert** L= 114.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 116.90' / 114.60' S= 0.0202 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf

Primary OutFlow Max=3.03 cfs @ 12.08 hrs HW=117.73' TW=108.33' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 3.03 cfs @ 2.45 fps)

Summary for Pond 419RP: CB4+19R TO CB4+19L

Inflow Area = 6.154 ac, 19.85% Impervious, Inflow Depth = 0.18" for 2 YR event
Inflow = 1.17 cfs @ 12.08 hrs, Volume= 0.092 af
Outflow = 1.17 cfs @ 12.08 hrs, Volume= 0.092 af, Atten= 0%, Lag= 0.0 min
Primary = 1.17 cfs @ 12.08 hrs, Volume= 0.092 af
Routed to Pond 419LP : CB4+19L TO DMH1001+25

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 123.01' @ 12.08 hrs
Flood Elev= 128.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	122.40'	**15.0" Round Culvert** L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 122.40' / 122.25' S= 0.0068 '/' Cc= 0.900 n= 0.011, Flow Area= 1.23 sf

Primary OutFlow Max=1.17 cfs @ 12.08 hrs HW=123.01' TW=117.73' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 1.17 cfs @ 2.86 fps)

Summary for Pond 505P: dmh505 TO HW500

Inflow Area = 2.525 ac, 40.36% Impervious, Inflow Depth = 0.53" for 2 YR event
Inflow = 1.10 cfs @ 12.09 hrs, Volume= 0.111 af
Outflow = 1.10 cfs @ 12.09 hrs, Volume= 0.111 af, Atten= 0%, Lag= 0.0 min
Primary = 1.10 cfs @ 12.09 hrs, Volume= 0.111 af
Routed to Pond 100P : Outlet Structure 110 to HW109

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 104.19' @ 12.09 hrs
Flood Elev= 109.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	103.65'	**18.0" Round Culvert** L= 12.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 103.65' / 103.55' S= 0.0083 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=1.10 cfs @ 12.09 hrs HW=104.19' TW=100.96' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.10 cfs @ 2.82 fps)

Summary for Pond 507P: CB507 TO CB505

Inflow Area = 2.525 ac, 40.36% Impervious, Inflow Depth = 0.53" for 2 YR event
Inflow = 1.10 cfs @ 12.09 hrs, Volume= 0.111 af
Outflow = 1.10 cfs @ 12.09 hrs, Volume= 0.111 af, Atten= 0%, Lag= 0.0 min
Primary = 1.10 cfs @ 12.09 hrs, Volume= 0.111 af
Routed to Pond 505P : dmh505 TO HW500
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 1AR : STREAM

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 105.23' @ 12.09 hrs
Flood Elev= 110.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	104.70'	**18.0" Round Culvert** L= 151.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 104.70' / 103.75' S= 0.0063 '/' Cc= 0.900 n= 0.009 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	107.20'	**12.0" Round Culvert** L= 97.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 107.20' / 105.00' S= 0.0227 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.10 cfs @ 12.09 hrs HW=105.23' TW=104.19' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.10 cfs @ 1.96 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=104.70' TW=87.70' (Dynamic Tailwater)
2=Culvert (Controls 0.00 cfs)

Summary for Pond 508P: CB508 TO CB507

Inflow Area = 2.449 ac, 38.51% Impervious, Inflow Depth = 0.45" for 2 YR event
Inflow = 0.87 cfs @ 12.09 hrs, Volume= 0.092 af
Outflow = 0.87 cfs @ 12.09 hrs, Volume= 0.092 af, Atten= 0%, Lag= 0.0 min
Primary = 0.87 cfs @ 12.09 hrs, Volume= 0.092 af
Routed to Pond 507P : CB507 TO CB505

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 107.47' @ 12.09 hrs
Flood Elev= 113.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	107.00'	**18.0" Round Culvert** L= 77.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 107.00' / 104.80' S= 0.0286 '/' Cc= 0.900 n= 0.009 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.87 cfs @ 12.09 hrs HW=107.47' TW=105.23' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 0.87 cfs @ 1.84 fps)

Summary for Pond 509P: CB509 to CB508

Inflow Area = 2.449 ac, 38.51% Impervious, Inflow Depth = 0.45" for 2 YR event
Inflow = 0.87 cfs @ 12.09 hrs, Volume= 0.092 af
Outflow = 0.87 cfs @ 12.09 hrs, Volume= 0.092 af, Atten= 0%, Lag= 0.0 min
Primary = 0.87 cfs @ 12.09 hrs, Volume= 0.092 af
Routed to Pond 508P : CB508 TO CB507

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 108.81' @ 12.09 hrs
Flood Elev= 114.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	108.40'	**18.0" Round Culvert** L= 34.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 108.40' / 107.10' S= 0.0382 '/' Cc= 0.900 n= 0.009 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.87 cfs @ 12.09 hrs HW=108.81' TW=107.47' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 0.87 cfs @ 2.19 fps)

Summary for Pond 600P: DETENTION BASIN OS605 TO HW600

Inflow Area = 7.611 ac, 46.30% Impervious, Inflow Depth = 1.32" for 2 YR event
Inflow = 7.45 cfs @ 12.09 hrs, Volume= 0.835 af
Outflow = 0.14 cfs @ 23.73 hrs, Volume= 0.421 af, Atten= 98%, Lag= 698.8 min
Primary = 0.14 cfs @ 23.73 hrs, Volume= 0.421 af
Routed to Reach 2R : REACH 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Starting Elev= 97.50' Surf.Area= 27,329 sf Storage= 13,397 cf
Peak Elev= 98.58' @ 23.73 hrs Surf.Area= 29,649 sf Storage= 44,079 cf (30,683 cf above start)
Flood Elev= 101.00' Surf.Area= 37,948 sf Storage= 123,868 cf (110,472 cf above start)

Plug-Flow detention time= 2,468.6 min calculated for 0.113 af (14% of inflow)
Center-of-Mass det. time= 1,179.1 min (1,999.7 - 820.6)

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	123,868 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
97.00	26,258	0	0
97.50	27,329	13,397	13,397
98.00	28,384	13,928	27,325
98.50	29,477	14,465	41,790
99.00	30,585	15,016	56,806
100.00	32,796	31,691	88,496
101.00	37,948	35,372	123,868

Device	Routing	Invert	Outlet Devices
#1	Primary	96.20'	**24.0" Round Culvert** L= 25.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 96.20' / 96.00' S= 0.0080 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Device 1	97.50'	**0.5" W x 18.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	99.00'	**4.0" W x 9.6" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	99.80'	**48.0" x 60.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.14 cfs @ 23.73 hrs HW=98.58' TW=93.86' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.14 cfs of 16.01 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 0.14 cfs @ 3.33 fps)
3=Orifice/Grate (Controls 0.00 cfs)
4=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 710P: CB710 TO HW700

Inflow Area = 1.321 ac, 84.62% Impervious, Inflow Depth = 2.56" for 2 YR event
Inflow = 3.89 cfs @ 12.07 hrs, Volume= 0.282 af
Outflow = 3.89 cfs @ 12.07 hrs, Volume= 0.282 af, Atten= 0%, Lag= 0.0 min
Primary = 3.89 cfs @ 12.07 hrs, Volume= 0.282 af
Routed to Pond 600P : DETENTION BASIN OS605 TO HW600

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 100.76' @ 12.07 hrs
Flood Elev= 108.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	99.80'	**18.0" Round Culvert** L= 109.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 99.80' / 99.20' S= 0.0055 '/' Cc= 0.900 n= 0.009, Flow Area= 1.77 sf

Primary OutFlow Max=3.89 cfs @ 12.07 hrs HW=100.76' TW=97.85' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 3.89 cfs @ 4.66 fps)

Summary for Pond 711P: CB711 TO CB710

Inflow Area = 0.100 ac, 88.02% Impervious, Inflow Depth = 2.59" for 2 YR event
Inflow = 0.30 cfs @ 12.07 hrs, Volume= 0.022 af
Outflow = 0.30 cfs @ 12.07 hrs, Volume= 0.022 af, Atten= 0%, Lag= 0.0 min
Primary = 0.30 cfs @ 12.07 hrs, Volume= 0.022 af
Routed to Pond 710P : CB710 TO HW700

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 103.45' @ 12.07 hrs
Flood Elev= 109.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	103.20'	**15.0" Round Culvert** L= 52.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 103.20' / 102.50' S= 0.0135 '/' Cc= 0.900 n= 0.009, Flow Area= 1.23 sf

Primary OutFlow Max=0.30 cfs @ 12.07 hrs HW=103.45' TW=100.76' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.30 cfs @ 1.70 fps)

Summary for Pond 715P: CB715 TO CB710

Inflow Area = 1.116 ac, 83.85% Impervious, Inflow Depth = 2.55" for 2 YR event
Inflow = 3.29 cfs @ 12.07 hrs, Volume= 0.238 af
Outflow = 3.29 cfs @ 12.07 hrs, Volume= 0.238 af, Atten= 0%, Lag= 0.0 min
Primary = 3.29 cfs @ 12.07 hrs, Volume= 0.238 af
Routed to Pond 710P : CB710 TO HW700

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 101.23' @ 12.07 hrs
Flood Elev= 106.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	100.25'	**18.0" Round Culvert** L= 65.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 100.25' / 99.90' S= 0.0054 '/' Cc= 0.900 n= 0.009, Flow Area= 1.77 sf

Primary OutFlow Max=3.28 cfs @ 12.07 hrs HW=101.23' TW=100.76' (Dynamic Tailwater)
1=Culvert (Outlet Controls 3.28 cfs @ 3.82 fps)

Summary for Pond 720P: DCB720 TO CB715

Inflow Area = 1.040 ac, 85.46% Impervious, Inflow Depth = 2.59" for 2 YR event
Inflow = 3.09 cfs @ 12.07 hrs, Volume= 0.224 af
Outflow = 3.09 cfs @ 12.07 hrs, Volume= 0.224 af, Atten= 0%, Lag= 0.0 min
Primary = 3.09 cfs @ 12.07 hrs, Volume= 0.224 af
Routed to Pond 715P : CB715 TO CB710

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 101.69' @ 12.07 hrs
Flood Elev= 105.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	100.70'	**18.0" Round Culvert** L= 53.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 100.70' / 100.35' S= 0.0066 '/' Cc= 0.900 n= 0.009, Flow Area= 1.77 sf

Primary OutFlow Max=3.09 cfs @ 12.07 hrs HW=101.69' TW=101.23' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 3.09 cfs @ 3.54 fps)

Summary for Pond 725P: CB725 TO DCB720

Inflow Area = 0.633 ac, 84.41% Impervious, Inflow Depth = 2.59" for 2 YR event
Inflow = 1.88 cfs @ 12.07 hrs, Volume= 0.136 af
Outflow = 1.88 cfs @ 12.07 hrs, Volume= 0.136 af, Atten= 0%, Lag= 0.0 min
Primary = 1.88 cfs @ 12.07 hrs, Volume= 0.136 af
Routed to Pond 720P : DCB720 TO CB715

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 102.15' @ 12.07 hrs
Flood Elev= 104.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.40'	**15.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.40' / 100.95' S= 0.0060 '/' Cc= 0.900 n= 0.009, Flow Area= 1.23 sf

Primary OutFlow Max=1.88 cfs @ 12.07 hrs HW=102.15' TW=101.69' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 1.88 cfs @ 3.50 fps)

Summary for Pond 801P: HW801 TO HW800

Inflow Area = 4.947 ac, 48.40% Impervious, Inflow Depth = 1.23" for 2 YR event
Inflow = 6.43 cfs @ 12.07 hrs, Volume= 0.507 af
Outflow = 3.72 cfs @ 12.18 hrs, Volume= 0.502 af, Atten= 42%, Lag= 6.7 min
Primary = 3.72 cfs @ 12.18 hrs, Volume= 0.502 af
Routed to Pond 600P : DETENTION BASIN OS605 TO HW600

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 101.43' @ 12.18 hrs Surf.Area= 5,411 sf Storage= 3,062 cf
Flood Elev= 104.00' Surf.Area= 12,500 sf Storage= 28,835 cf

Plug-Flow detention time= 30.3 min calculated for 0.502 af (99% of inflow)
Center-of-Mass det. time= 24.1 min (833.4 - 809.3)

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	28,835 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
100.00	20	0	0
101.00	2,660	1,340	1,340
102.00	9,110	5,885	7,225
104.00	12,500	21,610	28,835

Device	Routing	Invert	Outlet Devices
#1	Primary	100.40'	**15.0" Round Culvert** L= 65.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 100.40' / 99.00' S= 0.0215 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=3.72 cfs @ 12.18 hrs HW=101.43' TW=97.95' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.72 cfs @ 3.45 fps)

Summary for Pond 805P: CB805 TO HW802

Inflow Area = 1.483 ac, 90.81% Impervious, Inflow Depth = 2.57" for 2 YR event
Inflow = 4.20 cfs @ 12.07 hrs, Volume= 0.318 af
Outflow = 4.20 cfs @ 12.07 hrs, Volume= 0.318 af, Atten= 0%, Lag= 0.0 min
Primary = 4.20 cfs @ 12.07 hrs, Volume= 0.318 af
Routed to Pond 801P : HW801 TO HW800

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 102.17' @ 12.07 hrs
Flood Elev= 105.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.10'	**18.0" Round Culvert** L= 68.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.10' / 100.75' S= 0.0051 '/' Cc= 0.900 n= 0.009, Flow Area= 1.77 sf

Primary OutFlow Max=4.19 cfs @ 12.07 hrs HW=102.16' TW=101.27' (Dynamic Tailwater)
1=Culvert (Barrel Controls 4.19 cfs @ 4.38 fps)

Summary for Pond 806P: CB806 TO CB805

Inflow Area = 1.167 ac, 88.96% Impervious, Inflow Depth = 2.50" for 2 YR event
Inflow = 3.21 cfs @ 12.07 hrs, Volume= 0.243 af
Outflow = 3.21 cfs @ 12.07 hrs, Volume= 0.243 af, Atten= 0%, Lag= 0.0 min
Primary = 3.21 cfs @ 12.07 hrs, Volume= 0.243 af
Routed to Pond 805P : CB805 TO HW802

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 103.80' @ 12.07 hrs
Flood Elev= 108.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	102.95'	**18.0" Round Culvert** L= 100.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 102.95' / 101.20' S= 0.0175 '/' Cc= 0.900 n= 0.009, Flow Area= 1.77 sf

Primary OutFlow Max=3.20 cfs @ 12.07 hrs HW=103.79' TW=102.16' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 3.20 cfs @ 3.13 fps)

Summary for Pond 807P: CB807 TO CB806

Inflow Area = 0.650 ac, 81.27% Impervious, Inflow Depth = 2.25" for 2 YR event
Inflow = 1.61 cfs @ 12.07 hrs, Volume= 0.122 af
Outflow = 1.61 cfs @ 12.07 hrs, Volume= 0.122 af, Atten= 0%, Lag= 0.0 min
Primary = 1.61 cfs @ 12.07 hrs, Volume= 0.122 af
Routed to Pond 806P : CB806 TO CB805

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 105.85' @ 12.07 hrs
Flood Elev= 111.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	105.20'	**18.0" Round Culvert** L= 100.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 105.20' / 103.05' S= 0.0215 '/' Cc= 0.900 n= 0.009, Flow Area= 1.77 sf

Primary OutFlow Max=1.61 cfs @ 12.07 hrs HW=105.85' TW=103.79' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 1.61 cfs @ 2.17 fps)

Summary for Pond 808P: CB808 TO CB807

Inflow Area = 0.511 ac, 82.04% Impervious, Inflow Depth = 2.39" for 2 YR event
Inflow = 1.32 cfs @ 12.07 hrs, Volume= 0.102 af
Outflow = 1.32 cfs @ 12.07 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.0 min
Primary = 1.32 cfs @ 12.07 hrs, Volume= 0.102 af
Routed to Pond 807P : CB807 TO CB806

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 106.73' @ 12.07 hrs
Flood Elev= 110.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	106.10'	**15.0" Round Culvert** L= 128.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 106.10' / 105.45' S= 0.0051 '/' Cc= 0.900 n= 0.009, Flow Area= 1.23 sf

Primary OutFlow Max=1.32 cfs @ 12.07 hrs HW=106.73' TW=105.85' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 1.32 cfs @ 2.13 fps)

Summary for Pond 857LP: CB8+57L TO CB4+19L

[80] Warning: Exceeded Pond 857RP by 0.04' @ 12.12 hrs (0.12 cfs 0.001 af)

Inflow Area = 3.229 ac, 37.66% Impervious, Inflow Depth = 0.44" for 2 YR event
Inflow = 1.02 cfs @ 12.08 hrs, Volume= 0.117 af
Outflow = 1.02 cfs @ 12.08 hrs, Volume= 0.117 af, Atten= 0%, Lag= 0.0 min
Primary = 1.02 cfs @ 12.08 hrs, Volume= 0.117 af
Routed to Pond 419LP : CB4+19L TO DMH1001+25

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 133.20' @ 12.08 hrs
Flood Elev= 137.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	132.65'	**15.0" Round Culvert** L= 439.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 132.65' / 122.25' S= 0.0237 '/' Cc= 0.900 n= 0.011, Flow Area= 1.23 sf

Primary OutFlow Max=1.02 cfs @ 12.08 hrs HW=133.20' TW=117.73' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 1.02 cfs @ 1.98 fps)

Summary for Pond 857RP: CB8+57R TO CB8+57L

Inflow Area = 0.734 ac, 20.90% Impervious, Inflow Depth = 0.14" for 2 YR event
Inflow = 0.02 cfs @ 12.43 hrs, Volume= 0.008 af
Outflow = 0.02 cfs @ 12.44 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.1 min
Primary = 0.02 cfs @ 12.44 hrs, Volume= 0.008 af
Routed to Pond 857LP : CB8+57L TO CB4+19L

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 133.17' @ 12.05 hrs
Flood Elev= 137.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	132.90'	**15.0" Round Culvert** L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 132.90' / 132.75' S= 0.0068 '/' Cc= 0.900 n= 0.011, Flow Area= 1.23 sf

Primary OutFlow Max=0.02 cfs @ 12.44 hrs HW=133.04' TW=133.03' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 0.02 cfs @ 0.44 fps)

Summary for Pond 900P: POND 900

Inflow Area = 26.604 ac, 27.89% Impervious, Inflow Depth = 0.28" for 2 YR event
Inflow = 6.72 cfs @ 12.08 hrs, Volume= 0.627 af
Outflow = 0.24 cfs @ 19.10 hrs, Volume= 0.554 af, Atten= 96%, Lag= 421.1 min
Discarded = 0.24 cfs @ 19.10 hrs, Volume= 0.554 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 41R : REACH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 98.60' @ 19.10 hrs Surf.Area= 31,299 sf Storage= 18,162 cf
Flood Elev= 104.00' Surf.Area= 46,635 sf Storage= 227,944 cf

Plug-Flow detention time= 968.6 min calculated for 0.554 af (88% of inflow)
Center-of-Mass det. time= 910.1 min (1,769.2 - 859.1)

Volume	Invert	Avail.Storage	Storage Description
#1	98.00'	227,944 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
98.00	29,679	0	0
100.00	35,118	64,797	64,797
102.00	40,697	75,815	140,612
104.00	46,635	87,332	227,944

Device	Routing	Invert	Outlet Devices
#1	Primary	98.50'	**30.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 98.50' / 98.00' S= 0.0200 '/' Cc= 0.900 n= 0.009, Flow Area= 4.91 sf
#2	Discarded	98.00'	**6.300 in/hr Exfiltration over Surface area above 98.00'** Excluded Surface area = 29,679 sf
#3	Device 1	99.60'	**1.0" W x 38.4" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	102.80'	**48.0" x 60.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.24 cfs @ 19.10 hrs HW=98.60' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.24 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=98.00' TW=98.00' (Dynamic Tailwater)
└**1=Culvert** (Controls 0.00 cfs)
  ├**3=Orifice/Grate** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 1000P: Sediment Forebay

Inflow Area = 2.680 ac, 15.99% Impervious, Inflow Depth = 0.06" for 2 YR event
Inflow = 0.02 cfs @ 15.37 hrs, Volume= 0.014 af
Outflow = 0.02 cfs @ 15.39 hrs, Volume= 0.014 af, Atten= 0%, Lag= 1.3 min
Primary = 0.02 cfs @ 15.39 hrs, Volume= 0.014 af
Routed to Pond 2168P : DMH 21+68R to DMH 22+41R

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 111.50' @ 15.39 hrs Surf.Area= 1,397 sf Storage= 6 cf
Flood Elev= 114.50' Surf.Area= 3,367 sf Storage= 4,642 cf

Plug-Flow detention time= 5.6 min calculated for 0.014 af (100% of inflow)
Center-of-Mass det. time= 5.4 min (1,102.0 - 1,096.5)

Volume	Invert	Avail.Storage	Storage Description
#1	111.50'	4,642 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
111.50	1,394	0	0
112.00	1,668	766	766
113.00	2,934	2,301	3,067
113.50	3,367	1,575	4,642

Device	Routing	Invert	Outlet Devices
#1	Primary	107.38'	**12.0" Round Culvert** L= 60.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 107.38' / 105.88' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	111.50'	**21.0" x 23.2" Horiz. Orifice/Grate X 3.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.02 cfs @ 15.39 hrs HW=111.50' TW=105.85' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.02 cfs of 7.20 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.02 cfs @ 0.22 fps)

Summary for Pond 1100P: Subsurface Detention SC-740 Chamber System #1

50 SC-740 Chambers

[92] Warning: Device #4 is above defined storage
[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=266)

Inflow Area = 1.718 ac, 45.40% Impervious, Inflow Depth = 0.62" for 2 YR event
Inflow = 0.95 cfs @ 12.09 hrs, Volume= 0.089 af
Outflow = 0.13 cfs @ 11.98 hrs, Volume= 0.089 af, Atten= 87%, Lag= 0.0 min
Discarded = 0.13 cfs @ 11.98 hrs, Volume= 0.089 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 2210P : DMH 22+10R to DMH22+20R

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 117.31' @ 13.56 hrs Surf.Area= 1,848 sf Storage= 1,137 cf
Flood Elev= 121.50' Surf.Area= 1,848 sf Storage= 3,966 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 81.2 min (969.8 - 888.6)

Volume	Invert	Avail.Storage	Storage Description
#1	116.30'	1,669 cf	**25.25'W x 73.20'L x 3.50'H Prismatoid** 6,469 cf Overall - 2,297 cf Embedded = 4,172 cf x 40.0% Voids
#2	116.80'	2,297 cf	**ADS_StormTech SC-740** x 50 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		3,966 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	116.30'	**3.000 in/hr Exfiltration over Surface area**
#2	Primary	116.80'	**12.0" Round Culvert** L= 8.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 116.80' / 116.80' S= 0.0000 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#3	Device 2	119.50'	**4.0" Vert. Orifice/Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#4	Device 2	120.50'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.13 cfs @ 11.98 hrs HW=116.35' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.13 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=116.30' TW=116.80' (Dynamic Tailwater)
└**2=Culvert** (Controls 0.00 cfs)
  ├**3=Orifice/Grate** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 1200P: Subsurface Detention SC-740 Chamber System #2

50 SC-740 Chambers

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[92] Warning: Device #4 is above defined storage
[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=327)

Inflow Area = 1.219 ac, 51.49% Impervious, Inflow Depth = 0.78" for 2 YR event
Inflow = 0.79 cfs @ 12.06 hrs, Volume= 0.079 af
Outflow = 0.13 cfs @ 11.95 hrs, Volume= 0.079 af, Atten= 84%, Lag= 0.0 min
Discarded = 0.13 cfs @ 11.95 hrs, Volume= 0.079 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 2495P : DMH24+95R TO DMH25+00

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 109.81' @ 13.07 hrs Surf.Area= 1,848 sf Storage= 994 cf
Flood Elev= 113.90' Surf.Area= 1,848 sf Storage= 3,966 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 64.7 min (938.2 - 873.5)

Volume	Invert	Avail.Storage	Storage Description
#1	108.90'	1,669 cf	**25.25'W x 73.20'L x 3.50'H Prismatoid** 6,469 cf Overall - 2,297 cf Embedded = 4,172 cf x 40.0% Voids
#2	109.40'	2,297 cf	**ADS_StormTech SC-740** x 50 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		3,966 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	108.90'	**3.000 in/hr Exfiltration over Surface area**
#2	Primary	109.40'	**12.0" Round Culvert** L= 12.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 109.40' / 109.40' S= 0.0000 '/' Cc= 0.900 n= 0.011, Flow Area= 0.79 sf
#3	Device 2	112.10'	**4.0" Vert. Orifice/Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#4	Device 2	113.10'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.13 cfs @ 11.95 hrs HW=108.95' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.13 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=108.90' TW=109.40' (Dynamic Tailwater)
└**2=Culvert** (Controls 0.00 cfs)
  ├**3=Orifice/Grate** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 1295GP: CB12+95G TO CB12+95R

Inflow Area = 1.623 ac, 33.46% Impervious, Inflow Depth = 0.26" for 2 YR event
Inflow = 0.18 cfs @ 12.39 hrs, Volume= 0.035 af
Outflow = 0.18 cfs @ 12.39 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.0 min
Primary = 0.18 cfs @ 12.39 hrs, Volume= 0.035 af
Routed to Pond 1295RP : CB12+95R CB12+95L

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 137.12' @ 12.37 hrs
Flood Elev= 141.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	136.90'	**15.0" Round Culvert** L= 11.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 136.90' / 136.80' S= 0.0091 '/' Cc= 0.900 n= 0.011, Flow Area= 1.23 sf

Primary OutFlow Max=0.18 cfs @ 12.39 hrs HW=137.12' TW=136.97' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 0.18 cfs @ 1.86 fps)

Summary for Pond 1295LP: CB12+95L TO CB8+57L

Inflow Area = 2.106 ac, 38.84% Impervious, Inflow Depth = 0.41" for 2 YR event
Inflow = 0.52 cfs @ 12.08 hrs, Volume= 0.073 af
Outflow = 0.52 cfs @ 12.08 hrs, Volume= 0.073 af, Atten= 0%, Lag= 0.0 min
Primary = 0.52 cfs @ 12.08 hrs, Volume= 0.073 af
Routed to Pond 857LP : CB8+57L TO CB4+19L

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 136.78' @ 12.08 hrs
Flood Elev= 142.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	136.40'	**15.0" Round Culvert** L= 438.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 136.40' / 132.75' S= 0.0083 '/' Cc= 0.900 n= 0.011, Flow Area= 1.23 sf

Primary OutFlow Max=0.51 cfs @ 12.08 hrs HW=136.78' TW=133.19' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.51 cfs @ 1.65 fps)

Summary for Pond 1295RP: CB12+95R CB12+95L

Inflow Area = 1.920 ac, 36.25% Impervious, Inflow Depth = 0.34" for 2 YR event
Inflow = 0.28 cfs @ 12.32 hrs, Volume= 0.054 af
Outflow = 0.28 cfs @ 12.32 hrs, Volume= 0.054 af, Atten= 0%, Lag= 0.0 min
Primary = 0.28 cfs @ 12.32 hrs, Volume= 0.054 af
Routed to Pond 1295LP : CB12+95L TO CB8+57L

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 136.98' @ 12.32 hrs
Flood Elev= 142.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	136.70'	**15.0" Round Culvert** L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 136.70' / 136.50' S= 0.0091 '/' Cc= 0.900 n= 0.011, Flow Area= 1.23 sf

Primary OutFlow Max=0.28 cfs @ 12.32 hrs HW=136.98' TW=136.73' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.28 cfs @ 1.41 fps)

Summary for Pond 1643LP: CB16+43L TO CB16+43R

Inflow Area = 0.039 ac, 35.38% Impervious, Inflow Depth = 0.39" for 2 YR event
Inflow = 0.01 cfs @ 12.11 hrs, Volume= 0.001 af
Outflow = 0.01 cfs @ 12.11 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min
Primary = 0.01 cfs @ 12.11 hrs, Volume= 0.001 af
Routed to Pond 1643RP : CB16+43R TO CB17+85R

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 137.70' @ 12.11 hrs
Flood Elev= 141.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	137.65'	**12.0" Round Culvert** L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 137.65' / 137.50' S= 0.0068 '/' Cc= 0.900 n= 0.011, Flow Area= 0.79 sf

Primary OutFlow Max=0.01 cfs @ 12.11 hrs HW=137.70' TW=136.33' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.01 cfs @ 0.94 fps)

Summary for Pond 1643RP: CB16+43R TO CB17+85R

Inflow Area = 0.228 ac, 50.91% Impervious, Inflow Depth = 0.76" for 2 YR event
Inflow = 0.17 cfs @ 12.12 hrs, Volume= 0.014 af
Outflow = 0.17 cfs @ 12.12 hrs, Volume= 0.014 af, Atten= 0%, Lag= 0.0 min
Primary = 0.17 cfs @ 12.12 hrs, Volume= 0.014 af
Routed to Pond 1785RP : CB17+85R TO DMH18+69

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 136.33' @ 12.12 hrs
Flood Elev= 141.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	136.10'	**12.0" Round Culvert** L= 143.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 136.10' / 131.15' S= 0.0346 '/' Cc= 0.900 n= 0.011, Flow Area= 0.79 sf

Primary OutFlow Max=0.17 cfs @ 12.12 hrs HW=136.33' TW=130.29' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.17 cfs @ 1.28 fps)

Summary for Pond 1785LP: CB17+85L TO CB17+85R

Inflow Area = 0.209 ac, 28.75% Impervious, Inflow Depth = 0.26" for 2 YR event
Inflow = 0.02 cfs @ 12.35 hrs, Volume= 0.005 af
Outflow = 0.02 cfs @ 12.35 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min
Primary = 0.02 cfs @ 12.35 hrs, Volume= 0.005 af
Routed to Pond 1785RP : CB17+85R TO DMH18+69

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 131.38' @ 12.35 hrs
Flood Elev= 135.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	131.30'	**12.0" Round Culvert** L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 131.30' / 131.15' S= 0.0068 '/' Cc= 0.900 n= 0.011, Flow Area= 0.79 sf

Primary OutFlow Max=0.02 cfs @ 12.35 hrs HW=131.38' TW=130.22' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.02 cfs @ 0.77 fps)

Summary for Pond 1785RP: CB17+85R TO DMH18+69

Inflow Area = 0.574 ac, 42.99% Impervious, Inflow Depth = 0.58" for 2 YR event
Inflow = 0.28 cfs @ 12.10 hrs, Volume= 0.028 af
Outflow = 0.28 cfs @ 12.10 hrs, Volume= 0.028 af, Atten= 0%, Lag= 0.0 min
Primary = 0.28 cfs @ 12.10 hrs, Volume= 0.028 af
Routed to Pond 1869P : DMH18+69 TO CB19+28L

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 130.29' @ 12.10 hrs
Flood Elev= 135.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	130.00'	**12.0" Round Culvert** L= 86.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 130.00' / 127.10' S= 0.0337 '/' Cc= 0.900 n= 0.011, Flow Area= 0.79 sf

Primary OutFlow Max=0.28 cfs @ 12.10 hrs HW=130.29' TW=127.26' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.28 cfs @ 1.45 fps)

Summary for Pond 1869P: DMH18+69 TO CB19+28L

Inflow Area = 0.574 ac, 42.99% Impervious, Inflow Depth = 0.58" for 2 YR event
Inflow = 0.28 cfs @ 12.10 hrs, Volume= 0.028 af
Outflow = 0.28 cfs @ 12.10 hrs, Volume= 0.028 af, Atten= 0%, Lag= 0.0 min
Primary = 0.28 cfs @ 12.10 hrs, Volume= 0.028 af
Routed to Pond 1928LP : CB19+28L TO CB19+79R

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 127.26' @ 12.10 hrs
Flood Elev= 132.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	127.00'	**12.0" Round Culvert** L= 55.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 127.00' / 125.10' S= 0.0345 '/' Cc= 0.900 n= 0.011, Flow Area= 0.79 sf

Primary OutFlow Max=0.28 cfs @ 12.10 hrs HW=127.26' TW=123.63' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.28 cfs @ 1.73 fps)

Summary for Pond 1928LP: CB19+28L TO CB19+79R

Inflow Area = 0.900 ac, 44.03% Impervious, Inflow Depth = 0.59" for 2 YR event
Inflow = 0.46 cfs @ 12.09 hrs, Volume= 0.045 af
Outflow = 0.46 cfs @ 12.09 hrs, Volume= 0.045 af, Atten= 0%, Lag= 0.0 min
Primary = 0.46 cfs @ 12.09 hrs, Volume= 0.045 af
Routed to Pond 1979RP : CB19+79 TO CB21+73R

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 123.63' @ 12.09 hrs
Flood Elev= 129.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	123.25'	**12.0" Round Culvert** L= 55.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 123.25' / 121.70' S= 0.0282 '/' Cc= 0.900 n= 0.011, Flow Area= 0.79 sf

Primary OutFlow Max=0.46 cfs @ 12.09 hrs HW=123.63' TW=121.95' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.46 cfs @ 1.67 fps)

Summary for Pond 1928RP: CB19+28R TO CB19+28L

Inflow Area = 0.143 ac, 51.15% Impervious, Inflow Depth = 0.75" for 2 YR event
Inflow = 0.12 cfs @ 12.07 hrs, Volume= 0.009 af
Outflow = 0.12 cfs @ 12.07 hrs, Volume= 0.009 af, Atten= 0%, Lag= 0.0 min
Primary = 0.12 cfs @ 12.07 hrs, Volume= 0.009 af
Routed to Pond 1928LP : CB19+28L TO CB19+79R

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 125.59' @ 12.07 hrs
Flood Elev= 129.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	125.40'	**12.0" Round Culvert** L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 125.40' / 125.25' S= 0.0068 '/' Cc= 0.900 n= 0.011, Flow Area= 0.79 sf

Primary OutFlow Max=0.12 cfs @ 12.07 hrs HW=125.59' TW=123.63' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.12 cfs @ 1.16 fps)

Summary for Pond 1979RP: CB19+79 TO CB21+73R

Inflow Area = 0.952 ac, 44.25% Impervious, Inflow Depth = 0.60" for 2 YR event
Inflow = 0.50 cfs @ 12.09 hrs, Volume= 0.047 af
Outflow = 0.50 cfs @ 12.09 hrs, Volume= 0.047 af, Atten= 0%, Lag= 0.0 min
Primary = 0.50 cfs @ 12.09 hrs, Volume= 0.047 af
Routed to Pond 2173RP : CB21+73R TO DMH21+95R

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 121.95' @ 12.09 hrs
Flood Elev= 127.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	121.60'	**12.0" Round Culvert** L= 190.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 121.60' / 117.97' S= 0.0191 '/' Cc= 0.900 n= 0.011, Flow Area= 0.79 sf

Primary OutFlow Max=0.50 cfs @ 12.09 hrs HW=121.95' TW=118.33' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.50 cfs @ 2.02 fps)

Summary for Pond 2168P: DMH 21+68R to DMH 22+41R

Inflow Area = 2.680 ac, 15.99% Impervious, Inflow Depth = 0.06" for 2 YR event
Inflow = 0.02 cfs @ 15.39 hrs, Volume= 0.014 af
Outflow = 0.02 cfs @ 15.39 hrs, Volume= 0.014 af, Atten= 0%, Lag= 0.0 min
Primary = 0.02 cfs @ 15.39 hrs, Volume= 0.014 af
Routed to Pond 2241 : DMH 22+41R to DMH24+86R

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 105.85' @ 15.39 hrs
Flood Elev= 109.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	105.78'	**12.0" Round Culvert** L= 76.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 105.78' / 104.64' S= 0.0150 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.02 cfs @ 15.39 hrs HW=105.85' TW=104.66' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.02 cfs @ 0.91 fps)

Summary for Pond 2173LP: CB21+73L TO CB21+73R

Inflow Area = 0.431 ac, 40.92% Impervious, Inflow Depth = 0.49" for 2 YR event
Inflow = 0.17 cfs @ 12.11 hrs, Volume= 0.018 af
Outflow = 0.17 cfs @ 12.11 hrs, Volume= 0.018 af, Atten= 0%, Lag= 0.0 min
Primary = 0.17 cfs @ 12.11 hrs, Volume= 0.018 af
Routed to Pond 2173RP : CB21+73R TO DMH21+95R

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 118.70' @ 12.11 hrs
Flood Elev= 122.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	118.47'	**12.0" Round Culvert** L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 118.47' / 118.22' S= 0.0114 '/' Cc= 0.900 n= 0.011, Flow Area= 0.79 sf

Primary OutFlow Max=0.17 cfs @ 12.11 hrs HW=118.70' TW=118.33' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.17 cfs @ 1.28 fps)

Summary for Pond 2173RP: CB21+73R TO DMH21+95R

Inflow Area = 1.579 ac, 44.78% Impervious, Inflow Depth = 0.61" for 2 YR event
Inflow = 0.85 cfs @ 12.10 hrs, Volume= 0.080 af
Outflow = 0.85 cfs @ 12.10 hrs, Volume= 0.080 af, Atten= 0%, Lag= 0.0 min
Primary = 0.85 cfs @ 12.10 hrs, Volume= 0.080 af
Routed to Pond 2195P : DMH21+95R TO Subsurface Detention

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 118.33' @ 12.10 hrs
Flood Elev= 122.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	117.87'	**18.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 117.87' / 116.80' S= 0.0357 '/' Cc= 0.900 n= 0.011, Flow Area= 1.77 sf

Primary OutFlow Max=0.85 cfs @ 12.10 hrs HW=118.33' TW=117.29' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.85 cfs @ 1.83 fps)

Summary for Pond 2182P: DCB 21+82R TO DMH 21+97R

Inflow Area = 0.140 ac, 52.35% Impervious, Inflow Depth = 0.79" for 2 YR event
Inflow = 0.13 cfs @ 12.04 hrs, Volume= 0.009 af
Outflow = 0.13 cfs @ 12.04 hrs, Volume= 0.009 af, Atten= 0%, Lag= 0.0 min
Primary = 0.13 cfs @ 12.04 hrs, Volume= 0.009 af
Routed to Pond 2197P : DMH 21+97R TO Subsurface Detention

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 117.31' @ 13.56 hrs
Flood Elev= 120.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	116.90'	**12.0" Round Culvert** L= 10.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 116.90' / 116.80' S= 0.0100 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.13 cfs @ 12.04 hrs HW=117.12' TW=117.04' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.13 cfs @ 1.52 fps)

Summary for Pond 2195P: DMH21+95R TO Subsurface Detention

Inflow Area = 1.579 ac, 44.78% Impervious, Inflow Depth = 0.61" for 2 YR event
Inflow = 0.85 cfs @ 12.10 hrs, Volume= 0.080 af
Outflow = 0.85 cfs @ 12.10 hrs, Volume= 0.080 af, Atten= 0%, Lag= 0.0 min
Primary = 0.85 cfs @ 12.10 hrs, Volume= 0.080 af
Routed to Pond 1100P : Subsurface Detention SC-740 Chamber System #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 117.31' @ 13.55 hrs
Flood Elev= 123.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	116.80'	**24.0" Round Culvert** L= 8.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 116.80' / 116.80' S= 0.0000 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.85 cfs @ 12.10 hrs HW=117.29' TW=116.71' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.85 cfs @ 2.15 fps)

Summary for Pond 2197P: DMH 21+97R TO Subsurface Detention

Inflow Area = 0.140 ac, 52.35% Impervious, Inflow Depth = 0.79" for 2 YR event
Inflow = 0.13 cfs @ 12.04 hrs, Volume= 0.009 af
Outflow = 0.13 cfs @ 12.04 hrs, Volume= 0.009 af, Atten= 0%, Lag= 0.0 min
Primary = 0.13 cfs @ 12.04 hrs, Volume= 0.009 af
Routed to Pond 1100P : Subsurface Detention SC-740 Chamber System #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 117.31' @ 13.56 hrs
Flood Elev= 121.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	116.80'	**12.0" Round Culvert** L= 10.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 116.80' / 116.80' S= 0.0000 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.13 cfs @ 12.04 hrs HW=117.04' TW=116.49' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.13 cfs @ 1.34 fps)

Summary for Pond 2210P: DMH 22+10R to DMH22+20R

Inflow Area = 1.718 ac, 45.40% Impervious, Inflow Depth = 0.00" for 2 YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 2220P : DMH22+20R TO DMH22+41R

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 116.80' @ 0.00 hrs
Flood Elev= 121.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	116.80'	**12.0" Round Culvert** L= 5.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 116.80' / 116.70' S= 0.0200 '/' Cc= 0.900 n= 0.011, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=116.80' TW=108.60' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.00 cfs)

Summary for Pond 2220P: DMH22+20R TO DMH22+41R

Inflow Area = 1.718 ac, 45.40% Impervious, Inflow Depth = 0.00" for 2 YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 2241 : DMH 22+41R to DMH24+86R

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 108.60' @ 0.00 hrs
Flood Elev= 121.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	108.60'	**12.0" Round Culvert** L= 53.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 108.60' / 104.64' S= 0.0747 '/' Cc= 0.900 n= 0.011, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=108.60' TW=104.54' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.00 cfs)

Summary for Pond 2241: DMH 22+41R to DMH24+86R

Inflow Area = 4.757 ac, 32.95% Impervious, Inflow Depth = 0.26" for 2 YR event
Inflow = 1.13 cfs @ 12.07 hrs, Volume= 0.101 af
Outflow = 1.13 cfs @ 12.07 hrs, Volume= 0.101 af, Atten= 0%, Lag= 0.0 min
Primary = 1.13 cfs @ 12.07 hrs, Volume= 0.101 af
Routed to Pond 2286P : DMH 22+86R to DMH24+78R

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 105.09' @ 12.07 hrs
Flood Elev= 112.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	104.54'	**12.0" Round Culvert** L= 188.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 104.54' / 101.72' S= 0.0150 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.13 cfs @ 12.07 hrs HW=105.09' TW=102.17' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.13 cfs @ 2.53 fps)

Summary for Pond 2286P: DMH 22+86R to DMH24+78R

Inflow Area = 4.757 ac, 32.95% Impervious, Inflow Depth = 0.26" for 2 YR event
Inflow = 1.13 cfs @ 12.07 hrs, Volume= 0.101 af
Outflow = 1.13 cfs @ 12.07 hrs, Volume= 0.101 af, Atten= 0%, Lag= 0.0 min
Primary = 1.13 cfs @ 12.07 hrs, Volume= 0.101 af
Routed to Pond 2478P : DMH24+78R to HW24+89R

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 102.17' @ 12.07 hrs
Flood Elev= 105.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.62'	**12.0" Round Culvert** L= 54.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 101.62' / 100.81' S= 0.0150 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.13 cfs @ 12.07 hrs HW=102.17' TW=101.29' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.13 cfs @ 2.53 fps)

Summary for Pond 2440P: TD24+40R TO CB24+60R

Inflow Area = 0.034 ac, 42.82% Impervious, Inflow Depth = 0.53" for 2 YR event
Inflow = 0.02 cfs @ 12.07 hrs, Volume= 0.001 af
Outflow = 0.02 cfs @ 12.07 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min
Primary = 0.02 cfs @ 12.07 hrs, Volume= 0.001 af
Routed to Pond 2460P : CB24+60R TO DMH24+85R

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 111.97' @ 12.07 hrs
Flood Elev= 115.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	111.90'	**12.0" Round Culvert** L= 62.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 111.90' / 109.90' S= 0.0323 '/' Cc= 0.900 n= 0.011, Flow Area= 0.79 sf

Primary OutFlow Max=0.02 cfs @ 12.07 hrs HW=111.97' TW=110.06' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.02 cfs @ 0.71 fps)

Summary for Pond 2460LP: CB24+60L TO CB24+60R

Inflow Area = 0.611 ac, 47.56% Impervious, Inflow Depth = 0.66" for 2 YR event
Inflow = 0.33 cfs @ 12.17 hrs, Volume= 0.033 af
Outflow = 0.33 cfs @ 12.17 hrs, Volume= 0.033 af, Atten= 0%, Lag= 0.0 min
Primary = 0.33 cfs @ 12.17 hrs, Volume= 0.033 af
Routed to Pond 2460RP : CB24+60R TO DMH24+86R

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 113.69' @ 12.17 hrs
Flood Elev= 117.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	113.40'	**12.0" Round Culvert** L= 22.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 113.40' / 113.18' S= 0.0100 '/' Cc= 0.900 n= 0.011, Flow Area= 0.79 sf

Primary OutFlow Max=0.32 cfs @ 12.17 hrs HW=113.69' TW=113.42' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.32 cfs @ 2.54 fps)

Summary for Pond 2460P: CB24+60R TO DMH24+85R

Inflow Area = 0.190 ac, 68.67% Impervious, Inflow Depth = 1.38" for 2 YR event
Inflow = 0.35 cfs @ 12.02 hrs, Volume= 0.022 af
Outflow = 0.35 cfs @ 12.02 hrs, Volume= 0.022 af, Atten= 0%, Lag= 0.0 min
Primary = 0.35 cfs @ 12.02 hrs, Volume= 0.022 af
Routed to Pond 2485P : DMH24+85R TO Subsurface Detention

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 110.09' @ 12.02 hrs
Flood Elev= 113.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	109.80'	**12.0" Round Culvert** L= 28.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 109.80' / 109.50' S= 0.0107 '/' Cc= 0.900 n= 0.011, Flow Area= 0.79 sf

Primary OutFlow Max=0.35 cfs @ 12.02 hrs HW=110.09' TW=109.73' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.35 cfs @ 1.83 fps)

Summary for Pond 2460RP: CB24+60R TO DMH24+86R

Inflow Area = 0.931 ac, 48.88% Impervious, Inflow Depth = 0.69" for 2 YR event
Inflow = 0.49 cfs @ 12.11 hrs, Volume= 0.053 af
Outflow = 0.49 cfs @ 12.11 hrs, Volume= 0.053 af, Atten= 0%, Lag= 0.0 min
Primary = 0.49 cfs @ 12.11 hrs, Volume= 0.053 af
Routed to Pond 2468P : DMH24+86R TO Subsurface Detention

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 113.43' @ 12.11 hrs
Flood Elev= 117.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	113.08'	**12.0" Round Culvert** L= 58.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 113.08' / 109.50' S= 0.0617 '/' Cc= 0.900 n= 0.011, Flow Area= 0.79 sf

Primary OutFlow Max=0.49 cfs @ 12.11 hrs HW=113.43' TW=109.77' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.49 cfs @ 2.01 fps)

Summary for Pond 2468P: DMH24+86R TO Subsurface Detention

Inflow Area = 0.931 ac, 48.88% Impervious, Inflow Depth = 0.69" for 2 YR event
Inflow = 0.49 cfs @ 12.11 hrs, Volume= 0.053 af
Outflow = 0.49 cfs @ 12.11 hrs, Volume= 0.053 af, Atten= 0%, Lag= 0.0 min
Primary = 0.49 cfs @ 12.11 hrs, Volume= 0.053 af
Routed to Pond 1200P : Subsurface Detention SC-740 Chamber System #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 109.81' @ 13.05 hrs
Flood Elev= 117.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	109.40'	**24.0" Round Culvert** L= 8.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 109.40' / 109.40' S= 0.0000 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf

Primary OutFlow Max=0.49 cfs @ 12.11 hrs HW=109.77' TW=109.38' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.49 cfs @ 1.83 fps)

Summary for Pond 2474P: DMH24+74R TO DMH24+85R

Inflow Area = 0.098 ac, 43.00% Impervious, Inflow Depth = 0.53" for 2 YR event
Inflow = 0.05 cfs @ 12.07 hrs, Volume= 0.004 af
Outflow = 0.05 cfs @ 12.07 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min
Primary = 0.05 cfs @ 12.07 hrs, Volume= 0.004 af
Routed to Pond 2485P : DMH24+85R TO Subsurface Detention

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 110.01' @ 12.07 hrs
Flood Elev= 113.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	109.90'	**12.0" Round Culvert** L= 12.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 109.90' / 109.50' S= 0.0333 '/' Cc= 0.900 n= 0.011, Flow Area= 0.79 sf

Primary OutFlow Max=0.05 cfs @ 12.07 hrs HW=110.01' TW=109.70' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.05 cfs @ 1.10 fps)

Summary for Pond 2478P: DMH24+78R to HW24+89R

Inflow Area = 5.975 ac, 36.73% Impervious, Inflow Depth = 0.20" for 2 YR event
Inflow = 1.13 cfs @ 12.07 hrs, Volume= 0.101 af
Outflow = 1.13 cfs @ 12.07 hrs, Volume= 0.101 af, Atten= 0%, Lag= 0.0 min
Primary = 1.13 cfs @ 12.07 hrs, Volume= 0.101 af
Routed to Pond 900P : POND 900

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 101.29' @ 12.07 hrs
Flood Elev= 103.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	100.71'	**12.0" Round Culvert** L= 14.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 100.71' / 100.50' S= 0.0150 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.13 cfs @ 12.07 hrs HW=101.29' TW=98.19' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.13 cfs @ 3.45 fps)

Summary for Pond 2485P: DMH24+85R TO Subsurface Detention

Inflow Area = 0.288 ac, 59.95% Impervious, Inflow Depth = 1.09" for 2 YR event
Inflow = 0.38 cfs @ 12.03 hrs, Volume= 0.026 af
Outflow = 0.38 cfs @ 12.03 hrs, Volume= 0.026 af, Atten= 0%, Lag= 0.0 min
Primary = 0.38 cfs @ 12.03 hrs, Volume= 0.026 af
Routed to Pond 1200P : Subsurface Detention SC-740 Chamber System #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 109.81' @ 13.07 hrs
Flood Elev= 114.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	109.40'	**24.0" Round Culvert** L= 6.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 109.40' / 109.40' S= 0.0000 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf

Primary OutFlow Max=0.38 cfs @ 12.03 hrs HW=109.73' TW=109.10' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.38 cfs @ 1.73 fps)

Summary for Pond 2495P: DMH24+95R TO DMH25+00

Inflow Area = 1.219 ac, 51.49% Impervious, Inflow Depth = 0.00" for 2 YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 2505P : DMH24+82R to DMH24+78R

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 109.40' @ 0.00 hrs
Flood Elev= 114.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	109.40'	**12.0" Round Culvert** L= 10.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 109.40' / 109.20' S= 0.0200 '/' Cc= 0.900 n= 0.011, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=109.40' TW=103.60' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Summary for Pond 2505P: DMH24+82R to DMH24+78R

Inflow Area = 1.219 ac, 51.49% Impervious, Inflow Depth = 0.00" for 2 YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 2478P : DMH24+78R to HW24+89R

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 103.60' @ 0.00 hrs
Flood Elev= 114.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	103.60'	**12.0" Round Culvert** L= 43.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 103.60' / 100.81' S= 0.0649 '/' Cc= 0.900 n= 0.011, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=103.60' TW=100.71' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Summary for Pond 2625RP: DMH26+25R TO HW26+25

Inflow Area = 1.290 ac, 65.27% Impervious, Inflow Depth = 1.36" for 2 YR event
Inflow = 1.73 cfs @ 12.07 hrs, Volume= 0.146 af
Outflow = 1.73 cfs @ 12.07 hrs, Volume= 0.146 af, Atten= 0%, Lag= 0.0 min
Primary = 1.73 cfs @ 12.07 hrs, Volume= 0.146 af
Routed to Pond 900P : POND 900

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 101.52' @ 12.07 hrs
Flood Elev= 104.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	100.80'	**12.0" Round Culvert** L= 15.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 100.80' / 100.50' S= 0.0200 '/' Cc= 0.900 n= 0.011, Flow Area= 0.79 sf

Primary OutFlow Max=1.73 cfs @ 12.07 hrs HW=101.51' TW=98.19' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 1.73 cfs @ 2.88 fps)

Summary for Pond 2723P: DMH27+23R TO DMH26+25R

Inflow Area = 0.931 ac, 51.89% Impervious, Inflow Depth = 0.77" for 2 YR event
Inflow = 0.63 cfs @ 12.10 hrs, Volume= 0.059 af
Outflow = 0.63 cfs @ 12.10 hrs, Volume= 0.059 af, Atten= 0%, Lag= 0.0 min
Primary = 0.63 cfs @ 12.10 hrs, Volume= 0.059 af
Routed to Pond 2625RP : DMH26+25R TO HW26+25

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 102.80' @ 12.10 hrs
Flood Elev= 106.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	102.40'	**12.0" Round Culvert** L= 93.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 102.40' / 100.90' S= 0.0161 '/' Cc= 0.900 n= 0.011, Flow Area= 0.79 sf

Primary OutFlow Max=0.63 cfs @ 12.10 hrs HW=102.80' TW=101.49' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 0.63 cfs @ 2.15 fps)

Summary for Pond 2723RP: TD27+23R TO DMH27+23R

Trench Drain will connect to service line between CB27+30R and DMH27+23R.

Inflow Area = 0.103 ac, 61.44% Impervious, Inflow Depth = 1.05" for 2 YR event
Inflow = 0.13 cfs @ 12.07 hrs, Volume= 0.009 af
Outflow = 0.13 cfs @ 12.07 hrs, Volume= 0.009 af, Atten= 0%, Lag= 0.0 min
Primary = 0.13 cfs @ 12.07 hrs, Volume= 0.009 af
Routed to Pond 2723P : DMH27+23R TO DMH26+25R

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 104.77' @ 12.07 hrs
Flood Elev= 109.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	104.60'	**12.0" Round Culvert** L= 39.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 104.60' / 102.50' S= 0.0538 '/' Cc= 0.900

n= 0.011, Flow Area= 0.79 sf

Primary OutFlow Max=0.13 cfs @ 12.07 hrs HW=104.77' TW=102.79' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.13 cfs @ 1.41 fps)

Summary for Pond 2730LP: CB27+30L TO 27+30R

Inflow Area = 0.551 ac, 49.95% Impervious, Inflow Depth = 0.70" for 2 YR event
Inflow = 0.33 cfs @ 12.16 hrs, Volume= 0.032 af
Outflow = 0.33 cfs @ 12.16 hrs, Volume= 0.032 af, Atten= 0%, Lag= 0.0 min
Primary = 0.33 cfs @ 12.16 hrs, Volume= 0.032 af
Routed to Pond 2730RP : CB27+30R TO DMH27+23R

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 109.70' @ 12.15 hrs
Flood Elev= 113.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	109.40'	**12.0" Round Culvert** L= 22.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 109.40' / 109.18' S= 0.0100 '/' Cc= 0.900 n= 0.011, Flow Area= 0.79 sf

Primary OutFlow Max=0.33 cfs @ 12.16 hrs HW=109.70' TW=109.43' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.33 cfs @ 2.55 fps)

Summary for Pond 2730RP: CB27+30R TO DMH27+23R

Inflow Area = 0.828 ac, 50.70% Impervious, Inflow Depth = 0.73" for 2 YR event
Inflow = 0.51 cfs @ 12.11 hrs, Volume= 0.050 af
Outflow = 0.51 cfs @ 12.11 hrs, Volume= 0.050 af, Atten= 0%, Lag= 0.0 min
Primary = 0.51 cfs @ 12.11 hrs, Volume= 0.050 af
Routed to Pond 2723P : DMH27+23R TO DMH26+25R

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 109.44' @ 12.11 hrs
Flood Elev= 113.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	109.08'	**12.0" Round Culvert** L= 125.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 109.08' / 102.50' S= 0.0526 '/' Cc= 0.900 n= 0.011, Flow Area= 0.79 sf

Primary OutFlow Max=0.51 cfs @ 12.11 hrs HW=109.44' TW=102.80' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.51 cfs @ 2.03 fps)

Summary for Pond 3018GP: CB30+18G TO CB30+20L

Inflow Area = 16.325 ac, 22.50% Impervious, Inflow Depth = 0.21" for 2 YR event
Inflow = 3.04 cfs @ 12.08 hrs, Volume= 0.290 af
Outflow = 3.04 cfs @ 12.08 hrs, Volume= 0.290 af, Atten= 0%, Lag= 0.0 min
Primary = 3.04 cfs @ 12.08 hrs, Volume= 0.290 af
Routed to Pond 3020LP : CB30+20L TO CB30+20R

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 103.21' @ 12.08 hrs
Flood Elev= 107.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	102.20'	**24.0" Round Culvert** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 102.20' / 102.10' S= 0.0100 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf

Primary OutFlow Max=3.03 cfs @ 12.08 hrs HW=103.21' TW=102.95' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.03 cfs @ 1.91 fps)

Summary for Pond 3020LP: CB30+20L TO CB30+20R

Inflow Area = 17.313 ac, 24.24% Impervious, Inflow Depth = 0.25" for 2 YR event
Inflow = 3.57 cfs @ 12.09 hrs, Volume= 0.355 af
Outflow = 3.57 cfs @ 12.09 hrs, Volume= 0.355 af, Atten= 0%, Lag= 0.0 min
Primary = 3.57 cfs @ 12.09 hrs, Volume= 0.355 af
Routed to Pond 3020RP : CB30+20R TO HW29+63

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 102.96' @ 12.09 hrs
Flood Elev= 108.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	102.00'	**24.0" Round Culvert** L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 102.00' / 101.80' S= 0.0091 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf

Primary OutFlow Max=3.56 cfs @ 12.09 hrs HW=102.96' TW=102.54' (Dynamic Tailwater)
1=Culvert (Outlet Controls 3.56 cfs @ 3.52 fps)

Summary for Pond 3020RP: CB30+20R TO HW29+63

Inflow Area = 17.545 ac, 24.73% Impervious, Inflow Depth = 0.26" for 2 YR event
Inflow = 3.89 cfs @ 12.09 hrs, Volume= 0.379 af
Outflow = 3.89 cfs @ 12.09 hrs, Volume= 0.379 af, Atten= 0%, Lag= 0.0 min
Primary = 3.89 cfs @ 12.09 hrs, Volume= 0.379 af
Routed to Pond 900P : POND 900

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 102.54' @ 12.09 hrs
Flood Elev= 108.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.70'	**24.0" Round Culvert** L= 135.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.70' / 100.50' S= 0.0089 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf

Primary OutFlow Max=3.89 cfs @ 12.09 hrs HW=102.54' TW=98.20' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 3.89 cfs @ 3.12 fps)

Summary for Pond 3200P: CB3200 TO CB320

Inflow Area = 0.081 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2 YR event
Inflow = 0.00 cfs @ 24.02 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 24.02 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 24.02 hrs, Volume= 0.000 af
Routed to Pond 320P : CB320 TO CB315

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 108.63' @ 12.07 hrs
Flood Elev= 111.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	108.15'	**15.0" Round Culvert** L= 90.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 108.15' / 107.70' S= 0.0050 '/' Cc= 0.900 n= 0.009, Flow Area= 1.23 sf

Primary OutFlow Max=0.00 cfs @ 24.02 hrs HW=108.15' TW=107.55' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.00 cfs @ 0.05 fps)

Summary for Pond 100125P: DMH1001+25 TO DMH1003+11

Inflow Area = 10.125 ac, 28.38% Impervious, Inflow Depth = 0.32" for 2 YR event
Inflow = 3.04 cfs @ 12.08 hrs, Volume= 0.271 af
Outflow = 3.04 cfs @ 12.08 hrs, Volume= 0.271 af, Atten= 0%, Lag= 0.0 min
Primary = 3.04 cfs @ 12.08 hrs, Volume= 0.271 af
Routed to Pond 100311P : DMH1003+11C TO CB30+18G

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 108.33' @ 12.08 hrs
Flood Elev= 121.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	107.50'	**24.0" Round Culvert** L= 194.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 107.50' / 103.60' S= 0.0201 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf

Primary OutFlow Max=3.03 cfs @ 12.08 hrs HW=108.33' TW=104.33' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 3.03 cfs @ 2.45 fps)

Summary for Pond 100311P: DMH1003+11C TO CB30+18G

Inflow Area = 10.125 ac, 28.38% Impervious, Inflow Depth = 0.32" for 2 YR event
Inflow = 3.04 cfs @ 12.08 hrs, Volume= 0.271 af
Outflow = 3.04 cfs @ 12.08 hrs, Volume= 0.271 af, Atten= 0%, Lag= 0.0 min
Primary = 3.04 cfs @ 12.08 hrs, Volume= 0.271 af
Routed to Pond 3018GP : CB30+18G TO CB30+20L

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 104.33' @ 12.08 hrs
Flood Elev= 108.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	103.50'	**24.0" Round Culvert** L= 130.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 103.50' / 102.30' S= 0.0092 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf

Primary OutFlow Max=3.03 cfs @ 12.08 hrs HW=104.33' TW=103.21' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 3.03 cfs @ 2.45 fps)

Summary for Pond BMP-1: BMP-1 STORMTECH

DESIGN BY BOHLER

Inflow Area = 0.941 ac, 82.99% Impervious, Inflow Depth = 2.29" for 2 YR event
Inflow = 3.00 cfs @ 12.00 hrs, Volume= 0.180 af
Outflow = 1.04 cfs @ 12.19 hrs, Volume= 0.143 af, Atten= 65%, Lag= 11.4 min
Discarded = 0.01 cfs @ 8.03 hrs, Volume= 0.057 af
Primary = 1.03 cfs @ 12.19 hrs, Volume= 0.087 af
Routed to Pond 100P : Outlet Structure 110 to HW109

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 105.53' @ 12.19 hrs Surf.Area= 2,035 sf Storage= 3,480 cf

Plug-Flow detention time= 591.8 min calculated for 0.143 af (80% of inflow)
Center-of-Mass det. time= 515.8 min (1,308.3 - 792.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	103.05'	1,943 cf	**30.00'W x 67.82'L x 3.75'H Field A** 7,629 cf Overall - 2,773 cf Embedded = 4,856 cf x 40.0% Voids
#2A	103.55'	2,773 cf	**ADS_StormTech SC-800 +Cap** x 54 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap 54 Chambers in 6 Rows Cap Storage= 3.4 cf x 2 x 6 rows = 41.0 cf
		4,716 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	103.05'	**0.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	103.05'	**24.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 103.05' / 102.90' S= 0.0150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#3	Device 2	105.35'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Discarded OutFlow Max=0.01 cfs @ 8.03 hrs HW=103.09' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=1.03 cfs @ 12.19 hrs HW=105.53' TW=101.42' (Dynamic Tailwater)
└**2=Culvert** (Passes 1.03 cfs of 16.98 cfs potential flow)
└**3=Sharp-Crested Rectangular Weir** (Weir Controls 1.03 cfs @ 1.40 fps)

Summary for Pond C3P: CBC3 to CB509

Inflow Area = 2.082 ac, 37.92% Impervious, Inflow Depth = 0.44" for 2 YR event
Inflow = 0.70 cfs @ 12.09 hrs, Volume= 0.076 af
Outflow = 0.70 cfs @ 12.09 hrs, Volume= 0.076 af, Atten= 0%, Lag= 0.0 min
Primary = 0.70 cfs @ 12.09 hrs, Volume= 0.076 af
Routed to Pond 509P : CB509 to CB508

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 114.23' @ 12.09 hrs
Flood Elev= 119.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	113.90'	**18.0" Round Culvert** L= 183.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 113.90' / 108.50' S= 0.0295 '/' Cc= 0.900 n= 0.009 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.70 cfs @ 12.09 hrs HW=114.23' TW=108.81' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 0.70 cfs @ 2.44 fps)

Summary for Pond C4P: CBC4 to CBC3

Inflow Area = 1.170 ac, 43.43% Impervious, Inflow Depth = 0.55" for 2 YR event
Inflow = 0.61 cfs @ 12.08 hrs, Volume= 0.054 af
Outflow = 0.61 cfs @ 12.08 hrs, Volume= 0.054 af, Atten= 0%, Lag= 0.0 min
Primary = 0.61 cfs @ 12.08 hrs, Volume= 0.054 af
Routed to Pond C3P : CBC3 to CB509

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 116.46' @ 12.08 hrs
Flood Elev= 122.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	116.10'	**15.0" Round Culvert** L= 212.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 116.10' / 114.15' S= 0.0092 '/' Cc= 0.900 n= 0.009 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.61 cfs @ 12.08 hrs HW=116.46' TW=114.23' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.61 cfs @ 2.05 fps)

Summary for Pond C5P: CBC5 to DMHC6

Inflow Area = 0.360 ac, 51.62% Impervious, Inflow Depth = 0.75" for 2 YR event
Inflow = 0.28 cfs @ 12.08 hrs, Volume= 0.022 af
Outflow = 0.28 cfs @ 12.08 hrs, Volume= 0.022 af, Atten= 0%, Lag= 0.0 min
Primary = 0.28 cfs @ 12.08 hrs, Volume= 0.022 af
Routed to Pond C6P : DMHC6 to CBC4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 118.25' @ 12.08 hrs
Flood Elev= 123.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	118.00'	**15.0" Round Culvert** L= 66.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 118.00' / 117.40' S= 0.0091 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=0.28 cfs @ 12.08 hrs HW=118.25' TW=117.14' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.28 cfs @ 2.43 fps)

Summary for Pond C6P: DMHC6 to CBC4

Inflow Area = 0.759 ac, 38.76% Impervious, Inflow Depth = 0.45" for 2 YR event
Inflow = 0.28 cfs @ 12.08 hrs, Volume= 0.028 af
Outflow = 0.28 cfs @ 12.08 hrs, Volume= 0.028 af, Atten= 0%, Lag= 0.0 min
Primary = 0.28 cfs @ 12.08 hrs, Volume= 0.028 af
Routed to Pond C4P : CBC4 to CBC3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 117.14' @ 12.08 hrs
Flood Elev= 122.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	116.90'	**15.0" Round Culvert** L= 32.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 116.90' / 116.20' S= 0.0219 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=0.28 cfs @ 12.08 hrs HW=117.14' TW=116.46' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.28 cfs @ 1.68 fps)

Summary for Pond C7P: CBC7 to DMHC6

Inflow Area = 0.400 ac, 27.18% Impervious, Inflow Depth = 0.18" for 2 YR event
Inflow = 0.02 cfs @ 12.37 hrs, Volume= 0.006 af
Outflow = 0.02 cfs @ 12.37 hrs, Volume= 0.006 af, Atten= 0%, Lag= 0.0 min
Primary = 0.02 cfs @ 12.37 hrs, Volume= 0.006 af
Routed to Pond C6P : DMHC6 to CBC4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 118.63' @ 12.37 hrs
Flood Elev= 127.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	118.55'	**15.0" Round Culvert** L= 189.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 118.55' / 117.00' S= 0.0082 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=0.02 cfs @ 12.37 hrs HW=118.63' TW=117.07' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.02 cfs @ 1.15 fps)

Summary for Pond C8P: CBC8 to CBC7

Inflow Area = 0.400 ac, 27.18% Impervious, Inflow Depth = 0.18" for 2 YR event
Inflow = 0.02 cfs @ 12.37 hrs, Volume= 0.006 af
Outflow = 0.02 cfs @ 12.37 hrs, Volume= 0.006 af, Atten= 0%, Lag= 0.0 min
Primary = 0.02 cfs @ 12.37 hrs, Volume= 0.006 af
Routed to Pond C7P : CBC7 to DMHC6

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 119.07' @ 12.37 hrs
Flood Elev= 128.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	119.00'	**15.0" Round Culvert** L= 33.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 119.00' / 118.65' S= 0.0106 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=0.02 cfs @ 12.37 hrs HW=119.07' TW=118.63' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.02 cfs @ 1.25 fps)

Summary for Pond RD1Pa: RD1a TO CB327

Inflow Area = 0.120 ac,100.00% Impervious, Inflow Depth = 2.91" for 2 YR event
Inflow = 0.38 cfs @ 12.07 hrs, Volume= 0.029 af
Outflow = 0.38 cfs @ 12.07 hrs, Volume= 0.029 af, Atten= 0%, Lag= 0.0 min
Primary = 0.38 cfs @ 12.07 hrs, Volume= 0.029 af
Routed to Pond 326P : CB327 TO CB326

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 125.34' @ 12.07 hrs
Flood Elev= 127.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	125.00'	**12.0" Round Culvert** L= 43.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 125.00' / 124.14' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.38 cfs @ 12.07 hrs HW=125.34' TW=124.42' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.38 cfs @ 1.58 fps)

Summary for Pond RD1Pb: RD1b to CB 324

Inflow Area = 0.085 ac,100.00% Impervious, Inflow Depth = 2.91" for 2 YR event
Inflow = 0.27 cfs @ 12.07 hrs, Volume= 0.021 af
Outflow = 0.27 cfs @ 12.07 hrs, Volume= 0.021 af, Atten= 0%, Lag= 0.0 min
Primary = 0.27 cfs @ 12.07 hrs, Volume= 0.021 af
Routed to Pond 323P : CB324 to CB323

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 123.79' @ 12.07 hrs
Flood Elev= 127.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	123.50'	**12.0" Round Culvert** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 123.50' / 122.70' S= 0.0800 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.27 cfs @ 12.07 hrs HW=123.79' TW=121.82' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.27 cfs @ 1.44 fps)

Summary for Pond RD2Pa: RD2a to CB333

Inflow Area = 0.097 ac,100.00% Impervious, Inflow Depth = 2.91" for 2 YR event
Inflow = 0.31 cfs @ 12.07 hrs, Volume= 0.024 af
Outflow = 0.31 cfs @ 12.07 hrs, Volume= 0.024 af, Atten= 0%, Lag= 0.0 min
Primary = 0.31 cfs @ 12.07 hrs, Volume= 0.024 af
Routed to Pond 333P : CB333 TO CB331

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 113.51' @ 12.07 hrs
Flood Elev= 115.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	113.20'	**12.0" Round Culvert** L= 23.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 113.20' / 112.97' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.31 cfs @ 12.07 hrs HW=113.51' TW=113.01' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 0.31 cfs @ 1.49 fps)

Summary for Pond RD2Pb: RD2b TO CB322

Inflow Area = 0.095 ac,100.00% Impervious, Inflow Depth = 2.91" for 2 YR event
Inflow = 0.30 cfs @ 12.07 hrs, Volume= 0.023 af
Outflow = 0.30 cfs @ 12.07 hrs, Volume= 0.023 af, Atten= 0%, Lag= 0.0 min
Primary = 0.30 cfs @ 12.07 hrs, Volume= 0.023 af
Routed to Pond 321P : CB321 TO CB320

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 113.50' @ 12.07 hrs
Flood Elev= 115.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	113.20'	**12.0" Round Culvert** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 113.20' / 112.52' S= 0.0340 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.30 cfs @ 12.07 hrs HW=113.50' TW=113.00' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 0.30 cfs @ 1.48 fps)

Summary for Pond RD3P: RD3 TO CB808

Inflow Area = 0.419 ac,100.00% Impervious, Inflow Depth = 2.91" for 2 YR event
Inflow = 1.32 cfs @ 12.07 hrs, Volume= 0.102 af
Outflow = 1.32 cfs @ 12.07 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.0 min
Primary = 1.32 cfs @ 12.07 hrs, Volume= 0.102 af
Routed to Pond 808P : CB808 TO CB807

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 107.20' @ 12.07 hrs
Flood Elev= 113.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	106.50'	**12.0" Round Culvert** L= 7.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 106.50' / 106.35' S= 0.0214 '/' Cc= 0.900 n= 0.009, Flow Area= 0.79 sf

Primary OutFlow Max=1.32 cfs @ 12.07 hrs HW=107.20' TW=106.73' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 1.32 cfs @ 2.25 fps)

Summary for Pond RD4P: RD4 TO CB807

Inflow Area = 0.012 ac,100.00% Impervious, Inflow Depth = 2.91" for 2 YR event
Inflow = 0.04 cfs @ 12.07 hrs, Volume= 0.003 af
Outflow = 0.04 cfs @ 12.07 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min
Primary = 0.04 cfs @ 12.07 hrs, Volume= 0.003 af
Routed to Pond 807P : CB807 TO CB806

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 108.10' @ 12.07 hrs
Flood Elev= 113.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	108.00'	**12.0" Round Culvert** L= 34.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 108.00' / 106.50' S= 0.0441 '/' Cc= 0.900 n= 0.009, Flow Area= 0.79 sf

Primary OutFlow Max=0.04 cfs @ 12.07 hrs HW=108.10' TW=105.85' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.04 cfs @ 0.86 fps)

Summary for Pond RD5P: RD5 TO CB806

Inflow Area = 0.429 ac,100.00% Impervious, Inflow Depth = 2.91" for 2 YR event
Inflow = 1.35 cfs @ 12.07 hrs, Volume= 0.104 af
Outflow = 1.35 cfs @ 12.07 hrs, Volume= 0.104 af, Atten= 0%, Lag= 0.0 min
Primary = 1.35 cfs @ 12.07 hrs, Volume= 0.104 af
Routed to Pond 806P : CB806 TO CB805

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 106.71' @ 12.07 hrs
Flood Elev= 113.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	106.00'	**12.0" Round Culvert** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 106.00' / 103.45' S= 0.0567 '/' Cc= 0.900 n= 0.009, Flow Area= 0.79 sf

Primary OutFlow Max=1.35 cfs @ 12.07 hrs HW=106.71' TW=103.79' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.35 cfs @ 2.26 fps)

Summary for Pond RD6P: RD6 TO CB805

Inflow Area = 0.222 ac,100.00% Impervious, Inflow Depth = 2.91" for 2 YR event
Inflow = 0.70 cfs @ 12.07 hrs, Volume= 0.054 af
Outflow = 0.70 cfs @ 12.07 hrs, Volume= 0.054 af, Atten= 0%, Lag= 0.0 min
Primary = 0.70 cfs @ 12.07 hrs, Volume= 0.054 af
Routed to Pond 805P : CB805 TO HW802

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 103.48' @ 12.07 hrs
Flood Elev= 113.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	103.00'	**12.0" Round Culvert** L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 103.00' / 101.60' S= 0.0233 '/' Cc= 0.900 n= 0.009, Flow Area= 0.79 sf

Primary OutFlow Max=0.70 cfs @ 12.07 hrs HW=103.48' TW=102.16' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.70 cfs @ 1.87 fps)

Summary for Pond RD8P: RD8 TO CB107

Inflow Area = 0.053 ac,100.00% Impervious, Inflow Depth = 2.91" for 2 YR event
Inflow = 0.17 cfs @ 12.07 hrs, Volume= 0.013 af
Outflow = 0.17 cfs @ 12.07 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.0 min
Primary = 0.17 cfs @ 12.07 hrs, Volume= 0.013 af
Routed to Pond 107P : CB107 TO HW106

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 102.05' @ 12.07 hrs
Flood Elev= 107.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.80'	**8.0" Round Culvert** L= 28.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 101.80' / 101.50' S= 0.0107 '/' Cc= 0.900 n= 0.009, Flow Area= 0.35 sf

Primary OutFlow Max=0.17 cfs @ 12.07 hrs HW=102.05' TW=101.72' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.17 cfs @ 1.36 fps)

Summary for Pond RD9P: RD9 TO CB405

Inflow Area = 0.036 ac,100.00% Impervious, Inflow Depth = 2.91" for 2 YR event
Inflow = 0.11 cfs @ 12.07 hrs, Volume= 0.009 af
Outflow = 0.11 cfs @ 12.07 hrs, Volume= 0.009 af, Atten= 0%, Lag= 0.0 min
Primary = 0.11 cfs @ 12.07 hrs, Volume= 0.009 af
Routed to Pond 405P : CB405 TO HW400

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 102.51' @ 12.07 hrs
Flood Elev= 107.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	102.30'	**8.0" Round Culvert** L= 32.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 102.30' / 102.00' S= 0.0094 '/' Cc= 0.900 n= 0.009, Flow Area= 0.35 sf

Primary OutFlow Max=0.11 cfs @ 12.07 hrs HW=102.51' TW=102.11' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.11 cfs @ 1.23 fps)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: SUBCATCHMENT1 Runoff Area=116,725 sf 15.99% Impervious Runoff Depth=0.45"
Flow Length=928' Tc=34.5 min CN=47 Runoff=0.40 cfs 0.100 af

Subcatchment 11S: flow to reach 2R Runoff Area=17,367 sf 0.00% Impervious Runoff Depth=1.35"
Flow Length=80' Tc=8.0 min CN=63 Runoff=0.54 cfs 0.045 af

Subcatchment 12S: Flow to Lot H-2 Runoff Area=176,844 sf 9.99% Impervious Runoff Depth=2.58"
Flow Length=645' Tc=9.0 min CN=79 Runoff=11.08 cfs 0.873 af

Subcatchment 14S: Flow to Lot H-2 (REACH Runoff Area=76,548 sf 0.00% Impervious Runoff Depth=2.00"
Flow Length=416' Tc=9.0 min CN=72 Runoff=3.66 cfs 0.293 af

Subcatchment 15S: offsite flow Runoff Area=358,058 sf 1.70% Impervious Runoff Depth=0.01"
Flow Length=1,260' Tc=27.5 min CN=32 Runoff=0.02 cfs 0.008 af

Subcatchment 16S: offsite flow Runoff Area=2,052,474 sf 8.08% Impervious Runoff Depth=0.49"
Flow Length=1,412' Tc=34.3 min CN=48 Runoff=8.26 cfs 1.939 af

Subcatchment 30S: SUBCATCHMENT30 Runoff Area=48,198 sf 0.00% Impervious Runoff Depth=1.48"
Flow Length=154' Slope=0.0200 '/' Tc=23.5 min CN=65 Runoff=1.13 cfs 0.137 af

Subcatchment 40S: SUBCATCHMENT40 Runoff Area=152,210 sf 0.00% Impervious Runoff Depth=0.45"
Flow Length=452' Tc=14.5 min CN=47 Runoff=0.68 cfs 0.131 af

Subcatchment 50S: SUBCATCHMENT50 Runoff Area=125,909 sf 4.33% Impervious Runoff Depth=0.05"
Flow Length=987' Tc=24.8 min CN=35 Runoff=0.02 cfs 0.013 af

Subcatchment 100S: Flow to Detention Runoff Area=42,732 sf 0.00% Impervious Runoff Depth=1.85"
Tc=5.0 min CN=70 Runoff=2.15 cfs 0.151 af

Subcatchment 101AS: Flow to Detention Runoff Area=12,152 sf 1.03% Impervious Runoff Depth=2.76"
Tc=5.0 min CN=81 Runoff=0.93 cfs 0.064 af

Subcatchment 101os: North Side of Mast Runoff Area=17,404 sf 27.18% Impervious Runoff Depth=0.74"
Tc=5.0 min CN=53 Runoff=0.25 cfs 0.025 af

Subcatchment 102os: North Side of Mast Runoff Area=15,661 sf 51.62% Impervious Runoff Depth=1.77"
Tc=5.0 min CN=69 Runoff=0.75 cfs 0.053 af

Subcatchment 103os: Mast Road East to Runoff Area=12,002 sf 100.00% Impervious Runoff Depth=4.50"
Tc=5.0 min CN=98 Runoff=1.32 cfs 0.103 af

Subcatchment 107S: Flow to CB107 Runoff Area=7,160 sf 86.56% Impervious Runoff Depth=4.27"
Tc=5.0 min CN=96 Runoff=0.78 cfs 0.059 af

Subcatchment 108S: Flow to CB108 Runoff Area=20,254 sf 84.37% Impervious Runoff Depth=4.16"
Tc=5.0 min CN=95 Runoff=2.17 cfs 0.161 af

Subcatchment 148GS: SUBCATCHMENT Runoff Area=24,508 sf 16.32% Impervious Runoff Depth=0.32"
Flow Length=178' Tc=6.3 min CN=44 Runoff=0.07 cfs 0.015 af

Subcatchment 148RS: SUBCATCHMENT Runoff Area=4,316 sf 70.81% Impervious Runoff Depth=2.76"
Tc=5.0 min CN=81 Runoff=0.33 cfs 0.023 af

Subcatchment 200os: Mast Road East to Runoff Area=9,931 sf 100.00% Impervious Runoff Depth=4.50"
Tc=5.0 min CN=98 Runoff=1.09 cfs 0.086 af

Subcatchment 205S: Flow to CB205 Runoff Area=21,237 sf 94.10% Impervious Runoff Depth=4.39"
Tc=5.0 min CN=97 Runoff=2.32 cfs 0.178 af

Subcatchment 206S: Flow to CB206 Runoff Area=10,095 sf 95.84% Impervious Runoff Depth=4.39"
Tc=5.0 min CN=97 Runoff=1.10 cfs 0.085 af

Subcatchment 210S: Flow to CB210 Runoff Area=7,732 sf 75.04% Impervious Runoff Depth=3.73"
Tc=5.0 min CN=91 Runoff=0.77 cfs 0.055 af

Subcatchment 215S: Flow to DCB215 Runoff Area=28,399 sf 86.64% Impervious Runoff Depth=3.94"
Tc=5.0 min CN=93 Runoff=2.95 cfs 0.214 af

Subcatchment 220S: Flow to CB220 Runoff Area=15,024 sf 95.13% Impervious Runoff Depth=4.27"
Tc=5.0 min CN=96 Runoff=1.63 cfs 0.123 af

Subcatchment 300os: East Side of NH Runoff Area=2,933 sf 81.69% Impervious Runoff Depth=3.32"
Tc=5.0 min CN=87 Runoff=0.27 cfs 0.019 af

Subcatchment 303GS: SUBCATCHMENT Runoff Area=10,545 sf 75.15% Impervious Runoff Depth=2.94"
Tc=5.0 min CN=83 Runoff=0.86 cfs 0.059 af

Subcatchment 304RS: SUBCATCHMENT Runoff Area=5,196 sf 51.33% Impervious Runoff Depth=1.77"
Tc=5.0 min CN=69 Runoff=0.25 cfs 0.018 af

Subcatchment 305S: Flow to CB305 Runoff Area=7,928 sf 84.02% Impervious Runoff Depth=3.84"
Tc=5.0 min CN=92 Runoff=0.81 cfs 0.058 af

Subcatchment 310S: Flow to CB310 Runoff Area=145,473 sf 12.09% Impervious Runoff Depth=0.45"
Flow Length=469' Tc=13.1 min CN=47 Runoff=0.66 cfs 0.125 af

Subcatchment 315S: Flow to CB315 Runoff Area=116,325 sf 6.81% Impervious Runoff Depth=0.15"
Flow Length=537' Tc=9.9 min CN=39 Runoff=0.06 cfs 0.034 af

Subcatchment 316S: Flow to CB316 Runoff Area=3,776 sf 88.61% Impervious Runoff Depth=4.05"
Tc=5.0 min CN=94 Runoff=0.40 cfs 0.029 af

Subcatchment 320S: Flow to CB320 Runoff Area=3,127 sf 97.95% Impervious Runoff Depth=4.39"
Tc=5.0 min CN=97 Runoff=0.34 cfs 0.026 af

Subcatchment 320Sa: Porous Walk Runoff Area=404 sf 100.00% Impervious Runoff Depth=4.50"
Tc=5.0 min CN=98 Runoff=0.04 cfs 0.003 af

Subcatchment 321S: Flow to CB322 Runoff Area=1,903 sf 0.00% Impervious Runoff Depth=0.15"
Tc=5.0 min CN=39 Runoff=0.00 cfs 0.001 af

Subcatchment 321Sa: Porous Walk Runoff Area=456 sf 100.00% Impervious Runoff Depth=4.50"
Tc=5.0 min CN=98 Runoff=0.05 cfs 0.004 af

Subcatchment 322S: Flow to CB323 Runoff Area=4,253 sf 0.00% Impervious Runoff Depth=0.15"
Tc=5.0 min CN=39 Runoff=0.00 cfs 0.001 af

Subcatchment 323S: Flow to CB324 Runoff Area=1,844 sf 0.00% Impervious Runoff Depth=0.15"
Tc=5.0 min CN=39 Runoff=0.00 cfs 0.001 af

Subcatchment 323Sa: Porous Walk Runoff Area=498 sf 100.00% Impervious Runoff Depth=4.50"
Tc=5.0 min CN=98 Runoff=0.05 cfs 0.004 af

Subcatchment 324S: Flow to CB325 Runoff Area=2,213 sf 100.00% Impervious Runoff Depth=4.50"
Tc=5.0 min CN=98 Runoff=0.24 cfs 0.019 af

Subcatchment 325S: Flow to CB324 Runoff Area=1,665 sf 100.00% Impervious Runoff Depth=4.50"
Tc=5.0 min CN=98 Runoff=0.18 cfs 0.014 af

Subcatchment 326S: Flow to CB325 Runoff Area=34,308 sf 60.15% Impervious Runoff Depth=2.16"
Tc=5.0 min CN=74 Runoff=2.05 cfs 0.142 af

Subcatchment 326Sa: Porous Walk Runoff Area=1,787 sf 44.21% Impervious Runoff Depth=1.48"
Tc=5.0 min CN=65 Runoff=0.07 cfs 0.005 af

Subcatchment 326Sb: Porous Walk Runoff Area=57 sf 100.00% Impervious Runoff Depth=4.50"
Tc=5.0 min CN=98 Runoff=0.01 cfs 0.000 af

Subcatchment 326Sc: Porous Walk Runoff Area=53 sf 100.00% Impervious Runoff Depth=4.50"
Tc=5.0 min CN=98 Runoff=0.01 cfs 0.000 af

Subcatchment 330S: Flow to CB330 Runoff Area=3,294 sf 94.11% Impervious Runoff Depth=4.16"
Tc=5.0 min CN=95 Runoff=0.35 cfs 0.026 af

Subcatchment 330Sa: Porous Walk Runoff Area=450 sf 41.33% Impervious Runoff Depth=1.35"
Tc=5.0 min CN=63 Runoff=0.02 cfs 0.001 af

Subcatchment 330Sb: Porous Walk Runoff Area=218 sf 39.91% Impervious Runoff Depth=1.35"
Tc=5.0 min CN=63 Runoff=0.01 cfs 0.001 af

Subcatchment 331S: Flow to CB331 Runoff Area=10,020 sf 66.41% Impervious Runoff Depth=2.49"
Tc=5.0 min CN=78 Runoff=0.70 cfs 0.048 af

Subcatchment 331Sa: Porous Walk Runoff Area=1,084 sf 44.83% Impervious Runoff Depth=1.48"
Tc=5.0 min CN=65 Runoff=0.04 cfs 0.003 af

Subcatchment 332S: Flow to CB332 Runoff Area=1,679 sf 74.75% Impervious Runoff Depth=2.94"
Tc=5.0 min CN=83 Runoff=0.14 cfs 0.009 af

Subcatchment 332Sa: Porous Walk Runoff Area=1,526 sf 62.19% Impervious Runoff Depth=2.32"
Tc=5.0 min CN=76 Runoff=0.10 cfs 0.007 af

Subcatchment 333S: Flow to CB332 Runoff Area=2,063 sf 0.00% Impervious Runoff Depth=0.15"
Tc=5.0 min CN=39 Runoff=0.00 cfs 0.001 af

Subcatchment 333Sa: Porous Walk Runoff Area=1,005 sf 32.34% Impervious Runoff Depth=1.03"
Tc=5.0 min CN=58 Runoff=0.02 cfs 0.002 af

Subcatchment 335S: Flow to CB335 Runoff Area=4,263 sf 62.80% Impervious Runoff Depth=2.32"
Tc=5.0 min CN=76 Runoff=0.28 cfs 0.019 af

Subcatchment 340S: Flow to CB340 Runoff Area=2,616 sf 72.90% Impervious Runoff Depth=2.85"
Tc=5.0 min CN=82 Runoff=0.21 cfs 0.014 af

Subcatchment 350S: Flow to CB350 Runoff Area=3,138 sf 83.08% Impervious Runoff Depth=3.42"
Tc=5.0 min CN=88 Runoff=0.29 cfs 0.021 af

Subcatchment 351S: Flow to CB351 Runoff Area=2,600 sf 93.15% Impervious Runoff Depth=4.05"
Tc=5.0 min CN=94 Runoff=0.27 cfs 0.020 af

Subcatchment 360S: Flow to CB360 Runoff Area=3,507 sf 100.00% Impervious Runoff Depth=4.50"
Tc=5.0 min CN=98 Runoff=0.39 cfs 0.030 af

Subcatchment 365S: Flow to CB365 Runoff Area=3,724 sf 100.00% Impervious Runoff Depth=4.50"
Tc=5.0 min CN=98 Runoff=0.41 cfs 0.032 af

Subcatchment 400os: East Side of NH Runoff Area=13,932 sf 55.92% Impervious Runoff Depth=3.32"
Tc=5.0 min CN=87 Runoff=1.27 cfs 0.089 af

Subcatchment 402GS: SUBCATCHMENT Runoff Area=196,506 sf 11.43% Impervious Runoff Depth=0.25"
Flow Length=919' Tc=16.0 min CN=42 Runoff=0.27 cfs 0.093 af

Subcatchment 405S: Flow to CB405 Runoff Area=6,080 sf 83.22% Impervious Runoff Depth=4.16"
Tc=5.0 min CN=95 Runoff=0.65 cfs 0.048 af

Subcatchment 410S: Flow to DCB410 Runoff Area=16,744 sf 86.87% Impervious Runoff Depth=4.27"
Tc=5.0 min CN=96 Runoff=1.81 cfs 0.137 af

Subcatchment 415S: Flow to CB415 Runoff Area=5,205 sf 79.02% Impervious Runoff Depth=4.05"
Tc=5.0 min CN=94 Runoff=0.55 cfs 0.040 af

Subcatchment 416S: Flow to CB416 Runoff Area=7,343 sf 80.88% Impervious Runoff Depth=4.05"
Tc=5.0 min CN=94 Runoff=0.77 cfs 0.057 af

Subcatchment 419LS: SUBCATCHMENT Runoff Area=32,282 sf 58.86% Impervious Runoff Depth=2.16"
Tc=5.0 min CN=74 Runoff=1.93 cfs 0.133 af

Subcatchment 419RS: SUBCATCHMENT Runoff Area=27,019 sf 48.53% Impervious Runoff Depth=1.70"
Tc=5.0 min CN=68 Runoff=1.23 cfs 0.088 af

Subcatchment 500os: Drive to CB14 Runoff Area=1,717 sf 100.00% Impervious Runoff Depth=4.50"
Tc=5.0 min CN=98 Runoff=0.19 cfs 0.015 af

Subcatchment 505S: McDONALD SITE Runoff Area=40,980 sf 82.99% Impervious Runoff Depth=3.84"
Tc=0.0 min CN=92 Runoff=4.88 cfs 0.301 af

Subcatchment 507S: Flow to CB507 Runoff Area=3,338 sf 99.70% Impervious Runoff Depth=4.50"
Tc=5.0 min CN=98 Runoff=0.37 cfs 0.029 af

Subcatchment 508Aos: Flow to CBC4 Runoff Area=17,911 sf 52.06% Impervious Runoff Depth=1.77"
Tc=5.0 min CN=69 Runoff=0.86 cfs 0.061 af

Subcatchment 508Bos: West Side of NH Runoff Area=39,695 sf 30.84% Impervious Runoff Depth=0.97"
Tc=5.0 min CN=57 Runoff=0.88 cfs 0.074 af

Subcatchment 508S: Flow to CB508 Runoff Area=15,987 sf 41.84% Impervious Runoff Depth=1.41"
Tc=5.0 min CN=64 Runoff=0.59 cfs 0.043 af

Subcatchment 600os: Drive to CB15 Runoff Area=3,747 sf 100.00% Impervious Runoff Depth=4.50"
Tc=5.0 min CN=98 Runoff=0.41 cfs 0.032 af

Subcatchment 600S: POND 600 Runoff Area=58,507 sf 0.88% Impervious Runoff Depth=1.28"
Tc=5.0 min CN=62 Runoff=1.90 cfs 0.143 af

Subcatchment 700os: East Side of NH Runoff Area=24,418 sf 54.75% Impervious Runoff Depth=3.32"
Tc=5.0 min CN=87 Runoff=2.23 cfs 0.155 af

Subcatchment 710S: Flow to CB710 Runoff Area=4,542 sf 89.56% Impervious Runoff Depth=4.16"
Tc=5.0 min CN=95 Runoff=0.49 cfs 0.036 af

Subcatchment 711S: Flow to CB711 Runoff Area=4,357 sf 88.02% Impervious Runoff Depth=4.16"
Tc=5.0 min CN=95 Runoff=0.47 cfs 0.035 af

Subcatchment 715S: Flow to CB715 Runoff Area=3,324 sf 61.88% Impervious Runoff Depth=3.63"
Tc=5.0 min CN=90 Runoff=0.33 cfs 0.023 af

Subcatchment 720S: Flow to DCB720 Runoff Area=17,720 sf 87.10% Impervious Runoff Depth=4.16"
Tc=5.0 min CN=95 Runoff=1.89 cfs 0.141 af

Subcatchment 725S: Flows to CB725 Runoff Area=27,585 sf 84.41% Impervious Runoff Depth=4.16"
Tc=5.0 min CN=95 Runoff=2.95 cfs 0.220 af

Subcatchment 801S: HW801 TO HW800 Runoff Area=150,892 sf 30.25% Impervious Runoff Depth=1.62"
Tc=5.0 min CN=67 Runoff=6.55 cfs 0.469 af

Subcatchment 805S: FLOW TO CB805 Runoff Area=4,093 sf 91.91% Impervious Runoff Depth=4.27"
Tc=5.0 min CN=96 Runoff=0.44 cfs 0.033 af

Subcatchment 806S: FLOW TO CB806 Runoff Area=3,812 sf 92.10% Impervious Runoff Depth=3.94"
Tc=5.0 min CN=93 Runoff=0.40 cfs 0.029 af

Subcatchment 807S: FLOW TO CB807 Runoff Area=5,559 sf 76.47% Impervious Runoff Depth=3.03"
Tc=5.0 min CN=84 Runoff=0.47 cfs 0.032 af

Subcatchment 808S: FLOW TO CB808 Runoff Area=3,999 sf 0.00% Impervious Runoff Depth=0.15"
Tc=5.0 min CN=39 Runoff=0.00 cfs 0.001 af

Subcatchment857LS: SUBCATCHMENT Runoff Area=16,981 sf 62.84% Impervious Runoff Depth=2.32"
Tc=5.0 min CN=76 Runoff=1.10 cfs 0.075 af

Subcatchment857RS: SUBCATCHMENT Runoff Area=31,969 sf 20.90% Impervious Runoff Depth=0.64"
Tc=5.0 min CN=51 Runoff=0.35 cfs 0.039 af

Subcatchment900S: SUBCATCHMENT900S Runoff Area=78,149 sf 2.46% Impervious Runoff Depth=0.18"
Flow Length=171' Tc=12.4 min CN=40 Runoff=0.05 cfs 0.027 af

Subcatchment1100S: 1100S Runoff Area=6,092 sf 52.35% Impervious Runoff Depth=1.85"
Flow Length=100' Tc=2.6 min CN=70 Runoff=0.33 cfs 0.022 af

Subcatchment1295GS: SUBCATCHMENT Runoff Area=70,690 sf 33.46% Impervious Runoff Depth=0.91"
Flow Length=466' Tc=10.6 min CN=56 Runoff=1.16 cfs 0.123 af

Subcatchment1295LS: SUBCATCHMENT Runoff Area=8,078 sf 65.64% Impervious Runoff Depth=2.49"
Tc=5.0 min CN=78 Runoff=0.56 cfs 0.039 af

Subcatchment1295RS: SUBCATCHMENT Runoff Area=12,955 sf 51.46% Impervious Runoff Depth=1.77"
Tc=5.0 min CN=69 Runoff=0.62 cfs 0.044 af

Subcatchment1643LS: SUBCATCHMENT Runoff Area=1,696 sf 35.38% Impervious Runoff Depth=1.15"
Flow Length=125' Tc=5.2 min CN=60 Runoff=0.05 cfs 0.004 af

Subcatchment1643RS: SUBCATCHMENT Runoff Area=8,214 sf 54.11% Impervious Runoff Depth=1.92"
Flow Length=163' Tc=7.5 min CN=71 Runoff=0.40 cfs 0.030 af

Subcatchment1785LS: SUBCATCHMENT Runoff Area=9,115 sf 28.75% Impervious Runoff Depth=0.91"
Flow Length=231' Tc=8.1 min CN=56 Runoff=0.16 cfs 0.016 af

Subcatchment1785RS: SUBCATCHMENT Runoff Area=5,957 sf 51.59% Impervious Runoff Depth=1.77"
Flow Length=185' Tc=3.9 min CN=69 Runoff=0.30 cfs 0.020 af

Subcatchment1928LS: SUBCATCHMENT Runoff Area=8,001 sf 41.78% Impervious Runoff Depth=1.41"
Flow Length=173' Tc=6.7 min CN=64 Runoff=0.28 cfs 0.022 af

Subcatchment1928RS: SUBCATCHMENT Runoff Area=6,211 sf 51.15% Impervious Runoff Depth=1.77"
Flow Length=177' Tc=4.1 min CN=69 Runoff=0.31 cfs 0.021 af

Subcatchment1979RS: SUBCATCHMENT Runoff Area=2,259 sf 47.94% Impervious Runoff Depth=1.62"
Flow Length=93' Tc=4.4 min CN=67 Runoff=0.10 cfs 0.007 af

Subcatchment2173LS: SUBCATCHMENT Runoff Area=18,794 sf 40.92% Impervious Runoff Depth=1.35"
Flow Length=205' Tc=6.3 min CN=63 Runoff=0.62 cfs 0.048 af

Subcatchment2173RS: SUBCATCHMENT Runoff Area=8,515 sf 55.89% Impervious Runoff Depth=2.00"
Flow Length=126' Tc=6.5 min CN=72 Runoff=0.44 cfs 0.033 af

Subcatchment2373S: SUBCATCHMENT Runoff Area=15,629 sf 100.00% Impervious Runoff Depth=4.50"
Tc=5.0 min CN=98 Runoff=1.72 cfs 0.135 af

Subcatchment2440S: SUBCATCHMENT Runoff Area=1,462 sf 42.82% Impervious Runoff Depth=1.41"
Flow Length=61' Tc=3.4 min CN=64 Runoff=0.06 cfs 0.004 af

Subcatchment 2460LS: SUBCATCHMENT Runoff Area=26,630 sf 47.56% Impervious Runoff Depth=1.62"
Flow Length=378' Tc=10.9 min CN=67 Runoff=0.94 cfs 0.083 af

Subcatchment 2460RS: SUBCATCHMENT Runoff Area=13,923 sf 51.40% Impervious Runoff Depth=1.77"
Flow Length=261' Tc=3.4 min CN=69 Runoff=0.71 cfs 0.047 af

Subcatchment 2460S: SUBCATCHMENT Runoff Area=6,810 sf 74.21% Impervious Runoff Depth=2.94"
Flow Length=138' Tc=1.6 min CN=83 Runoff=0.63 cfs 0.038 af

Subcatchment 2474S: SUBCATCHMENT Runoff Area=4,253 sf 43.00% Impervious Runoff Depth=1.41"
Flow Length=76' Tc=3.7 min CN=64 Runoff=0.16 cfs 0.012 af

Subcatchment 2619S: SUBCATCHMENT Runoff Area=15,629 sf 100.00% Impervious Runoff Depth=4.50"
Tc=5.0 min CN=98 Runoff=1.72 cfs 0.135 af

Subcatchment 2723RS: SUBCATCHMENT Runoff Area=4,476 sf 61.44% Impervious Runoff Depth=2.24"
Flow Length=85' Tc=4.4 min CN=75 Runoff=0.28 cfs 0.019 af

Subcatchment 2730LS: SUBCATCHMENT Runoff Area=24,016 sf 49.95% Impervious Runoff Depth=1.70"
Flow Length=462' Tc=10.0 min CN=68 Runoff=0.92 cfs 0.078 af

Subcatchment 2730RS: SUBCATCHMENT Runoff Area=12,056 sf 52.21% Impervious Runoff Depth=1.85"
Flow Length=261' Tc=3.9 min CN=70 Runoff=0.63 cfs 0.043 af

Subcatchment 3018GS: SUBCATCHMENT Runoff Area=270,071 sf 12.90% Impervious Runoff Depth=0.36"
Flow Length=1,138' Tc=26.5 min CN=45 Runoff=0.70 cfs 0.188 af

Subcatchment 3020LS: SUBCATCHMENT Runoff Area=43,038 sf 52.99% Impervious Runoff Depth=1.85"
Flow Length=349' Tc=10.3 min CN=70 Runoff=1.80 cfs 0.152 af

Subcatchment 3020RS: SUBCATCHMENT Runoff Area=10,119 sf 60.96% Impervious Runoff Depth=2.49"
Flow Length=204' Tc=6.3 min CN=78 Runoff=0.67 cfs 0.048 af

Subcatchment 3200S: Flow to CB3200 Runoff Area=3,537 sf 0.00% Impervious Runoff Depth=0.15"
Tc=5.0 min CN=39 Runoff=0.00 cfs 0.001 af

Subcatchment RD1Sa: Roof drain 1a Runoff Area=5,231 sf 100.00% Impervious Runoff Depth=4.50"
Tc=5.0 min CN=98 Runoff=0.58 cfs 0.045 af

Subcatchment RD1Sb: Roof Drain 1b Runoff Area=3,703 sf 100.00% Impervious Runoff Depth=4.50"
Tc=5.0 min CN=98 Runoff=0.41 cfs 0.032 af

Subcatchment RD2Sa: Roof drain 2a Runoff Area=4,238 sf 100.00% Impervious Runoff Depth=4.50"
Tc=5.0 min CN=98 Runoff=0.47 cfs 0.037 af

Subcatchment RD2Sb: Roof drain 2b Runoff Area=4,138 sf 100.00% Impervious Runoff Depth=4.50"
Tc=5.0 min CN=98 Runoff=0.46 cfs 0.036 af

Subcatchment RD3S: ROOF DRAIN Runoff Area=18,273 sf 100.00% Impervious Runoff Depth=4.50"
Tc=5.0 min CN=98 Runoff=2.01 cfs 0.157 af

Subcatchment RD4S: ROOF DRAIN Runoff Area=504 sf 100.00% Impervious Runoff Depth=4.50"
Tc=5.0 min CN=98 Runoff=0.06 cfs 0.004 af

Subcatchment RD5S: ROOF DRAIN Runoff Area=18,667 sf 100.00% Impervious Runoff Depth=4.50"
Tc=5.0 min CN=98 Runoff=2.06 cfs 0.161 af

Subcatchment RD6S: ROOF DRAIN Runoff Area=9,690 sf 100.00% Impervious Runoff Depth=4.50"
Tc=5.0 min CN=98 Runoff=1.07 cfs 0.083 af

Subcatchment RD8S: Roof Drain Runoff Area=2,295 sf 100.00% Impervious Runoff Depth=4.50"
Tc=5.0 min CN=98 Runoff=0.25 cfs 0.020 af

Subcatchment RD9S: Roof Drain Runoff Area=1,575 sf 100.00% Impervious Runoff Depth=4.50"
Tc=5.0 min CN=98 Runoff=0.17 cfs 0.014 af

Reach 1AR: STREAM Avg. Flow Depth=0.64' Max Vel=3.22 fps Inflow=11.73 cfs 3.550 af
n=0.050 L=370.0' S=0.0314 '/' Capacity=108.07 cfs Outflow=11.45 cfs 3.550 af

Reach 1BR: STREAM Avg. Flow Depth=0.31' Max Vel=2.39 fps Inflow=3.66 cfs 0.293 af
n=0.050 L=310.0' S=0.0384 '/' Capacity=119.58 cfs Outflow=3.55 cfs 0.293 af

Reach 1R: STREAM Avg. Flow Depth=0.86' Max Vel=2.76 fps Inflow=14.99 cfs 3.842 af
n=0.050 L=380.0' S=0.0166 '/' Capacity=78.59 cfs Outflow=14.51 cfs 3.842 af

Reach 2R: REACH 2 Avg. Flow Depth=0.12' Max Vel=0.96 fps Inflow=0.62 cfs 1.009 af
n=0.050 L=560.0' S=0.0193 '/' Capacity=42.77 cfs Outflow=0.49 cfs 1.006 af

Reach 3R: REACH 3 Avg. Flow Depth=0.17' Max Vel=1.22 fps Inflow=1.13 cfs 0.137 af
n=0.050 L=340.0' S=0.0200 '/' Capacity=24.05 cfs Outflow=1.10 cfs 0.137 af

Reach 4R: REACH 4 Avg. Flow Depth=0.09' Max Vel=0.58 fps Inflow=0.68 cfs 0.131 af
n=0.050 L=255.0' S=0.0149 '/' Capacity=468.29 cfs Outflow=0.63 cfs 0.131 af

Reach 5R: REACH 5 Avg. Flow Depth=0.02' Max Vel=0.23 fps Inflow=0.03 cfs 0.020 af
n=0.050 L=540.0' S=0.0231 '/' Capacity=409.57 cfs Outflow=0.03 cfs 0.020 af

Reach 6R: REACH 6 Avg. Flow Depth=0.11' Max Vel=0.57 fps Inflow=0.63 cfs 0.151 af
n=0.050 L=278.0' S=0.0126 '/' Capacity=131.20 cfs Outflow=0.57 cfs 0.151 af

Reach 7R: STREAM Avg. Flow Depth=0.21' Max Vel=1.64 fps Inflow=1.52 cfs 0.288 af
n=0.050 L=194.0' S=0.0284 '/' Capacity=92.22 cfs Outflow=1.52 cfs 0.288 af

Reach 8R: STREAM Avg. Flow Depth=0.24' Max Vel=1.68 fps Inflow=1.90 cfs 1.294 af
n=0.050 L=512.0' S=0.0258 '/' Capacity=98.00 cfs Outflow=1.87 cfs 1.292 af

Reach 9R: STREAM Avg. Flow Depth=0.84' Max Vel=2.92 fps Inflow=15.06 cfs 5.134 af
n=0.050 L=100.0' S=0.0190 '/' Capacity=84.13 cfs Outflow=15.04 cfs 5.133 af

Reach 16R: Existing Culvert to West Avg. Flow Depth=0.47' Max Vel=5.30 fps Inflow=2.23 cfs 0.155 af
15.0" Round Pipe n=0.012 L=45.0' S=0.0113 '/' Capacity=7.45 cfs Outflow=2.23 cfs 0.155 af

Reach 41R: REACH Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.050 L=147.0' S=0.0184 '/' Capacity=23.05 cfs Outflow=0.00 cfs 0.000 af

Reach 326R: Reach 1BR Avg. Flow Depth=0.28' Max Vel=1.63 fps Inflow=2.66 cfs 2.678 af
n=0.050 L=358.0' S=0.0288 '/' Capacity=26.39 cfs Outflow=2.66 cfs 2.678 af

Pond 10P: CULVERT UNDER NH ROUTE 108 Peak Elev=69.48' Inflow=15.71 cfs 7.073 af
48.0" Round Culvert n=0.013 L=63.0' S=0.0063 '/' Outflow=15.71 cfs 7.073 af

Pond 11P: CB11 to CB12 Peak Elev=105.90' Inflow=1.32 cfs 0.103 af
12.0" Round Culvert n=0.010 L=19.0' S=0.0132 '/' Outflow=1.32 cfs 0.103 af

Pond 12R: From CB12 out Peak Elev=105.69' Inflow=2.42 cfs 0.189 af
12.0" Round Culvert n=0.010 L=20.0' S=0.0050 '/' Outflow=2.42 cfs 0.189 af

Pond 13P: CB13 to CB14 Peak Elev=107.24' Inflow=1.27 cfs 0.089 af
12.0" Round Culvert n=0.013 L=98.0' S=0.0101 '/' Outflow=1.27 cfs 0.089 af

Pond 14P: CB14 to CB15 Peak Elev=106.25' Inflow=1.46 cfs 0.103 af
12.0" Round Culvert n=0.013 L=25.0' S=0.0484 '/' Outflow=1.46 cfs 0.103 af

Pond 15P: CB15 out Peak Elev=105.21' Inflow=1.87 cfs 0.136 af
12.0" Round Culvert n=0.013 L=10.0' S=0.0100 '/' Outflow=1.87 cfs 0.136 af

Pond 100AP: Outlet Structure 105 to Peak Elev=101.97' Storage=23,046 cf Inflow=9.20 cfs 2.716 af
Outflow=2.66 cfs 2.678 af

Pond 100P: Outlet Structure 110 to HW109 Peak Elev=103.82' Storage=43,646 cf Inflow=27.08 cfs 2.116 af
Outflow=2.14 cfs 2.116 af

Pond 107P: CB107 TO HW106 Peak Elev=101.99' Inflow=3.19 cfs 0.240 af
15.0" Round Culvert n=0.009 L=20.0' S=0.0050 '/' Outflow=3.19 cfs 0.240 af

Pond 108P: CB108 TO CB107 Peak Elev=102.46' Inflow=2.17 cfs 0.161 af
15.0" Round Culvert n=0.009 L=106.0' S=0.0052 '/' Outflow=2.17 cfs 0.161 af

Pond 148GP: CB1+48G TO CB1+48R Peak Elev=126.59' Inflow=0.07 cfs 0.015 af
15.0" Round Culvert n=0.011 L=20.0' S=0.0050 '/' Outflow=0.07 cfs 0.015 af

Pond 148RP: CB1+48R TO CB3+04R Peak Elev=126.55' Inflow=0.33 cfs 0.038 af
15.0" Round Culvert n=0.011 L=153.0' S=0.0101 '/' Outflow=0.33 cfs 0.038 af

Pond 205P: CB205 TO HW200 Peak Elev=103.96' Inflow=8.77 cfs 0.655 af
24.0" Round Culvert n=0.013 L=54.0' S=0.0056 '/' Outflow=8.77 cfs 0.655 af

Pond 206P: CB206 TO CB205 Peak Elev=104.31' Inflow=1.10 cfs 0.085 af
15.0" Round Culvert n=0.013 L=50.0' S=0.0110 '/' Outflow=1.10 cfs 0.085 af

Pond 210P: CB210 TO CB205 Peak Elev=104.62' Inflow=5.34 cfs 0.392 af
18.0" Round Culvert n=0.013 L=65.0' S=0.0054 '/' Outflow=5.34 cfs 0.392 af

Pond 215P: DCB215 TO CB210 Peak Elev=105.12' Inflow=4.57 cfs 0.337 af
18.0" Round Culvert n=0.013 L=75.0' S=0.0053 '/' Outflow=4.57 cfs 0.337 af

Pond 220P: CB220 TO DCB215 Peak Elev=105.39' Inflow=1.63 cfs 0.123 af
15.0" Round Culvert n=0.013 L=60.0' S=0.0083 '/' Outflow=1.63 cfs 0.123 af

Pond 303GP: CB3+03G TO CB3+04R Peak Elev=126.60' Inflow=0.86 cfs 0.059 af
15.0" Round Culvert n=0.011 L=60.0' S=0.0233 '/' Outflow=0.86 cfs 0.059 af

Pond 304RP: CB3+04R TO CB4+01G Peak Elev=125.26' Inflow=1.44 cfs 0.115 af
15.0" Round Culvert n=0.011 L=94.0' S=0.0197 '/' Outflow=1.44 cfs 0.115 af

Pond 305P: CB305 TO HW300 Peak Elev=104.86' Inflow=8.99 cfs 0.820 af
24.0" Round Culvert n=0.009 L=16.0' S=0.0062 '/' Outflow=8.99 cfs 0.820 af

Pond 310P: CB310 TO CB305 Peak Elev=105.25' Inflow=8.18 cfs 0.762 af
24.0" Round Culvert n=0.013 L=28.0' S=0.0054 '/' Outflow=8.18 cfs 0.762 af

Pond 315P: CB315 TO CB310 Peak Elev=107.22' Inflow=8.15 cfs 0.637 af
18.0" Round Culvert n=0.009 L=185.0' S=0.0054 '/' Outflow=8.15 cfs 0.637 af

Pond 316P: CB316 TO CB315 Peak Elev=107.23' Inflow=0.40 cfs 0.029 af
15.0" Round Culvert n=0.009 L=24.0' S=0.0063 '/' Outflow=0.40 cfs 0.029 af

Pond 320P: CB320 TO CB315 Peak Elev=109.53' Inflow=7.76 cfs 0.574 af
18.0" Round Culvert n=0.009 L=213.0' S=0.0110 '/' Outflow=7.76 cfs 0.574 af

Pond 320Pa: Porous Walk Peak Elev=112.03' Storage=7 cf Inflow=0.04 cfs 0.003 af
Outflow=0.03 cfs 0.003 af

Pond 321P: CB321 TO CB320 Peak Elev=113.50' Inflow=3.92 cfs 0.290 af
15.0" Round Culvert n=0.013 L=114.0' S=0.0243 '/' Outflow=3.92 cfs 0.290 af

Pond 321Pa: Porous Walk Peak Elev=116.79' Storage=7 cf Inflow=0.05 cfs 0.004 af
Outflow=0.03 cfs 0.004 af

Pond 322P: CB323 TO CB322 Peak Elev=119.04' Inflow=3.46 cfs 0.254 af
15.0" Round Culvert n=0.013 L=70.0' S=0.0800 '/' Outflow=3.46 cfs 0.254 af

Pond 323P: CB324 to CB323 Peak Elev=122.23' Inflow=3.46 cfs 0.253 af
15.0" Round Culvert n=0.013 L=37.0' S=0.0100 '/' Outflow=3.46 cfs 0.253 af

Pond 323Pa: Porous Walk Peak Elev=129.39' Storage=7 cf Inflow=0.05 cfs 0.004 af
Outflow=0.03 cfs 0.004 af

Pond 324P: CB325 to CB324 Peak Elev=122.79' Inflow=3.05 cfs 0.220 af
15.0" Round Culvert n=0.013 L=57.0' S=0.0100 '/' Outflow=3.05 cfs 0.220 af

Pond 325P: CB326 TO CB325 Peak Elev=123.60' Inflow=2.81 cfs 0.201 af
15.0" Round Culvert n=0.013 L=67.0' S=0.0115 '/' Outflow=2.81 cfs 0.201 af

Pond 326P: CB327 TO CB326 Peak Elev=124.75' Inflow=2.63 cfs 0.187 af
15.0" Round Culvert n=0.013 L=120.0' S=0.0100 '/' Outflow=2.63 cfs 0.187 af

Pond 326Pa: Porous Walk Peak Elev=128.00' Storage=4 cf Inflow=0.07 cfs 0.005 af
Outflow=0.05 cfs 0.005 af

Pond 326Pb: Porous Walk Peak Elev=129.19' Storage=1 cf Inflow=0.01 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Pond 326Pc: Porous Walk Peak Elev=129.79' Storage=1 cf Inflow=0.01 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Pond 330P: CB330 T0 CB320 Peak Elev=110.10' Inflow=3.50 cfs 0.257 af
15.0" Round Culvert n=0.009 L=35.0' S=0.0286 '/' Outflow=3.50 cfs 0.257 af

Pond 330Pa: Porous Walk Peak Elev=114.25' Storage=0 cf Inflow=0.02 cfs 0.001 af
Outflow=0.02 cfs 0.001 af

Pond 330Pb: Porous Walk Peak Elev=112.69' Storage=0 cf Inflow=0.01 cfs 0.001 af
Outflow=0.01 cfs 0.001 af

Pond 331P: CB331 TO CB330 Peak Elev=110.68' Inflow=1.30 cfs 0.094 af
15.0" Round Culvert n=0.013 L=12.0' S=0.0100 '/' Outflow=1.30 cfs 0.094 af

Pond 331Pa: Porous Walk Peak Elev=116.29' Storage=2 cf Inflow=0.04 cfs 0.003 af
Outflow=0.03 cfs 0.003 af

Pond 332P: CB332 to CB331 Peak Elev=111.14' Inflow=0.14 cfs 0.009 af
15.0" Round Culvert n=0.013 L=50.0' S=0.0166 '/' Outflow=0.14 cfs 0.009 af

Pond 332Pa: Porous Walk Peak Elev=116.46' Storage=11 cf Inflow=0.10 cfs 0.007 af
Outflow=0.07 cfs 0.007 af

Pond 333P: CB333 TO CB331 Peak Elev=113.08' Inflow=0.47 cfs 0.037 af
15.0" Round Culvert n=0.013 L=135.0' S=0.0193 '/' Outflow=0.47 cfs 0.037 af

Pond 333Pa: Porous Walk Peak Elev=128.66' Storage=0 cf Inflow=0.02 cfs 0.002 af
Outflow=0.02 cfs 0.002 af

Pond 335P: CB335 TO CB330 Peak Elev=110.56' Inflow=1.85 cfs 0.136 af
15.0" Round Culvert n=0.009 L=29.0' S=0.0345 '/' Outflow=1.85 cfs 0.136 af

Pond 340P: CB340TO CB335 Peak Elev=112.10' Inflow=1.57 cfs 0.117 af
15.0" Round Culvert n=0.009 L=31.0' S=0.0355 '/' Outflow=1.57 cfs 0.117 af

Pond 345P: DMH345 TO CB340 Peak Elev=114.24' Inflow=1.36 cfs 0.103 af
15.0" Round Culvert n=0.009 L=59.0' S=0.0356 '/' Outflow=1.36 cfs 0.103 af

Pond 350P: CB350 TO DMH345 Peak Elev=119.24' Inflow=1.36 cfs 0.103 af
15.0" Round Culvert n=0.009 L=64.0' S=0.0344 '/' Outflow=1.36 cfs 0.103 af

Pond 351P: CB351 TO CB350 Peak Elev=120.77' Inflow=0.27 cfs 0.020 af
15.0" Round Culvert n=0.009 L=24.0' S=0.0063 '/' Outflow=0.27 cfs 0.020 af

Pond 355P: DMH355 TO CB350 Peak Elev=124.28' Inflow=0.80 cfs 0.062 af
15.0" Round Culvert n=0.009 L=84.0' S=0.0351 '/' Outflow=0.80 cfs 0.062 af

Pond 360P: CB360 TO DMH355 Peak Elev=131.78' Inflow=0.80 cfs 0.062 af
15.0" Round Culvert n=0.009 L=95.0' S=0.0347 '/' Outflow=0.80 cfs 0.062 af

Pond 365P: CB365 TO CB360 Peak Elev=132.98' Inflow=0.41 cfs 0.032 af
15.0" Round Culvert n=0.009 L=36.0' S=0.0056 '/' Outflow=0.41 cfs 0.032 af

Pond 402GP: CB4+02G TO CB4+19R Peak Elev=123.57' Inflow=1.44 cfs 0.208 af
15.0" Round Culvert n=0.011 L=26.0' S=0.0058 '/' Outflow=1.44 cfs 0.208 af

Pond 405P: CB405 TO HW400 Peak Elev=102.37' Inflow=3.96 cfs 0.296 af
18.0" Round Culvert n=0.013 L=33.0' S=0.0061 '/' Outflow=3.96 cfs 0.296 af

Pond 410P: DCB410 TO CB405 Peak Elev=103.18' Inflow=3.13 cfs 0.234 af
15.0" Round Culvert n=0.013 L=119.0' S=0.0050 '/' Outflow=3.13 cfs 0.234 af

Pond 415P: CB415 TO CB410 Peak Elev=103.35' Inflow=1.32 cfs 0.097 af
15.0" Round Culvert n=0.013 L=50.0' S=0.0054 '/' Outflow=1.32 cfs 0.097 af

Pond 416P: CB416 TO CB415 Peak Elev=103.48' Inflow=0.77 cfs 0.057 af
15.0" Round Culvert n=0.013 L=50.0' S=0.0052 '/' Outflow=0.77 cfs 0.057 af

Pond 419LP: CB4+19L TO DMH1001+25 Peak Elev=118.36' Inflow=7.95 cfs 0.749 af
24.0" Round Culvert n=0.011 L=114.0' S=0.0202 '/' Outflow=7.95 cfs 0.749 af

Pond 419RP: CB4+19R TO CB4+19L Peak Elev=123.41' Inflow=2.68 cfs 0.296 af
15.0" Round Culvert n=0.011 L=22.0' S=0.0068 '/' Outflow=2.68 cfs 0.296 af

Pond 505P: dmh505 TO HW500 Peak Elev=104.74' Inflow=3.68 cfs 0.284 af
18.0" Round Culvert n=0.013 L=12.0' S=0.0083 '/' Outflow=3.68 cfs 0.284 af

Pond 507P: CB507 TO CB505 Peak Elev=105.76' Inflow=3.68 cfs 0.284 af
Primary=3.68 cfs 0.284 af Secondary=0.00 cfs 0.000 af Outflow=3.68 cfs 0.284 af

Pond 508P: CB508 TO CB507 Peak Elev=107.99' Inflow=3.32 cfs 0.255 af
18.0" Round Culvert n=0.009 L=77.0' S=0.0286 '/' Outflow=3.32 cfs 0.255 af

Pond 509P: CB509 to CB508 Peak Elev=109.26' Inflow=3.32 cfs 0.255 af
18.0" Round Culvert n=0.009 L=34.0' S=0.0382 '/' Outflow=3.32 cfs 0.255 af

Pond 600P: DETENTION BASIN OS605 TO Peak Elev=99.30' Storage=66,222 cf Inflow=12.92 cfs 1.564 af
Outflow=0.47 cfs 0.964 af

Pond 710P: CB710 TO HW700 Peak Elev=101.09' Inflow=6.12 cfs 0.455 af
18.0" Round Culvert n=0.009 L=109.0' S=0.0055 '/' Outflow=6.12 cfs 0.455 af

Pond 711P: CB711 TO CB710 Peak Elev=103.52' Inflow=0.47 cfs 0.035 af
15.0" Round Culvert n=0.009 L=52.0' S=0.0135 '/' Outflow=0.47 cfs 0.035 af

Pond 715P: CB715 TO CB710 Peak Elev=101.60' Inflow=5.17 cfs 0.384 af
18.0" Round Culvert n=0.009 L=65.0' S=0.0054 '/' Outflow=5.17 cfs 0.384 af

Pond 720P: DCB720 TO CB715 Peak Elev=102.13' Inflow=4.84 cfs 0.361 af
18.0" Round Culvert n=0.009 L=53.0' S=0.0066 '/' Outflow=4.84 cfs 0.361 af

Pond 725P: CB725 TO DCB720 Peak Elev=102.52' Inflow=2.95 cfs 0.220 af
15.0" Round Culvert n=0.009 L=75.0' S=0.0060 '/' Outflow=2.95 cfs 0.220 af

Pond 801P: HW801 TO HW800 Peak Elev=101.98' Storage=7,045 cf Inflow=13.02 cfs 0.971 af
15.0" Round Culvert n=0.013 L=65.0' S=0.0215 '/' Outflow=5.77 cfs 0.966 af

Pond 805P: CB805 TO HW802 Peak Elev=102.53' Inflow=6.50 cfs 0.502 af
18.0" Round Culvert n=0.009 L=68.0' S=0.0051 '/' Outflow=6.50 cfs 0.502 af

Pond 806P: CB806 TO CB805 Peak Elev=104.05' Inflow=4.99 cfs 0.385 af
18.0" Round Culvert n=0.009 L=100.0' S=0.0175 '/' Outflow=4.99 cfs 0.385 af

Pond 807P: CB807 TO CB806 Peak Elev=106.05' Inflow=2.54 cfs 0.195 af
18.0" Round Culvert n=0.009 L=100.0' S=0.0215 '/' Outflow=2.54 cfs 0.195 af

Pond 808P: CB808 TO CB807 Peak Elev=106.90' Inflow=2.01 cfs 0.159 af
15.0" Round Culvert n=0.009 L=128.0' S=0.0051 '/' Outflow=2.01 cfs 0.159 af

Pond 857LP: CB8+57L TO CB4+19L Peak Elev=133.80' Inflow=3.41 cfs 0.320 af
15.0" Round Culvert n=0.011 L=439.0' S=0.0237 '/' Outflow=3.41 cfs 0.320 af

Pond 857RP: CB8+57R TO CB8+57L Peak Elev=133.81' Inflow=0.35 cfs 0.039 af
15.0" Round Culvert n=0.011 L=22.0' S=0.0068 '/' Outflow=0.35 cfs 0.039 af

Pond 900P: POND 900 Peak Elev=99.59' Storage=50,639 cf Inflow=15.10 cfs 1.712 af
Discarded=0.63 cfs 1.500 af Primary=0.00 cfs 0.000 af Outflow=0.63 cfs 1.500 af

Pond 1000P: Sediment Forebay Peak Elev=111.53' Storage=44 cf Inflow=0.40 cfs 0.100 af
Outflow=0.39 cfs 0.100 af

Pond 1100P: Subsurface Detention SC-740 Peak Elev=119.65' Storage=3,857 cf Inflow=2.84 cfs 0.222 af
Discarded=0.13 cfs 0.188 af Primary=0.31 cfs 0.034 af Outflow=0.44 cfs 0.222 af

Pond 1200P: Subsurface Detention SC-740 Peak Elev=112.16' Storage=3,789 cf Inflow=2.06 cfs 0.183 af
Discarded=0.13 cfs 0.179 af Primary=0.05 cfs 0.005 af Outflow=0.18 cfs 0.183 af

Pond 1295GP: CB12+95G TO CB12+95R Peak Elev=137.63' Inflow=1.16 cfs 0.123 af
15.0" Round Culvert n=0.011 L=11.0' S=0.0091 '/' Outflow=1.16 cfs 0.123 af

Pond 1295LP: CB12+95L TO CB8+57L Peak Elev=137.21' Inflow=2.04 cfs 0.206 af
15.0" Round Culvert n=0.011 L=438.0' S=0.0083 '/' Outflow=2.04 cfs 0.206 af

Pond 1295RP: CB12+95R CB12+95L Peak Elev=137.48' Inflow=1.59 cfs 0.167 af
15.0" Round Culvert n=0.011 L=22.0' S=0.0091 '/' Outflow=1.59 cfs 0.167 af

Pond 1643LP: CB16+43L TO CB16+43R Peak Elev=137.77' Inflow=0.05 cfs 0.004 af
12.0" Round Culvert n=0.011 L=22.0' S=0.0068 '/' Outflow=0.05 cfs 0.004 af

Pond 1643RP: CB16+43R TO CB17+85R Peak Elev=136.47' Inflow=0.44 cfs 0.034 af
12.0" Round Culvert n=0.011 L=143.0' S=0.0346 '/' Outflow=0.44 cfs 0.034 af

Pond 1785LP: CB17+85L TO CB17+85R Peak Elev=131.52' Inflow=0.16 cfs 0.016 af
12.0" Round Culvert n=0.011 L=22.0' S=0.0068 '/' Outflow=0.16 cfs 0.016 af

Pond 1785RP: CB17+85R TO DMH18+69 Peak Elev=130.54' Inflow=0.85 cfs 0.070 af
12.0" Round Culvert n=0.011 L=86.0' S=0.0337 '/' Outflow=0.85 cfs 0.070 af

Pond 1869P: DMH18+69 TO CB19+28L Peak Elev=127.47' Inflow=0.85 cfs 0.070 af
12.0" Round Culvert n=0.011 L=55.0' S=0.0345 '/' Outflow=0.85 cfs 0.070 af

Pond 1928LP: CB19+28L TO CB19+79R Peak Elev=123.98' Inflow=1.42 cfs 0.113 af
12.0" Round Culvert n=0.011 L=55.0' S=0.0282 '/' Outflow=1.42 cfs 0.113 af

Pond 1928RP: CB19+28R TO CB19+28L Peak Elev=125.71' Inflow=0.31 cfs 0.021 af
12.0" Round Culvert n=0.011 L=22.0' S=0.0068 '/' Outflow=0.31 cfs 0.021 af

Pond 1979RP: CB19+79 TO CB21+73R Peak Elev=122.26' Inflow=1.51 cfs 0.120 af
12.0" Round Culvert n=0.011 L=190.0' S=0.0191 '/' Outflow=1.51 cfs 0.120 af

Pond 2168P: DMH 21+68R to DMH 22+41R Peak Elev=106.09' Inflow=0.39 cfs 0.100 af
12.0" Round Culvert n=0.012 L=76.0' S=0.0150 '/' Outflow=0.39 cfs 0.100 af

Pond 2173LP: CB21+73L TO CB21+73R Peak Elev=119.66' Inflow=0.62 cfs 0.048 af
12.0" Round Culvert n=0.011 L=22.0' S=0.0114 '/' Outflow=0.62 cfs 0.048 af

Pond 2173RP: CB21+73R TO DMH21+95R Peak Elev=119.66' Inflow=2.57 cfs 0.201 af
18.0" Round Culvert n=0.011 L=30.0' S=0.0357 '/' Outflow=2.57 cfs 0.201 af

Pond 2182P: DCB 21+82R TO DMH 21+97R Peak Elev=119.65' Inflow=0.33 cfs 0.022 af
12.0" Round Culvert n=0.011 L=10.0' S=0.0100 '/' Outflow=0.33 cfs 0.021 af

Pond 2195P: DMH21+95R TO Subsurface Detention Peak Elev=119.65' Inflow=2.57 cfs 0.201 af
24.0" Round Culvert n=0.011 L=8.0' S=0.0000 '/' Outflow=2.57 cfs 0.201 af

Pond 2197P: DMH 21+97R TO Subsurface Detention Peak Elev=119.65' Inflow=0.33 cfs 0.021 af
12.0" Round Culvert n=0.011 L=10.0' S=0.0000 '/' Outflow=0.33 cfs 0.021 af

Pond 2210P: DMH 22+10R to DMH22+20R Peak Elev=117.09' Inflow=0.31 cfs 0.034 af
12.0" Round Culvert n=0.011 L=5.0' S=0.0200 '/' Outflow=0.31 cfs 0.034 af

Pond 2220P: DMH22+20R TO DMH22+41R Peak Elev=108.87' Inflow=0.31 cfs 0.034 af
12.0" Round Culvert n=0.011 L=53.0' S=0.0747 '/' Outflow=0.31 cfs 0.034 af

Pond 2241: DMH 22+41R to DMH24+86R Peak Elev=105.25' Inflow=1.72 cfs 0.269 af
12.0" Round Culvert n=0.012 L=188.0' S=0.0150 '/' Outflow=1.72 cfs 0.269 af

Pond 2286P: DMH 22+86R to DMH24+78R Peak Elev=102.33' Inflow=1.72 cfs 0.269 af
12.0" Round Culvert n=0.012 L=54.0' S=0.0150 '/' Outflow=1.72 cfs 0.269 af

Pond 2440P: TD24+40R TO CB24+60R Peak Elev=112.16' Inflow=0.06 cfs 0.004 af
12.0" Round Culvert n=0.011 L=62.0' S=0.0323 '/' Outflow=0.06 cfs 0.004 af

Pond 2460LP: CB24+60L TO CB24+60R Peak Elev=113.97' Inflow=0.94 cfs 0.083 af
12.0" Round Culvert n=0.011 L=22.0' S=0.0100 '/' Outflow=0.94 cfs 0.083 af

Pond 2460P: CB24+60R TO DMH24+85R Peak Elev=112.16' Inflow=0.68 cfs 0.042 af
12.0" Round Culvert n=0.011 L=28.0' S=0.0107 '/' Outflow=0.68 cfs 0.042 af

Pond 2460RP: CB24+60R TO DMH24+86R Peak Elev=113.71' Inflow=1.40 cfs 0.130 af
12.0" Round Culvert n=0.011 L=58.0' S=0.0617 '/' Outflow=1.40 cfs 0.130 af

Pond 2468P: DMH24+86R TO Subsurface Detention Peak Elev=112.16' Inflow=1.40 cfs 0.130 af
24.0" Round Culvert n=0.011 L=8.0' S=0.0000 '/' Outflow=1.40 cfs 0.130 af

Pond 2474P: DMH24+74R TO DMH24+85R Peak Elev=112.16' Inflow=0.16 cfs 0.012 af
12.0" Round Culvert n=0.011 L=12.0' S=0.0333 '/' Outflow=0.16 cfs 0.011 af

Pond 2478P: DMH24+78R to HW24+89R Peak Elev=101.47' Inflow=1.72 cfs 0.273 af
12.0" Round Culvert n=0.012 L=14.0' S=0.0150 '/' Outflow=1.72 cfs 0.273 af

Pond 2485P: DMH24+85R TO Subsurface Detention Peak Elev=112.16' Inflow=0.82 cfs 0.054 af
24.0" Round Culvert n=0.011 L=6.0' S=0.0000 '/' Outflow=0.82 cfs 0.054 af

Pond 2495P: DMH24+95R TO DMH25+00 Peak Elev=109.51' Inflow=0.05 cfs 0.005 af
12.0" Round Culvert n=0.011 L=10.0' S=0.0200 '/' Outflow=0.05 cfs 0.005 af

Pond 2505P: DMH24+82R to DMH24+78R Peak Elev=103.71' Inflow=0.05 cfs 0.005 af
12.0" Round Culvert n=0.011 L=43.0' S=0.0649 '/' Outflow=0.05 cfs 0.005 af

Pond 2625RP: DMH26+25R TO HW26+25 Peak Elev=102.08' Inflow=3.33 cfs 0.274 af
12.0" Round Culvert n=0.011 L=15.0' S=0.0200 '/' Outflow=3.33 cfs 0.274 af

Pond 2723P: DMH27+23R TO DMH26+25R Peak Elev=103.09' Inflow=1.65 cfs 0.140 af
12.0" Round Culvert n=0.011 L=93.0' S=0.0161 '/' Outflow=1.65 cfs 0.140 af

Pond 2723RP: TD27+23R TO DMH27+23R Peak Elev=104.86' Inflow=0.28 cfs 0.019 af
12.0" Round Culvert n=0.011 L=39.0' S=0.0538 '/' Outflow=0.28 cfs 0.019 af

Pond 2730LP: CB27+30L TO 27+30R Peak Elev=109.96' Inflow=0.92 cfs 0.078 af
12.0" Round Culvert n=0.011 L=22.0' S=0.0100 '/' Outflow=0.92 cfs 0.078 af

Pond 2730RP: CB27+30R TO DMH27+23R Peak Elev=109.70' Inflow=1.39 cfs 0.121 af
12.0" Round Culvert n=0.011 L=125.0' S=0.0526 '/' Outflow=1.39 cfs 0.121 af

Pond 3018GP: CB30+18G TO CB30+20L Peak Elev=104.28' Inflow=7.95 cfs 0.937 af
24.0" Round Culvert n=0.011 L=10.0' S=0.0100 '/' Outflow=7.95 cfs 0.937 af

Pond 3020LP: CB30+20L TO CB30+20R Peak Elev=103.84' Inflow=9.45 cfs 1.089 af
24.0" Round Culvert n=0.011 L=22.0' S=0.0091 '/' Outflow=9.45 cfs 1.089 af

Pond 3020RP: CB30+20R TO HW29+63 Peak Elev=103.16' Inflow=10.12 cfs 1.137 af
24.0" Round Culvert n=0.011 L=135.0' S=0.0089 '/' Outflow=10.12 cfs 1.137 af

Pond 3200P: CB3200 TO CB320 Peak Elev=109.51' Inflow=0.00 cfs 0.001 af
15.0" Round Culvert n=0.009 L=90.0' S=0.0050 '/' Outflow=0.00 cfs 0.001 af

Pond 100125P: DMH1001+25 TO DMH1003+11 Peak Elev=108.96' Inflow=7.95 cfs 0.749 af
24.0" Round Culvert n=0.011 L=194.0' S=0.0201 '/' Outflow=7.95 cfs 0.749 af

Pond 100311P: DMH1003+11C TO CB30+18G Peak Elev=105.06' Inflow=7.95 cfs 0.749 af
24.0" Round Culvert n=0.011 L=130.0' S=0.0092 '/' Outflow=7.95 cfs 0.749 af

Pond BMP-1: BMP-1 STORMTECH Peak Elev=105.84' Storage=3,863 cf Inflow=4.88 cfs 0.301 af
Discarded=0.01 cfs 0.058 af Primary=4.41 cfs 0.206 af Outflow=4.42 cfs 0.264 af

Pond C3P: CBC3 to CB509 Peak Elev=114.58' Inflow=2.73 cfs 0.212 af
18.0" Round Culvert n=0.009 L=183.0' S=0.0295 '/' Outflow=2.73 cfs 0.212 af

Pond C4P: CBC4 to CBC3 Peak Elev=116.77' Inflow=1.85 cfs 0.138 af
15.0" Round Culvert n=0.009 L=212.0' S=0.0092 '/' Outflow=1.85 cfs 0.138 af

Pond C5P: CBC5 to DMHC6 Peak Elev=118.42' Inflow=0.75 cfs 0.053 af
15.0" Round Culvert n=0.013 L=66.0' S=0.0091 '/' Outflow=0.75 cfs 0.053 af

Pond C6P: DMHC6 to CBC4 Peak Elev=117.37' Inflow=1.00 cfs 0.078 af
15.0" Round Culvert n=0.013 L=32.0' S=0.0219 '/' Outflow=1.00 cfs 0.078 af

Pond C7P: CBC7 to DMHC6 Peak Elev=118.80' Inflow=0.25 cfs 0.025 af
15.0" Round Culvert n=0.013 L=189.0' S=0.0082 '/' Outflow=0.25 cfs 0.025 af

Pond C8P: CBC8 to CBC7 Peak Elev=119.23' Inflow=0.25 cfs 0.025 af
15.0" Round Culvert n=0.013 L=33.0' S=0.0106 '/' Outflow=0.25 cfs 0.025 af

Pond RD1Pa: RD1a TO CB327 Peak Elev=125.43' Inflow=0.58 cfs 0.045 af
12.0" Round Culvert n=0.013 L=43.0' S=0.0200 '/' Outflow=0.58 cfs 0.045 af

Pond RD1Pb: RD1b to CB 324 Peak Elev=123.86' Inflow=0.41 cfs 0.032 af
12.0" Round Culvert n=0.013 L=10.0' S=0.0800 '/' Outflow=0.41 cfs 0.032 af

Pond RD2Pa: RD2a to CB333 Peak Elev=113.59' Inflow=0.47 cfs 0.037 af
12.0" Round Culvert n=0.013 L=23.0' S=0.0100 '/' Outflow=0.47 cfs 0.037 af

Pond RD2Pb: RD2b TO CB322 Peak Elev=113.66' Inflow=0.46 cfs 0.036 af
12.0" Round Culvert n=0.013 L=20.0' S=0.0340 '/' Outflow=0.46 cfs 0.036 af

Pond RD3P: RD3 TO CB808 Peak Elev=107.45' Inflow=2.01 cfs 0.157 af
12.0" Round Culvert n=0.009 L=7.0' S=0.0214 '/' Outflow=2.01 cfs 0.157 af

Pond RD4P: RD4 TO CB807 Peak Elev=108.13' Inflow=0.06 cfs 0.004 af
12.0" Round Culvert n=0.009 L=34.0' S=0.0441 '/' Outflow=0.06 cfs 0.004 af

Pond RD5P: RD5 TO CB806 Peak Elev=106.97' Inflow=2.06 cfs 0.161 af
12.0" Round Culvert n=0.009 L=45.0' S=0.0567 '/' Outflow=2.06 cfs 0.161 af

Pond RD6P: RD6 TO CB805 Peak Elev=103.61' Inflow=1.07 cfs 0.083 af
12.0" Round Culvert n=0.009 L=60.0' S=0.0233 '/' Outflow=1.07 cfs 0.083 af

Pond RD8P: RD8 TO CB107 Peak Elev=102.15' Inflow=0.25 cfs 0.020 af
8.0" Round Culvert n=0.009 L=28.0' S=0.0107 '/' Outflow=0.25 cfs 0.020 af

Pond RD9P: RD9 TO CB405 Peak Elev=102.57' Inflow=0.17 cfs 0.014 af
8.0" Round Culvert n=0.009 L=32.0' S=0.0094 '/' Outflow=0.17 cfs 0.014 af

Total Runoff Area = 121.896 ac Runoff Volume = 10.425 af Average Runoff Depth = 1.03"
80.32% Pervious = 97.907 ac 19.68% Impervious = 23.989 ac

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: SUBCATCHMENT1 Runoff Area=116,725 sf 15.99% Impervious Runoff Depth=0.94"
Flow Length=928' Tc=34.5 min CN=47 Runoff=1.14 cfs 0.209 af

Subcatchment 11S: flow to reach 2R Runoff Area=17,367 sf 0.00% Impervious Runoff Depth=2.18"
Flow Length=80' Tc=8.0 min CN=63 Runoff=0.92 cfs 0.073 af

Subcatchment 12S: Flow to Lot H-2 Runoff Area=176,844 sf 9.99% Impervious Runoff Depth=3.69"
Flow Length=645' Tc=9.0 min CN=79 Runoff=15.81 cfs 1.248 af

Subcatchment 14S: Flow to Lot H-2 (REACH Runoff Area=76,548 sf 0.00% Impervious Runoff Depth=3.00"
Flow Length=416' Tc=9.0 min CN=72 Runoff=5.57 cfs 0.440 af

Subcatchment 15S: offsite flow Runoff Area=358,058 sf 1.70% Impervious Runoff Depth=0.13"
Flow Length=1,260' Tc=27.5 min CN=32 Runoff=0.15 cfs 0.092 af

Subcatchment 16S: offsite flow Runoff Area=2,052,474 sf 8.08% Impervious Runoff Depth=1.01"
Flow Length=1,412' Tc=34.3 min CN=48 Runoff=22.36 cfs 3.952 af

Subcatchment 30S: SUBCATCHMENT30 Runoff Area=48,198 sf 0.00% Impervious Runoff Depth=2.36"
Flow Length=154' Slope=0.0200 '/' Tc=23.5 min CN=65 Runoff=1.88 cfs 0.217 af

Subcatchment 40S: SUBCATCHMENT40 Runoff Area=152,210 sf 0.00% Impervious Runoff Depth=0.94"
Flow Length=452' Tc=14.5 min CN=47 Runoff=2.02 cfs 0.273 af

Subcatchment 50S: SUBCATCHMENT50 Runoff Area=125,909 sf 4.33% Impervious Runoff Depth=0.25"
Flow Length=987' Tc=24.8 min CN=35 Runoff=0.11 cfs 0.061 af

Subcatchment 100S: Flow to Detention Runoff Area=42,732 sf 0.00% Impervious Runoff Depth=2.81"
Tc=5.0 min CN=70 Runoff=3.34 cfs 0.230 af

Subcatchment 101AS: Flow to Detention Runoff Area=12,152 sf 1.03% Impervious Runoff Depth=3.89"
Tc=5.0 min CN=81 Runoff=1.31 cfs 0.090 af

Subcatchment 101os: North Side of Mast Runoff Area=17,404 sf 27.18% Impervious Runoff Depth=1.37"
Tc=5.0 min CN=53 Runoff=0.57 cfs 0.046 af

Subcatchment 102os: North Side of Mast Runoff Area=15,661 sf 51.62% Impervious Runoff Depth=2.72"
Tc=5.0 min CN=69 Runoff=1.18 cfs 0.082 af

Subcatchment 103os: Mast Road East to Runoff Area=12,002 sf 100.00% Impervious Runoff Depth=5.77"
Tc=5.0 min CN=98 Runoff=1.68 cfs 0.133 af

Subcatchment 107S: Flow to CB107 Runoff Area=7,160 sf 86.56% Impervious Runoff Depth=5.54"
Tc=5.0 min CN=96 Runoff=0.99 cfs 0.076 af

Subcatchment 108S: Flow to CB108 Runoff Area=20,254 sf 84.37% Impervious Runoff Depth=5.42"
Tc=5.0 min CN=95 Runoff=2.78 cfs 0.210 af

Subcatchment148GS: SUBCATCHMENT Runoff Area=24,508 sf 16.32% Impervious Runoff Depth=0.74"
Flow Length=178' Tc=6.3 min CN=44 Runoff=0.27 cfs 0.035 af

Subcatchment148RS: SUBCATCHMENT Runoff Area=4,316 sf 70.81% Impervious Runoff Depth=3.89"
Tc=5.0 min CN=81 Runoff=0.47 cfs 0.032 af

Subcatchment200os: Mast Road East to Runoff Area=9,931 sf 100.00% Impervious Runoff Depth=5.77"
Tc=5.0 min CN=98 Runoff=1.39 cfs 0.110 af

Subcatchment205S: Flow to CB205 Runoff Area=21,237 sf 94.10% Impervious Runoff Depth=5.65"
Tc=5.0 min CN=97 Runoff=2.96 cfs 0.230 af

Subcatchment206S: Flow to CB206 Runoff Area=10,095 sf 95.84% Impervious Runoff Depth=5.65"
Tc=5.0 min CN=97 Runoff=1.41 cfs 0.109 af

Subcatchment210S: Flow to CB210 Runoff Area=7,732 sf 75.04% Impervious Runoff Depth=4.97"
Tc=5.0 min CN=91 Runoff=1.01 cfs 0.073 af

Subcatchment215S: Flow to DCB215 Runoff Area=28,399 sf 86.64% Impervious Runoff Depth=5.19"
Tc=5.0 min CN=93 Runoff=3.82 cfs 0.282 af

Subcatchment220S: Flow to CB220 Runoff Area=15,024 sf 95.13% Impervious Runoff Depth=5.54"
Tc=5.0 min CN=96 Runoff=2.08 cfs 0.159 af

Subcatchment300os: East Side of NH Runoff Area=2,933 sf 81.69% Impervious Runoff Depth=4.53"
Tc=5.0 min CN=87 Runoff=0.36 cfs 0.025 af

Subcatchment303GS: SUBCATCHMENT Runoff Area=10,545 sf 75.15% Impervious Runoff Depth=4.10"
Tc=5.0 min CN=83 Runoff=1.19 cfs 0.083 af

Subcatchment304RS: SUBCATCHMENT Runoff Area=5,196 sf 51.33% Impervious Runoff Depth=2.72"
Tc=5.0 min CN=69 Runoff=0.39 cfs 0.027 af

Subcatchment305S: Flow to CB305 Runoff Area=7,928 sf 84.02% Impervious Runoff Depth=5.08"
Tc=5.0 min CN=92 Runoff=1.05 cfs 0.077 af

Subcatchment310S: Flow to CB310 Runoff Area=145,473 sf 12.09% Impervious Runoff Depth=0.94"
Flow Length=469' Tc=13.1 min CN=47 Runoff=2.00 cfs 0.261 af

Subcatchment315S: Flow to CB315 Runoff Area=116,325 sf 6.81% Impervious Runoff Depth=0.45"
Flow Length=537' Tc=9.9 min CN=39 Runoff=0.46 cfs 0.100 af

Subcatchment316S: Flow to CB316 Runoff Area=3,776 sf 88.61% Impervious Runoff Depth=5.31"
Tc=5.0 min CN=94 Runoff=0.51 cfs 0.038 af

Subcatchment320S: Flow to CB320 Runoff Area=3,127 sf 97.95% Impervious Runoff Depth=5.65"
Tc=5.0 min CN=97 Runoff=0.44 cfs 0.034 af

Subcatchment320Sa: Porous Walk Runoff Area=404 sf 100.00% Impervious Runoff Depth=5.77"
Tc=5.0 min CN=98 Runoff=0.06 cfs 0.004 af

Subcatchment321S: Flow to CB322 Runoff Area=1,903 sf 0.00% Impervious Runoff Depth=0.45"
Tc=5.0 min CN=39 Runoff=0.01 cfs 0.002 af

Subcatchment 321Sa: Porous Walk Runoff Area=456 sf 100.00% Impervious Runoff Depth=5.77"
Tc=5.0 min CN=98 Runoff=0.06 cfs 0.005 af

Subcatchment 322S: Flow to CB323 Runoff Area=4,253 sf 0.00% Impervious Runoff Depth=0.45"
Tc=5.0 min CN=39 Runoff=0.02 cfs 0.004 af

Subcatchment 323S: Flow to CB324 Runoff Area=1,844 sf 0.00% Impervious Runoff Depth=0.45"
Tc=5.0 min CN=39 Runoff=0.01 cfs 0.002 af

Subcatchment 323Sa: Porous Walk Runoff Area=498 sf 100.00% Impervious Runoff Depth=5.77"
Tc=5.0 min CN=98 Runoff=0.07 cfs 0.005 af

Subcatchment 324S: Flow to CB325 Runoff Area=2,213 sf 100.00% Impervious Runoff Depth=5.77"
Tc=5.0 min CN=98 Runoff=0.31 cfs 0.024 af

Subcatchment 325S: Flow to CB324 Runoff Area=1,665 sf 100.00% Impervious Runoff Depth=5.77"
Tc=5.0 min CN=98 Runoff=0.23 cfs 0.018 af

Subcatchment 326S: Flow to CB325 Runoff Area=34,308 sf 60.15% Impervious Runoff Depth=3.19"
Tc=5.0 min CN=74 Runoff=3.06 cfs 0.210 af

Subcatchment 326Sa: Porous Walk Runoff Area=1,787 sf 44.21% Impervious Runoff Depth=2.36"
Tc=5.0 min CN=65 Runoff=0.12 cfs 0.008 af

Subcatchment 326Sb: Porous Walk Runoff Area=57 sf 100.00% Impervious Runoff Depth=5.77"
Tc=5.0 min CN=98 Runoff=0.01 cfs 0.001 af

Subcatchment 326Sc: Porous Walk Runoff Area=53 sf 100.00% Impervious Runoff Depth=5.77"
Tc=5.0 min CN=98 Runoff=0.01 cfs 0.001 af

Subcatchment 330S: Flow to CB330 Runoff Area=3,294 sf 94.11% Impervious Runoff Depth=5.42"
Tc=5.0 min CN=95 Runoff=0.45 cfs 0.034 af

Subcatchment 330Sa: Porous Walk Runoff Area=450 sf 41.33% Impervious Runoff Depth=2.18"
Tc=5.0 min CN=63 Runoff=0.03 cfs 0.002 af

Subcatchment 330Sb: Porous Walk Runoff Area=218 sf 39.91% Impervious Runoff Depth=2.18"
Tc=5.0 min CN=63 Runoff=0.01 cfs 0.001 af

Subcatchment 331S: Flow to CB331 Runoff Area=10,020 sf 66.41% Impervious Runoff Depth=3.59"
Tc=5.0 min CN=78 Runoff=1.00 cfs 0.069 af

Subcatchment 331Sa: Porous Walk Runoff Area=1,084 sf 44.83% Impervious Runoff Depth=2.36"
Tc=5.0 min CN=65 Runoff=0.07 cfs 0.005 af

Subcatchment 332S: Flow to CB332 Runoff Area=1,679 sf 74.75% Impervious Runoff Depth=4.10"
Tc=5.0 min CN=83 Runoff=0.19 cfs 0.013 af

Subcatchment 332Sa: Porous Walk Runoff Area=1,526 sf 62.19% Impervious Runoff Depth=3.39"
Tc=5.0 min CN=76 Runoff=0.14 cfs 0.010 af

Subcatchment 333S: Flow to CB332 Runoff Area=2,063 sf 0.00% Impervious Runoff Depth=0.45"
Tc=5.0 min CN=39 Runoff=0.01 cfs 0.002 af

Subcatchment 333Sa: Porous Walk Runoff Area=1,005 sf 32.34% Impervious Runoff Depth=1.76"
Tc=5.0 min CN=58 Runoff=0.05 cfs 0.003 af

Subcatchment 335S: Flow to CB335 Runoff Area=4,263 sf 62.80% Impervious Runoff Depth=3.39"
Tc=5.0 min CN=76 Runoff=0.40 cfs 0.028 af

Subcatchment 340S: Flow to CB340 Runoff Area=2,616 sf 72.90% Impervious Runoff Depth=4.00"
Tc=5.0 min CN=82 Runoff=0.29 cfs 0.020 af

Subcatchment 350S: Flow to CB350 Runoff Area=3,138 sf 83.08% Impervious Runoff Depth=4.64"
Tc=5.0 min CN=88 Runoff=0.39 cfs 0.028 af

Subcatchment 351S: Flow to CB351 Runoff Area=2,600 sf 93.15% Impervious Runoff Depth=5.31"
Tc=5.0 min CN=94 Runoff=0.35 cfs 0.026 af

Subcatchment 360S: Flow to CB360 Runoff Area=3,507 sf 100.00% Impervious Runoff Depth=5.77"
Tc=5.0 min CN=98 Runoff=0.49 cfs 0.039 af

Subcatchment 365S: Flow to CB365 Runoff Area=3,724 sf 100.00% Impervious Runoff Depth=5.77"
Tc=5.0 min CN=98 Runoff=0.52 cfs 0.041 af

Subcatchment 400os: East Side of NH Runoff Area=13,932 sf 55.92% Impervious Runoff Depth=4.53"
Tc=5.0 min CN=87 Runoff=1.71 cfs 0.121 af

Subcatchment 402GS: SUBCATCHMENT Runoff Area=196,506 sf 11.43% Impervious Runoff Depth=0.62"
Flow Length=919' Tc=16.0 min CN=42 Runoff=1.25 cfs 0.233 af

Subcatchment 405S: Flow to CB405 Runoff Area=6,080 sf 83.22% Impervious Runoff Depth=5.42"
Tc=5.0 min CN=95 Runoff=0.83 cfs 0.063 af

Subcatchment 410S: Flow to DCB410 Runoff Area=16,744 sf 86.87% Impervious Runoff Depth=5.54"
Tc=5.0 min CN=96 Runoff=2.32 cfs 0.177 af

Subcatchment 415S: Flow to CB415 Runoff Area=5,205 sf 79.02% Impervious Runoff Depth=5.31"
Tc=5.0 min CN=94 Runoff=0.71 cfs 0.053 af

Subcatchment 416S: Flow to CB416 Runoff Area=7,343 sf 80.88% Impervious Runoff Depth=5.31"
Tc=5.0 min CN=94 Runoff=1.00 cfs 0.075 af

Subcatchment 419LS: SUBCATCHMENT Runoff Area=32,282 sf 58.86% Impervious Runoff Depth=3.19"
Tc=5.0 min CN=74 Runoff=2.88 cfs 0.197 af

Subcatchment 419RS: SUBCATCHMENT Runoff Area=27,019 sf 48.53% Impervious Runoff Depth=2.63"
Tc=5.0 min CN=68 Runoff=1.96 cfs 0.136 af

Subcatchment 500os: Drive to CB14 Runoff Area=1,717 sf 100.00% Impervious Runoff Depth=5.77"
Tc=5.0 min CN=98 Runoff=0.24 cfs 0.019 af

Subcatchment 505S: McDONALD SITE Runoff Area=40,980 sf 82.99% Impervious Runoff Depth=5.08"
Tc=0.0 min CN=92 Runoff=6.36 cfs 0.398 af

Subcatchment 507S: Flow to CB507 Runoff Area=3,338 sf 99.70% Impervious Runoff Depth=5.77"
Tc=5.0 min CN=98 Runoff=0.47 cfs 0.037 af

Subcatchment 508Aos: Flow to CBC4 Runoff Area=17,911 sf 52.06% Impervious Runoff Depth=2.72"
Tc=5.0 min CN=69 Runoff=1.35 cfs 0.093 af

Subcatchment 508Bos: West Side of NH Runoff Area=39,695 sf 30.84% Impervious Runoff Depth=1.68"
Tc=5.0 min CN=57 Runoff=1.71 cfs 0.128 af

Subcatchment 508S: Flow to CB508 Runoff Area=15,987 sf 41.84% Impervious Runoff Depth=2.27"
Tc=5.0 min CN=64 Runoff=0.99 cfs 0.069 af

Subcatchment 600os: Drive to CB15 Runoff Area=3,747 sf 100.00% Impervious Runoff Depth=5.77"
Tc=5.0 min CN=98 Runoff=0.52 cfs 0.041 af

Subcatchment 600S: POND 600 Runoff Area=58,507 sf 0.88% Impervious Runoff Depth=2.10"
Tc=5.0 min CN=62 Runoff=3.29 cfs 0.235 af

Subcatchment 700os: East Side of NH Runoff Area=24,418 sf 54.75% Impervious Runoff Depth=4.53"
Tc=5.0 min CN=87 Runoff=2.99 cfs 0.211 af

Subcatchment 710S: Flow to CB710 Runoff Area=4,542 sf 89.56% Impervious Runoff Depth=5.42"
Tc=5.0 min CN=95 Runoff=0.62 cfs 0.047 af

Subcatchment 711S: Flow to CB711 Runoff Area=4,357 sf 88.02% Impervious Runoff Depth=5.42"
Tc=5.0 min CN=95 Runoff=0.60 cfs 0.045 af

Subcatchment 715S: Flow to CB715 Runoff Area=3,324 sf 61.88% Impervious Runoff Depth=4.86"
Tc=5.0 min CN=90 Runoff=0.43 cfs 0.031 af

Subcatchment 720S: Flow to DCB720 Runoff Area=17,720 sf 87.10% Impervious Runoff Depth=5.42"
Tc=5.0 min CN=95 Runoff=2.43 cfs 0.184 af

Subcatchment 725S: Flows to CB725 Runoff Area=27,585 sf 84.41% Impervious Runoff Depth=5.42"
Tc=5.0 min CN=95 Runoff=3.79 cfs 0.286 af

Subcatchment 801S: HW801 TO HW800 Runoff Area=150,892 sf 30.25% Impervious Runoff Depth=2.54"
Tc=5.0 min CN=67 Runoff=10.54 cfs 0.733 af

Subcatchment 805S: FLOW TO CB805 Runoff Area=4,093 sf 91.91% Impervious Runoff Depth=5.54"
Tc=5.0 min CN=96 Runoff=0.57 cfs 0.043 af

Subcatchment 806S: FLOW TO CB806 Runoff Area=3,812 sf 92.10% Impervious Runoff Depth=5.19"
Tc=5.0 min CN=93 Runoff=0.51 cfs 0.038 af

Subcatchment 807S: FLOW TO CB807 Runoff Area=5,559 sf 76.47% Impervious Runoff Depth=4.21"
Tc=5.0 min CN=84 Runoff=0.64 cfs 0.045 af

Subcatchment 808S: FLOW TO CB808 Runoff Area=3,999 sf 0.00% Impervious Runoff Depth=0.45"
Tc=5.0 min CN=39 Runoff=0.02 cfs 0.003 af

Subcatchment 857LS: SUBCATCHMENT Runoff Area=16,981 sf 62.84% Impervious Runoff Depth=3.39"
Tc=5.0 min CN=76 Runoff=1.61 cfs 0.110 af

Subcatchment 857RS: SUBCATCHMENT Runoff Area=31,969 sf 20.90% Impervious Runoff Depth=1.22"
Tc=5.0 min CN=51 Runoff=0.89 cfs 0.075 af

Subcatchment 900S: SUBCATCHMENT 900S Runoff Area=78,149 sf 2.46% Impervious Runoff Depth=0.50"
Flow Length=171' Tc=12.4 min CN=40 Runoff=0.37 cfs 0.075 af

Subcatchment 1100S: 1100S Runoff Area=6,092 sf 52.35% Impervious Runoff Depth=2.81"
Flow Length=100' Tc=2.6 min CN=70 Runoff=0.52 cfs 0.033 af

Subcatchment 1295GS: SUBCATCHMENT Runoff Area=70,690 sf 33.46% Impervious Runoff Depth=1.60"
Flow Length=466' Tc=10.6 min CN=56 Runoff=2.34 cfs 0.217 af

Subcatchment 1295LS: SUBCATCHMENT Runoff Area=8,078 sf 65.64% Impervious Runoff Depth=3.59"
Tc=5.0 min CN=78 Runoff=0.81 cfs 0.055 af

Subcatchment 1295RS: SUBCATCHMENT Runoff Area=12,955 sf 51.46% Impervious Runoff Depth=2.72"
Tc=5.0 min CN=69 Runoff=0.98 cfs 0.067 af

Subcatchment 1643LS: SUBCATCHMENT Runoff Area=1,696 sf 35.38% Impervious Runoff Depth=1.93"
Flow Length=125' Tc=5.2 min CN=60 Runoff=0.09 cfs 0.006 af

Subcatchment 1643RS: SUBCATCHMENT Runoff Area=8,214 sf 54.11% Impervious Runoff Depth=2.91"
Flow Length=163' Tc=7.5 min CN=71 Runoff=0.61 cfs 0.046 af

Subcatchment 1785LS: SUBCATCHMENT Runoff Area=9,115 sf 28.75% Impervious Runoff Depth=1.60"
Flow Length=231' Tc=8.1 min CN=56 Runoff=0.33 cfs 0.028 af

Subcatchment 1785RS: SUBCATCHMENT Runoff Area=5,957 sf 51.59% Impervious Runoff Depth=2.72"
Flow Length=185' Tc=3.9 min CN=69 Runoff=0.47 cfs 0.031 af

Subcatchment 1928LS: SUBCATCHMENT Runoff Area=8,001 sf 41.78% Impervious Runoff Depth=2.27"
Flow Length=173' Tc=6.7 min CN=64 Runoff=0.46 cfs 0.035 af

Subcatchment 1928RS: SUBCATCHMENT Runoff Area=6,211 sf 51.15% Impervious Runoff Depth=2.72"
Flow Length=177' Tc=4.1 min CN=69 Runoff=0.48 cfs 0.032 af

Subcatchment 1979RS: SUBCATCHMENT Runoff Area=2,259 sf 47.94% Impervious Runoff Depth=2.54"
Flow Length=93' Tc=4.4 min CN=67 Runoff=0.16 cfs 0.011 af

Subcatchment 2173LS: SUBCATCHMENT Runoff Area=18,794 sf 40.92% Impervious Runoff Depth=2.18"
Flow Length=205' Tc=6.3 min CN=63 Runoff=1.06 cfs 0.079 af

Subcatchment 2173RS: SUBCATCHMENT Runoff Area=8,515 sf 55.89% Impervious Runoff Depth=3.00"
Flow Length=126' Tc=6.5 min CN=72 Runoff=0.67 cfs 0.049 af

Subcatchment 2373S: SUBCATCHMENT Runoff Area=15,629 sf 100.00% Impervious Runoff Depth=5.77"
Tc=5.0 min CN=98 Runoff=2.19 cfs 0.173 af

Subcatchment 2440S: SUBCATCHMENT Runoff Area=1,462 sf 42.82% Impervious Runoff Depth=2.27"
Flow Length=61' Tc=3.4 min CN=64 Runoff=0.10 cfs 0.006 af

Subcatchment 2460LS: SUBCATCHMENT Runoff Area=26,630 sf 47.56% Impervious Runoff Depth=2.54"
Flow Length=378' Tc=10.9 min CN=67 Runoff=1.52 cfs 0.129 af

Subcatchment 2460RS: SUBCATCHMENT Runoff Area=13,923 sf 51.40% Impervious Runoff Depth=2.72"
Flow Length=261' Tc=3.4 min CN=69 Runoff=1.11 cfs 0.072 af

Subcatchment 2460S: SUBCATCHMENT Runoff Area=6,810 sf 74.21% Impervious Runoff Depth=4.10"
Flow Length=138' Tc=1.6 min CN=83 Runoff=0.87 cfs 0.053 af

Subcatchment 2474S: SUBCATCHMENT Runoff Area=4,253 sf 43.00% Impervious Runoff Depth=2.27"
Flow Length=76' Tc=3.7 min CN=64 Runoff=0.27 cfs 0.018 af

Subcatchment 2619S: SUBCATCHMENT Runoff Area=15,629 sf 100.00% Impervious Runoff Depth=5.77"
Tc=5.0 min CN=98 Runoff=2.19 cfs 0.173 af

Subcatchment 2723RS: SUBCATCHMENT Runoff Area=4,476 sf 61.44% Impervious Runoff Depth=3.29"
Flow Length=85' Tc=4.4 min CN=75 Runoff=0.42 cfs 0.028 af

Subcatchment 2730LS: SUBCATCHMENT Runoff Area=24,016 sf 49.95% Impervious Runoff Depth=2.63"
Flow Length=462' Tc=10.0 min CN=68 Runoff=1.47 cfs 0.121 af

Subcatchment 2730RS: SUBCATCHMENT Runoff Area=12,056 sf 52.21% Impervious Runoff Depth=2.81"
Flow Length=261' Tc=3.9 min CN=70 Runoff=0.98 cfs 0.065 af

Subcatchment 3018GS: SUBCATCHMENT Runoff Area=270,071 sf 12.90% Impervious Runoff Depth=0.81"
Flow Length=1,138' Tc=26.5 min CN=45 Runoff=2.32 cfs 0.416 af

Subcatchment 3020LS: SUBCATCHMENT Runoff Area=43,038 sf 52.99% Impervious Runoff Depth=2.81"
Flow Length=349' Tc=10.3 min CN=70 Runoff=2.80 cfs 0.232 af

Subcatchment 3020RS: SUBCATCHMENT Runoff Area=10,119 sf 60.96% Impervious Runoff Depth=3.59"
Flow Length=204' Tc=6.3 min CN=78 Runoff=0.97 cfs 0.069 af

Subcatchment 3200S: Flow to CB3200 Runoff Area=3,537 sf 0.00% Impervious Runoff Depth=0.45"
Tc=5.0 min CN=39 Runoff=0.01 cfs 0.003 af

Subcatchment RD1Sa: Roof drain 1a Runoff Area=5,231 sf 100.00% Impervious Runoff Depth=5.77"
Tc=5.0 min CN=98 Runoff=0.73 cfs 0.058 af

Subcatchment RD1Sb: Roof Drain 1b Runoff Area=3,703 sf 100.00% Impervious Runoff Depth=5.77"
Tc=5.0 min CN=98 Runoff=0.52 cfs 0.041 af

Subcatchment RD2Sa: Roof drain 2a Runoff Area=4,238 sf 100.00% Impervious Runoff Depth=5.77"
Tc=5.0 min CN=98 Runoff=0.59 cfs 0.047 af

Subcatchment RD2Sb: Roof drain 2b Runoff Area=4,138 sf 100.00% Impervious Runoff Depth=5.77"
Tc=5.0 min CN=98 Runoff=0.58 cfs 0.046 af

Subcatchment RD3S: ROOF DRAIN Runoff Area=18,273 sf 100.00% Impervious Runoff Depth=5.77"
Tc=5.0 min CN=98 Runoff=2.56 cfs 0.202 af

Subcatchment RD4S: ROOF DRAIN Runoff Area=504 sf 100.00% Impervious Runoff Depth=5.77"
Tc=5.0 min CN=98 Runoff=0.07 cfs 0.006 af

Subcatchment RD5S: ROOF DRAIN Runoff Area=18,667 sf 100.00% Impervious Runoff Depth=5.77"
Tc=5.0 min CN=98 Runoff=2.61 cfs 0.206 af

Subcatchment RD6S: ROOF DRAIN Runoff Area=9,690 sf 100.00% Impervious Runoff Depth=5.77"
Tc=5.0 min CN=98 Runoff=1.36 cfs 0.107 af

Subcatchment RD8S: Roof Drain Runoff Area=2,295 sf 100.00% Impervious Runoff Depth=5.77"
Tc=5.0 min CN=98 Runoff=0.32 cfs 0.025 af

Subcatchment RD9S: Roof Drain Runoff Area=1,575 sf 100.00% Impervious Runoff Depth=5.77"
Tc=5.0 min CN=98 Runoff=0.22 cfs 0.017 af

Reach 1AR: STREAM Avg. Flow Depth=0.78' Max Vel=3.59 fps Inflow=16.85 cfs 5.096 af
n=0.050 L=370.0' S=0.0314 '/' Capacity=108.07 cfs Outflow=16.58 cfs 5.095 af

Reach 1BR: STREAM Avg. Flow Depth=0.40' Max Vel=2.74 fps Inflow=5.57 cfs 0.440 af
n=0.050 L=310.0' S=0.0384 '/' Capacity=119.58 cfs Outflow=5.43 cfs 0.440 af

Reach 1R: STREAM Avg. Flow Depth=1.05' Max Vel=3.08 fps Inflow=22.01 cfs 5.535 af
n=0.050 L=380.0' S=0.0166 '/' Capacity=78.59 cfs Outflow=21.49 cfs 5.534 af

Reach 2R: REACH 2 Avg. Flow Depth=0.20' Max Vel=1.31 fps Inflow=1.13 cfs 1.638 af
n=0.050 L=560.0' S=0.0193 '/' Capacity=42.77 cfs Outflow=1.13 cfs 1.635 af

Reach 3R: REACH 3 Avg. Flow Depth=0.23' Max Vel=1.47 fps Inflow=1.88 cfs 0.484 af
n=0.050 L=340.0' S=0.0200 '/' Capacity=24.05 cfs Outflow=1.84 cfs 0.484 af

Reach 4R: REACH 4 Avg. Flow Depth=0.16' Max Vel=0.81 fps Inflow=2.02 cfs 0.273 af
n=0.050 L=255.0' S=0.0149 '/' Capacity=468.29 cfs Outflow=1.89 cfs 0.273 af

Reach 5R: REACH 5 Avg. Flow Depth=0.04' Max Vel=0.42 fps Inflow=0.24 cfs 0.153 af
n=0.050 L=540.0' S=0.0231 '/' Capacity=409.57 cfs Outflow=0.24 cfs 0.153 af

Reach 6R: REACH 6 Avg. Flow Depth=0.18' Max Vel=0.81 fps Inflow=1.89 cfs 0.426 af
n=0.050 L=278.0' S=0.0126 '/' Capacity=131.20 cfs Outflow=1.78 cfs 0.426 af

Reach 7R: STREAM Avg. Flow Depth=0.35' Max Vel=2.20 fps Inflow=3.58 cfs 0.910 af
n=0.050 L=194.0' S=0.0284 '/' Capacity=92.22 cfs Outflow=3.57 cfs 0.910 af

Reach 8R: STREAM Avg. Flow Depth=0.38' Max Vel=2.20 fps Inflow=4.24 cfs 2.545 af
n=0.050 L=512.0' S=0.0258 '/' Capacity=98.00 cfs Outflow=4.16 cfs 2.543 af

Reach 9R: STREAM Avg. Flow Depth=1.05' Max Vel=3.29 fps Inflow=22.89 cfs 8.077 af
n=0.050 L=100.0' S=0.0190 '/' Capacity=84.13 cfs Outflow=22.86 cfs 8.076 af

Reach 16R: Existing Culvert to West Avg. Flow Depth=0.55' Max Vel=5.74 fps Inflow=2.99 cfs 0.211 af
15.0" Round Pipe n=0.012 L=45.0' S=0.0113 '/' Capacity=7.45 cfs Outflow=2.99 cfs 0.211 af

Reach 41R: REACH Avg. Flow Depth=0.08' Max Vel=0.71 fps Inflow=0.28 cfs 0.266 af
n=0.050 L=147.0' S=0.0184 '/' Capacity=23.05 cfs Outflow=0.28 cfs 0.266 af

Reach 326R: Reach 1BR Avg. Flow Depth=0.41' Max Vel=2.13 fps Inflow=6.32 cfs 3.849 af
n=0.050 L=358.0' S=0.0288 '/' Capacity=26.39 cfs Outflow=6.31 cfs 3.848 af

Pond 10P: CULVERT UNDER NH ROUTE 108 Peak Elev=70.59' Inflow=39.32 cfs 12.028 af
48.0" Round Culvert n=0.013 L=63.0' S=0.0063 '/' Outflow=39.32 cfs 12.028 af

Pond 11P: CB11 to CB12 Peak Elev=106.18' Inflow=1.68 cfs 0.133 af
12.0" Round Culvert n=0.010 L=19.0' S=0.0132 '/' Outflow=1.68 cfs 0.133 af

Pond 12R: From CB12 out Peak Elev=105.98' Inflow=3.07 cfs 0.242 af
12.0" Round Culvert n=0.010 L=20.0' S=0.0050 '/' Outflow=3.07 cfs 0.242 af

Pond 13P: CB13 to CB14 Peak Elev=107.37' Inflow=1.71 cfs 0.121 af
12.0" Round Culvert n=0.013 L=98.0' S=0.0101 '/' Outflow=1.71 cfs 0.121 af

Pond 14P: CB14 to CB15 Peak Elev=106.38' Inflow=1.95 cfs 0.140 af
12.0" Round Culvert n=0.013 L=25.0' S=0.0484 '/' Outflow=1.95 cfs 0.140 af

Pond 15P: CB15 out Peak Elev=105.39' Inflow=2.47 cfs 0.181 af
12.0" Round Culvert n=0.013 L=10.0' S=0.0100 '/' Outflow=2.47 cfs 0.181 af

Pond 100AP: Outlet Structure 105 to Peak Elev=102.29' Storage=25,558 cf Inflow=11.71 cfs 3.890 af
Outflow=6.32 cfs 3.849 af

Pond 100P: Outlet Structure 110 to HW109 Peak Elev=104.47' Storage=60,052 cf Inflow=38.13 cfs 3.103 af
Outflow=4.95 cfs 3.103 af

Pond 107P: CB107 TO HW106 Peak Elev=102.30' Inflow=4.09 cfs 0.311 af
15.0" Round Culvert n=0.009 L=20.0' S=0.0050 '/' Outflow=4.09 cfs 0.311 af

Pond 108P: CB108 TO CB107 Peak Elev=102.65' Inflow=2.78 cfs 0.210 af
15.0" Round Culvert n=0.009 L=106.0' S=0.0052 '/' Outflow=2.78 cfs 0.210 af

Pond 148GP: CB1+48G TO CB1+48R Peak Elev=126.78' Inflow=0.27 cfs 0.035 af
15.0" Round Culvert n=0.011 L=20.0' S=0.0050 '/' Outflow=0.27 cfs 0.035 af

Pond 148RP: CB1+48R TO CB3+04R Peak Elev=126.69' Inflow=0.68 cfs 0.067 af
15.0" Round Culvert n=0.011 L=153.0' S=0.0101 '/' Outflow=0.68 cfs 0.067 af

Pond 205P: CB205 TO HW200 Peak Elev=104.47' Inflow=11.28 cfs 0.854 af
24.0" Round Culvert n=0.013 L=54.0' S=0.0056 '/' Outflow=11.28 cfs 0.854 af

Pond 206P: CB206 TO CB205 Peak Elev=104.49' Inflow=1.41 cfs 0.109 af
15.0" Round Culvert n=0.013 L=50.0' S=0.0110 '/' Outflow=1.41 cfs 0.109 af

Pond 210P: CB210 TO CB205 Peak Elev=104.94' Inflow=6.91 cfs 0.515 af
18.0" Round Culvert n=0.013 L=65.0' S=0.0054 '/' Outflow=6.91 cfs 0.515 af

Pond 215P: DCB215 TO CB210 Peak Elev=105.47' Inflow=5.90 cfs 0.441 af
18.0" Round Culvert n=0.013 L=75.0' S=0.0053 '/' Outflow=5.90 cfs 0.441 af

Pond 220P: CB220 TO DCB215 Peak Elev=105.67' Inflow=2.08 cfs 0.159 af
15.0" Round Culvert n=0.013 L=60.0' S=0.0083 '/' Outflow=2.08 cfs 0.159 af

Pond 303GP: CB3+03G TO CB3+04R Peak Elev=126.69' Inflow=1.19 cfs 0.083 af
15.0" Round Culvert n=0.011 L=60.0' S=0.0233 '/' Outflow=1.19 cfs 0.083 af

Pond 304RP: CB3+04R TO CB4+01G Peak Elev=125.46' Inflow=2.24 cfs 0.177 af
15.0" Round Culvert n=0.011 L=94.0' S=0.0197 '/' Outflow=2.24 cfs 0.177 af

Pond 305P: CB305 TO HW300 Peak Elev=105.28' Inflow=12.82 cfs 1.263 af
24.0" Round Culvert n=0.009 L=16.0' S=0.0062 '/' Outflow=12.82 cfs 1.263 af

Pond 310P: CB310 TO CB305 Peak Elev=105.89' Inflow=11.77 cfs 1.186 af
24.0" Round Culvert n=0.013 L=28.0' S=0.0054 '/' Outflow=11.77 cfs 1.186 af

Pond 315P: CB315 TO CB310 Peak Elev=108.60' Inflow=11.07 cfs 0.925 af
18.0" Round Culvert n=0.009 L=185.0' S=0.0054 '/' Outflow=11.07 cfs 0.925 af

Pond 316P: CB316 TO CB315 Peak Elev=108.60' Inflow=0.51 cfs 0.038 af
15.0" Round Culvert n=0.009 L=24.0' S=0.0063 '/' Outflow=0.51 cfs 0.038 af

Pond 320P: CB320 TO CB315 Peak Elev=111.05' Inflow=10.55 cfs 0.787 af
18.0" Round Culvert n=0.009 L=213.0' S=0.0110 '/' Outflow=10.55 cfs 0.787 af

Pond 320Pa: Porous Walk Peak Elev=112.23' Storage=14 cf Inflow=0.06 cfs 0.004 af
Outflow=0.03 cfs 0.004 af

Pond 321P: CB321 TO CB320 Peak Elev=114.15' Inflow=5.43 cfs 0.404 af
15.0" Round Culvert n=0.013 L=114.0' S=0.0243 '/' Outflow=5.43 cfs 0.404 af

Pond 321Pa: Porous Walk Peak Elev=116.97' Storage=14 cf Inflow=0.06 cfs 0.005 af
Outflow=0.03 cfs 0.005 af

Pond 322P: CB323 TO CB322 Peak Elev=119.58' Inflow=4.85 cfs 0.356 af
15.0" Round Culvert n=0.013 L=70.0' S=0.0800 '/' Outflow=4.85 cfs 0.356 af

Pond 323P: CB324 to CB323 Peak Elev=122.77' Inflow=4.85 cfs 0.353 af
15.0" Round Culvert n=0.013 L=37.0' S=0.0100 '/' Outflow=4.85 cfs 0.353 af

Pond 323Pa: Porous Walk Peak Elev=129.57' Storage=16 cf Inflow=0.07 cfs 0.005 af
Outflow=0.03 cfs 0.006 af

Pond 324P: CB325 to CB324 Peak Elev=123.30' Inflow=4.33 cfs 0.310 af
15.0" Round Culvert n=0.013 L=57.0' S=0.0100 '/' Outflow=4.33 cfs 0.310 af

Pond 325P: CB326 TO CB325 Peak Elev=124.05' Inflow=4.02 cfs 0.286 af
15.0" Round Culvert n=0.013 L=67.0' S=0.0115 '/' Outflow=4.02 cfs 0.286 af

Pond 326P: CB327 TO CB326 Peak Elev=125.08' Inflow=3.79 cfs 0.267 af
15.0" Round Culvert n=0.013 L=120.0' S=0.0100 '/' Outflow=3.79 cfs 0.267 af

Pond 326Pa: Porous Walk Peak Elev=128.31' Storage=29 cf Inflow=0.12 cfs 0.008 af
Outflow=0.05 cfs 0.008 af

Pond 326Pb: Porous Walk Peak Elev=129.37' Storage=2 cf Inflow=0.01 cfs 0.001 af
Outflow=0.00 cfs 0.001 af

Pond 326Pc: Porous Walk Peak Elev=129.97' Storage=2 cf Inflow=0.01 cfs 0.001 af
Outflow=0.00 cfs 0.001 af

Pond 330P: CB330 T0 CB320 Peak Elev=112.04' Inflow=4.69 cfs 0.346 af
15.0" Round Culvert n=0.009 L=35.0' S=0.0286 '/' Outflow=4.69 cfs 0.346 af

Pond 330Pa: Porous Walk Peak Elev=114.31' Storage=1 cf Inflow=0.03 cfs 0.002 af
Outflow=0.02 cfs 0.002 af

Pond 330Pb: Porous Walk Peak Elev=113.03' Storage=3 cf Inflow=0.01 cfs 0.001 af
Outflow=0.01 cfs 0.001 af

Pond 331P: CB331 TO CB330 Peak Elev=112.18' Inflow=1.79 cfs 0.131 af
15.0" Round Culvert n=0.013 L=12.0' S=0.0100 '/' Outflow=1.79 cfs 0.131 af

Pond 331Pa: Porous Walk Peak Elev=116.60' Storage=17 cf Inflow=0.07 cfs 0.005 af
Outflow=0.03 cfs 0.005 af

Pond 332P: CB332 to CB331 Peak Elev=112.18' Inflow=0.19 cfs 0.013 af
15.0" Round Culvert n=0.013 L=50.0' S=0.0166 '/' Outflow=0.19 cfs 0.013 af

Pond 332Pa: Porous Walk Peak Elev=116.75' Storage=38 cf Inflow=0.14 cfs 0.010 af
Outflow=0.07 cfs 0.010 af

Pond 333P: CB333 TO CB331 Peak Elev=113.13' Inflow=0.59 cfs 0.049 af
15.0" Round Culvert n=0.013 L=135.0' S=0.0193 '/' Outflow=0.59 cfs 0.049 af

Pond 333Pa: Porous Walk Peak Elev=128.99' Storage=11 cf Inflow=0.05 cfs 0.003 af
Outflow=0.02 cfs 0.003 af

Pond 335P: CB335 TO CB330 Peak Elev=112.31' Inflow=2.45 cfs 0.182 af
15.0" Round Culvert n=0.009 L=29.0' S=0.0345 '/' Outflow=2.45 cfs 0.182 af

Pond 340P: CB340TO CB335 Peak Elev=112.51' Inflow=2.05 cfs 0.154 af
15.0" Round Culvert n=0.009 L=31.0' S=0.0355 '/' Outflow=2.05 cfs 0.154 af

Pond 345P: DMH345 TO CB340 Peak Elev=114.34' Inflow=1.76 cfs 0.134 af
15.0" Round Culvert n=0.009 L=59.0' S=0.0356 '/' Outflow=1.76 cfs 0.134 af

Pond 350P: CB350 TO DMH345 Peak Elev=119.34' Inflow=1.76 cfs 0.134 af
15.0" Round Culvert n=0.009 L=64.0' S=0.0344 '/' Outflow=1.76 cfs 0.134 af

Pond 351P: CB351 TO CB350 Peak Elev=120.81' Inflow=0.35 cfs 0.026 af
15.0" Round Culvert n=0.009 L=24.0' S=0.0063 '/' Outflow=0.35 cfs 0.026 af

Pond 355P: DMH355 TO CB350 Peak Elev=124.34' Inflow=1.01 cfs 0.080 af
15.0" Round Culvert n=0.009 L=84.0' S=0.0351 '/' Outflow=1.01 cfs 0.080 af

Pond 360P: CB360 TO DMH355 Peak Elev=131.84' Inflow=1.01 cfs 0.080 af
15.0" Round Culvert n=0.009 L=95.0' S=0.0347 '/' Outflow=1.01 cfs 0.080 af

Pond 365P: CB365 TO CB360 Peak Elev=133.03' Inflow=0.52 cfs 0.041 af
15.0" Round Culvert n=0.009 L=36.0' S=0.0056 '/' Outflow=0.52 cfs 0.041 af

Pond 402GP: CB4+02G TO CB4+19R Peak Elev=124.11' Inflow=2.32 cfs 0.409 af
15.0" Round Culvert n=0.011 L=26.0' S=0.0058 '/' Outflow=2.32 cfs 0.409 af

Pond 405P: CB405 TO HW400 Peak Elev=102.56' Inflow=5.08 cfs 0.385 af
18.0" Round Culvert n=0.013 L=33.0' S=0.0061 '/' Outflow=5.08 cfs 0.385 af

Pond 410P: DCB410 TO CB405 Peak Elev=103.41' Inflow=4.02 cfs 0.305 af
15.0" Round Culvert n=0.013 L=119.0' S=0.0050 '/' Outflow=4.02 cfs 0.305 af

Pond 415P: CB415 TO CB410 Peak Elev=103.57' Inflow=1.71 cfs 0.127 af
15.0" Round Culvert n=0.013 L=50.0' S=0.0054 '/' Outflow=1.71 cfs 0.127 af

Pond 416P: CB416 TO CB415 Peak Elev=103.67' Inflow=1.00 cfs 0.075 af
15.0" Round Culvert n=0.013 L=50.0' S=0.0052 '/' Outflow=1.00 cfs 0.075 af

Pond 419LP: CB4+19L TO DMH1001+25 Peak Elev=119.11' Inflow=13.11 cfs 1.267 af
24.0" Round Culvert n=0.011 L=114.0' S=0.0202 '/' Outflow=13.11 cfs 1.267 af

Pond 419RP: CB4+19R TO CB4+19L Peak Elev=123.86' Inflow=4.27 cfs 0.545 af
15.0" Round Culvert n=0.011 L=22.0' S=0.0068 '/' Outflow=4.27 cfs 0.545 af

Pond 505P: dmh505 TO HW500 Peak Elev=105.18' Inflow=6.25 cfs 0.454 af
18.0" Round Culvert n=0.013 L=12.0' S=0.0083 '/' Outflow=6.25 cfs 0.454 af

Pond 507P: CB507 TO CB505 Peak Elev=106.32' Inflow=6.25 cfs 0.454 af
Primary=6.25 cfs 0.454 af Secondary=0.00 cfs 0.000 af Outflow=6.25 cfs 0.454 af

Pond 508P: CB508 TO CB507 Peak Elev=108.49' Inflow=5.78 cfs 0.417 af
18.0" Round Culvert n=0.009 L=77.0' S=0.0286 '/' Outflow=5.78 cfs 0.417 af

Pond 509P: CB509 to CB508 Peak Elev=109.62' Inflow=5.78 cfs 0.417 af
18.0" Round Culvert n=0.009 L=34.0' S=0.0382 '/' Outflow=5.78 cfs 0.417 af

Pond 600P: DETENTION BASIN OS605 TO Peak Elev=99.78' Storage=81,375 cf Inflow=17.07 cfs 2.205 af
Outflow=1.09 cfs 1.566 af

Pond 710P: CB710 TO HW700 Peak Elev=101.41' Inflow=7.87 cfs 0.593 af
18.0" Round Culvert n=0.009 L=109.0' S=0.0055 '/' Outflow=7.87 cfs 0.593 af

Pond 711P: CB711 TO CB710 Peak Elev=103.56' Inflow=0.60 cfs 0.045 af
15.0" Round Culvert n=0.009 L=52.0' S=0.0135 '/' Outflow=0.60 cfs 0.045 af

Pond 715P: CB715 TO CB710 Peak Elev=102.02' Inflow=6.65 cfs 0.501 af
18.0" Round Culvert n=0.009 L=65.0' S=0.0054 '/' Outflow=6.65 cfs 0.501 af

Pond 720P: DCB720 TO CB715 Peak Elev=102.87' Inflow=6.22 cfs 0.470 af
18.0" Round Culvert n=0.009 L=53.0' S=0.0066 '/' Outflow=6.22 cfs 0.470 af

Pond 725P: CB725 TO DCB720 Peak Elev=103.27' Inflow=3.79 cfs 0.286 af
15.0" Round Culvert n=0.009 L=75.0' S=0.0060 '/' Outflow=3.79 cfs 0.286 af

Pond 801P: HW801 TO HW800 Peak Elev=102.46' Storage=11,605 cf Inflow=18.84 cfs 1.382 af
15.0" Round Culvert n=0.013 L=65.0' S=0.0215 '/' Outflow=7.08 cfs 1.377 af

Pond 805P: CB805 TO HW802 Peak Elev=103.00' Inflow=8.32 cfs 0.650 af
18.0" Round Culvert n=0.009 L=68.0' S=0.0051 '/' Outflow=8.32 cfs 0.650 af

Pond 806P: CB806 TO CB805 Peak Elev=104.26' Inflow=6.40 cfs 0.499 af
18.0" Round Culvert n=0.009 L=100.0' S=0.0175 '/' Outflow=6.40 cfs 0.499 af

Pond 807P: CB807 TO CB806 Peak Elev=106.18' Inflow=3.27 cfs 0.255 af
18.0" Round Culvert n=0.009 L=100.0' S=0.0215 '/' Outflow=3.27 cfs 0.255 af

Pond 808P: CB808 TO CB807 Peak Elev=107.04' Inflow=2.56 cfs 0.205 af
15.0" Round Culvert n=0.009 L=128.0' S=0.0051 '/' Outflow=2.56 cfs 0.205 af

Pond 857LP: CB8+57L TO CB4+19L Peak Elev=134.95' Inflow=6.05 cfs 0.524 af
15.0" Round Culvert n=0.011 L=439.0' S=0.0237 '/' Outflow=6.05 cfs 0.524 af

Pond 857RP: CB8+57R TO CB8+57L Peak Elev=134.99' Inflow=0.89 cfs 0.075 af
15.0" Round Culvert n=0.011 L=22.0' S=0.0068 '/' Outflow=0.89 cfs 0.075 af

Pond 900P: POND 900 Peak Elev=100.66' Storage=88,635 cf Inflow=23.42 cfs 3.042 af
Discarded=1.06 cfs 2.429 af Primary=0.28 cfs 0.266 af Outflow=1.34 cfs 2.696 af

Pond 1000P: Sediment Forebay Peak Elev=111.56' Storage=89 cf Inflow=1.14 cfs 0.209 af
Outflow=1.14 cfs 0.209 af

Pond 1100P: Subsurface Detention SC-740 Peak Elev=120.75' Storage=3,966 cf Inflow=4.63 cfs 0.349 af
Discarded=0.13 cfs 0.212 af Primary=4.51 cfs 0.137 af Outflow=4.64 cfs 0.349 af

Pond 1200P: Subsurface Detention SC-740 Peak Elev=112.86' Storage=3,966 cf Inflow=3.22 cfs 0.280 af
Discarded=0.13 cfs 0.202 af Primary=1.95 cfs 0.078 af Outflow=2.08 cfs 0.280 af

Pond 1295GP: CB12+95G TO CB12+95R Peak Elev=138.29' Inflow=2.34 cfs 0.217 af
15.0" Round Culvert n=0.011 L=11.0' S=0.0091 '/' Outflow=2.34 cfs 0.217 af

Pond 1295LP: CB12+95L TO CB8+57L Peak Elev=137.65' Inflow=3.69 cfs 0.340 af
15.0" Round Culvert n=0.011 L=438.0' S=0.0083 '/' Outflow=3.69 cfs 0.340 af

Pond 1295RP: CB12+95R CB12+95L Peak Elev=138.07' Inflow=3.04 cfs 0.284 af
15.0" Round Culvert n=0.011 L=22.0' S=0.0091 '/' Outflow=3.04 cfs 0.284 af

Pond 1643LP: CB16+43L TO CB16+43R Peak Elev=137.81' Inflow=0.09 cfs 0.006 af
12.0" Round Culvert n=0.011 L=22.0' S=0.0068 '/' Outflow=0.09 cfs 0.006 af

Pond 1643RP: CB16+43R TO CB17+85R Peak Elev=136.58' Inflow=0.69 cfs 0.052 af
12.0" Round Culvert n=0.011 L=143.0' S=0.0346 '/' Outflow=0.69 cfs 0.052 af

Pond 1785LP: CB17+85L TO CB17+85R Peak Elev=131.62' Inflow=0.33 cfs 0.028 af
12.0" Round Culvert n=0.011 L=22.0' S=0.0068 '/' Outflow=0.33 cfs 0.028 af

Pond 1785RP: CB17+85R TO DMH18+69 Peak Elev=130.73' Inflow=1.41 cfs 0.111 af
12.0" Round Culvert n=0.011 L=86.0' S=0.0337 '/' Outflow=1.41 cfs 0.111 af

Pond 1869P: DMH18+69 TO CB19+28L Peak Elev=127.63' Inflow=1.41 cfs 0.111 af
12.0" Round Culvert n=0.011 L=55.0' S=0.0345 '/' Outflow=1.41 cfs 0.111 af

Pond 1928LP: CB19+28L TO CB19+79R Peak Elev=124.36' Inflow=2.33 cfs 0.178 af
12.0" Round Culvert n=0.011 L=55.0' S=0.0282 '/' Outflow=2.33 cfs 0.178 af

Pond 1928RP: CB19+28R TO CB19+28L Peak Elev=125.80' Inflow=0.48 cfs 0.032 af
12.0" Round Culvert n=0.011 L=22.0' S=0.0068 '/' Outflow=0.48 cfs 0.032 af

Pond 1979RP: CB19+79 TO CB21+73R Peak Elev=122.52' Inflow=2.48 cfs 0.189 af
12.0" Round Culvert n=0.011 L=190.0' S=0.0191 '/' Outflow=2.48 cfs 0.189 af

Pond 2168P: DMH 21+68R to DMH 22+41R Peak Elev=109.96' Inflow=1.14 cfs 0.209 af
12.0" Round Culvert n=0.012 L=76.0' S=0.0150 '/' Outflow=1.14 cfs 0.209 af

Pond 2173LP: CB21+73L TO CB21+73R Peak Elev=121.01' Inflow=1.06 cfs 0.079 af
12.0" Round Culvert n=0.011 L=22.0' S=0.0114 '/' Outflow=1.06 cfs 0.079 af

Pond 2173RP: CB21+73R TO DMH21+95R Peak Elev=120.98' Inflow=4.21 cfs 0.316 af
18.0" Round Culvert n=0.011 L=30.0' S=0.0357 '/' Outflow=4.21 cfs 0.316 af

Pond 2182P: DCB 21+82R TO DMH 21+97R Peak Elev=120.75' Inflow=0.52 cfs 0.033 af
12.0" Round Culvert n=0.011 L=10.0' S=0.0100 '/' Outflow=0.52 cfs 0.033 af

Pond 2195P: DMH21+95R TO Subsurface Detention Peak Elev=120.78' Inflow=4.21 cfs 0.316 af
24.0" Round Culvert n=0.011 L=8.0' S=0.0000 '/' Outflow=4.21 cfs 0.316 af

Pond 2197P: DMH 21+97R TO Subsurface Detention Peak Elev=120.75' Inflow=0.52 cfs 0.033 af
12.0" Round Culvert n=0.011 L=10.0' S=0.0000 '/' Outflow=0.52 cfs 0.033 af

Pond 2210P: DMH 22+10R to DMH22+20R Peak Elev=118.72' Inflow=4.51 cfs 0.137 af
12.0" Round Culvert n=0.011 L=5.0' S=0.0200 '/' Outflow=4.51 cfs 0.137 af

Pond 2220P: DMH22+20R TO DMH22+41R Peak Elev=111.38' Inflow=4.51 cfs 0.137 af
12.0" Round Culvert n=0.011 L=53.0' S=0.0747 '/' Outflow=4.51 cfs 0.137 af

Pond 2241: DMH 22+41R to DMH24+86R Peak Elev=111.53' Inflow=5.79 cfs 0.519 af
12.0" Round Culvert n=0.012 L=188.0' S=0.0150 '/' Outflow=5.79 cfs 0.519 af

Pond 2286P: DMH 22+86R to DMH24+78R Peak Elev=106.03' Inflow=5.79 cfs 0.519 af
12.0" Round Culvert n=0.012 L=54.0' S=0.0150 '/' Outflow=5.79 cfs 0.519 af

Pond 2440P: TD24+40R TO CB24+60R Peak Elev=112.86' Inflow=0.10 cfs 0.006 af
12.0" Round Culvert n=0.011 L=62.0' S=0.0323 '/' Outflow=0.10 cfs 0.006 af

Pond 2460LP: CB24+60L TO CB24+60R Peak Elev=114.20' Inflow=1.52 cfs 0.129 af
12.0" Round Culvert n=0.011 L=22.0' S=0.0100 '/' Outflow=1.52 cfs 0.129 af

Pond 2460P: CB24+60R TO DMH24+85R Peak Elev=112.86' Inflow=0.96 cfs 0.060 af
12.0" Round Culvert n=0.011 L=28.0' S=0.0107 '/' Outflow=0.96 cfs 0.060 af

Pond 2460RP: CB24+60R TO DMH24+86R Peak Elev=113.93' Inflow=2.24 cfs 0.202 af
12.0" Round Culvert n=0.011 L=58.0' S=0.0617 '/' Outflow=2.24 cfs 0.202 af

Pond 2468P: DMH24+86R TO Subsurface Detention Peak Elev=112.87' Inflow=2.24 cfs 0.202 af
24.0" Round Culvert n=0.011 L=8.0' S=0.0000 '/' Outflow=2.24 cfs 0.201 af

Pond 2474P: DMH24+74R TO DMH24+85R Peak Elev=112.86' Inflow=0.27 cfs 0.018 af
12.0" Round Culvert n=0.011 L=12.0' S=0.0333 '/' Outflow=0.27 cfs 0.018 af

Pond 2478P: DMH24+78R to HW24+89R Peak Elev=104.16' Inflow=6.50 cfs 0.597 af
12.0" Round Culvert n=0.012 L=14.0' S=0.0150 '/' Outflow=6.50 cfs 0.597 af

Pond 2485P: DMH24+85R TO Subsurface Detention Peak Elev=112.86' Inflow=1.20 cfs 0.078 af
24.0" Round Culvert n=0.011 L=6.0' S=0.0000 '/' Outflow=1.20 cfs 0.078 af

Pond 2495P: DMH24+95R TO DMH25+00 Peak Elev=110.21' Inflow=1.95 cfs 0.078 af
12.0" Round Culvert n=0.011 L=10.0' S=0.0200 '/' Outflow=1.95 cfs 0.078 af

Pond 2505P: DMH24+82R to DMH24+78R Peak Elev=104.54' Inflow=1.95 cfs 0.078 af
12.0" Round Culvert n=0.011 L=43.0' S=0.0649 '/' Outflow=1.95 cfs 0.078 af

Pond 2625RP: DMH26+25R TO HW26+25 Peak Elev=102.86' Inflow=4.72 cfs 0.386 af
12.0" Round Culvert n=0.011 L=15.0' S=0.0200 '/' Outflow=4.72 cfs 0.386 af

Pond 2723P: DMH27+23R TO DMH26+25R Peak Elev=103.51' Inflow=2.58 cfs 0.214 af
12.0" Round Culvert n=0.011 L=93.0' S=0.0161 '/' Outflow=2.58 cfs 0.214 af

Pond 2723RP: TD27+23R TO DMH27+23R Peak Elev=104.92' Inflow=0.42 cfs 0.028 af
12.0" Round Culvert n=0.011 L=39.0' S=0.0538 '/' Outflow=0.42 cfs 0.028 af

Pond 2730LP: CB27+30L TO 27+30R Peak Elev=110.18' Inflow=1.47 cfs 0.121 af
12.0" Round Culvert n=0.011 L=22.0' S=0.0100 '/' Outflow=1.47 cfs 0.121 af

Pond 2730RP: CB27+30R TO DMH27+23R Peak Elev=109.92' Inflow=2.20 cfs 0.186 af
12.0" Round Culvert n=0.011 L=125.0' S=0.0526 '/' Outflow=2.20 cfs 0.186 af

Pond 3018GP: CB30+18G TO CB30+20L Peak Elev=106.84' Inflow=13.22 cfs 1.683 af
24.0" Round Culvert n=0.011 L=10.0' S=0.0100 '/' Outflow=13.22 cfs 1.683 af

Pond 3020LP: CB30+20L TO CB30+20R Peak Elev=105.62' Inflow=15.65 cfs 1.914 af
24.0" Round Culvert n=0.011 L=22.0' S=0.0091 '/' Outflow=15.65 cfs 1.914 af

Pond 3020RP: CB30+20R TO HW29+63 Peak Elev=103.91' Inflow=16.61 cfs 1.984 af
24.0" Round Culvert n=0.011 L=135.0' S=0.0089 '/' Outflow=16.61 cfs 1.984 af

Pond 3200P: CB3200 TO CB320 Peak Elev=111.02' Inflow=0.01 cfs 0.003 af
15.0" Round Culvert n=0.009 L=90.0' S=0.0050 '/' Outflow=0.01 cfs 0.003 af

Pond 100125P: DMH1001+25 TO DMH1003+11 Peak Elev=109.71' Inflow=13.11 cfs 1.267 af
24.0" Round Culvert n=0.011 L=194.0' S=0.0201 '/' Outflow=13.11 cfs 1.267 af

Pond 100311P: DMH1003+11C TO CB30+18G Peak Elev=108.02' Inflow=13.11 cfs 1.267 af
24.0" Round Culvert n=0.011 L=130.0' S=0.0092 '/' Outflow=13.11 cfs 1.267 af

Pond BMP-1: BMP-1 STORMTECH Peak Elev=105.95' Storage=3,981 cf Inflow=6.36 cfs 0.398 af
Discarded=0.01 cfs 0.059 af Primary=5.86 cfs 0.302 af Outflow=5.87 cfs 0.362 af

Pond C3P: CBC3 to CB509 Peak Elev=114.84' Inflow=4.80 cfs 0.348 af
18.0" Round Culvert n=0.009 L=183.0' S=0.0295 '/' Outflow=4.80 cfs 0.348 af

Pond C4P: CBC4 to CBC3 Peak Elev=117.01' Inflow=3.09 cfs 0.220 af
15.0" Round Culvert n=0.009 L=212.0' S=0.0092 '/' Outflow=3.09 cfs 0.220 af

Pond C5P: CBC5 to DMHC6 Peak Elev=118.53' Inflow=1.18 cfs 0.082 af
15.0" Round Culvert n=0.013 L=66.0' S=0.0091 '/' Outflow=1.18 cfs 0.082 af

Pond C6P: DMHC6 to CBC4 Peak Elev=117.56' Inflow=1.75 cfs 0.127 af
15.0" Round Culvert n=0.013 L=32.0' S=0.0219 '/' Outflow=1.75 cfs 0.127 af

Pond C7P: CBC7 to DMHC6 Peak Elev=118.93' Inflow=0.57 cfs 0.046 af
15.0" Round Culvert n=0.013 L=189.0' S=0.0082 '/' Outflow=0.57 cfs 0.046 af

Pond C8P: CBC8 to CBC7 Peak Elev=119.36' Inflow=0.57 cfs 0.046 af
15.0" Round Culvert n=0.013 L=33.0' S=0.0106 '/' Outflow=0.57 cfs 0.046 af

Pond RD1Pa: RD1a TO CB327 Peak Elev=125.50' Inflow=0.73 cfs 0.058 af
12.0" Round Culvert n=0.013 L=43.0' S=0.0200 '/' Outflow=0.73 cfs 0.058 af

Pond RD1Pb: RD1b to CB 324 Peak Elev=123.91' Inflow=0.52 cfs 0.041 af
12.0" Round Culvert n=0.013 L=10.0' S=0.0800 '/' Outflow=0.52 cfs 0.041 af

Pond RD2Pa: RD2a to CB333 Peak Elev=113.64' Inflow=0.59 cfs 0.047 af
12.0" Round Culvert n=0.013 L=23.0' S=0.0100 '/' Outflow=0.59 cfs 0.047 af

Pond RD2Pb: RD2b TO CB322 Peak Elev=114.19' Inflow=0.58 cfs 0.046 af
12.0" Round Culvert n=0.013 L=20.0' S=0.0340 '/' Outflow=0.58 cfs 0.046 af

Pond RD3P: RD3 TO CB808 Peak Elev=107.77' Inflow=2.56 cfs 0.202 af
12.0" Round Culvert n=0.009 L=7.0' S=0.0214 '/' Outflow=2.56 cfs 0.202 af

Pond RD4P: RD4 TO CB807 Peak Elev=108.14' Inflow=0.07 cfs 0.006 af
12.0" Round Culvert n=0.009 L=34.0' S=0.0441 '/' Outflow=0.07 cfs 0.006 af

Pond RD5P: RD5 TO CB806 Peak Elev=107.27' Inflow=2.61 cfs 0.206 af
12.0" Round Culvert n=0.009 L=45.0' S=0.0567 '/' Outflow=2.61 cfs 0.206 af

Pond RD6P: RD6 TO CB805 Peak Elev=103.71' Inflow=1.36 cfs 0.107 af
12.0" Round Culvert n=0.009 L=60.0' S=0.0233 '/' Outflow=1.36 cfs 0.107 af

Pond RD8P: RD8 TO CB107 Peak Elev=102.31' Inflow=0.32 cfs 0.025 af
8.0" Round Culvert n=0.009 L=28.0' S=0.0107 '/' Outflow=0.32 cfs 0.025 af

Pond RD9P: RD9 TO CB405 Peak Elev=102.67' Inflow=0.22 cfs 0.017 af
8.0" Round Culvert n=0.009 L=32.0' S=0.0094 '/' Outflow=0.22 cfs 0.017 af

Total Runoff Area = 121.896 ac Runoff Volume = 16.713 af Average Runoff Depth = 1.65"
80.32% Pervious = 97.907 ac 19.68% Impervious = 23.989 ac

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: SUBCATCHMENT1 Runoff Area=116,725 sf 15.99% Impervious Runoff Depth=1.50"
Flow Length=928' Tc=34.5 min CN=47 Runoff=2.08 cfs 0.334 af

Subcatchment 11S: flow to reach 2R Runoff Area=17,367 sf 0.00% Impervious Runoff Depth=3.04"
Flow Length=80' Tc=8.0 min CN=63 Runoff=1.30 cfs 0.101 af

Subcatchment 12S: Flow to Lot H-2 Runoff Area=176,844 sf 9.99% Impervious Runoff Depth=4.75"
Flow Length=645' Tc=9.0 min CN=79 Runoff=20.25 cfs 1.607 af

Subcatchment 14S: Flow to Lot H-2 (REACH Runoff Area=76,548 sf 0.00% Impervious Runoff Depth=3.98"
Flow Length=416' Tc=9.0 min CN=72 Runoff=7.41 cfs 0.583 af

Subcatchment 15S: offsite flow Runoff Area=358,058 sf 1.70% Impervious Runoff Depth=0.36"
Flow Length=1,260' Tc=27.5 min CN=32 Runoff=0.55 cfs 0.243 af

Subcatchment 16S: offsite flow Runoff Area=2,052,474 sf 8.08% Impervious Runoff Depth=1.59"
Flow Length=1,412' Tc=34.3 min CN=48 Runoff=39.62 cfs 6.228 af

Subcatchment 30S: SUBCATCHMENT30 Runoff Area=48,198 sf 0.00% Impervious Runoff Depth=3.24"
Flow Length=154' Slope=0.0200 '/' Tc=23.5 min CN=65 Runoff=2.62 cfs 0.299 af

Subcatchment 40S: SUBCATCHMENT40 Runoff Area=152,210 sf 0.00% Impervious Runoff Depth=1.50"
Flow Length=452' Tc=14.5 min CN=47 Runoff=3.82 cfs 0.436 af

Subcatchment 50S: SUBCATCHMENT50 Runoff Area=125,909 sf 4.33% Impervious Runoff Depth=0.55"
Flow Length=987' Tc=24.8 min CN=35 Runoff=0.50 cfs 0.131 af

Subcatchment 100S: Flow to Detention Runoff Area=42,732 sf 0.00% Impervious Runoff Depth=3.77"
Tc=5.0 min CN=70 Runoff=4.49 cfs 0.308 af

Subcatchment 101AS: Flow to Detention Runoff Area=12,152 sf 1.03% Impervious Runoff Depth=4.97"
Tc=5.0 min CN=81 Runoff=1.66 cfs 0.116 af

Subcatchment 101os: North Side of Mast Runoff Area=17,404 sf 27.18% Impervious Runoff Depth=2.05"
Tc=5.0 min CN=53 Runoff=0.92 cfs 0.068 af

Subcatchment 102os: North Side of Mast Runoff Area=15,661 sf 51.62% Impervious Runoff Depth=3.66"
Tc=5.0 min CN=69 Runoff=1.60 cfs 0.110 af

Subcatchment 103os: Mast Road East to Runoff Area=12,002 sf 100.00% Impervious Runoff Depth=6.94"
Tc=5.0 min CN=98 Runoff=2.01 cfs 0.159 af

Subcatchment 107S: Flow to CB107 Runoff Area=7,160 sf 86.56% Impervious Runoff Depth=6.70"
Tc=5.0 min CN=96 Runoff=1.19 cfs 0.092 af

Subcatchment 108S: Flow to CB108 Runoff Area=20,254 sf 84.37% Impervious Runoff Depth=6.58"
Tc=5.0 min CN=95 Runoff=3.34 cfs 0.255 af

Subcatchment148GS: SUBCATCHMENT Runoff Area=24,508 sf 16.32% Impervious Runoff Depth=1.24"
Flow Length=178' Tc=6.3 min CN=44 Runoff=0.60 cfs 0.058 af

Subcatchment148RS: SUBCATCHMENT Runoff Area=4,316 sf 70.81% Impervious Runoff Depth=4.97"
Tc=5.0 min CN=81 Runoff=0.59 cfs 0.041 af

Subcatchment200os: Mast Road East to Runoff Area=9,931 sf 100.00% Impervious Runoff Depth=6.94"
Tc=5.0 min CN=98 Runoff=1.66 cfs 0.132 af

Subcatchment205S: Flow to CB205 Runoff Area=21,237 sf 94.10% Impervious Runoff Depth=6.82"
Tc=5.0 min CN=97 Runoff=3.55 cfs 0.277 af

Subcatchment206S: Flow to CB206 Runoff Area=10,095 sf 95.84% Impervious Runoff Depth=6.82"
Tc=5.0 min CN=97 Runoff=1.69 cfs 0.132 af

Subcatchment210S: Flow to CB210 Runoff Area=7,732 sf 75.04% Impervious Runoff Depth=6.12"
Tc=5.0 min CN=91 Runoff=1.23 cfs 0.090 af

Subcatchment215S: Flow to DCB215 Runoff Area=28,399 sf 86.64% Impervious Runoff Depth=6.35"
Tc=5.0 min CN=93 Runoff=4.62 cfs 0.345 af

Subcatchment220S: Flow to CB220 Runoff Area=15,024 sf 95.13% Impervious Runoff Depth=6.70"
Tc=5.0 min CN=96 Runoff=2.50 cfs 0.193 af

Subcatchment300os: East Side of NH Runoff Area=2,933 sf 81.69% Impervious Runoff Depth=5.65"
Tc=5.0 min CN=87 Runoff=0.44 cfs 0.032 af

Subcatchment303GS: SUBCATCHMENT Runoff Area=10,545 sf 75.15% Impervious Runoff Depth=5.20"
Tc=5.0 min CN=83 Runoff=1.50 cfs 0.105 af

Subcatchment304RS: SUBCATCHMENT Runoff Area=5,196 sf 51.33% Impervious Runoff Depth=3.66"
Tc=5.0 min CN=69 Runoff=0.53 cfs 0.036 af

Subcatchment305S: Flow to CB305 Runoff Area=7,928 sf 84.02% Impervious Runoff Depth=6.23"
Tc=5.0 min CN=92 Runoff=1.28 cfs 0.095 af

Subcatchment310S: Flow to CB310 Runoff Area=145,473 sf 12.09% Impervious Runoff Depth=1.50"
Flow Length=469' Tc=13.1 min CN=47 Runoff=3.79 cfs 0.417 af

Subcatchment315S: Flow to CB315 Runoff Area=116,325 sf 6.81% Impervious Runoff Depth=0.83"
Flow Length=537' Tc=9.9 min CN=39 Runoff=1.18 cfs 0.186 af

Subcatchment316S: Flow to CB316 Runoff Area=3,776 sf 88.61% Impervious Runoff Depth=6.47"
Tc=5.0 min CN=94 Runoff=0.62 cfs 0.047 af

Subcatchment320S: Flow to CB320 Runoff Area=3,127 sf 97.95% Impervious Runoff Depth=6.82"
Tc=5.0 min CN=97 Runoff=0.52 cfs 0.041 af

Subcatchment320Sa: Porous Walk Runoff Area=404 sf 100.00% Impervious Runoff Depth=6.94"
Tc=5.0 min CN=98 Runoff=0.07 cfs 0.005 af

Subcatchment321S: Flow to CB322 Runoff Area=1,903 sf 0.00% Impervious Runoff Depth=0.83"
Tc=5.0 min CN=39 Runoff=0.02 cfs 0.003 af

Subcatchment 321Sa: Porous Walk Runoff Area=456 sf 100.00% Impervious Runoff Depth=6.94"
Tc=5.0 min CN=98 Runoff=0.08 cfs 0.006 af

Subcatchment 322S: Flow to CB323 Runoff Area=4,253 sf 0.00% Impervious Runoff Depth=0.83"
Tc=5.0 min CN=39 Runoff=0.05 cfs 0.007 af

Subcatchment 323S: Flow to CB324 Runoff Area=1,844 sf 0.00% Impervious Runoff Depth=0.83"
Tc=5.0 min CN=39 Runoff=0.02 cfs 0.003 af

Subcatchment 323Sa: Porous Walk Runoff Area=498 sf 100.00% Impervious Runoff Depth=6.94"
Tc=5.0 min CN=98 Runoff=0.08 cfs 0.007 af

Subcatchment 324S: Flow to CB325 Runoff Area=2,213 sf 100.00% Impervious Runoff Depth=6.94"
Tc=5.0 min CN=98 Runoff=0.37 cfs 0.029 af

Subcatchment 325S: Flow to CB324 Runoff Area=1,665 sf 100.00% Impervious Runoff Depth=6.94"
Tc=5.0 min CN=98 Runoff=0.28 cfs 0.022 af

Subcatchment 326S: Flow to CB325 Runoff Area=34,308 sf 60.15% Impervious Runoff Depth=4.20"
Tc=5.0 min CN=74 Runoff=4.02 cfs 0.276 af

Subcatchment 326Sa: Porous Walk Runoff Area=1,787 sf 44.21% Impervious Runoff Depth=3.24"
Tc=5.0 min CN=65 Runoff=0.16 cfs 0.011 af

Subcatchment 326Sb: Porous Walk Runoff Area=57 sf 100.00% Impervious Runoff Depth=6.94"
Tc=5.0 min CN=98 Runoff=0.01 cfs 0.001 af

Subcatchment 326Sc: Porous Walk Runoff Area=53 sf 100.00% Impervious Runoff Depth=6.94"
Tc=5.0 min CN=98 Runoff=0.01 cfs 0.001 af

Subcatchment 330S: Flow to CB330 Runoff Area=3,294 sf 94.11% Impervious Runoff Depth=6.58"
Tc=5.0 min CN=95 Runoff=0.54 cfs 0.041 af

Subcatchment 330Sa: Porous Walk Runoff Area=450 sf 41.33% Impervious Runoff Depth=3.04"
Tc=5.0 min CN=63 Runoff=0.04 cfs 0.003 af

Subcatchment 330Sb: Porous Walk Runoff Area=218 sf 39.91% Impervious Runoff Depth=3.04"
Tc=5.0 min CN=63 Runoff=0.02 cfs 0.001 af

Subcatchment 331S: Flow to CB331 Runoff Area=10,020 sf 66.41% Impervious Runoff Depth=4.64"
Tc=5.0 min CN=78 Runoff=1.29 cfs 0.089 af

Subcatchment 331Sa: Porous Walk Runoff Area=1,084 sf 44.83% Impervious Runoff Depth=3.24"
Tc=5.0 min CN=65 Runoff=0.10 cfs 0.007 af

Subcatchment 332S: Flow to CB332 Runoff Area=1,679 sf 74.75% Impervious Runoff Depth=5.20"
Tc=5.0 min CN=83 Runoff=0.24 cfs 0.017 af

Subcatchment 332Sa: Porous Walk Runoff Area=1,526 sf 62.19% Impervious Runoff Depth=4.42"
Tc=5.0 min CN=76 Runoff=0.19 cfs 0.013 af

Subcatchment 333S: Flow to CB332 Runoff Area=2,063 sf 0.00% Impervious Runoff Depth=0.83"
Tc=5.0 min CN=39 Runoff=0.02 cfs 0.003 af

Subcatchment 333Sa: Porous Walk Runoff Area=1,005 sf 32.34% Impervious Runoff Depth=2.53"
Tc=5.0 min CN=58 Runoff=0.07 cfs 0.005 af

Subcatchment 335S: Flow to CB335 Runoff Area=4,263 sf 62.80% Impervious Runoff Depth=4.42"
Tc=5.0 min CN=76 Runoff=0.52 cfs 0.036 af

Subcatchment 340S: Flow to CB340 Runoff Area=2,616 sf 72.90% Impervious Runoff Depth=5.09"
Tc=5.0 min CN=82 Runoff=0.36 cfs 0.025 af

Subcatchment 350S: Flow to CB350 Runoff Area=3,138 sf 83.08% Impervious Runoff Depth=5.77"
Tc=5.0 min CN=88 Runoff=0.48 cfs 0.035 af

Subcatchment 351S: Flow to CB351 Runoff Area=2,600 sf 93.15% Impervious Runoff Depth=6.47"
Tc=5.0 min CN=94 Runoff=0.43 cfs 0.032 af

Subcatchment 360S: Flow to CB360 Runoff Area=3,507 sf 100.00% Impervious Runoff Depth=6.94"
Tc=5.0 min CN=98 Runoff=0.59 cfs 0.047 af

Subcatchment 365S: Flow to CB365 Runoff Area=3,724 sf 100.00% Impervious Runoff Depth=6.94"
Tc=5.0 min CN=98 Runoff=0.62 cfs 0.049 af

Subcatchment 400os: East Side of NH Runoff Area=13,932 sf 55.92% Impervious Runoff Depth=5.65"
Tc=5.0 min CN=87 Runoff=2.11 cfs 0.151 af

Subcatchment 402GS: SUBCATCHMENT Runoff Area=196,506 sf 11.43% Impervious Runoff Depth=1.07"
Flow Length=919' Tc=16.0 min CN=42 Runoff=2.80 cfs 0.403 af

Subcatchment 405S: Flow to CB405 Runoff Area=6,080 sf 83.22% Impervious Runoff Depth=6.58"
Tc=5.0 min CN=95 Runoff=1.00 cfs 0.077 af

Subcatchment 410S: Flow to DCB410 Runoff Area=16,744 sf 86.87% Impervious Runoff Depth=6.70"
Tc=5.0 min CN=96 Runoff=2.78 cfs 0.215 af

Subcatchment 415S: Flow to CB415 Runoff Area=5,205 sf 79.02% Impervious Runoff Depth=6.47"
Tc=5.0 min CN=94 Runoff=0.85 cfs 0.064 af

Subcatchment 416S: Flow to CB416 Runoff Area=7,343 sf 80.88% Impervious Runoff Depth=6.47"
Tc=5.0 min CN=94 Runoff=1.20 cfs 0.091 af

Subcatchment 419LS: SUBCATCHMENT Runoff Area=32,282 sf 58.86% Impervious Runoff Depth=4.20"
Tc=5.0 min CN=74 Runoff=3.78 cfs 0.259 af

Subcatchment 419RS: SUBCATCHMENT Runoff Area=27,019 sf 48.53% Impervious Runoff Depth=3.56"
Tc=5.0 min CN=68 Runoff=2.68 cfs 0.184 af

Subcatchment 500os: Drive to CB14 Runoff Area=1,717 sf 100.00% Impervious Runoff Depth=6.94"
Tc=5.0 min CN=98 Runoff=0.29 cfs 0.023 af

Subcatchment 505S: McDONALD SITE Runoff Area=40,980 sf 82.99% Impervious Runoff Depth=6.23"
Tc=0.0 min CN=92 Runoff=7.72 cfs 0.489 af

Subcatchment 507S: Flow to CB507 Runoff Area=3,338 sf 99.70% Impervious Runoff Depth=6.94"
Tc=5.0 min CN=98 Runoff=0.56 cfs 0.044 af

Subcatchment 508Aos: Flow to CBC4 Runoff Area=17,911 sf 52.06% Impervious Runoff Depth=3.66"
Tc=5.0 min CN=69 Runoff=1.83 cfs 0.125 af

Subcatchment 508Bos: West Side of NH Runoff Area=39,695 sf 30.84% Impervious Runoff Depth=2.43"
Tc=5.0 min CN=57 Runoff=2.58 cfs 0.185 af

Subcatchment 508S: Flow to CB508 Runoff Area=15,987 sf 41.84% Impervious Runoff Depth=3.14"
Tc=5.0 min CN=64 Runoff=1.39 cfs 0.096 af

Subcatchment 600os: Drive to CB15 Runoff Area=3,747 sf 100.00% Impervious Runoff Depth=6.94"
Tc=5.0 min CN=98 Runoff=0.63 cfs 0.050 af

Subcatchment 600S: POND 600 Runoff Area=58,507 sf 0.88% Impervious Runoff Depth=2.93"
Tc=5.0 min CN=62 Runoff=4.71 cfs 0.328 af

Subcatchment 700os: East Side of NH Runoff Area=24,418 sf 54.75% Impervious Runoff Depth=5.65"
Tc=5.0 min CN=87 Runoff=3.70 cfs 0.264 af

Subcatchment 710S: Flow to CB710 Runoff Area=4,542 sf 89.56% Impervious Runoff Depth=6.58"
Tc=5.0 min CN=95 Runoff=0.75 cfs 0.057 af

Subcatchment 711S: Flow to CB711 Runoff Area=4,357 sf 88.02% Impervious Runoff Depth=6.58"
Tc=5.0 min CN=95 Runoff=0.72 cfs 0.055 af

Subcatchment 715S: Flow to CB715 Runoff Area=3,324 sf 61.88% Impervious Runoff Depth=6.00"
Tc=5.0 min CN=90 Runoff=0.52 cfs 0.038 af

Subcatchment 720S: Flow to DCB720 Runoff Area=17,720 sf 87.10% Impervious Runoff Depth=6.58"
Tc=5.0 min CN=95 Runoff=2.93 cfs 0.223 af

Subcatchment 725S: Flows to CB725 Runoff Area=27,585 sf 84.41% Impervious Runoff Depth=6.58"
Tc=5.0 min CN=95 Runoff=4.55 cfs 0.347 af

Subcatchment 801S: HW801 TO HW800 Runoff Area=150,892 sf 30.25% Impervious Runoff Depth=3.45"
Tc=5.0 min CN=67 Runoff=14.48 cfs 0.996 af

Subcatchment 805S: FLOW TO CB805 Runoff Area=4,093 sf 91.91% Impervious Runoff Depth=6.70"
Tc=5.0 min CN=96 Runoff=0.68 cfs 0.052 af

Subcatchment 806S: FLOW TO CB806 Runoff Area=3,812 sf 92.10% Impervious Runoff Depth=6.35"
Tc=5.0 min CN=93 Runoff=0.62 cfs 0.046 af

Subcatchment 807S: FLOW TO CB807 Runoff Area=5,559 sf 76.47% Impervious Runoff Depth=5.31"
Tc=5.0 min CN=84 Runoff=0.80 cfs 0.056 af

Subcatchment 808S: FLOW TO CB808 Runoff Area=3,999 sf 0.00% Impervious Runoff Depth=0.83"
Tc=5.0 min CN=39 Runoff=0.05 cfs 0.006 af

Subcatchment857LS: SUBCATCHMENT Runoff Area=16,981 sf 62.84% Impervious Runoff Depth=4.42"
Tc=5.0 min CN=76 Runoff=2.09 cfs 0.144 af

Subcatchment857RS: SUBCATCHMENT Runoff Area=31,969 sf 20.90% Impervious Runoff Depth=1.86"
Tc=5.0 min CN=51 Runoff=1.49 cfs 0.114 af

Subcatchment900S: SUBCATCHMENT900S Runoff Area=78,149 sf 2.46% Impervious Runoff Depth=0.91"
Flow Length=171' Tc=12.4 min CN=40 Runoff=0.89 cfs 0.136 af

Subcatchment1100S: 1100S Runoff Area=6,092 sf 52.35% Impervious Runoff Depth=3.77"
Flow Length=100' Tc=2.6 min CN=70 Runoff=0.70 cfs 0.044 af

Subcatchment1295GS: SUBCATCHMENT Runoff Area=70,690 sf 33.46% Impervious Runoff Depth=2.34"
Flow Length=466' Tc=10.6 min CN=56 Runoff=3.59 cfs 0.316 af

Subcatchment1295LS: SUBCATCHMENT Runoff Area=8,078 sf 65.64% Impervious Runoff Depth=4.64"
Tc=5.0 min CN=78 Runoff=1.04 cfs 0.072 af

Subcatchment1295RS: SUBCATCHMENT Runoff Area=12,955 sf 51.46% Impervious Runoff Depth=3.66"
Tc=5.0 min CN=69 Runoff=1.32 cfs 0.091 af

Subcatchment1643LS: SUBCATCHMENT Runoff Area=1,696 sf 35.38% Impervious Runoff Depth=2.73"
Flow Length=125' Tc=5.2 min CN=60 Runoff=0.13 cfs 0.009 af

Subcatchment1643RS: SUBCATCHMENT Runoff Area=8,214 sf 54.11% Impervious Runoff Depth=3.88"
Flow Length=163' Tc=7.5 min CN=71 Runoff=0.81 cfs 0.061 af

Subcatchment1785LS: SUBCATCHMENT Runoff Area=9,115 sf 28.75% Impervious Runoff Depth=2.34"
Flow Length=231' Tc=8.1 min CN=56 Runoff=0.50 cfs 0.041 af

Subcatchment1785RS: SUBCATCHMENT Runoff Area=5,957 sf 51.59% Impervious Runoff Depth=3.66"
Flow Length=185' Tc=3.9 min CN=69 Runoff=0.63 cfs 0.042 af

Subcatchment1928LS: SUBCATCHMENT Runoff Area=8,001 sf 41.78% Impervious Runoff Depth=3.14"
Flow Length=173' Tc=6.7 min CN=64 Runoff=0.65 cfs 0.048 af

Subcatchment1928RS: SUBCATCHMENT Runoff Area=6,211 sf 51.15% Impervious Runoff Depth=3.66"
Flow Length=177' Tc=4.1 min CN=69 Runoff=0.66 cfs 0.044 af

Subcatchment1979RS: SUBCATCHMENT Runoff Area=2,259 sf 47.94% Impervious Runoff Depth=3.45"
Flow Length=93' Tc=4.4 min CN=67 Runoff=0.22 cfs 0.015 af

Subcatchment2173LS: SUBCATCHMENT Runoff Area=18,794 sf 40.92% Impervious Runoff Depth=3.04"
Flow Length=205' Tc=6.3 min CN=63 Runoff=1.50 cfs 0.109 af

Subcatchment2173RS: SUBCATCHMENT Runoff Area=8,515 sf 55.89% Impervious Runoff Depth=3.98"
Flow Length=126' Tc=6.5 min CN=72 Runoff=0.90 cfs 0.065 af

Subcatchment2373S: SUBCATCHMENT Runoff Area=15,629 sf 100.00% Impervious Runoff Depth=6.94"
Tc=5.0 min CN=98 Runoff=2.62 cfs 0.208 af

Subcatchment2440S: SUBCATCHMENT Runoff Area=1,462 sf 42.82% Impervious Runoff Depth=3.14"
Flow Length=61' Tc=3.4 min CN=64 Runoff=0.13 cfs 0.009 af

Subcatchment 2460LS: SUBCATCHMENT Runoff Area=26,630 sf 47.56% Impervious Runoff Depth=3.45"
Flow Length=378' Tc=10.9 min CN=67 Runoff=2.09 cfs 0.176 af

Subcatchment 2460RS: SUBCATCHMENT Runoff Area=13,923 sf 51.40% Impervious Runoff Depth=3.66"
Flow Length=261' Tc=3.4 min CN=69 Runoff=1.51 cfs 0.098 af

Subcatchment 2460S: SUBCATCHMENT Runoff Area=6,810 sf 74.21% Impervious Runoff Depth=5.20"
Flow Length=138' Tc=1.6 min CN=83 Runoff=1.09 cfs 0.068 af

Subcatchment 2474S: SUBCATCHMENT Runoff Area=4,253 sf 43.00% Impervious Runoff Depth=3.14"
Flow Length=76' Tc=3.7 min CN=64 Runoff=0.39 cfs 0.026 af

Subcatchment 2619S: SUBCATCHMENT Runoff Area=15,629 sf 100.00% Impervious Runoff Depth=6.94"
Tc=5.0 min CN=98 Runoff=2.62 cfs 0.208 af

Subcatchment 2723RS: SUBCATCHMENT Runoff Area=4,476 sf 61.44% Impervious Runoff Depth=4.31"
Flow Length=85' Tc=4.4 min CN=75 Runoff=0.55 cfs 0.037 af

Subcatchment 2730LS: SUBCATCHMENT Runoff Area=24,016 sf 49.95% Impervious Runoff Depth=3.56"
Flow Length=462' Tc=10.0 min CN=68 Runoff=2.00 cfs 0.163 af

Subcatchment 2730RS: SUBCATCHMENT Runoff Area=12,056 sf 52.21% Impervious Runoff Depth=3.77"
Flow Length=261' Tc=3.9 min CN=70 Runoff=1.32 cfs 0.087 af

Subcatchment 3018GS: SUBCATCHMENT Runoff Area=270,071 sf 12.90% Impervious Runoff Depth=1.32"
Flow Length=1,138' Tc=26.5 min CN=45 Runoff=4.52 cfs 0.683 af

Subcatchment 3020LS: SUBCATCHMENT Runoff Area=43,038 sf 52.99% Impervious Runoff Depth=3.77"
Flow Length=349' Tc=10.3 min CN=70 Runoff=3.78 cfs 0.310 af

Subcatchment 3020RS: SUBCATCHMENT Runoff Area=10,119 sf 60.96% Impervious Runoff Depth=4.64"
Flow Length=204' Tc=6.3 min CN=78 Runoff=1.24 cfs 0.090 af

Subcatchment 3200S: Flow to CB3200 Runoff Area=3,537 sf 0.00% Impervious Runoff Depth=0.83"
Tc=5.0 min CN=39 Runoff=0.04 cfs 0.006 af

Subcatchment RD1Sa: Roof drain 1a Runoff Area=5,231 sf 100.00% Impervious Runoff Depth=6.94"
Tc=5.0 min CN=98 Runoff=0.88 cfs 0.069 af

Subcatchment RD1Sb: Roof Drain 1b Runoff Area=3,703 sf 100.00% Impervious Runoff Depth=6.94"
Tc=5.0 min CN=98 Runoff=0.62 cfs 0.049 af

Subcatchment RD2Sa: Roof drain 2a Runoff Area=4,238 sf 100.00% Impervious Runoff Depth=6.94"
Tc=5.0 min CN=98 Runoff=0.71 cfs 0.056 af

Subcatchment RD2Sb: Roof drain 2b Runoff Area=4,138 sf 100.00% Impervious Runoff Depth=6.94"
Tc=5.0 min CN=98 Runoff=0.69 cfs 0.055 af

Subcatchment RD3S: ROOF DRAIN Runoff Area=18,273 sf 100.00% Impervious Runoff Depth=6.94"
Tc=5.0 min CN=98 Runoff=3.06 cfs 0.243 af

Subcatchment RD4S: ROOF DRAIN Runoff Area=504 sf 100.00% Impervious Runoff Depth=6.94"
Tc=5.0 min CN=98 Runoff=0.08 cfs 0.007 af

Subcatchment RD5S: ROOF DRAIN Runoff Area=18,667 sf 100.00% Impervious Runoff Depth=6.94"
Tc=5.0 min CN=98 Runoff=3.13 cfs 0.248 af

Subcatchment RD6S: ROOF DRAIN Runoff Area=9,690 sf 100.00% Impervious Runoff Depth=6.94"
Tc=5.0 min CN=98 Runoff=1.62 cfs 0.129 af

Subcatchment RD8S: Roof Drain Runoff Area=2,295 sf 100.00% Impervious Runoff Depth=6.94"
Tc=5.0 min CN=98 Runoff=0.38 cfs 0.030 af

Subcatchment RD9S: Roof Drain Runoff Area=1,575 sf 100.00% Impervious Runoff Depth=6.94"
Tc=5.0 min CN=98 Runoff=0.26 cfs 0.021 af

Reach 1AR: STREAM Avg. Flow Depth=0.97' Max Vel=4.04 fps Inflow=25.44 cfs 6.622 af
n=0.050 L=370.0' S=0.0314 '/' Capacity=108.07 cfs Outflow=25.09 cfs 6.622 af

Reach 1BR: STREAM Avg. Flow Depth=0.47' Max Vel=3.00 fps Inflow=7.41 cfs 0.583 af
n=0.050 L=310.0' S=0.0384 '/' Capacity=119.58 cfs Outflow=7.26 cfs 0.583 af

Reach 1R: STREAM Avg. Flow Depth=1.28' Max Vel=3.42 fps Inflow=32.24 cfs 7.205 af
n=0.050 L=380.0' S=0.0166 '/' Capacity=78.59 cfs Outflow=31.59 cfs 7.204 af

Reach 2R: REACH 2 Avg. Flow Depth=0.48' Max Vel=2.18 fps Inflow=5.19 cfs 2.280 af
n=0.050 L=560.0' S=0.0193 '/' Capacity=42.77 cfs Outflow=5.16 cfs 2.277 af

Reach 3R: REACH 3 Avg. Flow Depth=0.28' Max Vel=1.66 fps Inflow=2.63 cfs 1.179 af
n=0.050 L=340.0' S=0.0200 '/' Capacity=24.05 cfs Outflow=2.60 cfs 1.179 af

Reach 4R: REACH 4 Avg. Flow Depth=0.21' Max Vel=0.98 fps Inflow=3.82 cfs 0.436 af
n=0.050 L=255.0' S=0.0149 '/' Capacity=468.29 cfs Outflow=3.60 cfs 0.436 af

Reach 5R: REACH 5 Avg. Flow Depth=0.08' Max Vel=0.62 fps Inflow=1.00 cfs 0.374 af
n=0.050 L=540.0' S=0.0231 '/' Capacity=409.57 cfs Outflow=0.87 cfs 0.374 af

Reach 6R: REACH 6 Avg. Flow Depth=0.24' Max Vel=0.99 fps Inflow=3.62 cfs 0.810 af
n=0.050 L=278.0' S=0.0126 '/' Capacity=131.20 cfs Outflow=3.44 cfs 0.810 af

Reach 7R: STREAM Avg. Flow Depth=0.47' Max Vel=2.62 fps Inflow=6.03 cfs 1.989 af
n=0.050 L=194.0' S=0.0284 '/' Capacity=92.22 cfs Outflow=6.02 cfs 1.989 af

Reach 8R: STREAM Avg. Flow Depth=0.54' Max Vel=2.66 fps Inflow=7.61 cfs 4.266 af
n=0.050 L=512.0' S=0.0258 '/' Capacity=98.00 cfs Outflow=7.59 cfs 4.264 af

Reach 9R: STREAM Avg. Flow Depth=1.29' Max Vel=3.69 fps Inflow=34.59 cfs 11.468 af
n=0.050 L=100.0' S=0.0190 '/' Capacity=84.13 cfs Outflow=34.56 cfs 11.467 af

Reach 16R: Existing Culvert to West Avg. Flow Depth=0.62' Max Vel=6.06 fps Inflow=3.70 cfs 0.264 af
15.0" Round Pipe n=0.012 L=45.0' S=0.0113 '/' Capacity=7.45 cfs Outflow=3.70 cfs 0.264 af

Reach 41R: REACH Avg. Flow Depth=0.15' Max Vel=1.07 fps Inflow=0.82 cfs 0.880 af
n=0.050 L=147.0' S=0.0184 '/' Capacity=23.05 cfs Outflow=0.82 cfs 0.880 af

Reach 326R: Reach 1BR Avg. Flow Depth=0.61' Max Vel=2.77 fps Inflow=14.99 cfs 5.016 af
n=0.050 L=358.0' S=0.0288 '/' Capacity=26.39 cfs Outflow=14.86 cfs 5.015 af

Pond 10P: CULVERT UNDER NH ROUTE 108 Peak Elev=71.72' Inflow=68.00 cfs 17.695 af
48.0" Round Culvert n=0.013 L=63.0' S=0.0063 '/' Outflow=68.00 cfs 17.695 af

Pond 11P: CB11 to CB12 Peak Elev=106.45' Inflow=2.01 cfs 0.159 af
12.0" Round Culvert n=0.010 L=19.0' S=0.0132 '/' Outflow=2.01 cfs 0.159 af

Pond 12R: From CB12 out Peak Elev=106.17' Inflow=3.67 cfs 0.291 af
12.0" Round Culvert n=0.010 L=20.0' S=0.0050 '/' Outflow=3.67 cfs 0.291 af

Pond 13P: CB13 to CB14 Peak Elev=107.49' Inflow=2.11 cfs 0.151 af
12.0" Round Culvert n=0.013 L=98.0' S=0.0101 '/' Outflow=2.11 cfs 0.151 af

Pond 14P: CB14 to CB15 Peak Elev=106.51' Inflow=2.40 cfs 0.173 af
12.0" Round Culvert n=0.013 L=25.0' S=0.0484 '/' Outflow=2.40 cfs 0.173 af

Pond 15P: CB15 out Peak Elev=105.61' Inflow=3.02 cfs 0.223 af
12.0" Round Culvert n=0.013 L=10.0' S=0.0100 '/' Outflow=3.02 cfs 0.223 af

Pond 100AP: Outlet Structure 105 to Peak Elev=103.00' Storage=31,540 cf Inflow=16.97 cfs 5.060 af
Outflow=14.99 cfs 5.016 af

Pond 100P: Outlet Structure 110 to HW109 Peak Elev=104.94' Storage=72,884 cf Inflow=49.48 cfs 4.100 af
Outflow=14.11 cfs 4.100 af

Pond 107P: CB107 TO HW106 Peak Elev=103.02' Inflow=4.92 cfs 0.377 af
15.0" Round Culvert n=0.009 L=20.0' S=0.0050 '/' Outflow=4.92 cfs 0.377 af

Pond 108P: CB108 TO CB107 Peak Elev=103.30' Inflow=3.34 cfs 0.255 af
15.0" Round Culvert n=0.009 L=106.0' S=0.0052 '/' Outflow=3.34 cfs 0.255 af

Pond 148GP: CB1+48G TO CB1+48R Peak Elev=126.96' Inflow=0.60 cfs 0.058 af
15.0" Round Culvert n=0.011 L=20.0' S=0.0050 '/' Outflow=0.60 cfs 0.058 af

Pond 148RP: CB1+48R TO CB3+04R Peak Elev=126.84' Inflow=1.14 cfs 0.099 af
15.0" Round Culvert n=0.011 L=153.0' S=0.0101 '/' Outflow=1.14 cfs 0.099 af

Pond 205P: CB205 TO HW200 Peak Elev=104.98' Inflow=13.57 cfs 1.037 af
24.0" Round Culvert n=0.013 L=54.0' S=0.0056 '/' Outflow=13.57 cfs 1.037 af

Pond 206P: CB206 TO CB205 Peak Elev=104.99' Inflow=1.69 cfs 0.132 af
15.0" Round Culvert n=0.013 L=50.0' S=0.0110 '/' Outflow=1.69 cfs 0.132 af

Pond 210P: CB210 TO CB205 Peak Elev=105.68' Inflow=8.34 cfs 0.628 af
18.0" Round Culvert n=0.013 L=65.0' S=0.0054 '/' Outflow=8.34 cfs 0.628 af

Pond 215P: DCB215 TO CB210 Peak Elev=106.32' Inflow=7.11 cfs 0.538 af
18.0" Round Culvert n=0.013 L=75.0' S=0.0053 '/' Outflow=7.11 cfs 0.538 af

Pond 220P: CB220 TO DCB215 Peak Elev=106.52' Inflow=2.50 cfs 0.193 af
15.0" Round Culvert n=0.013 L=60.0' S=0.0083 '/' Outflow=2.50 cfs 0.193 af

Pond 303GP: CB3+03G TO CB3+04R Peak Elev=126.78' Inflow=1.50 cfs 0.105 af
15.0" Round Culvert n=0.011 L=60.0' S=0.0233 '/' Outflow=1.50 cfs 0.105 af

Pond 304RP: CB3+04R TO CB4+01G Peak Elev=126.12' Inflow=3.14 cfs 0.240 af
15.0" Round Culvert n=0.011 L=94.0' S=0.0197 '/' Outflow=3.14 cfs 0.240 af

Pond 305P: CB305 TO HW300 Peak Elev=105.92' Inflow=17.49 cfs 1.734 af
24.0" Round Culvert n=0.009 L=16.0' S=0.0062 '/' Outflow=17.49 cfs 1.734 af

Pond 310P: CB310 TO CB305 Peak Elev=107.07' Inflow=16.24 cfs 1.640 af
24.0" Round Culvert n=0.013 L=28.0' S=0.0054 '/' Outflow=16.24 cfs 1.640 af

Pond 315P: CB315 TO CB310 Peak Elev=111.55' Inflow=14.26 cfs 1.223 af
18.0" Round Culvert n=0.009 L=185.0' S=0.0054 '/' Outflow=14.26 cfs 1.223 af

Pond 316P: CB316 TO CB315 Peak Elev=111.52' Inflow=0.62 cfs 0.047 af
15.0" Round Culvert n=0.009 L=24.0' S=0.0063 '/' Outflow=0.62 cfs 0.047 af

Pond 320P: CB320 TO CB315 Peak Elev=115.39' Inflow=13.29 cfs 0.991 af
18.0" Round Culvert n=0.009 L=213.0' S=0.0110 '/' Outflow=13.29 cfs 0.991 af

Pond 320Pa: Porous Walk Peak Elev=112.45' Storage=23 cf Inflow=0.07 cfs 0.005 af
Outflow=0.03 cfs 0.005 af

Pond 321P: CB321 TO CB320 Peak Elev=117.60' Inflow=6.93 cfs 0.513 af
15.0" Round Culvert n=0.013 L=114.0' S=0.0243 '/' Outflow=6.93 cfs 0.513 af

Pond 321Pa: Porous Walk Peak Elev=117.16' Storage=23 cf Inflow=0.08 cfs 0.006 af
Outflow=0.03 cfs 0.006 af

Pond 322P: CB323 TO CB322 Peak Elev=120.27' Inflow=6.22 cfs 0.455 af
15.0" Round Culvert n=0.013 L=70.0' S=0.0800 '/' Outflow=6.22 cfs 0.455 af

Pond 323P: CB324 to CB323 Peak Elev=123.44' Inflow=6.18 cfs 0.449 af
15.0" Round Culvert n=0.013 L=37.0' S=0.0100 '/' Outflow=6.18 cfs 0.449 af

Pond 323Pa: Porous Walk Peak Elev=129.76' Storage=25 cf Inflow=0.08 cfs 0.007 af
Outflow=0.03 cfs 0.007 af

Pond 324P: CB325 to CB324 Peak Elev=124.34' Inflow=5.54 cfs 0.397 af
15.0" Round Culvert n=0.013 L=57.0' S=0.0100 '/' Outflow=5.54 cfs 0.397 af

Pond 325P: CB326 TO CB325 Peak Elev=125.57' Inflow=5.17 cfs 0.367 af
15.0" Round Culvert n=0.013 L=67.0' S=0.0115 '/' Outflow=5.17 cfs 0.367 af

Pond 326P: CB327 TO CB326 Peak Elev=126.71' Inflow=4.89 cfs 0.345 af
15.0" Round Culvert n=0.013 L=120.0' S=0.0100 '/' Outflow=4.89 cfs 0.345 af

Pond 326Pa: Porous Walk Peak Elev=128.81' Storage=68 cf Inflow=0.16 cfs 0.011 af
Outflow=0.05 cfs 0.011 af

Pond 326Pb: Porous Walk Peak Elev=129.56' Storage=3 cf Inflow=0.01 cfs 0.001 af
Outflow=0.00 cfs 0.001 af

Pond 326Pc: Porous Walk Peak Elev=130.16' Storage=3 cf Inflow=0.01 cfs 0.001 af
Outflow=0.00 cfs 0.001 af

Pond 330P: CB330 T0 CB320 Peak Elev=116.89' Inflow=5.81 cfs 0.431 af
15.0" Round Culvert n=0.009 L=35.0' S=0.0286 '/' Outflow=5.81 cfs 0.431 af

Pond 330Pa: Porous Walk Peak Elev=114.59' Storage=6 cf Inflow=0.04 cfs 0.003 af
Outflow=0.02 cfs 0.003 af

Pond 330Pb: Porous Walk Peak Elev=113.58' Storage=8 cf Inflow=0.02 cfs 0.001 af
Outflow=0.01 cfs 0.001 af

Pond 331P: CB331 TO CB330 Peak Elev=117.09' Inflow=2.26 cfs 0.165 af
15.0" Round Culvert n=0.013 L=12.0' S=0.0100 '/' Outflow=2.26 cfs 0.165 af

Pond 331Pa: Porous Walk Peak Elev=117.08' Storage=40 cf Inflow=0.10 cfs 0.007 af
Outflow=0.03 cfs 0.007 af

Pond 332P: CB332 to CB331 Peak Elev=117.10' Inflow=0.24 cfs 0.017 af
15.0" Round Culvert n=0.013 L=50.0' S=0.0166 '/' Outflow=0.24 cfs 0.017 af

Pond 332Pa: Porous Walk Peak Elev=117.13' Storage=74 cf Inflow=0.19 cfs 0.013 af
Outflow=0.07 cfs 0.013 af

Pond 333P: CB333 TO CB331 Peak Elev=117.13' Inflow=0.73 cfs 0.060 af
15.0" Round Culvert n=0.013 L=135.0' S=0.0193 '/' Outflow=0.73 cfs 0.060 af

Pond 333Pa: Porous Walk Peak Elev=129.61' Storage=31 cf Inflow=0.07 cfs 0.005 af
Outflow=0.02 cfs 0.005 af

Pond 335P: CB335 TO CB330 Peak Elev=117.27' Inflow=3.01 cfs 0.224 af
15.0" Round Culvert n=0.009 L=29.0' S=0.0345 '/' Outflow=3.01 cfs 0.224 af

Pond 340P: CB340TO CB335 Peak Elev=117.55' Inflow=2.48 cfs 0.188 af
15.0" Round Culvert n=0.009 L=31.0' S=0.0355 '/' Outflow=2.48 cfs 0.188 af

Pond 345P: DMH345 TO CB340 Peak Elev=117.75' Inflow=2.12 cfs 0.163 af
15.0" Round Culvert n=0.009 L=59.0' S=0.0356 '/' Outflow=2.12 cfs 0.163 af

Pond 350P: CB350 TO DMH345 Peak Elev=119.43' Inflow=2.12 cfs 0.163 af
15.0" Round Culvert n=0.009 L=64.0' S=0.0344 '/' Outflow=2.12 cfs 0.163 af

Pond 351P: CB351 TO CB350 Peak Elev=120.84' Inflow=0.43 cfs 0.032 af
15.0" Round Culvert n=0.009 L=24.0' S=0.0063 '/' Outflow=0.43 cfs 0.032 af

Pond 355P: DMH355 TO CB350 Peak Elev=124.40' Inflow=1.21 cfs 0.096 af
15.0" Round Culvert n=0.009 L=84.0' S=0.0351 '/' Outflow=1.21 cfs 0.096 af

Pond 360P: CB360 TO DMH355 Peak Elev=131.90' Inflow=1.21 cfs 0.096 af
15.0" Round Culvert n=0.009 L=95.0' S=0.0347 '/' Outflow=1.21 cfs 0.096 af

Pond 365P: CB365 TO CB360 Peak Elev=133.07' Inflow=0.62 cfs 0.049 af
15.0" Round Culvert n=0.009 L=36.0' S=0.0056 '/' Outflow=0.62 cfs 0.049 af

Pond 402GP: CB4+02G TO CB4+19R Peak Elev=125.68' Inflow=4.27 cfs 0.643 af
15.0" Round Culvert n=0.011 L=26.0' S=0.0058 '/' Outflow=4.27 cfs 0.643 af

Pond 405P: CB405 TO HW400 Peak Elev=103.01' Inflow=6.10 cfs 0.467 af
18.0" Round Culvert n=0.013 L=33.0' S=0.0061 '/' Outflow=6.10 cfs 0.467 af

Pond 410P: DCB410 TO CB405 Peak Elev=103.69' Inflow=4.84 cfs 0.370 af
15.0" Round Culvert n=0.013 L=119.0' S=0.0050 '/' Outflow=4.84 cfs 0.370 af

Pond 415P: CB415 TO CB410 Peak Elev=103.83' Inflow=2.06 cfs 0.155 af
15.0" Round Culvert n=0.013 L=50.0' S=0.0054 '/' Outflow=2.06 cfs 0.155 af

Pond 416P: CB416 TO CB415 Peak Elev=103.91' Inflow=1.20 cfs 0.091 af
15.0" Round Culvert n=0.013 L=50.0' S=0.0052 '/' Outflow=1.20 cfs 0.091 af

Pond 419LP: CB4+19L TO DMH1001+25 Peak Elev=120.41' Inflow=18.94 cfs 1.822 af
24.0" Round Culvert n=0.011 L=114.0' S=0.0202 '/' Outflow=18.94 cfs 1.822 af

Pond 419RP: CB4+19R TO CB4+19L Peak Elev=124.97' Inflow=6.51 cfs 0.827 af
15.0" Round Culvert n=0.011 L=22.0' S=0.0068 '/' Outflow=6.51 cfs 0.827 af

Pond 505P: dmh505 TO HW500 Peak Elev=105.70' Inflow=8.73 cfs 0.628 af
18.0" Round Culvert n=0.013 L=12.0' S=0.0083 '/' Outflow=8.73 cfs 0.628 af

Pond 507P: CB507 TO CB505 Peak Elev=107.39' Inflow=8.86 cfs 0.629 af
Primary=8.73 cfs 0.628 af Secondary=0.12 cfs 0.000 af Outflow=8.86 cfs 0.629 af

Pond 508P: CB508 TO CB507 Peak Elev=109.28' Inflow=8.30 cfs 0.584 af
18.0" Round Culvert n=0.009 L=77.0' S=0.0286 '/' Outflow=8.30 cfs 0.584 af

Pond 509P: CB509 to CB508 Peak Elev=110.23' Inflow=8.30 cfs 0.584 af
18.0" Round Culvert n=0.009 L=34.0' S=0.0382 '/' Outflow=8.30 cfs 0.584 af

Pond 600P: DETENTION BASIN OS605 TO Peak Elev=99.96' Storage=87,182 cf Inflow=20.92 cfs 2.828 af
Outflow=5.07 cfs 2.179 af

Pond 710P: CB710 TO HW700 Peak Elev=101.79' Inflow=9.47 cfs 0.721 af
18.0" Round Culvert n=0.009 L=109.0' S=0.0055 '/' Outflow=9.47 cfs 0.721 af

Pond 711P: CB711 TO CB710 Peak Elev=103.60' Inflow=0.72 cfs 0.055 af
15.0" Round Culvert n=0.009 L=52.0' S=0.0135 '/' Outflow=0.72 cfs 0.055 af

Pond 715P: CB715 TO CB710 Peak Elev=102.67' Inflow=8.00 cfs 0.609 af
18.0" Round Culvert n=0.009 L=65.0' S=0.0054 '/' Outflow=8.00 cfs 0.609 af

Pond 720P: DCB720 TO CB715 Peak Elev=103.91' Inflow=7.48 cfs 0.571 af
18.0" Round Culvert n=0.009 L=53.0' S=0.0066 '/' Outflow=7.48 cfs 0.571 af

Pond 725P: CB725 TO DCB720 Peak Elev=104.49' Inflow=4.55 cfs 0.347 af
15.0" Round Culvert n=0.009 L=75.0' S=0.0060 '/' Outflow=4.55 cfs 0.347 af

Pond 801P: HW801 TO HW800 Peak Elev=102.95' Storage=16,609 cf Inflow=24.50 cfs 1.784 af
15.0" Round Culvert n=0.013 L=65.0' S=0.0215 '/' Outflow=8.19 cfs 1.779 af

Pond 805P: CB805 TO HW802 Peak Elev=103.73' Inflow=10.03 cfs 0.788 af
18.0" Round Culvert n=0.009 L=68.0' S=0.0051 '/' Outflow=10.03 cfs 0.788 af

Pond 806P: CB806 TO CB805 Peak Elev=104.57' Inflow=7.73 cfs 0.606 af
18.0" Round Culvert n=0.009 L=100.0' S=0.0175 '/' Outflow=7.73 cfs 0.606 af

Pond 807P: CB807 TO CB806 Peak Elev=106.31' Inflow=3.99 cfs 0.312 af
18.0" Round Culvert n=0.009 L=100.0' S=0.0215 '/' Outflow=3.99 cfs 0.312 af

Pond 808P: CB808 TO CB807 Peak Elev=107.17' Inflow=3.10 cfs 0.249 af
15.0" Round Culvert n=0.009 L=128.0' S=0.0051 '/' Outflow=3.10 cfs 0.249 af

Pond 857LP: CB8+57L TO CB4+19L Peak Elev=136.79' Inflow=8.75 cfs 0.736 af
15.0" Round Culvert n=0.011 L=439.0' S=0.0237 '/' Outflow=8.75 cfs 0.736 af

Pond 857RP: CB8+57R TO CB8+57L Peak Elev=136.89' Inflow=1.49 cfs 0.114 af
15.0" Round Culvert n=0.011 L=22.0' S=0.0068 '/' Outflow=1.49 cfs 0.114 af

Pond 900P: POND 900 Peak Elev=101.78' Storage=131,534 cf Inflow=42.02 cfs 4.609 af
Discarded=1.52 cfs 3.275 af Primary=0.82 cfs 0.880 af Outflow=2.34 cfs 4.155 af

Pond 1000P: Sediment Forebay Peak Elev=112.14' Storage=1,002 cf Inflow=2.08 cfs 0.334 af
Outflow=7.93 cfs 0.334 af

Pond 1100P: Subsurface Detention SC-740 Peak Elev=146.53' Storage=3,966 cf Inflow=6.40 cfs 0.477 af
Discarded=0.13 cfs 0.230 af Primary=9.05 cfs 0.247 af Outflow=9.17 cfs 0.477 af

Pond 1200P: Subsurface Detention SC-740 Peak Elev=116.35' Storage=3,966 cf Inflow=4.36 cfs 0.375 af
Discarded=0.13 cfs 0.219 af Primary=4.57 cfs 0.156 af Outflow=4.70 cfs 0.375 af

Pond 1295GP: CB12+95G TO CB12+95R Peak Elev=140.96' Inflow=3.59 cfs 0.316 af
15.0" Round Culvert n=0.011 L=11.0' S=0.0091 '/' Outflow=3.59 cfs 0.316 af

Pond 1295LP: CB12+95L TO CB8+57L Peak Elev=139.48' Inflow=5.39 cfs 0.478 af
15.0" Round Culvert n=0.011 L=438.0' S=0.0083 '/' Outflow=5.39 cfs 0.478 af

Pond 1295RP: CB12+95R CB12+95L Peak Elev=140.38' Inflow=4.55 cfs 0.407 af
15.0" Round Culvert n=0.011 L=22.0' S=0.0091 '/' Outflow=4.55 cfs 0.407 af

Pond 1643LP: CB16+43L TO CB16+43R Peak Elev=146.37' Inflow=0.13 cfs 0.009 af
12.0" Round Culvert n=0.011 L=22.0' S=0.0068 '/' Outflow=0.13 cfs 0.009 af

Pond 1643RP: CB16+43R TO CB17+85R Peak Elev=148.88' Inflow=0.93 cfs 0.070 af
12.0" Round Culvert n=0.011 L=143.0' S=0.0346 '/' Outflow=0.93 cfs 0.070 af

Pond 1785LP: CB17+85L TO CB17+85R Peak Elev=148.83' Inflow=0.50 cfs 0.041 af
12.0" Round Culvert n=0.011 L=22.0' S=0.0068 '/' Outflow=0.50 cfs 0.041 af

Pond 1785RP: CB17+85R TO DMH18+69 Peak Elev=150.83' Inflow=1.98 cfs 0.152 af
12.0" Round Culvert n=0.011 L=86.0' S=0.0337 '/' Outflow=1.98 cfs 0.152 af

Pond 1869P: DMH18+69 TO CB19+28L Peak Elev=146.33' Inflow=1.98 cfs 0.152 af
12.0" Round Culvert n=0.011 L=55.0' S=0.0345 '/' Outflow=1.98 cfs 0.152 af

Pond 1928LP: CB19+28L TO CB19+79R Peak Elev=148.12' Inflow=3.23 cfs 0.244 af
12.0" Round Culvert n=0.011 L=55.0' S=0.0282 '/' Outflow=3.23 cfs 0.244 af

Pond 1928RP: CB19+28R TO CB19+28L Peak Elev=146.10' Inflow=0.66 cfs 0.044 af
12.0" Round Culvert n=0.011 L=22.0' S=0.0068 '/' Outflow=0.66 cfs 0.044 af

Pond 1979RP: CB19+79 TO CB21+73R Peak Elev=149.07' Inflow=3.45 cfs 0.259 af
12.0" Round Culvert n=0.011 L=190.0' S=0.0191 '/' Outflow=3.45 cfs 0.259 af

Pond 2168P: DMH 21+68R to DMH 22+41R Peak Elev=137.22' Inflow=7.71 cfs 0.463 af
12.0" Round Culvert n=0.012 L=76.0' S=0.0150 '/' Outflow=7.71 cfs 0.463 af

Pond 2173LP: CB21+73L TO CB21+73R Peak Elev=147.66' Inflow=1.50 cfs 0.109 af
12.0" Round Culvert n=0.011 L=22.0' S=0.0114 '/' Outflow=1.50 cfs 0.109 af

Pond 2173RP: CB21+73R TO DMH21+95R Peak Elev=143.29' Inflow=5.84 cfs 0.433 af
18.0" Round Culvert n=0.011 L=30.0' S=0.0357 '/' Outflow=5.84 cfs 0.433 af

Pond 2182P: DCB 21+82R TO DMH 21+97R Peak Elev=142.43' Inflow=0.70 cfs 0.044 af
12.0" Round Culvert n=0.011 L=10.0' S=0.0100 '/' Outflow=0.70 cfs 0.044 af

Pond 2195P: DMH21+95R TO Subsurface Detention Peak Elev=144.60' Inflow=5.84 cfs 0.433 af
24.0" Round Culvert n=0.011 L=8.0' S=0.0000 '/' Outflow=5.84 cfs 0.433 af

Pond 2197P: DMH 21+97R TO Subsurface Detention Peak Elev=144.47' Inflow=0.70 cfs 0.044 af
12.0" Round Culvert n=0.011 L=10.0' S=0.0000 '/' Outflow=0.70 cfs 0.044 af

Pond 2210P: DMH 22+10R to DMH22+20R Peak Elev=141.42' Inflow=9.05 cfs 0.247 af
12.0" Round Culvert n=0.011 L=5.0' S=0.0200 '/' Outflow=9.05 cfs 0.247 af

Pond 2220P: DMH22+20R TO DMH22+41R Peak Elev=142.90' Inflow=9.05 cfs 0.247 af
12.0" Round Culvert n=0.011 L=53.0' S=0.0747 '/' Outflow=9.05 cfs 0.247 af

Pond 2241: DMH 22+41R to DMH24+86R Peak Elev=144.00' Inflow=11.78 cfs 0.917 af
12.0" Round Culvert n=0.012 L=188.0' S=0.0150 '/' Outflow=11.78 cfs 0.917 af

Pond 2286P: DMH 22+86R to DMH24+78R Peak Elev=122.65' Inflow=11.78 cfs 0.917 af
12.0" Round Culvert n=0.012 L=54.0' S=0.0150 '/' Outflow=11.78 cfs 0.917 af

Pond 2440P: TD24+40R TO CB24+60R Peak Elev=116.36' Inflow=0.13 cfs 0.009 af
12.0" Round Culvert n=0.011 L=62.0' S=0.0323 '/' Outflow=0.13 cfs 0.009 af

Pond 2460LP: CB24+60L TO CB24+60R Peak Elev=116.98' Inflow=2.09 cfs 0.176 af
12.0" Round Culvert n=0.011 L=22.0' S=0.0100 '/' Outflow=2.09 cfs 0.176 af

Pond 2460P: CB24+60R TO DMH24+85R Peak Elev=114.39' Inflow=1.21 cfs 0.076 af
12.0" Round Culvert n=0.011 L=28.0' S=0.0107 '/' Outflow=1.21 cfs 0.076 af

Pond 2460RP: CB24+60R TO DMH24+86R Peak Elev=114.99' Inflow=3.08 cfs 0.273 af
12.0" Round Culvert n=0.011 L=58.0' S=0.0617 '/' Outflow=3.08 cfs 0.273 af

Pond 2468P: DMH24+86R TO Subsurface Detention Peak Elev=115.68' Inflow=3.08 cfs 0.273 af
24.0" Round Culvert n=0.011 L=8.0' S=0.0000 '/' Outflow=3.08 cfs 0.273 af

Pond 2474P: DMH24+74R TO DMH24+85R Peak Elev=114.37' Inflow=0.39 cfs 0.026 af
12.0" Round Culvert n=0.011 L=12.0' S=0.0333 '/' Outflow=0.39 cfs 0.026 af

Pond 2478P: DMH24+78R to HW24+89R Peak Elev=113.40' Inflow=13.21 cfs 1.073 af
12.0" Round Culvert n=0.012 L=14.0' S=0.0150 '/' Outflow=13.21 cfs 1.073 af

Pond 2485P: DMH24+85R TO Subsurface Detention Peak Elev=115.65' Inflow=1.56 cfs 0.102 af
24.0" Round Culvert n=0.011 L=6.0' S=0.0000 '/' Outflow=1.56 cfs 0.102 af

Pond 2495P: DMH24+95R TO DMH25+00 Peak Elev=113.01' Inflow=4.57 cfs 0.156 af
12.0" Round Culvert n=0.011 L=10.0' S=0.0200 '/' Outflow=4.57 cfs 0.156 af

Pond 2505P: DMH24+82R to DMH24+78R Peak Elev=113.69' Inflow=4.57 cfs 0.156 af
12.0" Round Culvert n=0.011 L=43.0' S=0.0649 '/' Outflow=4.57 cfs 0.156 af

Pond 2625RP: DMH26+25R TO HW26+25 Peak Elev=103.86' Inflow=6.05 cfs 0.495 af
12.0" Round Culvert n=0.011 L=15.0' S=0.0200 '/' Outflow=6.05 cfs 0.495 af

Pond 2723P: DMH27+23R TO DMH26+25R Peak Elev=104.95' Inflow=3.49 cfs 0.287 af
12.0" Round Culvert n=0.011 L=93.0' S=0.0161 '/' Outflow=3.49 cfs 0.287 af

Pond 2723RP: TD27+23R TO DMH27+23R Peak Elev=105.10' Inflow=0.55 cfs 0.037 af
12.0" Round Culvert n=0.011 L=39.0' S=0.0538 '/' Outflow=0.55 cfs 0.037 af

Pond 2730LP: CB27+30L TO 27+30R Peak Elev=110.46' Inflow=2.00 cfs 0.163 af
12.0" Round Culvert n=0.011 L=22.0' S=0.0100 '/' Outflow=2.00 cfs 0.163 af

Pond 2730RP: CB27+30R TO DMH27+23R Peak Elev=110.20' Inflow=2.99 cfs 0.250 af
12.0" Round Culvert n=0.011 L=125.0' S=0.0526 '/' Outflow=2.99 cfs 0.250 af

Pond 3018GP: CB30+18G TO CB30+20L Peak Elev=111.67' Inflow=19.61 cfs 2.505 af
24.0" Round Culvert n=0.011 L=10.0' S=0.0100 '/' Outflow=19.61 cfs 2.505 af

Pond 3020LP: CB30+20L TO CB30+20R Peak Elev=108.97' Inflow=23.00 cfs 2.815 af
24.0" Round Culvert n=0.011 L=22.0' S=0.0091 '/' Outflow=23.00 cfs 2.815 af

Pond 3020RP: CB30+20R TO HW29+63 Peak Elev=105.27' Inflow=24.23 cfs 2.905 af
24.0" Round Culvert n=0.011 L=135.0' S=0.0089 '/' Outflow=24.23 cfs 2.905 af

Pond 3200P: CB3200 TO CB320 Peak Elev=115.35' Inflow=0.04 cfs 0.006 af
15.0" Round Culvert n=0.009 L=90.0' S=0.0050 '/' Outflow=0.04 cfs 0.006 af

Pond 100125P: DMH1001+25 TO DMH1003+11 Peak Elev=116.56' Inflow=18.94 cfs 1.822 af
24.0" Round Culvert n=0.011 L=194.0' S=0.0201 '/' Outflow=18.94 cfs 1.822 af

Pond 100311P: DMH1003+11C TO CB30+18G Peak Elev=114.12' Inflow=18.94 cfs 1.822 af
24.0" Round Culvert n=0.011 L=130.0' S=0.0092 '/' Outflow=18.94 cfs 1.822 af

Pond BMP-1: BMP-1 STORMTECH Peak Elev=106.04' Storage=4,074 cf Inflow=7.72 cfs 0.489 af
Discarded=0.01 cfs 0.060 af Primary=7.20 cfs 0.392 af Outflow=7.22 cfs 0.452 af

Pond C3P: CBC3 to CB509 Peak Elev=115.08' Inflow=6.92 cfs 0.488 af
18.0" Round Culvert n=0.009 L=183.0' S=0.0295 '/' Outflow=6.92 cfs 0.488 af

Pond C4P: CBC4 to CBC3 Peak Elev=117.26' Inflow=4.34 cfs 0.303 af
15.0" Round Culvert n=0.009 L=212.0' S=0.0092 '/' Outflow=4.34 cfs 0.303 af

Pond C5P: CBC5 to DMHC6 Peak Elev=118.63' Inflow=1.60 cfs 0.110 af
15.0" Round Culvert n=0.013 L=66.0' S=0.0091 '/' Outflow=1.60 cfs 0.110 af

Pond C6P: DMHC6 to CBC4 Peak Elev=117.77' Inflow=2.51 cfs 0.178 af
15.0" Round Culvert n=0.013 L=32.0' S=0.0219 '/' Outflow=2.51 cfs 0.178 af

Pond C7P: CBC7 to DMHC6 Peak Elev=119.04' Inflow=0.92 cfs 0.068 af
15.0" Round Culvert n=0.013 L=189.0' S=0.0082 '/' Outflow=0.92 cfs 0.068 af

Pond C8P: CBC8 to CBC7 Peak Elev=119.48' Inflow=0.92 cfs 0.068 af
15.0" Round Culvert n=0.013 L=33.0' S=0.0106 '/' Outflow=0.92 cfs 0.068 af

Pond RD1Pa: RD1a TO CB327 Peak Elev=126.79' Inflow=0.88 cfs 0.069 af
12.0" Round Culvert n=0.013 L=43.0' S=0.0200 '/' Outflow=0.88 cfs 0.069 af

Pond RD1Pb: RD1b to CB 324 Peak Elev=123.95' Inflow=0.62 cfs 0.049 af
12.0" Round Culvert n=0.013 L=10.0' S=0.0800 '/' Outflow=0.62 cfs 0.049 af

Pond RD2Pa: RD2a to CB333 Peak Elev=117.19' Inflow=0.71 cfs 0.056 af
12.0" Round Culvert n=0.013 L=23.0' S=0.0100 '/' Outflow=0.71 cfs 0.056 af

Pond RD2Pb: RD2b TO CB322 Peak Elev=117.62' Inflow=0.69 cfs 0.055 af
12.0" Round Culvert n=0.013 L=20.0' S=0.0340 '/' Outflow=0.69 cfs 0.055 af

Pond RD3P: RD3 TO CB808 Peak Elev=108.22' Inflow=3.06 cfs 0.243 af
12.0" Round Culvert n=0.009 L=7.0' S=0.0214 '/' Outflow=3.06 cfs 0.243 af

Pond RD4P: RD4 TO CB807 Peak Elev=108.16' Inflow=0.08 cfs 0.007 af
12.0" Round Culvert n=0.009 L=34.0' S=0.0441 '/' Outflow=0.08 cfs 0.007 af

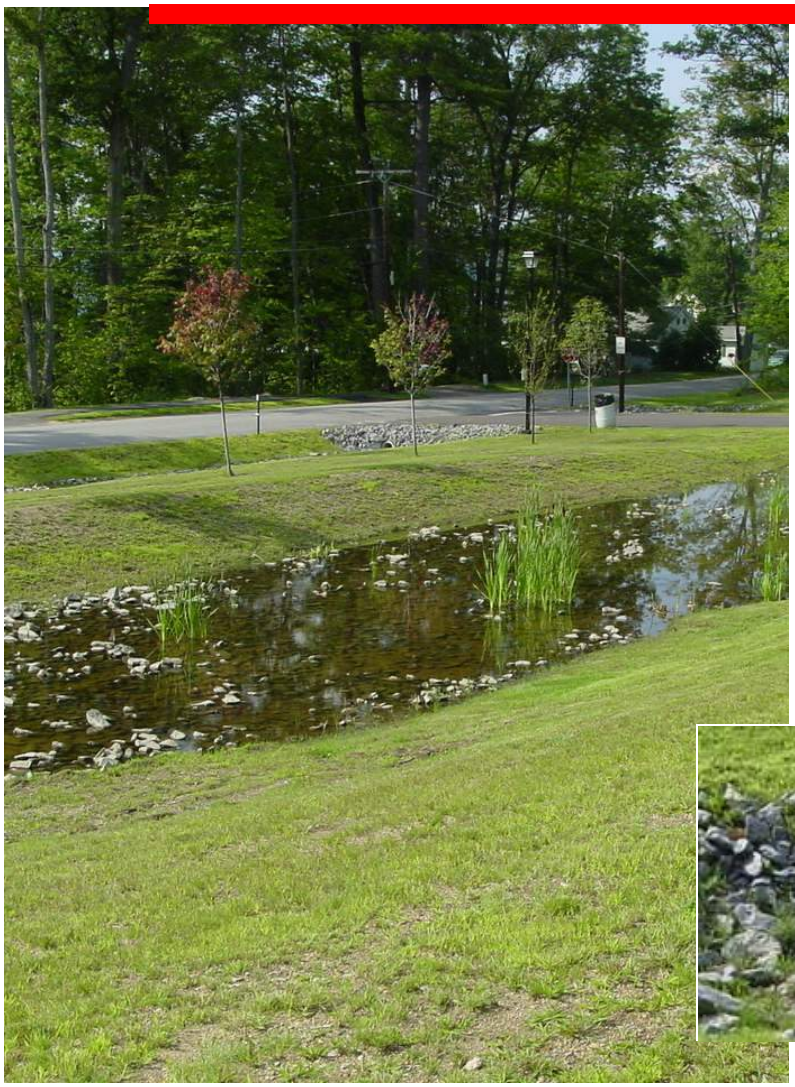
Pond RD5P: RD5 TO CB806 Peak Elev=107.60' Inflow=3.13 cfs 0.248 af
12.0" Round Culvert n=0.009 L=45.0' S=0.0567 '/' Outflow=3.13 cfs 0.248 af

Pond RD6P: RD6 TO CB805 Peak Elev=104.02' Inflow=1.62 cfs 0.129 af
12.0" Round Culvert n=0.009 L=60.0' S=0.0233 '/' Outflow=1.62 cfs 0.129 af

Pond RD8P: RD8 TO CB107 Peak Elev=103.02' Inflow=0.38 cfs 0.030 af
8.0" Round Culvert n=0.009 L=28.0' S=0.0107 '/' Outflow=0.38 cfs 0.030 af

Pond RD9P: RD9 TO CB405 Peak Elev=103.01' Inflow=0.26 cfs 0.021 af
8.0" Round Culvert n=0.009 L=32.0' S=0.0094 '/' Outflow=0.26 cfs 0.021 af

Total Runoff Area = 121.896 ac Runoff Volume = 23.417 af Average Runoff Depth = 2.31"
80.32% Pervious = 97.907 ac 19.68% Impervious = 23.989 ac



INSPECTION AND MAINTENANCE MANUAL

SUBSURFACE STORMWATER AND SURFACE STORMWATER SYSTEMS

May 25, 2006

Revised June 19, 2012 (Commercial Revised)
Revised September 13, 2012
2nd Revision October 1, 2012
3rd Revision October 4, 2012



Residential – Commercial Mixed Use Development: Senior Housing

Mast Road and Durham Road (NH Route 108)
DOVER, NH 03820

Prepared for:
Housing Initiatives of New England Corp.

Prepared by

TFMORAN INC.

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Land Planners
Landscape Architects

554 Union Street, Manchester, NH 03104
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Inspection & Maintenance Manual

HOUSING INITIATIVES SENIOR HOUSING
Grapevine Drive, Dover, NH

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Stormwater Practices – Maintenance Guidelines
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Porous Pavement

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Inspection Checklist and Inspection & Maintenance Plan

Description of Project

Housing Initiatives of New England Corp is proposing revisions to the previously permitted Dover Mixed-Use Project, Commercial Phase on tax map H lot 4-3 at the intersection of Mast Road and Route 108 in Dover, NH. The site is located within the I-4 and B-4 zoning districts in the City of Dover with a portion of the residential phase located in the General Residential and Agricultural district in the Town of Madbury.

Other areas of the site are completed or are currently under construction, including a Hannaford grocery store and the residential components on tax map H lot 4. The project described herein refers to the proposed revisions which are only applicable to the commercial phase of the project, which involve revising the previously approved 15,600 sf medical office building to be a 60-unit congregate care facility.

Approval by the NHDES Alteration of Terrain Bureau and Conditional Approval by the Dover Planning Board have been received.

The revisions proposed as part of this project provide the appropriate stormwater management systems in accordance with the intent of the original design, and the requirements of NHDES and the City of Dover.

Responsible Party

Facility Owner: Housing Initiatives of New England Corp.

Address: 36 Union Wharf, Box 12, Portland, ME 04101

Reporting Requirements

An annual report shall be submitted to the City of Dover Engineering Division in December of each year. The report should document the inspections completed and any maintenance performed on the system during the previous 12 months.

Description of Stormwater Practices

The following descriptions are provided based on information contained in Volume 2 of the New Hampshire Stormwater Manual dated December 2008.

CATCH BASINS

Catch basins consist of a manhole-type structure with an inlet grate, an outlet pipe connected to the piped drainage system, and a sump with a depth several times the diameter of the outlet pipe. The inlet grate is located at the surface, and is sometimes combined with a vertical inlet integrated with a street or parking area curb. The sump's purpose is to capture coarse sediments and debris from the runoff intercepted by the structure. The outlet pipes are fitted with a "hood" consisting of a cast metal or formed plastic fitting, designed to prevent floating materials from exiting the structure.

The site design includes catch basins in both parking lots, as well as 3 catch basins on the east side of the building and one catch basin in the rain garden off the southwest corner of the building.

RAIN GARDEN AREA

A rain garden (sometimes referred to as a "bioretention area") is a type of filtration BMP designed to collect and filter moderate amounts of stormwater runoff using conditioned planting soil beds, gravel beds and vegetation within shallow depressions. The rain garden has been designed to infiltrate the treated water directly to the subsoil. Rain gardens are capable of reducing sediment, nutrients, oil and grease, and trace metals. Rain gardens should be sited in close proximity to the origin of the stormwater runoff to be treated.

The major difference between rain gardens and other filtration systems is the use of vegetation. A typical surface sand filter is designed to be maintained with no vegetation, whereas a rain garden is planted with a variety of shrubs and perennials whose roots assist with pollutant uptake. The use of vegetation allows these systems to blend in with other landscaping features.

One rain garden has been incorporated into the site design, off the southwest corner of the building.

POROUS PAVEMENT

Porous pavement consists of a porous surface, base, and sub-base materials which allow penetration of runoff through the surface into underlying soils. The surface materials for permeable pavement can consist of paving blocks or grids, pervious asphalt, or pervious concrete. These materials are installed on a base which serves as a filter course between the pavement surface and the underlying sub-base material.

Although traffic loading capacities vary, porous pavement alternatives are generally appropriate for low traffic areas (e.g. sidewalks, parking lots, overflow parking, residential roads). Pavement

type and thickness are selected based on anticipated load (light, moderate, heavy) and maintenance requirements. Careful maintenance is essential for long term use and effectiveness.

Frequently, porous pavements filter only the runoff generated on the pavement surface itself. However, runoff from other areas can be directed to porous pavement if properly designed.

Porous asphalt is very similar to conventional asphalt except that it is mixed without particles smaller than coarse sand (less than 600 µm or No. 30 sieve). Without these smaller size particles, water is able to pass through the surface and into a crushed stone storage area. The lack of fine particles in the asphalt, however, limits the loading capacity of the asphalt relative to conventional asphalt. Because of this limitation, pervious asphalt should not be used in high-traffic areas. An advantage to the use of porous asphalt is the reduced need for stormwater conveyance systems and other additional BMPs.

The site design includes porous sidewalks.

Stormwater Practices – Schedule of Maintenance

The following practices shall be inspected twice annually; once following snow-melt (spring) and once following leaf-drop (fall):

- Catch Basins
- Rain Garden Area
- Porous Pavement*

* Concrete pavers may be installed as an alternate to porous sidewalks.

Stormwater Practices – Maintenance Guidelines

I. CATCH BASIN - MAINTENANCE PROCEDURES:

STEP 1) INSPECT CATCH BASIN SEMI-ANNUALLY FOR SEDIMENT.
STEP 2) REMOVE GRATES AND COVERS.
STEP 3) SKIM OFF OILS AND FLOATABLES.
STEP 4) USING A STADIA ROD, MEASURE THE DEPTH OF SEDIMENT.
STEP 5) IF SEDIMENT IS AT A DEPTH GREATER THAN 6" PROCEED TO STEP 6, IF NOT, PROCEED TO STEP 7.
STEP 6) VACUUM OR MANUALLY REMOVE SEDIMENT. REPLACE GRATES OR COVERS.
STEP 7) RECORD DEPTH & DATE AND SCHEDULE NEXT INSPECTION.

II. RAIN GARDEN AREA MONITORING:

STEP 1) INSPECT AND REMOVE ROUTINELY ANY ACCUMULATED DEBRIS.
STEP 2) INSPECT PLANT SPECIES SEMI-ANNUALLY AND REMOVE DEAD, SERIOUSLY DISEASED, PLANTS LACKING SUFFICIENT VIGOR, OR PLANTS EXHIBITING SIZABLE DIE-BACK. REPLACE REMOVED VEGETATION AT THE SAME SIZE AND KIND REMOVED. PRUNE OR WEED, AS NECESSARY, TO MAINTAIN APPEARANCE.
STEP 3) INSPECT SUBSTRATE MEDIUM. REPLACE WHERE EROSION EVIDENT; ADD SUBSTRATE AMENDMENTS TO MAINTAIN PROPER SOIL pH; ADJUST SOIL MOISTURE CONTENT, AS NEEDED; REPLACE MEDIUM WHEN LEVELS OF POLLUTANTS REACH TOXIC LEVELS AND PLANT GROWTH IS IMPAIRED.
STEP 4) INSPECT EMBANKMENTS FOR NUISANCE PROBLEMS (e.g. EROSION, INVASIVE SPECIES OR BURROWING ANIMALS) AND REPAIR, IF NECESSARY.
STEP 5) INSPECT EMBANKMENTS FOR STRUCTURAL INTEGRITY, ESPECIALLY FOLLOWING MAJOR STORM EVENT AND CONSULT WITH PROJECT ENGINEER FOR REPAIR.
STEP 6) INSPECT RAIN GARDEN BOTTOM AND REMOVE ANY ACCUMULATED SEDIMENTS.

III. POROUS PAVEMENT – MAINTENANCE PROCEDURES:

STEP 1) INSPECT SIDEWALKS AT LEAST TWICE A YEAR (SPRING AND FALL) AND FOLLOWING ANY LARGE RAINFALL EVENT TO ENSURE THAT THE PAVEMENT IS DRAINING PROPERLY.
STEP 2) IF DETERIORATION OR SPALLING HAS OCCURRED, THEN MEASURES SHALL BE TAKEN TO REPAIR THE PAVEMENT.
STEP3) REMOVE AND DISPOSE OF ANY ACCUMULATED DEBRIS IN A LEGAL MANNER.
STEP 4) THERE SHALL BE NO WINTER SANDING OF POROUS ASPHALT.
STEP 5) POROUS ASPHALT SHOULD BE VACUUM SWEPT WITH A COMMERCIAL UNIT (DO NOT USE BRUSH WASH OR COMPRESSED AIR UNIT) AT LEAST TWO TIMES PER YEAR, FOLLOWED BY A HIGH PRESSURE HOSING TO FREE PORES IN THE TOP LAYER FROM CLOGGING.

Inspection & Maintenance Log

Date	Inspector	BMPs checked	Maintenance Required

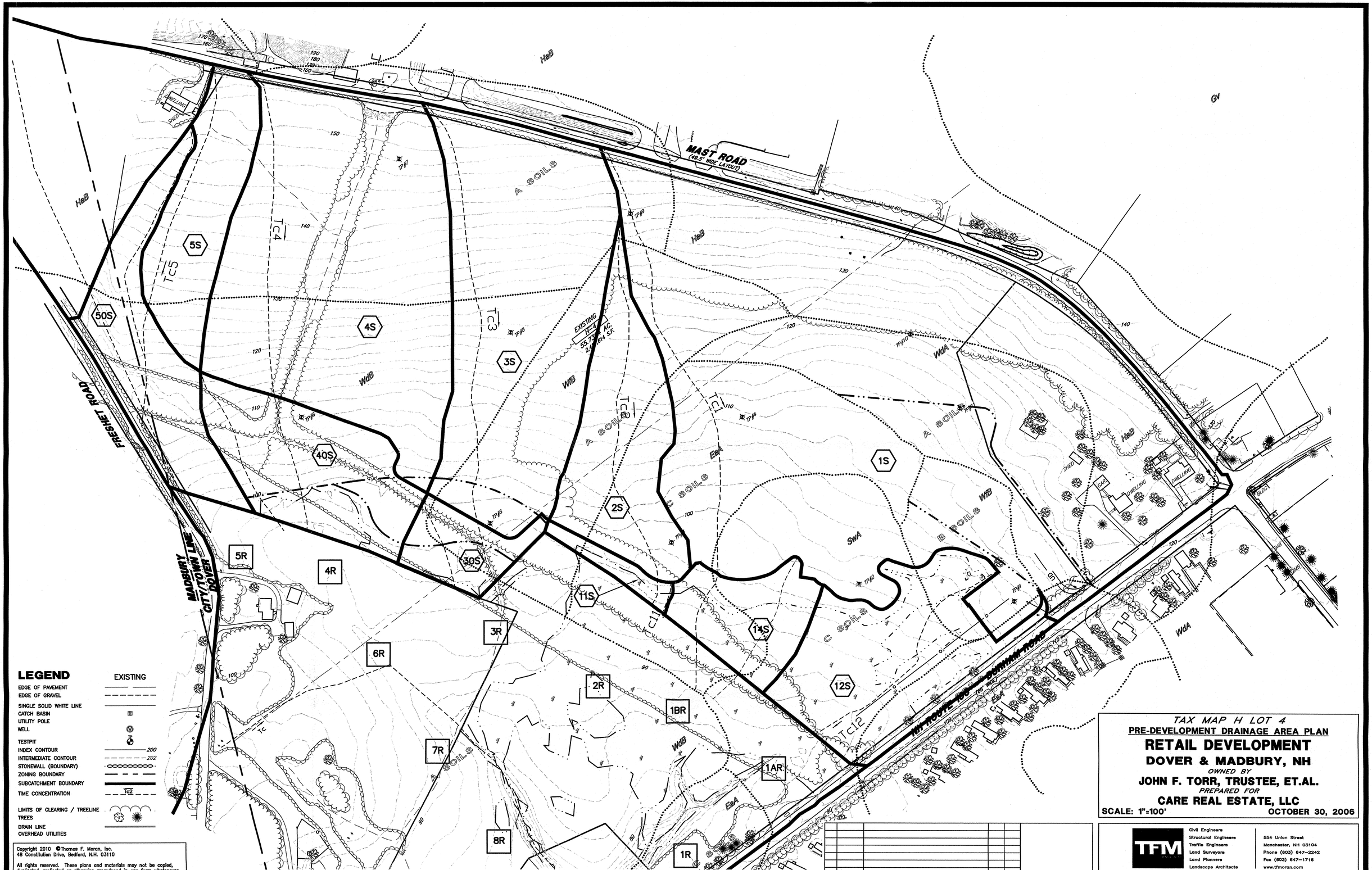
Inspection Checklist

Date:	**Project Name: Housing Initiatives Senior Housing**
Inspector's Name/Title:	
Inspector's Contact Information:	

☐ 1st Yearly Inspection	BMP's to be inspected: All
☐ 2nd Yearly Inspection	BMP's to be inspected: All

	BMP* **Refer to following Inspection & Maintenance Plan for BMP location**	Maintenance Required	Corrective Action Needed and Notes
1	Rain Garden	☐ Yes ☐ No	
2	Catch Basin DCB 331	☐ Yes ☐ No	
3	Catch Basin CB 332	☐ Yes ☐ No	
4	Catch Basin CB 333	☐ Yes ☐ No	
5	Catch Basin CB 321	☐ Yes ☐ No	
6	Catch Basin CB 322	☐ Yes ☐ No	
7	Catch Basin CB 323	☐ Yes ☐ No	
8	Catch Basin CB 324	☐ Yes ☐ No	
9	Catch Basin CB 325	☐ Yes ☐ No	
10	Catch Basin CB 326	☐ Yes ☐ No	
11	Catch Basin DCB 327	☐ Yes ☐ No	

12	Porous Sidewalk South Side of Building	☐ Yes ☐ No	
13	Porous Sidewalk Parking Lot Island	☐ Yes ☐ No	
14	Porous Sidewalk West Side of Driveway	☐ Yes ☐ No	
15	Porous Sidewalk Gazebo Area	☐ Yes ☐ No	
16	Porous Sidewalk East Side of Building	☐ Yes ☐ No	
17	Porous Sidewalk North Side of Building	☐ Yes ☐ No	
18	Porous Sidewalk West Side of Building	☐ Yes ☐ No	
		☐ Yes ☐ No	
		☐ Yes ☐ No	
		☐ Yes ☐ No	
		☐ Yes ☐ No	
		☐ Yes ☐ No	
		☐ Yes ☐ No	
		☐ Yes ☐ No	



LEGEND

	EXISTING
EDGE OF PAVEMENT	
EDGE OF GRAVEL	
SINGLE SOLID WHITE LINE	
CATCH BASIN	
UTILITY POLE	
WELL	
TESTPIT	
INDEX CONTOUR	200
INTERMEDIATE CONTOUR	202
STONEWALL (BOUNDARY)	
ZONING BOUNDARY	
SUBCATCHMENT BOUNDARY	
TIME CONCENTRATION	Tc2
LIMITS OF CLEARING / TREELINE	
TREES	
DRAIN LINE	
OVERHEAD UTILITIES	

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REV.	DATE	DESCRIPTION	DR	CK
1	11/21/06	REVISIONS TO RESIDENTIAL	DCQ	DLB

TAX MAP H LOT 4

PRE-DEVELOPMENT DRAINAGE AREA PLAN

RETAIL DEVELOPMENT

DOVER & MADBURY, NH

OWNED BY

JOHN F. TORR, TRUSTEE, ET.AL.

PREPARED FOR

CARE REAL ESTATE, LLC

SCALE: 1"=100' **OCTOBER 30, 2006**

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Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Land Planners
Landscape Architects
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FILE	DR	CK	CADFILE	
46001.01	DCQ	DLB	46001-Engineering	SHEET 1 OF 4

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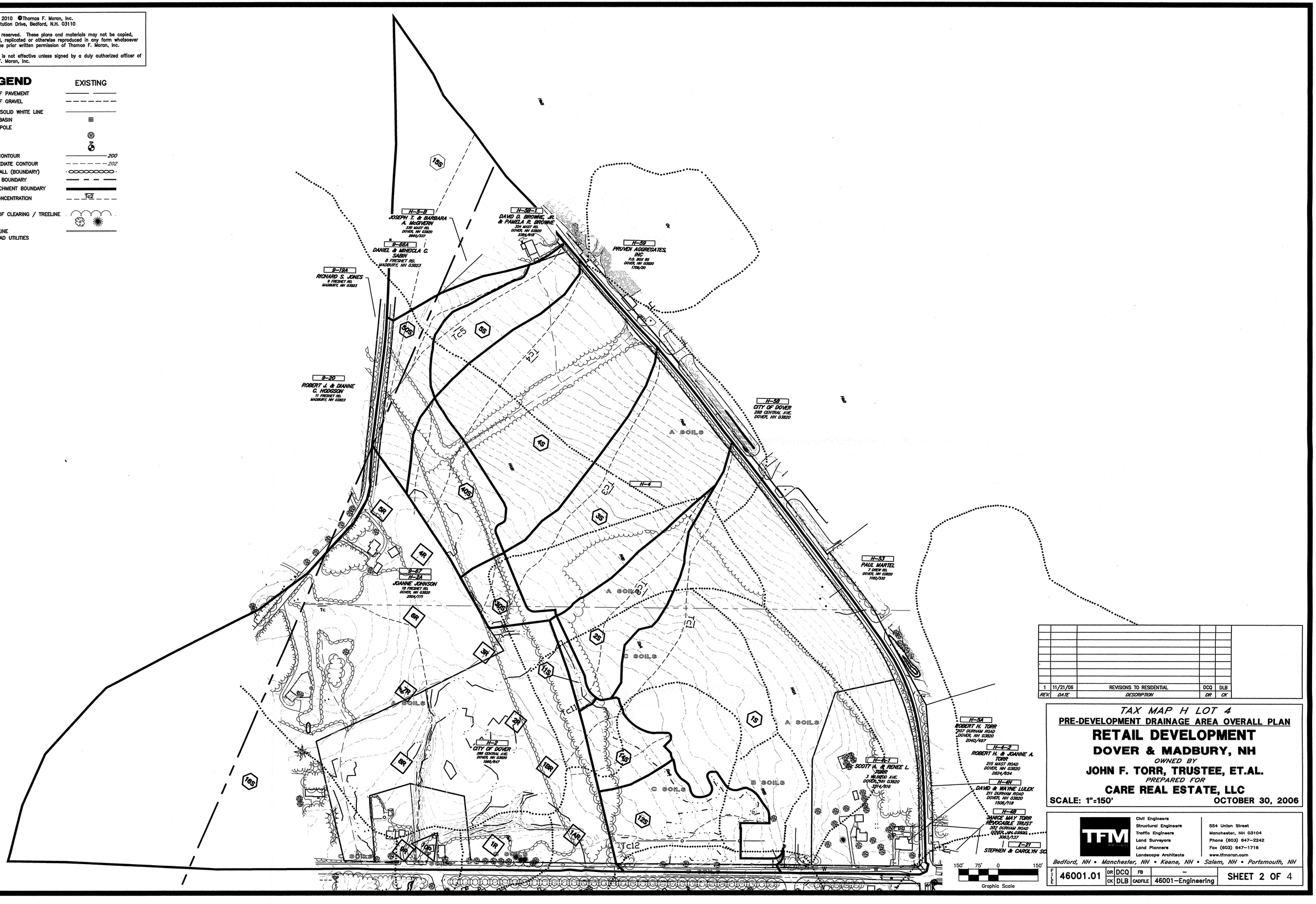
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LEGEND

EXISTING

- EDGE OF PAVEMENT
- EDGE OF GRAVEL
- SINGLE SOLID WHITE LINE
- CATCH BASIN
- UTILITY POLE
- WELL
- TESTPIT
- INDEX CONTOUR 200
- INTERMEDIATE CONTOUR 202
- STONEWALL (BOUNDARY)
- ZONING BOUNDARY
- SUBCATCHMENT BOUNDARY
- TIME CONCENTRATION Tc2
- LIMITS OF CLEARING / TREELINE
- TREES
- DRAIN LINE
- OVERHEAD UTILITIES



REV.	DATE	DESCRIPTION	DR	CK
1	11/21/06	REVISIONS TO RESIDENTIAL	DCQ	DLB

TAX MAP H LOT 4

PRE-DEVELOPMENT DRAINAGE AREA OVERALL PLAN

RETAIL DEVELOPMENT

DOVER & MADBURY, NH

OWNED BY

JOHN F. TORR, TRUSTEE, ET.AL.

PREPARED FOR

CARE REAL ESTATE, LLC

SCALE: 1"=150' OCTOBER 30, 2006

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FILE		DR	CK	FB	CADFILE	
46001.01		DCQ	DLB	–	46001-Engineering	SHEET 2 OF 4



LEGEND

- DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION
- (5) SUBCATCHMENT
- (1) POND
- (9) REACH
- (A) DISCHARGE POINT

Graphic Scale 30 15 0 30

REV.	DATE	DESCRIPTION	DR	CK

TAX MAP H LOT 4–3

POST-DEVELOPMENT DRAINAGE AREA PLAN

MCDONALD'S

NH ROUTE 108 AND GRAPEVINE DRIVE
DOVER, NEW HAMPSHIRE

OWNER OF RECORD	*AND*	*APPLICANT/DEVELOPER*
n/f VC DOVER INVESTMENTS, LLC 48 CONSTITUTION DRIVE BEDFORD, NH 03110		BOHLER ENGINEERING, LLC 352 TURNPIKE RD, 3RD FLOOR SOUTHBOROUGH, MA 01772

SCALE: 1"=100' **DECEMBER 5, 2024**

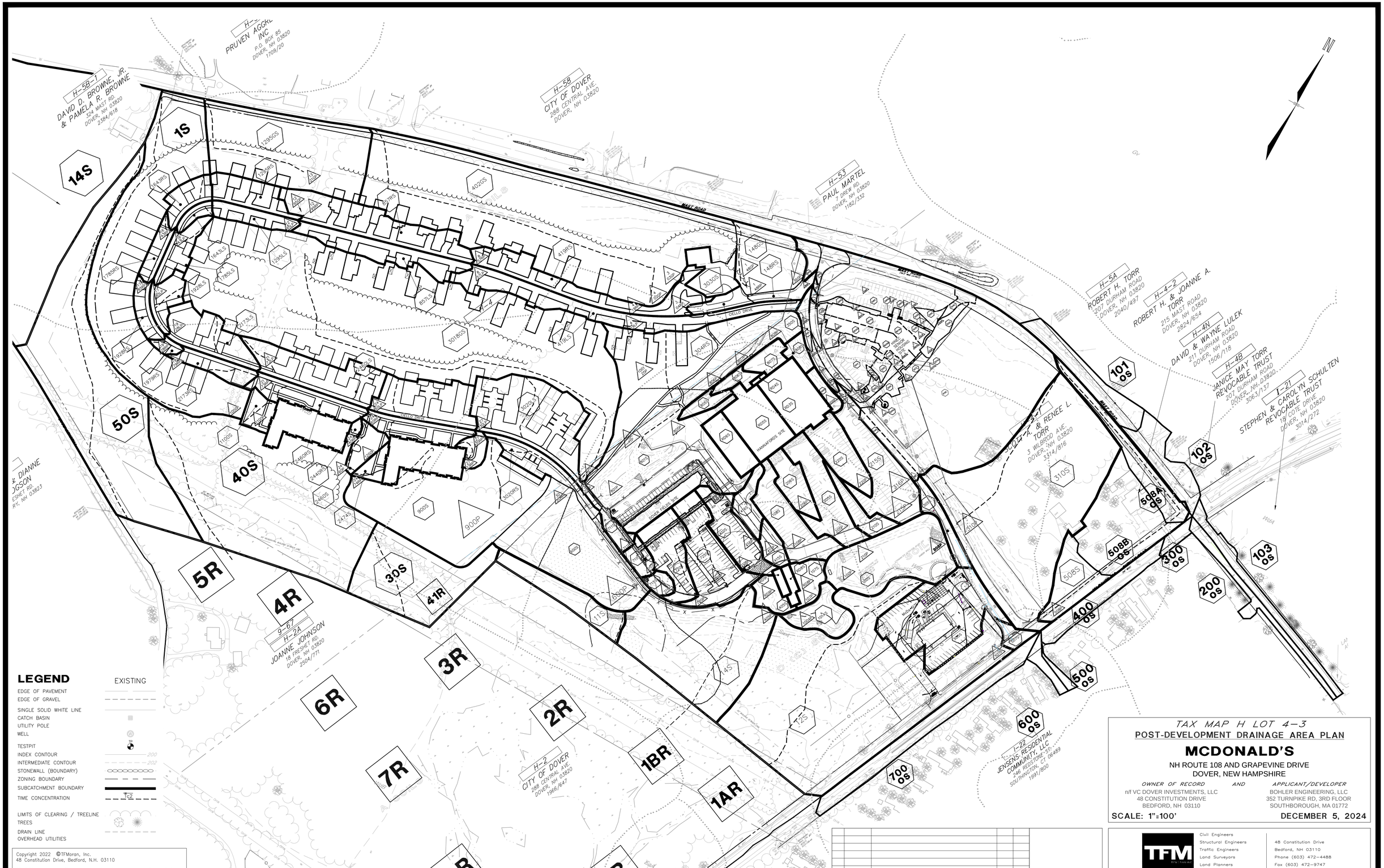
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FILE	46001.33	DR	JMR	FB	–	SHEET 3 OF 4
		CK	RED	CADFILE	46001.33 DRAINAGE	

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LEGEND

EXISTING

- EDGE OF PAVEMENT
- EDGE OF GRAVEL
- SINGLE SOLID WHITE LINE
- CATCH BASIN
- UTILITY POLE
- WELL
- TESTPIT
- INDEX CONTOUR
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- TIME CONCENTRATION
- LIMITS OF CLEARING / TREELINE
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Graphic Scale 100' 50' 0 100'

REV.	DATE	DESCRIPTION	DR	CK

TAX MAP H LOT 4–3

POST-DEVELOPMENT DRAINAGE AREA PLAN

MCDONALD'S

NH ROUTE 108 AND GRAPEVINE DRIVE
DOVER, NEW HAMPSHIRE

OWNER OF RECORD	AND	APPLICANT/DEVELOPER
n/f VC DOVER INVESTMENTS, LLC 48 CONSTITUTION DRIVE BEDFORD, NH 03110		BOHLER ENGINEERING, LLC 352 TURNPIKE RD, 3RD FLOOR SOUTHBOROUGH, MA 01772

SCALE: 1"=100' DECEMBER 5, 2024

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PROJECT #	46001.33	DR	JMR	FB	–	SHEET 4 OF 4
		CK	RED	CADFILE	46001.33 DRAINAGE	

WHITESTONE
An Employee-Owned Company

3 EXECUTIVE PARK DRIVE
SUITE 202
BEDFORD, NH 03110
603.514.2230
whitestoneassoc.com

REPORT OF GEOTECHNICAL INVESTIGATION

PROPOSED McDONALD'S RESTAURANT #28-0178
NEW HAMPSHIRE ROUTE 108 & GRAPEVINE DRIVE
MAP H4, PORTION OF LOT 3
DOVER, STRAFFORD COUNTY, NEW HAMPSHIRE



Prepared for:

McDONALD'S USA, LLC
110 North Carpenter Street
Chicago, Illinois 60607

Prepared by:

WHITESTONE ASSOCIATES, INC.
3 Executive Park Drive
Suite 202
Bedford, New Hampshire 3110

Richard W.M. McLaren
Senior Consultant

Ryan R. Roy, P.E.
Vice President

Whitestone Project No.: GM2421922.000
June 11, 2024

WHITESTONE
An Employee-Owned Company

3 EXECUTIVE PARK DRIVE
SUITE 202
BEDFORD, NH 03110
603.514.2230
whitestoneassoc.com

June 11, 2024

via email

McDONALD'S USA, LLC
110 North Street
Chicago, Illinois 60607

Attention: Mr. Eric Wagner
Area Construction Manager

Regarding: PROPOSED McDONALD'S RESTAURANT #28-0178
NEW HAMPSHIRE ROUTE 108 & GRAPEVINE DRIVE
MAP H4, PORTION OF LOT 3
DOVER, STRAFFORD COUNTY, NEW HAMPSHIRE
WHITESTONE PROJECT NO.: GM2421922.000

Dear Mr. Wagner:

Whitestone Associates, Inc. (Whitestone) is pleased to submit the attached *Report of Geotechnical Investigation* for the above-referenced project. The report presents the results of Whitestone's site visit and subsurface exploration, and includes design recommendations for the proposed foundations, floor slab, and pavements, and related earthwork associated with the proposed McDonald's restaurant.

Whitestone appreciates the opportunity to be of continued service to McDonald's USA, LLC. Should you have questions regarding the attached report, please contact us at (603) 514-2230.

Sincerely,

WHITESTONE ASSOCIATES, INC.

Richard W.M. McLaren, P.E.
Senior Consultant

Ryan R. Roy, P.E.
Vice President

RWM/th N:\Job Folders\2024\2421922GM\Reports and Submittals\McD Dover NH GM2421922 ROGI 6-11-24.docx
Enclosures
Copy: Laurence W. Keller, P.E., Whitestone Associates, Inc.

REPORT OF
GEOTECHNICAL INVESTIGATION
Proposed McDonald's Restaurant #28-0178
New Hampshire Route 108 & Grapevine Drive
Dover, Strafford County, New Hampshire

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REPORT OF
GEOTECHNICAL INVESTIGATION
Proposed McDonald's Restaurant #0178
New Hampshire Route 108 & Grapevine Drive
Dover, Strafford County, New Hampshire

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APPENDIX B Laboratory Test Results
APPENDIX C Supplemental Information (USCS, Terms & Symbols)

SECTION 1.0
Summary of Findings

Whitestone Associates, Inc. (Whitestone) has conducted an exploration and evaluation of the subsurface conditions at the site of the proposed McDonald's restaurant to be located southwest of the intersection of New Hampshire Route 108 and Grapevine Drive in the City of Dover, Strafford County, New Hampshire. Based on an April 29, 2024 *Concept Sketch 'A'* prepared by Bohler Engineering MA, LLC of Bedford, New Hampshire, the proposed project will include the construction of new single-story restaurant with a footprint of 3,694 square feet, drive-thru facilities, pavement, utilities, and landscaped areas. Whitestone anticipates that the building will be constructed close to existing site grade. Stormwater management areas are planned to the west and south of the restaurant. No new retaining walls are shown on the *Concept Sketch 'A'*.

The geotechnical investigation included conducting a reconnaissance of the project site, advancing 14 borings, and collecting soil samples for laboratory testing and characterization. Site subsurface conditions consisted of topsoil/subsoil overlying intermittent existing fill, which is underlain by a natural marine deposit. Groundwater was encountered in the borings during the exploration at depths ranging from two feet below ground surface (fbgs) to seven fbgs.

The results of the investigation indicate the site is suitable for conventional shallow foundations bearing on properly inspected and approved natural marine deposit or structural fill placed over the marine deposit, and the subgrade reviewed by the geotechnical engineer, as specified in this report. Footing subgrade should be undercut by a minimum of eight inches and replaced with crushed stone wrapped in geotextile separation fabric. Intermittent existing fill, which was encountered at the site to a depth of more than six fbgs, was within the northern portion of the site and outside the proposed building footprint. However, existing fill may be encountered during building construction between the widely spaced borings and associated with the retaining wall to be removed. Overexcavation of existing fill within foundation influence zones and replacement with structural fill may be required within a portion of the building footprint. The results of the investigation also indicate the site is suitable for a ground-supported floor slab deriving support from the properly inspected, improved, and approved marine deposit or existing fill, and/or compacted structural fill, as specified in this report. Additionally, the site conditions support the use of typical pavement sections using standard State of New Hampshire Department of Transportation (NHDOT) specified materials.

The above summary is intended to provide an overview of the geotechnical findings and recommendations and is not fully developed. Greater detail is presented in the following sections. The entire report must be read for comprehensive understanding of the information contained herein.

SECTION 2.0
Introduction

2.1 AUTHORIZATION

Mr. Eric Wagner, Area Construction Manager at McDonald's USA, LLC issued authorization to Whitestone to conduct a geotechnical investigation on the site relevant to a proposed McDonald's restaurant southwest of the intersection of New Hampshire Route 108 and Grapevine Drive in the City of Dover, Strafford County, New Hampshire. The geotechnical investigation was conducted in general accordance with Whitestone's May 17, 202 *Service Supplier Proposal*.

2.2 PURPOSE

The purpose of this exploration and analysis was to:

- ascertain the various soil profile components at test locations;
- conduct preliminary infiltration testing;
- estimate the engineering characteristics of the proposed foundation bearing and subgrade materials;
- provide geotechnical criteria for use by the design engineers in preparing the foundation, floor slab, and pavement design;
- provide recommendations for required earthwork and subgrade preparation;
- record groundwater and/or bedrock levels (if encountered) at the time of the investigation and discuss the potential impact on the proposed construction; and
- recommend additional investigation and/or analysis, if warranted.

2.3 SCOPE

The scope of the exploration and analysis included the subsurface exploration, field testing and sampling, laboratory testing, evaluation of the subsurface materials, and a geotechnical engineering analysis. This *Report of Geotechnical Investigation* is limited to addressing the site conditions related to the physical support of the proposed construction. A *Phase I Environmental Site Assessment* (ESA) was completed concurrently with the geotechnical investigation. The ESA report was issued under separate cover.

2.3.1 Field Exploration

Field exploration of the project site was conducted by means of 14 borings, identified as B-1 through B-14, advanced with an all terrain vehicle (ATV) mounted CME 55LC drill rig equipped with hollow stem

augers to termination depths that ranged from approximately six fbgs to 22 fbgs. The borings were backfilled with excavated soils generated from the investigation. Test locations are shown on the *Boring Location Plan* included as Figure 1.

Test locations were based on project information provided to Whitestone at the time of the investigation, including the April 29, 2024 *Concept Sketch 'A'*. The subsurface testing was conducted in the presence of a Whitestone representative, who conducted field tests, recorded visual classifications, and collected samples of the various strata encountered. The tests were located in the field using phone-based GPS. These locations are presumed to be accurate to the degree implied by the method used (± 20 feet).

Borings and Standard Penetration Tests (SPTs) were conducted in general accordance with ASTM International (ASTM) designation D1586. The Standard Penetration Resistance value (N) can be used as an indicator of the consistency of fine-grained soils and the relative density of coarse-grained soils. The N-value for various soil types can be correlated with the engineering behavior of earthworks and foundations. The soil classification information along with other pertinent information was recorded on the boring logs and included in Appendix A on the *Records of Subsurface Exploration*.

Groundwater level observations, where encountered, were recorded during and immediately following the completion of the field operations prior to backfilling the borings. Seasonal variations, temperature effects, and recent rainfall conditions may influence the levels of the groundwater, and observed levels will depend on the permeability of the soils. Groundwater elevations derived from sources other than seasonally observed groundwater monitoring wells may not be representative of true groundwater levels.

2.3.2 Infiltration Testing

Borings B-8 and B-11 were advanced to a depth of seven fbgs to evaluate soil conditions prior to infiltration testing. Infiltration tests I-1 and I-2 were then conducted as falling head tests in cased holes at the locations shown on the *Boring Location Plan*. PVC casing, four inches in diameter, was installed to the depths tabulated below. The soil was pre-soaked for approximately 30 minutes. Following testing, the casings were removed. The results are tabulated below.

SUMMARY OF INFILTRATION TESTING				
Location	**Approximate Ground Elevation (feet)**	**Test Depth (fbgs)**	**Approximate Test Elevation (feet)**	**Infiltration Rate (in/hr)**
I-1 (B-8)	110	4.2	106	0.0
I-1 (B-11)	100	3.6	96	0.0

Typically, a Factor of Safety (FoS) is applied to measured infiltration rates to account for siltation and consolidation of soil below the systems over time. Safety factors used should consider how critical the systems are to the development and the available storage. If the system is critical or storage limited, a higher FoS should be applied. Infiltration rates are variable and dependent on test depth and stratification.

2.3.3 Laboratory Testing

Laboratory testing was conducted to determine pertinent engineering characteristics of representative samples of on-site soils. The laboratory testing was conducted in general accordance with applicable ASTM standard test methods and included physical testing of the marine deposit.

Physical/Textural Analysis: Two representative samples of the site soils were subjected to laboratory testing that included moisture content determinations (ASTM D2216) and washed gradation analyses (ASTM D422) in order to conduct supplementary engineering soil classifications and to assess possible re-use of the site soils as structural fill. The results of the laboratory testing are summarized in the following table:

LABORATORY TESTING SUMMARY					
Boring	**Sample Number**	**Depth (fbgs)**	**Moisture Content (%)**	**Passing No. 200 Sieve (%)**	**USCS Classification**
B-2	S-2	2.0 - 4.0	26.9	78.3	ML
B-4	S-3	5.0 - 7.0	33.0	28.6	SM

The engineering classifications are useful when considered in conjunction with the additional site data to estimate properties of the soil types encountered and to predict soil behavior under construction and service loads. Laboratory test results are provided in Appendix B.

SECTION 3.0
Site Description

3.1 LOCATION & DESCRIPTION

The subject property is located immediately southwest of the intersection of New Hampshire Route 108 and Grapevine Drive in the City of Dover, Strafford County, New Hampshire, Latitude 43.1664 North, and Longitude 70.8922 West. The undeveloped site is an approximately 0.5-acre portion of a 10.85-acre parcel, further identified as Map H4, Lot 3.

The approximately rectangular site is bounded to the east by New Hampshire Route 108 (Durham Road); to the north by Grapevine Drive; to the west by a large stormwater management basin; and to south by undeveloped land, then a high tension power corridor. Access to the site is from Grapevine Drive. The site of the proposed construction is shown on the *Boring Location Plan* included as Figure 1.

3.2 EXISTING CONDITIONS

Existing Development: At the time of Whitestone's investigation, the site was generally undeveloped and grass covered. However, there was a low, masonry block retaining wall extending approximately north to south, just to the west of the proposed building footprint. Whitestone understands that this retaining wall will be removed and the site regraded.

Topography: Based on a review of the *USGS 7.5 Minute Series Dover West Quadrangle, New Hampshire* (2021) and on Whitestone's visual observations, the site slopes down to the southwest from approximately 110 feet above National American Vertical Datum of 1988 (NAVD) to 100 feet above NAVD.

Utilities: The site is not serviced by underground utilities. The utility information contained in this report is presented for general discussion only and is not intended for construction purposes.

Site Drainage: Surface run-off will follow site topography, flowing to the southwest.

3.3 SITE GEOLOGY

From a review of the *Surficial Geologic Map of the Dover West Quadrangle, Strafford County, New Hampshire (1989)*, the site is underlain by marine sand. The mapped boundary with stratified glacial sand and gravel is immediately west of the site. The *Geologic Map of New Hampshire*, prepared by U.S. Geological Survey, indicates that the subject property is underlain, at depth, by Early Devonian-age Exeter Diorite, consisting of gabbro and diorite, with minor granite and granodiorite.

3.4 PROPOSED CONSTRUCTION

Based on the aforementioned Bohler *Concept Sketch 'A'*, the proposed project will include the construction of new single-story restaurant with a footprint of 3,694 square feet, drive-thru facilities, pavement, utilities, and landscaped areas. Whitestone anticipates that the building will be constructed close to existing site grade. Stormwater management areas are planned to the west and south of the restaurant. No new retaining walls are shown on the *Concept Sketch 'A'*.

Whitestone anticipates the proposed building will be a single-story, masonry and metal-framed structure constructed with a ground-supported concrete floor slab and no basement. Maximum column and wall loads are expected to be on the order of:

- interior column loads - 60.0 kips;
- load bearing walls - 2.0 kips per linear foot; and
- floor slab loads - 100 pounds per square foot.

The scope of Whitestone's investigation and the professional advice contained in this report were generated based on the project details and loading noted herein. Revisions or additions to the design details enumerated in this report should be brought to the attention of Whitestone for additional evaluation as warranted.

SECTION 4.0
Subsurface Conditions

Details of the subsurface materials encountered in the borings are presented on the *Records of Subsurface Exploration* in Appendix A of this report. The subsurface soil conditions encountered in the test locations consisted of the following generalized strata in order of increasing depth.

4.1 SUBSURFACE SOIL CONDITIONS

Surface Cover Materials: The borings encountered three inches to nine inches of topsoil at the ground surface, generally underlain by three inches to 11 inches of subsoil with roots.

Existing Fill (intermittent): Beneath the surface cover materials, borings B-13 and B-14 encountered existing fill, consisting of brown to gray-brown, medium dense to dense, silty sand with gravel. SPT N-values recorded within the existing fill were variable, ranging from 21 blows per foot (bpf) to 37 bpf. Where penetrated in boring B-13, the existing fill extended to a depth of four fbgs. Boring B-14 terminated in the existing fill at a depth of six fbgs. Existing fill should also be expected in the vicinity of the retaining wall to be removed.

Marine Deposit: Beneath the surface cover materials or existing fill, the borings, except B-14, encountered a marine deposit, consisting of gray to brown, loose to medium dense (occasionally very loose), sandy silt (USCS: ML) to silty sand (USCS: SM). SPT N-values recorded within the marine deposit were variable, ranging from two bpf to 29 bpf. The borings, except B-14, terminated in the marine deposit at depths of six fbgs to 22 fbgs.

4.2 GROUNDWATER

Groundwater was encountered in the borings at depths ranging from two fbgs to seven fbgs during Whitestone's subsurface exploration activities. The shallower groundwater is likely perched. Static and perched/trapped water conditions generally will fluctuate seasonally and following periods of precipitation.

SECTION 5.0
Conclusions & Recommendations

5.1 GENERAL

The results of the investigation indicate the site is suitable for conventional shallow foundations bearing on properly inspected and approved natural marine deposit or structural fill placed over the marine deposit, and the subgrade reviewed by the geotechnical engineer, as specified in this report. Footing subgrade should be undercut by a minimum of eight inches and replaced with crushed stone wrapped in geotextile separation fabric. Intermittent existing fill, which was encountered at the site to a depth of more than six fbgs, was within the northern portion of the site and outside the proposed building footprint. However, existing fill may be encountered during building construction between the widely spaced borings and associated with the retaining wall to be removed. Overexcavation of existing fill within foundation influence zones and replacement with structural fill may be required within a portion of the building footprint. The results of the investigation also indicate the site is suitable for a ground-supported floor slab deriving support from the properly inspected, improved, and approved marine deposit or existing fill, and/or compacted structural fill, as specified in this report. Additionally, the site conditions support the use of typical pavement sections using standard NHDOT specified materials.

5.2 SITE PREPARATION & EARTHWORK

Surface Cover Stripping and Demolition: Prior to stripping operations, any utilities should be identified and secured. Vegetation, topsoil, organic subsoil, and other organic matter should be removed from within and at least five feet beyond the limits of the proposed building footprint, as well as any other area that will require controlled structural fill placement. Any tree/shrub removal should include the removal of stumps and root material, which will require removal of more than the few inches of topsoil encountered in the borings. The existing retaining wall should be removed entirely within and up to five feet around the proposed building footprint. Elsewhere, under paved areas, the retaining wall components should be removed to a minimum of two feet below pavement subgrade. The contractor should be required to conduct earthwork in accordance with the recommendations in this report, including backfilling any excavation, etc. with structural fill. Fill or backfill placed within the proposed building and slab areas should be placed as structural fill in accordance with Sections 5.2, 5.3, and 5.11 of this report.

Surface Preparation/Proofrolling: Prior to placing fill or subbase materials to raise or restore grades to the desired subgrade elevations, the existing exposed soils should be compacted to a firm surface with several passes in two perpendicular directions of a minimum 10-ton vibratory roller. The surface should then be proofrolled with a loaded tandem axle truck in the presence of the geotechnical engineer to help identify soft or loose pockets that may require removal and replacement, or further evaluation. Proofrolling should be conducted after a suitable period of dry and non-freezing weather to reduce the

likelihood of degrading an otherwise stable subgrade. Should construction be attempted in the winter or when temperatures are below freezing, Whitestone should be contacted for alternative surface preparation recommendations. Fill or backfill should be placed and compacted in accordance with Section 5.3.

Weather Performance Criteria: The site soils are moisture sensitive. Every effort should be made to maintain drainage of surface water runoff away from construction areas by grading and limiting the exposure of excavations and prepared subgrades to rainfall. Accordingly, excavation and fill placement procedures should be conducted during favorable weather conditions. Overexcavation of wet or disturbed soils and replacement with controlled structural fill per Section 5.3 of this report may be required prior to resuming work on subgrade soils.

Subgrade Protection and Maintenance: The site soils are moisture sensitive and will degrade if exposed to inclement weather, freeze-thaw cycles, or repeated construction traffic. However, if properly protected and maintained as recommended herein, the site soils will provide adequate support for the proposed construction. The site contractors should employ appropriate means and methods to protect the subgrade, including but not limited to the following:

- sealing exposed subgrade soils on a daily basis with a smooth drum roller operated in static mode;
- regrading the site as needed to maintain positive drainage away from open earthwork construction areas and to prevent standing water;
- removing wet surficial soils and ruts immediately; and
- limiting exposure to construction traffic and precipitation especially following inclement weather and subgrade thawing.

5.3 STRUCTURAL FILL & BACKFILL

Imported Fill Material: Imported material placed as structural fill or backfill to raise elevations or restore design grades should consist of clean, relatively well graded sand or gravel with a maximum particle size of three inches and up to 15 percent, by weight, of material finer than a #200 sieve. Imported material should be free of silt, clay, organics, and deleterious material. Imported material should be approved by a qualified geotechnical engineer prior to delivery to the site.

On-Site Material Reuse: The fine-grained marine deposit encountered throughout the site is marginally acceptable for reuse as structural fill and/or backfill because of its difficult workability. Reuse of the fine-grained soil will likely require extensive moisture conditioning and/or drying during extended periods of warm, dry weather to facilitate reuse, workability, and compaction in fill areas. The more granular portions of the existing fill may be suitable for reuse as structural fill and/or backfill, but the quantity is limited. Reuse of the site soils will be contingent on careful inspection in the field by the owner's geotechnical engineer.

Stringent quality control and inspection by the geotechnical engineer will be required for suitable portions of the on-site soils to be reused as structural fill and backfill, and to confirm that the soils are properly placed and compacted within two percent of their optimum moisture content.

Immediate re-use of on-site soils for structural fill or backfill should not be anticipated as the natural soils are moisture sensitive. On-site materials that are or become wet will require extensive handling, such as discing and aerating, which may not be practical during wet seasons or where site area is limited. In order to attempt the re-use of on-site soil, the contractor should cover stockpiled soils, seal subgrades each day with a smooth drum roller, and provide proper surface drainage during forecasted wet weather. Alternatively, imported fill materials may be required to expedite earthwork operations. The stripped surface cover materials should not be used as structural fill or backfill.

Submerged Fill: In the wet (flooding, perched water, or groundwater), consideration should be given to placing an open-graded, 0.75-inch crushed stone to provide a working mat, expedite dewatering efforts and enable subsequent placement of structural fill or backfill in the dry. Prior to placing submerged fill materials, free water and disturbed materials should be removed to the extent recommended by the geotechnical engineer. A fines barrier geotextile, such as *Mirafi 140N* or equivalent, should be placed at the base and sides of the overexcavation to separate the crushed stone from underlying and adjacent soils. The fabric also should be placed on top of the crushed stone prior to subsequent fill placement, if fill soils with a substantial amount of fines are to be used to restore grade.

Compaction and Placement Requirements: Fill and backfill should be placed in maximum 12-inch thick loose lifts when compacted using a vibratory drum roller with a minimum weight of one ton, and in maximum eight-inch thick loose lifts when compacted with a plate compactor. A sheepsfoot roller may be appropriate if fine-grained material is used as fill. Structural fill and backfill should be compacted to at least 95 percent of the maximum dry density within three percent of the optimum moisture content, as determined by ASTM D1557 (Modified Proctor).

Structural Fill Testing: A sample of the imported fill material or on-site material proposed for reuse as structural fill or backfill should be submitted to the owner's geotechnical engineer for analysis and approval at least one week prior to its use. The placement of fill and backfill should be monitored by a qualified engineering technician, such that the specified material and lift thicknesses are properly installed. A sufficient number of in-place density tests should be conducted, such that the specified compaction is achieved throughout the height of the fill or backfill.

5.4 GROUNDWATER CONTROL

Shallow groundwater was encountered within the borings during this investigation. In addition, perched/trapped water may be encountered during construction above non-permeable strata. As such, construction phase dewatering will consist of temporarily lowering the groundwater table and removing surface water runoff, infiltrating water, or trapped water. While construction phase dewatering may be possible by installing temporary sump pits and filtered pumps within trenches and excavations, depending on depth of excavation, groundwater level at time of construction, and rate of flow into the excavation, an enhanced dewatering system, such as well points, may be required.

Proper grading and drainage should be incorporated into the site design and construction phase grading to discourage ponding of surface runoff. Every effort should be made to maintain drainage of surface run-off away from construction areas by grading. The contractor should limit exposure of excavations and prepared subgrades to rainfall. Overexcavation of wet soils and replacement with controlled structural fill per Section 5.3 of this report may be required prior to resuming work on disturbed subgrade soils.

Because of the shallow groundwater, Whitestone recommends that permanent drainage measures be implemented. The permanent drainage should include a foundation perimeter drain close to the underside of footing level around the building and a network of interceptor drains extending from stormwater inlet structures within proposed pavement areas.

5.5 FOUNDATIONS

Whitestone considers that the proposed structure may be supported on conventional spread and continuous wall footings designed to bear on the natural marine deposit or structural fill placed on the marine deposit, provided these materials are properly evaluated, placed, and compacted in accordance with Sections 5.2, 5.3, and 5.11 of this report. Existing fill was not encountered in the five borings advanced within or close to the proposed building footprint, however, existing fill was encountered to a depth of more than six fbgs in boring B-14, north of the proposed building footprint. In addition, existing fill may be encountered during construction between the widely spaced borings and associated with the retaining to be removed. Therefore, overexcavation of existing fill under footings and replacement with structural fill may be required within a portion of the building footprint. Foundation subgrades in the marine deposit should be undercut by at least eight inches and replaced with minus 0.75-inch crushed stone wrapped in geotextile separation fabric (*Mirafi 140N*, or similar). Foundations bearing on suitably prepared subgrades may be designed to impart a maximum allowable net bearing pressure of 3,000 pounds per square foot. Regardless of loading conditions, new foundations should be sized no less than minimum dimensions of 24 inches for continuous wall footings and 36 inches for isolated column footings.

Foundation subgrades should be compacted with a roller operated in static mode in the presence of the geotechnical engineer to densify any disturbed soils. The fine-grained soils are susceptible to disturbance by vibrations from compaction equipment and other construction activity. Compaction should therefore only be attempted under the direction of the geotechnical engineer, such that the underlying fine-grained materials do not become disturbed by the compaction process. A smooth bladed bucket would be appropriate for excavation of the fine-grained soils. Consideration should be given to the option of placing geotextile separation fabric and a few inches of crushed stone over the fine-grained soils exposed in the bottom of foundation excavations to reduce the likelihood of disturbance and provide a working surface for formwork and reinforcing steel placement.

Footings should be designed such that the maximum toe pressure due to the combined effect of vertical loads (including soil weight) and overturning moment does not exceed the recommended maximum allowable bearing pressure. In addition, positive contact pressure should be maintained throughout the base of the footings such that no uplift or tension exists between the base of the footings and the

supporting soil. Uplift loads should be resisted by the weight of the concrete footing. Side friction should be neglected when proportioning the footings, and lateral resistance should be provided by friction resistance at the base of the footings. A coefficient of friction (ultimate) against sliding of 0.3 is recommended for use in the design of concrete foundations bearing within the site soils or imported structural fill.

Foundation Inspection/Overexcavation Criteria: Whitestone recommends that the suitability of the bearing materials along new footing bottoms be reviewed by a geotechnical engineer prior to placing concrete for the footings. Special attention should be given to any areas of the site underlain by soft/loose conditions. In the event that isolated areas of unsuitable materials are encountered in footing excavations, overexcavation and replacement of the materials or deeper foundation embedment may be necessary to provide a suitable footing subgrade. Overexcavation to be restored with structural fill should extend at least one foot laterally beyond footing edges for each vertical foot of overexcavation. Lateral overexcavation may be eliminated if grade is restored with lean concrete.

Settlement: Whitestone estimates post construction settlements of new building foundations will be on the order of less than one inch, if the recommendations outlined in this report are properly implemented. Differential settlements of new building foundations should be less than about one half inch.

Frost Coverage: Footings subject to frost action should be placed at least 48 inches below adjacent exterior grades, in accordance with the *State of New Hampshire Building Code* to provide protection from frost penetration. Interior footings not subject to frost action (including during construction) may be placed at a minimum depth of 18 inches below the slab subgrade, but should not be placed on existing fill.

5.6 FLOOR SLAB

Whitestone anticipates that the properly inspected and approved marine deposit, or existing fill improved with surface compaction, and/or compacted structural fill will be suitable for support of the proposed floor slab provided these materials are properly evaluated, compacted, and proofrolled in accordance with Sections 5.2, 5.3, and 5.11 of this report during favorable weather conditions. Areas that are, or become, softened or disturbed as a result of wetting and/or repeated exposure to construction traffic or contain objectionable materials should be removed and replaced with compacted structural fill. The properly prepared on-site soils are expected to yield a minimum subgrade modulus (k) of 150 psi/in.

A minimum 12-inch thick layer of NHDOT *304.3 Crushed Gravel* (or approved equivalent) should be placed below the floor slab to provide a uniform subbase. A moisture vapor barrier should be installed beneath the floor slab in accordance with flooring manufacturer's recommendations. A moisture vapor barrier should also be installed if the floor supports moisture-sensitive equipment.

5.7 PAVEMENT DESIGN CRITERIA

General: Whitestone anticipates that the properly inspected and approved marine deposit, or existing fill improved with surface compaction, and/or compacted structural fill placed to raise or restore design elevations will be suitable for support of the proposed pavements, provided these materials are properly evaluated, compacted, and proofrolled in accordance with Sections 5.2, 5.3, and 5.11 of this report during favorable weather conditions.

Design Criteria: A California Bearing Ratio of 5.0 has been assigned to the properly prepared subgrade soils for pavement design purposes. This value was correlated with pertinent soil support values and assumed traffic loads to prepare flexible and rigid pavement designs per the AASHTO *Guide for the Design of Pavement Structures*.

Design traffic loads were assumed based on typical volumes for similar facilities and correlated with 18-kip equivalent single axle loads (ESAL) for a 20-year life. Estimated maximum pavement loads of 30,000 ESALs and 75,000 ESALs were used for the standard-duty and heavy-duty pavement areas, respectively. These values assume the pavements primarily will accommodate both automobile and limited heavier truck traffic, with the heavier truck traffic designated to the main drive lanes. Actual loading experienced is anticipated to be less than these values.

Pavement Sections: Pavement components should meet material specifications from NHDOT *Standard Specifications* specified below. The recommended flexible pavement sections are tabulated below:

FLEXIBLE PAVEMENT SECTION			
LAYER	**Material**	**Standard-Duty Thickness (inches)**	**Heavy-Duty Thickness (inches)**
Asphalt Surface Course	NHDOT "Wearing Course"	1.5	1.5
Asphalt Binder Course	NHDOT "Binder Course"	1.5	2.5
Granular Subbase	NHDOT 304.3 Crushed Gravel	12.0	12.0

A rigid concrete pavement should be used to provide suitable support at areas of high traffic or severe turns, such as at the drive-thru, trash enclosure, and ingress/egress locations. The recommended rigid pavement is tabulated below:

RIGID PAVEMENT SECTION		
LAYER	**Material**	**Thickness (inches)**
Surface	4,000 psi Air-Entrained Concrete	6.0[1]
Granular Subbase	NHDOT 304.3 Crushed Gravel	12.0

Note [1]: The outer edges of concrete pavements are susceptible to damage as trucks move from rigid pavement to adjacent flexible pavement. Therefore, the thickness at the outer two feet of the rigid concrete pavement should be 12 inches. The concrete should be reinforced with at least one layer of six-inch by six-inch W5.4/W5.4 welded wire fabric (ASTM A185).

Pavement Drainage Systems: Because of the shallow groundwater, Whitestone recommends installing a network of interceptor drains extending from stormwater inlet structures to improve drainage within proposed pavement areas. Interceptor drains typically consist of top perforated polyvinyl chloride (PVC) piping within a 12-inch by 12-inch, clean 0.75-inch crushed stone layer surrounded by a fines separation fabric. For the fine-grained soils present on the subject site, a woven fabric, such as long term clog resistant *Mirafi FW700*, or approved equivalent, is recommended. Interceptor drains should be designed to pitch towards and discharge into the stormwater drainage system. The pipes should have a minimum slope of 0.5 percent.

Additional Design Considerations: The pavement section thickness designs presented in this report are based on the design parameters detailed herein and are contingent on proper construction, inspection, and maintenance. Additional pavement thickness may be required by local code. The designs are contingent on achieving the minimum soil support value in the field. To accomplish this requirement, subgrade soil and supporting fill or backfill should be placed, compacted, and evaluated in accordance with Sections 5.2, 5.3, and 5.11 of this report. Proper drainage should be provided for the pavement structure, including appropriate grading and surface water control, a network of interceptor drains, and an edge drain where the pavement abuts higher ground.

The performance of the pavement also will depend on the quality of materials and workmanship. Whitestone recommends that NHDOT standards for materials, workmanship, and maintenance be applied to this site. Project specifications should include verifying that the installed asphaltic concrete material composition is within tolerance for the specified materials and that the percentage of air voids of the installed pavement is within specified ranges for the respective materials. Rigid concrete pavements should be suitably air-entrained, jointed, and reinforced in general accordance with ACI 330R-08 *Guide for the Design and Construction of Concrete Parking Lots*.

5.8 RETAINING WALLS/BELOW GRADE WALLS

Proposed site retaining walls were not indicated at this time. Whitestone should be notified if retaining walls or structures resisting lateral earth pressures are planned. The following recommendations are provided for preliminary planning of any retaining walls, below-grade walls, and other structures reliant on granular materials to provide adequate drainage. However, the parameters are not directly applicable to the design of mechanically stabilized earth (MSE) retaining walls, which require proprietary design methods for the selected earth retention system.

Lateral Earth Pressures: Retaining/below-grade walls should be capable of withstanding active and at-rest earth pressures. With an active earth pressure coefficient (K_a) of 0.33 and assuming a level backfill and an assumed maximum backfill soil unit weight of 140 pounds per cubic foot (pcf), an equivalent fluid pressure of 46 psf per foot of wall height should be used in design of retaining/below-grade walls which are free to rotate.

Retaining/below-grade walls and wall corners typically are restrained from lateral movement and should be designed using at-rest earth pressures. A coefficient of at-rest earth pressure (K_o) of 0.5, for a level backfill, is recommended for retaining/below-grade walls designed to resist at-rest earth pressures, which assume no lateral movement. With an assumed maximum total unit weight of backfill of approximately 140 pcf, an equivalent fluid pressure of 70 psf of wall height should be used in design of restrained retaining/below-grade wall and wall corners. A coefficient of friction of 0.3 against sliding can be used for concrete on the existing site soils. Additional lateral earth pressures from a sloped backfill or any temporary or long-term surcharge loads also should be included in the design. Retaining wall design should include a global stability analysis.

Backfill Criteria: Whitestone recommends that granular soils be used to backfill behind retaining walls. The granular backfill materials should consist of clean, relatively well-graded sand or gravel with a maximum particle size of three inches and up to 15 percent of material finer than a #200 U.S. Standard sieve.

Whitestone recommends that backfill directly behind any walls be compacted with light, hand-held compactors. Heavy compactors and grading equipment should not be allowed to operate within a zone of influence measured at a 45-degree angle from the base of the walls during backfilling to avoid developing excessive temporary or long-term lateral soil pressures.

Wall Drainage: Positive drainage should be provided at the base of the below-grade walls. Where wall drainage is not provided, the wall should be designed to withstand full hydrostatic pressure. All below grade walls should also include a minimum 18 inches of open graded stone backfill immediately adjacent to the wall that re-directs water from the building. Geotextile separation fabric should be placed between the open graded stone and the site soils.

Whitestone should be notified if any retaining structures or design considerations requiring lateral earth pressure estimations are proposed. Specific recommendations for temporary retaining structures are beyond Whitestone's scope of services.

5.9 SEISMIC & LIQUEFACTION CONSIDERATIONS

The subsurface conditions are most consistent with a Site Class D, as defined by the *State of New Hampshire Building Code*. Based on the building type (single story), seismic zone, and soil profile, liquefaction considerations are not expected to have a substantial impact on design.

5.10 EXCAVATIONS

The site soils encountered during this investigation typically are, at a minimum, consistent with Type C Soil Conditions as defined by 29 CFR Part 1926 (OSHA), which require a maximum unbraced excavation angle of 1.5:1 (horizontal:vertical). Actual conditions encountered during construction should be evaluated by a competent person (as defined by OSHA), such that safe excavation methods and/or shoring and bracing requirements are implemented.

5.11 SUPPLEMENTAL POST INVESTIGATION SERVICES

Structural & Grading Plan Review: Whitestone should be provided with the final structural and grading plans to review and confirm the final design plans are consistent with the recommendations in this report. Whitestone should review site grading and proposed fill placement.

Construction Inspection and Monitoring: Earthwork inspections, testing, and consultation should be conducted during construction as described in previous sections of this report. Monitoring and testing should also be conducted to confirm that any encountered underground structures are properly backfilled, the existing surface cover materials are properly removed, and suitable materials, used for controlled fill, are properly placed and compacted over suitable subgrade soils. Overexcavation of any existing fill beneath proposed foundations and proofrolling of all subgrades prior to foundation, slab, and pavement support should be witnessed and documented by the owner's geotechnical engineer to confirm earthwork is conducted in accordance with the recommendations herein.

SECTION 6.0
General Comments

Supplemental recommendations may be required upon finalization of construction plans or if significant changes are made in the characteristics or location of the proposed structure. Soil bearing conditions should be checked at the appropriate time for consistency with those conditions encountered during Whitestone's geotechnical investigation.

The recommendations presented herein should be utilized by a qualified engineer in preparing the project plans and specifications. The engineer should consider these recommendations as minimum physical standards, which may be superseded by local and regional building codes and structural considerations. These recommendations are prepared for the sole use of the McDonald's USA, LLC for the specific project detailed and should not be used by any third party. These recommendations are relevant to the design phase and should not be substituted for construction specifications.

The possibility exists that conditions between borings may differ from those at specific test locations, and conditions may not be as anticipated by the designers or contractors. In addition, the construction process may alter soil and rock conditions. Therefore, experienced geotechnical personnel should observe and document the construction procedures used and the conditions encountered.

Whitestone assumes that a qualified contractor will be employed to conduct the construction work, and that the contractor will be required to exercise care to ensure excavations are conducted in accordance with applicable regulations and good practice. Particular attention should be paid to avoiding damaging or undermining adjacent buildings/properties and maintaining slope stability.

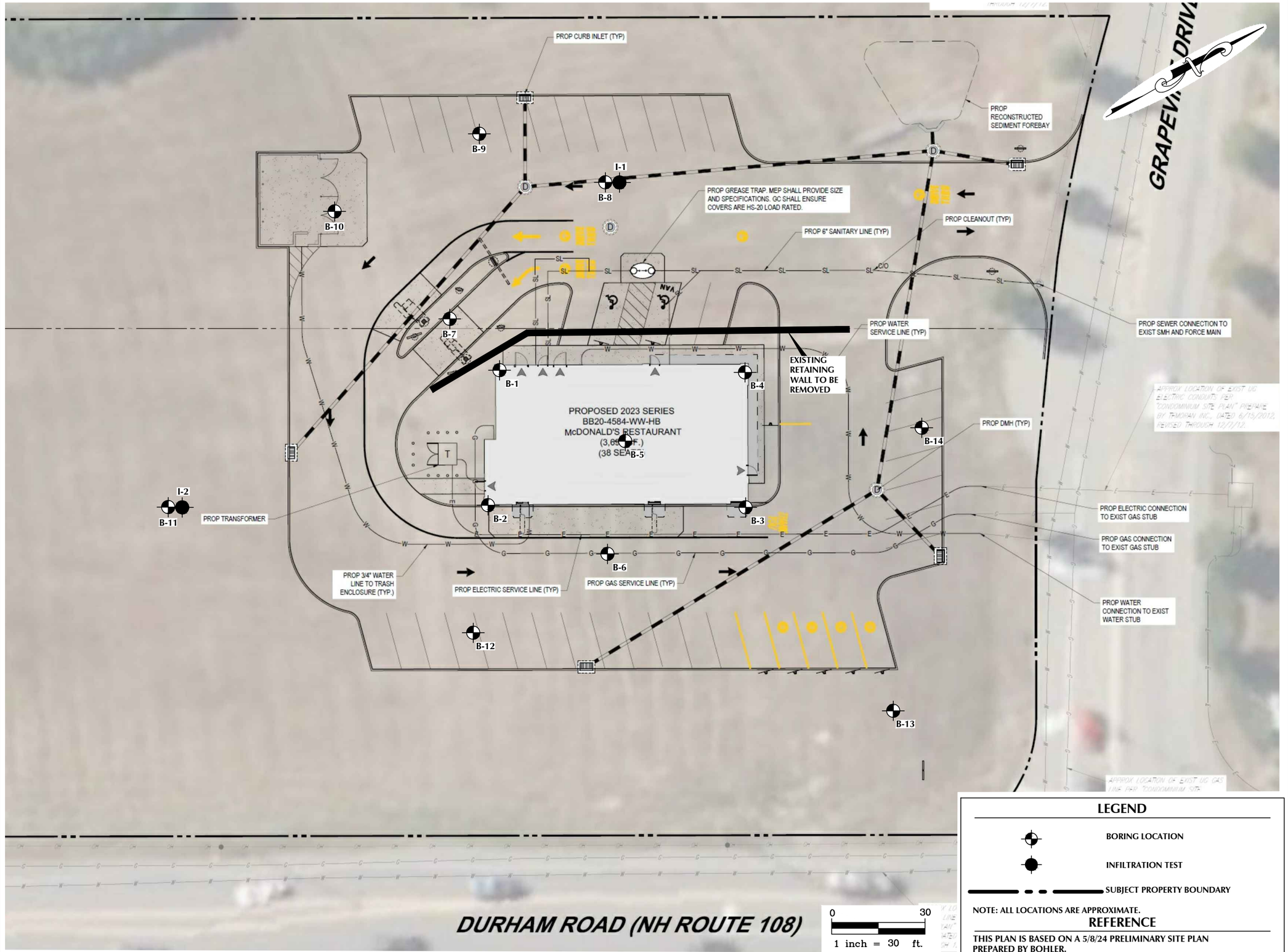
Whitestone recommends that the services of the geotechnical engineer be engaged to test and evaluate the materials in the footing excavations prior to concreting in order to determine that the materials will support the bearing pressures. Monitoring and testing also should be conducted to check that suitable materials are used for controlled fills and that they are properly placed and compacted over suitable subgrade.

The exploration and analysis of the foundation conditions reported herein are considered sufficient in detail and scope to form a reasonable basis for the foundation design. The recommendations submitted for the proposed construction are based on the available soil information and the design details furnished by McDonald's USA, LLC and Bohler Engineering MA, LLC. Deviations from the noted subsurface conditions encountered during construction should be brought to the attention of the geotechnical engineer.

The geotechnical engineer warrants that the findings, recommendations, specifications, or professional advice contained herein have been promulgated after being prepared in accordance with generally accepted professional engineering practice in the fields of foundation engineering, soil mechanics, and engineering geology. No other warranties, express or implied, are made.

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FIGURE 1
Boring Location Plan



LEGEND

- BORING LOCATION
- INFILTRATION TEST
- SUBJECT PROPERTY BOUNDARY

NOTE: ALL LOCATIONS ARE APPROXIMATE.

REFERENCE

THIS PLAN IS BASED ON A 5/8/24 PRELIMINARY SITE PLAN PREPARED BY BOHLER.

WHITESTONE
An Employee-Owned Company
3 EXECUTIVE PARK DRIVE, SUITE 202, BEDFORD, NH 03110
PHONE: 603.514.2230 WHITESTONEASSOC.COM

DRAWING TITLE: **BORING LOCATION PLAN**

CLIENT: McDONALD'S USA, LLC

PROJECT: PROPOSED McDONALD'S RESTAURANT # 28-0178
NH ROUTE 108 & GRAPEVINE DRIVE
DOVER, NEW HAMPSHIRE

PROJECT #: GM2421922.000	
DESIGNED BY: MR	PROJ. MGR.: RR
DATE: 5/31/24	FIGURE: 1
SCALE: 1" = 30'	

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APPENDIX A
Records of Subsurface Exploration

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-1

Page 1 of 1

Project:	Proposed McDonald's Restaurant #28-0178	**WAI Project No.:**	GM2421922.000
Location:	NH Route 108 & Grapevine Drive, Dover, Strafford County, New Hampshire	**Client:**	McDonald's USA, LLC

				Water Depth | Elevation (feet bgs) | (ft NAVD88)	Cave-In Depth | Elevation (feet bgs) | (ft NAVD88)
Surface Elevation:	± NS feet Above NAVD88	**Date Started:**	5/28/2024		
Termination Depth:	22.0 feet bgs	**Date Completed:**	5/28/2024		
Proposed Location:	Building	**Logged By:**	ZH	**During:** 5.0 | --	
Drill / Test Method:	HSA / SPT (Autohammer)	**Contractor:**	DE	**At Completion:** -- | --	**At Completion:** -- | --
		Equipment:	CME 55LC	**24 Hours:** -- | --	**24 Hours:** -- | --

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
							TS		6" Topsoil	
0 - 2	S-1	X	WOH - 1 - 3 - 5	16	4				Gray-Brown, Very Loose to Loose, Sandy Silt (ML)	
2 - 4	S-2	X	4 - 4 - 7 - 9	24	11				As Above, Gray, Medium Dense (ML)	
						5.0 ▽				
5 - 7	S-3	X	3 - 4 - 5 - 6	24	9				As Above, Gray-Brown, Loose (ML)	
7 - 9	S-4	X	4 - 6 - 5 - 6	24	11				As Above, Medium Dense (ML)	
						10.0				
10 - 12	S-5	X	3 - 4 - 6 - 6	21	10		MARINE DEPOSIT		As Above, Brown, Loose to Medium Dense (ML)	
						15.0				
15 - 17	S-6	X	1 - 1 - 1 - 3	22	2				As Above, Gray, Very Loose (ML)	
						20.0				
20 - 22	S-7	X	2 - 1 - 2 - 4	22	3				As Above, Gray-Brown (ML)	
						25.0			Boring Log B-1 Terminated at Depth of 22.0 feet below ground surface.	

NOTES: bgs = below ground surface, msl = mean sea level, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-2

Page 1 of 1

Project:	Proposed McDonald's Restaurant #28-0178	**WAI Project No.:**	GM2421922.000
Location:	NH Route 108 & Grapevine Drive, Dover, Strafford County, New Hampshire	**Client:**	McDonald's USA, LLC

Surface Elevation:	± NS feet Above NAVD88	**Date Started:**	5/28/2024		**Water Depth | Elevation** (feet bgs) | (ft NAVD88)		**Cave-In Depth | Elevation** (feet bgs) | (ft NAVD88)
Termination Depth:	19.0 feet bgs	**Date Completed:**	5/28/2024				
Proposed Location:	Building	**Logged By:**	ZH	**During:**	2.0 | --		
Drill / Test Method:	HSA / SPT (Autohammer)	**Contractor:**	DE	**At Completion:**	7.0 | --	**At Completion:**	-- | --
		Equipment:	CME 55LC	**24 Hours:**	-- | --	**24 Hours:**	-- | --

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
0 - 2	S-1	X	1 - 2 - 2 - 3	21	4		TS		3" Topsoil	
							SUBSOIL		9" Subsoil, Roots	
									Gray-Brown, Very Loose to Loose, Sandy Silt (ML)	
2 - 4	S-2	X	3 - 4 - 7 - 9	24	11				As Above, Medium Dense (ML)	
						5.0				
5 - 7	S-3	X	4 - 4 - 5 - 5	24	9				As Above, Loose (ML)	
7 - 9	S-4	X	5 - 5 - 5 - 6	24	10				As Above, Loose to Medium Dense (ML)	
						10.0	MARINE DEPOSIT			
10 - 12	S-5	X	2 - 3 - 5 - 5	24	8				As Above, Loose (ML)	
						15.0				
15 - 17	S-6	X	WOH - 1 - 2 - 2	24	3				As Above, Very Loose (ML)	
17 - 19	S-7	X	1 - 2 - 2 - 1	22	4				As Above, Very Loose to Loose (ML)	
						20.0			Boring Log B-2 Terminated at Depth of 19.0 feet below ground surface.	
						25.0				

NOTES: bgs = below ground surface, msl = mean sea level, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-3

Page 1 of 1

Project:	Proposed McDonald's Restaurant #28-0178	**WAI Project No.:**	GM2421922.000
Location:	NH Route 108 & Grapevine Drive, Dover, Strafford County, New Hampshire	**Client:**	McDonald's USA, LLC

				Water Depth | Elevation (feet bgs) | (ft NAVD88)	Cave-In Depth | Elevation (feet bgs) | (ft NAVD88)
Surface Elevation:	± NS feet Above NAVD88	**Date Started:**	5/28/2024		
Termination Depth:	19.0 feet bgs	**Date Completed:**	5/28/2024		
Proposed Location:	Building	**Logged By:**	ZH	**During:** 7.0 | --	
Drill / Test Method:	HSA / SPT (Autohammer)	**Contractor:**	DE	**At Completion:** -- | --	**At Completion:** -- | --
		Equipment:	CME 55LC	**24 Hours:** -- | --	**24 Hours:** -- | --

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
0 - 2	S-1	X	3 - 4 - 5 - 6	21	9		TS		9" Topsoil	
							SUBSOIL		10" Subsoil	
2 - 4	S-2	X	4 - 7 - 5 - 6	15	12				Gray-Brown, Medium Dense, Silty Sand (SM)	
						5.0				
5 - 7	S-3	X	3 - 4 - 6 - 7	22	10				As Above, Loose to Medium Dense (SM)	
7 - 9	S-4	X	6 - 6 - 6 - 7	23	12				As Above, Medium Dense (SM)	
						10.0	MARINE DEPOSIT			
10 - 12	S-5	X	4 - 6 - 9 - 8	24	15				As Above, Brown (SM)	
						15.0				
15 - 17	S-6	X	3 - 5 - 6 - 4	16	11				As Above, Gray to Brown (SM)	
17 - 19	S-7	X	2 - 2 - 7 - 13	24	9				As Above, Gray-Brown, Loose (SM)	
						20.0			Boring Log B-3 Terminated at Depth of 19.0 feet below ground surface.	
						25.0				

NOTES: bgs = below ground surface, msl = mean sea level, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-4

Page 1 of 1

Project:	Proposed McDonald's Restaurant #28-0178	**WAI Project No.:**	GM2421922.000
Location:	NH Route 108 & Grapevine Drive, Dover, Strafford County, New Hampshire	**Client:**	McDonald's USA, LLC

				Water Depth | Elevation (feet bgs) | (ft NAVD88)	Cave-In Depth | Elevation (feet bgs) | (ft NAVD88)
Surface Elevation:	± NS feet Above NAVD88	**Date Started:**	5/28/2024		
Termination Depth:	19.0 feet bgs	**Date Completed:**	5/28/2024		
Proposed Location:	Building	**Logged By:**	ZH	**During:** 7.0 | --	
Drill / Test Method:	HSA / SPT (Autohammer)	**Contractor:**	DE	**At Completion:** -- | --	**At Completion:** -- | --
		Equipment:	CME 55LC	**24 Hours:** -- | --	**24 Hours:** -- | --

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
0 - 2	S-1	X	2 - 3 - 4 - 4	21	7		TS		8" Topsoil	
							SUBSOIL		11" Subsoil	
2 - 4	S-2	X	4 - 5 - 4 - 7	16	9				Gray-Brown, Loose, Silty Sand (SM)	
						5.0				
5 - 7	S-3	X	2 - 3 - 5 - 6	22	8				As Above (SM)	
7 - 9	S-4	X	5 - 6 - 7 - 9	24	13				As Above, Medium Dense (SM)	
						10.0	MARINE DEPOSIT			
10 - 12	S-5	X	2 - 2 - 5 - 7	24	7				As Above, Loose (SM)	
						15.0				
15 - 17	S-6	X	1 - 2 - 3 - 2	24	5				As Above (SM)	
17 - 19	S-7	X	5 - 7 - 8 - 8	24	15				As Above, Brown, Medium Dense (SM)	
						20.0			Boring Log B-4 Terminated at Depth of 19.0 feet below ground surface.	
						25.0				

NOTES: bgs = below ground surface, msl = mean sea level, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-5

Page 1 of 1

Project:	Proposed McDonald's Restaurant #28-0178	**WAI Project No.:**	GM2421922.000
Location:	NH Route 108 & Grapevine Drive, Dover, Strafford County, New Hampshire	**Client:**	McDonald's USA, LLC

				Water Depth | Elevation (feet bgs) | (ft NAVD88)	Cave-In Depth | Elevation (feet bgs) | (ft NAVD88)
Surface Elevation:	± NS feet Above NAVD88	**Date Started:**	5/28/2024		
Termination Depth:	19.0 feet bgs	**Date Completed:**	5/28/2024		
Proposed Location:	Building	**Logged By:**	ZH	**During:** 7.0 | --	
Drill / Test Method:	HSA / SPT (Autohammer)	**Contractor:**	DE	**At Completion:** -- | --	**At Completion:** -- | --
		Equipment:	CME 55LC	**24 Hours:** -- | --	**24 Hours:** -- | --

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
0 - 2	S-1	X	2 - 3 - 5 - 5	20	8		TS		3" Topsoil	
							SUBSOIL		5" Subsoil, Roots	
									Brown, Loose, Sandy Silt (ML)	
2 - 4	S-2	X	4 - 6 - 5 - 5	18	11				As Above, Gray-Brown, Medium Dense (ML)	
						5.0				
5 - 7	S-3	X	3 - 4 - 5 - 5	20	9				As Above, Gray, Loose (ML)	
7 - 9	S-4	X	5 - 6 - 5 - 6	22	11				As Above, Gray-Brown, Medium Dense (ML)	
						10.0	MARINE DEPOSIT			
10 - 12	S-5	X	4 - 5 - 8 - 8	23	13				As Above, Brown (ML)	
						15.0				
15 - 17	S-6	X	3 - 6 - 5 - 5	18	11				As Above (ML)	
17 - 19	S-7	X	2 - 3 - 6 - 10	23	9				As Above, Loose (ML)	
						20.0			Boring Log B-5 Terminated at Depth of 19.0 feet below ground surface.	
						25.0				

NOTES: bgs = below ground surface, msl = mean sea level, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-6

Page 1 of 1

Project:	Proposed McDonald's Restaurant #28-0178	**WAI Project No.:**	GM2421922.000
Location:	NH Route 108 & Grapevine Drive, Dover, Strafford County, New Hampshire	**Client:**	McDonald's USA, LLC

Surface Elevation:	± NS feet Above NAVD88	**Date Started:**	5/28/2024		**Water Depth | Elevation** (feet bgs) | (ft NAVD88)	**Cave-In Depth | Elevation** (feet bgs) | (ft NAVD88)
Termination Depth:	17.0 feet bgs	**Date Completed:**	5/28/2024			
Proposed Location:	Grease Trap	**Logged By:**	ZH	**During:**	7.0 | --	
Drill / Test Method:	HSA / SPT (Autohammer)	**Contractor:**	DE	**At Completion:**	-- | --	**At Completion:** -- | --
		Equipment:	CME 55LC	**24 Hours:**	-- | --	**24 Hours:** -- | --

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
0 - 2	S-1	X	1 - 1 - 2 - 3	19	3		TS		4" Topsoil	
							SUBSOIL		7" Subsoil, Roots	
									Gray, Loose, Sandy Silt (ML)	
2 - 4	S-2	X	3 - 3 - 6 - 8	22	9				As Above (ML)	
						5.0				
5 - 7	S-3	X	4 - 5 - 4 - 4	24	9				As Above (ML)	
7 - 9	S-4	X	4 - 5 - 5 - 5	24	10				As Above, Gray-Brown, Loose to Medium Dense (ML)	
							MARINE DEPOSIT			
						10.0				
10 - 12	S-5	X	2 - 3 - 4 - 6	23	7				As Above, Brown, Loose (ML)	
						15.0				
15 - 17	S-6	X	WOH - 1 - 1 - 1	24	2				As Above, Gray, Very Loose (ML)	
									Boring Log B-6 Terminated at Depth of 17.0 feet below ground surface.	
						20.0				
						25.0				

NOTES: bgs = below ground surface, msl = mean sea level, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-7

Project:	Proposed McDonald's Restaurant #28-0178	**WAI Project No.:**	GM2421922.000
Location:	NH Route 108 & Grapevine Drive, Dover, Strafford County, New Hampshire	**Client:**	McDonald's USA, LLC

				Water Depth | Elevation (feet bgs) | (ft NAVD88)	Cave-In Depth | Elevation (feet bgs) | (ft NAVD88)
Surface Elevation:	± NS feet Above NAVD88	**Date Started:**	5/29/2024		
Termination Depth:	12.0 feet bgs	**Date Completed:**	5/29/2024		
Proposed Location:	Drive-thru / Order Boards	**Logged By:**	ZH	**During:** 5.0 | --	
Drill / Test Method:	HSA / SPT (Autohammer)	**Contractor:**	DE	**At Completion:** -- | --	**At Completion:** -- | --
		Equipment:	CME 55LC	**24 Hours:** -- | --	**24 Hours:** -- | --

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
0 - 2	S-1		WOH - 2 - 2 - 8	15	4		TS		5" Topsoil	
							SUBSOIL		6" Subsoil, Roots	
									Brown, Loose, Silty Sand (SM)	
2 - 4	S-2		8 - 10 - 8 - 6	18	18				As Above, Gray-Brown, Medium Dense (SM)	
						5.0				
5 - 7	S-3		3 - 2 - 4 - 3	24	6		MARINE DEPOSIT		Gray-Brown, Loose, Sandy Silt (ML)	
7 - 9	S-4		4 - 5 - 5 - 6	24	10				As Above, Loose to Medium Dense (ML)	
						10.0				
10 - 12	S-5		6 - 8 - 6 - 6	24	14				As Above, Gray, Medium Dense (ML)	
									Boring Log B-7 Terminated at Depth of 12.0 feet below ground surface.	
						15.0				
						20.0				
						25.0				

NOTES: bgs = below ground surface, msl = mean sea level, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-8

Project:	Proposed McDonald's Restaurant #28-0178	**WAI Project No.:**	GM2421922.000
Location:	NH Route 108 & Grapevine Drive, Dover, Strafford County, New Hampshire	**Client:**	McDonald's USA, LLC

Surface Elevation:	± NS feet Above NAVD88	**Date Started:**	5/29/2024		**Water Depth | Elevation** (feet bgs) | (ft NAVD88)		**Cave-In Depth | Elevation** (feet bgs) | (ft NAVD88)
Termination Depth:	7.0 feet bgs	**Date Completed:**	5/29/2024				
Proposed Location:	SWM Area	**Logged By:**	ZH	**During:**	6.0 | --		
Drill / Test Method:	HSA / SPT (Autohammer)	**Contractor:**	DE	**At Completion:**	-- | --	**At Completion:**	-- | --
		Equipment:	CME 55LC	**24 Hours:**	-- | --	**24 Hours:**	-- | --

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
							TS		5" Topsoil	
							SUBSOIL		7" Subsoil, Roots	
1 - 3	S-1	X	2 - 3 - 4 - 5	23	7				Gray, Loose, Sandy Silt (ML)	
3 - 5	S-2	X	5 - 6 - 8 - 10	18	14		MARINE DEPOSIT		As Above, Medium Dense (ML)	
						5.0				
5 - 7	S-3	X	3 - 3 - 8 - 8	12	11				As Above, Gray-Brown (ML)	
									Boring Log B-8 Terminated at Depth of 7.0 feet below ground surface.	
						10.0				
						15.0				
						20.0				
						25.0				

NOTES: bgs = below ground surface, msl = mean sea level, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-9

Project:	Proposed McDonald's Restaurant #28-0178	**WAI Project No.:**	GM2421922.000
Location:	NH Route 108 & Grapevine Drive, Dover, Strafford County, New Hampshire	**Client:**	McDonald's USA, LLC

Surface Elevation:	± NS feet Above NAVD88	**Date Started:**	5/29/2024		**Water Depth | Elevation** (feet bgs) | (ft NAVD88)		**Cave-In Depth | Elevation** (feet bgs) | (ft NAVD88)
Termination Depth:	7.0 feet bgs	**Date Completed:**	5/29/2024				
Proposed Location:	Parking	**Logged By:**	ZH	**During:**	-- | --		
Drill / Test Method:	HSA / SPT (Autohammer)	**Contractor:**	DE	**At Completion:**	-- | --	**At Completion:**	-- | --
		Equipment:	CME 55LC	**24 Hours:**	-- | --	**24 Hours:**	-- | --

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
							TS		6" Topsoil	
							SUBSOIL		6" Subsoil, Roots	
1 - 3	S-1	X	2 - 3 - 4 - 4	15	7		MARINE DEPOSIT		Gray- Brown, Loose, Sandy Silt (ML)	
3 - 5	S-2	X	4 - 6 - 9 - 11	21	15	5.0			As Above, Medium Dense (ML)	
5 - 7	S-3	X	3 - 4 - 10 - 9	20	14				As Above, Gray (ML)	
									Boring Log B-9 Terminated at Depth of 7.0 feet below ground surface.	
						10.0				
						15.0				
						20.0				
						25.0				

NOTES: bgs = below ground surface, msl = mean sea level, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-10

Page 1 of 1

Project:	Proposed McDonald's Restaurant #28-0178	**WAI Project No.:**	GM2421922.000
Location:	NH Route 108 & Grapevine Drive, Dover, Strafford County, New Hampshire	**Client:**	McDonald's USA, LLC

				Water Depth | Elevation (feet bgs) | (ft NAVD88)	Cave-In Depth | Elevation (feet bgs) | (ft NAVD88)
Surface Elevation:	± NS feet Above NAVD88	**Date Started:**	5/29/2024		
Termination Depth:	11.0 feet bgs	**Date Completed:**	5/29/2024		
Proposed Location:	Dumpster Pad	**Logged By:**	ZH	**During:** 5.5 | --	
Drill / Test Method:	HSA / SPT (Autohammer)	**Contractor:**	DE	**At Completion:** -- | --	**At Completion:** -- | --
		Equipment:	CME 55LC	**24 Hours:** -- | --	**24 Hours:** -- | --

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
							TS		4" Topsoil	
							SUBSOIL		5" Subsoil, Roots	
1 - 3	S-1	X	3 - 6 - 6 - 8	24	12				Gray-Brown, Medium Dense, Sandy Silt (ML)	
3 - 5	S-2	X	2 - 5 - 5 - 9	17	10				As Above, Gray, Loose to Medium Dense (ML)	
						5.0				
5 - 7	S-3	X	5 - 7 - 7 - 8	24	14		MARINE DEPOSIT		As Above, Medium Dense (ML)	
7 - 9	S-4	X	6 - 7 - 6 - 6	24	13				As Above, Brown (ML)	
9 - 11	S-5	X	3 - 3 - 3 - 4	9	6	10.0			As Above, Loose (ML)	
									Boring Log B-10 Terminated at Depth of 11.0 feet below ground surface.	
						15.0				
						20.0				
						25.0				

NOTES: bgs = below ground surface, msl = mean sea level, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-11

Project:	Proposed McDonald's Restaurant #28-0178	**WAI Project No.:**	GM2421922.000
Location:	NH Route 108 & Grapevine Drive, Dover, Strafford County, New Hampshire	**Client:**	McDonald's USA, LLC

Surface Elevation:	± NS feet Above NAVD88	**Date Started:**	5/29/2024		**Water Depth | Elevation** (feet bgs) | (ft NAVD88)		**Cave-In Depth | Elevation** (feet bgs) | (ft NAVD88)
Termination Depth:	7.0 feet bgs	**Date Completed:**	5/29/2024				
Proposed Location:	SWM Area	**Logged By:**	ZH	**During:**	3.0 | --		
Drill / Test Method:	HSA / SPT (Autohammer)	**Contractor:**	DE	**At Completion:**	-- | --	**At Completion:**	-- | --
		Equipment:	CME 55LC	**24 Hours:**	-- | --	**24 Hours:**	-- | --

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
							TS		5" Topsoil	
							SUBSOIL		7" Subsoil, Roots	
1 - 3	S-1	X	2 - 4 - 8 - 11	24	12				Gray-Brown, Medium Dense, Silty Sand (SM)	
3 - 5	S-2	X	3 - 6 - 9 - 15	20	15		MARINE DEPOSIT		As Above (SM)	
						5.0				
5 - 7	S-3	X	4 - 6 - 8 - 12	12	14				As Above, Brown (SM)	
									Boring Log B-11 Terminated at Depth of 7.0 feet below ground surface.	
						10.0				
						15.0				
						20.0				
						25.0				

NOTES: bgs = below ground surface, msl = mean sea level, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-12

Project:	Proposed McDonald's Restaurant #28-0178	**WAI Project No.:**	GM2421922.000
Location:	NH Route 108 & Grapevine Drive, Dover, Strafford County, New Hampshire	**Client:**	McDonald's USA, LLC

Surface Elevation:	± NS feet Above NAVD88	**Date Started:**	5/29/2024		**Water Depth | Elevation** (feet bgs) | (ft NAVD88)		**Cave-In Depth | Elevation** (feet bgs) | (ft NAVD88)
Termination Depth:	6.0 feet bgs	**Date Completed:**	5/29/2024				
Proposed Location:	Parking	**Logged By:**	ZH	**During:**	2.0 | --		
Drill / Test Method:	HSA / SPT (Autohammer)	**Contractor:**	DE	**At Completion:**	-- | --	**At Completion:**	-- | --
		Equipment:	CME 55LC	**24 Hours:**	-- | --	**24 Hours:**	-- | --

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
							TS		4" Topsoil; 3" Subsoil, Roots	
0 - 2	S-1		1 - 2 - 3 - 5	24	5				Gray-Brown, Loose, Sandy Silt (ML)	
2 - 4	S-2		6 - 9 - 11 - 11	24	20		MARINE DEPOSIT		As Above, Medium Dense (ML)	
4 - 6	S-3		4 - 6 - 6 - 9	11	12	5.0			As Above (ML)	
									Boring Log B-12 Terminated at Depth of 6.0 feet below ground surface.	
						10.0				
						15.0				
						20.0				
						25.0				

NOTES: bgs = below ground surface, msl = mean sea level, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-13

Page 1 of 1

Project:	Proposed McDonald's Restaurant #28-0178	**WAI Project No.:**	GM2421922.000
Location:	NH Route 108 & Grapevine Drive, Dover, Strafford County, New Hampshire	**Client:**	McDonald's USA, LLC

Surface Elevation:	± NS feet Above NAVD88	**Date Started:**	5/29/2024		**Water Depth | Elevation** (feet bgs) | (ft NAVD88)		**Cave-In Depth | Elevation** (feet bgs) | (ft NAVD88)
Termination Depth:	17.0 feet bgs	**Date Completed:**	5/29/2024				
Proposed Location:	Sign	**Logged By:**	ZH	**During:**	7.0 | --		
Drill / Test Method:	HSA / SPT (Autohammer)	**Contractor:**	DE	**At Completion:**	-- | --	**At Completion:**	-- | --
		Equipment:	CME 55LC	**24 Hours:**	-- | --	**24 Hours:**	-- | --

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
							TS		6" Topsoil	
							SUBSOIL		6" Subsoil, Roots	
1 - 3	S-1	X	5 - 6 - 15 - 28	24	21		EXISTING FILL		Brown, Medium Dense, Silty Sand with Gravel (FILL)	
3 - 5	S-2	X	18 - 13 - 10 - 15	20	23	4.0			As Above (FILL)	
						5.0			Gray, Medium Dense, Sandy Silt (ML)	
5 - 7	S-3	X	4 - 5 - 10 - 12	18	15				As Above (ML)	
7 - 9	S-4	X	12 - 14 - 15 - 15	24	29				As Above (ML)	
						10.0				
10 - 12	S-5	X	2 - 3 - 7 - 10	23	10		MARINE DEPOSIT		Brown, Loose to Medium Dense, Silty Sand (SM)	
						15.0				
15 - 17	S-6	X	4 - 2 - 3 - 4	17	5				Brown, Loose, Sandy Silt (ML)	
									Boring Log B-13 Terminated at Depth of 17.0 feet below ground surface.	
						20.0				
						25.0				

NOTES: bgs = below ground surface, msl = mean sea level, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-14

Project:	Proposed McDonald's Restaurant #28-0178	**WAI Project No.:**	GM2421922.000
Location:	NH Route 108 & Grapevine Drive, Dover, Strafford County, New Hampshire	**Client:**	McDonald's USA, LLC

Surface Elevation:	± NS feet Above NAVD88	**Date Started:**	5/29/2024		**Water Depth | Elevation** (feet bgs) | (ft NAVD88)		**Cave-In Depth | Elevation** (feet bgs) | (ft NAVD88)
Termination Depth:	6.0 feet bgs	**Date Completed:**	5/29/2024				
Proposed Location:	Parking	**Logged By:**	ZH	**During:**	-- | --		
Drill / Test Method:	HSA / SPT (Autohammer)	**Contractor:**	DE	**At Completion:**	-- | --	**At Completion:**	-- | --
		Equipment:	CME 55LC	**24 Hours:**	-- | --	**24 Hours:**	-- | --

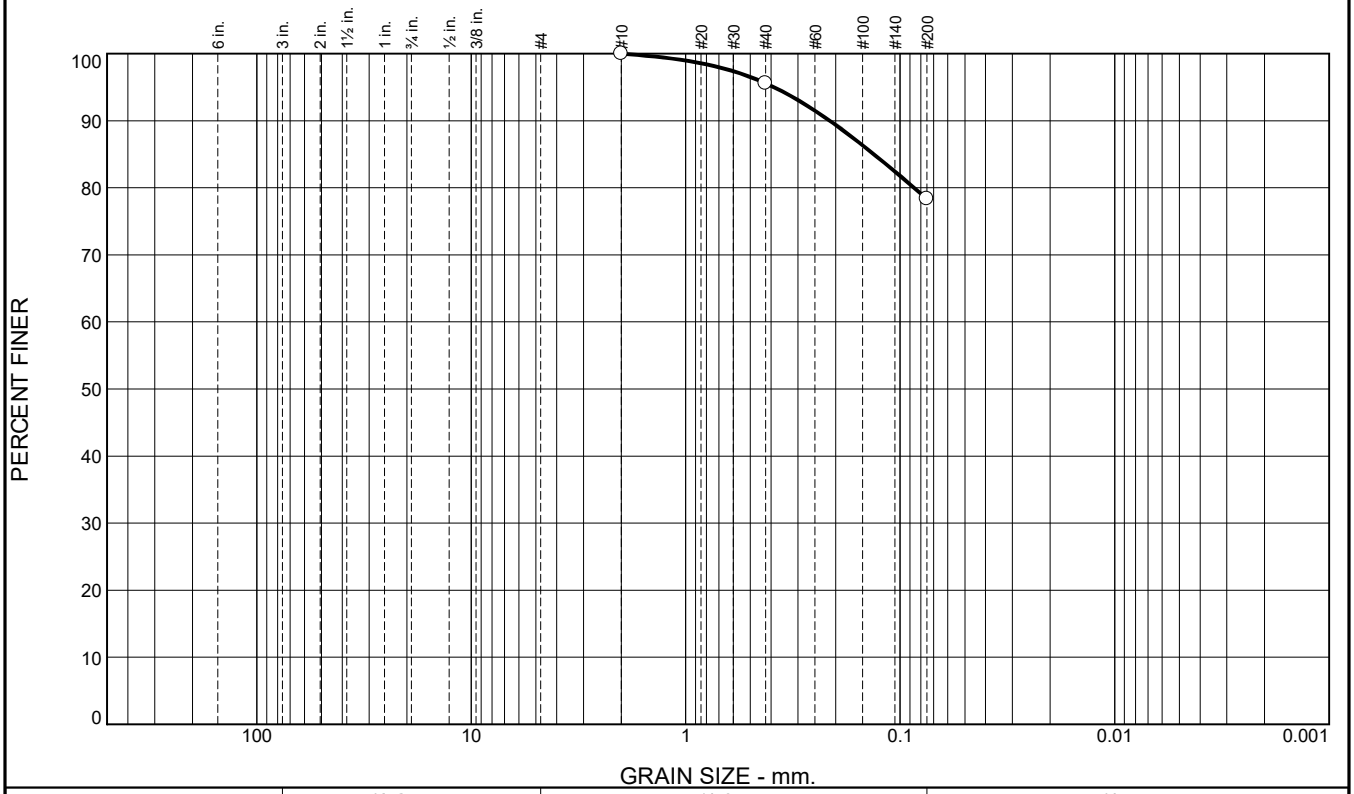
SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
0 - 2	S-1		2 - 6 - 22 - 16	22	28		TS		5" Topsoil	
							SUBSOIL		5" Subsoil, Roots	
							EXISTING FILL		Brown, Dense, Silty Sand with Gravel (FILL)	
2 - 4	S-2		6 - 7 - 25 - 33	24	32				As Above (FILL)	
4 - 6	S-3		15 - 22 - 15 - 14	22	37	5.0			As Above, Gray-Brown (FILL)	
									Boring Log B-14 Terminated at Depth of 6.0 feet below ground surface.	
						10.0				
						15.0				
						20.0				
						25.0				

NOTES: bgs = below ground surface, msl = mean sea level, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

APPENDIX B
Laboratory Test Results

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	4.4	17.3	78.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100.0		
#40	95.6		
#200	78.3		

* (no specification provided)

Material Description

Silt with Sand

Atterberg Limits

PL= NP LL= NV PI= NV

Coefficients

D_{90}= 0.2137 D_{85}= 0.1331 D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= ML AASHTO= A-4(0)

Remarks

Moisture Content: 26.9%

Location: B-2
Sample Number: S-2 **Depth:** 2' - 4' **Date:** 6/4/24

WHITESTONE

Client: McDonald's USA, LLC
Project: Proposed McDonald's Restaurant #28-0178
NH Route 108 & Grapevine Drive, Dover, Strafford County, NH
Project No: GM2421922.000 **Figure** S-1

Tested By: MM **Checked By:** RWM

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	3.3	26.5	41.6	28.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	96.7		
#40	70.2		
#200	28.6		

* (no specification provided)

Material Description

Silty Sand

Atterberg Limits

PL= NP LL= NV PI= NV

Coefficients

D_{90}= 1.1558 D_{85}= 0.8638 D_{60}= 0.2730
D_{50}= 0.1795 D_{30}= 0.0795 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

Moisture Content: 33.0%

Location: B-4
Sample Number: S-3 **Depth:** 5' - 7' **Date:** 6/4/24

WHITESTONE

Client: McDonald's USA, LLC
Project: Proposed McDonald's Restaurant #28-0178
NH Route 108 & Grapevine Drive, Dover, Strafford County, NH
Project No: GM2421922.000 **Figure** S-2

Tested By: MM **Checked By:** RWM

WHITESTONE

APPENDIX C
Supplemental Information (USCS, Terms & Symbols)

WHITESTONE
An Employee-Owned Company

3 EXECUTIVE PARK DRIVE
SUITE 202
BEDFORD, NH 03110
813.851.0690
whitestoneassoc.com

UNIFIED SOIL CLASSIFICATION SYSTEM

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
			GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS	CLEAN SAND (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
			SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
			SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMITS LESS THAN 50	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMITS GREATER THAN 50	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS FOR SAMPLES WITH 5% TO 12% FINES

GRADATION*

% FINER BY WEIGHT

TRACE..... 1% TO 10%
LITTLE..... 10% TO 20%
SOME..... 20% TO 35%
AND..... 35% TO 50%

COMPACTNESS*
Sand and/or Gravel

RELATIVE DENSITY

LOOSE. ..... 0% TO 40%
MEDIUM DENSE.... 40% TO 70%
DENSE..... 70% TO 90%
VERY DENSE..... 90% TO 100%

CONSISTENCY*
Clay and/or Silt

RANGE OF SHEARING STRENGTH IN POUNDS PER SQUARE FOOT

VERY SOFT..... LESS THAN 250
SOFT..... ..... 250 TO 500
MEDIUM..... 500 TO 1000
STIFF..... 1000 TO 2000
VERY STIFF..... 2000 TO 4000
HARD..... GREATER THAN 4000

** VALUES ARE FROM LABORATORY OR FIELD TEST DATA, WHERE APPLICABLE. WHEN NO TESTING WAS PERFORMED, VALUES ARE ESTIMATED.*

L:\Geotechnical Forms and References\Reports\USCSTRMSSYM MA.docx

WHITESTONE
An Employee-Owned Company

3 EXECUTIVE PARK DRIVE
SUITE 202
BEDFORD, NH 03110
813.851.0690
whitestoneassoc.com

GEOTECHNICAL TERMS AND SYMBOLS

SAMPLE IDENTIFICATION

The Unified Soil Classification System is used to identify the soil unless otherwise noted.

SOIL PROPERTY SYMBOLS

N: Standard Penetration Value: Blows per ft. of a 140 lb. hammer falling 30" on a 2" O.D. split-spoon.
Qu: Unconfined compressive strength, TSF.
Qp: Penetrometer value, unconfined compressive strength, TSF.
Mc: Moisture content, %.
LL: Liquid limit, %.
PI: Plasticity index, %.
δd: Natural dry density, PCF.
▼: Apparent groundwater level at time noted after completion of boring.

DRILLING AND SAMPLING SYMBOLS

NE: Not Encountered (Groundwater was not encountered).
SS: Split-Spoon - 1 ⅜" I.D., 2" O.D., except where noted.
ST: Shelby Tube - 3" O.D., except where noted.
AU: Auger Sample.
OB: Diamond Bit.
CB: Carbide Bit
WS: Washed Sample.

RELATIVE DENSITY AND CONSISTENCY CLASSIFICATION

Term (Non-Cohesive Soils)	Standard Penetration Resistance
Very Loose	0-4
Loose	4-10
Medium Dense	10-30
Dense	30-50
Very Dense	Over 50

Term (Cohesive Soils)	Qu (TSF)
Very Soft	0 - 0.25
Soft	0.25 - 0.50
Firm (Medium)	0.50 - 1.00
Stiff	1.00 - 2.00
Very Stiff	2.00 - 4.00
Hard	4.00+

PARTICLE SIZE

Boulders	8 in.+	Coarse Sand	5mm-0.6mm	Silt	0.074mm-0.005mm
Cobbles	8 in.-3 in.	Medium Sand	0.6mm-0.2mm	Clay	-0.005mm
Gravel	3 in.-5mm	Fine Sand	0.2mm-0.074mm		

PROPOSED SITE PLAN DOCUMENTS

FOR

PROPOSED

RESTAURANT WITH DRIVE-THRU

LOCATION OF SITE

NH ROUTE 108 & GRAPEVINE DRIVE, CITY OF DOVER

STRAFFORD COUNTY, NEW HAMPSHIRE

MAP H, LOT 4-3

REFERENCES AND CONTACTS

REFERENCES

♦ALTA/NSPS LAND TITLE SURVEY:
CONTROL POINT ASSOCIATES, INC.
352 TURNPIKE ROAD
SOUTHBOROUGH, MA 01772
DATED: 07/10/2024
SURVEY JOB # 03-240216-00
ELEVATIONS: NAVD 1988

♦ARCHITECTURAL PLAN:
CORE STATES GROUP
135 WATER STREET, SUITE 201
NAPERVILLE, IL 60540

♦GEOTECHNICAL REPORT:
WHITESTONE ASSOCIATES, INC.
3 EXECUTIVE PARK DRIVE, SUITE 202
BEDFORD, NEW HAMPSHIRE 03110
DATED: 06/11/2024
PROJECT # GM2421922.000

GOVERNING AGENCIES

♦PLANNING DEPARTMENT
288 CENTRAL AVENUE
DOVER, NH 03820
PHONE: (603) 516-6008

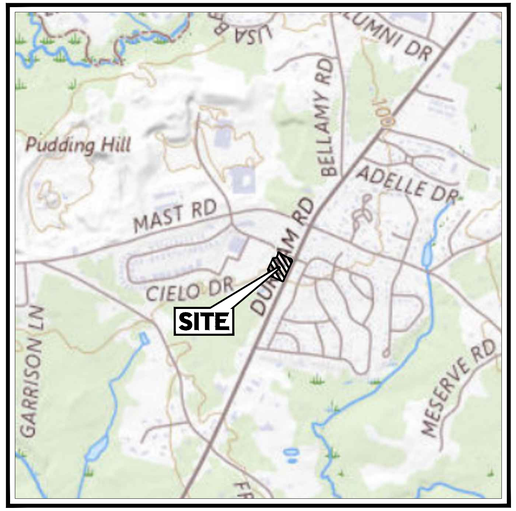
♦BUILDING DEPARTMENT
288 CENTRAL AVENUE
DOVER, NH 03820
PHONE: (603) 516-6038

♦FIRE DEPARTMENT
288 CENTRAL AVENUE
DOVER, NH 03820
PHONE: (603) 516-6038

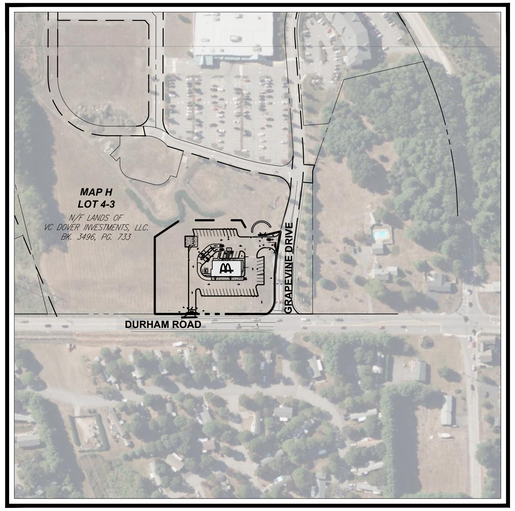
ROW JURISDICTION

♦TRAFFIC, STORMWATER, WATER & SEWER
DOVER COMMUNITY SERVICES DEPARTMENT
271 MAST ROAD
DOVER, NH 03820
PHONE: (603) 516-6450

THE ABOVE REFERENCED DOCUMENTS ARE INCORPORATED BY REFERENCE AS PART OF THESE PLANS, HOWEVER, BOHLER ENGINEERING DOES NOT CERTIFY THE ACCURACY OF THE WORK REFERENCED OR DERIVED FROM THESE DOCUMENTS, BY OTHERS.



USGS MAP
SCALE: 1" = 1,000'
SOURCE: USGS QUADRANGLE



SITE MAP
SCALE: 1" = 200'
SOURCE: AUTODESK CIVIL3D GEOLOCATION

OWNER
VC DOVER INVESTMENTS, LLC
48 CONSTITUTION DRIVE
BEDFORD, NH 03110

DEVELOPER
McDONALD'S USA, LLC
110 N CARPENTER STREET
CHICAGO, IL 60607

SHEET INDEX

SHEET TITLE	SHEET NUMBER
COVER SHEET	C-101
GENERAL NOTES AND LEGEND	C-102
EXISTING CONDITIONS/DEMOLITION PLAN	C-201
SITE PLAN	C-301
GRADING AND DRAINAGE PLAN	C-401
UTILITY PLAN	C-501
EROSION AND SEDIMENT CONTROL PLAN	C-801
EROSION AND SEDIMENT CONTROL NOTES AND DETAILS	C-802
CONSTRUCTION DETAILS	C-901
CONSTRUCTION DETAILS	C-902
CONSTRUCTION DETAILS	C-903
CONSTRUCTION DETAILS	C-904
CONSTRUCTION DETAILS	C-905
CONSTRUCTION DETAILS	C-906
LANDSCAPE PLAN	L-101
LANDSCAPE NOTES AND DETAILS	L-102
LIGHTING PLAN	L-201
ALTA/NSPS LAND TITLE SURVEY (BY OTHERS)	2 SHEETS

PREPARED BY

BOHLER

CONTACT: ERIC DUBRULE

BOHLER
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

THE INFORMATION, DESIGN AND CONCEPTS OF THIS PLAN ARE COPYRIGHTED AND SHALL NOT BE DISCLOSED OR USED FOR ANY PURPOSE, WITHOUT THE WRITTEN AUTHORIZATION FROM BOHLER. ONLY APPROVED, SEALED PLANS SHALL BE UTILIZED FOR CONSTRUCTION PURPOSES.

REVISIONS

REV	DATE	COMMENT	DRAWN BY / CHECKED BY

811 Know what's below. Call before you dig.
ALWAYS CALL 811
It's fast. It's free. It's the law.

ISSUED FOR ENTITLEMENTS

THIS DRAWING IS INTENDED FOR MUNICIPAL AND/OR AGENCY REVIEW AND APPROVAL. IT IS NOT INTENDED AS A CONSTRUCTION DOCUMENT UNLESS INDICATED OTHERWISE.

PROJECT No.: MAA240177.00-0C
DRAWN BY: JDG
CHECKED BY: CSE
DATE: 12/17/2024
CAD I.D.: P-CIVL-CNDS

PROJECT:

PROPOSED SITE PLAN DOCUMENTS

FOR

SITE ID #: 28-0178

PROPOSED DEVELOPMENT

MAP: H | LOT: 4-3
NH ROUTE 108 & GRAPEVINE DRIVE
STRAFFORD COUNTY
DOVER, NEW HAMPSHIRE

BOHLER
352 TURNPIKE ROAD, 3rd FLOOR
SOUTHBOROUGH, MA 01772
Phone: (508) 480-9900
www.BohlerEngineering.com

J.A. KUCICH
JOHN A. KUCICH
PROFESSIONAL ENGINEER
MASSACHUSETTS LICENSE NO. 52530
NEW HAMPSHIRE LICENSE NO. 19476
CONNECTICUT LICENSE NO. PEC.0029177
RHODE ISLAND LICENSE NO. 9616
MAINE LICENSE NO. 12553

SHEET TITLE:

COVER SHEET

SHEET NUMBER:

C-101

ORG. DATE - 12/17/2024

P:\2024\MAA240177.00\CAD\DRAWINGS\PLAN SETS\CIVIL SITE PLANS\P-CIVL-CNDS-MAA240177.00-0C ——LAYOUT: C-101 COVER

GENERAL NOTES

(Rev. 1/2023)

1. THESE PLANS ARE SOLELY BASED ON INFORMATION THE OWNER AND OTHERS PROVIDED TO BOHLER ENGINEERING MA, LLC (HEREIN "BOHLER") PRIOR TO THE DATE ON WHICH THE PROFESSIONAL OF RECORD AND BOHLER PREPARED THESE PLANS. THE CONTRACTOR MUST FIELD VERIFY ALL EXISTING CONDITIONS AND IMMEDIATELY NOTIFY BOHLER, IN WRITING, IF ANY ACTUAL SITE CONDITIONS DIFFER FROM THOSE SHOWN ON THESE PLANS, OR IF THE PROPOSED WORK CONFLICTS WITH ANY OTHER SITE FEATURES.
2. THE CONTRACTOR MUST STRICTLY COMPLY WITH THESE NOTES AND ALL SPECIFICATIONS/REPORTS CONTAINED HEREIN. THE CONTRACTOR MUST ENSURE THAT ALL SUBCONTRACTORS FULFILL AND COMPLETELY CONFORM TO AND COMPLY WITH THESE REQUIREMENTS. THESE NOTES, AND THE REQUIREMENTS ARTICULATED IN THE NOTES CONTAINED IN ALL THE OTHER DRAWINGS THAT COMPRISE THE PLAN SET OF DRAWINGS. ADDITIONAL NOTES AND SPECIFIC PLAN NOTES MAY BE FOUND ON THE INDIVIDUAL PLANS. THESE GENERAL NOTES APPLY TO THIS ENTIRE DOCUMENT PACKAGE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REVIEW ALL CONSTRUCTION CONTRACT DOCUMENTS INCLUDING, BUT NOT LIMITED TO, ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THE PROJECT WORK SCOPE, PRIOR TO THE INITIATION AND COMMENCEMENT OF CONSTRUCTION.
3. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR MUST CONFIRM WITH THE PROFESSIONAL OF RECORD AND BOHLER THAT THE LATEST EDITION OF THE DOCUMENTS AND/OR REPORTS REFERENCED WITHIN THE PLAN REFERENCES ARE BEING USED FOR CONSTRUCTION. THIS IS THE CONTRACTOR'S SOLE AND OTHER RESPONSIBILITY.
4. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR MUST ENSURE THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED. NO CONSTRUCTION OR FABRICATION SHALL BE UNDERTAKEN UNTIL THOROUGHLY REVIEWING AND UNDERSTANDING THE CONDITIONS OF APPROVAL TO ALL PLANS AND OTHER DOCUMENTS REVIEWED AND APPROVED BY THE PERMITTING AUTHORITIES AND HAS ALSO CONFIRMED THAT ALL NECESSARY AND REQUIRED PERMITS HAVE BEEN OBTAINED. THE CONTRACTOR MUST HAVE COPIES OF ALL PERMITS AND APPROVALS ON SITE AT ALL TIMES.
5. THE CONTRACTOR MUST ENSURE THAT ALL WORK IS PERFORMED IN ACCORDANCE WITH THESE PLANS, SPECIFICATIONS/REPORTS AND CONDITIONS OF APPROVAL AND ALL APPLICABLE REQUIREMENTS, RULES, REGULATIONS, STATUTORY REQUIREMENTS, CODES, LAWS AND STANDARDS OF ALL GOVERNMENTAL ENTITIES WITH JURISDICTION OVER THIS PROJECT, AND ALL PROVISIONS IN AND CONDITIONS OF THE CONSTRUCTION CONTRACT WITH THE OWNER/DEVELOPER INCLUDING ALL EXHIBITS, ATTACHMENTS AND ADDENDA TO SAME.
6. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR MUST CONFIRM THE BUILDING LAYOUT BY CAREFULLY REVIEWING THE MOST CURRENT ARCHITECTURAL, CIVIL AND STRUCTURAL CONSTRUCTION DOCUMENTS (INCLUDING, BUT NOT LIMITED TO, MECHANICAL, ELECTRICAL, PLUMBING AND/OR FIRE SUPPRESSION PLANS, WHERE APPLICABLE). THE CONTRACTOR MUST IMMEDIATELY NOTIFY OWNER, ARCHITECT AND PROFESSIONAL OF RECORD AND BOHLER, IN WRITING, OF ANY CONFLICTS, DISCREPANCIES OR AMBIGUITIES WHICH EXIST BETWEEN THESE PLANS AND ANY OTHER PLANS THAT COMPRISE THE CONSTRUCTION DOCUMENTS.
7. CONTRACTOR MUST REFER TO AND ENSURE COMPLIANCE WITH THE ARCHITECTURAL/BUILDING PLANS OF RECORD FOR EXACT LOCATIONS AND DIMENSIONS OF ENTRY/EXIT POINTS, ELEVATIONS, PRECISE BUILDING DIMENSIONS, AND EXACT BUILDING UTILITY LOCATIONS.
8. THE CONTRACTOR MUST FIELD VERIFY ALL DIMENSIONS AND MEASUREMENTS SHOWN ON THESE PLANS, PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. THE CONTRACTOR MUST IMMEDIATELY NOTIFY PROFESSIONAL OF RECORD AND BOHLER, IN WRITING, IF ANY CONFLICTS, DISCREPANCIES, OR AMBIGUITIES EXIST PRIOR TO PROCEEDING WITH CONSTRUCTION. NO EXTRA COMPENSATION WILL BE PAID TO THE CONTRACTOR FOR WORK WHICH NEEDS TO BE RE-DONE OR REMOVED DUE TO DIMENSIONAL MISMATCHES OR DISCREPANCIES BETWEEN THESE PLANS PRIOR TO BOTH (A) THE CONTRACTOR GIVING PROFESSIONAL OF RECORD AND BOHLER WRITTEN NOTIFICATION OF SAME AND (B) PROFESSIONAL OF RECORD AND BOHLER, THEREAFTER, PROVIDING THE CONTRACTOR WITH WRITTEN AUTHORIZATION TO PROCEED WITH SUCH ADDITIONAL WORK.
9. THE CONTRACTOR MUST VERIFY ALL DIMENSIONS AND MEASUREMENTS INCLUDED ON DESIGN DOCUMENTS HEREIN AND MUST NOT SCALE OFF THE DRAWINGS DUE TO POTENTIAL PRINTING INACCURACIES. ALL DIMENSIONS AND MEASUREMENTS ARE TO BE STRICTLY CONFORMED TO BY THE GENERAL CONTRACTOR PRIOR TO PREPARATION OF SHOP DRAWINGS, FABRICATION/ORDERING OF PARTS AND MATERIALS AND COMMENCEMENT OF SITE WORK. SITE PLAN DRAWINGS ARE NOT INTENDED AS SURVEY DOCUMENTS. DIMENSIONS SUPERSEDE GRAPHICAL REPRESENTATIONS. THE CONTRACTOR MUST MAKE CONTRACTOR'S OWN MEASUREMENTS FOR LAYOUT OF IMPROVEMENTS.
10. THE OWNER AND CONTRACTOR MUST BE FAMILIAR WITH AND RESPONSIBLE FOR THE PROCUREMENT OF ANY AND ALL CERTIFICATIONS REQUIRED FOR THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY.
11. WHEN INCLUDED AS ONE OF THE REFERENCED DOCUMENTS, THE GEOTECHNICAL REPORT, SPECIFICATIONS AND RECOMMENDATIONS SET FORTH THEREIN ARE A PART OF THE REQUIRED CONSTRUCTION DOCUMENTS AND, IN CASE OF CONFLICT, DISCREPANCY OR AMBIGUITY, THE MORE STRINGENT REQUIREMENTS AND/OR RECOMMENDATIONS CONTAINED IN: (A) THE PLANS; AND (B) THE GEOTECHNICAL REPORT AND RECOMMENDATIONS, MUST TAKE PRECEDENCE UNLESS SPECIFICALLY NOTED OTHERWISE ON THE PLANS. THE CONTRACTOR MUST NOTIFY THE PROFESSIONAL OF RECORD AND BOHLER, IN WRITING, OF ANY SUCH CONFLICT, DISCREPANCY OR AMBIGUITY BETWEEN THE GEOTECHNICAL REPORT AND PLANS AND SPECIFICATIONS, PRIOR TO PROCEEDING WITH ANY FURTHER WORK. IF A GEOTECHNICAL REPORT WAS NOT CREATED, THEN THE CONTRACTOR MUST FOLLOW AND COMPLY WITH ALL OF THE REQUIREMENTS OF ANY AND ALL MUNICIPAL, COUNTY, STATE, AND FEDERAL LAWS AND APPLICABLE SPECIFICATIONS WHICH HAVE JURISDICTION OVER THIS PROJECT.
12. PROFESSIONAL OF RECORD AND BOHLER ARE NEITHER LIABLE NOR RESPONSIBLE FOR ANY SUBSURFACE CONDITIONS AND FURTHER, HAS NO LIABILITY FOR ANY HAZARDOUS MATERIALS, HAZARDOUS SUBSTANCES OR POLLUTANTS ON, ABOUT OR UNDER THE PROPERTY.
13. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING WHEN AND WHERE SHORING IS REQUIRED AND FOR INSTALLING ALL SHORING REQUIRED DURING EXCAVATION (TO BE PERFORMED IN ACCORDANCE WITH CURRENT OSHA STANDARDS) AND ANY ADDITIONAL PRECAUTIONS TO BE TAKEN TO ASSURE THE STABILITY OF ADJACENT, NEARBY AND CONTIGUOUS STRUCTURES AND PROPERTIES. ANY OF THIS WORK IS TO BE PERFORMED AT CONTRACTOR'S SOLE COST AND EXPENSE.
14. THE CONTRACTOR MUST USE EXTREME CAUTION WHEN PERFORMING ANY WORK ACTIVITIES ADJACENT TO PAVEMENT, STRUCTURES, ETC. WHICH ARE TO REMAIN EITHER FOR AN INITIAL PHASE OF THE PROJECT OR AS PART OF THE FINAL CONDITION. THE CONTRACTOR IS RESPONSIBLE FOR TAKING ALL APPROPRIATE MEASURES REQUIRED TO ENSURE THE STRUCTURAL STABILITY OF SIDEWALKS AND PAVEMENT, UTILITIES, BUILDINGS, AND INFRASTRUCTURE WHICH ARE TO REMAIN, AND FOR THIRD PARTIES, PEDESTRIANS AND ANYONE ELSE WHO MAY BE WITHIN INVOLVED WITH THE PROJECT.
15. DEBRIS MUST NOT BE BURIED ON THE SUBJECT SITE. ALL DEMOLITION AND CONSTRUCTION WASTES, UNSUITABLE EXCAVATED MATERIAL, EXCESS SOIL AND DEBRIS (SOLID WASTE) MUST BE DISPOSED OF IN ACCORDANCE WITH THE REQUIREMENTS OF ANY AND ALL MUNICIPAL, COUNTY, STATE, AND FEDERAL LAWS AND APPLICABLE CODES WHICH HAVE JURISDICTION OVER THIS PROJECT OR OVER THE CONTRACTOR.
16. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO MAINTAIN RECORDS TO DEMONSTRATE PROPER AND FULLY COMPLIANT DISPOSAL ACTIVITIES, TO BE PROMPTLY PROVIDED TO THE OWNER UPON REQUEST.
17. THE CONTRACTOR SHALL REPAIR, AT CONTRACTOR'S SOLE COST, ALL DAMAGE DONE TO ANY NEW OR EXISTING CONSTRUCTION OR PROPERTY DURING THE COURSE OF CONSTRUCTION, INCLUDING BUT NOT LIMITED TO DRAINAGE, UTILITIES, PAVEMENT, STRIPING, CURB, ETC. AND MUST BEAR ALL COSTS ASSOCIATED WITH SAME TO INCLUDE, BUT NOT BE LIMITED TO, REDESIGN, RE-SURVEY, RE-PERMITTING AND CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR AND MUST REPLACE ALL SIGNAL INTERCONNECTION CABLE, WIRING CONDUITS, AND ANY UNDERGROUND OR ACCESSORY EQUIPMENT DAMAGED DURING CONSTRUCTION AND MUST BEAR ALL COSTS ASSOCIATED WITH SAME. THE REPAIR OF ANY SUCH NEW OR EXISTING CONSTRUCTION OR PROPERTY MUST RESTORE SUCH CONSTRUCTION OR PROPERTY TO A CONDITION EQUIVALENT TO OR BETTER THAN THE CONDITIONS PRIOR TO COMMENCEMENT OF THE CONSTRUCTION, AND IN CONFORMANCE WITH APPLICABLE CODES, LAWS, RULES, REGULATIONS, STATUTORY REQUIREMENTS AND STATUTES. THE CONTRACTOR MUST BEAR ALL COSTS ASSOCIATED WITH SAME. THE CONTRACTOR MUST, PROMPTLY, DOCUMENT ALL EXISTING DAMAGE AND NOTIFY, IN WRITING, THE OWNER AND CONSTRUCTION MANAGER OF SAME PRIOR TO THE START OF CONSTRUCTION.
18. THE PROFESSIONAL OF RECORD AND BOHLER ARE NOT RESPONSIBLE FOR AND HAVE NO CONTRACTUAL, LEGAL OR OTHER RESPONSIBILITIES FOR JOB SITE SAFETY JOB SITE SUPERVISION, OR ANYTHING RELATED TO SAME. THE PROFESSIONAL OF RECORD AND BOHLER HAVE NOT BEEN RETAINED TO PERFORM OR TO BE RESPONSIBLE FOR JOB SITE SAFETY, SAME BEING WHOLLY OUTSIDE OF PROFESSIONAL OF RECORD'S AND BOHLER'S SERVICES AS RELATED TO THE PROJECT. THE PROFESSIONAL OF RECORD AND BOHLER ARE NOT RESPONSIBLE TO IDENTIFY OR REPORT ANY JOB SITE SAFETY ISSUES OR ANY JOB SITE CONDITIONS, AT ANY TIME.
19. THE CONTRACTOR MUST IMMEDIATELY IDENTIFY IN WRITING THE PROFESSIONAL OF RECORD AND BOHLER , ANY DISCREPANCIES THAT MAY OR COULD AFFECT THE PUBLIC SAFETY, HEALTH OR GENERAL WELFARE, OR PROJECT COST. IF THE CONTRACTOR PROCEEDS WITH CONSTRUCTION WITHOUT PROVIDING PROPER WRITTEN NOTIFICATION AS DESCRIBED ABOVE, IT WILL BE AT THE CONTRACTOR'S OWN RISK AND, FURTHER, THE CONTRACTOR MUST INDEMNIFY, DEFEND AND HOLD HARMLESS THE PROFESSIONAL OF RECORD AND BOHLER FOR ANY AND ALL DAMAGES, CLAIMS, INJURIES, ATTORNEY'S FEES AND THE LIKE WHICH RESULT FROM OR ARE IN ANY WAY RELATED TO SAME INCLUDING, BUT NOT LIMITED TO, ANY THIRD PARTY AND FIRST PARTY CLAIMS.
20. THE PROFESSIONAL OF RECORD AND BOHLER ARE NOT RESPONSIBLE FOR ANY INJURY OR DAMAGES RESULTING FROM THE CONTRACTOR'S FAILURE TO BUILD OR CONSTRUCT IN STRICT ACCORDANCE WITH THE APPROVED PLANS, AND CURRENT CODES, RULES, STATUTES AND THE LIKE. IF THE CONTRACTOR AND/OR OWNER FAIL TO BUILD OR CONSTRUCT IN STRICT ACCORDANCE WITH APPROVED PLANS AND CURRENT CODES, RULES, STATUTES AND THE LIKE, THE CONTRACTOR AND/OR OWNER AGREE TO AND MUST JOINTLY, INDEPENDENTLY, SEPARATELY, AND SEVERALLY INDEMNIFY AND HOLD THE PROFESSIONAL OF RECORD AND BOHLER HARMLESS FOR AND FROM ALL INJURIES, CLAIMS AND DAMAGES THAT PROFESSIONAL OF RECORD AND BOHLER INCUR AS RELATED TO SAME.
21. ALL CONTRACTORS MUST CARRY AT LEAST THE MINIMUM AMOUNT OF THE SPECIFIED AND COMMERCIALLY REASONABLE STATUTORY WORKER'S COMPENSATION INSURANCE, EMPLOYER'S LIABILITY INSURANCE AND GENERAL LIABILITY INSURANCE (COL) INCLUDING ALSO AS UMBRELLA COVERAGES. ALL CONTRACTORS MUST HAVE THEIR COL POLICIES ENDORSED TO NAME BOHLER, AND ITS PAST, PRESENT AND FUTURE OWNERS, OFFICERS, DIRECTORS, PARTNERS, SHAREHOLDERS, MEMBERS, PRINCIPALS, COMMISSIONERS, AGENTS, SERVANTS, EMPLOYEES, AFFILIATES, SUBSIDIARIES, AND RELATED ENTITIES, AND ITS SUBCONTRACTORS AND SUBCONSULTANTS AT A CONSTRUCTION/PROJECT SITE (HEREIN "BOHLER PARTIES"), RELIEVES OR WILL RELIEVE THE CONTRACTOR OF AND FROM CONSTRUCTION MEANS, METHODS, SEQUENCE, TECHNIQUES OR PROCEDURES NECESSARY FOR PERFORMING, OVERSEEING, SUPERINTENDING AND COORDINATING THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND COMPLIANCE WITH ALL HEALTH AND SAFETY PRECAUTIONS REQUIRED BY ANY REGULATORY AGENCIES HAVING JURISDICTION OVER THE PROJECT AND/OR PROPERTY. BOHLER PARTIES HAVE NO AUTHORITY TO EXERCISE ANY CONTROL OVER (OR ANY RESPONSIBILITY FOR) ANY CONSTRUCTION, THE CONTRACTOR OR ITS EMPLOYEES RELATING TO SAFETY OF WORK AND ANY HEALTH AND SAFETY PROGRAMS OR PROCEDURES. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR JOB SITE SAFETY. THE CONTRACTOR MUST INDEMNIFY, DEFEND, PROTECT AND HOLD HARMLESS BOHLER PARTIES FOR AND FROM ANY LIABILITY TO BOHLER PARTIES RESULTING FROM THE CONTRACTOR'S WORK, SERVICES AND/OR WORKS EXCEPT FOR THIS NOTE. THESE NOTES OR ANY WORDS IN THE PLAN SET AND, FURTHER, THE CONTRACTOR MUST NAME BOHLER AS AN ADDITIONAL INSURED UNDER THE GENERAL CONTRACTOR'S POLICIES OF GENERAL LIABILITY INSURANCE AS DESCRIBED ABOVE.
22. WHEN IT IS CLEARLY AND SPECIFICALLY WITHIN BOHLER'S SCOPE OF SERVICES CONTRACT WITH THE OWNER/DEVELOPER, BOHLER WILL REVIEW OR TAKE OTHER APPROPRIATE ACTION ON THE CONTRACTOR SUBMITTALS, SUCH AS SHOP DRAWINGS, PRODUCT DATA, SAMPLES, AND OTHER DATA, WHICH THE CONTRACTOR IS REQUIRED TO SUBMIT, BUT ONLY FOR THE LIMITED PURPOSE OF EVALUATING CONFORMANCE WITH THE DESIGN INTENT AND THE INFORMATION SHOWN IN THE CONSTRUCTION CONTRACT DOCUMENTS. CONSTRUCTION MEANS AND METHODS AND/OR TECHNIQUES OR PROCEDURES, COORDINATION OF THE WORK WITH OTHER TRADES, AND CONSTRUCTION SAFETY PRECAUTIONS ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND BOHLER HAS NO RESPONSIBILITY OR LIABILITY FOR SAME. BOHLER WILL PERFORM ITS SHOP DRAWING REVIEW WITH REASONABLE PROMPTNESS, AS CONDITIONS PERMIT. ANY DOCUMENT, DOCUMENTING BOHLER'S REVIEW OF A SPECIFIC ITEM OR LIMITED SCOPE, MUST NOT INDICATE THAT BOHLER HAS REVIEWED THE ENTIRE ASSEMBLY OF WHICH THE ITEM IS A COMPONENT. BOHLER IS NOT RESPONSIBLE FOR ANY DEVIATIONS FROM THE CONSTRUCTION DOCUMENTS. THE CONTRACTOR MUST, IN WRITING, PROMPTLY AND IMMEDIATELY BRING ANY DEVIATIONS FROM THE CONSTRUCTION DOCUMENTS TO BOHLER'S ATTENTION. BOHLER IS NOT REQUIRED TO REVIEW PARTIAL SUBMISSIONS OR THOSE FOR WHICH SUBMISSIONS OF CORRELATED ITEMS HAVE NOT BEEN RECEIVED.
23. IF THE CONTRACTOR DEVIATES FROM THESE PLANS AND/OR SPECIFICATIONS, INCLUDING THE NOTES CONTAINED HEREIN, WITHOUT FIRST OBTAINING THE PROFESSIONAL OF RECORD AND BOHLER'S WRITTEN AUTHORIZATION TO DEVIATE FROM THESE PLANS AND SPECIFICATIONS WITHIN PROFESSIONAL OF RECORD'S SCOPE, THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE PAYMENT OF ALL COSTS INCURRED IN CORRECTING ANY WORK PERFORMED WHICH DEVIATES FROM THE PLANS, ALL FINES AND/OR PENALTIES ASSESSED WITH RESPECT THERETO AND ALL COSTS TO CURE OR PUNITIVE DAMAGES RESULTING THEREFROM AND, FURTHER, MUST DEFEND, INDEMNIFY, PROTECT, AND HOLD HARMLESS THE PROFESSIONAL OF RECORD AND BOHLER PARTIES TO THE FULLEST EXTENT PERMITTED UNDER THE LAW, FOR AND FROM ALL FEES, ATTORNEYS' FEES, DAMAGES, COSTS, JUDGMENTS, CLAIMS, INJURIES, PENALTIES AND THE LIKE RELATED TO SAME.
24. THE CONTRACTOR IS RESPONSIBLE FOR A MAINTAINING AND PROTECTING THE TRAFFIC CONTROL PLAN AND ELEMENTS IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REQUIREMENTS, AND B) ANY WORK THAT AFFECTS PUBLIC UTILITIES EITHER IN THE RIGHT OF WAY OR ON SITE. THE COST FOR THIS ITEM MUST BE INCLUDED IN THE CONTRACTOR'S PRICE AND IS THE CONTRACTOR'S SOLE RESPONSIBILITY.
25. OWNER MUST MAINTAIN AND PRESERVE ALL PHYSICAL SITE FEATURES AND DESIGN FEATURES DEPICTED ON THE PLANS AND RELATED DOCUMENTS IN STRICT ACCORDANCE WITH THE APPROVED PLANS AND DESIGN AND, FURTHER, THE PROFESSIONAL OF RECORD AND BOHLER ARE NOT RESPONSIBLE FOR ANY FAILURE TO SO MAINTAIN OR PRESERVE SITE AND/OR DESIGN FEATURES. IF OWNER FAILS TO MAINTAIN AND/OR PRESERVE ALL PHYSICAL SITE FEATURES AND/OR DESIGN FEATURES DEPICTED ON THE PLANS AND RELATED DOCUMENTS, OWNER AGREES TO INDEMNIFY AND HOLD THE PROFESSIONAL OF RECORD AND BOHLER PARTIES, HARMLESS FOR ALL INJURIES, DAMAGES AND COSTS THAT PROFESSIONAL OF RECORD AND BOHLER INCUR AS A RESULT OF SAID FAILURE OR FAILURE TO PRESERVE.
26. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ENSURING THAT ALL CONSTRUCTION ACTIVITIES AND MATERIALS COMPLY WITH AND CONFORM TO APPLICABLE FEDERAL, STATE AND LOCAL RULES AND REGULATIONS, LAWS, ORDINANCES, AND CODES, AND ALL APPLICABLE REQUIREMENTS OF THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970, (29 U.S.C. 651 ET SEQ.) AS AMENDED, AND ANY MODIFICATIONS, AMENDMENTS OR REVISIONS TO SAME.
27. THE CONTRACTOR MUST STRICTLY COMPLY WITH THE LATEST AND CURRENT OSHA STANDARDS AND REGULATIONS, AND/OR ANY OTHER AGENCY WITH JURISDICTION OVER EXCAVATION AND TRENCHING PROCEDURES. PROFESSIONAL OF RECORD AND BOHLER HAS NO RESPONSIBILITY FOR OR AS RELATED TO EXCAVATION AND TRENCHING PROCEDURES AND WORK.
28. THE CONTRACTOR AND THE OWNER MUST INSTALL ALL ELEMENTS AND COMPONENTS IN STRICT COMPLIANCE WITH AND IN ACCORDANCE WITH MANUFACTURER'S STANDARDS AND RECOMMENDATIONS AND THE CONSTRUCTION CRITERIA AND SPECIFICATIONS AS SET FORTH BY THE CONTRACTOR'S PROFESSIONALS. IF THEY FAIL TO DO SO, THEY AGREE TO JOINTLY, INDEPENDENTLY, SEPARATELY, COLLECTIVELY, AND SEVERALLY INDEMNIFY, DEFEND, PROTECT AND HOLD PROFESSIONAL OF RECORD AND BOHLER HARMLESS FOR AND FROM ALL INJURIES AND DAMAGES THAT PROFESSIONAL OF RECORD SUFFERS AND COSTS THAT PROFESSIONAL OF RECORD INCURS AS A RESULT OF SAID FAILURE.
29. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN AN ON-SITE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) IN COMPLIANCE WITH THE ENVIRONMENTAL PROTECTION AGENCY (EPA) REQUIREMENTS OR LOCAL GOVERNING AGENCY FOR SITES WHERE ONE (1) ACRE OR MORE IS DISTURBED BY CONSTRUCTION ACTIVITIES (UNLESS THE LOCAL JURISDICTION REQUIRES A DIFFERENT THRESHOLD). THE CONTRACTOR MUST ENSURE THAT ALL ACTIVITIES, INCLUDING THOSE OF ALL SUBCONTRACTORS, ARE IN COMPLIANCE WITH THE SWPPP, INCLUDING BUT NOT LIMITED TO LOGGING ACTIVITIES (MINIMUM ONCE PER WEEK AND AFTER RAINFALL EVENTS) AND CORRECTIVE MEASURES, AS APPROPRIATE AND FURTHER, THE CONTRACTOR IS SOLELY AND COMPLETELY RESPONSIBLE FOR FAILING TO DO SO.
30. AS CONTAINED IN THESE DRAWINGS AND ASSOCIATED DOCUMENTS PREPARED BY THE PROFESSIONAL OF RECORD AND BOHLER, THE USE OF THE WORDS 'CERTIFY' OR 'CERTIFICATION' CONSTITUTE(S) AN EXPRESSION ONLY OF PROFESSIONAL OPINION REGARDING THE INFORMATION WHICH IS THE SUBJECT OF THE PROFESSIONAL OF RECORD'S AND BOHLER KNOWLEDGE OR BELIEF AND IN ACCORDANCE WITH COMMON AND ACCEPTED PROCEDURE CONSISTENT WITH THE APPLICABLE STANDARDS OF PRACTICE, AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE OF ANY NATURE OR TYPE, EITHER EXPRESSED OR IMPLIED, UNDER ANY CIRCUMSTANCES.

DEMOLITION NOTES

(Rev. 1/2023)

1. THE GENERAL NOTES MUST BE INCLUDED AS PART OF THIS ENTIRE DOCUMENT PACKAGE AND ARE PART OF THE CONTRACT DOCUMENTS. THE GENERAL NOTES ARE REFERENCED HEREIN, AND THE CONTRACTOR MUST REFER TO THEM AND FULLY COMPLY WITH THESE NOTES, IN THEIR ENTIRETY. THE CONTRACTOR MUST BE FAMILIAR WITH AND ACKNOWLEDGE FAMILIARITY WITH ALL OF THE GENERAL NOTES AND ALL OF THE PLANS' SPECIFIC NOTES.
2. THE CONTRACTOR MUST CONDUCT DEMOLITION/REMOVALS ACTIVITIES IN SUCH A MANNER AS TO ENSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, SIDEWALKS, WALKWAYS, AND ALL OTHER ADJACENT FACILITIES. THE CONTRACTOR MUST OBTAIN ALL APPLICABLE PERMITS FROM THE APPROPRIATE GOVERNMENTAL AUTHORITY(IES) PRIOR TO THE COMMENCEMENT OF ANY DEMOLITION OR DEMOLITION ACTIVITIES ON AND/OR ADJACENT TO THE RIGHT-OF-WAY.
3. WHEN DEMOLITION-RELATED ACTIVITIES IMPACT ROADWAYS AND/OR ROADWAY RIGHT-OF-WAY, THE CONTRACTOR MUST PROVIDE TRAFFIC CONTROL AND GENERALLY ACCEPTED SAFE PRACTICES IN CONFORMANCE WITH THE CURRENT FEDERAL HIGHWAY ADMINISTRATION MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), AND THE FEDERAL, STATE, AND LOCAL REGULATIONS.
4. THE DEMOLITION (AND/OR REMOVALS) PLAN IS INTENDED TO PROVIDE GENERAL INFORMATION AND TO IDENTIFY ONLY CONDITIONS REGARDING ITEMS TO BE DEMOLISHED, REMOVED, AND/OR TO REMAIN.
   A. THE CONTRACTOR MUST ALSO REVIEW ALL CONSTRUCTION DOCUMENTS AND INCLUDE WITHIN THE DEMOLITION ACTIVITIES ALL ANCILLARY ITEMS AND EQUIPMENT NECESSARY FOR A COMPLETE AND THOROUGH REMOVAL.
   B. THIS PLAN IS NOT INTENDED TO AND DOES NOT PROVIDE DIRECTION REGARDING THE MEANS, METHODS, SEQUENCING, TECHNIQUES AND PROCEDURES TO BE EMPLOYED TO ACCOMPLISH THE WORK. ALL MEANS, METHODS, SEQUENCING, TECHNIQUES AND PROCEDURES TO BE UTILIZED BY THE CONTRACTOR MUST BE IN STRICT CONFORMANCE WITH ALL STATE, FEDERAL, LOCAL, AND JURISDICTIONAL REQUIREMENTS. THE CONTRACTOR MUST COMPLY WITH ALL OSHA AND OTHER SAFETY PRECAUTIONS NECESSARY TO PROTECT THE PUBLIC AND ALL PERSONS ON THE SITE AND ADJACENT.
5. THE CONTRACTOR MUST PROVIDE ALL "METHODS AND MEANS" NECESSARY TO PREVENT MOVEMENT, SETTLEMENT, OR COLLAPSE OF EXISTING STRUCTURES, AND ANY OTHER IMPROVEMENTS THAT ARE REMAINING ON OR OFF SITE. THE CONTRACTOR, AT THE CONTRACTOR'S SOLE COST, MUST REPAIR OR REPLACE ALL DAMAGE TO ALL ITEMS AND FEATURES THAT ARE TO REMAIN. CONTRACTOR MUST USE NEW MATERIAL FOR ALL REPAIRS, CONTRACTOR'S REPAIRS MUST INCLUDE THE RESTORATION OF ALL ITEMS AND FEATURES DAMAGED BY THE PRE-DEMOLITION CONDITION, OR BETTER. CONTRACTOR MUST PERFORM ALL REPAIRS AT THE CONTRACTOR'S SOLE EXPENSE.
6. THE PROFESSIONAL OF RECORD AND BOHLER ARE NOT RESPONSIBLE FOR JOB SITE SAFETY OR SUPERVISION. THE CONTRACTOR MUST PROCEED WITH ALL DEMOLITION IN A SYSTEMATIC AND SAFETY CONSCIOUS MANNER WITH ALL OSHA REQUIREMENTS, TO ENSURE PUBLIC AND CONTRACTOR SAFETY AND SAFETY TO ALL PROPERTY ON THE SITE OR ADJACENT OR NEARBY.
7. THE CONTRACTOR IS RESPONSIBLE FOR JOB SITE SAFETY, WHICH MUST INCLUDE, BUT IS NOT LIMITED TO, THE INSTALLATION AND MAINTENANCE OF BARRIERS, FENCING, OTHER APPROPRIATE AND/OR NECESSARY SAFETY FEATURES AND ITEMS NECESSARY TO PROTECT THE PUBLIC AND ALL PERSONS ON THE SITE AND ADJACENT TO ANY ACTIVITIES. THE CONTRACTOR MUST SAFEGUARD THE SITE AS NECESSARY TO PERFORM THE DEMOLITION IN SUCH A MANNER AS TO PREVENT THE ENTRY OF TRESPASSERS, UNAUTHORIZED PERSONS AT ANY TIME AND TO BACKFILL EXCAVATIONS FOR THE INSTALLATION OF UNDERGROUND IMPROVEMENTS.
8. PRIOR TO THE COMMENCEMENT OF ANY SITE ACTIVITY AND ANY DEMOLITION ACTIVITY, THE CONTRACTOR MUST, IN WRITING, RAISE ANY QUESTIONS CONCERNING THE ACCURACY OR INTENT OF THESE PLANS AND/OR SPECIFICATIONS, ALL CONCERNS OR QUESTIONS REGARDING THE APPLICABLE SAFETY STANDARDS AND/OR THE CONSTRUCTION MEANS AND/OR METHODS OF PARTIES IN PERFORMING THE WORK ON THIS PROJECT. ANY SUCH CONCERNS MUST BE CONVEYED TO THE PROFESSIONAL OF RECORD AND BOHLER, IN WRITING AND SUFFICIENTLY IN ADVANCE OF THE COMMENCEMENT OF ANY SUCH ACTIVITIES TO ALLOW THE PROFESSIONAL OF RECORD AND BOHLER, IN WRITING, ALL DEMOLITION ACTIVITIES MUST BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THESE PLANS AND SPECIFICATIONS AND ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS, RULES, REQUIREMENTS, STATUTES, ORDINANCES AND CODES.
9. THE CONTRACTOR MUST BECOME FAMILIAR WITH THE APPLICABLE UTILITY SERVICE PROVIDER REQUIREMENTS AND IS RESPONSIBLE FOR COORDINATING ALL UTILITY SERVICE DISCONNECTIONS AND DISCONTINUANCES AS IDENTIFIED OR REQUIRED FOR THE PROJECT. THE CONTRACTOR MUST PROVIDE THE OWNER WITH WRITTEN NOTIFICATION THAT THE EXISTING UTILITIES AND SERVICES HAVE BEEN TERMINATED, REMOVED AND/OR ABANDONED IN ACCORDANCE WITH THE JURISDICTION AND UTILITY COMPANY REQUIREMENTS AND/OR AS DIRECTED BY THE PROFESSIONAL OF RECORD AND BOHLER, IN WRITING.
10. PRIOR TO COMMENCING ANY DEMOLITION, THE CONTRACTOR MUST:
    A. OBTAIN ALL REQUIRED PERMITS AND MAINTAIN THE SAME ON SITE FOR REVIEW BY THE PROFESSIONAL OF RECORD AND ALL PUBLIC AGENCIES WITH JURISDICTION THROUGHOUT THE DURATION OF THE PROJECT, SITE WORK, AND DEMOLITION WORK.
    B. NOTIFY, AT A MINIMUM, THE MUNICIPAL ENGINEER, DESIGN ENGINEER, AND LOCAL SOIL CONSERVATION JURISDICTION, AT LEAST 72 BUSINESS HOURS PRIOR TO THE COMMENCEMENT OF WORK.
    C. INSTALL THE REQUIRED SOIL EROSION AND SEDIMENT CONTROL MEASURES PRIOR TO SITE DISTURBANCE, AND MAINTAIN SAID CONTROLS UNTIL SITE IS STABILIZED.
    D. IN ACCORDANCE WITH STATE LAW, THE CONTRACTOR MUST CALL THE STATE ONE-CALL DAMAGE PROTECTION SYSTEM FOR UTILITY MARK OUT, IN ADVANCE OF VERTICAL CHANGES OVER 14-INCHES.
    E. LOCATE AND PROTECT ALL UTILITIES AND SERVICES, INCLUDING BUT NOT LIMITED TO GAS, WATER, ELECTRIC, SANITARY AND STORM SEWER, TELEPHONE, CABLE, FIBER OPTIC CABLE, ETC. WITHIN AND ADJACENT TO THE LIMITS OF PROJECT ACTIVITIES. THE CONTRACTOR MUST CONTACT ALL UTILITY COMPANIES PRIOR TO COMMENCING THE NEW SITE IMPROVEMENTS NOTIFICATION SYSTEM TO LOCATE ALL UNDERGROUND UTILITIES.
    F. PROTECT AND MAINTAIN IN OPERATION ALL ACTIVE UTILITIES AND SYSTEMS THAT ARE NOT BEING REMOVED DURING ANY DEMOLITION ACTIVITIES.
    G. ARRANGE FOR AND COORDINATE WITH THE APPLICABLE UTILITY SERVICE PROVIDER(S) FOR THE TEMPORAR

NAD83

MAP H
LOT 4-3
N/F LANDS OF
VC DOVER INVESTMENTS, LLC.
BK. 3496, PG. 733.

PROP LOT LINE
(TOTAL PARCEL: 1.92 AC
LAND TAKING: 0.67 AC)

PROP LIMIT OF WORK LINE (TYP)

172.09'
S24°08'19"W

84.08'
S09°44'35"E

47.83'
S04°09'13"W

44.34'
S24°06'34"W

42.03'
S10°32'45"W

68.80'
N85°41'53"W

48.72'
N60°11'10"W

75.52'
N65°40'47"W

52.03'
S65°46'54"E

162.91'
S65°46'54"E

EX LOT LINE (TBR)

N24°21'47"E
340.00'

N24°13'06"E
313.87'

MAP H
LOT 4-3
N/F LANDS OF
VC DOVER INVESTMENTS, LLC.
BK. 3496, PG. 733.
VACANT-NO BUILDINGS

APPROX. LOC. OF 50' WIDE EASEMENT TO LOT H-4-1 & ACCESS EASEMENT C

APPROX. LOC. OF ACCESS EASEMENT "A" BK. 3496, PG. 746. (DOT HATCH)

APPROX LIMIT OF PAVEMENT SAWCUT (TYP)

EX STRIPED MEDIAN TO BE REMOVED AS PART OF GRAPEVINE DRIVE WIDENING OFFSITE IMPROVEMENTS BY OTHERS

EX SLOPED GRANITE CURB (TBR)

APPROX LOCATION OF EX UG SANITARY LINE (TBR)

EX STRIPING TO BE REMOVED AS PART OF GRAPEVINE DRIVE WIDENING OFFSITE IMPROVEMENTS BY OTHERS

PORTION OF EX SLOPED GRANITE CURB TO BE REMOVED AS PART OF GRAPEVINE DRIVE WIDENING OFFSITE IMPROVEMENTS BY OTHERS

APPROX LIMIT OF EX SLOPED GRANITE CURB TO BE REMOVED AS PART OF GRAPEVINE DRIVE WIDENING OFFSITE IMPROVEMENTS BY OTHERS

PROP LIMIT OF WORK LINE (TYP)

GRAPEVINE DRIVE
(PRIVATE - COMMON AREA)
(PER SURVEY)
TWO WAY TRAFFIC
(ASPHALT ROADWAY)

DURHAM ROAD
(A.K.A. N.H. ROUTE 108)
(PUBLIC - 66' WIDE R.O.W.)
(PER SURVEY)
TWO WAY TRAFFIC
(ASPHALT ROADWAY)

EX OVERGROWN GRASS (TBR)
EX POSSIBLE WELL (TBR)
EX TREE (TBR)
EX RIP RAP (TBR)
LIMIT OF EX SLOPED GRANITE CURB (TBR)
24" RCP INV=102.89
EX HEAD WALL (TBR)
EX UG DRAIN LINE (TBR)
EX STONE WALL (TBR)
EX CATCH BASIN (TBR)
EX ASPHALT PAVEMENT (TBR)
EX SLOPED GRANITE CURB (TBR)
18" RCP
EX UG DRAIN LINE (TBR)
LIMIT OF EX UG DRAIN LINE (TBR), PRIOR TO CONSTRUCTION, GC SHALL CONFIRM EXACT LOCATION AND ELEVATION OF EXISTING INVERT AND NOTIFY THE ENGINEER IN WRITING SHOULD CONFLICT OCCUR
EX HYDRANT
12" RCP INV=104.4
LIMIT OF EX EDGE OF PAVEMENT (TBR)
APPROX LIMIT OF PAVEMENT SAWCUT (TYP)
PROP LIMIT OF WORK LINE (TYP)
APPROX LOCATION WETLANDS PER PLANS TITLED "PROPOSED RESTAURANT "TACO BELL" – CHARTER FOODS" DATED 2/3/2022, REVISED THROUGH 10/27/2022. WETLANDS DELINEATED BY DAMON E. BURT, N.H.C.W.S. #163 OF RINGLE ROCK ENVIRONMENTAL SERVICES, ON 9/2/2022.
APPROX. LOC. OF UG WATER LINE
APPROX. LOC. OF UG ELECTRIC LINE
APPROX. LOC. OF UG GAS LINE
APPROX. LOC. OF UG DRAINAGE LINE
APPROX. LOC. OF UG ELEC LINE
APPROX. LOC. OF EX. "WALK (TO REMAIN)
APPROX. LOCATION OF EX. "WAWARO" DIRECTORY SIGN
EX LIGHT POLE & FOUNDATION
EX GRASS AREA
TRANSFORMER
"ROLLECOM" DIRECTIONAL
CURB CHANGE
TBM-A
TBM-B
R=44.78'
D=058°12'5"
L=45.50'
CHB=S36°36'21"E
CHD=43.56'

NEW HAMPSHIRE DEMOLITION NOTES

(Rev. 1/2023)

1. THE CONTRACTOR MUST LOCATE AND CLEARLY DEFINE VERTICALLY AND HORIZONTALLY ALL ACTIVE AND INACTIVE UTILITY AND/OR SERVICE SYSTEMS THAT ARE TO BE REMOVED. THE CONTRACTOR IS RESPONSIBLE TO PROTECT AND MAINTAIN ALL ACTIVE SYSTEMS THAT ARE NOT BEING REMOVED/RELOCATED DURING SITE ACTIVITY.
2. CONTRACTOR SHALL FIELD LOCATE EXISTING UTILITIES PRIOR TO CONSTRUCTION AND IF REQUIRED, DIG EXPLORATORY TEST PITS TO CONFIRM EXACT LOCATION AND DEPTH OF UTILITIES. CONTRACTOR SHALL NOTIFY DESIGN ENGINEER WITH ANY CONFLICTS AS NEEDED TO COORDINATE FINAL LOCATION OF ALL PROPOSED IMPROVEMENTS.
3. CONTRACTOR SHALL INSPECT ALL EXISTING UTILITY STRUCTURES THAT ARE TO REMAIN FOR THE PROJECTS RE-USE TO VERIFY SUITABILITY FOR SAME. IF STRUCTURES CAN NOT BE REUSED THEN THE CONTRACTOR SHALL PROVIDE A NEW STRUCTURE. THE CONTRACTOR SHALL COORDINATE SUCH WORK WITH THE APPLICABLE UTILITY PROVIDER.
4. CONTRACTOR TO REMOVE ANY BUILDING FOUNDATION REMAINS OR ASSOCIATED IMPROVEMENTS, DELETERIOUS MATERIALS, AND/OR DEBRIS THAT IMPEDE THE WORK SHOWN ON THESE PLANS.
5. THE CONTRACTOR SHALL REVIEW THE PLANS VERSUS THE LOCATION OF EXISTING STRUCTURES, UTILITIES AND APPURTENANCES IN THE FIELD TO CONFIRM ACCURACY OF SAME AND VERIFY ITEMS TO BE REMOVED. THE CONTRACTOR SHALL CARRY COSTS FOR REMOVAL OF ANY EXISTING STRUCTURES, APPURTENANCES, AND UNDERGROUND UTILITIES, INCLUDING BUT NOT LIMITED TO; DRAIN, WATER, SEWER, STEAM, IRRIGATION, GAS, TELECOM AND ELECTRIC.
6. THE CONTRACTOR SHALL MAINTAIN, ADJUST OR ABANDON EXISTING MONITORING WELLS IN ACCORDANCE WITH THE DIRECTION OF THE ENVIRONMENTAL CONSULTANT (TYP.)
7. WHERE THE LIMIT OF WORK COINCIDES WITH PROPERTY LINE, TREE LINE, PROPOSED SAWCUT OR COMBINATION THEREOF IT IS SHOWN ADJACENT TO THESE FEATURES FOR GRAPHICAL CLARITY.
8. EXISTING TREES TO REMAIN ARE TO BE PROTECTED DURING CONSTRUCTION UNLESS CLEARLY INDICATED OTHERWISE. REASONABLE CARE AND CAUTION SHALL BE TAKEN DURING CONSTRUCTION TO PREVENT DAMAGE AND SELECTIVE PRUNING MAY BE REQUIRED TO ENSURE THAT TREES DO NOT CONFLICT WITH THE DEVELOPMENT.
9. CONTRACTOR SHALL REPAIR/REPLACE ANY TRAFFIC LOOP DETECTORS THAT ARE DAMAGED DURING CONSTRUCTION WITHIN EXISTING OR PROPOSED RIGHTS OF WAYS. ANY SUCH WORK SHALL BE PERFORMED BY A LICENSED / DOT APPROVED SIGNAL CONTRACTOR. ANY DAMAGED LOOPS OR OTHER SIGNAL EQUIPMENT SHALL BE REPAIRED IMMEDIATELY AFTER THE WORK IS COMPLETE. THE SIGNAL CONTRACTOR SHALL BE AVAILABLE TO MAKE ANY TEMPORARY SIGNAL CHANGES IF REQUESTED BY DOT AND/OR THE MUNICIPALITY.
10. THE CONTRACTOR MUST FIELD VERIFY THE LOCATIONS WHERE PROPOSED UTILITIES CROSS EXISTING UNDERGROUND UTILITIES BY USING A TEST PIT TO DETERMINE THE EXACT SIZE, DEPTH AND LOCATION, PRIOR TO COMMENCEMENT OF CONSTRUCTION.
11. CONTRACTOR SHALL LOCATE ANY EXISTING UTILITY SERVICES THAT ARE TO BE TERMINATED AT THE EXISTING MAIN AND/OR PROPERTY LINE. THESE SERVICES ARE TO BE TERMINATED IN ACCORDANCE WITH MUNICIPAL / STATE TRANSPORTATION DEPARTMENT REQUIREMENTS.

DEMOLITION ABBREVIATIONS

ABBREVIATION	DESCRIPTION
(TBA)	TO BE ABANDONED
(TBR)	TO BE REMOVED
(TBV)	TO BE VACATED
(RELO)	TO BE RELOCATED

CONTRACTOR SHALL CONFIRM ALL UTILITY & DRAINAGE LOCATIONS AND ELEVATIONS PRIOR TO CONSTRUCTION AND SHALL NOTIFY ENGINEER IN WRITING IF ANY CONFLICTS OCCUR.

REFER TO GENERAL NOTES SHEET FOR DEMOLITION NOTES

THIS PLAN TO BE UTILIZED FOR DEMOLITION/ REMOVAL PURPOSES ONLY

20 10 5 0 20
SCALE: 1" = 20'

BOHLER
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

THE INFORMATION, DESIGN AND CONTENT OF THIS PLAN IS PROPRIETARY AND SHALL NOT BE COPIED OR USED FOR ANY PURPOSE WITHOUT PRIOR WRITTEN AUTHORIZATION FROM BOHLER. ONLY APPROVED, SEALED PLANS SHALL BE UTILIZED FOR CONSTRUCTION PURPOSES.
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REVISIONS

REV	DATE	COMMENT	DRAWN BY / CHECKED BY

811 Know what's below. Call before you dig.
ALWAYS CALL 811
It's fast. It's free. It's the law.

ISSUED FOR ENTITLEMENTS

THIS DRAWING IS INTENDED FOR MUNICIPAL AND/OR AGENCY REVIEW AND APPROVAL. IT IS NOT INTENDED AS A CONSTRUCTION DOCUMENT UNLESS INDICATED OTHERWISE.

PROJECT No.:	MAA240177.00-0C
DRAWN BY:	JDG
CHECKED BY:	CSE
DATE:	12/17/2024
CAD I.D.:	P-CIVL-PROP

PROJECT:

PROPOSED SITE PLAN DOCUMENTS

FOR

SITE ID #: 28-0178

PROPOSED DEVELOPMENT

MAP: H | LOT: 4-3
NH ROUTE 108 & GRAPEVINE DRIVE
STRAFFORD COUNTY
DOVER, NEW HAMPSHIRE

BOHLER
352 TURNPIKE ROAD, 3rd FLOOR
SOUTHBOROUGH, MA 01772
Phone: (508) 480-9900
www.BohlerEngineering.com

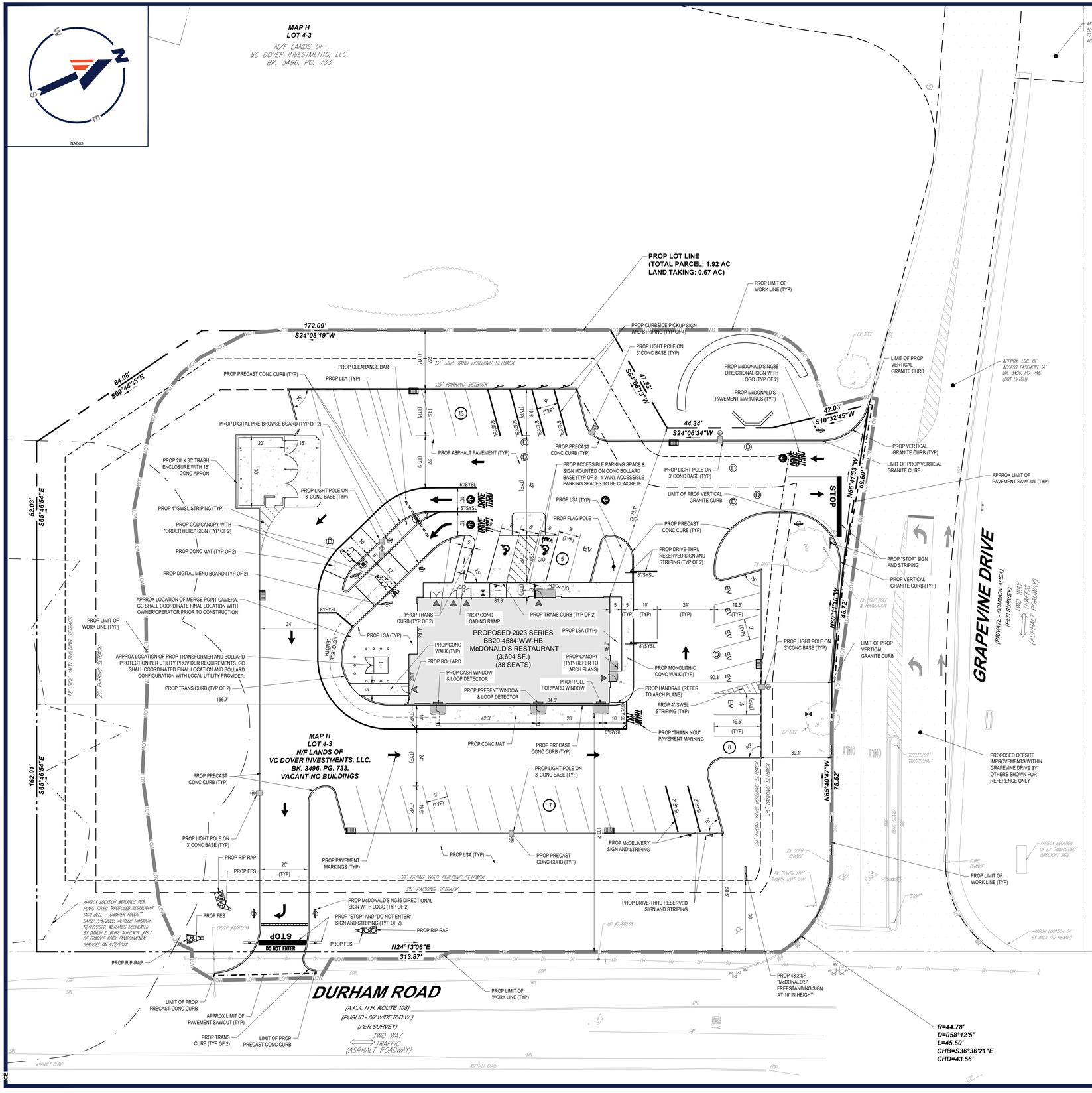
J.A. KUCICH, PROFESSIONAL ENGINEER
MASS. LIC. NO. 54330 | NEVADA LIC. NO. 27876 | CONN. LIC. NO. 30177 | RHODE ISLAND LIC. NO. 9616 | MAINE LIC. NO. 12553

SHEET TITLE:
EXISTING CONDITIONS/ DEMOLITION PLAN

SHEET NUMBER:
C-201

ORG. DATE - 12/17/2024

P:\2024\MAA240177.00\CAD\DRAWINGS\PLAN SETS\CIVIL SITE PLANS\P-CIVL-PROP-MAA240177.00-0C---LAYOUT: C-201 EXDM
CE


MAP H
LOT 4-3
N/F LANDS OF
VC DOVER INVESTMENTS, LLC.
BK. 3496, PG. 733.
NAD83
PROP LOT LINE
(TOTAL PARCEL: 1.92 AC
LAND TAKING: 0.67 AC)
PROP LIMIT OF WORK LINE (TYP)
172.09'
S24°08'19"W
84.08'
S09°44'35"E
52.03'
S65°46'54"E
162.91'
S65°46'54"E
12' SIDE YARD BUILDING SETBACK
25' PARKING SETBACK
30' FRONT YARD BUILDING SETBACK
PROP CLEARANCE BAR
PROP PRECAST CONC CURB (TYP)
PROP LSA (TYP)
PROP DIGITAL PRE-BROWSE BOARD (TYP OF 2)
PROP 20' X 30' TRASH ENCLOSURE WITH 15' CONC APRON
PROP LIGHT POLE ON 3' CONC BASE (TYP)
PROP 4"SWSL STRIPING (TYP)
PROP COD CANOPY WITH "ORDER HERE" SIGN (TYP OF 2)
PROP CONC MAT (TYP OF 2)
PROP DIGITAL MENU BOARD (TYP OF 2)
APPROX LOCATION OF MERGE POINT CAMERA. GC SHALL COORDINATE FINAL LOCATION WITH OWNER/OPERATOR PRIOR TO CONSTRUCTION
APPROX LOCATION OF PROP TRANSFORMER AND BOLLARD PROTECTION PER UTILITY PROVIDER REQUIREMENTS. GC SHALL COORDINATED FINAL LOCATION AND BOLLARD CONFIGURATION WITH LOCAL UTILITY PROVIDER.
PROP TRANS CURB (TYP OF 2)
PROP ASPHALT PAVEMENT (TYP)
PROP ACCESSIBLE PARKING SPACE & SIGN MOUNTED ON CONC BOLLARD BASE (TYP OF 2 - 1 VAN). ACCESSIBLE PARKING SPACES TO BE CONCRETE.
PROP FLAG POLE
PROP DRIVE-THRU RESERVED SIGN AND STRIPING (TYP OF 2)
PROP TRANS CURB (TYP OF 2)
PROP CONC LOADING RAMP
PROP CONC WALK (TYP)
PROP BOLLARD
PROP CASH WINDOW & LOOP DETECTOR
PROP PRESENT WINDOW & LOOP DETECTOR
PROP CANOPY (TYP- REFER TO ARCH PLANS)
PROP PULL FORWARD WINDOW
PROP MONOLITHIC CONC WALK (TYP)
PROP HANDRAIL (REFER TO ARCH PLANS)
PROP 4"SWSL STRIPING (TYP)
PROP "THANK YOU" PAVEMENT MARKING
PROPOSED 2023 SERIES
BB20-4584-WW-HB
McDONALD'S RESTAURANT
(3,694 SF.)
(38 SEATS)
DRIVE THRU
STOP
DO NOT ENTER
81.3'
156.7'
42.3'
28'
84.6'
90.3'
47.83'
S54°08'13"W
44.34'
S24°06'34"W
42.03'
S10°32'45"W
68.80'
N65°41'53"W
48.72'
N09°41'50"W
75.52'
N65°40'47"W
313.87'
N24°13'06"E
PROP LIMIT OF VERTICAL GRANITE CURB
PROP VERTICAL GRANITE CURB (TYP)
LIMIT OF PROP VERTICAL GRANITE CURB
PROP McDONALD'S NG36 DIRECTIONAL SIGN WITH LOGO (TYP OF 2)
PROP McDONALD'S PAVEMENT MARKINGS (TYP)
PROP LIGHT POLE ON 3' CONC BASE (TYP)
PROP PRECAST CONC CURB (TYP)
PROP LIMIT OF VERTICAL GRANITE CURB
PROP LSA (TYP)
PROP DRIVE-THRU RESERVED SIGN AND STRIPING
PROP "STOP" SIGN AND STRIPING
PROP VERTICAL GRANITE CURB (TYP)
LIMIT OF PROP VERTICAL GRANITE CURB
PROP LIGHT POLE ON 3' CONC BASE (TYP)
PROP McDELIVERY SIGN AND STRIPING
PROP LSA (TYP)
PROP PRECAST CONC CURB (TYP)
PROP DRIVE-THRU RESERVED SIGN AND STRIPING
PROP PAVEMENT MARKINGS (TYP)
PROP LIGHT POLE ON 3' CONC BASE (TYP)
PROP RIP-RAP
PROP FES
PROP McDONALD'S NG36 DIRECTIONAL SIGN WITH LOGO (TYP OF 2)
PROP "STOP" AND "DO NOT ENTER" SIGN AND STRIPING (TYP OF 2)
PROP RIP-RAP
PROP FES
PROP RIP-RAP
APPROX LOCATION WETLANDS PER PLANS TITLED "PROPOSED RESTAURANT "TACO BELL – CHARTER FOODS"" DATED 7/5/2022, REVISED THROUGH 10/31/2022. WETLANDS DELINEATED BY DAMON E. BURT, N.H.C.W.S. #163 OF FRAGLE ROCK ENVIRONMENTAL SERVICES ON 9/2/2022.
LIMIT OF PROP PRECAST CONC CURB
APPROX LIMIT OF PAVEMENT SAWCUT (TYP)
PROP TRANS CURB (TYP OF 2)
LIMIT OF PROP PRECAST CONC CURB
PROP LIMIT OF WORK LINE (TYP)
PROP 48.2 SF "McDONALD'S" FREESTANDING SIGN AT 16' IN HEIGHT
R=44.78'
D=058°12'5"
L=45.50'
CHB=S36°36'21"E
CHD=43.56'
DURHAM ROAD
(A.K.A. N.H. ROUTE 108)
(PUBLIC - 66' WIDE R.O.W.)
(PER SURVEY)
TWO WAY TRAFFIC
(ASPHALT ROADWAY)
MAP H
LOT 4-3
NF LANDS OF
VC DOVER INVESTMENTS, LLC.
BK. 3496, PG. 733.
VACANT-NO BUILDINGS
APPROX. LOC. OF 50' WIDE EASEMENT TO LOT H-4-1 & ACCESS EASEMENT C
APPROX. LOC. OF ACCESS EASEMENT "A" BK. 5496, PG. 746. (DOT HATCH)
APPROX LIMIT OF PAVEMENT SAWCUT (TYP)
PROP "STOP" SIGN AND STRIPING
PROP VERTICAL GRANITE CURB (TYP)
LIMIT OF PROP VERTICAL GRANITE CURB
PROP LIGHT POLE ON 3' CONC BASE (TYP)
PROPOSED OFFSITE IMPROVEMENTS WITHIN GRAPEVINE DRIVE BY OTHERS SHOWN FOR REFERENCE ONLY
APPROX LOCATION OF EX. "PANHANDLE" DIRECTORY SIGN
PROP LIMIT OF WORK LINE (TYP)
APPROX LOCATION OF EX WALK (TO REMAIN)
GRAPEVINE DRIVE
(PRIVATE - COMMON AREA)
(PER SURVEY)
TWO WAY TRAFFIC
(ASPHALT ROADWAY)
EX TREE
EX LIGHT POLE & FOUNDATION
EX CURB CHANGE
"REFLECTOR" "DIRECTIONAL"
"STOP"
"EX "SOUTH 108" "NORTH 108" SIGN
ONE WAY
ONE WAY
ONE WAY

NAD83

MAP H
LOT 4-3
N/F LANDS OF
VC DOVER INVESTMENTS, LLC.
BK. 3496, PG. 733.

PROP STORMTECH SC-800 INFILTRATION SYSTEM (BMP-1)
54 CHAMBERS
TOP STONE=106.00
TOP CHAMBER=105.50
BOT CHAMBER=102.75
BOT STONE=102.25

A-51
PROP STM MH
RIM 107.85
INV IN 102.90 (12") A-51A
INV IN 102.90 (12") A-51B
INV OUT 102.80 (12") A-50

A-50
PROP ICS
RIM 107.85
INV IN 102.75 (12") A-51
INV IN 102.75 (12") A-60
INV OUT 102.75 (12") BMP-1

A-51A
PROP CURB INLET
GRATE 106.70
INV OUT 103.40 (12") A-51

PROP ISOLATOR ROW (TYP OF 2)

PROP LOT LINE
(TOTAL PARCEL: 1.92 AC
LAND TAKING: 0.67 AC)

A-20
PROP OCS
RIM 107.10
INV IN 102.75 (12") BMP-1
INV OUT 102.75 (12") A-11

PROP LIMIT OF WORK LINE (TYP)

APPROX LOCATION OF PROP RECONSTRUCTED FOREBAY. DESIGN AND CONSTRUCTION OF FOREBAY RESPONSIBILITY OF LANDLORD (TYP)

A-51B
PROP CURB INLET
GRATE 106.60
INV OUT 103.25 (12") A-51

A-10
PROP HEADWALL
INV OUT 102.10 (12") A-11
INV OUT 102.10 (18") A-70

172.09'
S24°08'19"W
84.08'
S09°44'35"E
47.83'
S84°09'13"W
44.34'
S24°06'34"W
42.03'
S10°32'45"W
68.80'
N85°41'53"W
48.72'
N60°11'10"W
75.52'
N65°40'47"W
52.03'
S65°46'54"E
162.91'
S65°46'54"E
313.87'
N24°13'06"E

PROP 172 LF 12" HDPE @ 0.6%
PROP 51 LF 12" HDPE @ 1.0%
PROP 62 LF 12" HDPE @ 0.6%
PROP 6 LF 12" HDPE @ 0.8%
PROP 89 LF 12" HDPE @ 0.7%
PROP 10 LF 12" HDPE @ 3.5%
PROP 11 LF 12" HDPE @ 1.8%
PROP 30 LF 18" HDPE @ 1.3%
PROP 36 LF 12" HDPE @ 1.7%
PROP 121 LF 12" HDPE @ 0.6%
PROP 85 LF 6" HDPE @ 3.3%
PROP 65 LF 12" HDPE @ 0.5%
PROP 18 LF 12" HDPE @ 2.2%
PROP 87 LF 12" HDPE @ 0.6%
PROP 190 LF 18" HDPE @ 1.7%
PROP 17 LF 12" HDPE @ 0.6%
PROP 70 LF 12" HDPE @ 1.4%

PROP ACCESSIBLE PARKING AREA MAX 2.0% SLOPE IN ALL DIRECTIONS

PROP INSPECTION PORT (TYP)

PROPOSED 2023 SERIES
BB20-4584-WW-HB
McDONALD'S RESTAURANT
(3,694 SF.)
(38 SEATS)
FF 109.25

PROP ACCESSIBLE ROUTE (TYP)
MAX 2.0% CROSS SLOPE
MAX 5.0% RUNNING SLOPE

INV 105.75±

A-11
PROP STM MH
RIM 107.10
INV IN 102.55 (12") A-20
INV OUT 102.45 (12") A-10

APPROX LIMIT OF PAVEMENT SAWCUT (TYP)

A-70
PROP STM MH
RIM 107.40
INV IN 102.60 (18") EXIST
INV OUT 102.50 (18") A-10

A-30
PROP ICS
RIM 107.35
INV IN 102.85 (12") A-40
INV OUT 102.75 (12") BMP-1

A-41
PROP CURB INLET
GRATE 107.60
INV OUT 103.70 (12") A-40

A-40
PROP STM MH
RIM 107.95
INV IN 103.30 (12") A-41
INV IN 103.30 (12") A-42
INV OUT 103.20 (12") A-40

A-60
PROP STM MH
RIM 107.75
INV IN 103.50 (12") A-62
INV IN 103.50 (12") A-61
INV OUT 103.40 (12") A-50

A-61
PROP CURB INLET
GRATE 107.10
INV OUT 104.10 (12") A-60

B-20
PROP TRENCH DRAIN
GRATE 102.75
INV OUT 100.95 (12") B-10

B-10
PROP FES
INV OUT 100.85 (12") B-20

APPROX. LOCATION WETLANDS PER PLANS TITLED "PROPOSED RESTAURANT TACO BELL – CHARTER FOODS" DATED 2/5/2022, REVISED THROUGH 10/21/2022. WETLANDS DELINEATED BY DAMON E. BURT, N.H.C.W.S. #163 OF FANGLE ROCK ENVIRONMENTAL SERVICES, ON 9/2/2022.

A-62
PROP CURB INLET
GRATE 107.00
INV OUT 104.20 (12") A-60

A-42
PROP CURB INLET
GRATE 107.35
INV OUT 103.85 (12") A-40

C-20
PROP FES
INV IN 99.50 (12") C-10

C-10
PROP FES
INV OUT 98.50 (12") C-20

PROP CONNECTION TO EX CB. INV OUT 105.85± (18") A-70 PRIOR TO CONSTRUCTION. GC SHALL CONFIRM EXACT LOCATION, SIZE, AND INVERT ELEVATION OF EX CB & NOTIFY ENGINEER IN WRITING SHOULD CONFLICT OCCUR

PROP LIMIT OF WORK LINE (TYP)

PROP RIP-RAP

APPROX. LOC. OF ACCESS EASEMENT "A" BK. 5496, PG. 746. (DOT HATCH)

APPROX. LOC. OF 50' WIDE EASEMENT TO LOT H–4–1 & ACCESS EASEMENT C

APPROX LOC. OF US DRAINAGE LINE

MAP H
LOT 4-3
N/F LANDS OF
VC DOVER INVESTMENTS, LLC.
BK. 3496, PG. 733.
VACANT-NO BUILDINGS

DURHAM ROAD
(A.K.A. N.H. ROUTE 108)
(PUBLIC - 66' WIDE R.O.W.)
(PER SURVEY)
TWO WAY TRAFFIC
(ASPHALT ROADWAY)

GRAPEVINE DRIVE
(PRIVATE - COMMON AREA)
(PER SURVEY)
TWO WAY TRAFFIC
(ASPHALT ROADWAY)

R=44.78'
D=058°12'5"
L=45.50'
CHB=S36°36'21"E
CHD=43.56'

NEW HAMPSHIRE GRADING NOTES

(Rev. 5/2024)

1. PROPOSED TOP OF CURB ELEVATIONS ARE GENERALLY 6" ABOVE PAVEMENT GRADE UNLESS OTHERWISE NOTED.
2. THE CONTRACTOR MUST CONFIRM AND ENSURE THAT AS CONSTRUCTED IMPROVEMENTS CREATE THE FOLLOWING MINIMUM SLOPES (EXCEPT WHERE ADA REQUIREMENTS LIMIT THEM): 1.0% ON ALL CONCRETE SURFACES, 1.5% ON ASPHALT SURFACES, 1.5% IN LANDSCAPED AREAS AND 0.75% SLOPE AGAINST ALL ISLANDS, GUTTERS, AND CURBS TO PROVIDE POSITIVE DRAINAGE.
3. WHERE RETAINING WALLS ARE IDENTIFIED ON THE PLANS, TOP AND BOTTOM OF WALL ELEVATIONS (GH & GL) REPRESENT THE PROPOSED FINISHED GRADE AT THE FACE OF THE TOP AND THE BOTTOM OF THE WALL AND DO NOT REPRESENT THE OVERALL HEIGHT OF THE WALL TO ITS EXTENTS (I.E. ANY CAP UNITS OR COURSES BELOW GRADE INCLUDING FOOTINGS ARE EXCLUDED). WALL FOOTINGS/FOUNDATION ELEVATIONS ARE NOT IDENTIFIED HEREIN AND ARE TO BE SET/DETERMINED BY THE CONTRACTOR OR WALL DESIGNER, AND MUST BE SET BASED UPON FINAL STRUCTURAL DESIGN SHOP DRAWINGS PREPARED BY THE APPROPRIATE PROFESSIONAL LICENSED IN THE STATE WHERE THE CONSTRUCTION OCCURS. THE CONTRACTOR MUST ENSURE THAT THERE ARE NO UTILITIES ON THE PASSIVE SIDE OF THE RETAINING WALL. NO EXCAVATION MAY BE PERFORMED ON THE PASSIVE SIDE OF THE RETAINING WALL WITHOUT APPROPRIATELY AND SAFELY SUPPORTING THE WALL IN ACCORDANCE WITH THE STANDARD OF CARE AND ALL APPLICABLE RULES, REGULATIONS, CODES, ORDINANCES, LAWS AND STATUTES.
4. MSE OR GRAVITY BLOCK WALLS SHALL BE CONSTRUCTED SUCH THAT UPON COMPLETION OF CONSTRUCTION THERE IS NO UNFINISHED SURFACE OR LIFTING RINGS VISIBLE (E.G. USE OF FINISHED TOP BLOCK OR CAP STONES)
5. STORMWATER RUNOFF WITHIN PROPERTY MUST BE COLLECTED ON-SITE WITH NO OVERLAND RUNOFF ONTO THE RIGHT-OF-WAY OR ADJACENT PROPERTIES TO THE MAXIMUM EXTENT POSSIBLE OR IN THE MANNER SHOWN ON THE CONSTRUCTION DRAWINGS. STORMWATER RUNOFF ONTO ADJACENT PROPERTIES SHALL BE CONTROLLED AS TO NOT ADVERSELY IMPACT SAID PROPERTIES.
6. BEFORE COMMENCING GRADING WORK, CONTRACTOR SHALL SUBMIT SAMPLES OF ALL NATIVE AND IMPORTED MATERIALS WITH THEIR INTENDED FOR STRUCTURAL USES TO THE GEOTECHNICAL ENGINEER OF RECORD.
7. REFER TO GENERAL NOTES SHEET FOR ADDITIONAL ADA GUIDELINES AND REQUIREMENTS.
8. FOR ALL RETAINING WALLS 4 FEET OR GREATER IN HEIGHT:
   - 8.1. THE OWNER OR THE OWNER'S CONTRACTOR IS TO PROVIDE A SITE-SPECIFIC RETAINING WALL DESIGN PREPARED BY THE APPROPRIATE PROFESSIONAL LICENSED (E.G. STRUCTURAL ENGINEER) IN THE STATE WHERE THE CONSTRUCTION OCCURS. SOIL TYPES, WATER TABLE ELEVATION, EXISTING & PROPOSED SURROUNDING IMPROVEMENTS/CONDITIONS (INCLUDING BUT NOT LIMITED TO SLOPES, DRIVE AISLES, ROADS, FENCING, GUIDERAILS, UTILITIES, DRAINAGE FACILITIES, STRUCTURES, FOUNDATIONS), LIVE LOADS AND OTHER SITE AMENITIES THAT COULD HAVE AN INFLUENCE OR IMPACT ON THE RETAINING WALL(S) CONSTRUCTABILITY AND/OR LONGEVITY SHALL BE CONSIDERED AND INCORPORATED INTO THE RETAINING WALL DESIGN AS WELL AS THE GLOBAL STABILITY ANALYSIS.
   - 8.2. PEER REVIEW AND GLOBAL STABILITY ANALYSIS OF THE RETAINING WALL DESIGN MUST BE COMPLETED BY THE OWNER'S GEOTECHNICAL ENGINEER TO CERTIFY THE DESIGN MEETS INDUSTRY STANDARDS FOR FACTOR OF SAFETY. SOIL TYPES, WATER TABLE ELEVATION AND DESIGN PROPERTIES AS NOTED ABOVE SHALL BE FIELD CONFIRMED AND APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO WALL CONSTRUCTION.
9. CONTRACTOR SHALL INSTALL CONCRETE CURB ALONG FACE OF BUILDING / WALL AS SHOWN TO PROVIDE CONSISTENT WIDTH ALONG LENGTH OF PROPOSED ACCESSIBLE RAMP AND RAMP LANDING TO MEET ADA/AAB REQUIREMENTS.
10. CONTRACTOR SHALL REVIEW RETAINING WALL LOCATIONS VERSUS APPLICABLE STATE AND LOCAL CODES AND PROVIDE FALL PROTECTION (E.G. FENCING OR RAILING) IN ACCORDANCE WITH SAID CODE.
11. CONTRACTOR SHALL COORDINATE WITH OWNER/OPERATOR TO REVIEW EXISTING DEPRESSIONS WITHIN EXISTING PAVEMENT AREAS TO REMAIN AND SHALL CONFIRM THAT THE SCOPE OF WORK SHALL PROVIDE POSITIVE DRAINAGE BY FIXING ANY EXISTING AREAS OF PONDING.
12. BEFORE COMMENCING GRADING WORK, CONTRACTOR SHALL SUBMIT SAMPLES OF ALL NATIVE AND IMPORTED MATERIALS WITH THEIR INTENDED FOR STRUCTURAL USES TO THE GEOTECHNICAL ENGINEER OF RECORD.

NEW HAMPSHIRE DRAINAGE NOTES

(Rev. 1/2023)

1. WHEN THESE PLANS INVOLVE MULTIPLE BUILDINGS, SOME OF WHICH MAY BE BUILT AT A LATER DATE, THE CONTRACTOR MUST EXTEND ALL UTILITY SERVICES, INCLUDING BUT NOT LIMITED TO STORM, SANITARY, UTILITIES, AND IRRIGATION LINES, TO A POINT AT LEAST FIVE (5) FEET BEYOND THE PAVED AREAS FOR WHICH THE CONTRACTOR IS RESPONSIBLE. THE CONTRACTOR MUST CAP ENDS OF INSTALLED UTILITIES AS APPROPRIATE, MARK UTILITY ENDS WITH MAGNETIC TRACER TAPE, MARK TERMINUS LOCATIONS WITH A 2X4 STAKE, AND MUST NOTE THE LOCATION OF ALL UTILITY STUBS ON A CLEAN COPY OF THE PLAN. THIS RECORD DOCUMENT MUST BE PREPARED IN A NEAT AND WORKMAN-LIKE MANNER AND TURNED OVER TO THE OWNER/DEVELOPER UPON COMPLETION OF THE WORK, ALL OF WHICH IS AT THE CONTRACTOR'S SOLE COST.
2. STORM AND SANITARY PIPE LENGTHS INDICATED ARE NOMINAL AND ARE MEASURED FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE UNLESS INDICATED ON THE PLANS OTHERWISE.
3. UNLESS CLEARLY INDICATED OTHERWISE, ALL STORM PIPE MUST BE REINFORCED CONCRETE PIPE (RCP) CLASS III WITH SILT/SOIL TIGHT JOINTS. WHEN HIGH-DENSITY POLYETHYLENE PIPE (HDPE) IS CALLED FOR ON THE PLANS, IT MUST CONFORM TO AASHTO M252 FOR PIPES 4" TO 10" AND TO AASHTO M294 FOR PIPES 12" TO 60" AND TYPE S (SMOOTH INTERIOR WITH ANGULAR CORRUGATIONS) WITH GASKET FOR SILT/SOIL TIGHT JOINT. PIPE FOR ROOF DRAIN CONNECTION MUST BE SDR 26 PVC OR SCHEDULE 40 UNLESS INDICATED OTHERWISE. HDPE PIPE JOINT GASKETS MUST BE PROVIDED AND CONFORM TO ASTM F477. DRAIN PIPE INSTALLED WITH OVER TEN (10) FEET OVER COVER AND/OR IN HIGH GROUNDWATER CONDITIONS SHALL BE SANITITE HP POLYPROPYLENE PIPE (PP), OR APPROVED EQUIVALENT.

CONTRACTOR SHALL CONFIRM ALL UTILITY & DRAINAGE LOCATIONS AND ELEVATIONS PRIOR TO CONSTRUCTION AND SHALL NOTIFY ENGINEER IN WRITING IF ANY CONFLICTS OCCUR.

THIS PLAN TO BE UTILIZED FOR SITE GRADING AND DRAINAGE PURPOSES ONLY. REFER TO GENERAL NOTES SHEET FOR ADDITIONAL GRADING & UTILITY NOTES

20 10 5 0 20
SCALE: 1" = 20'

BOHLER
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
ENVIRONMENTAL SERVICES
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PROJECT NO.: MAA240177.00-0C
DRAWN BY: JDG
CHECKED BY: CSE
DATE: 12/17/2024
CAD I.D.: P-CIVIL-PROP

PROJECT:

PROPOSED SITE PLAN DOCUMENTS

FOR

SITE ID #: 28-0178

PROPOSED DEVELOPMENT

MAP: H | LOT: 4-3
NH ROUTE 108 & GRAPEVINE DRIVE
STRAFFORD COUNTY
DOVER, NEW HAMPSHIRE

BOHLER
352 TURNPIKE ROAD, 3rd FLOOR
SOUTHBOROUGH, MA 01772
Phone: (508) 480-9900
www.BohlerEngineering.com

J. A. KUCICH
PROFESSIONAL ENGINEER
MASS. NO. 52321 | CONN. NO. 30
NEW YORK NO. 102476
COMMONWEALTH OF VIRGINIA NO. 0402
RHODE ISLAND NO. 9616
MAINE NO. 12553

SHEET TITLE:

GRADING AND DRAINAGE PLAN

SHEET NUMBER:

C-401

ORG. DATE - 12/17/2024

P:\2024\MAA240177.00\CAD\DRAWINGS\PLAN SETS\CIVIL SITE PLANS\P-CIVIL-PROP-MAA240177.00-0C-----LAYOUT: C-401 GRDR
CE

NAD83

MAP H
LOT 4-3
N/F LANDS OF
VC DOVER INVESTMENTS, LLC.
BK. 3496, PG. 733.

PROP LOT LINE
(TOTAL PARCEL: 1.92 AC
LAND TAKING: 0.67 AC)

PROP LIMIT OF WORK LINE (TYP)

172.09'
S24°08'19"W

84.08'
S09°44'55"E

52.03'
S65°46'54"E

162.91'
S65°46'54"E

47.83'
S64°09'13"W

44.34'
S24°06'34"W

42.03'
S10°32'45"W

N56°41'53"W
68.80'

N60°11'10"W
48.72'

N65°40'47"W
75.52'

N24°13'06"E
313.87'

R=44.78'
D=058°12'5"
L=45.50'
CHB=S36°36'21"E
CHD=43.56'

PROP 1,300 GALLON GREEN TURTLE GREASE INTERCEPTOR. GC SHALL ENSURE COVERS ARE HS-20 LOAD RATED.
RIM 108.45
INV IN 102.30
INV OUT 102.05

PROP WATER AND SEWER CROSSING PER CITY OF DOVER REQUIREMENTS (TYP)

PROP 50 LF 6" DUCTILE IRON @ 2.0%

PROP VENT LINE. GC SHALL COORDINATE MATERIAL, SIZE, AND LOCATION WITH MEP

APPROX LOCATION OF PROP DOMESTIC WATER CONNECTION TO BE COORDINATED WITH ARCH PLANS

PROP 3/4" WATER LINE TO TRASH ENCLOSURE (TYP)

PROP 125 LF 6" SDR-35 @ 1.0%

INV 101.90±

PROP CLEANOUT (TYP)

PROP ANTI SEEP COLLAR (TYP)

PROP 34 LF 6" DUCTILE IRON @ 4.1%

INV 102.50±

PROP CLEANOUT (TYP)

PROP UTILITY CROSSING SEWER CROWN 101.6± (6") DRAIN INV 102.8± (12")

PROP UTILITY CROSSING SEWER CROWN 101.8± (6") DRAIN INV 102.9± (12")

PROP WATER AND SEWER CROSSING PER CITY OF DOVER REQUIREMENTS (TYP)

INV 103.30±

PROP GATE VALVE

INV 103.30±

PROP 2" TYPE K COPPER DOMESTIC WATER SERVICE LINE

PROPOSED 2023 SERIES
BB20-4584-WW-HB
McDONALD'S RESTAURANT
(3,694 SF.)
(38 SEATS)
FF 109.25

PROP ELECTRIC CONDUIT FOR 7 ELECTRIC VEHICLE CHARGING READY PARKING SPACES

PROP GATE VALVE

APPROX LOCATION OF PROP PAD-MOUNTED TRANSFORMER. GC TO CONFIRM FINAL LOCATION AND BOLLARD CONFIGURATION WITH UTILITY PROVIDER

APPROX LOCATION OF ELECTRIC METER AND SERVICE CONNECTION TO BE COORDINATED WITH ARCH PLANS

APPROX LOCATION OF PROP WATER CONNECTION TO EX STUB. GC SHALL COORDINATE CONNECTION WITH CITY OF DOVER WATER DEPARTMENT

APPROX LOCATION OF PROP ELECTRIC CONNECTION TO EX STUB. GC SHALL COORDINATE WITH LOCAL UTILITY PROVIDER

PROP ELECTRIC SERVICE LINE (TYP) GC SHALL COORDINATE CONDUIT SIZE AND MATERIAL WITH LOCAL UTILITY PROVIDER

PROP LIMIT OF WORK LINE (TYP)

APPROX LOCATION WETLANDS PER PLANS TITLED "PROPOSED RESTAURANT "TACO BELL – CHARTER FOODS" DATED 2/3/2022, REVISED THROUGH 10/27/2022. WETLANDS DELINEATED BY DAMON E. BURT, N.H.C.W.S. #163 OF "ENGLE ROCK ENVIRONMENTAL SERVICES" ON 9/2/2022.

APPROX LIMIT OF PAVEMENT SAWCUT (TYP)

APPROX LIMIT OF PAVEMENT SAWCUT (TYP)

PROP CONNECTION TO EX SMH
INV IN 100.8±
INV OUT 100.7±
PRIOR TO CONSTRUCTION, GC SHALL CONFIRM EXACT LOCATION, SIZE, AND INVERT OF EX SMH AND NOTIFY ENGINEER IN WRITING SHOULD CONFLICT OCCUR

APPROX LOC. OF 50' WIDE EASEMENT TO LOT H–4–1 & ACCESS EASEMENT C

APPROX LOC. OF UG WATER LINE

APPROX LOC. OF ACCESS EASEMENT "A" BK. 5496, PG. 746. (DOT HATCH)

APPROX LOC. OF UG ELECTRIC LINE

APPROX LOC OF UG GAS LINE

APPROX LOC. OF UG ELEC. LINE

APPROX LOC. OF UG GAS LINE

APPROX LOC. OF UG ELECTRIC LINE

APPROX LOC. OF UG WATER LINE

TRANSFORMER

RIM=107.67
(U/G–SEWER)

RIM=108.59
INV=100.7

EX HYDRANT

UP #2/R0/R8

UP #2/R0/R9

MAP H
LOT 4-3
N/F LANDS OF
VC DOVER INVESTMENTS, LLC.
BK. 3496, PG. 733.
VACANT-NO BUILDINGS

GRAPEVINE DRIVE
(PRIVATE - COMMON AREA)
(PER SURVEY)
TWO WAY TRAFFIC
(ASPHALT ROADWAY)

DURHAM ROAD
(A.K.A. N.H. ROUTE 108)
(PUBLIC - 66' WIDE R.O.W.)
(PER SURVEY)
TWO WAY TRAFFIC
(ASPHALT ROADWAY)

NEW HAMPSHIRE UTILITY NOTES

(Rev. 7/2024)

1. THE CONTRACTOR'S PRICE FOR WATER AND SEWER SERVICE INSTALLATIONS MUST INCLUDE ALL FEES, COSTS, AND APPURTENANCES REQUIRED BY THE UTILITY PROVIDER (AND OTHER AGENCIES HAVING JURISDICTION OVER THE WORK) TO PROVIDE FULL AND COMPLETE WORKING SERVICE, INCLUDING (BUT NOT LIMITED TO) NECESSARY FEES, TESTING, DISINFECTING, INSPECTIONS, ROAD OPENING & BACKFILL REQUIREMENTS, TRAFFIC CONTROL AND SURETY BONDS AS DEFINED BY THE PROVIDER (AND OTHER AGENCIES HAVING JURISDICTION OVER THE WORK).
2. ALL WORK ASSOCIATED WITH UTILITY POLES, OVERHEAD WIRES AND ANY/ALL APPURTENANCES SHALL BE COORDINATED BY THE GC WITH THE LOCAL UTILITY COMPANIES PRIOR TO THE ORDERING OF ANY MATERIALS. THIS MAY INCLUDE BUT IS NOT LIMITED TO THE REMOVAL, INSTALLATION, RELOCATION OR PROTECTION OF ANY BRACING, GUY WIRES, OVERHEAD WIRES, ETC. AS MAY BE REQUIRED TO ACCOMMODATE THE PROJECT.
3. SEWERS CONVEYING SANITARY FLOW, OR INDUSTRIAL FLOW MUST BE SEPARATED FROM WATER MAINS BY A DISTANCE OF AT LEAST 10 FEET HORIZONTALLY. IF SUCH LATERAL SEPARATION IS NOT POSSIBLE, THE PIPES MUST, AT A MINIMUM, BE IN SEPARATE TRENCHES WITH THE AT LEAST 18 INCHES OF VERTICAL SEPARATION FROM THE BOTTOM OF THE WATER MAIN TO THE TOP OF THE SEWER LINE. WHERE APPROPRIATE SEPARATION FROM A WATER MAIN IS NOT POSSIBLE, THE SEWER MUST BE ENCASED IN CONCRETE, OR CONSTRUCTED OF DUCTILE IRON PIPE USING MECHANICAL OR SLIP-ON JOINTS FOR A DISTANCE OF AT LEAST 10 FEET ON EITHER SIDE OF THE CROSSING. IN ADDITION, ONE FULL LENGTH OF SEWER PIPE SHOULD BE LOCATED SO BOTH JOINTS WILL BE AS FAR FROM THE WATER LINE AS POSSIBLE. WHERE A WATER MAIN CROSSES UNDER A SANITARY SEWER, ADEQUATE STRUCTURAL SUPPORT FOR THE SANITARY SEWER MUST BE PROVIDED. ALL CROSSINGS SHALL BE IN ACCORDANCE WITH JURISDICTIONAL PERMITTING/UTILITY AUTHORITIES REGULATIONS.
4. WHEN THESE PLANS INVOLVE MULTIPLE BUILDINGS, SOME OF WHICH MAY BE BUILT AT A LATER DATE, THE CONTRACTOR MUST EXTEND ALL UTILITY SERVICES, INCLUDING BUT NOT LIMITED TO STORM, SANITARY, UTILITIES, AND IRRIGATION LINES, TO A POINT AT LEAST FIVE (5) FEET BEYOND THE PAVED AREAS FOR WHICH THE CONTRACTOR IS RESPONSIBLE. THE CONTRACTOR MUST CAP ENDS OF INSTALLED UTILITIES AS APPROPRIATE, MARK UTILITY ENDS WITH MAGNETIC TRACER TAPE, MARK TERMINUS LOCATIONS WITH A 2X4 STAKE, AND MUST NOTE THE LOCATION OF ALL UTILITY STUBS ON A CLEAN COPY OF THE PLAN. THIS RECORD DOCUMENT MUST BE PREPARED IN A NEAT AND WORKMAN-LIKE MANNER AND TURNED OVER TO THE OWNER/DEVELOPER UPON COMPLETION OF THE WORK, ALL OF WHICH IS AT THE CONTRACTOR'S SOLE COST.
5. UNLESS INDICATED OTHERWISE, ALL NEW UTILITIES/SERVICES, INCLUDING ELECTRIC, TELEPHONE, CABLE TV, ETC., MUST BE INSTALLED UNDERGROUND. ALL NEW UTILITY SERVICES MUST BE INSTALLED IN ACCORDANCE WITH THE UTILITY SERVICE PROVIDER INSTALLATION SPECIFICATIONS AND STANDARDS.
6. SANITARY PIPE MUST BE POLYVINYL CHLORIDE (PVC) SDR 35 EXCEPT WHERE CLEARLY INDICATED OTHERWISE. SANITARY LATERAL(S) MUST BE PVC SDR 26 UNLESS CLEARLY INDICATED OTHERWISE.
7. UNLESS CLEARLY INDICATED OTHERWISE ALL SANITARY PIPE MUST BE:
   - 7.1. FOR PIPES LESS THAN 12 FEET DEEP: POLYVINYL CHLORIDE (PVC) SDR 35 PER ASTM D3034.
   - 7.2. FOR PIPES GREATER THAN 12 FEET DEEP: POLYVINYL CHLORIDE (PVC) SDR 26 PER ASTM D3034.
   - 7.3. UNLESS LOCAL OR STATE BUILDING / PLUMBING CODE CLEARLY SPECIFIES DIFFERENTLY, SANITARY LATERALS MUST BE PVC SDR 26.
   - 7.4. FOR ALL UTILITY PIPING (INCLUDING DRAIN) WITHIN 10 FT OF A BUILDING, PIPE MATERIAL SHALL COMPLY WITH APPLICABLE LOCAL OR STATE BUILDING AND PLUMBING CODES. CONTRACTOR SHALL REFER TO PLUMBING ENGINEERING PLANS AND VERIFY PIPE MATERIAL WITH LOCAL OFFICIAL PRIOR TO ORDERING OF MATERIALS.
   - 7.5. CONTRACTOR SHALL VERIFY THE CONNECTION OF EXTERIOR PIPING TO ANY FIXTURES (SUCH AS AN EXTERIOR GREASE INTERCEPTOR) OR OTHER DRAINAGE SYSTEMS WITH LOCAL OFFICIALS FOR COMPLIANCE WITH APPLICABLE LOCAL OR STATE BUILDING AND PLUMBING CODES PRIOR TO ORDERING OF MATERIALS.
8. WATER MAIN PIPING MUST BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS AND SPECIFICATIONS OF THE LOCAL WATER COMPANY. IN THE ABSENCE OF SUCH REQUIREMENTS, WATER MAIN PIPING MUST BE CEMENT-LINED DUCTILE IRON (DIP) MINIMUM CLASS 52 THICKNESS. ALL PIPE AND APPURTENANCES MUST COMPLY WITH THE APPLICABLE AWWA STANDARDS IN EFFECT AT THE TIME OF APPLICATION.
9. GAS METERS MUST BE PROTECTED AS REQUIRED BY THE JURISDICTIONAL GAS PROVIDER.
10. TRANSFORMERS AND SWITCH GEARS: GC SHALL PROVIDE ALL APPURTENANCES IN ACCORDANCE WITH UTILITY COMPANY SPECIFICATIONS AND CARRY SAME IN BASE BID. APPURTENANCES SHALL INCLUDE, BUT NOT BE LIMITED TO, THE CONCRETE PAD, SECONDARY SPILL CONTAINMENT AREAS (IF REQUIRED), BOLLARD / VEHICULAR PROTECTION, AND OTHER ITEMS AS MAY BE REQUIRED BY THE UTILITY PROVIDER FOR INSTALLATION OF THE TRANSFORMER. GC SHALL COORDINATE ALL ASPECTS OF INSTALLATION WITH UTILITY PROVIDER PRIOR TO ORDERING OF MATERIALS AND NOTIFY DESIGN ENGINEER OF ANY CONFLICTS IN WRITING.

TRANSFORMER NOTE:

GC SHALL PROVIDE ALL APPURTENANCES IN ACCORDANCE WITH UTILITY COMPANY SPECIFICATIONS AND CARRY SAME IN BASE BID. APPURTENANCES SHALL INCLUDE, BUT NOT BE LIMITED TO, THE CONCRETE PAD, SECONDARY SPILL CONTAINMENT AREAS (IF REQUIRED), BOLLARD / VEHICULAR PROTECTION, AND OTHER ITEMS AS MAY BE REQUIRED BY THE UTILITY PROVIDER FOR INSTALLATION OF THE TRANSFORMER. GC SHALL COORDINATE ALL ASPECTS OF INSTALLATION WITH UTILITY PROVIDER PRIOR TO ORDERING OF MATERIALS AND NOTIFY DESIGN ENGINEER OF ANY CONFLICTS IN WRITING.

CONTRACTOR SHALL CONFIRM ALL UTILITY & DRAINAGE LOCATIONS AND ELEVATIONS PRIOR TO CONSTRUCTION AND SHALL NOTIFY ENGINEER IN WRITING IF ANY CONFLICTS OCCUR.

THIS PLAN TO BE UTILIZED FOR UTILITIES PURPOSES ONLY. REFER TO GENERAL NOTES SHEET FOR ADDITIONAL GRADING & UTILITY NOTES

SCALE: 1" = 20'

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LAND SURVEYING
PROGRAM MANAGEMENT
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PROJECT No.:	MAA240177.00-0C
DRAWN BY:	JDG
CHECKED BY:	CSE
DATE:	12/17/2024
CAD I.D.:	P-CIVIL-PROP

PROJECT:

PROPOSED SITE PLAN DOCUMENTS

FOR

SITE ID #: 28-0178

PROPOSED DEVELOPMENT

MAP: H | LOT: 4-3
NH ROUTE 108 & GRAPEVINE DRIVE
STRAFFORD COUNTY
DOVER, NEW HAMPSHIRE

BOHLER
352 TURNPIKE ROAD, 3rd FLOOR
SOUTHBOROUGH, MA 01772
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J.A. KUCICH
PROFESSIONAL ENGINEER
MASSACHUSETTS LICENSE NO. 49530
NEW YORK LICENSE NO. 102476
COMMONWEALTH OF VIRGINIA NO. 0402057177
RHODE ISLAND NO. 9816
MAINE NO. 12553

SHEET TITLE:

UTILITY PLAN

SHEET NUMBER:

C-501

ORG. DATE - 12/17/2024

P:\2024\MAA240177.00\CAD\DRAWINGS\PLAN SETS\CIVIL SITE PLANS\P-CIVIL-PROP-MAA240177.00-0C----->LAYOUT: C-501 UTIL

NAD83

MAP H
LOT 4-3
N/F LANDS OF
VC DOVER INVESTMENTS, LLC.
BK. 3496, PG. 733.

APPROX. LOC. OF 50' WIDE EASEMENT TO LOT H-4-1 & ACCESS EASEMENT C

PROP LOT LINE
(TOTAL PARCEL: 1.92 AC
LAND TAKING: 0.67 AC)

PROP LIMIT OF WORK LINE (TYP)

172.09'
S24°08'19"W

84.08'
S09°44'35"E

52.03'
S65°46'54"E

162.91'
S65°46'54"E

47.83'
S84°09'13"W

44.34'
S24°06'34"W

42.03'
S10°32'45"W

LIMIT OF PROP SILT FENCE

APPROX. LOC. OF ACCESS EASEMENT "A" BK. 5496, PG. 746. (DOT HATCH)

N65°41'53"W
68.00'

APPROX LIMIT OF PAVEMENT SAWCUT (TYP)

PERIMETER CONTROLS ARE OFFSET FROM LOW FOR CLARITY PURPOSES (TYP)

PROP SILT FENCE (TYP)

PROP LIMIT OF WORK LINE (TYP)

PROP STABILIZED CONSTRUCTION ENTRANCE

PROPOSED 2023 SERIES
BB20-4584-WW-HB
McDONALD'S RESTAURANT
(3,694 SF.)
(38 SEATS)

AREA OF DISTURBANCE =
±76,450 SF (1.76 AC)

GRAPEVINE DRIVE
(PRIVATE - COMMON AREA)
(PER SURVEY)
TWO WAY TRAFFIC
(ASPHALT ROADWAY)

N60°11'10"W
48.72'

PROP TREE PROTECTION FENCE

LIMIT OF PROP SILT FENCE

PROP TREE PROTECTION FENCE

MAP H
LOT 4-3
N/F LANDS OF
VC DOVER INVESTMENTS, LLC.
BK. 3496, PG. 733
VACANT-NO BUILDINGS

PROP TEMPORARY SOIL STOCKPILE AREA SURROUNDED BY STRAW BALES AND SILT FENCE

N65°40'42"W
75.52'

PROP SILT FENCE (TYP)

PROP INLET PROTECTION (TYP)

PROP LIMIT OF WORK LINE (TYP)

PROP STABILIZED CONSTRUCTION ENTRANCE

APPROX LOCATION WETLANDS PER PLANS TITLED "PROPOSED RESTAURANT TACO BELL – CHARTER FOODS" DATED 2/3/2022, REVISED THROUGH 10/27/2022. WETLANDS DELINEATED BY DAMON E. BURT, N.H.C.W.S. #163 OF FANDLE ROCK ENVIRONMENTAL SERVICES, ON 9/2/2022.

N24°13'06"E
313.87'

DURHAM ROAD
(A.K.A. N.H. ROUTE 108)
(PUBLIC - 66' WIDE R.O.W.)
(PER SURVEY)
TWO WAY TRAFFIC
(ASPHALT ROADWAY)

LIMIT OF PROP SILT FENCE

APPROX LIMIT OF PAVEMENT SAWCUT (TYP)

LIMIT OF PROP SILT FENCE

PROP LIMIT OF WORK LINE (TYP)

R=44.78'
D=058°12'5"
L=45.50'
CHB=S36°36'21"E
CHD=43.56'

THIS PLAN TO BE UTILIZED FOR SOIL EROSION AND SEDIMENT CONTROL PURPOSES ONLY

20 10 5 0 20
SCALE: 1" = 20'

P:\2024\MAA240177.00\CAD\DRAWINGS\PLAN SETS\CIVIL SITE PLANS\P-CIVIL-PROP-MAA240177.00-0C---LAYOUT: C-801 EROS

BOHLER

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DRAWN BY: JDG
CHECKED BY: CSE
DATE: 12/17/2024
CAD I.D.: P-CIVL-PROP

PROJECT:

PROPOSED SITE PLAN DOCUMENTS

FOR

SITE ID #: 28-0178

PROPOSED DEVELOPMENT

MAP: H | LOT: 4-3
NH ROUTE 108 & GRAPEVINE DRIVE
STRAFFORD COUNTY
DOVER, NEW HAMPSHIRE

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MASSACHUSETTS LICENSE NO. 49530
NEVADA LICENSE NO. 27476
COMMONWEALTH OF VIRGINIA NO. 0402057177
RHODE ISLAND LICENSE NO. 9618
MAINE LICENSE NO. 12553

SHEET TITLE:

SOIL EROSION AND SEDIMENT CONTROL PLAN

SHEET NUMBER:

C-801

ORG. DATE - 12/17/2024

NEW HAMPSHIRE EROSION AND SEDIMENT CONTROL NOTES

1. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE DONE AS SET FORTH IN THE MOST CURRENT STATE SEDIMENT AND EROSION CONTROL MANUAL.
2. THOSE AREAS UNDERGOING ACTUAL CONSTRUCTION WILL BE LEFT IN AN UNTREATED OR UNVEGETATED CONDITION FOR A MINIMUM TIME. AREAS SHALL BE PERMANENTLY STABILIZED IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS. AT A MINIMUM, AREAS SHALL BE PERMANENTLY STABILIZED ACCORDING TO THE CURRENT EDITION OF THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP), OR IN THE ABSENCE OF A SWPPP, THEY SHALL BE PERMANENTLY STABILIZED WITHIN 14 DAYS OF FINAL GRADING AND TEMPORARILY STABILIZED WITHIN 30 DAYS OF INITIAL DISTURBANCE OF THE SOIL. IF THE DISTURBANCE IS WITHIN 100 FEET OF A STREAM OR POND, THE AREA SHALL BE STABILIZED WITHIN 7 DAYS OR PRIOR TO ANY STORM EVENT (THIS WOULD INCLUDE WETLANDS).
3. SEDIMENT BARRIERS (SILT FENCE, STRAW BARRIERS, ETC.) SHOULD BE INSTALLED PRIOR TO ANY SOIL DISTURBANCE OF THE CONTRIBUTING DRAINAGE AREA ABOVE THEM. MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL AREAS WITH SLOPES GREATER THAN 8%.
4. INSTALL SILTATION BARRIER AT TOE OF SLOPE TO FILTER SILT FROM RUNOFF. SEE SILTATION BARRIER DETAILS FOR PROPER INSTALLATION. SILTATION BARRIER WILL REMAIN IN PLACE PER NOTE #5.
5. ALL EROSION CONTROL STRUCTURES WILL BE INSPECTED, REPLACED AND/OR REPAIRED EVERY 7 DAYS AND IMMEDIATELY FOLLOWING ANY SIGNIFICANT RAINFALL OR SNOW MELT OR WHEN NO LONGER SERVICEABLE DUE TO SEDIMENT ACCUMULATION OR DECOMPOSITION. SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH STORM EVENT. THEY MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE HALF THE HEIGHT OF THE BARRIER. SEDIMENT CONTROL DEVICES SHALL REMAIN IN PLACE AND BE MAINTAINED BY THE CONTRACTOR UNTIL AREAS UPSLOPE ARE PERMANENTLY STABILIZED. FOR SEDIMENT CONTROL DEVICES THAT ARE WITHIN AREAS SUBJECT TO CONSERVATION COMMISSION JURISDICTION, THE DEVICES SHALL REMAIN IN PLACE AND BE REMOVED IN ACCORDANCE WITH THE ORDER OF CONDITIONS.
6. NO SLOPES, EITHER PERMANENT OR TEMPORARY, SHALL BE STEEPER THAN TWO TO ONE (2:1) UNLESS OTHERWISE INDICATED ON THE PLANS. SLOPE PROTECTION FOR SLOPES GREATER THAN 2:1 SHALL BE DESIGNED BY A GEOTECHNICAL ENGINEER.
7. IF FINAL SEEDING OF THE DISTURBED AREAS IS NOT COMPLETED 45 DAYS PRIOR TO THE FIRST KILLING FROST, USE TEMPORARY MULCH (DORMANT SEEDING MAY BE ATTEMPTED AS WELL) TO PROTECT THE SITE AND DELAY SEEDING UNTIL THE NEXT RECOMMENDED SEEDING PERIOD.
8. TEMPORARY SEEDING OF DISTURBED AREAS THAT HAVE NOT BEEN FINAL GRADED SHALL BE COMPLETED 45 DAYS PRIOR TO THE FIRST KILLING FROST TO PROTECT FROM SPRING RUNOFF PROBLEMS.
9. DURING THE CONSTRUCTION PHASE, INTERCEPTED SEDIMENT SHALL BE REMOVED AND DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL STANDARDS.
10. REVEGETATION MEASURES WILL COMMENCE UPON COMPLETION OF CONSTRUCTION EXCEPT AS NOTED ABOVE. ALL DISTURBED AREAS NOT OTHERWISE STABILIZED WILL BE GRADED, SMOOTHED, AND PREPARED FOR FINAL SEEDING AS FOLLOWS:
    a) SIX INCHES, OR DEPTH SPECIFIED ON THE LANDSCAPE PLAN, OF LOAM WILL BE SPREAD OVER DISTURBED AREAS AND SMOOTHED TO A UNIFORM SURFACE.
    b) APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST. IF SOIL TESTING IS NOT FEASIBLE ON SMALL OR VARIABLE SITES, OR WHERE TIMING IS CRITICAL, FERTILIZER MAY BE APPLIED AT THE RATE OF 800 LB PER ACRE OR 18.4 LB PER 1,000 SF USING 10-20-20 OR EQUIVALENT. APPLY GROUND LIMESTONE (EQUIVALENT TO 50% CALCIUM PLUS MAGNESIUM OXIDE) AT A RATE OF 3 TONS PER ACRE (138 LB PER 1,000 SF).
    c) FOLLOWING SEED BED PREPARATION, DITCHES AND BACK SLOPES WILL BE SEEDED TO A MIXTURE OF 47% CREEPING RED FESCUE, 5% REDTOP, AND 48% TALL FESCUE. THE LAWN AREAS WILL BE SEEDED TO A PREMIUM TURF MIXTURE OF 44% KENTUCKY BLUE-GRASS, 44% CREEPING RED FESCUE, AND 12% PERENNIAL RYEGRASS: SEEDING RATE IS 1.03 LBS PER 1,000 SF LAWN. QUALITY SOD MAY BE SUBSTITUTED FOR SEED WHERE SLOPES DO NOT EXCEED 2:1, SOD ON SLOPES STEEPER THAN 3:1 SHOULD BE PEGGED.
    d) STRAW MULCH AT THE RATE OF 70-90 LBS PER 1,000 SF. A HYDRO-APPLICATION OF WOOD OR PAPER FIBER SHALL BE APPLIED FOLLOWING SEEDING. A SUITABLE NON-TOXIC BINDER WILL BE USED ON STRAW MULCH FOR WIND CONTROL.
11. ALL TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED ONCE THE SITE IS 70% STABILIZED. FOR EROSION CONTROL MEASURES THAT ARE WITHIN AREAS SUBJECT TO CONSERVATION COMMISSION JURISDICTION, THE MEASURES SHALL REMAIN IN PLACE AND BE REMOVED IN ACCORDANCE WITH THE ORDER OF CONDITIONS.
12. WETLANDS WILL BE PROTECTED WITH BARRIERS CONSISTING OF STRAW BALES, COMPOST TUBES, SILT FENCE OR A COMBINATION THEREOF.
13. ALL AREAS WITHIN 100 FEET OF A FLAGGED WETLAND OR STREAM SHALL HAVE AN EXPOSURE WINDOW OF NOT MORE THAN 7 DAYS.
14. ALL AREAS WITHIN 100 FEET OF A FLAGGED WETLAND OR STREAM SHALL FOLLOW APPROPRIATE EROSION CONTROL MEASURES PRIOR TO EACH STORM IF NOT BEING ACTIVELY WORKED:

LOCATION	MULCH	MULCH RATE (1000 SF)
PROTECTED AREA	STRAW	100 POUNDS
WINDY AREA	SHREDDED OR CHOPPED CORNSTALKS	185-275 POUNDS
	STRAW (ANCHORED)*	100 POUNDS
MODERATE TO HIGH VELOCITY AREAS OR STEEP SLOPES GREATER THAN 3:1	JUTE MESH OR EXCELSIOR MAT	AS REQUIRED
GREATER THAN 3:1	(REFER TO GEOTECHNICAL REPORT FOR FINAL DESIGN REQUIREMENT)	

* A HYDRO-APPLICATION OF WOOD OR PAPER FIBER MAY BE APPLIED FOLLOWING SEEDING. A SUITABLE NON-TOXIC BINDER SHALL BE USED TO ADDITIONAL WIND CONTROL.

* MULCH ANCHORING: ANCHOR MULCH WITH PEG AND TWINE (1 SQ. YD/BLOCK); MULCH NETTING (AS PER MANUFACTURER); WOOD CELLULOSE FIBER (750 LBS/ACRE); CHEMICAL TACK (AS PER MANUFACTURER'S SPECIFICATIONS); USE OF A SERRATED STRAIGHT DISK. WETTING FOR SMALL AREAS AND ROAD DITCHES MAY BE PERMITTED.

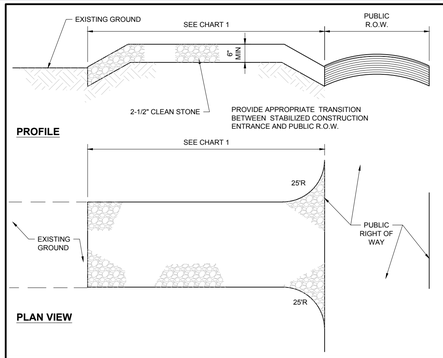
15. PROPOSED LOCATIONS OF SURFACE STORMWATER MANAGEMENT BASINS CAN BE UTILIZED AS A TEMPORARY SEDIMENT TRAP DURING CONSTRUCTION.SEDIMENT TRAPS SHALL BE SIZED AND CONSTRUCTED IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REQUIREMENTS.
    a) TEMPORARY SEDIMENT TRAPS SHALL BE SIZED PER THE CURRENT EDITION OF THE "MASSACHUSETTS EROSION AND SEDIMENT CONTROL GUIDELINES FOR URBAN AND SUBURBAN AREAS" AND PROVIDE A MINIMUM OF 1,800 CF PER ACRE OF TRIBUTARY AREA WITH A MAXIMUM TRIBUTARY AREA OF 5 ACRES, MAINTAIN A 2:1 LENGTH TO WIDTH RATIO, AND NOT EXCEED 5 FT IN HEIGHT. UPON SITE STABILIZATION, ACCUMULATED SEDIMENT SHALL BE REMOVED AND THE TEMPORARY SEDIMENT TRAP EXCAVATED TO 1 FOOT BELOW THE TRAP. THE AREA SHALL THEN BE SCARIFIED TO PREVENT COMPACTION AND PROMOTE INFILTRATION, AND GRADED AND STABILIZED IN ACCORDANCE WITH THE GRADING AND LANDSCAPE PLANS.
16. STOCKPILING OF MATERIALS (DIRT, WOOD, CONSTRUCTION MATERIALS, ETC.) MUST REMAIN COVERED AT ALL TIMES TO MINIMIZE ANY DUST PROBLEMS THAT MAY OCCUR WITH ADJACENT PROPERTIES AND TO PROVIDE MAXIMUM PROTECTION AGAINST EROSION RUNOFF.
17. EXISTING CATCH BASIN STRUCTURES SHALL BE PROTECTED UNTIL SUCH TIME AS THEY ARE REMOVED.
18. THE CONTRACTOR MUST PERFORM DEWATERING (IF REQUIRED), IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN AND PAY FOR THE COSTS ASSOCIATED WITH ANY AND ALL NECESSARY DISCHARGE PERMITS ASSOCIATED WITH SAME.
19. THE CONTRACTOR MUST LOCATE CONSTRUCTION WASTE MATERIAL STORAGE AREAS TO MINIMIZE EXPOSURE TO STORMWATER. THE CONTRACTOR MUST IMMEDIATELY PLACE CONSTRUCTION WASTE IN ON-SITE STORAGE CONTAINERS UNTIL THAT CONSTRUCTION WASTE IS READY FOR OFF-SITE DISPOSAL. THE CONTRACTOR MUST MAINTAIN SPILL PREVENTION AND RESPONSE EQUIPMENT AND MAKE SAME CONTINUOUSLY AVAILABLE ON-SITE FOR USE BY THE CONTRACTOR'S EMPLOYEES WHO MUST BE PROPERLY TRAINED IN THE APPLICATION OF SPILL PREVENTION AND RESPONSE PROCEDURES.
20. EROSION CONTROL NOTES DURING WINTER CONSTRUCTION
21. WINTER CONSTRUCTION PERIOD: NOVEMBER 1 THROUGH APRIL 15.
22. WINTER EXCAVATION AND EARTHWORK SHALL BE DONE SUCH THAT THE AMOUNT OF AREA OPEN AT ONE TIME IS MINIMIZED TO THE MAXIMUM EXTENT PRACTICABLE AND IN CONFORMANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN SUCH THAT ADEQUATE PROVISIONS ARE EMPLOYED TO CONTROL STORMWATER RUNOFF.
23. CONTINUATION OF EARTHWORK OPERATION ON ADDITIONAL AREAS SHALL NOT BEGIN UNTIL THE EXPOSED SOIL SURFACE ON THE AREA BEING WORKED HAS BEEN STABILIZED SUCH THAT NO LARGER AREA OF THE SITE IS WITHOUT EROSION CONTROL PROTECTION AS LISTED IN ITEM 2 ABOVE.
24. AN AREA SHALL BE CONSIDERED TO HAVE BEEN TEMPORARILY STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED WITH STRAW OR STRAW AT A RATE OF 100 LB. PER 1,000 SQUARE FEET (WITH OR WITHOUT SEEDING) OR DORMANT SEEDED, MULCHED AND ADEQUATELY ANCHORED BY AN APPROVED ANCHORING TECHNIQUE.
25. FOR AREAS WHERE CONSTRUCTION ACTIVITIES HAVE CEASED FOR A PERIOD EXCEEDING 14 DAYS BETWEEN THE DATES OF NOVEMBER 1ST AND APRIL 1ST, LOAM OR SEED WILL NOT BE REQUIRED. THE SLOPES SHALL BE FINE GRADED AND EITHER PROTECTED WITH MULCH OR TEMPORARILY SEEDED. IF THE EXPOSED AREA HAS BEEN LOAMED, FINAL GRADED AND IS SMOOTH, THEN THE AREA MAY BE DORMANT SEEDED AT A RATE OF 200-300% HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED AS APPLICABLE. SLOPES SHALL NOT BE LEFT UNSTABILIZED OVER THE WINTER OR IN AREAS WHERE WORK HAS CEASED FOR MORE THAN 14 DAYS UNLESS TREATED IN THE ABOVE MANNER. UNTIL SUCH TIME AS WEATHER CONDITIONS ALLOW DITCHES TO BE FINISHED WITH THE PERMANENT SURFACE TREATMENT, EROSION SHALL BE CONTROLLED BY THE INSTALLATION OF SEDIMENT BARRIERS OR STONE CHECK DAMS IN ACCORDANCE WITH THE STANDARD DETAILS.
26. MULCHING REQUIREMENTS:
    a) BETWEEN THE DATES OF NOVEMBER 1ST AND APRIL 15TH ALL MULCH SHALL BE ANCHORED BY EITHER PEG LINE, MULCH NETTING OR WOOD CELLULOSE FIBER.
    b) MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL DRAINAGE WAYS WITH A SLOPE GREATER THAN 3% FOR SLOPE EXPOSED TO DIRECT WINDS AND FOR ALL OTHER SLOPES GREATER THAN 8%.
    c) MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL AREAS WITH SLOPES GREATER THAN 15%. AFTER OCTOBER 1ST THE SAME APPLIES FOR ALL SLOPES GREATER THAN 8%.
27. ALL DISTURBED AREAS SHALL BE STABILIZED IN ACCORDANCE WITH THE STORMWATER PREVENTION PLAN.
28. DURING THE WINTER CONSTRUCTION PERIOD ALL SNOW SHALL BE REMOVED FROM AREAS OF SEEDING AND MULCHING PRIOR TO PLACEMENT.

GENERAL EROSION AND SEDIMENT CONTROL NOTES

1. THE GENERAL NOTES MUST BE INCLUDED AS PART OF THIS ENTIRE DOCUMENT PACKAGE AND ARE PART OF THE CONTRACT DOCUMENTS. THE GENERAL NOTES ARE REFERENCED HEREIN, AND THE CONTRACTOR MUST REFER TO THEM AND FULLY COMPLY WITH THESE NOTES, IN THEIR ENTIRETY. THE CONTRACTOR MUST BE FAMILIAR WITH AND ACKNOWLEDGE FAMILIARITY WITH ALL OF THE GENERAL NOTES AND ALL OF THE PLANS' SPECIFIC NOTES.
2. EROSION CONTROL MEASURES MUST CONFORM TO THE STATE, LOCAL, AND FEDERAL GUIDELINES FOR URBAN EROSION AND SEDIMENT CONTROL UNLESS OTHERWISE NOTED, OR UNLESS THE PROFESSIONAL OF RECORD CLEARLY AND SPECIFICALLY, IN WRITING, DIRECTS OTHERWISE. INSTALLATION OF EROSION CONTROL, CLEARING, AND SITE WORK MUST BE PERFORMED EXACTLY AS INDICATED IN THE EROSION CONTROL CONSTRUCTION NOTES.
3. THE DISTURBED LAND AREA OF THIS SITE IS APPROXIMATELY 1.76 ACRES.
4. THE FOLLOWING EROSION CONTROL MEASURES ARE PROPOSED FOR THIS SITE:
    a) STABILIZED CONSTRUCTION ENTRANCE/ EXIT - A TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT IS TO BE INSTALLED AT THE DESIGNATED LOCATION SHOWN ON THE PLAN. THIS AREA MUST BE GRADED SO THAT RUNOFF WATER WILL BE RETAINED ON-SITE.
    b) SEDIMENT FENCE - INSTALL SILT FENCE(S) AND/OR SILT SOCK AROUND ALL OF THE DOWNSLOPE PERIMETERS OF THE SITE, TEMPORARY FILL AND SOIL STOCKPILES.
    c) INSTALL FILTER FABRIC DROP INLET PROTECTION AROUND EACH DRAINAGE INLET AS DRAINAGE STRUCTURES ARE INSTALLED TO REDUCE THE QUANTITY OF SEDIMENT. INSTALL TEMPORARY INLET PROTECTION ON INLETS DOWNSLOPE FROM DISTURBANCE, WHICH MAY BE BEYOND THE LIMITS OF DISTURBED AREA.
5. INSTALLATION OF EROSION CONTROL DEVICES MUST BE IN ACCORDANCE WITH ALL OF THE MANUFACTURER'S RECOMMENDATIONS.
6. THE CONTRACTOR MUST INSPECT EROSION CONTROL MEASURES WEEKLY. THE CONTRACTOR MUST REMOVE ANY SILT DEPOSITS GREATER THAN 6 INCHES OR HALF THE EROSION CONTROL BARRIER'S HEIGHT COLLECTED ON THE FILTER FABRIC AND/OR SILT SOCK BARRIERS AND EXCAVATE AND REMOVE ANY SILT FROM DROP INLET PROTECTION.
7. THE CONTRACTOR MUST APPLY TEMPORARY SEED AND MULCH TO ALL DISTURBED AREAS THAT WILL NOT BE BROUGHT TO FINISHED GRADE AND VEGETATED WITHIN 7 DAYS. WHEN AREAS ARE DISTURBED AFTER THE GROWING SEASON, THE CONTRACTOR MUST STABILIZE SAME WITH GEOTEXTILE FABRIC AND MAINTAIN SAME IN STRICT ACCORDANCE WITH BEST MANAGEMENT PRACTICES.
8. THE CONTRACTOR MUST INSTALL ADDITIONAL EROSION CONTROL MEASURES IF THE PROFESSIONAL OF RECORD SO REQUIRES, TO PREVENT ANY, INCLUDING THE INCIDENTAL, DISCHARGE OF SILT-LADEN RUNOFF FROM EXITING THE SITE.
9. THE CONTRACTOR MUST BE RESPONSIBLE FOR INSPECTING AND MAINTAINING ALL EROSION CONTROL MEASURES ON THE SITE UNTIL PERMANENT PAVING AND TURF/LANDSCAPING IS ESTABLISHED. THE COSTS OF INSTALLING AND MAINTAINING THE EROSION CONTROL MEASURES MUST BE INCLUDED IN THE BID PRICE FOR THE SITE WORK AND THE CONTRACTOR IS RESPONSIBLE FOR ALL SUCH COSTS.
10. THE CONTRACTOR MUST CONTINUE TO MAINTAIN ALL EROSION CONTROL MEASURES UNTIL THE COMPLETION OF CONSTRUCTION AND THE ESTABLISHMENT OF VEGETATION.
11. THE CONTRACTOR MUST REMOVE EROSION CONTROL MEASURES, SILT AND DEBRIS AFTER ESTABLISHING PERMANENT VEGETATION COVER OR OTHER INSTALLING A DIFFERENT, SPECIFIED METHOD OF STABILIZATION.
12. THIS PLAN REPRESENTS THE MINIMUM LEVEL OF IMPLEMENTATION OF TEMPORARY EROSION AND SEDIMENTATION CONTROL FACILITIES, MEASURES AND STRUCTURES. ADDITIONAL FACILITIES, MEASURES AND STRUCTURES MUST BE INSTALLED WHERE NECESSARY TO COMPLY WITH ALL APPLICABLE CODES AND STANDARDS AND/OR TO PREVENT ANY, INCLUDING THE INCIDENTAL DISCHARGE OF SILT-LADEN RUNOFF FROM EXITING THE SITE.
13. THE CONTRACTOR MUST PROTECT ALL EXISTING TREES AND SHRUBS. THE CONTRACTOR MUST REFER TO THE LANDSCAPE AND/OR DEMOLITION PLAN(S) FOR TREE PROTECTION, FENCE LOCATIONS AND DETAILS.
14. THE CONTRACTOR MUST REFER TO GRADING PLANS FOR ADDITIONAL INFORMATION.
15. THE CONTRACTOR MUST CLEAN EXISTING AND PROPOSED DRAINAGE STRUCTURES AND INTERCONNECTING PIPES ON OR OFF-SITE AS THE JURISDICTIONAL AGENCY REQUIRES, BOTH AT THE TIME OF SITE STABILIZATION AND AT END OF PROJECT.
16. SOIL EROSION CONTROL MEASURES MUST BE ADJUSTED OR RELOCATED BY THE CONTRACTOR AS IDENTIFIED DURING SITE OBSERVATION IN ORDER TO MAINTAIN THE COMPLETE EFFECTIVENESS OF ALL CONTROL MEASURES.
17. THE CONTRACTOR MUST IDENTIFY, ON THE PLAN, THE LOCATION OF WASTE CONTAINERS, FUEL STORAGE TANKS, CONCRETE WASHOUT AREAS AND ANY OTHER LOCATIONS WHERE HAZARDOUS MATERIALS ARE STORED.

THE FOLLOWING CONSTRUCTION SEQUENCE IS RECOMMENDED:

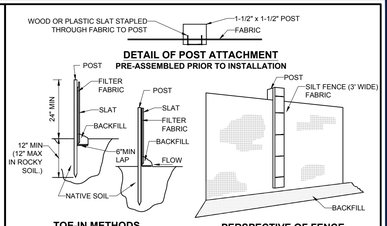
- INSTALLATION OF STABILIZED CONSTRUCTION ENTRANCE/EXIT (AS SHOWN)
- INSTALLATION OF EROSION CONTROL BARRIER (STRAW BALES AND SILT FENCE) (AS SHOWN)
- INSTALLATION OF INLET PROTECTION IN STREET (AS SHOWN)
- DEMOLITION OF EXISTING SITE STRUCTURES (SEE DEMOLITION PLAN)
- DEMOLITION OF EXISTING SITE PAVEMENT AND AMENITIES (SEE DEMOLITION PLAN)
- CLEARING AND GRUBBING
- EARTHWORK AND EXCAVATION/FILLING AS NECESSARY
- CONSTRUCTION OF UTILITIES
- STABILIZE PERMANENT LAWN AREAS AND SLOPES WITH TEMPORARY SEEDING
- INSTALLATION OF INLET PROTECTION OF ON-SITE UTILITIES (AS SHOWN)
- CONSTRUCTION OF BUILDINGS
- CONSTRUCTION OF ALL CURBING AND LANDSCAPE ISLANDS AS INDICATED ON THE PLANS
- SPREAD TOPSOIL ON SLOPED AREAS AND SEED AND MULCH
- FINAL GRADING OF ALL SLOPED AREAS
- PLACE 6" TOPSOIL ON SLOPES AFTER FINAL GRADING COMPLETED. FERTILIZE, SEED, AND MULCH SEED MIXTURE TO BE INSTALLED AS REQUIRED.
- PAVE PARKING LOT
- LANDSCAPING PER LANDSCAPING PLAN
- REMOVE EROSION CONTROLS AS DISTURBED AREAS BECOME STABILIZED TO 70% STABILIZATION OR GREATER



PERCENT SLOPE OF ROADWAY	LENGTH OF STONE REQUIRED	
	COARSE GRAINED SOILS	FINE GRAINED SOILS
0 TO 2%	50 FT	100 FT
2% TO 5%	100 FT	200FT
>5%	ENTIRE ENTRANCE STABILIZED WITH FABC BASE COURSE (1)	

(1) AS PRESCRIBED BY LOCAL ORDINANCE OR OTHER GOVERNING AUTHORITY.

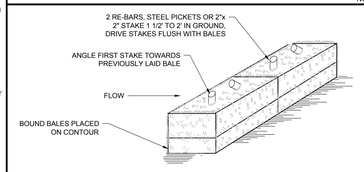
CHART 1



NOTES:
1. EXCAVATE A 6"x6" TRENCH ALONG THE LINE OF EROSION CONTROL OF THE SITE.
2. UNROLL SILTATION FENCE AND POSITION THE POSTS AGAINST THE BACK (DOWNSTREAM) WALL OF THE TRENCH (NOT SIDE WAY FROM FLOW DIRECTION).
3. DRIVE THE POST INTO THE GROUND UNTIL THE NETTING IS LAYING ACROSS THE TRENCH BOTTOM.
4. LAY THE TOE-IN FLAP OF THE FABRIC ONTO THE UNDISTURBED BOTTOM OF THE TRENCH, BACKFILL ALSO BE ACCOMPLISHED BY LAYING FABRIC FLAP ON UNDISTURBED GROUND AND PILING & TAMPING FILL AT THE BASE.

STABILIZED CONSTRUCTION ENTRANCE

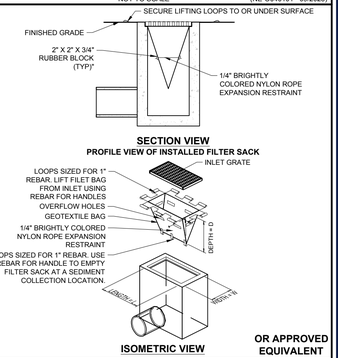
NOT TO SCALE (NE-O020101 - 09/2023)



NOTES:
1. BALES SHALL BE PLACED AT THE TOP OF A SLOPE OR ON THE CONTOUR AND IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE PLACED SO THE BINDINGS ARE HORIZONTAL.
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY EITHER TWO STAKES OR RE-BARS DRIVEN THROUGH THE BALE. THE FIRST STAKE IN EACH BALE SHALL BE DRIVEN TOWARD THE PREVIOUSLY LAID BALE AT AN ANGLE TO FORCE THE BALES TOGETHER. STAKES SHALL BE DRIVEN FLUSH WITH THE BALE.
4. INSPECTION SHALL BE FREQUENT AND REPAIR REPLACEMENT SHALL BE PROMPTLY AS NEEDED.
5. DRAINAGE AREA NO MORE THAN ¼ AC. PER 100 FEET OF STRAW BALE DIKE FOR SLOPES LESS THAN 25%.
6. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

SILT FENCE

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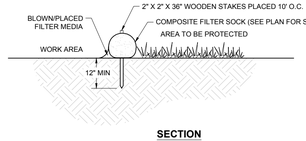
OR APPROVED EQUIVALENT

LOW TO MODERATE FLOW GEOTEXTILE FABRIC SPECIFICATION TABLE		
PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	300 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20%
PUNCTURE	ASTM D-4833	120 LBS
MULLEN BURST	ASTM D-3786	800 PSI
TRAPEZOID TEAR	ASTM D-4533	120 LBS
UV RESISTANCE	ASTM D-4355	90%
APPARENT OPENING SIZE	ASTM D-4751	40 US SIEVE
FLOW RATE	ASTM D-4491	40 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	0.55 SEC-1
MODERATE TO HIGH FLOW GEOTEXTILE FABRIC SPECIFICATION TABLE		
PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	265 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20%
PUNCTURE	ASTM D-4833	130 LBS
MULLEN BURST	ASTM D-3786	420 PSI
TRAPEZOID TEAR	ASTM D-4533	45 LBS
UV RESISTANCE	ASTM D-4355	90%
APPARENT OPENING SIZE	ASTM D-4751	20 US SIEVE
FLOW RATE	ASTM D-4491	200 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	1.5 SEC-1

NOTES:
1. REMOVE TRAPPED SEDIMENT WHEN BRIGHTLY COLORED EXPANSION RESTRAINT CAN NO LONGER BE SEEN.
2. GEOTEXTILE SHALL BE A WOVEN POLYPROPYLENE FABRIC THAT MEETS OR EXCEEDS REQUIREMENTS IN THE SPECIFICATIONS TABLE.
3. PLACE AN OIL ADSORBENT PAD OR PILLOW OVER INLET GRATE WHEN OIL SPILLS ARE A CONCERN.
4. INSPECT PER REGULATORY REQUIREMENTS.
5. THE WIDTH, "W", OF THE FILTER SACK SHALL MATCH THE INSIDE WIDTH OF THE GRATED INLET BOX.
6. THE DEPTH, "D", OF THE FILTER SACK SHALL BE BETWEEN 18 INCHES AND 36 INCHES.
7. THE LENGTH, "L", OF THE FILTER SACK SHALL MATCH THE INSIDE LENGTH OF THE GRATED INLET BOX.

STRAW BALE BARRIER

NOT TO SCALE (NE-O030302 - 09/2023)



NOTES:
1. ALL MATERIAL TO MEET MANUFACTURER SPECIFICATIONS
2. COMPOST FILTER SOCK FILL TO MEET APPLICATION REQUIREMENTS.
3. COMPOST MATERIAL TO BE DISPERSED ON SITE AT COMPLETION OF CONSTRUCTION OR AS DIRECTED BY OWNER AFTER STABILIZATION IS ACHIEVED.

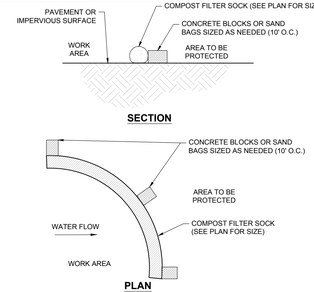
OR APPROVED EQUIVALENT

COMPOST FILTER SOCK

NOT TO SCALE (NE-O040201 - 09/2023)

INLET PROTECTION WITH MANUFACTURED INSERT

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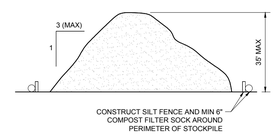


NOTES:
1. ALL MATERIAL TO MEET MANUFACTURER SPECIFICATIONS.
2. FILTER MEDIA TO MEET APPLICATION REQUIREMENTS.
3. FILTER MEDIA TO BE DISPERSED ON SITE AT COMPLETION OF CONSTRUCTION AFTER STABILIZATION IS ACHIEVED. AS DETERMINED BY ENGINEER IN OWNER

OR APPROVED EQUIVALENT

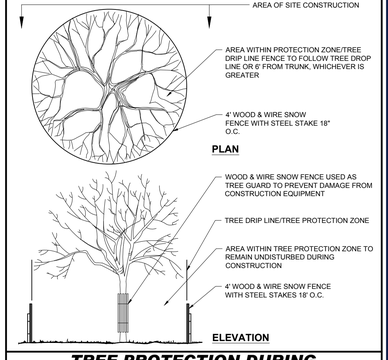
COMPOST FILTER SOCK IN PAVED CONDITION

NOT TO SCALE (NE-O040202 - 09/2023)



TEMPORARY STOCK PILE WITH SILT FENCE AND FILTER SOCK

NOT TO SCALE (NE-O060102 - 09/2023)



TREE PROTECTION DURING SITE CONSTRUCTION

NOT TO SCALE (NE-O030201 - 09/2023)

BOHLER
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
ENVIRONMENTAL SERVICES
PERMITTING SERVICES
TRANSPORTATION SERVICES
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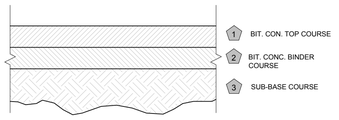
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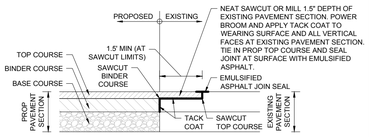
PROJECT NO.:	MAA240177.00-0C
DRAWN BY:	JDG
CHECKED BY:



1. BIT. CON. TOP COURSE (LIGHT DUTY=1.5") (NHDOT "WEARING COURSE")
2. BIT. CONC. BINDER COURSE (LIGHT DUTY=1.5") (NHDOT "BINDER COURSE")
3. GRANULAR SUB-BASE COURSE (LIGHT DUTY=12") (NHDOT 304.3 CRUSHED GRAVEL)

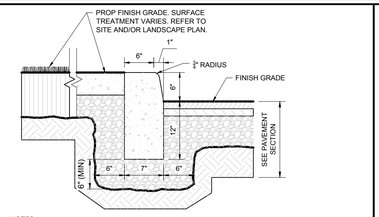
NOTES:
1. PAVEMENT BASE AND SUBBASE COURSES TO CONFORM TO STATE DEPARTMENT OF TRANSPORTATION.
2. GC TO REFER TO GEOTECHNICAL REPORT FOR PAVEMENT SPECIFICATIONS.

PAVEMENT SECTION
NOT TO SCALE (NE-S010101 - 09/2024) MOD



NOTES:
1. REFER TO GEOTECHNICAL REPORT PREPARED BY WHITESTONE ASSOCIATES, INC. AND DATED 06/11/2024

BITUMINOUS CONCRETE PAVEMENT TIE IN
NOT TO SCALE (NE-S010501 - 08/2024)



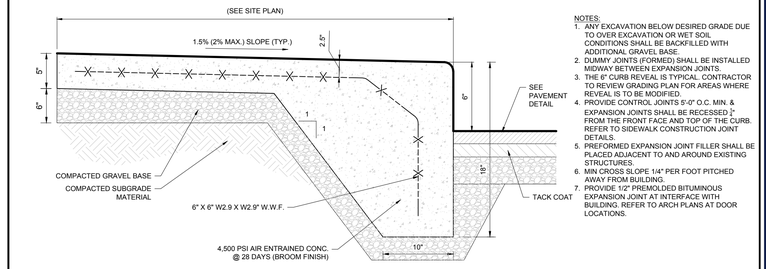
NOTES:
1. CURB SHALL CONSIST OF 4,000 PSI AIR ENTRAINED CONCRETE, EXPOSED EDGES TO HAVE RUBBED FINISH, AND SURFACE SHALL BE TREATED WITH A CONCRETE PENETRANT/SEALER.
2. THE ENDS OF CURB SECTIONS SHALL BE CHAMFERED 1/4 INCH.
3. THE CORNERS OF CURB SECTIONS SHALL MATCH THE ADJACENT CURB IN SIZE, COLOR AND FINISH.
4. CURBS, CURB CORNERS OR EDGING SHALL BE FITTED TOGETHER AS CLOSELY AS POSSIBLE.
5. EXPANSION JOINTS SHALL BE INSTALLED AT A MAXIMUM OF TWENTY FEET (20') ON CENTER USING PREFORMED EXPANSION JOINT FILLER HAVING A THICKNESS OF ¼ INCH.
6. PAVEMENT SECTION DEPTHS, MATERIAL, AND SPECIFICATIONS PER PAVEMENT SECTION DETAIL.
7. STRAIGHT CURB SECTIONS CAN BE USED FOR RADII 25' OR LESS. OTHERWISE, CURVED CURB LENGTHS SHALL BE INSTALLED AT THE SPECIFIED RADIUS PER THE SITE PLAN.

PRECAST CONCRETE CURB
NOT TO SCALE (NE-S020201 - 06/2024)



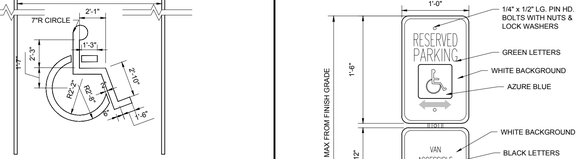
NOTES:
1. SEE TYPICAL CURB DETAIL AND SITE PLAN FOR CURB TYPE AND TRANSITION CURB LOCATIONS
2. BOTH TOP AND FACE OF CURB TO BE PAINTED YELLOW

PRECAST CONCRETE TRANSITION CURB
NOT TO SCALE (NE-S020206 - 09/2023) MOD



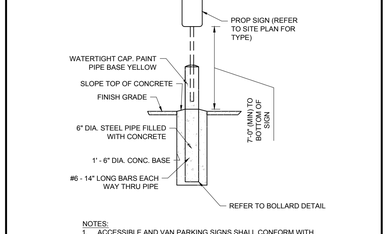
NOTES:
1. ANY EXCAVATION BELOW DESIRED GRADE DUE TO OVER EXCAVATION OR WET SOIL CONDITIONS SHALL BE BACKFILLED WITH ADDITIONAL GRAVEL BASE.
2. DUMMY JOINTS (FORMED) SHALL BE INSTALLED MIDWAY BETWEEN EXPANSION JOINTS.
3. THE 6" CURB REVEAL IS TYPICAL. CONTRACTOR TO REVIEW GRADING PLAN FOR AREAS WHERE REVEAL IS TO BE MODIFIED.
4. PROVIDE CONTROL JOINTS 5'-0" O.C. MIN. & EXPANSION JOINTS SHALL BE RECESSED ½" FROM THE FRONT FACE AND TOP OF THE CURB. REFER TO SIDEWALK CONSTRUCTION JOINT DETAILS.
5. PREFORMED EXPANSION JOINT FILLER SHALL BE PLACED ADJACENT TO AND AROUND EXISTING STRUCTURES.
6. MIN CROSS SLOPE 1/4" PER FOOT PITCHED AWAY FROM BUILDING.
7. PROVIDE 1/2" PREMOLDED BITUMINOUS EXPANSION JOINT AT INTERFACE WITH BUILDING. REFER TO ARCH PLANS AT DOOR LOCATIONS.

MONOLITHIC CURB AND SIDEWALK
NOT TO SCALE (BE-S030201 - 06/2024)



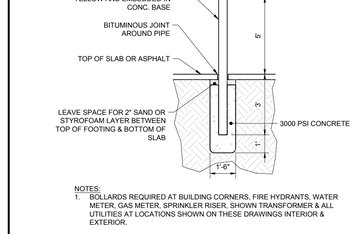
NOTE: FINAL PAVEMENT SPECIFICATIONS TO BE COORDINATED WITH GEOTECHNICAL REPORT RECOMMENDATIONS. McDONALD'S ENGINEER RESERVES THE RIGHT TO REQUEST A COMPACTION TEST AND/OR A CORE SAMPLE. IF TESTS PROVE CORRECT, PER ABOVE SPECIFICATION, TESTS WILL BE AT THE EXPENSE OF McDONALD'S, OTHERWISE, G.C. WILL BE CHARGED.

CONCRETE & BITUMINOUS CONCRETE PAVING
NOT TO SCALE

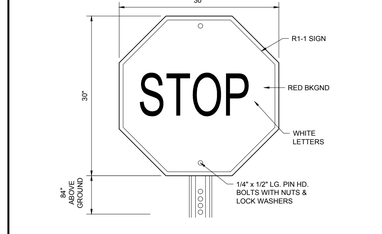


NOTES:
1. REFER TO SITE PLAN FOR LOCATIONS.
2. NOT FOR USE IN A PUBLIC RIGHT OF WAY. CURBING WITHIN RIGHT OF WAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARDS AND SPECIFICATIONS OF THE APPLICABLE CONTROLLING AUTHORITY (E.G. DPW, DOT, ETC.)

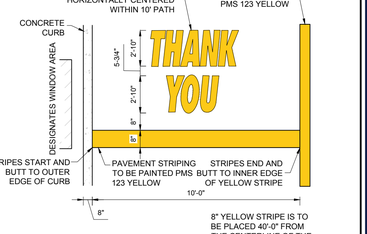
VERTICAL GRANITE CURB (ONSITE)
NOT TO SCALE (NE-S020301 - 09/2024)



SIDEWALK CONSTRUCTION JOINTS
NOT TO SCALE (BE-S030401 - 08/2023)



ACCESSIBLE RAMP TYPE B
NOT TO SCALE (NE-S030205 - 09/2023)



STALL STRIPING
NOT TO SCALE

LOCATE AT EDGE OF PARKING SPACE UNLESS ACCOMPANIED BY "VAN" LETTERING

NOTES:
1. LOCATE AT EDGE OF PARKING SPACE UNLESS ACCOMPANIED BY "VAN" LETTERING.
2. DIMENSIONS PER FIGURE 3B-22 PER LATEST EDITION OF MUTCD.
3. ACCESSIBLE PARKING SYMBOL TO CONFORM TO THE STRIPING PAINT SPECIFIED AND SHALL BE CENTERED IN THE STALL.

ACCESSIBLE PARKING SYMBOL
NOT TO SCALE (NE-S050102 - 09/2023)

NOTE:
1. REFER TO "ACCESSIBILITY NOTES" PROVIDED HEREIN FOR ADDITIONAL REQUIREMENTS AND SPECIFICATIONS.
2. THE LAYOUT AND NUMBER OF PARKING SPACES VARIES. REFER TO PLAN FOR LOCATION AND CONFIGURATION.
3. STALL DIMENSIONS ARE MEASURED TO THE CENTERLINE OF THE PAINTED STRIPE.
4. ACCESS AISLES CAN NOT OVERLAP VEHICULAR WAYS.

ADA PARKING STALL MARKING - ANGLED LEFT
NOT TO SCALE (BE-S050101 - 05/2024) MOD

NOTES:
1. ALL PAVEMENT STRIPING AND MARKINGS SHALL CONSIST OF CHLORINATED RUBBER PAINT APPLIED, OR APPROVED EQUIVALENT, IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS. PAINT SHALL BE APPLIED AT A MINIMUM OF 0.015" (.15 MIL) FILM THICKNESS.

STOP BAR
NOT TO SCALE (NE-S050301 - 09/2024)

NOTES:
1. ALL TRAFFIC FLOW ARROWS TO BE REFLECTIVE WHITE PAINT PER SPECS.

TRAFFIC FLOW ARROW
NOT TO SCALE (NE-S050302 - 09/2023)

MEETS NO STATE OR FEDERAL DESIGN STANDARDS.

SINGLE / DOUBLE HEADED ARROW
NOT TO SCALE (2024-05-01)

PAINTED TRAFFIC ARROWS AND LETTERS
NOT TO SCALE (2024-05-01)

NOTES:
1. ACCESSIBLE SYMBOL PAINT SHALL CONFORM TO THE STRIPING PAINT SPECIFIED AND SYMBOL SHALL BE CENTERED IN THE STALL
2. 12"x18", 5' TO BOTTOM OF SYMBOL
3. LOCATED SO THAT IT CANNOT BE OBSCURED BY A CAR PARKED IN THE SPACE (2' BEHIND CURB OR 2' BEHIND WALK, AS APPLICABLE)
4. CONFORM TO LOCAL CODES

ACCESSIBLE PARKING SYMBOL WITH DIMENSIONS
NOT TO SCALE (NE-S050103 - 09/2023)

ACCESSIBLE PARKING SIGNS
NOT TO SCALE (NE-S060101 - 09/2023)

NOTES:
1. ACCESSIBLE AND VAN PARKING SIGNS SHALL CONFORM WITH CURRENT FEDERAL, STATE, AND LOCAL CODES AND REGULATIONS.

SIGN ON BOLLARD
NOT TO SCALE (NE-S060201 - 09/2023)

NOTES:
1. BOLLARDS REQUIRED AT BUILDING CORNERS, FIRE HYDRANTS, WATER METER, GAS METER, SPRINKLER RISER, SHOWN TRANSFORMER & ALL UTILITIES AT LOCATIONS SHOWN ON THESE DRAWINGS INTERIOR & EXTERIOR.

BOLLARD
NOT TO SCALE (NE-S070101 - 09/2023)

STOP SIGN
NOT TO SCALE (NE-S060202 - 09/2023)

"THANK YOU" LETTERS
NOT TO SCALE (2024-05-01)

P:\2024\MAA240177.00\CAD\DRAWINGS\PLAN SETS\CIVIL SITE PLANS\P-CIVL-CNDS-MAA240177.00-0C-----LAYOUT: C-901 DETL

BOHLER
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
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REV	DATE	COMMENT	DRAWN BY / CHECKED BY

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PROJECT No.:	MAA240177.00-0C
DRAWN BY:	JDG
CHECKED BY:	CSE
DATE:	12/17/2024
CAD I.D.:	P-CIVL-CNDS

PROJECT:

PROPOSED SITE PLAN DOCUMENTS

FOR

SITE ID #: 28-0178

PROPOSED DEVELOPMENT

MAP: H | LOT: 4-3
NH ROUTE 108 & GRAPEVINE DRIVE
STRAFFORD COUNTY
DOVER, NEW HAMPSHIRE

BOHLER
352 TURNPIKE ROAD, 3rd FLOOR
SOUTHBOROUGH, MA 01772
Phone: (508) 480-9900
www.BohlerEngineering.com

J.A. KUCICH — NEW HAMPSHIRE — 14918 — PROFESSIONAL ENGINEER — 12/17/2024

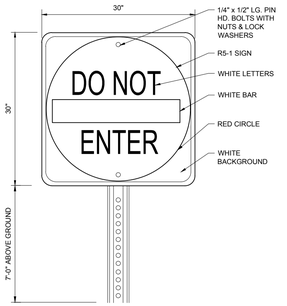
SHEET TITLE:

CONSTRUCTION DETAILS

SHEET NUMBER:

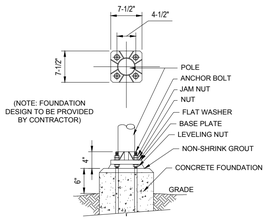
C-901

ORG. DATE - 12/17/2024



DO NOT ENTER SIGN

NOT TO SCALE (NE-S060203 - 09/2023)



FLAG POLE BASE

NOT TO SCALE



FLAG POLES

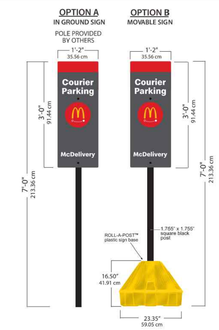
NOT TO SCALE (2024-05-01)



TOTAL AREA = 32.8 SF

NEXT GEN 24 IN WORDMARK

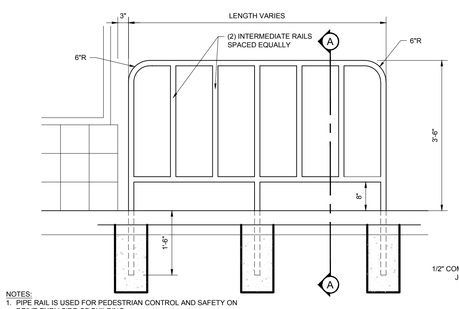
NOT TO SCALE (2024-05-01)

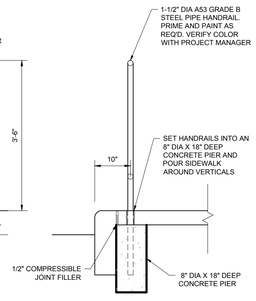


TOTAL AREA = 3.5 SF/EA

COURIER PARKING AND MCDELIVERY SIGN

NOT TO SCALE (2024-05-01)



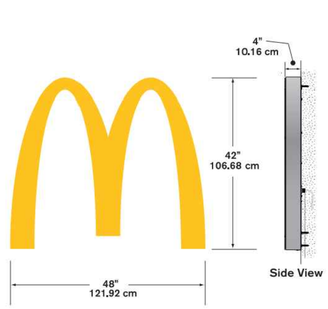


SECTION A-A

NOTES:
1. PIPE RAIL IS USED FOR PEDESTRIAN CONTROL AND SAFETY ON DRIVE-THRU SIDE OF BUILDING.
2. CONTRACTOR TO COORDINATE WITH ACM AND OWNER/OPERATOR FOR ACTUAL MATERIAL AND DESIGN PRIOR TO ORDERING

RAILING DETAIL AND SECTION

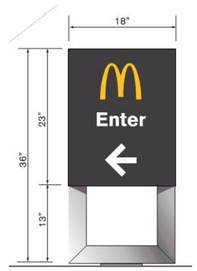
NOT TO SCALE (2024-09-27)



TOTAL AREA = 14 SF

42IN NEXT GEN ILLUMINATED BUILDING ARCH LED

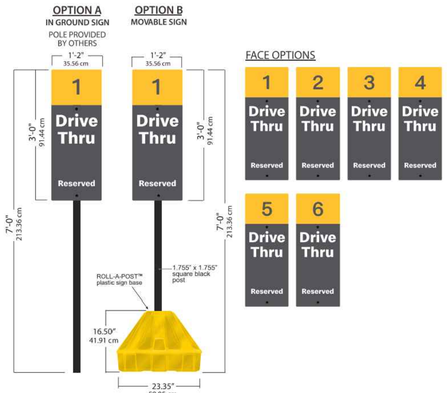
NOT TO SCALE (2024-05-01)



TOTAL AREA = 3 SF

NEXT GEN 3 SF 36 IN DIRECTIONAL BRANDED

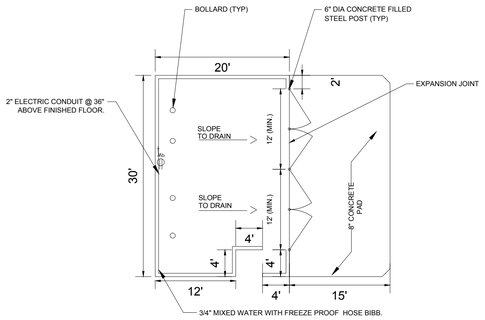
NOT TO SCALE (2024-05-01)



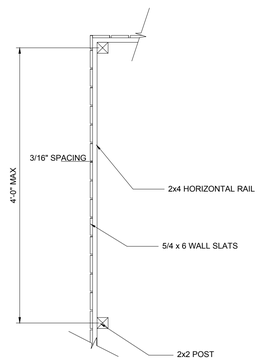
TOTAL AREA = 3.5 SF/EA

DRIVE THRU RESERVED SIGN

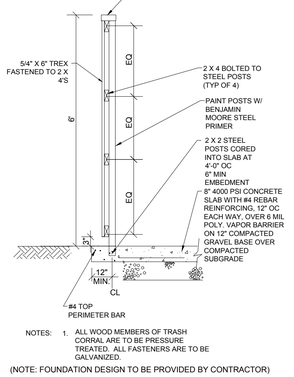
NOT TO SCALE (2024-05-01)



TRASH ENCLOSURE LAYOUT (20'x30')



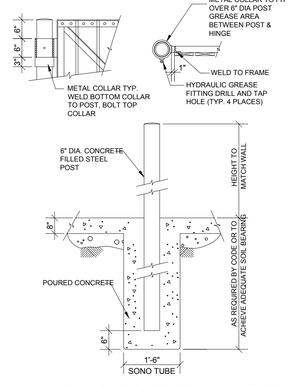
TRASH ENCLOSURE TYP PLAN ELEV



NOTES: 1. ALL WOOD MEMBERS OF TRASH CORRAL ARE TO BE PRESSURE TREATED. ALL FASTENERS ARE TO BE GALVANIZED.

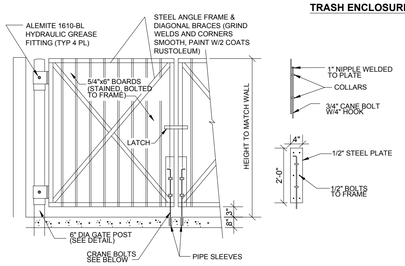
(NOTE: FOUNDATION DESIGN TO BE PROVIDED BY CONTRACTOR)

TRASH ENCLOSURE WALL SECTION

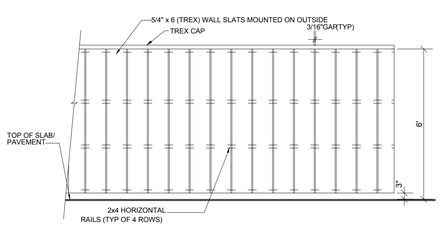


(NOTE: FOUNDATION DESIGN TO BE PROVIDED BY CONTRACTOR)

TRASH ENCLOSURE GATE POST DETAILS



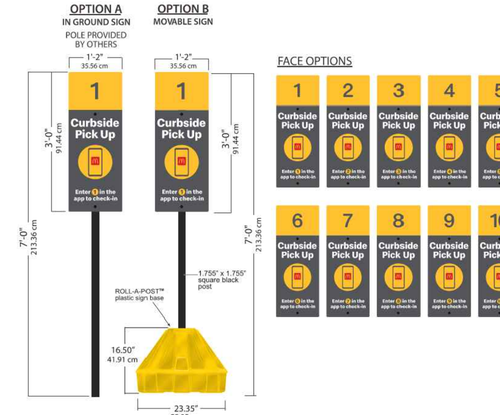
TRASH ENCLOSURE GATE & MOUNTING



TRASH ENCLOSURE TYPICAL ELEVATION

20' X 30' TREX TRASH ENCLOSURE

NOT TO SCALE (2024-09-27)



TOTAL AREA = 3.5 SF/EA

CURBSIDE PICK UP SIGN

NOT TO SCALE (2024-05-01)

BOHLER
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
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DRAWN BY:	JDG
CHECKED BY:	CSE
DATE:	12/17/2024
CAD I.D.:	P-CIVL-CNDS

PROJECT:

PROPOSED SITE PLAN DOCUMENTS

FOR

SITE ID #: 28-0178

PROPOSED DEVELOPMENT

MAP: H | LOT: 4-3
NH ROUTE 108 & GRAPEVINE DRIVE
STRAFFORD COUNTY
DOVER, NEW HAMPSHIRE

BOHLER
352 TURNPIKE ROAD, 3rd FLOOR
SOUTHBOROUGH, MA 01772
Phone: (508) 480-9900
www.BohlerEngineering.com

J. A. KUCICH — PROFESSIONAL ENGINEER — MASSACHUSETTS, NEW HAMPSHIRE, CONNECTICUT, RHODE ISLAND, MAINE

SHEET TITLE:

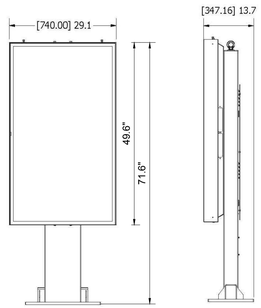
CONSTRUCTION DETAILS

SHEET NUMBER:

C-902

ORG. DATE - 12/17/2024

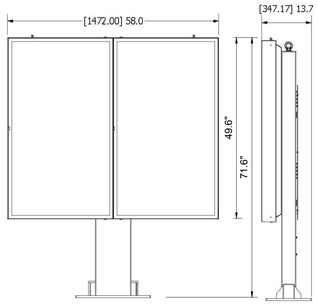
P:\2024\MAA240177.00\CAD\DRAWINGS\PLAN SETS\CIVIL SITE PLANS\P-CIVL-CNDS-MAA240177.00-0C---1A LAYOUT, C-902 DETL
ACE



TOTAL AREA = 10 SF

PRE-BROWSE OUTDOOR DISPLAY MENU BOARD

NOT TO SCALE (2024-05-01)

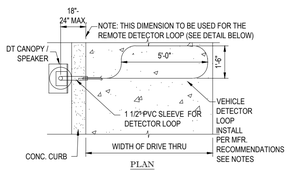


TOTAL AREA = 20 SF

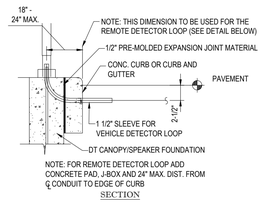
DOUBLE OUTDOOR DISPLAY MENU BOARD

NOT TO SCALE (2024-05-01)

SEE DRIVE THRU CONCRETE PAD DETAIL FOR DIMENSIONS OF DRIVE-THRU LANE CONCRETE PAD FOR DETECTOR LOOP.
NOTE: NO STEEL IS TO BE USED IN CONCRETE.



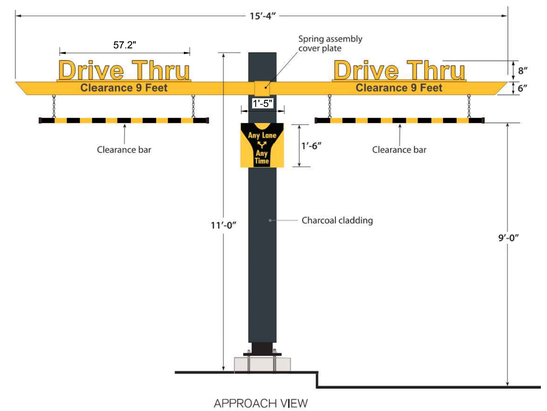
PLAN



SECTION

AUTO DETECTOR LOOP DETAIL

NOT TO SCALE

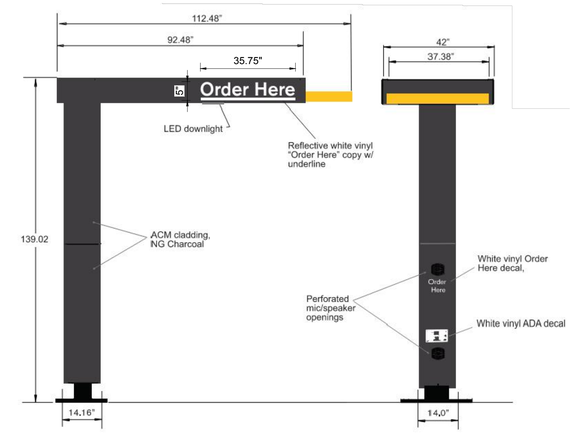


APPROACH VIEW

TOTAL AREA = 8.4 SF

DOUBLE WELCOME POINT GATEWAY

NOT TO SCALE (2024-05-01)



TOTAL AREA = 1.2 SF

SLIM SPRINGBOARD CANOPY - YELLOW

NOT TO SCALE (2024-05-01)

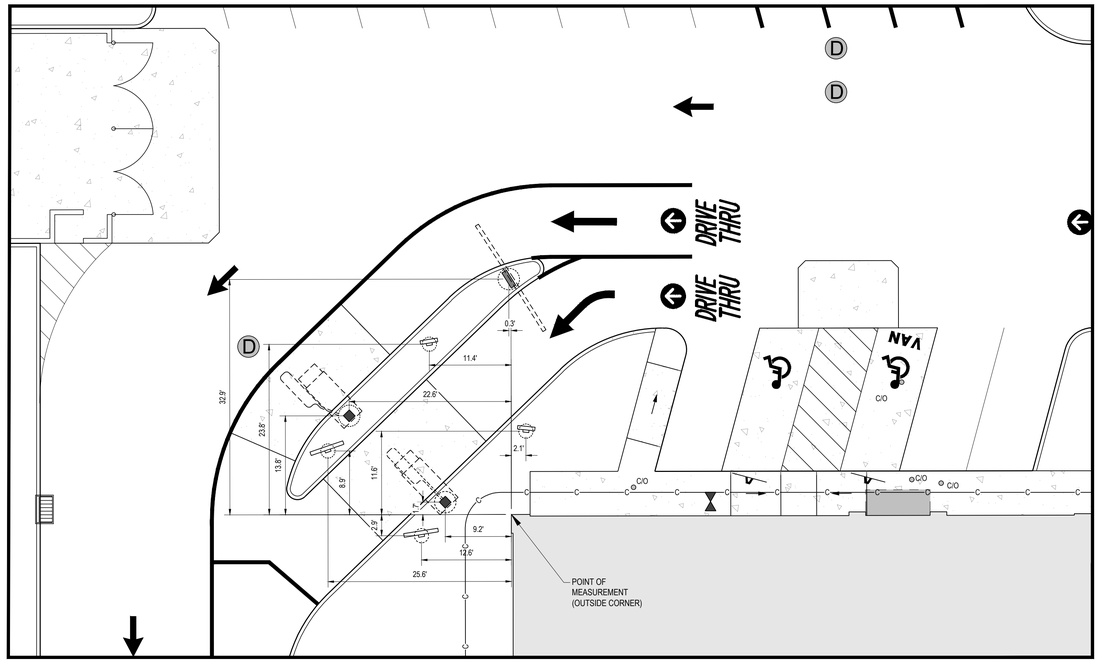


REFER TO LANDSCAPE PLAN FOR PLANTING SPECIFICATIONS

TOTAL AREA = 48.2 SF

McDONALD'S FREESTANDING SIGN

NOT TO SCALE (2024-05-01)



SIDE-BY-SIDE STANDARDS & DESIGN TOLERANCES:

1) DISTANCE FROM CENTER OF OPEN PRESENT WINDOW TO CENTER OF OPEN CASH WINDOW STANDARD IN 42'-45' AND IS SPECIFIC TO EACH BUILDING CONFIGURATION. ACCEPTABLE TOLERANCE IS 40' MIN ON REMODELS ONLY.

2) DISTANCE FROM CENTER OF OPEN CASH WINDOW TO CENTER OF PRIMARY LANE DT CANOPY/SPEAKER IS 100' OPTIMUM, 80' OR 60' MIN. ACCEPTABLE TOLERANCE IS PLUS OR MINUS 5' FOR 100' OR 80'.QUEUES.

3) THE CENTER OF THE DIGITAL MENU BOARD FOUNDATION IS TO BE 5'-9" (5'-6" MIN. AND 6'-0" MAX.) FROM THE CENTER OF THE DT CANOPY/SPEAKER FOUNDATION. IT SHOULD BE AT AN ANGLE OF APPROXIMATELY 25° TO 35° (35° PREFERRED) FROM A CAR POSITIONED AT THE DT CANOPY/SPEAKER AND WITH 100% VISIBILITY.

4) THE CRITICAL HOLD DISTANCE FROM CENTER OF THE PRIMARY LANE DT CANOPY/SPEAKER TO THE TIP OF THE CURBED ISLAND IS 15'-0".

5) THE CRITICAL HOLD DISTANCE FROM TIP OF ISLAND TO CENTER OF SECONDARY LANE DT CANOPY/SPEAKER IS 14'-0".

6) THE CENTER OF THE SECONDARY LANE DIGITAL MENU BOARD FOUNDATION SHALL BE 5'-9" (5'-6" MIN. AND 6'-0" MAX.) FROM THE CENTER OF THE DT CANOPY/SPEAKER FOUNDATION WITH THE END CAP OF THE SECONDARY MENU BOARD NOT BE LESS THAN 12" FROM FACE OF CURB. IT SHOULD BE AT AN ANGLE OF APPROXIMATELY 25° FROM A VEHICLE POSITIONED AT THE DT CANOPY/SPEAKER AND WITH 100% VISIBILITY.

7) THE ISLAND WIDTH IS 6'-0" STANDARD FROM FACE OF CURB TO CURB.

8) DIGITAL PRE-BROWSE BOARD IN THE PRIMARY LANE MUST BE 18'-24" FROM FACE OF CURB. THE DISTANCE BETWEEN THE PRIMARY DT CANOPY/SPEAKER AND PRE-BROWSE BOARD IS TO BE 15' AS MEASURED ALONG THE FACE OF CURB. THIS IS MEASURED FROM THE CENTER OF THE PRE-BROWSE BOARD FOUNDATION TO THE CENTER OF THE DT CANOPY/SPEAKER FOUNDATION. THE ANGLE (APPROXIMATELY 50°) OF THE PRE-BROWSE BOARD SHOULD MAXIMIZE VISIBILITY FROM THE SECOND CAR TO DT CANOPY/SPEAKER.

9) DIGITAL PRE-BROWSE BOARD IN THE SECONDARY LANE MUST BE MIN. 12' FROM FACE OF CURB. THE PRE-BROWSE BOARD IS TO BE 15' AS MEASURED ALONG THE FACE OF THE CURB. THIS IS MEASURED FROM THE POINT PERPENDICULAR TO THE CENTER OF THE PRE-BROWSE BOARD FOUNDATION TO THE POINT PERPENDICULAR TO THE CENTER OF THE DT CANOPY/SPEAKER FOUNDATION. THE ANGLE OF THE PRE-BROWSE BOARD SHOULD MAXIMIZE VISIBILITY TO THE SECOND CAR FROM THE DT CANOPY/SPEAKER (PREFERRED 35°)

10) A GATEWAY IS REQUIRED AND PLACED AT THE DRIVE-THRU LANE ENTRANCE.

11) EVERY SBS SHOULD HAVE BOTH DT CANOPY/SPEAKER IN BOTH LANES.

THE REGIONAL CONSTRUCTION MANAGER IS TO REVIEW AND APPROVE ALL DRIVE-THRU LAYOUTS. A DRIVE-THRU IS FINAL, AND CONSIDERED "RED", ONCE APPROVED. NO CHANGES ARE TO BE MADE AFTER THIS POINT.

NOTE: THE PLACEMENT OF THE DT CANOPY/SPEAKER SHOULD BE SUCH THAT IT PREVENTS, OR MINIMIZES, BLOCKING THE CUSTOMER'S VIEW OF THE MENU BOARD WHILE ORDERING.

NOTE: LINEAR DIMENSIONS ARE MEASURED PERPENDICULAR TO THE BUILDING FACES SHOWN UNLESS OTHERWISE NOTED.

NOTE: ALL SIGN BOLLARDS ARE TO BE 18"-24" FROM FACE OF CURB, THIS IS MEASURED FROM THE CLOSEST POINT ON THE SIGN.

DRIVE-THRU

SCALE: 1"=10'

BOHLER
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

THE INFORMATION, DESIGN AND CONTENT OF THIS PLAN IS PROPRIETARY AND SHALL NOT BE COPIED OR USED FOR ANY PURPOSE WITHOUT THE EXPRESS AUTHORIZATION FROM BOHLER. ONLY APPROVED, SEALED PLANS SHALL BE UTILIZED FOR CONSTRUCTION PURPOSES.

REVISIONS

REV	DATE	COMMENT	DRAWN BY / CHECKED BY

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ISSUED FOR ENTITLEMENTS

THIS DRAWING IS INTENDED FOR MUNICIPAL AND/OR AGENCY REVIEW AND APPROVAL. IT IS NOT INTENDED AS A CONSTRUCTION DOCUMENT UNLESS INDICATED OTHERWISE.

PROJECT No.:	MAA240177.00-0C
DRAWN BY:	JDG
CHECKED BY:	CSE
DATE:	12/17/2024
CAD I.D.:	P-CIVL-CNDS

PROJECT:

PROPOSED SITE PLAN DOCUMENTS

FOR

SITE ID #: 28-0178

PROPOSED DEVELOPMENT

MAP: H | LOT: 4-3
NH ROUTE 108 & GRAPEVINE DRIVE
STRAFFORD COUNTY
DOVER, NEW HAMPSHIRE

BOHLER
352 TURNPIKE ROAD, 3rd FLOOR
SOUTHBOROUGH, MA 01772
Phone: (508) 480-9900
www.BohlerEngineering.com

J.A. KUCICH — PROFESSIONAL ENGINEER — MASSACHUSETTS LICENSE NO. 49530 — NEW HAMPSHIRE LICENSE NO. 18476 — CONNECTICUT LICENSE NO. 30177 — RHODE ISLAND LICENSE NO. 9616 — MAINE LICENSE NO. 12553

SHEET TITLE:

CONSTRUCTION DETAILS

SHEET NUMBER:

C-903

ORG. DATE - 12/17/2024

P:\2024\MAA240177.00\CAD\DRAWINGS\PLAN SETS\CIVIL SITE PLANS\P-CIVL-CNDS-MAA240177.00-0C----->LAYOUT: C-903 DETL

ADS

Advanced Drainage Systems, Inc.

ADS SiteAssist®
FOR STORMTECH INSTALLATION INSTRUCTIONS VISIT OUR APP

SC-800 STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH SC-800.
2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
6. CHAMBERS SHALL BE DESIGNED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (+1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
7. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 550 LBS/FT/%. THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
8. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
   - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
   - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
   - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF THE SC-800 SYSTEM

1. STORMTECH SC-800 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH SC-800 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/SC-800/DC-780 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM - 6" (150 mm) SPACING BETWEEN THE CHAMBER ROWS.
7. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE 3/4-2" (20-50 mm).
8. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
9. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

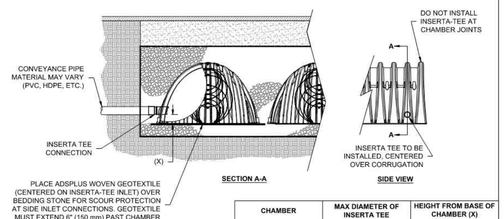
1. STORMTECH SC-800 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/SC-800/DC-780 CONSTRUCTION GUIDE".
2. THE USE OF CONSTRUCTION EQUIPMENT OVER SC-800 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/SC-800/DC-780 CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH SC-310/SC-740/SC-800/DC-780 CONSTRUCTION GUIDE".
3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO THE CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.



5 UNDERDRAIN DETAIL

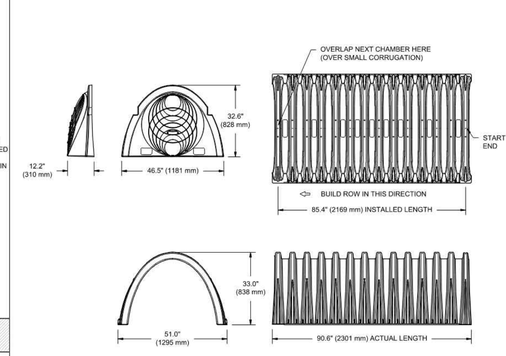


NOTES:
- PART NUMBERS WILL VARY BASED ON INLET PIPE MATERIALS. CONTACT STORMTECH FOR MORE INFORMATION.
- CONTACT ADS ENGINEERING SERVICES IF INSERTA TEE INLET MUST BE RAISED AS NOT ALL INVERTS ARE POSSIBLE.

CHAMBER	MAX DIAMETER OF INSERTA TEE	HEIGHT FROM BASE OF CHAMBER (X)
SC-310	6" (150 mm)	4" (100 mm)
SC-740	10" (250 mm)	4" (100 mm)
SC-800	10" (250 mm)	4" (100 mm)
DC-780	10" (250 mm)	4" (100 mm)
MC-3500	12" (300 mm)	6" (150 mm)
MC-4500	12" (300 mm)	8" (200 mm)
MC-7200	12" (300 mm)	8" (200 mm)

INSERTA TEE FITTINGS AVAILABLE FOR SDR 26, SDR 35, SCH 40 IPS GASKETED & SOLVENT WELD, N-12, HP STORM, C-900 OR DUCTILE IRON

6 INSERTA-TEE SIDE INLET DETAIL



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	51.0" X 33.0" X 85.4"	(1295 mm X 838 mm X 2169 mm)
CHAMBER STORAGE	50.6 CUBIC FEET	(1.43 m³)
MINIMUM INSTALLED STORAGE*	81.0 CUBIC FEET	(2.29 m³)
WEIGHT	81.8 lbs.	(37.1 kg)

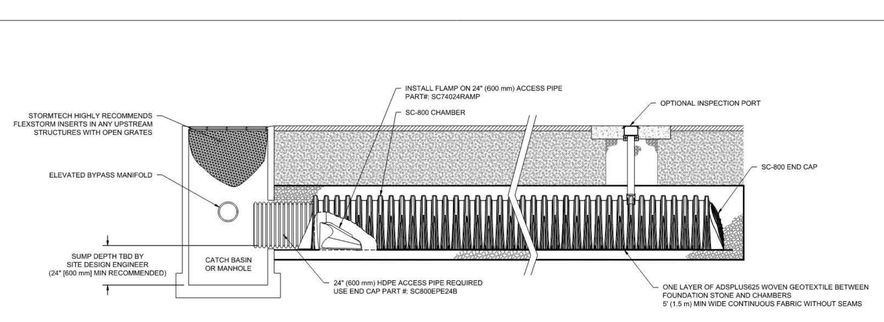
*ASSUMES 6" (152 mm) STONE ABOVE, BELOW, AND BETWEEN CHAMBERS

PRE-FAB STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
PRE-FAB STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
PRE-CORED END CAPS END WITH "PC"

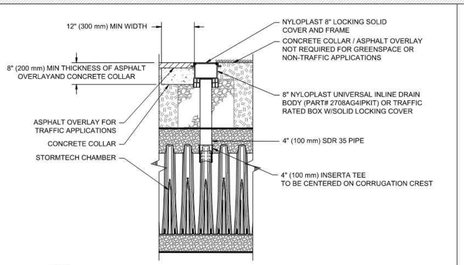
PART #	STUB	B	C
SC800EPE06T / SC800EPE06TPC	6" (150 mm)	21.4" (544 mm)	---
SC800EPE06B / SC800EPE06BPC		---	0.9" (23 mm)
SC800EPE08T / SC800EPE08TPC	8" (200 mm)	19.2" (488 mm)	---
SC800EPE08B / SC800EPE08BPC		---	1.0" (25 mm)
SC800EPE10T / SC800EPE10TPC	10" (250 mm)	17.0" (432 mm)	---
SC800EPE10B / SC800EPE10BPC		---	1.2" (30 mm)
SC800EPE12T / SC800EPE12TPC	12" (300 mm)	14.4" (366 mm)	---
SC800EPE12B / SC800EPE12BPC		---	1.6" (41 mm)
SC800EPE15T / SC800EPE15TPC	15" (375 mm)	11.3" (287 mm)	---
SC800EPE15B / SC800EPE15BPC		---	1.7" (43 mm)
SC800EPE18T / SC800EPE18TPC	18" (450 mm)	8.0" (203 mm)	---
SC800EPE18B / SC800EPE18BPC		---	2.0" (51 mm)
SC800EPE24B	24" (600 mm)	---	2.3" (58 mm)

NOTE: ALL DIMENSIONS ARE NOMINAL

2 SC-800 TECHNICAL SPECIFICATIONS



3 SC-800 ISOLATOR ROW PLUS DETAIL



NOTE:
INSPECTION PORTS MAY BE CONNECTED THROUGH ANY CHAMBER CORRUGATION CREST.

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

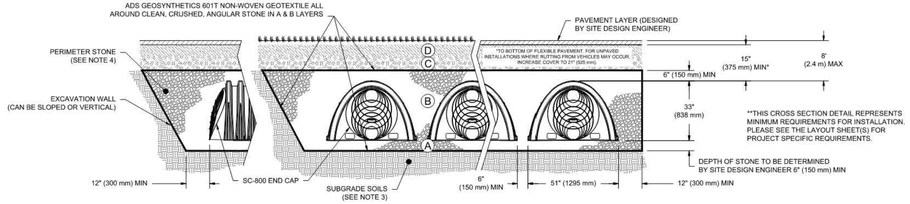
1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

4 4" PVC INSPECTION PORT DETAIL (SC SERIES CHAMBER)

ACCEPTABLE FILL MATERIALS: STORMTECH SC-800 CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 15" (375 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE[5]	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE[5]	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.
5. WHERE RECYCLED CONCRETE AGGREGATE IS USED IN LAYERS 'A' OR 'B' THE MATERIAL SHOULD ALSO MEET THE ACCEPTABILITY CRITERIA OUTLINED IN TECHNICAL NOTE 6.20 "RECYCLED CONCRETE STRUCTURAL BACKFILL".



NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-800 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 550 LBS/FT/%, AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

1 SC-800 CROSS SECTION DETAIL

STORMTECH SC-800 SUBSURFACE DETENTION/INFILTRATION BASIN DETAILS

NOT TO SCALE

P:\2024\MAA240177.00\CAD\DRAWINGS\PLAN SETS\CIVIL SITE PLANS\P-CIVL-CNDS-MAA240177.00-0C-----\LAYOUT(C-904 DETL

BOHLER

SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
ENVIRONMENTAL SERVICES
PERMITTING SERVICES
TRANSPORTATION SERVICES

THE INFORMATION, DESIGN AND CONTENT OF THIS PLAN IS PROPRIETARY AND SHALL NOT BE DISCLOSED OR USED FOR ANY PURPOSE, WITHOUT PRIOR WRITTEN AUTHORIZATION FROM BOHLER. ONLY APPROVED, SEALED PLANS SHALL BE UTILIZED FOR CONSTRUCTION PURPOSES.

DRAWN: JLM | DATE: 01/10/24
REVIEWED: JLM | PROJECT NO:
REV: | NOT TO SCALE

SC-800
STANDARD DETAILS

StormTech® Chamber System
888-892-2694 | WWW.STORMTECH.COM

4640 TRUEMAN BLVD
HILLIARD, OH 43026

ADS Advanced Drainage Systems, Inc.

SHEET 1

ADVANCED DRAINAGE SYSTEMS, INC. ("ADS") HAS PREPARED THIS DETAIL BASED ON REFERENCED STANDARDS. ADS HAS NOT PERFORMED ANY ENGINEERING OR DESIGN SERVICES FOR THIS PROJECT, NOR HAS ADS INDEPENDENTLY VERIFIED THE INFORMATION SUPPLIED. THE INSTALLATION DETAILS PROVIDED HEREIN ARE GENERAL RECOMMENDATIONS AND ARE NOT SPECIFIC FOR THIS PROJECT. UNLESS THE PLANS ARE SIGNED AND SEALED BY THE SITE DESIGN ENGINEER, THE SITE DESIGN ENGINEER SHALL REVIEW THESE DETAILS PRIOR TO CONSTRUCTION AND SEALING THE DOCUMENT. IT IS THE SITE DESIGN ENGINEER'S RESPONSIBILITY TO ENSURE THE DETAILS PROVIDED HEREIN MEET OR EXCEED THE APPLICABLE NATIONAL, STATE, OR LOCAL REQUIREMENTS AND TO ENSURE THAT THE DETAILS PROVIDED HEREIN ARE ACCEPTABLE FOR THIS PROJECT.

REVISIONS

REV	DATE	COMMENT	DRAWN BY / CHECKED BY

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ISSUED FOR ENTITLEMENTS

THIS DRAWING IS INTENDED FOR MUNICIPAL AND/OR AGENCY REVIEW AND APPROVAL. IT IS NOT INTENDED AS A CONSTRUCTION DOCUMENT UNLESS INDICATED OTHERWISE.

PROJECT No.: MAA240177.00-0C
DRAWN BY: JDG
CHECKED BY: CSE
DATE: 12/17/2024
CAD I.D.: P-CIVL-CNDS

PROJECT:

PROPOSED SITE PLAN DOCUMENTS

FOR

SITE ID #: 28-0178

PROPOSED DEVELOPMENT

MAP: H | LOT: 4-3
NH ROUTE 108 & GRAPEVINE DRIVE
STRAFFORD COUNTY
DOVER, NEW HAMPSHIRE

BOHLER
352 TURNPIKE ROAD, 3rd FLOOR
SOUTHBOROUGH, MA 01772
Phone: (508) 480-9900
www.BohlerEngineering.com

JOSHUA D. KUCICH — PROFESSIONAL ENGINEER — NEW HAMPSHIRE — 20576 — COMMONWEALTH OF MASSACHUSETTS — RHODE ISLAND — MAINE — 12553

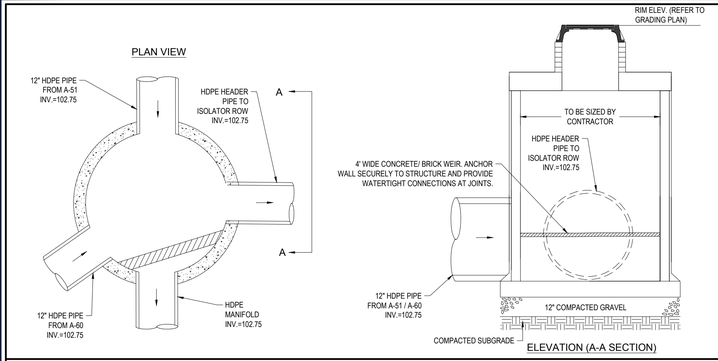
SHEET TITLE:

CONSTRUCTION DETAILS

SHEET NUMBER:

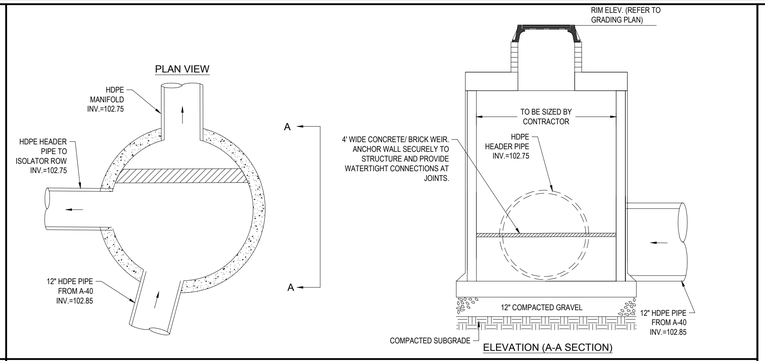
C-904

ORG. DATE - 12/17/2024



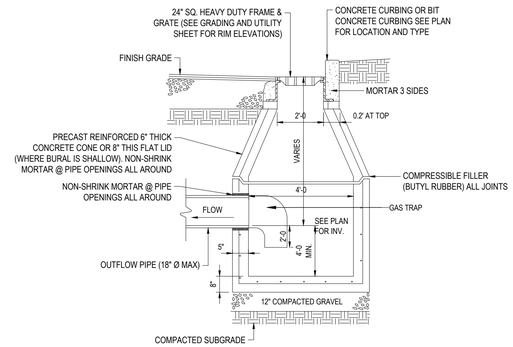
INLET CONTROL STRUCTURE (A-50)

(NE-U010103 - 09/2023) MOD NOT TO SCALE



INLET CONTROL STRUCTURE (A-30)

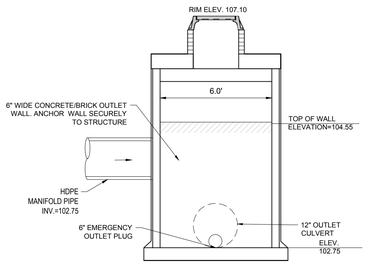
(NE-U010103 - 09/2023) MOD NOT TO SCALE



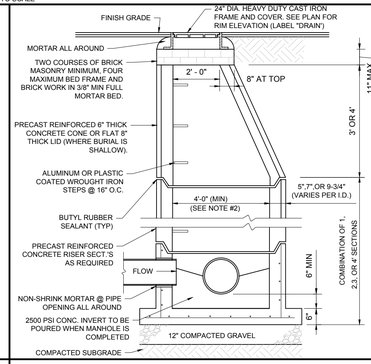
NOTES:
1. ALL STRUCTURES SHALL BE SUITABLE FOR H-20 LOADING AND SHALL MEET THE REQUIREMENTS OF ASTM C478.
2. USE PRECAST FLAT SLAB TOP FOR SHALLOW INVERT APPLICATIONS

PRECAST CONCRETE DEEP SUMP CATCH BASIN

(NE-U010201 - 07/2024) - MOD NOT TO SCALE



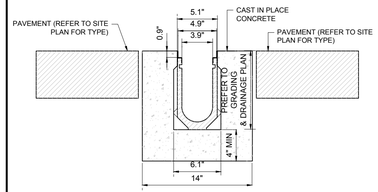
ELEVATION



NOTES:
1. ALL STRUCTURES SHALL BE SUITABLE FOR H-20 LOADING AND SHALL MEET THE REQUIREMENTS OF ASTM C478.
2. CONTRACTOR SHALL SIZE MANHOLE AS NECESSARY TO ACCOMMODATE THE PIPE SIZING AND ORIENTATION USING THE GEOMETRY SHOWN ON THE GRADING AND DRAINAGE PLANS.
3. CONCRETE SHALL BE 4,000 PSI AFTER 28 DAYS
4. REINFORCED STEEL CONFORMS TO ASTM A185 SPEC. 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. (BOTH WAYS) BASE BOTTOM.
5. MANHOLE DESIGN SPECS CONFORM TO ASTM C478 SPEC FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS"

PRECAST CONCRETE STORM DRAIN MANHOLE

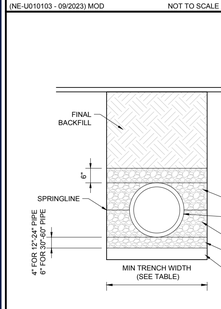
NOT TO SCALE (NE-U010101 - 05/2024)



INSTALLATION IN ASPHALT/CONCRETE

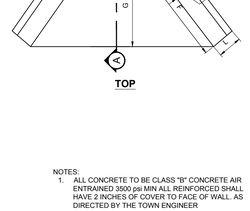
ACO TRENCH DRAIN SYSTEM

NOT TO SCALE (NE-U010208 - 09/2023)

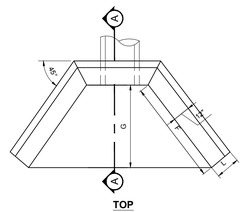


FRONT

D	E	F	G	H	L
12"	2' - 0"	2' -10"	2' - 0"	2' - 6"	1' - 0"
15"	2' - 3"	3' - 2"	2' - 3"	2' - 9"	1' - 1"
18"	2' - 6"	3' - 7"	2' - 6"	12"	1' - 2"
21"	2' - 9"	3' - 11"	2' - 9"	12"	1' - 3"
24"	3' - 6"	5' - 0"	3' - 6"	3' - 6"	1' - 4"
27"	3' - 9"	5' - 4"	3' - 9"	3' - 9"	1' - 5"
30"	4' - 0"	5' - 8"	4' - 0"	4' - 0"	1' - 6"
33"	4' - 3"	6' - 0"	4' - 3"	4' - 3"	1' - 7"
36"	4' - 6"	6' - 4"	4' - 6"	4' - 6"	1' - 8"
39"	4' - 9"	6' - 9"	4' - 9"	4' - 9"	1' - 9"
42"	5' - 0"	7' - 1"	5' - 0"	5' - 0"	1' - 10"
48"	5' - 6"	7' - 9"	5' - 6"	5' - 6"	2' - 0"



SELECTION A-A

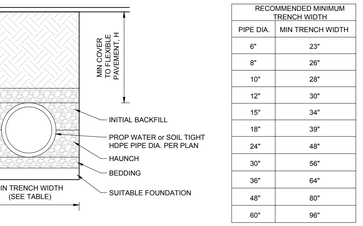


TOP

NOTES:
1. ALL CONCRETE TO BE CLASS "B" CONCRETE AIR ENTRAINED 3500 psi MIN ALL REINFORCED SHALL HAVE 2 INCHES OF COVER TO FACE OF WALL. AS DIRECTED BY THE TOWN ENGINEER

HEADWALL

NOT TO SCALE (NE-U010404 - 09/2023)

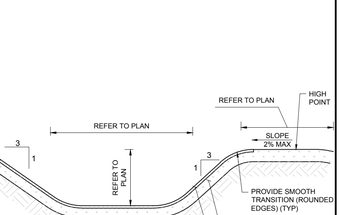


RECOMMENDED MINIMUM TRENCH WIDTH	
PIPE DIA.	MIN TRENCH WIDTH
6"	23"
8"	26"
10"	28"
12"	30"
15"	34"
18"	39"
24"	48"
30"	56"
36"	64"
48"	80"
60"	96"

NOTES:
1. ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST ADDITION.
2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.
3. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.
4. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II OR III. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) FOR 4"-24" (100mm-600mm); 6" (150mm) FOR 30"-60" (750mm-900mm).
5. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II OR III IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.
6. MINIMUM COVER: MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOTATION. FOR TRAFFIC APPLICATIONS, MINIMUM COVER, H, IS 12" UP TO 48" DIAMETER PIPE AND 24" OF COVER FOR 54"-60" DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT.

HDPE STORM PIPE TRENCH

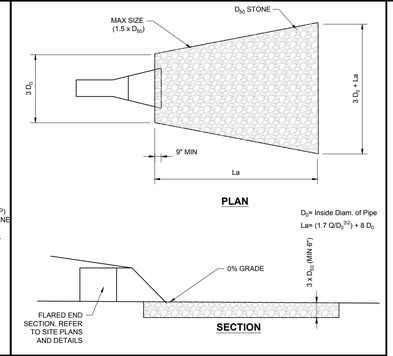
NOT TO SCALE (NE-U019812 - 09/2023)



NOTES:
1. 12" MINIMUM COVER OVER THE TOP OF THE PIPE. COMPACTED TO A DENSITY OF 90% AS PER AASHTO T-99.

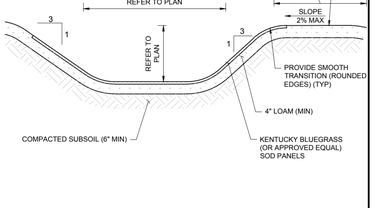
POLYETHYLENE FLARED END SECTION

NOT TO SCALE (NE-U010401 - 09/2023)



FLARED END SECTION WITH RIP-RAP

NOT TO SCALE (NE-U010403 - 09/2023)



NOTES:
1. ALL CONCRETE TO BE CLASS "B" CONCRETE AIR ENTRAINED 3500 psi MIN ALL REINFORCED SHALL HAVE 2 INCHES OF COVER TO FACE OF WALL. AS DIRECTED BY THE TOWN ENGINEER

SOD SWALE SECTION

NOT TO SCALE (NE-G020201 - 10/2024)

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REVISIONS

REV	DATE	COMMENT	DRAWN BY / CHECKED BY

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PROJECT No.:	MAA240177.00-0C
DRAWN BY:	JDG
CHECKED BY:	CSE
DATE:	12/17/2024
CAD I.D.:	P-CIVL-CNDS

PROJECT:

PROPOSED SITE PLAN DOCUMENTS

FOR

SITE ID #: 28-0178

PROPOSED DEVELOPMENT

MAP: H | LOT: 4-3
NH ROUTE 108 & GRAPEVINE DRIVE
STRAFFORD COUNTY
DOVER, NEW HAMPSHIRE

BOHLER
352 TURNPIKE ROAD, 3rd FLOOR
SOUTHBOROUGH, MA 01772
Phone: (508) 480-9900
www.BohlerEngineering.com

J.A. KUCICH — PROFESSIONAL ENGINEER
MASSACHUSETTS LICENSE NO. 48538
NEW HAMPSHIRE LICENSE NO. 17476
CONNECTICUT LICENSE NO. 30177
RHODE ISLAND LICENSE NO. 9616
MAINE LICENSE NO. 12553

SHEET TITLE:

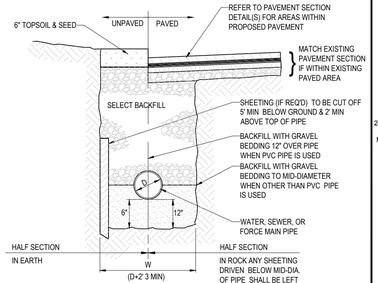
CONSTRUCTION DETAILS

SHEET NUMBER:

C-905

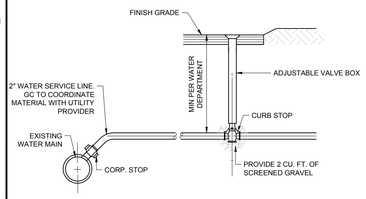
ORG. DATE - 12/17/2024

P:\2024\MAA240177.00\CAD\DRAWINGS\PLAN SETS\CIVIL SITE PLANS\P-CIVL-CNDS-MAA240177.00-0C---LAYOUT: C-905 DETL



TYPICAL UTILITY TRENCH

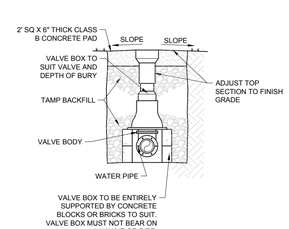
NOT TO SCALE (NE-U050201 - 09/2024)



NOTES:
1. DETAIL FOR GENERAL PURPOSES. GC TO COORDINATE CONNECTION WITH UTILITY PROVIDER.

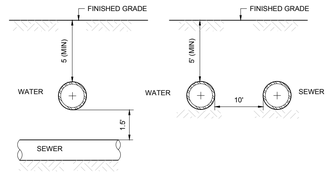
WATER SERVICE CONNECTION

NOT TO SCALE (NE-U030402 - 09/2023) MOD



GATE VALVE

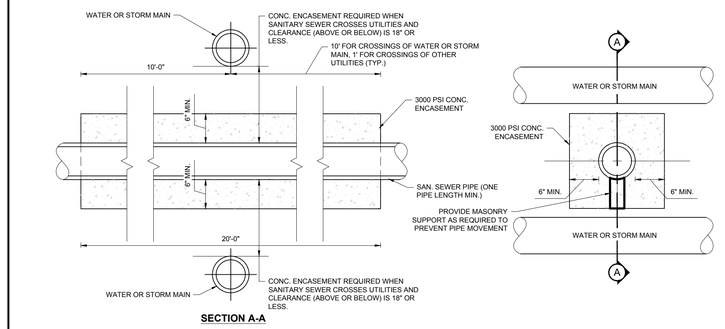
NOT TO SCALE (NE-U030201 - 09/2023)



NOTES:
1. 10' HORIZONTAL SEPARATION AND 1.5' VERTICAL SEPARATION SHALL BE PROVIDED BETWEEN WATER AND SEWER. AS DEPICTED IN THIS DETAIL OR SEWER SHALL BE ENCASED IN CONCRETE (SEE CONCRETE ENCASEMENT DETAIL) IN SECTIONS WHERE SEPARATIONS SHALL NOT BE ACHIEVED.

WATER AND SEWER UTILITY CROSSING

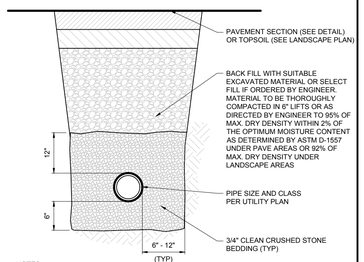
NOT TO SCALE (NE-U050101 - 09/2023)



SECTION A-A

SANITARY CONCRETE ENCASEMENT

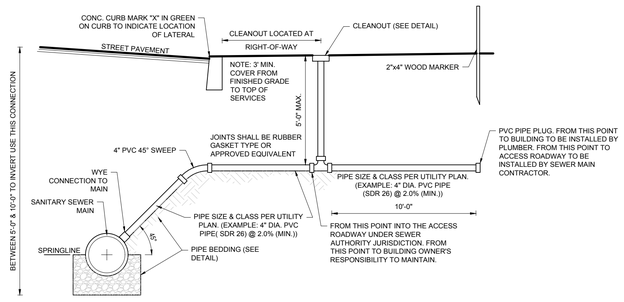
NOT TO SCALE (BE-U029901 - 04/2024)



NOTES:
1. THIS DETAIL IS INTENDED SOLELY FOR THE PURPOSE OF SHOWING BACK FILL, MATERIALS, AND MINIMUM THICKNESS OF LAYERS. DETAIL IS NOT INTENDED TO INDICATE MEANS AND METHODS OF CONSTRUCTION.
2. CONTRACTOR SHALL PROVIDE SHORING AND BRACING AS NECESSARY TO PROVIDE FOR SAFE INSTALLATION. CONTRACTOR SHALL COMPLY WITH ALL OSHA, STATE AND LOCAL REGULATIONS.
3. WHEN DIP IS USED, CRUSHED STONE NEED NOT EXTEND ABOVE PIPE.

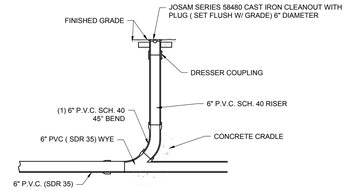
SANITARY TRENCH

NOT TO SCALE (BE-U050201 - 08/2023)



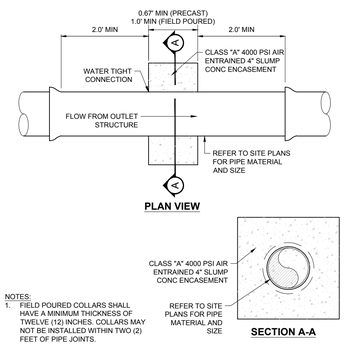
TYPICAL SANITARY SEWER LATERAL

NOT TO SCALE (BE-U020401 - 08/2023)



CLEANOUT (IN-LINE)

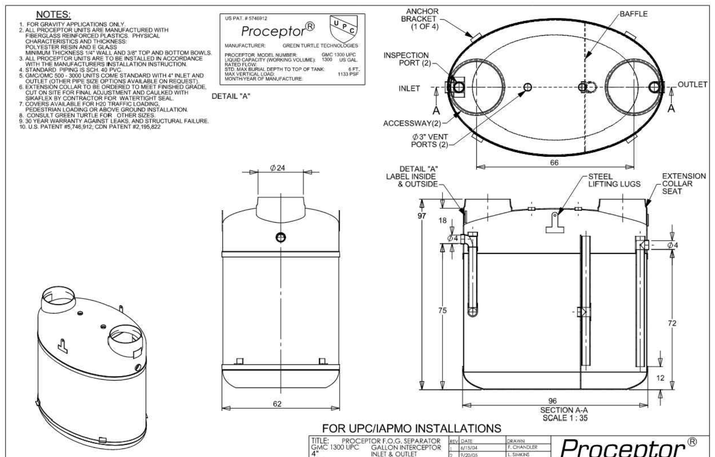
NOT TO SCALE (NE-U010302 - 09/2023)



NOTES:
1. FIELD POURED COLLARS SHALL HAVE A MINIMUM THICKNESS OF TWELVE (12) INCHES. COLLARS MAY NOT BE INSTALLED WITHIN TWO (2) FEET OF PIPE JOINTS.

ANTI-SEEP COLLAR

NOT TO SCALE (NE-U019813 - 09/2023)



FOR UPC/IAPMO INSTALLATIONS

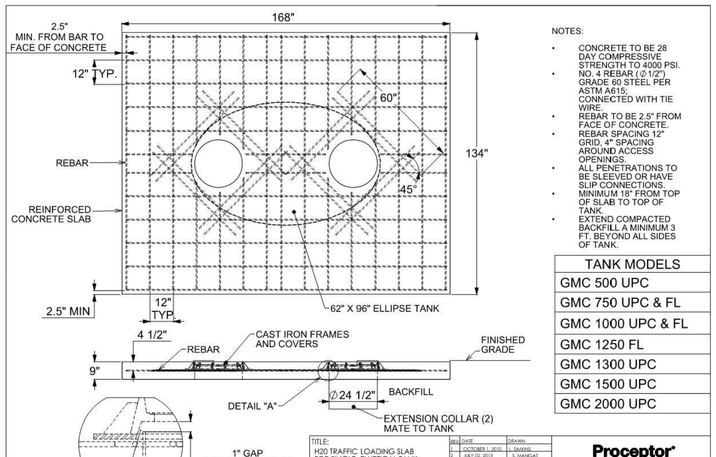
TITLE: PROCEPTOR F.O.G. SEPARATOR GMC 1300 UPC 4" 24" DIAMETER INTERCEPTOR INLET & OUTLET ACCESSWAY			
PROJECT: WO:	REV	DATE	DRAWN
	A	5/15/04	F. CHANDLER
	B	7/25/05	L. SIMMS
	C	JANUARY 2, 2007	L. SIMMS
	D	MAY 14, 2008	L. SIMMS
	E	NOVEMBER 19, 2009	L. SIMMS
AVAILABLE OPTIONS (CHECKED IF REQUESTED)	F	APRIL 3, 2012	L. SIMMS
GREASE SENSOR ALARM	G	OCTOBER 01, 2012	S. MANGAT
SUCTION PIPE FOR INDOOR INSTALLATION	H	FEBRUARY 11, 2013	S. MANGAT
ABOVE GROUND INSTALLATION	I	NOV. 11, 2014	
	J		
DRAWN BY: F CHANDLER			
DATE DRAWN: 5/15/04			

Proceptor® by greenturtle
US 877 428 8187 CAN 877 966 9444
www.greenturtletech.com

SIZE	DWG. NO.	REV
A	GMC 1300 UPC	9
SCALE:1:35	DO NOT SCALE DRAWING	SHEET 1 OF 1

PROCEPTOR® GMC 1300 UPC DETAIL

NOT TO SCALE



NOTES:
- CONCRETE TO BE 28 DAY COMPRESSIVE STRENGTH TO 4000 PSI.
- NO. 4 REBAR (Ø 1/2"), GRADE 60 STEEL PER ASTM A615; CONNECTED WITH TIE WIRE.
- REBAR TO BE 2.5" FROM FACE OF CONCRETE.
- REBAR SPACING 12" GRID, 4" SPACING AROUND ACCESS OPENINGS.
- ALL PENETRATIONS TO BE SLEEVED OR HAVE SLIP CONNECTIONS. MINIMUM 18" FROM TOP OF SLAB TO TOP OF TANK.
- EXTEND COMPACTED BACKFILL A MINIMUM 3 FT. BEYOND ALL SIDES OF TANK.

TANK MODELS
GMC 500 UPC
GMC 750 UPC & FL
GMC 1000 UPC & FL
GMC 1250 FL
GMC 1300 UPC
GMC 1500 UPC
GMC 2000 UPC

TITLE: H20 TRAFFIC LOADING SLAB FOR SINGLE ELLIPTICAL TANK ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SHOWN.	REV	DATE	DRAWN
PROJECT: WO:	1	OCTOBER 1, 2010	L. SIMMS
	2	JULY 02, 2013	S. MANGAT
	3	JULY 31, 2014	S. MANGAT
	4	JAN. 06, 2015	S. MANGAT
☑ CONFIGURATION:	5		
	6		
	7		
	8		
	9		
	10		
	11		
DRAWN BY: L. SIMMS			
DRAWN DATE: OCTOBER 1, 2008			

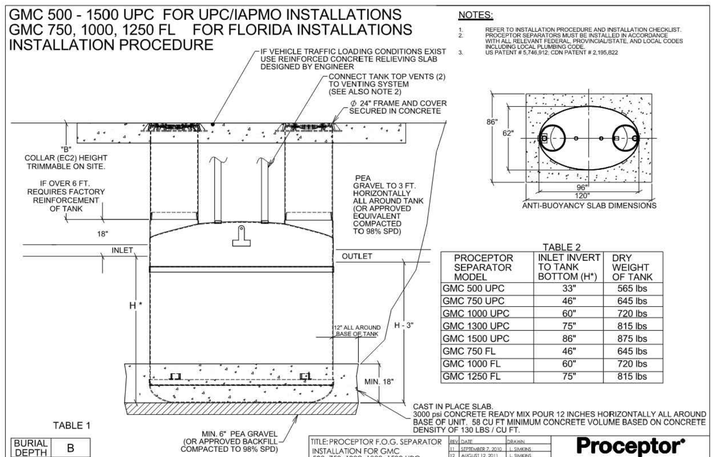
Proceptor® ZURN

SIZE	DWG. NO.	REV
A	SINGLE SLAB DUAL ACCESS	5
SCALE:1:35	DO NOT SCALE DRAWING	SHEET 1 OF 1

PROCEPTOR® SINGLE SLAB DUAL ACCESS DETAIL

NOT TO SCALE

GMC 500 - 1500 UPC FOR UPC/IAPMO INSTALLATIONS
GMC 750, 1000, 1250 FL FOR FLORIDA INSTALLATIONS
INSTALLATION PROCEDURE



NOTES:
1. REFER TO INSTALLATION PROCEDURE AND INSTALLATION CHECKLIST. PROCEPTOR SEPARATORS MUST BE INSTALLED IN ACCORDANCE WITH ALL RELEVANT FEDERAL, PROVINCIAL/STATE, AND LOCAL CODES INCLUDING LOCAL PLUMBING CODE.
3. US PATENT # 5,746,912; CDN PATENT # 2,195,822

TABLE 2

PROCEPTOR SEPARATOR MODEL	INLET INVERT TO TANK BOTTOM (H*)	DRY WEIGHT OF TANK
GMC 500 UPC	33"	565 lbs
GMC 750 UPC	46"	645 lbs
GMC 1000 UPC	60"	720 lbs
GMC 1300 UPC	75"	815 lbs
GMC 1500 UPC	86"	875 lbs
GMC 750 FL	46"	645 lbs
GMC 1000 FL	60"	720 lbs
GMC 1250 FL	75"	815 lbs

TABLE 1

BURIAL DEPTH	B
Max.	6 ft.
Min.with Traffic	18"
Min. no Traffic	** 12"

** ESTIMATED SPACE REQUIRED TO FIT VENT ELBOWS UNDER FLOOR

TITLE:PROCEPTOR F.O.G. SEPARATOR INSTALLATION FOR GMC 500, 750, 1000, 1300, 1500 UPC 750, 1000, 1250 FL	REV	DATE	DRAWN
PROJECT: WO:	01	SEPTEMBER 7, 2010	L. SIMMS
	02	AUGUST 12, 2011	L. SIMMS
	03	FEBRUARY 13, 2013	S. MANGAT
	04	MAY 27, 2013	S. MANGAT
	05	JULY 30, 2013	
	06		
	07		
	08	APRIL 04, 2014	
AVAILABLE OPTIONS (CHECKED IF REQUESTED)	09	MAY 16, 2014	
	10	JUNE 3, 2015	L. SIMMS
	DRAWN BY: F CHANDLER		
	DRAWN DATE: 6/18/04		

Proceptor® ZURN

SIZE	DWG. NO.	REV
A	INSTALL GMC 500-1500 UPC FL	19
SCALE:NTS	DO NOT SCALE DRAWING	SHEET 1 OF 1

PROCEPTOR® GMC 500-1500 UPC INSTALLATION DETAIL

NOT TO SCALE

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LAND SURVEYING
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REV	DATE	COMMENT	DRAWN BY / CHECKED BY

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PROJECT No.:	MAA240177.00-0C
DRAWN BY:	JDG
CHECKED BY:	CSE
DATE:	12/17/2024
CAD I.D.:	P-CIVL-CNDS

PROJECT:

PROPOSED SITE PLAN DOCUMENTS

FOR

SITE ID #: 28-0178

PROPOSED DEVELOPMENT

MAP: H | LOT: 4-3
NH ROUTE 108 & GRAPEVINE DRIVE
STRAFFORD COUNTY
DOVER, NEW HAMPSHIRE

BOHLER
352 TURNPIKE ROAD, 3rd FLOOR
SOUTHBOROUGH, MA 01772
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www.BohlerEngineering.com

J.A. KUCICH
PROFESSIONAL ENGINEER
MASSACHUSETTS
NEW HAMPSHIRE
CONNECTICUT
RHODE ISLAND
MAINE

SHEET TITLE:

CONSTRUCTION DETAILS

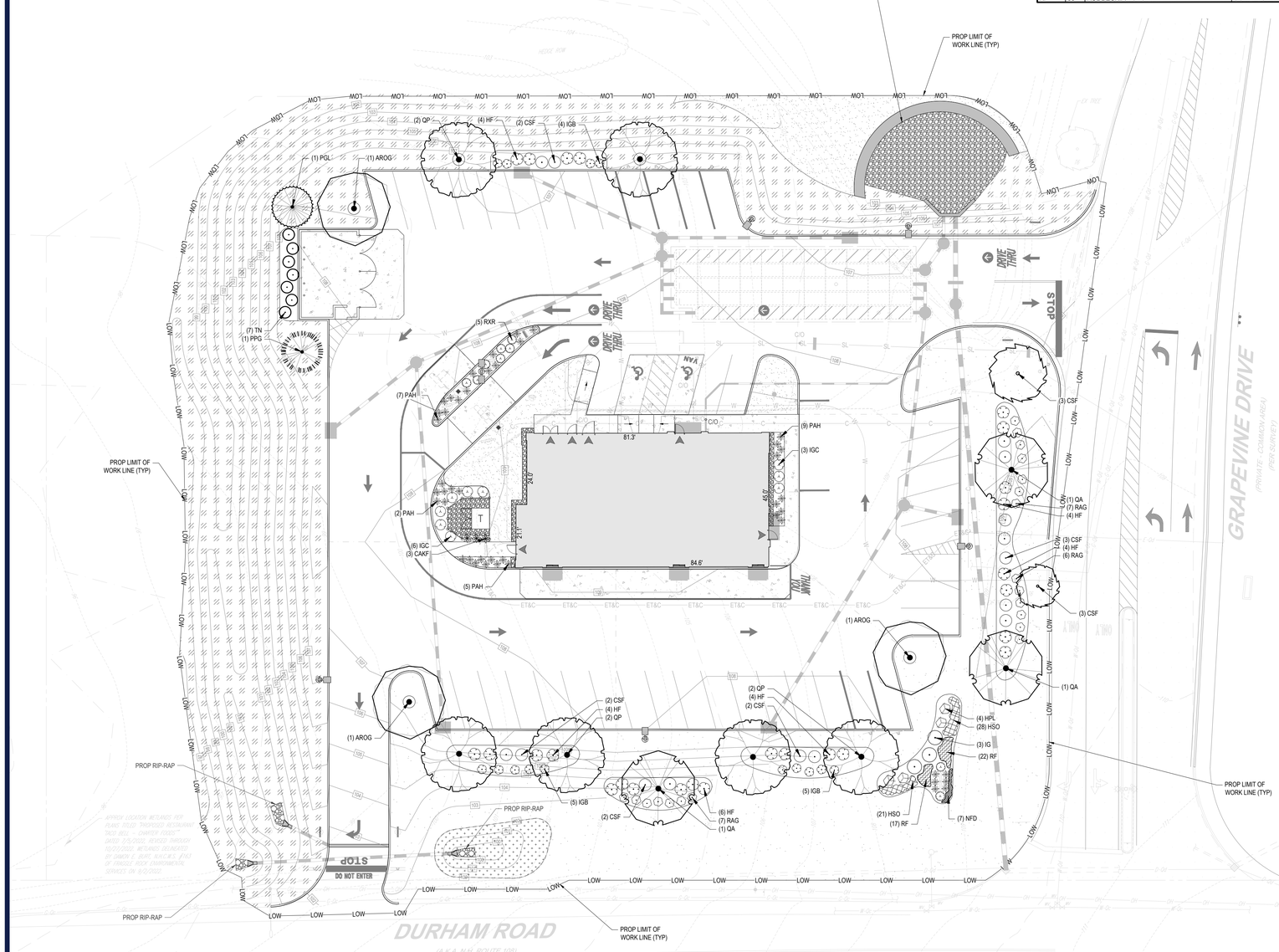
SHEET NUMBER:

C-906

ORG. DATE - 12/17/2024

P:\2024\MAA240177.00\CAD\DRAWINGS\PLAN SETS\CIVIL SITE PLANS\P-CIVL-CNDS-MAA240177.00-0C---LAYOUT: C-906 DETL

NAD83



CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER
CANOPY TREES					
AROG	3	ACER RUBRUM `OCTOBER GLORY`	OCTOBER GLORY RED MAPLE	2.5"-3" CAL.	B&B
QA	3	QUERCUS ALBA	WHITE OAK	2.5"-3" CAL.	B&B
QP	6	QUERCUS PALUSTRIS	PIN OAK	2.5"-3" CAL.	B&B
EVERGREEN TREES					
PGL	1	PICEA GLAUCA	WHITE SPRUCE	6-8`	B&B
PPG	1	PICEA PUNGENS `GLAUCA`	COLORADO BLUE SPRUCE	6-8`	B&B
TN	7	THUJA OCCIDENTALIS 'NIGRA'	BLACK ARBORVITAE	6-8`	B&B
SHRUBS					
CSF	15	CORNUS STOLONIFERA 'FARROW'	ARCTIC FIRE RED TWIG DOGWOOD	24-36"	CONTAINER
HF	26	HYPERICUM FRONDOSUM 'SUNBURST'	SUNBURST ST. JOHN'S WORT	18-24"	CONTAINER
HPL	4	HYDRANGEA PANICULATA 'SMHPLQF'	LITTLE QUICK FIRE PANICLE HYDRANGEA	24-30"	CONTAINER
IG	3	ILEX GLABRA	INKBERRY HOLLY	30-36"	CONTAINER
IGB	14	ILEX GLABRA 'SMNIGAB17'	GEM BOX INKBERRY HOLLY	18-24"	CONTAINER
IGC	9	ILEX GLABRA `COMPACTA`	COMPACT INKBERRY	24-30"	CONTAINER
RAG	20	RHUS AROMATICA 'GRO-LOW'	GRO-LOW FRAGRANT SUMAC	15-18"	CONTAINER
RXR	9	ROSA X 'RADRAZZ'	KNOCK OUT SHRUB ROSE	18-24"	CONTAINER
GRASSES					
CAKF	3	CALAMAGROSTIS X ACUTIFLORA `KARL FOERSTER`	FEATHER REED GRASS	1 GAL.	CONTAINER
PAH	45	PENNISETUM ALOPECUROIDES `HAMELN`	HAMELN FOUNTAIN GRASS	1 GAL.	CONTAINER
PERENNIALS					
HSO	49	HEMEROCALLIS X 'STELLA DE ORO'	STELLA DE ORO DAYLILY	1 GAL.	CONTAINER
NFD	7	NEPETA X FAASSENII 'DROPMORE'	DROPMORE CATMINT	1 GAL.	CONTAINER
RF	39	RUDBECKIA FULGIDA	CONEFLOWER	1 GAL.	CONTAINER

CITY OF DOVER
LANDSCAPE REQUIREMENTS

SECTION	REQUIREMENTS	CALCULATIONS/PROPOSED
153-13	(12) A LANDSCAPE PLAN THAT DELINEATES THE ARRANGEMENT, SPECIES AND DIMENSIONS OF ALL EXISTING AND PROPOSED LANDSCAPING MATERIALS. THE LANDSCAPE PLAN, IN SUFFICIENT DETAIL TO INDICATE COMPLIANCE WITH THESE REGULATIONS, SHALL BE PREPARED BY A PROFESSIONAL LANDSCAPE ARCHITECT WHO IS LICENSED BY THE STATE OF NEW HAMPSHIRE. THE LICENSED LANDSCAPE ARCHITECT SHALL SIGN THE PLAN. THE LANDSCAPE PLAN SHALL BE CERTIFIED BY THE LICENSED LANDSCAPE ARCHITECT AND INCLUDE HIS/HER STATE OF NEW HAMPSHIRE LICENSE NUMBER.	PROVIDED
153-14	G. (1) (a) EXISTING VEGETATION SHALL BE PRESERVED WHEREVER POSSIBLE. EXISTING NATURAL FEATURES OF SPECIAL INTEREST, SUCH AS THOSE HAVING HISTORIC RELEVANCE, SHALL BE DELINEATED AND LOCATED ON THE LANDSCAPING PLAN. A NOTE SHOULD BE ADDED TO THE SITE PLAN INDICATING THAT THE IDENTIFIED FEATURE(S) SHALL BE PROTECTED DURING SITE CLEARING AND CONSTRUCTION THROUGH THE USE OF CONSTRUCTION FENCING OR OTHER ADEQUATE PROTECTIVE BARRIERS. MAXIMUM EFFORT SHOULD BE MADE TO PRESERVE SMALL STANDS OF TREES, RATHER THAN INDIVIDUAL TREES, TO MINIMIZE THE POTENTIAL FOR SERIOUS DAMAGE DUE TO WIND, GRADE CHANGES AND SOIL COMPACTION. NO CONSTRUCTION MATERIALS, EQUIPMENT, VEHICLES, OR TEMPORARY SOIL DEPOSITS SHALL BE LOCATED WITHIN THE DRIPLINE OF EXISTING TREES. BEFORE COMMENCEMENT OF WORK, PROTECTIVE BARRIERS SHALL BE INSTALLED AND MAINTAINED AROUND EACH PLANT AND/OR GROUPS OF PLANTS THAT ARE TO REMAIN ON SITE UNTIL COMPLETION. SNOW FENCE INSTALLED AROUND THE DRIPLINE OF THE TREE CANOPY IS AN EXAMPLE OF AN ACCEPTABLE BARRIER.	EXISTING TREES TO REMAIN AND BE PROTECTED DURING CONSTRUCTION
	G. (1) (c) SHRUBS AND HEDGES SHALL BE A MINIMUM OF 24 INCHES IN HEIGHT WHEN MEASURED IMMEDIATELY AFTER PLANTING. GROUND COVERS AND PERENNIALS MAY BE LESS	PROVIDED
	G. (1) (e) PLANTS, OR A COMBINATION OF PLANTS AND A SOLID VISUAL BARRIER SUCH AS WOODEN FENCING, OR BERMS SHALL BE USED TO SCREEN LOADING, WASTE DISPOSAL, MATERIAL STORAGE AND OTHER AREAS THAT ARE LIKELY TO GENERATE NOISE, DUST, OR OTHER POTENTIALLY DISRUPTIVE CONDITIONS.	PROVIDED
	G. (1) (f) LANDSCAPING SHALL BE USED TO ESTABLISH AND/OR MAINTAIN AN ATTRACTIVE STREETSCAPE ADJACENT TO ROADWAYS. A MINIMUM OF ONE TREE PER 35 LINEAR FEET, NOT MORE THAN SIX FEET APART FOR INDIVIDUAL SHRUBS, AND NOT MORE THAN THREE FEET BETWEEN INDIVIDUAL PERENNIALS AND GROUND COVERS OR PORTION THEREOF SHALL BE PROVIDED.	REQUIRED: 9 TREES PROVIDED: 9 TREES CALCULATION: 313 LF OF FRONTAGE ALONG DURHAM ROAD / 35 LF = 8.94 OR 9 TREES
	G. (1) (f) A MAINTENANCE PLAN SHALL BE PROVIDED WITH THE SITE PLAN APPLICATION. ALL LANDSCAPED AREAS SHALL RECEIVE REGULAR MAINTENANCE AND UPKEEP. SEVERELY INJURED, DISEASED, OR DEAD PLANT MATERIAL SHALL BE REPLACED IN KIND IN PERPETUITY (AVOID REPLACING LANDSCAPE MATERIALS IN THE PERIOD FROM NOVEMBER TO MARCH). BEST PRACTICES TO MINIMIZE ENVIRONMENTAL IMPACTS, SUCH AS THE USE OF LOW-PHOSPHORUS FERTILIZER AND SLOW-RELEASE NITROGEN, SHALL BE INCLUDED IN THE MANAGEMENT PLAN. IF OWNERSHIP OF A SITE IS CONVEYED TO A NEW PROPERTY OWNER, THE NEW OWNER SHALL BE RESPONSIBLE FOR MAINTAINING ALL LANDSCAPING IN ACCORDANCE WITH THE APPROVED FINAL LANDSCAPING PLAN.	MAINTENANCE PLAN TO BE PROVIDED BY OWNER REPRESENTATIVE
	G. (1) (a) 21-50 PARKING SPACES REQUIRE A MINIMUM OF 8% INTERIOR LANDSCAPING	WAIVER REQUESTED
	G. (2) (c) ISLANDS AT THE END OF A ROW OF PARKING SPACES ARE ENCOURAGED TO PROTECT PARKED VEHICLES, INCREASE SAFETY IN PARKING LOTS, AND PROVIDE SPACE FOR LANDSCAPING. THE MINIMUM SIZE FOR LANDSCAPED ISLANDS SHALL BE 250 SQUARE FEET IN TOTAL AREA AND SHOULD INCLUDE TREES WITH SHRUBS, PERENNIALS, AND GROUND COVERS PLANTED EN MASSE AMONG THE TREES.	PROVIDED
	G. (2) (d) BARE SOIL IS NOT ACCEPTABLE. THE INTRODUCTION OF GROUND COVERS AND/OR PERENNIALS PLANTED EN MASSE AND THE USE OF MULCH AS A SOIL COVERING IS ACCEPTABLE. HOWEVER, NO MORE THAN 20% OF THE MINIMUM LANDSCAPED AREA MAY BE COVERED WITH NONLIVING LANDSCAPING MATERIAL, SUCH AS BARK MULCH, WOOD CHIPS, OR LEAF LITTER.	PROVIDED
	G. (3) (a) ALONG THE PERIMETER OF PARKING LOTS WITH 10 OR MORE SPACES, DECIDUOUS AND/OR EVERGREEN SHADE TREES SHALL BE PLANTED AT 35 FEET ON CENTER WITHIN THE BUFFER AREA REQUIRED BY § 153-17C. TREES SHALL BE SPECIES TOLERANT TO THE CLIMATIC CONDITIONS OF DOVER AND SHALL BE A MINIMUM CALIPER OF 3 INCHES (MEASURED AT FOUR FEET ABOVE GRADE LEVEL). WITHIN THE PERIMETER BUFFER, SHRUBS SHALL BE PLANTED BETWEEN THE TREES AT FIVE FEET ON CENTER. THE SHRUBS SHALL BE A MIX OF DECIDUOUS AND EVERGREEN SPECIES, TOLERANT TO THE CLIMATIC CONDITIONS OF DOVER AND SHALL BE A MINIMUM HEIGHT OF TWO FEET AT THE TIME OF PLANTING. ALL TREES, SHRUBS AND LANDSCAPING MATERIALS SHALL BE MAINTAINED IN GOOD CONDITION SO AS TO PRESENT A HEALTHY, NEAT, AND ORDERLY APPEARANCE.	REQUIRED: 12 TREES PROVIDED: 12 TREES CALCULATION: 408 LF / 35 LF = 11.65 OR 12 REQUIRED: 82 SHRUBS PROVIDED: 98 SHRUBS CALCULATION: 408 LF / 5 LF = 81.6 OR 82
	G. (3) (c) TO FOSTER BIOLOGICAL DIVERSITY, TREES PLANTED ALONG A GIVEN STREET SHALL USE THE 10-20-30 RULE (NO MORE THAN 10% OF THE TREES SHALL BE OF THE SAME SPECIES, NO MORE THAN 20% IN THE SAME GENUS, AND NO MORE THAN 30% IN THE SAME FAMILY).	PROVIDED
	G. (3) (d) TO ENSURE THAT LANDSCAPE MATERIALS DO NOT CONSTITUTE A DRIVING HAZARD, A CLEAR SIGHT TRIANGLE SHALL BE OBSERVED AT ALL STREET AND ACCESS DRIVE INTERSECTIONS. GROUND COVER AND TREES WITH AT LEAST EIGHT FEET OF LIMBLESS TRUNK SHALL BE PERMITTED WITHIN THE SIGHT DISTANCE TRIANGLE. IN THE CASE OF A CITY STREET INTERSECTION, THE SIGHT TRIANGLE SHALL CONSIST OF THE AREA BETWEEN POINTS 20 FEET ALONG BOTH INTERSECTING STREETS FROM THEIR RESPECTIVE EDGES OF PAVEMENT.	PROVIDED
	G. (5) (a) EACH EXISTING HEALTHY AND NATIVE OR NONINVASIVE TREE, WITH A CALIPER OF THREE INCHES OR GREATER, PRESERVED USING PROPER PROTECTION METHODS WITHIN THE INTERIOR PARKING LOT AREA MAY BE SUBSTITUTED FOR ONE TREE REQUIRED FOR EVERY 10 PARKING SPACES.	2 TREES PRESRVED = 20 PARKING SPACES. 43 TOTAL SPACES PROPOSED - 20 SPACES = 23 23 / 10 = 2.3 OR 3 INTERIOR TREES WAIVER REQUESTED
153-16	B (7) (c) FOR THE OVERALL SITE USE A MIXTURE OF DECIDUOUS AND EVERGREEN TREES	PROVIDED
	B (7) (d) IF RETAINING WALLS IN RETENTION BASINS ARE NECESSARY, THEY SHOULD BE LANDSCAPED TO REDUCE THEIR VISUAL SCALE	PROVIDED
	B (7) (f) NO MORE THAN 25% OF THE TOTAL GROUND AREA OF A LANDSCAPE AREA SHALL BE COMPRISED ON NONLIVING ORNAMENTAL MATERIALS	PROVIDED
	B (7) (g) A MINIMUM OF TWO TREES AND FOUR SHRUBS FOR EACH 1,000 SQUARE FEET OF LANDSCAPED AREA SHALL BE PROVIDED	PROVIDED
	B (7) (h) DECIDUOUS TREES SHALL BE AT LEAST TWO-INCH CALIPER MEASURED FOUR FEET ABOVE THE GROUND, EXCEPT ORNAMENTAL AND FLOWERING TREES SHALL BE AT LEASE AND-AND-ONE-HALF-INCH CALIPER	PROVIDED
	B (7) (i) CONIFEROUS TREES SHALL BE AT LEAST SIX FEET TALL	PROVIDED



MONUMENT SIGN PLANTING EXHIBIT

SEED MIX KEY

- PROPOSED HYDROSEED
- PROPOSED BASIN MIX
- PROPOSED BASIN MIX

THIS PLAN TO BE UTILIZED FOR LANDSCAPE PURPOSES ONLY

20 10 5 0 20

SCALE: 1" = 20'

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PROJECT No.:	MAA240177.00-0C
DRAWN BY:	JDG
CHECKED BY:	CSE
DATE:	12/17/2024
CAD I.D.:	P-CIVIL-LSCP

PROJECT:

PROPOSED SITE PLAN DOCUMENTS

FOR

SITE ID #: 28-0178

PROPOSED DEVELOPMENT

MAP: H | LOT: 4-3
NH ROUTE 108 & GRAPEVINE DRIVE
STRAFFORD COUNTY
DOVER, NEW HAMPSHIRE

BOHLER
352 TURNPIKE ROAD, 3rd FLOOR
SOUTHBOROUGH, MA 01772
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MATTHEW J. MRVA
No. 3108
REGISTERED LANDSCAPE ARCHITECT
COMMONWEALTH OF MASSACHUSETTS
VERMONT No. 1137
OHIO No. 250433

SHEET TITLE:

LANDSCAPE PLAN

SHEET NUMBER:

L-101

ORG. DATE - 12/17/2024

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LANDSCAPE SPECIFICATIONS

1. SCOPE OF WORK:

1.1. THE LANDSCAPE CONTRACTOR SHALL BE REQUIRED TO PERFORM ALL CLEARING, FINISHED GRADING, SOIL PREPARATION, PERMANENT SEEDING OR SODDING, PLANTING AND MULCHING INCLUDING ALL LABOR, MATERIALS, TOOLS AND EQUIPMENT NECESSARY FOR THE COMPLETION OF THIS PROJECT, UNLESS OTHERWISE CONTRACTED BY THE GENERAL CONTRACTOR.

2. MATERIALS

2.1. GENERAL - ALL HARDSCAPE MATERIALS SHALL MEET OR EXCEED SPECIFICATIONS AS OUTLINED IN THE STATE DEPARTMENT OF TRANSPORTATION'S SPECIFICATIONS.

2.2. TOPSOIL - NATURAL, FRIABLE, LOAMY SILT SOIL HAVING AN ORGANIC CONTENT NOT LESS THAN 5%, A PH RANGE BETWEEN 4.5-7.0. IT SHALL BE FREE OF DEBRIS, ROCKS LARGER THAN ONE INCH (1"), WOOD, ROOTS, VEGETABLE MATTER AND CLAY CLODS.

2.3. LAWN - ALL DISTURBED AREAS ARE TO BE TREATED WITH A MINIMUM 6" THICK LAYER OF TOPSOIL, OR AS DIRECTED BY THE LOCAL ORDINANCE OR CLIENT, AND SEEDED OR SODDED IN ACCORDANCE WITH THE PERMANENT STABILIZATION METHODS INDICATED ON THE LANDSCAPE PLAN

2.3.1. LAWN SEED MIXTURE SHALL BE FRESH, CLEAN NEW CROP SEED.

2.3.2. SOD SHALL BE STRONGLY ROOTED, WEED AND DISEASE/PEST FREE WITH A UNIFORM THICKNESS. SOD INSTALLED ON SLOPES GREATER THAN 4:1 SHALL BE PEGGED TO HOLD SOD IN PLACE.

2.4. MULCH - ALL PLANTING BEDS SHALL BE MULCHED WITH A 3" THICK LAYER OF DOUBLE SHREDDED HARDWOOD BARK MULCH, UNLESS OTHERWISE STATED ON THE LANDSCAPE PLAN AND/OR LANDSCAPE PLAN NOTES /DETAILS.

2.5. FERTILIZER

2.5.1. FERTILIZER SHALL BE DELIVERED TO THE SITE MIXED AS SPECIFIED IN THE ORIGINAL UNOPENED STANDARD BAGS SHOWING WEIGHT, ANALYSIS AND NAME OF MANUFACTURER. FERTILIZER SHALL BE STORED IN A WEATHERPROOF PLACE SO THAT IT CAN BE KEPT DRY PRIOR TO USE.

2.5.2. FOR THE PURPOSE OF BIDDING, ASSUME THAT FERTILIZER SHALL BE 10% NITROGEN, 6% PHOSPHORUS AND 4% POTASSIUM BY WEIGHT. A FERTILIZER SHOULD NOT BE SELECTED WITHOUT A SOIL TEST PERFORMED BY A CERTIFIED SOIL LABORATORY.

2.6. PLANT MATERIAL

2.6.1. ALL PLANTS SHALL IN ALL CASES CONFORM TO THE REQUIREMENTS OF THE "AMERICAN STANDARD FOR NURSERY STOCK" (ANSI Z60.1), LATEST EDITION, AS PUBLISHED BY THE AMERICAN NURSERY & LANDSCAPE ASSOCIATION (FORMERLY THE AMERICAN ASSOCIATION OF NURSERYMEN).

2.6.2. IN ALL CASES, BOTANICAL NAMES SHALL TAKE PRECEDENCE OVER COMMON NAMES FOR ANY AND ALL PLANT MATERIAL.

2.6.3. PLANTS SHALL BE LEGIBLY TAGGED WITH THE PROPER NAME AND SIZE. TAGS ARE TO REMAIN ON AT LEAST ONE PLANT OF EACH SPECIES FOR VERIFICATION PURPOSES DURING THE FINAL INSPECTION.

2.6.4. TREES WITH ABRASION OF THE BARK, SUN SCALDS, DISFIGURATION OR FRESH CUTS OF LIMBS OVER 1¼", WHICH HAVE NOT BEEN COMPLETELY CALLUSED, SHALL BE REJECTED. PLANTS SHALL NOT BE BOUND WITH WIRE OR ROPE AT ANY TIME SO AS TO DAMAGE THE BARK OR BREAK BRANCHES.

2.6.5. ALL PLANTS SHALL BE TYPICAL OF THEIR SPECIES OR VARIETY AND SHALL HAVE A NORMAL HABIT OF GROWTH: WELL DEVELOPED BRANCHES, DENSELY FOLIATED, VIGOROUS ROOT SYSTEMS AND BE FREE OF DISEASE, INSECTS, PESTS, EGGS OR LARVAE.

2.6.6. CALIPER MEASUREMENTS OF NURSERY GROWN TREES SHALL BE TAKEN AT A POINT ON THE TRUNK SIX INCHES (6") ABOVE THE NATURAL GRADE FOR TREES UP TO AND INCLUDING A FOUR INCH (4") CALIPER SIZE. IF THE CALIPER AT SIX INCHES (6") ABOVE THE GROUND EXCEEDS FOUR INCHES (4") IN CALIPER, THE CALIPER SHOULD BE MEASURED AT A POINT 12" ABOVE THE NATURAL GRADE.

2.6.7. SHRUBS SHALL BE MEASURED TO THE AVERAGE HEIGHT OR SPREAD OF THE SHRUB, AND NOT TO THE LONGEST BRANCH.

2.6.8. TREES AND SHRUBS SHALL BE HANDLED WITH CARE BY THE ROOT BALL.

3. GENERAL WORK PROCEDURES

3.1. CONTRACTOR TO UTILIZE WORKMANLIKE INDUSTRY STANDARDS IN PERFORMING ALL LANDSCAPE CONSTRUCTION. THE SITE IS TO BE LEFT IN A CLEAN STATE AT THE END OF EACH WORKDAY. ALL DEBRIS, MATERIALS AND TOOLS SHALL BE PROPERLY STORED, STOCKPILED OR DISPOSED OF.

3.2. WASTE MATERIALS AND DEBRIS SHALL BE COMPLETELY DISPOSED OF AT THE CONTRACTOR'S EXPENSE. DEBRIS SHALL NOT BE BURIED, INCLUDING ORGANIC MATERIALS, BUT SHALL BE REMOVED COMPLETELY FROM THE SITE.

4. SITE PREPARATIONS

4.1. BEFORE AND DURING PRELIMINARY GRADING AND FINISHED GRADING, ALL WEEDS AND GRASSES SHALL BE DUG OUT BY THE ROOTS AND DISPOSED OF IN ACCORDANCE WITH GENERAL WORK PROCEDURES OUTLINED HEREIN.

4.2. ALL EXISTING TREES TO REMAIN SHALL BE PRUNED TO REMOVE ANY DAMAGED BRANCHES. THE ENTIRE LIMB OF ANY DAMAGED BRANCH SHALL BE CUT OFF AT THE BRANCH COLLAR. CONTRACTOR SHALL ENSURE THAT CUTS ARE SMOOTH AND STRAIGHT. ANY EXPOSED ROOTS SHALL BE CUT BACK WITH CLEAN, SHARP TOOLS AND TOPSOIL SHALL BE PLACED AROUND THE REMAINDER OF THE ROOTS. EXISTING TREES SHALL BE MONITORED ON A REGULAR BASIS FOR ADDITIONAL ROOT OR BRANCH DAMAGE AS A RESULT OF CONSTRUCTION. ROOTS SHALL NOT BE LEFT EXPOSED FOR MORE THAN ONE (1) DAY. CONTRACTOR SHALL WATER EXISTING TREES AS NEEDED TO PREVENT SHOCK OR DECLINE.

4.3. CONTRACTOR SHALL ARRANGE TO HAVE A UTILITY STAKE-OUT TO LOCATE ALL UNDERGROUND UTILITIES PRIOR TO INSTALLATION OF ANY LANDSCAPE MATERIAL. UTILITY COMPANIES SHALL BE CONTACTED THREE (3) DAYS PRIOR TO THE BEGINNING OF WORK.

5. TREE PROTECTION

5.1. CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING TREES TO REMAIN. A TREE PROTECTION ZONE SHALL BE ESTABLISHED AT THE DRIP LINE OR AT THE LIMIT OF CONSTRUCTION DISTURBANCE, WHICHEVER IS GREATER. LOCAL STANDARDS THAT MAY REQUIRE A MORE STRICT TREE PROTECTION ZONE SHALL BE HONORED.

5.2. A FORTY-EIGHT INCH (48") HIGH WOODEN SNOW FENCE OR ORANGE COLORED HIGH-DENSITY "VISI-FENCE", OR APPROVED EQUAL, MOUNTED ON STEEL POSTS SHALL BE PLACED ALONG THE BOUNDARY OF THE TREE PROTECTION ZONE. POSTS SHALL BE LOCATED AT A MAXIMUM OF EIGHT FEET (8') ON CENTER OR AS INDICATED WITHIN THE TREE PROTECTION DETAIL.

5.3. WHEN THE TREE PROTECTION FENCING HAS BEEN INSTALLED, IT SHALL BE INSPECTED BY THE APPROVING AGENCY PRIOR TO DEMOLITION, GRADING, TREE CLEARING OR ANY OTHER CONSTRUCTION. THE FENCING ALONG THE TREE PROTECTION ZONE SHALL BE REGULARLY INSPECTED BY THE LANDSCAPE CONTRACTOR AND MAINTAINED UNTIL ALL CONSTRUCTION ACTIVITY HAS BEEN COMPLETED.

5.4. AT NO TIME SHALL MACHINERY, DEBRIS, FALLEN TREES OR OTHER MATERIALS BE PLACED, STOCKPILED OR LEFT STANDING IN THE TREE PROTECTION ZONE.

6. SOIL MODIFICATIONS

6.1. CONTRACTOR SHALL ATTAIN A SOIL TEST FOR ALL AREAS OF THE SITE PRIOR TO CONDUCTING ANY PLANTING. SOIL TESTS SHALL BE PERFORMED BY A CERTIFIED SOIL LABORATORY.

6.2. LANDSCAPE CONTRACTOR SHALL REPORT ANY SOIL OR DRAINAGE CONDITIONS CONSIDERED DETRIMENTAL TO THE GROWTH OF PLANT MATERIAL, SOIL MODIFICATIONS, AS SPECIFIED HEREIN, MAY NEED TO BE CONDUCTED BY THE LANDSCAPE CONTRACTOR DEPENDING ON SITE CONDITIONS.

6.3. THE FOLLOWING AMENDMENTS AND QUANTITIES ARE APPROXIMATE AND ARE FOR BIDDING PURPOSES ONLY. COMPOSITION OF AMENDMENTS SHOULD BE REVISED DEPENDING ON THE OUTCOME OF A TOPSOIL ANALYSIS PERFORMED BY A CERTIFIED SOIL LABORATORY.

6.3.1. TO INCREASE A SANDY SOIL'S ABILITY TO RETAIN WATER AND NUTRIENTS, THOROUGHLY TILL ORGANIC MATTER INTO THE TOP 6-12". USE COMPOSTED BARK, COMPOSTED LEAF MULCH OR PEAT MOSS. ALL PRODUCTS SHOULD BE COMPOSTED TO A DARK COLOR AND BE FREE OF PIECES WITH IDENTIFIABLE LEAF OR WOOD STRUCTURE. AVOID MATERIAL WITH A PH HIGHER THAN 7.5.

6.3.2. TO INCREASE DRAINAGE, MODIFY HEAVY CLAY OR SILT (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED PINE BARK (UP TO 30% BY VOLUME) AND/OR AGRICULTURAL GYPSUM. COARSE SAND MAY BE USED IF ENOUGH IS ADDED TO BRING THE SAND CONTENT TO MORE THAN 60% OF THE TOTAL MIX. SUBSURFACE DRAINAGE LINES MAY NEED TO BE ADDED TO INCREASE DRAINAGE.

6.3.3. MODIFY EXTREMELY SANDY SOILS (MORE THAN 85%) BY ADDING ORGANIC MATTER AND/OR DRY, SHREDDED CLAY LOAM UP TO 30% OF THE TOTAL MIX.

7. FINISHED GRADING

7.1. UNLESS OTHERWISE CONTRACTED, THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF TOPSOIL AND THE ESTABLISHMENT OF FINE-GRADING WITHIN THE DISTURBANCE AREA OF THE SITE.

7.2. LANDSCAPE CONTRACTOR SHALL VERIFY THAT SUBGRADE FOR INSTALLATION OF TOPSOIL HAS BEEN ESTABLISHED. THE SUBGRADE OF THE SITE MUST MEET THE FINISHED GRADE LESS THE REQUIRED TOPSOIL THICKNESS (1"±).

7.3. ALL LAWN AND PLANTING AREAS SHALL BE GRADED TO A SMOOTH, EVEN AND UNIFORM PLANE WITH NO ABRUPT CHANGE OF SURFACE AS DEPICTED WITHIN THIS SET OF CONSTRUCTION PLANS, UNLESS OTHERWISE DIRECTED BY THE PROJECT ENGINEER OR LANDSCAPE ARCHITECT.

7.4. ALL PLANTING AREAS SHALL BE GRADED AND MAINTAINED TO ALLOW FREE FLOW OF SURFACE WATER IN AND AROUND THE PLANTING BEDS. STANDING WATER SHALL NOT BE PERMITTED IN PLANTING BEDS.

8. TOPSOILING

8.1. CONTRACTOR SHALL PROVIDE A 6" THICK MINIMUM LAYER OF TOPSOIL, OR AS DIRECTED BY THE LOCAL ORDINANCE OR CLIENT, IN ALL PLANTING AREAS. TOPSOIL SHOULD BE SPREAD OVER A PREPARED SURFACE IN A UNIFORM LAYER TO ACHIEVE THE DESIRED COMPACTED THICKNESS.

8.2. ON-SITE TOPSOIL MAY BE USED TO SUPPLEMENT THE TOTAL AMOUNT REQUIRED. TOPSOIL FROM THE SITE MAY BE REJECTED IF IT HAS NOT BEEN PROPERLY REMOVED, STORED AND PROTECTED PRIOR TO CONSTRUCTION.

8.3. CONTRACTOR SHALL FURNISH TO THE APPROVING AGENCY AN ANALYSIS OF BOTH IMPORTED AND ON-SITE TOPSOIL TO BE UTILIZED IN ALL PLANTING AREAS. THE PH AND NUTRIENT LEVELS MAY NEED TO BE ADJUSTED THROUGH SOIL MODIFICATIONS AS NEEDED TO ACHIEVE THE REQUIRED LEVELS AS SPECIFIED IN THE MATERIALS SECTION ABOVE.

8.4. ALL LAWN AREAS ARE TO BE CULTIVATED TO A DEPTH OF SIX INCHES (6"). ALL DEBRIS EXPOSED FROM EXCAVATION AND CULTIVATION SHALL BE DISPOSED OF IN ACCORDANCE WITH GENERAL WORK PROCEDURES SECTION ABOVE. THE FOLLOWING SHALL BE TILLED INTO THE TOP FOUR INCHES (4") IN TWO DIRECTIONS (QUANTITIES BASED ON A 1,000 SQUARE FOOT AREA - FOR BID PURPOSES ONLY (SEE SPECIFICATION 8.A.)):

8.4.1. 20 POUNDS 'GRO-POWER' OR APPROVED SOIL CONDITIONER/FERTILIZER

8.4.2. 20 POUNDS NITRO-FORM (COURSE) 38-0-0 BLUE CHIP OR APPROVED NITROGEN FERTILIZER

8.5. THE SPREADING OF TOPSOIL SHALL NOT BE CONDUCTED UNDER MUDDY OR FROZEN CONDITIONS.

9. PLANTING

9.1. INSOFAR THAT IT IS FEASIBLE, PLANT MATERIAL SHALL BE PLANTED ON THE DAY OF DELIVERY. IN THE EVENT THAT THIS IS NOT POSSIBLE, LANDSCAPE CONTRACTOR SHALL PROTECT UNINSTALLED PLANT MATERIAL. PLANTS SHALL NOT REMAIN UNPLANTED FOR LONGER THAN A THREE DAY PERIOD AFTER DELIVERY. PLANTS THAT WILL NOT BE PLANTED FOR A PERIOD OF TIME GREATER THAN THREE DAYS SHALL BE HEALED IN WITH TOPSOIL OR MULCH TO HELP PRESERVE ROOT MOISTURE.

9.2. PLANTING OPERATIONS SHALL BE PERFORMED DURING PERIODS WITHIN THE PLANTING SEASON WHEN WEATHER AND SOIL CONDITIONS ARE SUITABLE AND IN ACCORDANCE WITH ACCEPTED LOCAL PRACTICE. PLANTS SHALL NOT BE INSTALLED IN TOPSOIL THAT IS IN A MUDDY OR FROZEN CONDITION.

9.3. ANY INJURED ROOTS OR BRANCHES SHALL BE PRUNED TO MAKE CLEAN-CUT ENDS PRIOR TO PLANTING UTILIZING CLEAN, SHARP TOOLS. ONLY INJURED OR DISEASED BRANCHING SHALL BE REMOVED.

9.4. ALL PLANTING CONTAINERS, BASKETS AND NON-BIODEGRADABLE MATERIALS SHALL BE REMOVED FROM ROOT BALLS DURING PLANTING. NATURAL FIBER BURLAP MUST BE CUT FROM AROUND THE TRUNK OF THE TREE AND FOLDED DOWN AGAINST THE ROOT BALL PRIOR TO BACKFILLING.

9.5. POSITION TREES AND SHRUBS AT THEIR INTENDED LOCATIONS AS PER THE PLANS AND SECURE THE APPROVAL OF THE LANDSCAPE ARCHITECT PRIOR TO EXCAVATING PITS, MAKING NECESSARY ADJUSTMENTS AS DIRECTED.

9.6. PRIOR TO THE ISSUANCE OF ANY CERTIFICATE OF OCCUPANCY, THE PROPOSED LANDSCAPE, AS SHOWN ON THE APPROVED LANDSCAPE PLAN, MUST BE INSTALLED, INSPECTED AND APPROVED BY THE APPROVING AGENCY. THE APPROVING AGENCY SHALL TAKE INTO ACCOUNT SEASONAL CONSIDERATIONS IN THIS REGARD AS FOLLOWS. THE PLANTING OF TREES, SHRUBS, VINES OR GROUND COVER SHALL OCCUR ONLY DURING THE FOLLOWING PLANTING SEASONS:

9.6.1. PLANTS: MARCH 15 TO DECEMBER 15

9.6.2. LAWN: MARCH 15 TO JUNE 15 OR SEPT. 1 TO DECEMBER 1

9.6.3. PLANTINGS REQUIRED FOR A CERTIFICATE OF OCCUPANCY SHALL BE PROVIDED DURING THE NEXT APPROPRIATE SEASON AT THE MUNICIPALITY'S DISCRETION. CONTRACTOR SHOULD CONTACT APPROVING AGENCY FOR POTENTIAL SUBSTITUTIONS.

9.7. FURTHERMORE, THE FOLLOWING TREE VARIETIES ARE UNUSUALLY SUSCEPTIBLE TO WINTER DAMAGE. WITH TRANSPLANT SHOCK AND THE SEASONAL LACK OF NITROGEN AVAILABILITY, THE RISK OF PLANT DEATH IS GREATLY INCREASED. IT IS NOT RECOMMENDED THAT THESE SPECIES BE PLANTED DURING THE FALL PLANTING SEASON:

ACER RUBRUM	PLATANUS X ACERIFOLIA
BETULA VARIETIES	POPULUS VARIETIES
CARPINUS VARIETIES	PRUNUS VARIETIES
CRATAEGUS VARIETIES	PYRUS VARIETIES
KOELREUTERIA	QUERCUS VARIETIES
LIQUIDAMBAR STYRACIFLUA	TILIA TOMENTOSA
LIRIODENDRON TULIPIFERA	ZELKOVA VARIETIES

9.8. PLANTING PITS SHALL BE DUG WITH LEVEL BOTTOMS, WITH THE WIDTH TWICE THE DIAMETER OF ROOT BALL. THE ROOT BALL SHALL REST ON UNDISTURBED GRADE. EACH PLANT PIT SHALL BE BACKFILLED IN LAYERS WITH THE FOLLOWING PREPARED SOIL MIXED THOROUGHLY:

9.8.1. 1 PART PEAT MOSS

9.8.2. 1 PART COMPOSTED COW MANURE BY VOLUME

9.8.3. 3 PARTS TOPSOIL BY VOLUME

9.8.4. 21 GRAMS 'AGRIFORM' PLANTING TABLETS (OR APPROVED EQUAL) AS FOLLOWS:
- 9.8.4.1. 2 TABLETS PER 1 GALLON PLANT
- 9.8.4.2. 3 TABLETS PER 5 GALLON PLANT
- 9.8.4.3. 4 TABLETS PER 15 GALLON PLANT
- 9.8.4.4. LARGER PLANTS: 2 TABLETS PER ½" CALIPER OF TRUNK

9.9. FILL PREPARED SOIL AROUND BALL OF PLANT HALF-WAY AND INSERT PLANT TABLETS. COMPLETE BACKFILL AND WATER THOROUGHLY.

9.10. ALL PLANTS SHALL BE PLANTED SO THAT THE TOP OF THE ROOT BALL, THE POINT AT WHICH THE ROOT FLARE BEGINS, IS SET AT GROUND LEVEL AND IN THE CENTER OF THE PIT. NO SOIL IS TO BE PLACED DIRECTLY ON TOP OF THE ROOT BALL.

9.11. ALL PROPOSED TREES DIRECTLY ADJACENT TO WALKWAYS OR DRIVEWAYS SHALL BE PRUNED AND MAINTAINED TO A MINIMUM BRANCHING HEIGHT OF 7' FROM GRADE.

9.12. GROUND COVER AREAS SHALL RECEIVE A ¼" LAYER OF HUMUS RAKED INTO THE TOP 1" OF PREPARED SOIL PRIOR TO PLANTING. ALL GROUND COVER AREAS SHALL BE WEEDED AND TREATED WITH A PRE-EMERGENT CHEMICAL AS PER MANUFACTURER'S RECOMMENDATION.

9.13. NO PLANT, EXCEPT GROUND COVERS, GRASSES OR VINES, SHALL BE PLANTED LESS THAN TWO FEET (2') FROM EXISTING STRUCTURES AND SIDEWALKS.

9.14. ALL PLANTING AREAS AND PLANTING PITS SHALL BE MULCHED AS SPECIFIED HEREIN TO FILL THE ENTIRE BED AREA OR SAUCER. NO MULCH IS TO TOUCH THE TRUNK OF THE TREE OR SHRUB.

9.15. ALL PLANTING AREAS SHALL BE WATERED IMMEDIATELY UPON INSTALLATION IN ACCORDANCE WITH THE WATERING SPECIFICATIONS AS LISTED HEREIN.

10. TRANSPLANTING (WHEN REQUIRED)

10.1. ALL TRANSPLANTS SHALL BE DUG WITH INTACT ROOT BALLS CAPABLE OF SUSTAINING THE PLANT.

10.2. IF PLANTS ARE TO BE STOCKPILED BEFORE REPLANTING, THEY SHALL BE HEALED IN WITH MULCH OR SOIL, ADEQUATELY WATERED AND PROTECTED FROM EXTREME HEAT, SUN AND WIND.

10.3. PLANTS SHALL NOT BE DUG FOR TRANSPLANTING BETWEEN APRIL 10 AND JUNE 30.

10.4. UPON REPLANTING, BACKFILL SOIL SHALL BE AMENDED WITH FERTILIZER AND ROOT GROWTH HORMONE.

10.5. TRANSPLANTS SHALL BE GUARANTEED FOR THE LENGTH OF THE GUARANTEE PERIOD SPECIFIED HEREIN.

10.6. F TRANSPLANTS DIE, SHRUBS AND TREES LESS THAN SIX INCHES (6") DBH SHALL BE REPLACED IN KIND. TREES GREATER THAN SIX INCHES (6") DBH MAY BE REQUIRED TO BE REPLACED IN ACCORDANCE WITH THE MUNICIPALITY'S TREE REPLACEMENT GUIDELINES.

11. WATERING

11.1. NEW PLANTINGS OR LAWN AREAS SHALL BE ADEQUATELY IRRIGATED BEGINNING IMMEDIATELY AFTER PLANTING. WATER SHALL BE APPLIED TO EACH TREE AND SHRUB IN SUCH MANNER AS NOT TO DISTURB BACKFILL AND TO THE EXTENT THAT ALL MATERIALS IN THE PLANTING HOLE ARE THOROUGHLY SATURATED. WATERING SHALL CONTINUE AT LEAST UNTIL PLANTS ARE ESTABLISHED.

11.2. SITE OWNER SHALL PROVIDE WATER IF AVAILABLE ON SITE AT TIME OF PLANTING. IF WATER IS NOT AVAILABLE ON SITE, CONTRACTOR SHALL SUPPLY ALL NECESSARY WATER. THE USE OF WATERING BAGS IS RECOMMENDED FOR ALL NEWLY PLANTED TREES.

11.3. IF AN IRRIGATION SYSTEM HAS BEEN INSTALLED ON THE SITE, IT SHALL BE USED TO WATER PROPOSED PLANT MATERIAL, BUT ANY FAILURE OF THE SYSTEM DOES NOT ELIMINATE THE CONTRACTOR'S RESPONSIBILITY OF MAINTAINING THE DESIRED MOISTURE LEVEL FOR VIGOROUS, HEALTHY GROWTH.

12. GUARANTEE

12.1. THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL PLANTS FOR A PERIOD OF 1 YEAR FROM APPROVAL OF LANDSCAPE INSTALLATION BY THE APPROVING AGENCY. CONTRACTOR SHALL SUPPLY THE OWNER WITH A MAINTENANCE BOND FOR TEN PERCENT (10%) OF THE VALUE OF THE LANDSCAPE INSTALLATION WHICH WILL BE RELEASED AT THE CONCLUSION OF THE GUARANTEE PERIOD AND WHEN A FINAL INSPECTION HAS BEEN COMPLETED AND APPROVED BY THE OWNER OR AUTHORIZED REPRESENTATIVE.

12.2. ANY DEAD OR DYING PLANT MATERIAL SHALL BE REPLACED FOR THE LENGTH OF THE GUARANTEE PERIOD. REPLACEMENT OF PLANT MATERIAL SHALL BE CONDUCTED AT THE FIRST SUCCEEDING PLANTING SEASON. ANY DEBRIS SHALL BE DISPOSED OF OFF-SITE, WITHOUT EXCEPTION.

12.3. TREES AND SHRUBS SHALL BE MAINTAINED BY THE CONTRACTOR DURING CONSTRUCTION AND THROUGHOUT THE 90 DAY MAINTENANCE PERIOD AS SPECIFIED HEREIN. CULTIVATION, WEEDING, WATERING AND THE PREVENTATIVE TREATMENTS SHALL BE PERFORMED AS NECESSARY TO KEEP PLANT MATERIAL IN GOOD CONDITION AND FREE OF INSECTS AND DISEASE.

12.4. LAWNS SHALL BE MAINTAINED THROUGH WATERING, FERTILIZING, WEEDING, MOWING, TRIMMING AND OTHER OPERATIONS SUCH AS ROLLING, REGARDING AND REPLANTING AS REQUIRED TO ESTABLISH A SMOOTH, ACCEPTABLE LAWN, FREE OF ERODED OR BARE AREAS.

13. CLEANUP

13.1. UPON THE COMPLETION OF ALL LANDSCAPE INSTALLATION AND BEFORE THE FINAL ACCEPTANCE, THE CONTRACTOR SHALL REMOVE ALL UNUSED MATERIALS, EQUIPMENT AND DEBRIS FROM THE SITE. ALL PAVED AREAS ARE TO BE CLEANED.

13.2. THE SITE SHALL BE CLEANED AND LEFT IN A NEAT AND ACCEPTABLE CONDITION AS APPROVED BY THE OWNER OR AUTHORIZED REPRESENTATIVE.

14. MAINTENANCE (ALTERNATIVE BID):

14.1. A 90 DAY MAINTENANCE PERIOD SHALL COMMENCE AT THE END OF ALL LANDSCAPE INSTALLATION OPERATIONS. THE 90 DAY MAINTENANCE PERIOD ENSURES TO THE OWNER/OPERATOR THAT THE NEWLY INSTALLED LANDSCAPING HAS BEEN MAINTAINED AS SPECIFIED ON THE APPROVED LANDSCAPE PLAN. ONCE THE INITIAL 90 DAY MAINTENANCE PERIOD HAS EXPIRED, THE OWNER/OPERATOR MAY REQUEST THAT BIDDERS SUBMIT AN ALTERNATE MAINTENANCE BID FOR A MONTHLY MAINTENANCE CONTRACT. THE ALTERNATE MAINTENANCE CONTRACT WILL ENCOMPASS ANY WORK THAT IS CONSIDERED APPROPRIATE TO ENSURE THAT PLANT AND LAWN AREAS ARE HEALTHY AND MANICURED TO THE APPROVAL OF THE OWNER/OPERATOR.

"QUICK EROSION CONTROL COVER MIX" AS PREPARED BY:

ERNST CONSERVATION SEEDS, INC.
8884 MERCER PIKE, MEADVILLE, PA 16335
PHONE: 800-873-3321 / 814-336-2404
EMAIL: SALES@ERNSTSEED.COM
WEBSITE: WWW.ERNSTSEED.COM

APPLICATION RATE: 50 LBS. / ACRE

MIX COMPOSITION:
50.0% Lolium multiflorum (Annual Ryegrass)
50.0% Lolium perenne, 'Blackcat II' (Perennial Ryegrass)

SLOPE SEED MIX SPECIFICATIONS

"NATIVE DETENTION AREA MIX" AS PREPARED BY:

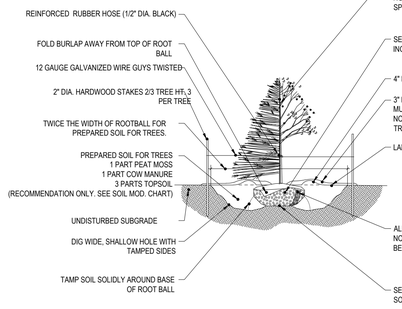
ERNST CONSERVATION SEEDS, INC.
8884 MERCER PIKE, MEADVILLE, PA 16335
PHONE: 800-873-3321 / 814-336-2404
EMAIL: SALES@ERNSTSEED.COM
WEBSITE: WWW.ERNSTSEED.COM

APPLICATION RATE: 1/2 LB. / 1000 SQ. FT. (20 LBS. / ACRE)

MIX COMPOSITION:
25.0% PANICUM VIRGATUM, 'SHELTER' (SWITCHGRASS, 'SHELTER')
24.0% PANICUM CLANDESTINUM, 'TIOGA' (DEERTONGUE, 'TIOGA')
22.0% CAREX VULPINOIDEA, PA ECOTYPE (FOX SEDGE, PA ECOTYPE)
21.0% ELYMUS VIRGINICUS, PA ECOTYPE (VIRGINIA WILDRYE, PA ECOTYPE)
6.0% AGROSTIS PERENNANS, ALBANY PINE BUSH-NY ECOTYPE (AUTUMN BENTGRASS, ALBANY PINE BUSH-NY ECOTYPE)
1.0% JUNCUS EFFUSUS (SOFT RUSH)
1.0% PANICUM RIGIDULUM, PA ECOTYPE (REDTOP PANICGRASS, PA ECOTYPE)

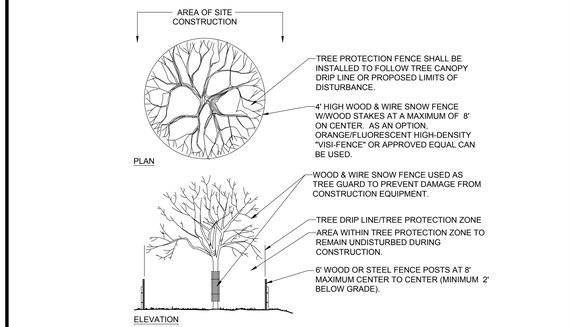
BASIN SEED MIX SPECIFICATIONS

NOTES:
1.) NO SOIL OR MULCH SHALL BE PLACED AGAINST ROOT COLLAR OF PLANT.
2.) REMOVE ALL NON-BIODEGRADABLE MATERIAL AND ROPE FROM TRUNK & TOP OF ROOT BALL. FOLD BURLAP BACK 1/3 FROM ROOT BALL.
3.) PLANTING DEPTH SHALL BE THE SAME AS GROWN IN NURSERY.
4.) THOROUGHLY SOAK THE TREE ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH
AFTER PLANTING AND REGULARLY THROUGHOUT THE FOLLOWING TWO SUMMERS.
5.) THE BOTTOM OF PLANTING PIT EXCAVATIONS SHOULD BE ROUGH TO AVOID MATTING OF SOIL LAYERS AS
NEW SOIL IS ADDED. IT IS PREFERABLE TO TILL THE FIRST LIFT (2 TO 3 IN.) OF PLANTING SOIL INTO THE SUBSOIL.
6.) REFER TO THE CHART "GENERAL RANGE OF SOIL MODIFICATIONS & VOLUMES FOR VARIOUS SOIL CONDITIONS" TO DETERMINE MINIMUM WIDTH OF PREPARED SOIL.
7.) SUBSTITUTE ARBORVITAE STAKING SYSTEM WHEN SPECIFIED.



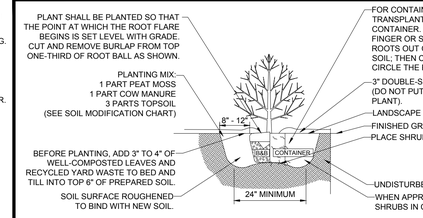
TREE PLANTING DETAIL

N.T.S.



TREE PROTECTION DURING SITE CONSTRUCTION

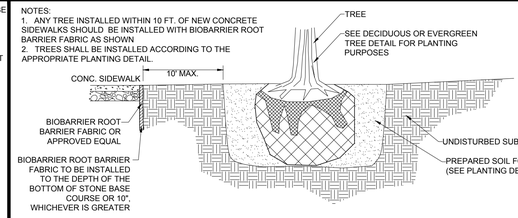
N.T.S.



SHRUB PLANTING DETAIL

N.T.S.

NOTES:
1. ANY TREE INSTALLED WITHIN 10 FT. OF NEW CONCRETE SIDEWALKS SHOULD BE INSTALLED WITH BIOBARRIER ROOT BARRIER FABRIC AS SHOWN
2. TREES SHALL BE INSTALLED ACCORDING TO THE APPROPRIATE PLANTING DETAIL.


TREE
SEE DECIDUOUS OR EVERGREEN TREE DETA

NADB3

MAP H
LOT 4-3
N/F LANDS OF
VC DOVER INVESTMENTS, LLC.
BK. 3496, PG. 733.

APPROX. LOC. OF 50' WIDE EASEMENT TO LOT H-4-1 & ACCESS EASEMENT C

APPROX. LOC. OF ACCESS EASEMENT "A" BK. 3496, PG. 746. (DOT HATCH)

PROP LOT LINE
(TOTAL PARCEL: 1.92 AC
LAND TAKING: 0.67 AC)

PROP LIMIT OF WORK LINE (TYP)

172.09'
S24°08'19"W

84.08'
S65°46'54"E

52.03'
S65°46'54"E

162.91'
S65°46'54"E

47.83'
S54°08'19"W

44.34'
S24°08'34"W

42.03'
S10°32'45"W

N65°41'53"W
69.00'

N60°19'10"W
48.72'

N65°40'47"W
575.52'

N24°13'06"E
313.87'

PROPOSED 2023 SERIES
BB20-4584-WW-HB
McDONALD'S RESTAURANT
(3,694 SF.)
(38 SEATS)

MAP H
LOT 4-3
N/F LANDS OF
VC DOVER INVESTMENTS, LLC.
BK. 3496, PG. 733.
VACANT-NO BUILDINGS

AB

A2

DRIVE THRU

APPROX LOCATION WETLANDS PER PLANS TITLED "PROPOSED RESTAURANT "TACO BELL" - CHARLES, FORD" DATED 2-3-2022, REVISED THROUGH 10/27/2022. WETLANDS DELINEATED BY SIMON F. BURT, N.H.C.W.S. #163 OF TERRENCE ROCK ENVIRONMENTAL SERVICES ON 9/2/2022.

DURHAM ROAD
(A.K.A. N.H. ROUTE 108)
(PUBLIC - 66' WIDE R.O.W.)
(PER SURVEY)
TWO WAY TRAFFIC
(ASPHALT ROADWAY)

GRAPEVINE DRIVE
(PRIVATE - COMMON AREA)
(PER SURVEY)
TWO WAY TRAFFIC
(ASPHALT ROADWAY)

R=44.78'
D=058°12'5"
L=45.50'
CHB=S36°36'21"E
CHD=43.56'

NEW HAMPSHIRE LIGHTING NOTES

(Rev. 6/2023)

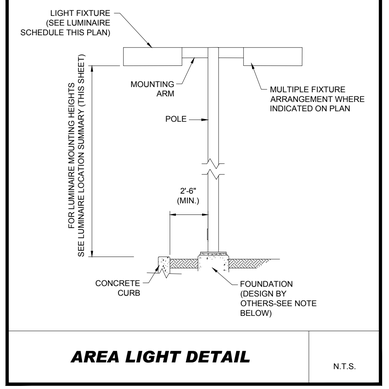
1. THE GENERAL NOTES MUST BE INCLUDED AS PART OF THIS ENTIRE DOCUMENT PACKAGE AND ARE PART OF THE CONTRACT DOCUMENTS. THE GENERAL NOTES ARE REFERENCED HEREIN, AND THE CONTRACTOR MUST REFER TO THEM AND FULLY COMPLY WITH THESE NOTES, IN THEIR ENTIRETY. THE CONTRACTOR MUST BE FAMILIAR WITH AND ACKNOWLEDGE FAMILIARITY WITH ALL OF THE GENERAL NOTES AND ALL OF THE PLANS' SPECIFIC NOTES.
2. THIS LIGHTING PLAN DEPICTS PROPOSED SUSTAINED ILLUMINATION LEVELS CALCULATED USING DATA PROVIDED BY THE NOTED MANUFACTURER(S). ACTUAL SUSTAINED SITE ILLUMINATION LEVELS AND PERFORMANCE OF LUMINAIRES MAY VARY DUE TO VARIATIONS IN WEATHER, ELECTRICAL VOLTAGE, TOLERANCE IN LAMPS, THE SERVICE LIFE OF EQUIPMENT AND LUMINAIRES AND OTHER RELATED VARIABLE FIELD CONDITIONS.
3. THE LIGHT LOSS FACTORS (LLF) DEPICTED IN THE LUMINAIRE SCHEDULE ON THIS PLAN ARE BASED ON DATA PROVIDED BY THE MANUFACTURER FOLLOWING IES LM-80-08 TESTING. THE LIGHT LEVELS DEPICTED ON THIS PLAN WERE CALCULATED BASED ON THE LLF LISTED IN THE LUMINAIRE SCHEDULE.
4. THE LIGHTING VALUES AND CALCULATION POINTS DEPICTED ON THIS PLAN ARE ALL ANALYZED ON A HORIZONTAL GEOMETRIC PLANE AT ELEVATION ZERO (GROUND LEVEL) UNLESS OTHERWISE NOTED. THE VALUES DEPICTED ON THIS PLAN ARE IN FOOTCANDLES (FC).
5. THE LUMINAIRES, LAMPS AND LENSES MUST BE REGULARLY INSPECTED/MAINTAINED TO ENSURE THAT THEY FUNCTION PROPERLY. THIS WORK SHOULD INCLUDE, BUT IS NOT LIMITED TO, VISUAL OBSERVATION, CLEANING OF LENSES, AND RE-LAMPING (IF NECESSARY) ACCORDING TO MANUFACTURER RECOMMENDATIONS. FAILURE TO FOLLOW THE ABOVE STEPS COULD RESULT IN IMPROPER LIGHT DISTRIBUTION AND FAILURE TO COMPLY WITH THE APPROVED DESIGN. UPON COMPLETION AND OWNER'S ACCEPTANCE OF THE WORK, THE ABOVE RESPONSIBILITIES BECOMES SOLELY THE OWNERS.
6. WHERE APPLICABLE, THE EXISTING CONDITION LIGHT LEVELS ILLUSTRATED ARE REPRESENTATIVE OF AN APPROXIMATION UTILIZING LABORATORY DATA FOR SIMILAR FIXTURES, UNLESS ACTUAL FIELD MEASUREMENTS ARE TAKEN WITH A LIGHT METER AND ARE, CONSEQUENTLY, APPROXIMATIONS ONLY. DUE TO FACTORS SUCH AS FIXTURE MAINTENANCE, EQUIPMENT TOLERANCES, WEATHER CONDITIONS, ETC, ACTUAL LIGHT LEVELS MAY DIFFER. EXISTING LIGHT LEVELS DEPICTED ON THIS PLAN SHOULD BE CONSIDERED APPROXIMATE.
7. THIS LIGHTING PLAN IS INTENDED TO SHOW THE LOCATIONS AND TYPE OF LUMINAIRES, ONLY. POWER SYSTEM, CONDUITS, WIRING, VOLTAGES AND OTHER ELECTRICAL COMPONENTS ARE THE RESPONSIBILITY OF THE ARCHITECT, MEP AND/OR LIGHTING CONTRACTOR, AS INDICATED IN THE CONSTRUCTION CONTRACT DOCUMENTS. THESE ITEMS MUST BE INSTALLED AS REQUIRED BY STATE AND LOCAL REGULATIONS. LIGHT POLE BASES ARE THE RESPONSIBILITY OF THE STRUCTURAL ENGINEER, AS INDICATED IN THE CONSTRUCTION CONTRACT DOCUMENTS. CONTRACTOR IS RESPONSIBLE FOR INSTALLING LIGHTING FIXTURES AND APPURTENANCES IN ACCORDANCE WITH ALL APPLICABLE BUILDING AND ELECTRICAL CODES AND ALL OTHER APPLICABLE RULES, REGULATIONS, LAWS AND STATUTES.
8. CONTRACTOR MUST BRING TO DESIGNER'S ATTENTION, PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, ANY LIGHT LOCATIONS THAT CONFLICT WITH DRAINAGE, UTILITIES, OR OTHER STRUCTURES.
9. IT IS THE LIGHTING CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH THE PROJECT ARCHITECT OR OWNER REGARDING ANY AND ALL POWER SOURCE(S) , AND TIMING DEVICES NECESSARY TO MEET THE DESIGN INTENT. THESE ITEMS MUST BE INSTALLED AS REQUIRED BY STATE AND LOCAL REGULATIONS.
10. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT SHIELDING AND OR ROTATED OPTICS ARE INSTALLED AS INDICATED ON THE PLAN IN ORDER TO ACHIEVE THE LIGHTING LEVELS THE REVIEWING AGENCY APPROVED.
11. THE LIGHTING CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CONTRACTOR REQUIREMENTS INDICATED IN THE SITE PLAN, INCLUDING BUT NOT LIMITED TO, GENERAL NOTES, GRADING AND UTILITY NOTES, SITE SAFETY, AND ALL GOVERNMENTAL RULES, LAWS, ORDINANCES, REGULATIONS AND THE LIKE.
12. THE CONTRACTOR MUST VERIFY THAT INSTALLATION OF LIGHTING FIXTURES COMPLIES WITH THE REQUIREMENTS FOR SEPARATION FROM OVERHEAD ELECTRICAL WIRES PER STATE REGULATIONS.
13. WHEN A BANK ATM IS INCLUDED IN THE PLAN, THE LIGHTING DESIGN REPRESENTS BOHLER'S UNDERSTANDING AND INTERPRETATION OF THE REGULATORY LIGHTING LEVELS INTENDED BY PUBLISHED STANDARDS.
14. UPON OWNER'S ACCEPTANCE OF THE COMPLETED PROJECT, THE OWNER SHALL BE RESPONSIBLE FOR ALL MAINTENANCE, SERVICING, REPAIR AND INSPECTION OF THE LIGHTING SYSTEM AND ALL OF ITS COMPONENTS AND RELATED SYSTEMS, TO ENSURE ADEQUATE LIGHTING LEVELS ARE PRESENT AND FUNCTIONING AT ALL TIMES.

NUMERIC SUMMARY

LABEL	CALC TYPE	UNITS	AVG	MAX	MIN	AVG/MIN	MAX/MIN
PAVED SURFACE READINGS	ILLUMINANCE	FC	3.00	7.0	0.5	6.00	14.00
PROPERTY LINE READINGS	ILLUMINANCE	FC	0.10	1.1	0.0	N/A	N/A
OVERALL READINGS	ILLUMINANCE	FC	0.52	7.3	0.0	N/A	N/A

LUMINAIRE SCHEDULE

SYMBOL	QTY	ARRANGEMENT	LUM WATTS	LLF	DESCRIPTION	MOUNTING HEIGHT
AB	5	SINGLE	226.9	0.85	RAR2-480L-240-5K7-4W SES-18-40-1-TA-GL-XX (4") POLE	21'
A2	1	BACK-BACK	226.9	0.85	RAR2-480L-240-5K7-4W-BC SES-18-40-1-TA-GL-XX (4") POLE	21'



AREA LIGHT DETAIL — N.T.S.

NOTE: THIS DETAIL IS FOR BID AND BUDGETARY PURPOSES ONLY. CONTRACTOR SHALL BE RESPONSIBLE FOR HAVING A FOUNDATION DESIGN PREPARED BY A QUALIFIED STRUCTURAL ENGINEER CONSIDERING LIGHTING MANUFACTURER REQUIREMENTS, LOCAL WIND LOADS AND SITE SPECIFIC SOIL PARAMETERS.

- SOME SITE CONDITIONS AND/OR LOCATIONS MAY REQUIRE VIBRATION DAMPENING MEASURES AS DETERMINED BY A STRUCTURAL ENGINEER.
- THE STRUCTURAL ENGINEER SHALL BE NOTIFIED OF THE INTENT TO MOUNT ANYTHING TO THE POLE, ASIDE FROM THE LIGHT FIXTURES, INCLUDING BUT NOT LIMITED TO CAMERAS, BANNERS, FLAGS, SIGNAGE, ETC. AS IT WILL IMPACT THE POLE AND FOUNDATION DESIGN.

THIS PLAN TO BE UTILIZED FOR LIGHTING PURPOSES ONLY

20 10 5 0 20
SCALE: 1" = 20'

BOHLER
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

THE INFORMATION, DESIGN AND CONTENT OF THIS PLAN ARE COPYRIGHTED AND SHALL NOT BE COPIED OR USED FOR ANY PURPOSE WITHOUT PRIOR WRITTEN AUTHORIZATION FROM BOHLER. ONLY APPROVED, SEALED PLANS SHALL BE UTILIZED FOR CONSTRUCTION PURPOSES.

REVISIONS

REV	DATE	COMMENT	DRAWN BY / CHECKED BY

Know what's below. Call before you dig.
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It's fast. It's free. It's the law.

ISSUED FOR ENTITLEMENTS

THIS DRAWING IS INTENDED FOR MUNICIPAL AND/OR AGENCY REVIEW AND APPROVAL. IT IS NOT INTENDED AS A CONSTRUCTION DOCUMENT UNLESS INDICATED OTHERWISE.

PROJECT No.:	MAA240177.00-0C
DRAWN BY:	JDG
CHECKED BY:	CSE
DATE:	12/17/2024
CAD I.D.:	P-CIVL-PROP

PROJECT:

PROPOSED SITE PLAN DOCUMENTS

FOR

SITE ID #: 28-0178

PROPOSED DEVELOPMENT

MAP: H | LOT: 4-3
NH ROUTE 108 & GRAPEVINE DRIVE
STRAFFORD COUNTY
DOVER, NEW HAMPSHIRE

BOHLER
352 TURNPIKE ROAD, 3rd FLOOR
SOUTHBOROUGH, MA 01772
Phone: (508) 480-9900
www.BohlerEngineering.com

J.A. KUCICH — PROFESSIONAL ENGINEER — NEW HAMPSHIRE — CERTIFICATE NUMBER 14476 — PROFESSIONAL ENGINEER

SHEET TITLE:

SOIL EROSION AND SEDIMENT CONTROL PLAN

SHEET NUMBER:

L-201

ORG. DATE - 12/17/2024

P:\2024\MAA240177.00\CAD\DRAWINGS\PLAN SETS\CIVIL SITE PLANS\P-CIVL-PROP-MAA240177.00-0C---LAYOUT L-201 LGHT

REFERENCES:

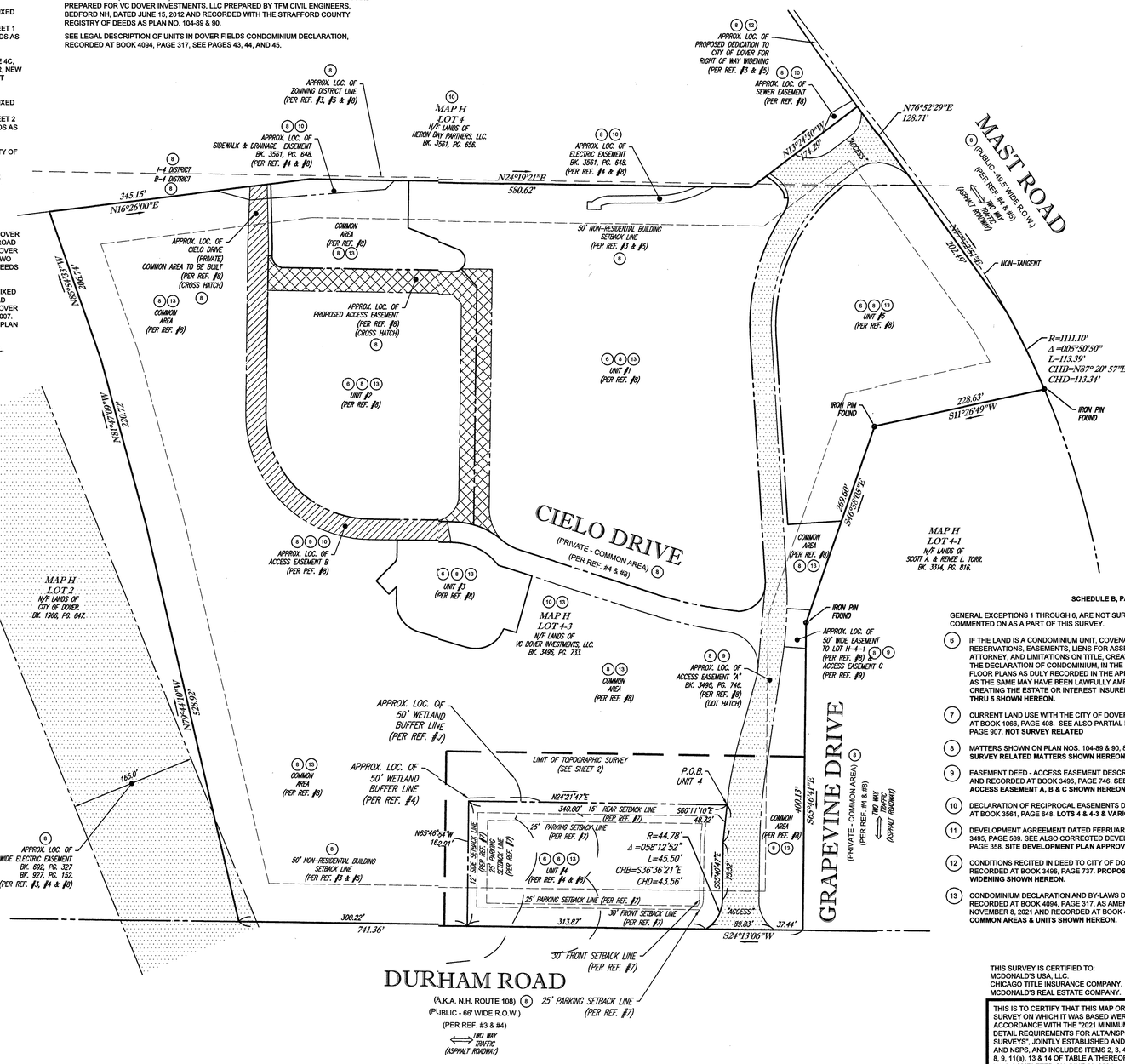
1. THE GIS MAP OF CITY OF DOVER, STRAFFORD COUNTY, MAP H.
2. MAP ENTITLED "NATIONAL FLOOD INSURANCE PROGRAM, FIRM, FLOOD INSURANCE RATE MAP, STRAFFORD COUNTY, NEW HAMPSHIRE (ALL JURISDICTIONS), PANEL 320 OF 405," MAP NUMBER 33017C0320E. MAP REVISED: SEPTEMBER 30, 2015.
3. MAP ENTITLED "TAX MAP H, LOT 4, SUBDIVISION PLAN (1 OF 2), MIXED USE DEVELOPMENT, NH ROUTE 108 & MAST ROAD, DOVER, NEW HAMPSHIRE," PREPARED BY TFM, DATED OCTOBER 30, 2006. SHEET 1 OF 2. RECORDED WITH STRAFFORD COUNTY REGISTRY OF DEEDS AS PLAN BOOK 89, PAGE 40.
4. MAP ENTITLED "TAX MAP H, LOT 4-3, OVERALL SITE PLAN - PHASE 4C, MIXED USE DEVELOPMENT, NH ROUTE 108 & MAST ROAD, DOVER, NEW HAMPSHIRE," PREPARED BY TFM, DATED OCTOBER 18, 2022, LAST REVISED FEBRUARY 28, 2023. SHEET 2 OF 23.
5. MAP ENTITLED "TAX MAP H, LOT 4, SUBDIVISION PLAN (2 OF 2), MIXED USE DEVELOPMENT, NH ROUTE 108 & MAST ROAD, DOVER, NEW HAMPSHIRE," PREPARED BY TFM, DATED OCTOBER 30, 2006. SHEET 2 OF 2. RECORDED WITH STRAFFORD COUNTY REGISTRY OF DEEDS AS PLAN BOOK 89, PAGE 41.
6. UNDERGROUND WATER MAPPING IN THE AREA PROVIDED BY CITY OF DOVER.
7. MAP ENTITLED "PROPOSED RESTAURANT TACO BELL - CHARTER FOODS, DURHAM ROAD (NH 108) AND GRAPEVINE DRIVE CITY OF DOVER, COUNTY OF STRAFFORD, STATE OF NEW HAMPSHIRE, EXISTING CONDITION & DEMOLITION PLAN" PREPARED BY CHRISTOPHER J. BEDNAR, DATED JULY 5, 2022, LAST REVISED OCTOBER 27, 2022. SHEET C1.0
8. MAP ENTITLED "TAX MAP H, LOT 4-3, CONDOMINIUM SITE PLAN, DOVER FIELDS CONDOMINIUN, DURHAM ROAD (NH ROUTE 108) & MAST ROAD DOVER, NEW HAMPSHIRE, OWNED BY AND PREPARED FOR VC DOVER INVESTMENTS, LLC," PREPARED BY TFM, DATED JUNE 15, 2012. TWO SHEETS. RECORDED WITH STRAFFORD COUNTY REGISTRY OF DEEDS AS PLAN BOOK 104, PAGE 89 & 90.
9. MAP ENTITLED "TAX MAP H, LOT 4 & 4-3, SITE EASEMENT PLAN, MIXED USE DEVELOPMENT RETAIL PHASE, (NH ROUTE 108) & MAST ROAD DOVER, NEW HAMPSHIRE, OWNED BY AND PREPARED FOR VC DOVER INVESTMENTS, LLC," PREPARED BY TFM, DATED FEBRUARY 15, 2007. RECORDED WITH STRAFFORD COUNTY REGISTRY OF DEEDS AS PLAN BOOK 91, PAGE 43.
10. UNDERGROUND GAS MAPPING IN THE AREA PROVIDED BY UNITIL.

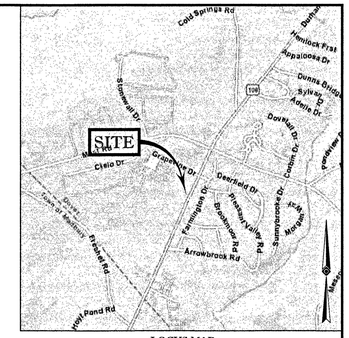
EXHIBIT "A"
COMMITMENT No. NH240053CTI WITH AN EFFECTIVE DATE OF APRIL 30, 2024.
LEGAL DESCRIPTION

UNIT NUMBER TO BE DETERMINED

AS SHOWN ON TAX MAP H LOT 4-3 CONDOMINIUM SITE PLAN DOVER FIELDS CONDOMINIUM DURHAM ROAD (NH ROUTE 108) AND MAST ROAD DOVER NEW HAMPSHIRE OWNED BY AND PREPARED FOR VC DOVER INVESTMENTS, LLC PREPARED BY TFM CIVIL ENGINEERS, BEDFORD NH, DATED JUNE 15, 2012 AND RECORDED WITH THE STRAFFORD COUNTY REGISTRY OF DEEDS AS PLAN NO. 104-89 & 90.

SEE LEGAL DESCRIPTION OF UNITS IN DOVER FIELDS CONDOMINIUM DECLARATION, RECORDED AT BOOK 4094, PAGE 317, SEE PAGES 43, 44, AND 45.





LOCUS MAP
NOT TO SCALE

NOTES:

1. PROPERTY KNOWN AS LOT 4-3, UNIT 4 AS SHOWN ON THE CITY OF DOVER, STRAFFORD COUNTY, STATE OF NEW HAMPSHIRE; MAP NO. H.
2. AREA LOT 4-3 = 923,185 SQUARE FEET OR 21.193 ACRES.
   AREA UNIT 4 = 54,340 SQUARE FEET OR 1.247 ACRES.
3. LOCATION OF UNDERGROUND UTILITIES ARE APPROXIMATE. LOCATIONS AND SIZES ARE BASED ON UTILITY MARK-OUTS, ABOVE GROUND STRUCTURES THAT WERE VISIBLE & ACCESSIBLE IN THE FIELD, AND THE MAPS AS LISTED IN THE REFERENCES AVAILABLE AT THE TIME OF THE SURVEY. AVAILABLE AS-BUILT PLANS AND UTILITY MARKOUT DOES NOT ENSURE MAPPING OF ALL UNDERGROUND UTILITIES AND STRUCTURES. BEFORE ANY EXCAVATION IS TO BEGIN, ALL UNDERGROUND UTILITIES SHOULD BE VERIFIED AS TO THEIR LOCATION, SIZE AND TYPE BY THE PROPER UTILITY COMPANIES. CONTROL POINT ASSOCIATES, INC. DOES NOT GUARANTEE THE UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA EITHER IN SERVICE OR ABANDONED.
   - QUALITY LEVEL D - UTILITIES SHOWN BASED UPON REFERENCE MAPPING OR ORAL HISTORY. NOT FIELD VERIFIED.
   - QUALITY LEVEL C - LOCATION OF UTILITY SURFACE FEATURES SUPPLEMENTS REFERENCE MAPPING. INCLUDES MARKOUT BY OTHERS.
   - QUALITY LEVEL B - UTILITY LOCATION DATA IS COLLECTED THROUGH GEOPHYSICAL SENSING TECHNOLOGY TO SUPPLEMENT SURFACE FEATURES AND OR REFERENCE MAPPING. INCLUDES MARKOUT BY CONTROL POINT ASSOCIATES, INC.
   - QUALITY LEVEL A - HORIZONTAL AND VERTICAL LOCATION OF UTILITIES ARE OBTAINED USING VACUUM EQUIPMENT EXCAVATION OR OTHER METHODS TO EXPOSE THE UTILITY. LOCATION SHOWN AT SINGLE POINT WHERE EXCAVATION OCCURRED UNLESS UTILITY WAS LOCATED PRIOR TO FILLING.

   ALL FOUR TYPES MAY NOT BE PRESENT ON THIS SURVEY.
4. THIS PLAN IS BASED ON INFORMATION PROVIDED BY A SURVEY PREPARED IN THE FIELD BY CONTROL POINT ASSOCIATES, INC. AND OTHER REFERENCE MATERIAL AS LISTED HEREON.
5. THIS SURVEY WAS PREPARED WITH THE BENEFIT OF COMMITMENT FOR TITLE INSURANCE PREPARED BY CHICAGO TITLE INSURANCE COMPANY, COMMITMENT NUMBER: NH240053CTI, WITH AN EFFECTIVE DATE OF APRIL 30, 2024 AND IS SUBJECT TO THE RESTRICTIONS, COVENANTS AND/OR EASEMENTS THAT MAY BE CONTAINED THEREIN.
6. BY GRAPHIC PLOTTING ONLY PROPERTY IS PARTIALLY LOCATED IN FLOOD HAZARD ZONE X- UNSHADED (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN), PER REF. #2
7. ELEVATIONS REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), BASED ON GPS OBSERVATIONS UTILIZING THE KEYSTONE VRS NETWORK (KEYNETGPS) TAKEN AT THE TIME OF THE FIELD SURVEY.

   TEMPORARY BENCH MARKS SET:

   TBM-A: X-CUT SET IN BOLT OVER MAIN OUTLET OF FIRE HYDRANT, ELEVATION= 111.24'

   TBM-B: X-CUT SET ON CORNER OF CONCRETE PAD, ELEVATION= 110.46'

   PRIOR TO CONSTRUCTION IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THAT THE BENCHMARKS ILLUSTRATED ON THIS SKETCH HAVE NOT BEEN DISTURBED AND THEIR ELEVATIONS HAVE BEEN CONFIRMED. ANY CONFLICTS MUST BE REPORTED PRIOR TO CONSTRUCTION.
8. THE OFFSETS SHOWN ARE NOT TO BE USED FOR THE CONSTRUCTION OF ANY STRUCTURE, FENCE, PERMANENT ADDITION, ETC.
9. PARTIAL TOPOGRAPHY SHOWN HEREON PER CONTRACTUAL AGREEMENT WITH CLIENT.
10. PROPERTY HAS DIRECT ACCESS TO DURHAM ROAD & INDIRECT ACCESS TO MAST ROAD & DURHAM ROAD VIA ACCESS EASEMENT RECORDED IN BOOK 3561, PAGE 648.
11. NO PARKING STRIPES WERE OBSERVED WITHIN THE SURVEY AREA AT THE TIME OF THE FIELD WORK.
12. THERE IS NO EVIDENCE OF RECENT EARTH MOVING WORK, BUILDING CONSTRUCTION OR BUILDING ADDITIONS OBSERVED IN THE PROCESS OF CONDUCTING THE FIELD WORK.
13. NO PROPOSED CHANGES IN STREET RIGHT OF WAY LINES HAVE BEEN MADE AVAILABLE TO THE SURVEYOR BY THE CONTROLLING JURISDICTION.
14. NO BUILDING OBSERVED WITHIN SURVEY AREA AT THE TIME OF FIELD WORK.

SCHEDULE B, PART II

GENERAL EXCEPTIONS 1 THROUGH 5, ARE NOT SURVEY RELATED AND HAVE NOT BEEN COMMENTED ON AS A PART OF THIS SURVEY.

6. IF THE LAND IS A CONDOMINIUM UNIT, COVENANTS, CONDITIONS, RESTRICTIONS, RESERVATIONS, EASEMENTS, LIENS FOR ASSESSMENTS, OPTIONS, POWERS OF ATTORNEY, AND LIMITATIONS ON TITLE, CREATED BY STATE LAW OR SET FORTH IN THE DECLARATION OF CONDOMINIUM, IN THE RELATED BY-LAWS, OR SITE PLANS AND FLOOR PLANS AS DULY RECORDED IN THE APPROPRIATE LAND RECORDS OFFICE AND AS THE SAME MAY HAVE BEEN LAWFULLY AMENDED, AND IN ANY INSTRUMENTS CREATING THE ESTATE OR INTEREST INSURED BY THIS POLICY. **CONDOMINIUM UNITS 1 THRU 5 SHOWN HEREON.**
7. CURRENT LAND USE WITH THE CITY OF DOVER DATED JUNE 8, 1981 AND RECORDED AT BOOK 1066, PAGE 408. SEE ALSO PARTIAL RELEASE RECORDED AT BOOK 3553, PAGE 907. **NOT SURVEY RELATED**
8. MATTERS SHOWN ON PLAN NOS. 104-89 & 90, 89-40 & 41, 91-43, AND 64-23. **SURVEY RELATED MATTERS SHOWN HEREON.**
9. EASEMENT DEED - ACCESS EASEMENT DESCRIBED IN DEED DATED FEBRUARY 21, 2007 AND RECORDED AT BOOK 3496, PAGE 746. SEE ALSO EASEMENT PLAN 91-43. **ACCESS EASEMENT A, B & C SHOWN HEREON.**
10. DECLARATION OF RECIPROCAL EASEMENTS DATED AUGUST 7, 2007 AND RECORDED AT BOOK 3561, PAGE 648. **LOTS 4 & 4-3 & VARIOUS EASEMENTS SHOWN HEREON.**
11. DEVELOPMENT AGREEMENT DATED FEBRUARY 20, 2007 AND RECORDED AT BOOK 3495, PAGE 589. SEE ALSO CORRECTED DEVELOPMENT AGREEMENT AT BOOK 3534, PAGE 358. **SITE DEVELOPMENT PLAN APPROVAL; NOT PLOTTABLE.**
12. CONDITIONS RECITED IN DEED TO CITY OF DOVER DATED FEBRUARY 21, 2007 AND RECORDED AT BOOK 3496, PAGE 737. **PROPOSED DEDICATION FOR RIGHT OF WAY WIDENING SHOWN HEREON.**
13. CONDOMINIUM DECLARATION AND BY-LAWS DATED DECEMBER 14, 2012 AND RECORDED AT BOOK 4094, PAGE 317, AS AMENDED BY FIRST AMENDMENT DATED NOVEMBER 8, 2021 AND RECORDED AT BOOK 4979, PAGE 349. **BLANKET IN NATURE, COMMON AREAS & UNITS SHOWN HEREON.**

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THE STATE OF NEW HAMPSHIRE REQUIRES NOTIFICATION BY EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN THE STATE.

SEE SHEET 2 OF 2 FOR TOPOGRAPHIC & UTILITIES

GRAPHIC SCALE
80' 0 40' 80' 160' 320'
(IN FEET)
1 inch = 80 ft.

THIS SURVEY IS CERTIFIED TO:
MCDONALD'S USA, LLC.
CHICAGO TITLE INSURANCE COMPANY.
MCDONALD'S REAL ESTATE COMPANY.

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT WAS BASED WERE MADE IN ACCORDANCE WITH THE "2021 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS", JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 2, 3, 4, 5, 7(a), 7(b)(1), 7(c), 8, 9, 11(a), 13 & 14 OF TABLE A THEREOF. THE FIELDWORK WAS COMPLETED ON JUNE 19, 2024.

NOT A VALID ORIGINAL DOCUMENT UNLESS EMBOSSED WITH RAISED IMPRESSION OR STAMPED WITH A BLUE INK SEAL.

STATE OF NEW HAMPSHIRE — No. 899 JOHN P. LYNCH — LICENSED LAND SURVEYOR
SIGNATURE
07-10-2024
DATE

JOHN P. LYNCH
NEW HAMPSHIRE PROFESSIONAL LAND SURVEYOR #899

FIELD DATE	06-19-2024
FIELD BOOK NO.	23-03-MA
FIELD BOOK PG.	58
FIELD CREW	J.S.A.
DRAWN:	R.A.B.
REVIEWED:	R.J.K.

ALTA/NSPS LAND TITLE SURVEY
McDONALD'S USA, LLC
GRAPEVINE DRIVE & 250 MAST ROAD
MAP H, LOT 4-3, UNIT 4
CITY OF DOVER, STRAFFORD COUNTY
STATE OF NEW HAMPSHIRE
L/C# 28-0178

CONTROL POINT ASSOCIATES, INC.
352 TURNPIKE ROAD
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508.948.3000 - 508.948.3003 FAX
ALBANY, NY 5182175010
CHALFONT, PA 2157129800
MANHATTAN, NY 4467809411
MT LAUREL, NJ 6098572099
WARREN, NJ 9086680099

APPROVED:	DATE	SCALE	FILE NO.	DWG. NO.
J.P.L.	07-10-2024	1"=80'	03-240216-00	1 OF 2

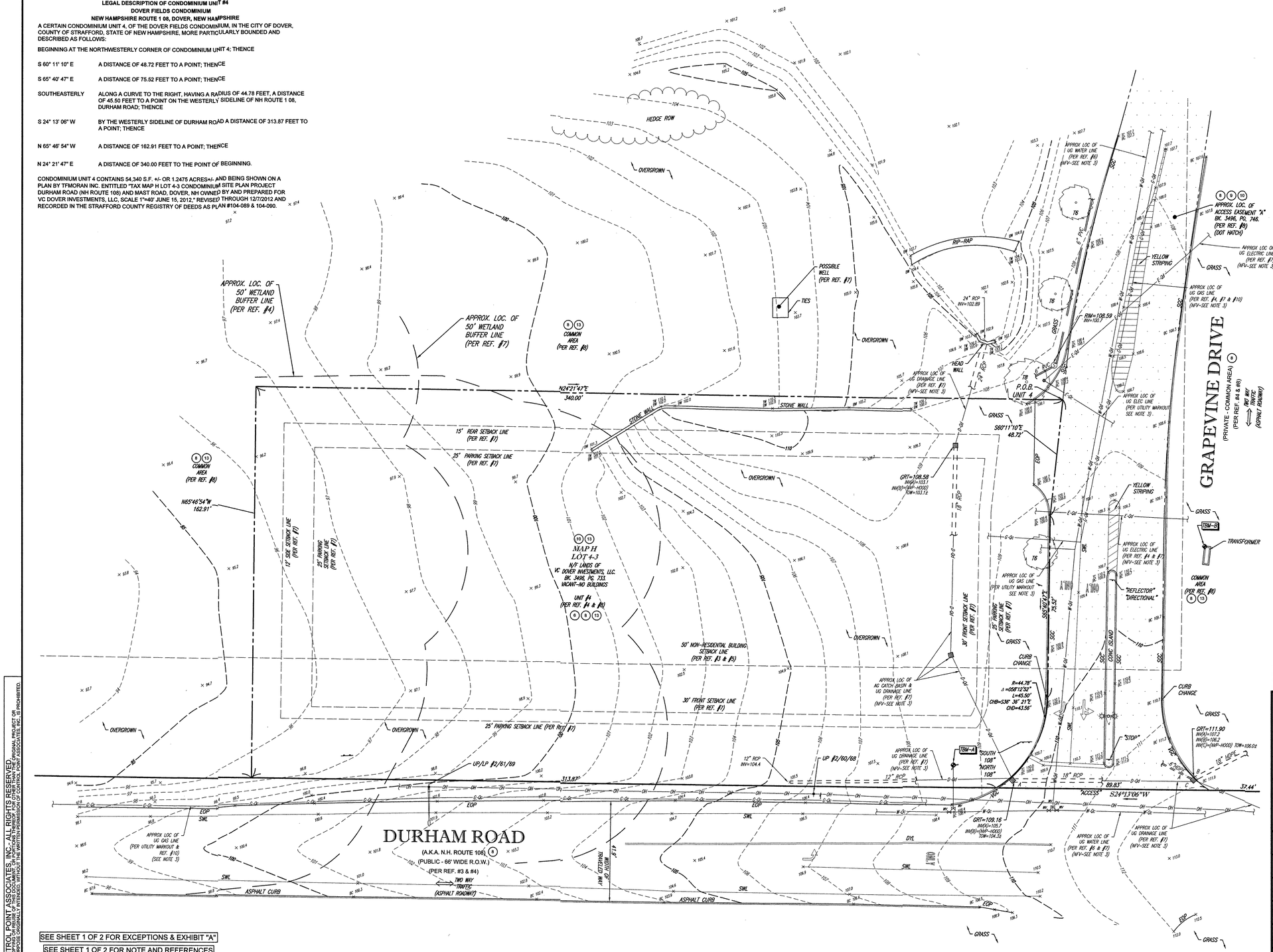
LEGAL DESCRIPTION OF CONDOMINIUM UNIT #4
DOVER FIELDS CONDOMINIUM
NEW HAMPSHIRE ROUTE 1 08, DOVER, NEW HAMPSHIRE

A CERTAIN CONDOMINIUM UNIT 4, OF THE DOVER FIELDS CONDOMINIUM, IN THE CITY OF DOVER, COUNTY OF STRAFFORD, STATE OF NEW HAMPSHIRE, MORE PARTICULARLY BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHWESTERLY CORNER OF CONDOMINIUM UNIT 4; THENCE

S 60° 11' 10" E	A DISTANCE OF 48.72 FEET TO A POINT; THENCE
S 65° 40' 47" E	A DISTANCE OF 75.52 FEET TO A POINT; THENCE
SOUTHEASTERLY	ALONG A CURVE TO THE RIGHT, HAVING A RADIUS OF 44.78 FEET, A DISTANCE OF 45.50 FEET TO A POINT ON THE WESTERLY SIDELINE OF NH ROUTE 1 08, DURHAM ROAD; THENCE
S 24° 13' 06" W	BY THE WESTERLY SIDELINE OF DURHAM ROAD A DISTANCE OF 313.87 FEET TO A POINT; THENCE
N 65° 46' 54" W	A DISTANCE OF 162.91 FEET TO A POINT; THENCE
N 24° 21' 47" E	A DISTANCE OF 340.00 FEET TO THE POINT OF BEGINNING.

CONDOMINIUM UNIT 4 CONTAINS 54,340 S.F. +/- OR 1.2475 ACRES+/- AND BEING SHOWN ON A PLAN BY TFMORAN INC. ENTITLED "TAX MAP H LOT 4-3 CONDOMINIUM SITE PLAN PROJECT DURHAM ROAD (NH ROUTE 108) AND MAST ROAD, DOVER, NH OWNED BY AND PREPARED FOR VC DOVER INVESTMENTS, LLC, SCALE 1"=40' JUNE 15, 2012," REVISED THROUGH 12/7/2012 AND RECORDED IN THE STRAFFORD COUNTY REGISTRY OF DEEDS AS PLAN #104-089 & 104-090.



SEE SHEET 1 OF 2 FOR EXCEPTIONS & EXHIBIT "A"

SEE SHEET 1 OF 2 FOR NOTE AND REFERENCES

LEGEND

124 / 125	EXISTING CONTOUR
× 123.45	EXISTING SPOT ELEVATION
× TC 123.45	EXISTING TOP OF CURB ELEVATION
× BC 123.45	EXISTING BOTTOM OF CURB ELEVATION
× TW 123.45	EXISTING TOP OF WALL ELEVATION
× BW 122.95	EXISTING BOTTOM OF WALL ELEVATION
	HYDRANT
WV	WATER VALVE
OH	OVERHEAD WIRES
G	APPROX. LOC. UNDERGROUND GAS LINE
E	APPROX. LOC. UNDERGROUND ELECTRIC LINE
D	APPROX. LOC. UNDERGROUND DRAINAGE LINE
S	APPROX. LOC. UNDERGROUND SANITARY / SEWER LINE
W	APPROX. LOC. UNDERGROUND WATER LINE
UP	UTILITY POLE
	PAINTED ARROWS
S SMH	SANITARY/SEWER MANHOLE
CB	CATCH BASIN OR INLET
TREE & TRUNK SIZE	
EOC	EDGE OF CONCRETE
EOP	EDGE OF PAVEMENT
(TYP)	TYPICAL
SWL	SOLID WHITE LINE
PVC	POLYVINYL CHLORIDE PIPE
RCP	REINFORCED CONCRETE PIPE
INV	INVERT ELEVATION
GRT	GRATE ELEVATION
SGC	SLOPE GRANITE CURB
VGC	VERTICAL GRANITE CURB
-Uc	SUBSURFACE UTILITY QUALITY LEVEL C
-Ud	SUBSURFACE UTILITY QUALITY LEVEL D
(#)	TITLE REPORT EXCEPTION

GRAPHIC SCALE

20' 0 10' 20' 40' 80'

(IN FEET)
1 inch = 20 ft.

THIS SURVEY IS CERTIFIED TO:
MCDONALD'S USA, LLC.
CHICAGO TITLE INSURANCE COMPANY.
MCDONALD'S REAL ESTATE COMPANY.

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT WAS BASED WERE MADE IN ACCORDANCE WITH THE "2021 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS", JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 2, 3, 4, 5, 7(a), 7(b)(1), 7(c), 8, 9, 11(a), 13 & 14 OF TABLE A THEREOF. THE FIELDWORK WAS COMPLETED ON JUNE 19, 2024.

NOT A VALID ORIGINAL DOCUMENT UNLESS EMBOSSED WITH RAISED IMPRESSION OR STAMPED WITH A BLUE INK SEAL.

STATE OF NEW HAMPSHIRE — LICENSED LAND SURVEYOR — No. 899 — JOHN P LYNCH — SURVEYOR

07-10-2024
DATE

JOHN P. LYNCH
NEW HAMPSHIRE PROFESSIONAL LAND SURVEYOR #899

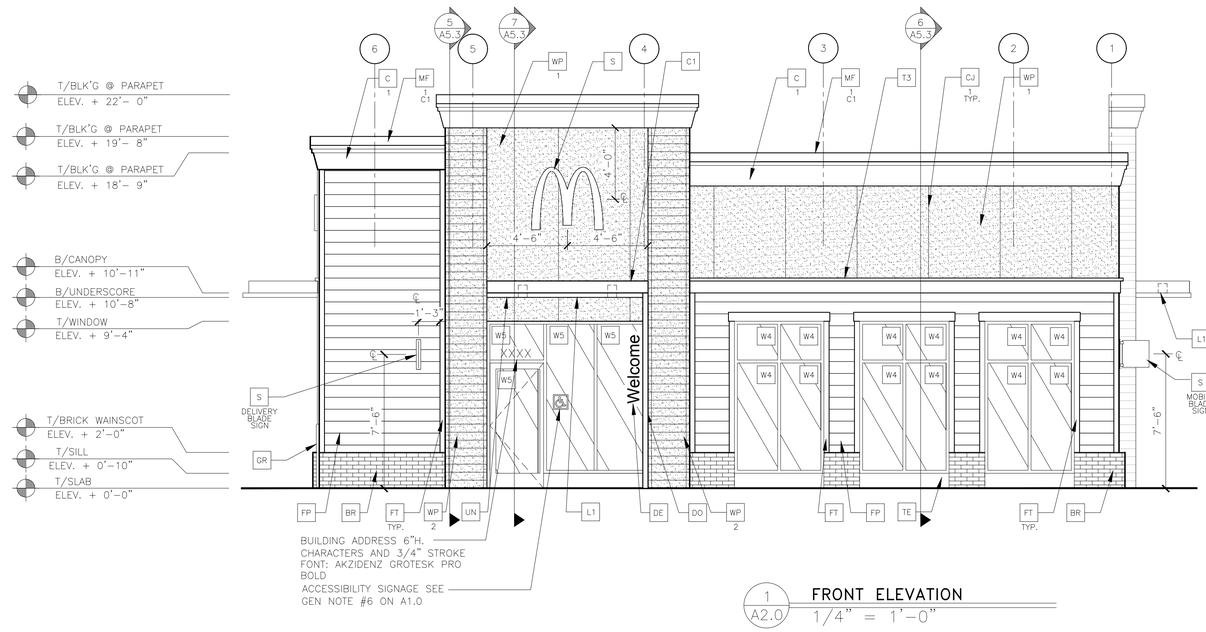
FIELD DATE	06-19-2024
FIELD BOOK NO.	23-03-MA
FIELD BOOK PG.	58
FIELD CREW	J.S.A.
DRAWN:	R.A.B.
REVIEWED:	R.J.K.

ALTA/NSPS LAND TITLE SURVEY
McDONALD'S USA, LLC
GRAPEVINE DRIVE & 250 MAST ROAD
MAP H, LOT 4-3, UNIT 4
CITY OF DOVER, STRAFFORD COUNTY
STATE OF NEW HAMPSHIRE
L/C# 28-0178

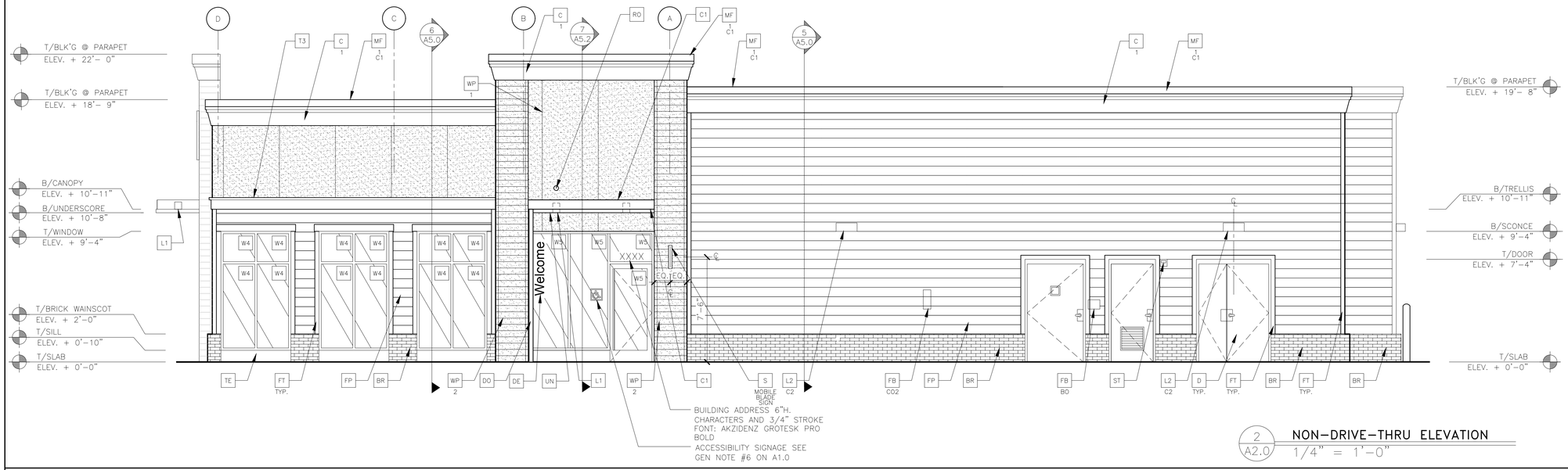
CONTROL POINT ASSOCIATES, INC.
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ALBANY, NY 5182175010
CHALFONT, PA 2157128800
MANHATTAN, NY 6467800411
MT LAUREL, NJ 6098572099
WARREN, NJ 9086680099

APPROVED:	DATE	SCALE	FILE NO.	DWG. NO.
J.P.L.	07-10-2024	1"=20'	03-240216-00	2 OF 2

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1 A2.0 FRONT ELEVATION
1/4" = 1'-0"



2 A2.0 NON-DRIVE-THRU ELEVATION
1/4" = 1'-0"

KEY NOTES:

- C — CORNICE –EXTERIOR INSULATION FINISH SYSTEM (E.I.F.S.) PAINT: FOG
  - X — TYPE: 1= 14" CORNICE
- BR — MODULAR FACE BRICK
  - B1 — COLOR: B1 = "SILVERADO" SMOOTH BY HEBRON BRICK COMPANY
- C1 — ALUMINUM CANOPY SYSTEM W/FASCIA COLOR: WHITE
- C2 — ALUMINUM CANOPY SYSTEM COLOR: RAL 7022
- CJ — CONTROL JOINT
  - 1 — TYPE: 1 = WALL PANEL
- D — HOLLOW METAL DOOR PAINT: "FAIRVIEW TAUPE" HC–85 BY BENJAMIN MOORE
- DE — DECAL BY GRAPHICS SUPPLIER SURFACE APPLIED, FIELD INSTALLED, PRE CUT, PRE SPACED. SUPPLIERS: VOMELA (865) 330–7337, ann.bowen@vomela.com GFX INTERNATIONAL (847) 543–4600, mcdonaldsdecor@gfxi.com
- DO — DOWNSPOUT 3" DOWNSPOUT BY CANOPY SYSTEM MANUFACTURER COLOR: RAL 7022
- DS — DOWNSPOUT PAINT TO MATCH SURROUNDING MATERIAL
- FB — C02 — C02 = BULK C02 FILL BOX (EQPM SCHEDULE ITEM 49.00); BO = BULK OIL FILL BOX (EQPM SCHEDULE ITEM 700.18)
- FP — FIBER CEMENT LAP SIDING: SMOOTH HARDI–BOARD PLANK BY JAMES HARDIE, 8–1/4" WIDTH, 7" EXPOSURE, HZ5 COLOR: TIMBER BARK
- FT — FIBER CEMENT TRIM: HARDIE TRIM BOARDS 4/4 SMOOTH, 1 5/8" AND 3 1/2" WIDTH, 3/4" THICK, HZ5 COLOR: TIMBER BARK (CHECK 1 5/8" PRE–PAINT AVAILABILITY)
- GR — GUARD RAIL –SEE SITE PLAN FOR EXACT LOCATION AND LENGTH PAINT: "IRON ORE" SW 7069 BY SHERWIN WILLIAMS
- L1 — RECESSED DOWN LIGHT FIXTURE – SEE ELECTRICAL COLOR: GOLD
- L2 — RADIAL SCONCE LIGHT FIXTURE – SEE ELECTRICAL
  - C1 — COLOR: C1= WHITE; C2= PLATINUM SILVER
- MF — METAL FASCIA
  - C1 — TYPE: 1 = PRE–FAB ANCHOR–TITE FASCIA; 2 = BOTTOM TRIM AT METAL REVEAL PANEL; 3 = VERTICAL TRIM AT METAL REVEAL PANEL CORNERS, CLOSURES
  - C1 — COLOR: C1= FOG
- PB — PIPE BOLLARD – PAINTED YELLOW
- PT — (RMHC) COIN COLLECTOR MODEL: #WPT STD CALL 1–888–743–7435 TO ORDER
- RO — ROOF DRAIN OVERFLOW PIPE PAINT TO MATCH SURROUNDING MATERIAL
- S — McDONALD'S SIGNAGE BY OTHERS – UNDER SEPARATE PERMIT.
  - C1 — COLOR: C1= CITYSCAPE RACEWAY
- ST — C02 STROBE/ALARM. SEE MECHANICAL DRAWINGS FOR SPECIFICATION.
- T3 — 2X8 EXTERIOR INSULATION FINISH SYSTEM (E.I.F.S.) FASCIA BAND. SEE MANUFACTURER SHOP DRAWINGS. COLOR: CITYSCAPE
- TE — TRU EXTERIOR 1" THICK TRIM, PAINTED ON SITE COLOR: "IRON ORE" SW 7069 BY SHERWIN WILLIAMS
- UN — METAL UNDERSCORE COLOR: GOLD
- W# — EXTERIOR WINDOW ASSEMBLY – TEMPERED GLASS COLOR: DARK BRONZE
- W2 — DRIVE–THRU WINDOW BY READY ACCESS MODEL: 600 SERIES, 36" SERVICE HEIGHT WITH TRANSOM, MANUAL OPEN; ELECTRONIC RELEASE
  - XX — COLOR: DEEP BRONZE; SLIDE DIRECTION: RL = RIGHT TO LEFT, LR = LEFT TO RIGHT
- WP 1 — ARCHITECTURAL WALL PANELS BY NICHIHA ILLUMINATION SERIES, AWP–3030. COLOR: FOG. NOTE: PANEL PATTERN SHALL BEGIN W/ FULL PANELS ABOVE/BELOW OPENING HEAD ELEVATION (9'–4") VERTICAL INSTALL CONTACT: MATT STEPHENSON mstephenson@nichiha.com, (770)–805–9466 or (770)–789–8228
- WP 2 — ARCHITECTURAL WALL PANELS BY NICHIHA NOVENARY SERIES, AWP–1818. COLOR: SAND. NOTE: PANEL PATTERN SHALL BEGIN W/ FULL PANELS ABOVE/BELOW OPENING HEAD ELEVATION (9'–4") HORIZONTAL INSTALL CONTACT: MATT STEPHENSON mstephenson@nichiha.com, (770)–805–9466 or (770)–789–8228

BY	DESCRIPTION	DATE	REV

LICENSED ARCHITECT — MARC PELINI — No:05437 — 10-25-24 — STATE OF NEW HAMPSHIRE

PREPARED BY:
CORE STATES GROUP
135 Wynter Street
Suite 201
Holbrook, IL 60340
312.718.5415
core-states.com

PREPARED FOR:
McDonald's USA, LLC

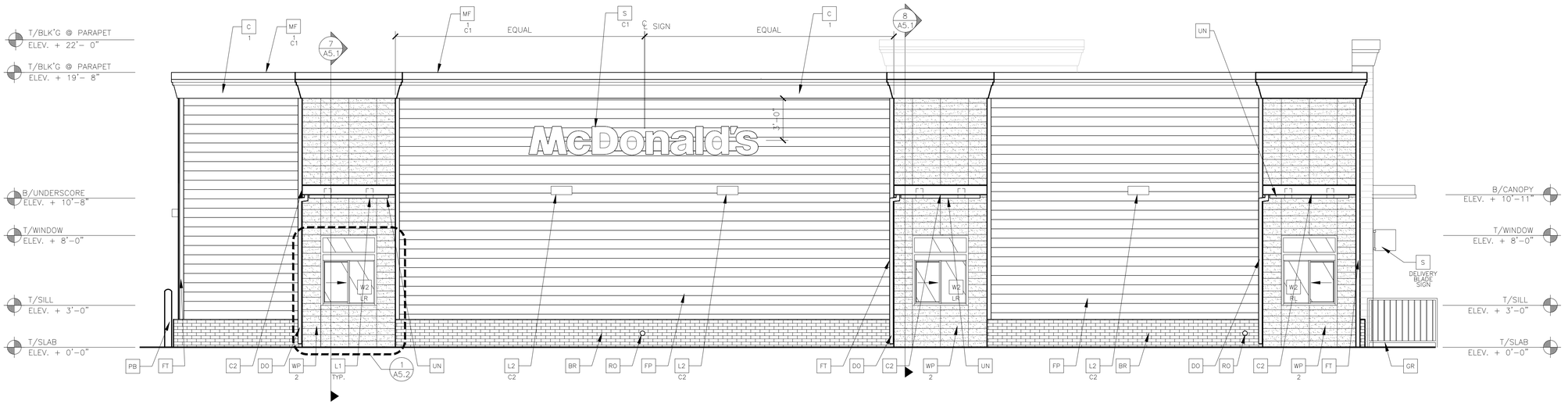
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DRAWN BY	REVIEWED BY	C.S.G. PROJECT #
B.ABDALLA	M.PELINI	MCD.39450
STD ISSUE DATE 2024 07	DATE ISSUED 10/01/2024	

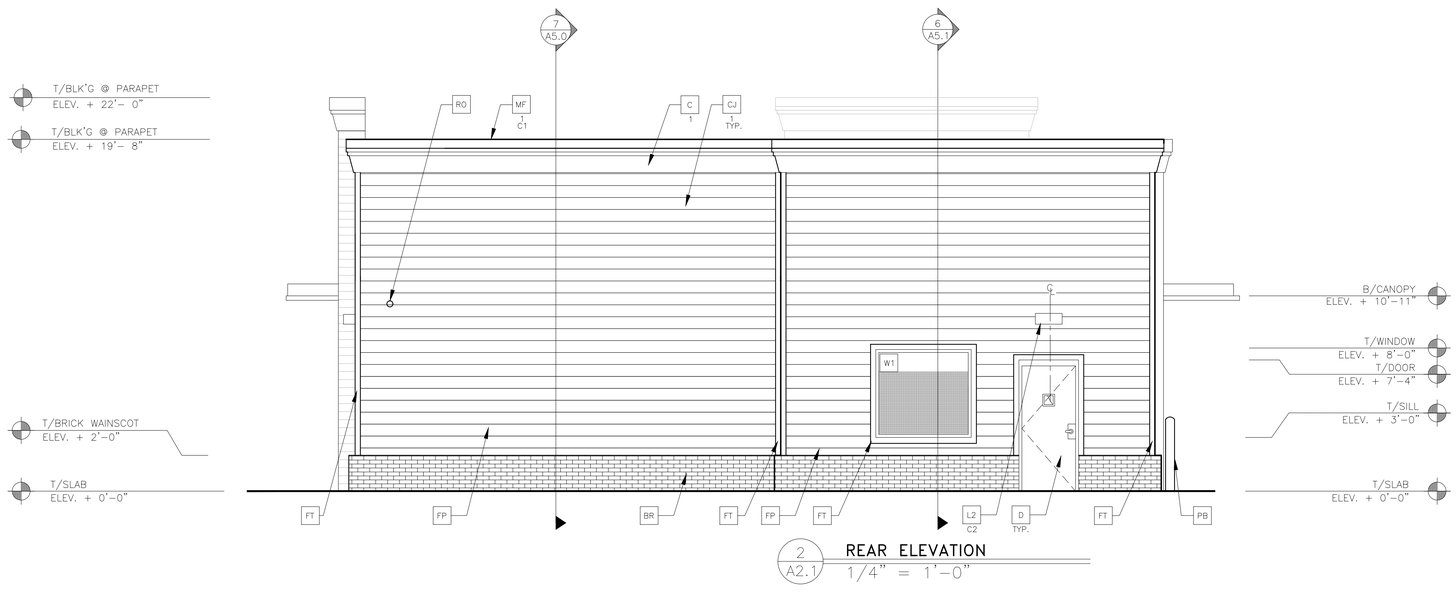
TITLE: 2023 STANDARD BUILDING – BB20
4584–WOOD/WOOD

DESCRIPTION	SITE ADDRESS
WOOD BEARING WALLS W/HARDIE BOARD EXTERIOR FINISH	NSN: 43514
WOOD TRUSS ROOF FRAMING	L/C: 028–0178
WALL PANEL/HARDIE BOARD EXTERIOR FINISH	4 DEERFIELD DR. DOVER, NH

SHEET NO. A2.0
028–0178.00.0
ELEVATIONS



1 A2.1 **DRIVE THRU ELEVATION**
1/4" = 1'-0"



2 A2.1 **REAR ELEVATION**
1/4" = 1'-0"

KEY NOTES:

- C — CORNICE –EXTERIOR INSULATION FINISH SYSTEM (E.I.F.S.) PAINT: FOG; X — TYPE: 1= 14" CORNICE
- BR — MODULAR FACE BRICK; B1 — COLOR: B1 = "SILVERADO" SMOOTH BY HEBRON BRICK COMPANY
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- T3 — 2X8 EXTERIOR INSULATION FINISH SYSTEM (E.I.F.S.) FASCIA BAND. SEE MANUFACTURER SHOP DRAWINGS. COLOR: CITYSCAPE
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REV	DATE	DESCRIPTION	BY

LICENSED ARCHITECT — MARC PELINI No:05437 — 10-25-24 — STATE OF NEW HAMPSHIRE

PREPARED BY: CORE STATES GROUP
135 Wynter Street, Suite 201, Schererville, IL 60540, 312.718.3415, core-states.com

PREPARED FOR: McDonald's USA, LLC

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DRAWN BY	REVIEWED BY	DATE ISSUED	C.S.S. PROJECT #
B.ABDALLA	M.PELINI	10/01/2024	MCD.39450
STD ISSUE DATE 2024 07			

TITLE: 2023 STANDARD BUILDING – BB20
4584–WOOD/WOOD
DESCRIPTION: WOOD BEARING WALLS W/HARDIE BOARD EXTERIOR FINISH; WOOD TRUSS ROOF FRAMING; WALL PANEL/HARDIE BOARD EXTERIOR FINISH
NSN: 43514 | SITE ADDRESS: 4 DEERFIELD DR. DOVER, NH
L/C: 028–0178

SHEET NO. 028–0178.00.0 **A2.1** ELEVATIONS



Front Elevation



Rear Elevation



Non-Drive-Thru Side Elevation



Drive-Thru Side Elevation

Materials Legend

- *Fiber Cement Lap Siding*
  Hardie - Board Plank
  "Timber Bark" by James Hardie
- *Architectural Wall Panels by Nichiha*
  "Light Mist"
- *Architectural Wall Panels by Nichiha*
  "Sand"
- Brick by Hebron Brick Company
  "Silverado"
- Aluminum Canopy (Prefinished Metal)
  "White"
- Aluminum Underscore (Prefinished)
  "Gold"
- Aluminum Trellis (Prefinished)
  "RAL 7022"
- Glazing (Windows & Storefront)
  1" Insulated Clear Glass
- Storefront Mullions
  "Deep Bronze"
- Metal Coping
  "Light Mist"
- Fascia Band
  "Cityscape"
- Service Doors & Frames
  "Fairview Taupe" by Benjamin Moore

CORE STATES GROUP

Proposed McDonald's Restaurant #028-0178
4 Deerfield Dr.
Dover, NH
July 30, 2024

***NOTE:* PROTOTYPICAL McDONALD'S ARCHITECTURE FOR REFERENCE ONLY - NOT FOR CONSTRUCTION**

Front Elevation



Rear Elevation



Non-Drive-Thru Elevation



Drive-Thru Elevation



4584 Prototype

Fiber Cement Siding

FOR REFERENCE ONLY - NOT FOR CONSTRUCTION

Scheme: Desert

Materials Legend

- Hardie Plank Siding: Timber Bark by James Hardie
- Aluminium Composite: RAL 7022 by Metal Era
- EIFS/Stucco: SW 7069 "Iron Ore" Finish: Hydrophobic//Finessee
- Parapet Facia: Weathered Zinc by Metal Era
- Parapet Facia (Feature Wall): RAL 7022 by Metal Era
- 2x2 Aluminum Battens
- Aluminum Canopy (Metal)
- Glazing (Windows + Storefront)
- Gold Underscore
- Service Doors and Frames: Paint: "HC-85 Fairview Taupe" by Benjamin Moore

PLAN SNAPSHOT REPORT SITE-2024-0019
FOR CITY OF DOVER, N.H.

Plan Type:	Site Plan - Major	**Project:**		**App Date:**	12/12/2024
Work Class:	New Construction	**District:**	None	**Exp Date:**	02/15/2025
Status:	Submitted - Online	**Square Feet:**	0.00	**Completed:**	NOT COMPLETED
Valuation:	$0.00	**Assigned To:**	Blonigen, Rachel	**Approval Expire Date:**	

Description: Proposed 84 Lodging Unit Building and two, 90 unit single occupancy residential buildings restricted to HUD rates. TDR request for additional units above base commercial density.

Parcel:	H0037-A00000 Main	**Address:**	239 Knox Marsh Rd Main Dover, NH	**Zone:**	

Owner
Gil Aleixo
Mobile: (603) 349-0470

Architect
Nicholas Isaak
35 Oyster River Rd.,
Durham, NH 03824
Business: (603) 969-6711

Project Manager
Berry Surveying & Engineering
335 Second Crown Point Road
Barrington, NH 03825
Business: (603) 332-2863
Mobile: (603) 781-3403

Engineer
Kenneth Berry
Home: (603) 332-2863
Business: (603) 332-2863
Mobile: (603) 332-2863

Landscape Architect
Terrain Planning & Design, LLC
Business: (603) 491-2322

Surveyor
Kenneth Berry
Home: (603) 332-2863
Business: (603) 332-2863
Mobile: (603) 332-2863

Soil Scientist
John Hayes III
Home: (603) 205-4396
Business: (603) 205-4396
Mobile: (603) 205-4396

Applicant
Berry Surveying & Engineering
335 Second Crown Point Road
Barrington, NH 03825
Business: (603) 332-2863
Mobile: (603) 781-3403

Wetlands Scientist
Deidra Benjamin
Home: (603) 332-2863

Plan Custom Fields

Total	0	Total2	0	Total3	0
Total4	0	Total5	0	Total6	0
Total7	0	Total8	0	Total9	0
Street Classification Type	Municipal	Net Change in # Parking Spaces (+/-)	318	Water Service	Municipal
Recording Number		Sewer Service	Municipal	Total Acres (GIS)	9.36
Deed Book	5138	Total SQFT	407722	Deed Page	73
Deed Date	9/18/23	Proposed Property Use	Proposed 84 Lodging Unit Building and two, 90 unit single occupancy residential buildings restricted to HUD rates. TDR request for additional units above base commercial density.	Area of Parcel to be Developed (SQFT)	302500
Number of Parking Spaces Existing	0	Number of Parking Spaces Proposed	318	Number of Employees Total	0
Number of Employees in Max Shift	0	Distance to City Water	0	Distance to City Sewer	0
Type of Building to be Built	Steel first level and wood upper levels	Estimated Construction Value	40000000.00	Refuse Removal	Private
Is there an existing Conservation Easement?	No	Existing Conservation Easement Details		TotalImpactFeeSDTOD	0.00
TotalImpactFeeTHTOD	0.00	TotalImpactFee23FTOD	0.00	TotalImpactFeeA4TOD	0.00
TotalImpactFeeMHTOD	0.00	TotalImpactFeeADUTOD	0.00	TotalImpactFeeAONRTOD	0.00
TotalImpactFeeAR55TOD	0.00	TotalImpactFeeAR62TOD	0.00	Sub Total Residential	0.00

PLAN SNAPSHOT REPORT (SITE-2024-0019)

TotalImpactFeeRIRCTOD 0.00	TotalImpactFeeOCSTOD 0.00	TotalImpactFeeITWCTOD 0.00
TotalImpactFeeNHALTOD 0.00	TotalImpactFeeOIUTOD 0.00	TotalImpactFeeAFAOTOD 0.00
Sub Total Non-Residential 0.00	Total of Impact Fees to be Assessed 0.00	

Attachment File Name	Added On	Added By	Attachment Group	Notes
Signature_Chris_Berry_12/12/2024.jpg	12/12/2024 11:27	Berry, Chris		Uploaded via CSS

Invoice No.	Fee	Fee Amount	Amount Paid
INV-00010360	Planning General Application Fee	$200.00	$0.00
	Total for Invoice INV-00010360	$200.00	$0.00
	Grand Total for Plan	$200.00	$0.00

Workflow Step / Action Name	Action Type	Start Date	End Date
Review v.1			
Confirm application complete v.1	Generic Action		
Technical Review Committee Meeting Agenda v.1	Task		
Land Use Plan Technical Review v.1	Receive Submittal		
Technical Review Committee Meeting v.1	Hold Meeting		
Planning Board v.1			
Planning Board Agenda v.1	Task		
Invoice for Notices v.1	Task		
Send Notices v.1	Task		
Planner Creates Staff Recommendations v.1	Plan Activity		
Distribute Planning Board Materials v.1	Task		
Planning Board Hearing v.1	Hold Hearing		
Planning Board Decision v.1	Plan Activity		
NOD Sent to Applicant v.1	Create Report		
Final Plan v.1			
Land Use Plan Stamped and Signed v.1	Generic Action		
Recording v.1	Task		
Document Archival v.1	Generic Action		
Internal Notification of Plan Completion v.1	Generic Action		
Building Official Notifies Address v.1	Generic Action		
Pre-Con Meeting v.1	Hold Meeting		
Create/Link to Records v.1			
Create / Link to Permit - Building Major v.1	Create Sub Permit		
Create / Link to Permit - Site Work, Construction v.1	Create Sub Permit		

City of Dover, New Hampshire
SITE REVIEW APPLICATION

[Revision Date: July 1, 2021]

Office Use Only	Project #:		Date Received:	
	Amount Paid:		Time Received:	

APPLICANT AND OWNER INFORMATION

Name of Applicant: 239 Knox Marsh Realty, LLC Telephone #603-349-0470

Address of Applicant: P.O. Box 720, Middleton, MA 01949

E-Mail Address: Gilaleixo@gmail.com

Name of Property Owner (*if different from applicant*): _____ Telephone #_____

Address of Property Owner: _____

PROPERTY INFORMATION

Address of Property: 239 Knox Marsh Road

Assessor's Map # H Lot(s) # 37A

Zoning District(s) Commercial (C) Overlay District(s) Secondary Groundwater Recharge & Conservation District

Size of Parcel: 407,542 sq. ft. 9.36 ac. Property Deed: Book 5138 Page: 73

Existing Use of Property: Vacant/Former Single Family

SITE PLAN INFORMATION

Describe Proposed Use: Mixed-use

Area of Parcel to be Developed: 302,500 sq. ft.

If Multi-family Residential: Number of Units 180 & Buildings Proposed 2

If lodging: Number of Units 84 & number of Buildings 1

Number of Parking Spaces: Existing driveway Proposed 318

Highway Access (check where applicable): X City Street ____ State Highway

Number of Employees Total: TBD In Maximum Shift: TBD

Disposition of Parcel:

Building Footprint 15,097 sq. ft.

Total Building Area 58,901 sq. ft.

Paved Area 19,798 sq. ft.

Building Setbacks:

Front Yard 30 ft.

Rear Yard 15' ft.

Side Yard: Right 12 ft. Left 12 ft.

City Water? X Yes ___ No How far is city water from the property? At property

City Sewer? X Yes ___ No How far is city sewer from the property? At property

TRANSFER OF DEVELOPMENT RIGHTS INFORMATION

Type of TRANSFER OF DEVELOPMENT RIGHT REQUEST (Check All That Apply):

☒ Residential ☐ Residential (reduced size) ☐ Industrial | ☐ Purchase ☐ Land Preservation

Relief sought (Check All That Apply):

☐ Lot Size ☐ Frontage ☒ Setback ☐ 30' Buffer ☒ Increase by 114 units

Describe Proposed Use or Activity that requires TDR; describe any impacts and document mitigation:
Please find attached narrative

BUILDING INFORMATION

Type of Building to be Built: Steel first level and wood upper levels

Height of Building: 44.5' Finished Floor Elevation: 98.6, 99.0, 99.35

Number of Seats (where applicable) N/A

Estimated value of construction: 40,000,000 Refuse removal: Public/Private (circle one)

WAIVER REQUESTS

Site Review Regulations section(s) to be waived: _____

Justification for waiver request(s) (*attach additional sheets as needed*):
157-32G, 157-40-B(5), 154-14-(3)(B)(4), 157-44, please find attached narrative

SURVEYOR INFORMATION

Name of Surveyor and Company (Licensed in N.H.) Kenneth A. Berry, PE, LLS

Address 335 Second Crown Point Road, Barrington, NH 03825 Telephone #: 603-332-2863

Professional License #: 805 E-mail address: K.berry@berrysurveying.com

ENGINEER INFORMATION

crberry@metrocast.net

Name of Engineer and Company (Licensed in N.H.) Kenneth A. Berry, PE, LLS

Address 335 Second Crown Point Road, Barrington, NH 03825 Telephone #: 603-332-2863

Professional License #: 14243 E-mail address: K.berry@berrysurveying.com

ARCHITECT INFORMATION

crberry@metrocast.net

Name of Architect and Company (Licensed in N.H.) Nick Isaak, AIA

Address 35 Oyster River Road, Durham, NH 03824 Telephone #: 603-969-6711

Professional License #: 3202 E-mail address: Nick@isaakdesign.com

LANDSCAPE ARCHITECT INFORMATION

Name of Landscape Architect and Company (Licensed in N.H.) Terrain Planning & Design LLC Eric Buck

Address 311 Kast Hill Road, Hopkinton NH 03229 Telephone #: 603-491-2322

Professional License #: 78 E-mail address:

SOIL SCIENTIST INFORMATION

Name of Soil Scientist and Company (Licensed in N.H.) Deidra Benjamin, CWS

Address 100 Leavitt Road, Pittsfield, NH 03263 Telephone #: 603-496-3307

Professional License #: 295 E-mail address: deidrabenjamin1@gmail.com

CONSERVATION EASEMENT HOLDER

Name of Easement Holder: _____ Telephone #_____

Address Easement Holder: _____

SIGNATURES

I/We hereby submit this application to the City of Dover Planning Board and attest that to the best of my knowledge all of the information on this application form and in the accompanying application materials and documentation is true and accurate. Furthermore, I/we submit that the existing conditions sheet of the plan represents the lot in question, and that no alteration of the site shall take place during Planning Board review up to and including the pre-construction meeting. As applicant or as agent, I attest that I am duly authorized to act in this capacity.

Signature of Property Owner: _____ Date: 11-26-24

Signature of Applicant (*if different from owner*): _____ Date: _____

Signature of Agent: _____ Date: 11-26-24

AUTHORIZATION TO ENTER SUBJECT PROPERTY

I, and my successors, hereby authorize members of the Dover Planning Board, Planning Department and other pertinent City Departments and boards to enter my property for the purpose of evaluating this application, including performing inspections during the application phase, post-approval phase, construction phase and occupancy phase. It is understood that these individuals must use all reasonable care, courtesy, and diligence when on the property.

Signature of Property Owner: _____ Date: 11-26-24

AUTHORIZATION TO COMPLETE THE PROJECT ON SUBJECT PROPERTY

I, and my successors, hereby the City of Dover or its assigns to enter my property for the purpose of completing the site work as required by the approved plan should the letter or credit or other surety be called. It is understood that these individuals must use all reasonable care, courtesy, and diligence when on the property.

Signature of Property Owner: _____ Date: 11-26-24

Signature of Applicant (*if different from owner*): _____ Date: _____

CERTIFICATION OF FEES

I, and my successors, hereby certify that I understand that the City of Dover collects impact fees, utility investment fees and inspection fees for projects developed in Dover. Said fees must be paid before a Certificate of Occupancy can be obtained for a structure, unless a different payment schedule is agreed to by the applicant and the City prior to approvals being issued by the Dover Planning Board. Additionally, should the property be in "Current Use" it will be subject to the Land Use Change Tax.

Signature of Property Owner: _____ Date: 11-26-24

Signature of Applicant (*if different from owner*): _____ Date: _____

CITY OF DOVER SITE REVIEW
LIST OF ABUTTERS

Pursuant to RSA 676:4, the State Law of New Hampshire, the City of Dover is required to notify the applicant, abutters (including holders of conservation easements), and any professional whose seal is on the plan, of the public hearing by certified mail, return receipt requested. Staff will provide the abutter information, while the applicant must provide accurate contact information for the owner, applicant and professional agents representing the project.

Owner:

TAX MAP	LOT #	PROPERTY OWNER	MAILING ADDRESS

Applicant (if different from owner):

APPLICANT NAME	APPLICANT COMPANY	MAILING ADDRESS

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	MAILING ADDRESS

Conservation Easement Holder:

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	MAILING ADDRESS

City of Dover, New Hampshire
SITE PLAN REVIEW SUBMISSION CHECKLIST

[Revision Date: June 4, 2019]

This site plan review checklist, as required by Chapter 153-6-B(2), should be completed by the applicant. It is intended to assist the applicant in the planning process of preparing a Site Plan Review application for Planning Board action. The size of the project will determine the types of information required for review, therefore, a **pre-application conference** with the Planning Department to determine the list of items that must be completed is strongly encouraged.

The first step would be to appear before the Technical Review Committee, to apply, eight (8) folded copies of the site plan with scale of not less than 1"=50' or 1" =100' for larger site plans, need to be provided, along with payment of plan review fees.

Two weeks prior to Planning Board, three (3) full size and twelve (12) half size (11x17), folded, copies of the plan set and materials, including response to TRC comments, will be due. Abutter/Notice Fees will be invoiced and need to be paid 28 hours prior to the Planning Board meeting.

The applicant is cautioned that this checklist is only a guide and is not intended to be a complete list of all site plan review requirements. Please refer to the Site Plan Review Regulations for full details.

APPLICANT: 239 Knox Marsh Realty, LLC File Number: _____

PROJECT TITLE: Residences & Lodges at Kelly Brook

PROPERTY LOCATION: 239 Knox Marsh Road Tax Map: H Lot: 37A

	Where/How Provided	Reviewed
1. Completed and signed Application form	X	
2. Plan Review Fees are provided	X	
3. Electronic copy of the engineered/surveyed plan layout	X	
4. Electronic copy of supplementary materials and application	X	
5. Traffic Impact Assessment and Analysis (Standard or Advanced)	X	
6. Waiver requests to the Site Plan Review Regulations, with written justification	X	
7. Conditional Use Permit applications	X	
8. A colored rendering of the streetscape that will be created along the existing public right-of-way	X	
9. A colored architectural plan showing all sides of buildings	X	
10. Folded copies of site plan w/scale of not less than 1"=50' or 1"=100' for larger site plans, for TRC. Plans shall contain the following items as appropriate:	X	
Location map at appropriate scale	X	
Proposed Project name and title and Planning File #	X	
Date, north arrow and scale	X	
Names of all abutting property owners	X	
Name and address of owners and/or applicants	X	
Signature & stamp of NH licensed land surveyor and/or engineer	X	
Zoning District boundaries, including any special or overlay districts	X	
Location of Conservation District areas	X	
Location, names and widths of existing and proposed streets, including pavement widths, grades, curbs and crosswalks	X	
Location and widths of existing & proposed easements & right of ways	X	
Location and width of existing and proposed access/egress ways	X	

	Explain How Provided	Reviewed
Depict pedestrian walkways and accessible access	X	
Existing and proposed property lines with dimensions and bearings tied into Dover's Geographic Information System coordinate system	X	
Existing and proposed topographic information at two foot intervals	X	
Existing and proposed buildings and structure locations	X	
Minimum building setbacks or build to lines on all lots	X	
Location and size of existing and proposed electric, telephone, gas cable and other underground utilities	X	
Existing and proposed water lines and fire hydrants, including materials and capacity needed	X	
Location and materials of sanitary sewage facilities within project site and projected additional peak hour sewer load	X	
Existing and proposed stormwater lines and facilities	X	
Lighting plan depicting all existing and proposed exterior light fixtures and a lighting level analysis for parking lots	X	
Location of Flood Hazard Zone	N/A	
Location of all bodies of water and watercourses	X	
Location of wetlands and buffers	X	
Neighborhood plan with aerial underlay showing how project relates to abutting uses within the plan set	X	
Existing natural features and/or significant vegetation on property	X	
Depict existing contours up to 100 ft. beyond project limits	X	
Landscape plan depicting existing and proposed landscaping, prepared by a licensed Professional Landscape Architect	X	
Location of parking layout delineating spaces and arrangement; note addressing maximum required spaces	X	
Location, material and size of existing and proposed pavement area	X	
Location of proposed fire lanes	X	
Specify finished floor elevations of buildings	X	
Location of solid waste disposal facilities (dumpster, pad and screening, etc.), including required screening	X	
Depict all service, storage, loading bays and utility areas	X	
All applicable Dover Common Site Plan notes	X	
11. Additional Information if appropriate		
Stormwater Management Plan depicting the existing & proposed storm drainage system and engineered drainage analysis	X	
Stormwater Management System Operation and Maintenance Plan	X	
Letter to Serve from Public and Private Utilities	Will provide	
Erosion and Sedimentation Control Plan	X	
Landscape Operation and Maintenance Plan	X	
Proposed restrictive covenants or homeowners association documents	N/A	
Dates and permit numbers of all required state and federal permits	Will provide	
If wetland buffer, indicate placards locations, as applicable	X	
Depict test boring locations, groundwater elevations and soil profiles and/or soils types call-outs	X	
Location of proposed drive-in facilities	X	
Provide additional exhibits/technical data determined appropriate by the Planning Board or its staff as required	Will provide as needed	

REVIEWED BY: _____ DATE_____ TRC DATE_____

City of Dover, New Hampshire
TRANSFER OF DEVELOPMENT RIGHTS APPLICATION

[Revision Date: September 26, 2024]

Office Use Only	Project #:		Date Received:	
	Amount Paid:		Time Received:	

APPLICANT AND OWNER INFORMATION

Name of Applicant: 239 Knox Marsh Realty, LLC Telephone # 603-349-0470

Address of Applicant: P.O. Box 720, Middleton, MA 01949

E-Mail Address: Gilaleixo@gmail.com

Name of Property Owner (if different from applicant): _____ Telephone #_____

Address of Property Owner: _____

PROPERTY INFORMATION

Assessor's Map # H Lot(s) # 37A

Address of Property: 239 Knox Marsh Road

Zoning District(s) Commercial (C) Overlay District(s) Secondary Groundwater Recharge Conservation District

Existing Use of Property: Vacant/Former Single Family

New impervious area (in s.f.): 158,234

TRANSFER OF DEVELOPMENT RIGHTS INFORMATION

Type of TRANSFER OF DEVELOPMENT RIGHT REQUEST (Check All That Apply):

☒ Residential ☐ Residential (reduced size) ☐ Industrial | ☐ Purchase ☐ Land Preservation

Relief sought (Check All That Apply):

☒ Lot Size ☐ Frontage ☒ Setback ☒ Increase by 114 units

Describe Proposed Use or Activity that requires TDR; describe any impacts and document mitigation:

Please find attached narrative

List Any Associated State or Federal Permits That Have Been or Will Be Applied For and Indicate Their Status: NHDES Alteration of Terrain, NHDES Sewer Discharge, NHDOT Driveway Permit, EPA NOI (Not yet Submitted)

Name of Professional That Prepared TDR Plans: Kenneth A. Berry, PE, LLS

Address 335 Second Crown Point Road, Barrington, NH 03825 Telephone #: 603-332-2863

Professional License #: 14243 (PE), 805 (LLS) E-mail address: K.berry@berrysurveying.com crberry@metrocast.net

SIGNATURES

I/We hereby submit this application to the City of Dover Planning Board and attest that to the best of my knowledge all of the information on this application form and in the accompanying application materials and documentation is true and accurate. As applicant or as agent, I attest that I am duly authorized to act in this capacity.

Signature of Property Owner: _____ Date: 11-26-24

Signature of Applicant (if different from owner): _____ Date: _____

Signature of Agent: _____ Date: 11-26-24

AUTHORIZATION TO ENTER SUBJECT PROPERTY

I, and my successors, hereby authorize members of the Dover Planning Board, Planning Department and other pertinent City Departments and boards to enter my property for the purpose of evaluating this application, including performing inspections during the application phase, post-approval phase, construction phase and occupancy phase. It is understood that these individuals must use all reasonable care, courtesy, and diligence when on the property.

Signature of Property Owner: _____ Date: 11-26-24

CITY OF DOVER TRANSFER OF DEVELOPMENT RIGHTS
LIST OF ABUTTERS

Pursuant to RSA 676:4, the State Law of New Hampshire, the City of Dover is required to notify the applicant, abutters (including holders of conservation easements), and any professional whose seal is on the plan, of the public hearing by certified mail, return receipt requested. Staff will provide the abutter information, while the applicant must provide accurate contact information for the owner, applicant and professional agents representing the project.

Owner:

TAX MAP	LOT #	PROPERTY OWNER	MAILING ADDRESS

Applicant (if different from owner):

APPLICANT NAME	APPLICANT COMPANY	MAILING ADDRESS

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	MAILING ADDRESS

Conservation Easement Holder:

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	MAILING ADDRESS

BERRY SURVEYING & ENGINEERING
335 Second Crown Point Road
Barrington, NH 03825
Phone: (603) 332-2863
Fax: (603) 335-4623
www.BerrySurveying.Com

November 26, 2024

To: City of Dover Planning Department
Attn: Mrs. Donna Benton, AICP
Director of Department of Planning and Community Development
288 Central Ave
Dover, NH 03820

RE: "Residences and Lodges at Kelly Brook"
239 Knox Marsh Realty, LLC
239 Knox Marsh Road (NH Route 155)
Mixed-Use TDR Site Plan
Project Narrative
Map H, Lot 37A

Mrs. Benton and the Dover Planning Board,

Berry Surveying & Engineering (BS&E,) on behalf of 239 Knox Marsh Realty, LLC respectfully submits to Planning Board a proposed Mixed-Use TDR Site Plan application located at 239 Knox Marsh Road (NH Route 155) within the Commercial (C) Zoning District and Secondary Groundwater Recharge Overlay.

Background

239 Knox Marsh Realty, LLC owns the parcel known as 239 Knox Marsh Road, Map H, Lot 37A, consisting of 9.36 acres. Subject parcel development had been previously approved under SITE-2023-0010, consisting of two mixed-use buildings with 52 apartments at the front of the site, with 12 single family homes at the rear of the site, serviced by a roadway known as Tibetan Drive. Construction began on the previously approved design in 2023 and was halted in 2024 to redesign the project into the proposed format.

In the pre-existing/pre-development condition, there was a house and driveway that sat in the southeastern corner of the Lot. The lot was mostly open with two planted tree farms on either side of the house, and the main tree line running along the property line. Berry Surveying & Engineering has conducted a full boundary survey as well as a topographic analysis. In addition, a certified wetland scientist has been on site and delineated all wetlands (wetland found along the northern boundary line abutting the railroad). A soil scientist has also been on site and conducted a site-specific soil map (SSSM), in order to determine the soil types and slopes on site.

Project Proposal

The proposal is to construct a private roadway off Knox Marsh Road, known as "Tibetan Drive". The development proposal consists of an 84-unit lodging unit building, referred to as Lodging Building "A" and two 90-unit single occupancy unit buildings, referred to as Residential Buildings "B" and Residential Building "C". This results in a total of 180 single occupancy residential units. These buildings are 4 stories, with podium style parking on the first level, with the respective lodging or residential units on levels 2-4, with cantilevered overhang over level 1. All required accessible parking, EV parking spaces and motorcycle parking spaces are provided within the first level of the buildings.

In July of 2024, a zoning variance (ZONE-2024-0033) was received that allows for the commercial requirement of the site to be in a separate building from the residential units (still required to be 1/3 of the provided space). Also, allowing for building height of greater than 40' in the zone (44.5' proposed). A condition of this zoning approval is that all residential units are restricted to the applicable current HUD fair market rent value in perpetuity, which is what has been proposed.

Utilizing the Commercial Zoning District base density calculation, the parcel is calculated to be allowed 66 units by right. The proposal includes a Transfer of Development Rights Request of obtaining 114 single occupancy units HUD units to meet the 180 residential units proposed. A separate Transfer of Development Rights request narrative is included within the application package.

Site Operation

Tibetan Drive is proposed as a 24' wide roadway with sidewalks and crosswalks proposed throughout the development for connectivity. A loading zone is provided adjacent to Lodging Building "A" for deliveries. In parking areas, a full 24' lane is provided, including through the building parking garages. Full vehicle circulation lanes are provided around Lodging Building "A" and Residential Building "C", with at least three-sided fire truck access provided around all three of the buildings. Circulation locations without parking are provided as an 18' traveled way.

A parking lot provided on the western side of the site contains a hammerhead turnaround and a sidewalk connection to the area of active and passive recreation space. Passive recreation space includes a dog park with active recreation area including a bocce court and other usable space.

A robust Landscaping Plan has been provided with the submission. Around the perimeter of the parking lots, trees are proposed at 35' on center, with shrubs 5' on center in between. Internal landscaping islands are proposed through the site that exceed the internal landscaping requirements. Wetland buffer replanting and screening trees are proposed throughout the site. Snow storage is provided throughout the site in locations that do not conflict with the perimeter landscaping requirements. Landscaping has been offset from the parking lot to allow for this.

The first level of the buildings include elevator access to the upper levels, an entry vestibule on the northern side of each building, and various other egress doors around the buildings. The southern side of the buildings includes a 6' raised sidewalk adjacent to vehicle parking, with the northern side of the buildings containing a 5' sidewalk against the building, under the cantilever overhangs. Mail pickup is located on the first levels next to the entry vestibule. Refuse disposal will occur in the different dumpster locations on site, situated based on garbage truck accessibility.

Drainage

Drainage mitigation and treatment is proposed via a series of Detention Ponds and Gravel Wetlands. Gravel Wetlands provide stormwater treatment of total suspended solids (TSS), nitrogen, and phosphorous greater than the standards prescribed by the City of Dover in Chapter 153. An Environmental Conditional Use Permit is being requested for greater than 20% impervious within the Secondary Groundwater Recharge Overlay (40.2% proposed). The site had previously received an Environmental Conditional Use Permit for wetland buffer impact and for 33.8% impervious surface within this zone. This increased level of treatment from the gravel wetlands is beneficial for surface water discharge from the site, considering the on-site soil infiltration restrictions.

The soils across the site consists of silt loam soils with infiltration restrictions in the "B" and "C" soil horizons. This is relevant, as there are no soils on site with the capability of providing stormwater infiltration in accordance with NHDES Alteration of Terrain Standards. As a result, a waiver for Ground Water Recharge Volume (GRV) has previously been requested from Alteration of Terrain, and approved for the previous project, AoT-2183/2183-A. The project relies on extended detention of stormwater to provide compliance with regulations. A waiver has been requested for an increase in stormwater volume in one location, with an extensive justification provided within the waiver request. See Environmental Conditional Use Permit request for justifications regarding the project impervious percentage.

Utilities/Lighting

Sewer and water utilities have been partially installed on the project from the original approval. Sewer is provided as 8" SDR 35, with 8" SDR35/8" Schd. 40 services extending to each building. The proposed design flow is 27,492 GPD, whereas the prior approval was for 25,075 GPD (NHDES Sewer Discharge Permit D2022-0705).

The proposed site water is provided as 8" C.L.D.I. throughout the project, with 4" C.L.D.I domestic and fire suppression lines supplied to each building. The lighting design proposed is in compliance with Commercial Zone lighting standards. Pole lights around the property as proposed with a backlight control package in consideration of abutting properties. Electric utility is provided underground through out the project, with the exception of the drop poles along NH Route 155 requested by Eversource. A waiver request is included in the submission for this item. Heating and cooling for the buildings will be provided by roof top units that are screened from NH Route 155 by the building parapet. The buildings are proposed to include solar on the rooftop to satisfy the site plan review requirements.

Traffic

As part of this application, a Traffic assessment has been conducted by Kim Eric Hazarvartian, Ph.D, PE, PTOE of TEPP, LLC, showing the difference in trip generation from the proposed site to the previously approved site. From this assessment, it is seen that during the AM weekday peak hour an increase of 21 trips, decrease of 5 PM weekday peak hour trips and an increase of 46 Saturday peak hour trips. A new NHDOT driveway permit and approval will be required for the project.

Wildlife

The site was also designed in consideration of NHF&G requirements for wildlife and allow for small animal migration throughout the site. The design will feature the following elements: 3:1 or 4:1 side slopes, natural fiber matting, catch basins without sumps and outlet structures with crushed stone sumps. All of these methods have been used for similar projects in the past. All proper erosion and sediment control methods will be taken to ensure that no sediment is tracked onto Knox Marsh Road, abutting lots, wetlands or buffers. Upon start of construction, a construction entrance will be installed off Knox Marsh Road to prevent tracking. Perimeter control will be installed at the edge of construction to contain sediment within the construction zone.

The project requires the following approvals:

- Site Plan Approval
- TDR Approval for increased unit density
- Environmental CUP for % impervious
- EPA Notice of Intent (NOI)
- NHDES Alteration of Terrain Permit (to be amended)
- NHDES Sewer Discharge Permit (to be amended)
- NHDOT Driveway Permit (to be amended)

BERRY SURVEYING & ENGINEERING

Kevin R. Poulin, PE
Project Engineer

Christopher R. Berry
Principal, President

BERRY SURVEYING & ENGINEERING
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November 26, 2024

City of Dover Planning Board
Attention: Donna Benton, AICP, Director of Planning and Community Development
288 Central Ave
Dover, NH 03820

Re: Waiver Requests
"Residences and Lodges at Kelly Brook"
Mixed-Use TDR Site Plan
239 Knox Marsh Realty, LLC
239 Knox Marsh Road (NH Route 155)
Tax Map H, Lot 37A

Chairperson & Members of the Dover Planning Board:

In accordance with Subdivision Regulations Article 157-40-B(5), the following waivers (4) are hereby requested:

1. Identification of Waiver Request: Maximum road grade of 3% within 75' of an intersection per Dover Subdivision Regulation 157-32.G.

- Proposed road with a -4.0% grade off of Knox Marsh Road then flattening with a sag vertical curve to a positive 4% grade into the development.

1. Explanation:

The applicant is proposing to construct a private roadway, known as Tibetan Drive, off Knox Marsh Road to provide access to a mixed-use development. The NHDOT requires all proposed roadways to have a grade of -4% off of state-controlled roads to allow for plow trucks to not gouge and damage the driveway. This creates a roadway sag curve at station 0+45. The proposed 4% positive grade into the development provides elevation for the site that is required for stormwater management. A difference of 1% grade at the entrance allows the roadway crest curve of Tibetan Drive (station 1+90), to be closer to NH Route 155.

In this situation, an intersection grade into the development of less than 4% would result in additional stormwater runoff being conveyed south, to the NH Route 155 side of the project site for treatment. As discussed in Waiver Request #2, a drainage design objective is to minimize stormwater runoff conveyed south towards NH Route 155. This additional stormwater conveyed south to the NH Route 155 side of the

site would further exacerbate the volumetric waiver for drainage Point of Analysis (POA) Final Reach #400.

2. Waiver Justification:

a. Granting the waiver will properly carry out the purpose and intent of the regulations.

The intent of requiring a maximum road grade of 3% within 75' of an intersection is to ensure vehicular safety for all turning and stopping movements, in addition to site distance. In this case, the -4% proposed within 75' is the NHDOT standard, and therefore will carry out the purpose and intent of the regulation.

b. Strict conformity to the regulations would pose an unnecessary hardship to the applicant.

Requiring the applicant to meet the intersection grade requirement would cause the intersection to be incompliant with NHDOT standards for the -4% downgrade. The unnecessary hardship of not allowing the 4% positive grade into the site would be to further exacerbate the drainage volumetric waiver for POA Final Reach #400, which is discussed more in depth in the following waiver request.

2. Identification of Waiver Request: An increase of stormwater runoff volume at Final Reach #400 (under NH Route 155) 153-14-(3)(B)(4).

- Post-development stormwater runoff volume greater than pre-development stormwater runoff volume over a 24-hour span, 1 location, Final Reach #400.

1. Explanation:

The applicant is proposing a Mixed-Use TDR Site Plan using the general drainage scheme based upon approved previous project "Residences and Shops at Kelly Brook" (Dover SITE-2023-010 & NHDES Alteration of Terrain Permit AoT-2183/2183-A). The previously proposed subsurface gravel wetlands (#101, #103, & #104) have been constructed, and are proposed to be modified for this project. These stormwater best management practices (BMPs) have been located based upon the available site elevation and surface water discharge locations. The site contains silt loam soils with limited infiltration capacity in the "B" and "C" horizons. These BMPs discharge surface water to the following defined drainage points of analysis (POA): Final Reach #100, Final Reach #200, and Final Reach #400.

Subsurface Gravel Wetland #101 treats storm water and discharges as surface water to Final Reach #100, located in the northeastern portion of the parcel. Subsurface Gravel Wetland #103 treats storm water and discharges as surface water to Final Reach #200, located in the northern portion of the parcel. Subsurface Gravel Wetland #104 treats storm water and discharges as surface water to Final Reach #400, located in the southern portion of the parcel, analyzed as a culvert under NH Route 155.

Figure #1, from the provided Drainage Analysis, demonstrates the peak rates of stormwater runoff and stormwater volume, at the previously mentioned Final Reach drainage points of analysis for the pre-existing condition vs the proposed development condition:

3.0 FULL COMPARATIVE ANALYSIS

ANALYSIS COMPONENT PEAK RATE DISCHARGE (Cubic Feet / Second)

		2 Yr	10 Yr	25 Yr	50 Yr	100 Yr
Final Reach #100	Existing	2.23	4.83	7.01	9.12	11.66
	Proposed	1.15	2.16	2.98	4.90	9.71
Final Reach #200	Existing	4.02	9.00	13.30	17.49	22.58
	Proposed	1.43	5.90	12.39	17.30	22.33
Final Reach #400	Existing	0.83	2.67	4.35	5.52	6.30
	Proposed	0.59	2.02	3.39	4.26	4.97

ANALYSIS COMPONENT VOLUME (ACRE FEET) (OVER 24 HOURS)

		2 Yr	10 Yr	25 Yr	50 Yr	100 Yr
Final Reach #100	Existing	0.202	0.421	0.609	0.794	1.021
	Proposed	0.167	0.335	0.552	0.758	1.019
Final Reach #200	Existing	0.592	1.269	1.862	2.448	3.171
	Proposed	0.592	1.244	1.789	2.309	2.949
Final Reach #400	Existing	0.145	0.387	0.618	0.855	1.158
	Proposed	0.181	0.437	0.718	1.001	1.356

Figure 1: Drainage Comparative Analysis Table

As demonstrated in the comparative analysis for the pre-existing drainage condition vs the proposed condition: Final Reach #400 (Discharging under NH Route

155), shows a reduction in the peak rate of runoff across the 2YR-24HR through 100YR-24HR storm events. This an 28.9% decrease in the peak rate of runoff for the 2YR-24HR storm event, 24.3% decrease in the peak rate of stormwater runoff for the 10YR-24HR storm event, 22.1% decrease in the peak rate of runoff for the 25YR-24HR storm event, 22.8% decrease in the peak rate of runoff for the 50YR-24HR storm event, 21.1% decrease in the peak rate of runoff for the 100YR-24HR storm event.

This reduction in peak rate of stormwater runoff is relevant in relation to the stormwater volumetric increase that is shown at Final Reach #400. The reduction in the peak rates of runoff affects the capacity of the downstream receiving area. The increase in total runoff volume is received by the downstream area in a more controlled and delayed manner than the pre-existing condition (as shown by the reduction in peak rates of runoff and peak rate of runoff timing shown in Section 2A).

The site stormwater design is controlled by the existing discharge locations and elevations. As the site in the pre-existing condition lacks substantial grade change, stormwater routing is limited by this factor. An objective of the drainage design is to minimize the contributing area of the proposed development to Final Reach #400. This is achieved by conveying the maximum amount stormwater possible north to Final Reach #100 & #200. A driveway entrance profile proposed at 4% allows the crest in Tibetan Drive to be as far south as possible (station 1+90), allowing for elevation and conveyance of stormwater infrastructure associated with Final Reach #100 & #200, to the north of the site.

The only designed impervious areas contributing to Final Reach #400 are locations where there are physically no conveyance methods to direct stormwater to Final Reach #100 or Final Reach #200, while providing drainage pipe cover or positive swale drainage. Figure #2, from the W2-Proposed Conditions Drainage Plan, highlights the developed contributing area and the previously mentioned roadway crest curve in Tibetan Drive. The contributing area to Gravel Wetland #104 is traced on Figure #2 and referred to as Subcatchment #14. Subcatchment #16, which includes the majority of the parking lot in the front of residential building "B", conveyes north runoff towards Gravel Wetland #103 (Final Reach #200). Stormwater runoff on the western side of Tibetan Drive is able to be conveyed to Gravel Wetland #101 (Final Reach #100.) Tibetan Drive is not superevelated to the east due to icing concerns.

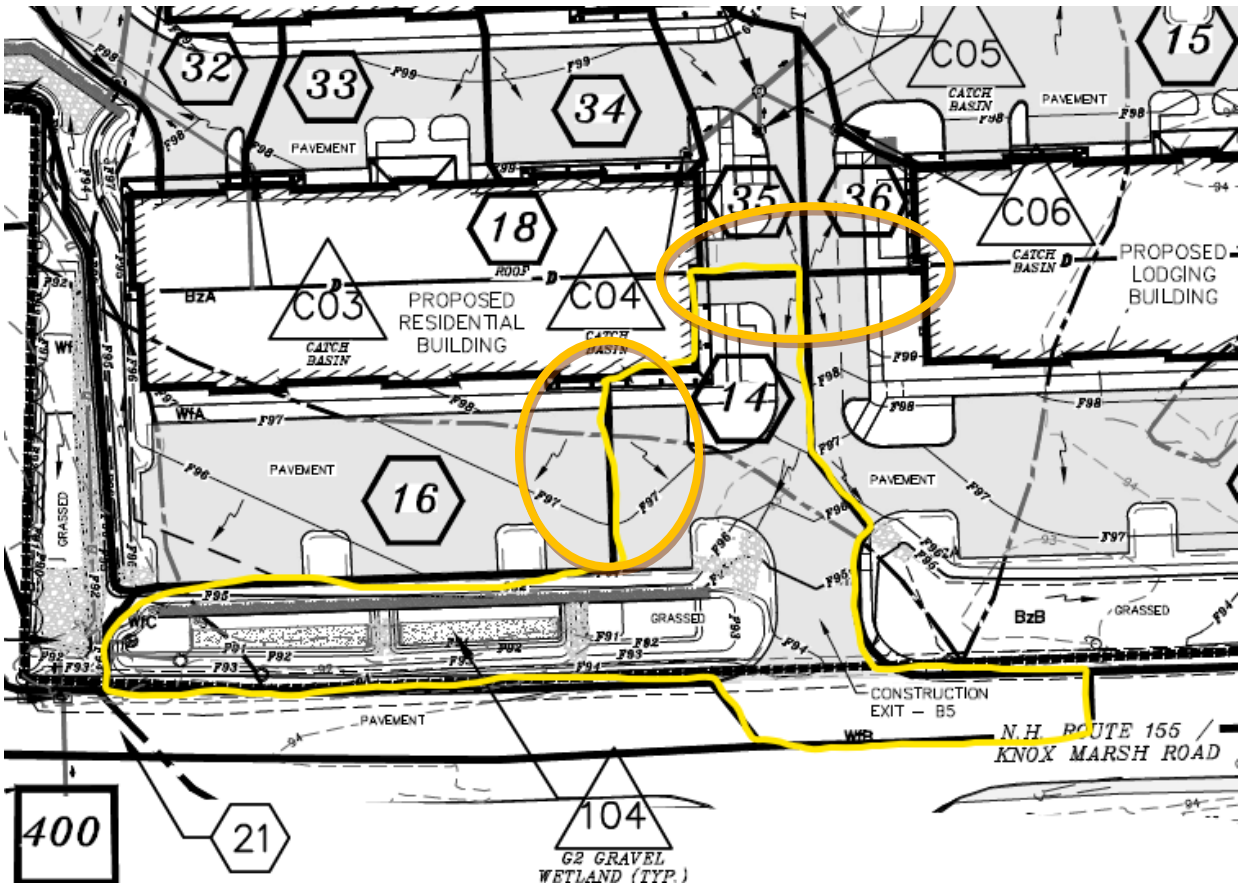


Figure 2: W2 Proposed Watershed Plan

The flow arrows in Figure #2 indicate the direction of stormwater runoff.

2. Waiver Justification:

a. Granting the waiver will properly carry out the purpose and intent of the regulations.

The purpose and intent of the regulation is to protect downstream properties from upstream development. The stormwater BMP proposed results with a greater than 20% reduction in the peak rate of runoff across all modeled storm events, resulting in the stormwater runoff volume reaching downstream areas at a reduced rate and different timing than the pre-existing condition. This reduced rate of stormwater runoff would allow downstream stormwater features to discharge other off-site received flow and reduce the opportunity for downstream capacity issues (extended detention). The discharge from the developed area to Final Reach #400, from Gravel Wetland #104, is controlled by an orifice, which results in a slow controlled "metering" of stormwater discharge of the BMP from the developed site. Figure #3, from the Proposed

Development HydroCAD model, demonstrates the slow "metering" of stormwater from the developed area, with the timing of the discharge of the peak rate of runoff over 10 hours later than the peak inflow rate for the 2Yr-24HR storm event.

24-034 Proposed Conditions Analysis *Type III 24-hr 2 YR - 24 HR Rainfall=3.60"*
Prepared by Berry Surveying & Engineering Printed 12/11/2024
HydroCAD® 10.00-25 s/n 07605 © 2019 HydroCAD Software Solutions LLC

Summary for Pond 104P: Gravel Wetland #104

Inflow Area =	0.506 ac, 53.15% Impervious,	Inflow Depth >	2.27"	for 2 YR - 24 HR event
Inflow =	1.32 cfs @ 12.09 hrs,	Volume=	0.096 af	
Outflow =	0.02 cfs @ 22.28 hrs,	Volume=	0.021 af,	Atten= 99%, Lag= 611.2 min
Primary =	0.02 cfs @ 22.28 hrs,	Volume=	0.021 af	
Secondary =	0.00 cfs @ 0.00 hrs,	Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 92.20' @ 22.28 hrs Surf.Area= 6,174 sf Storage= 3,288 cf
Flood Elev= 94.00' Surf.Area= 10,045 sf Storage= 12,384 cf

Figure 3: Gravel Wetland #104 2YR-24HR Event

It is the opinion of Berry Surveying & Engineering that the increases in stormwater runoff volume to Final Reach #400 are mitigated by the decrease in the peak rate of stormwater runoff and the slowed and controlled manner of discharge from the Gravel Wetland of the developed area, properly carry out the purpose and intent of the regulations. The conclusion can also be drawn that the discharge of 0.02 CFS from Gravel Wetland #104, in relation to the Final Reach #400 2Yr-24HR peak rate of runoff (0.59CFS), indicates the contribution of off-site area is a factor.

b. Strict conformity to the regulations would pose an unnecessary hardship to the applicant.

Requiring strict conformity of the regulations would pose an unnecessary hardship to the applicant. The site physical constraints: including lack of elevation for stormwater conveyance and no soils located on site with infiltration capacity in accordance with NHDES Alteration of Terrain Regulations, present a difficulty for compliance with this regulation. As part of the previous Alteration of Terrain approval (AoT-2183/2183-A), a waiver for Ground Water Recharge Volume (GRV) was approved by NHDES. As mentioned, no on-site soils exist with the ability provide infiltration in accordance with NHDES regulations. It is also of note that the peak rates of runoff and volume provided in the comparative analysis are compliant with Alteration of Terrain Standards, including Channel Protection Volume (CPV). The 2Yr.-24Hr. peak rate of runoff is less than 2CFS from the developed area, allowed by Env-Wq 1507.05(b)(1)(b) for Channel Protection Volume purposes.

3. 1. Identification of Waiver Request: Minimum pipe cover per Subdivision Regulation 157-40-B(5)

- Proposed drainage pipes with less than 3' of cover where 3' is required. This Waiver Request is a result of Waiver Request #2.

2. Explanation:

The applicant proposes less than 3' of drain pipe cover for the following: Catch Basin #2 (for a few feet at the outlet), Catch Basin #3 (for a few feet at the outlet), Catch Basin #4, Catch Basin #5, Catch Basin #6, and Drain Manhole #4. This is due to elevation constraints and the physical features of the project site. In these locations, the culverts are proposed as RCP as opposed to HDPE N-12, which is specified in other locations of the project. The roadway crest curve of Tibetan Drive (Station 1+90) is situated in the location for drainage considerations previously discussed in Waiver Request #2. This roadway crest curve controls the elevation of the parking garage entrance on the eastern side of building "B".

The sag curve provided at station 2+42.75 provides a low point for drainage to be collected outside of the loading zone and outside of the proposed crosswalk. As Tibetan Drive reaches a second roadway crest curve at station 3+02.50, the adjacent intersection elevation is controlled by this factor. Catch Basins #2 & #3 to the north of building "B" are controlled by the elevation required to access the building "B" parking garage. As previously mentioned, this parking garage elevation is controlled by the elevation of the crest and sag curves of Tibetan Drive. Where possible on site, 3' of cover is provided in other locations with HDPE N-12 culverts. It is of note that the elevation of the discharge of Drain Manhole #4 is controlled by the bottom of Detention Pond #105, and the bottom of pond is controlled by the outlet elevation of Gravel Wetland #103. The elevations of Catch Basin #2 and Catch Basin #3 are controlled in the same manner by the outlet elevation of Gravel Wetland #103. Figure #4, from the W2 Proposed Watershed Plan, highlights the aforementioned culverts without 3' of drainage cover, showing the relationship between the crest curve. Figure #5, from the Grading & Drainage Plan, shows the Tibetan Drive roadway profile demonstrating the internal intersection.

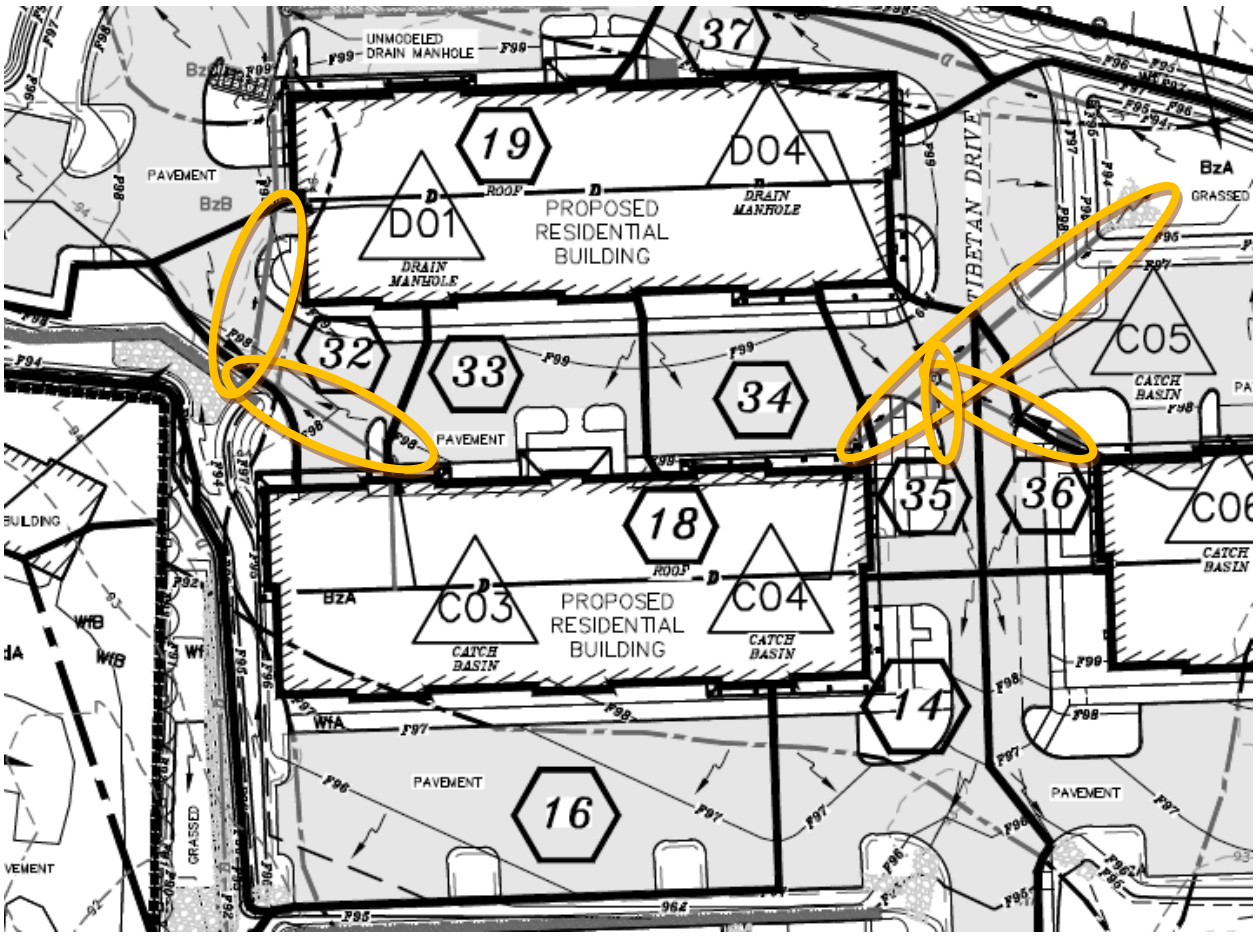


Figure 4: W2 Proposed Watershed Plan

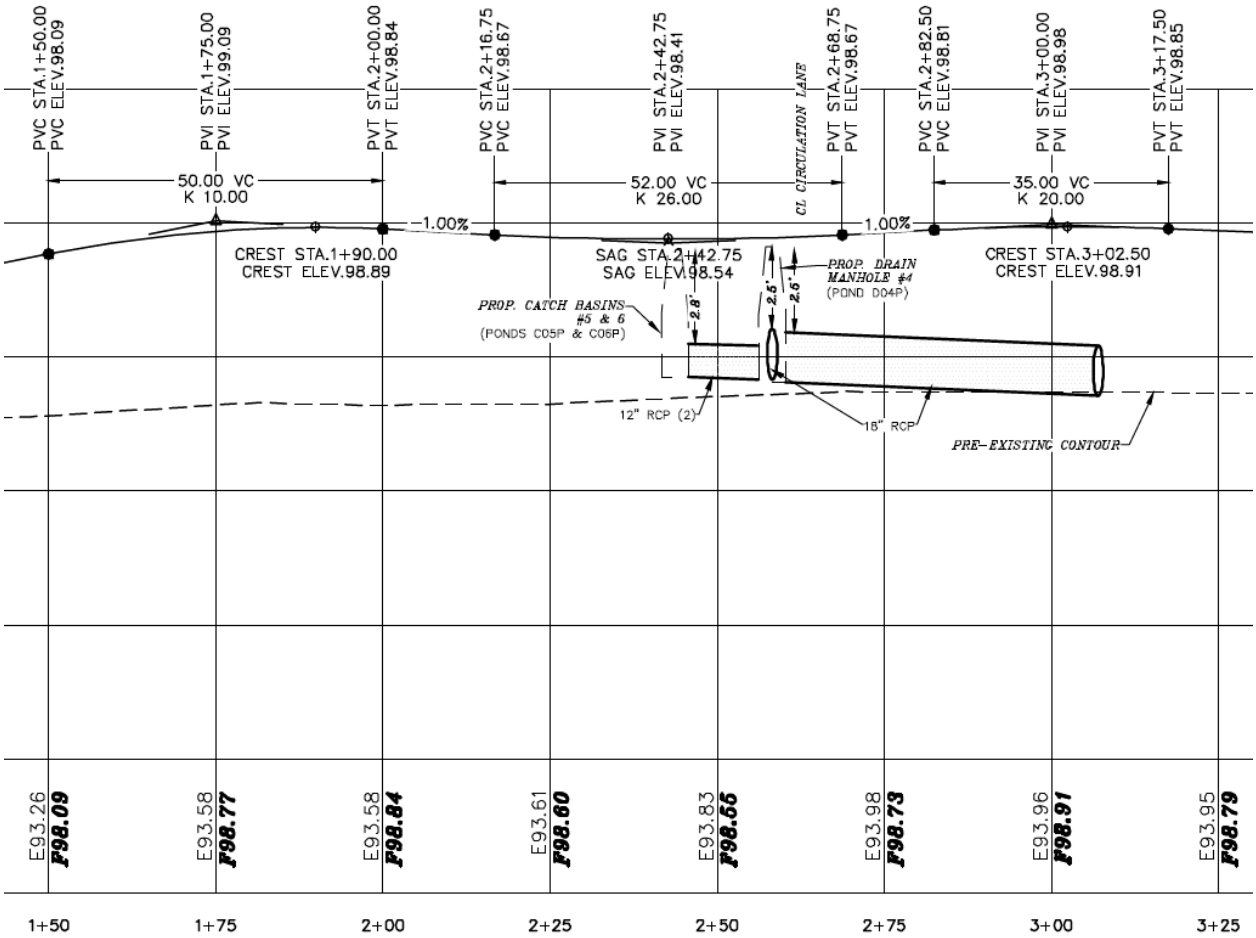


Figure 5: Tibetan Drive profile from Grading Plan sheet #13

3. Waiver Justification:

a. Granting the waiver will properly carry out the purpose and intent of the regulations.

The purpose and intent of this regulation is to provide long term pavement and pipe durability. With the exception of Catch Basin #4 (2' of cover), the remaining RCP locations are provided at least 2.5' of cover. The conversion of drainage pipes from HDPE N-12 to RCP provides a more durable product (designed for lower cover applications) with less than 3' of cover over vehicle traffic. The crown of the RCP culverts will still be below the invert of the pavement gravel select materials, ensuring a full-strength roadway section is provided still in these locations. Given the underlying silt loam soils, the heavier pipe will be more effective against pipe floating or heaving.

b. Strict conformity to the regulations would pose an unnecessary hardship to the applicant.

Requiring the applicant to provide 3' of cover would pose an unnecessary hardship on the applicant. To provide the required cover, the applicant would need to move the crest curve from 1+90 to a location further into Tibetan Drive, likely greater than 50'. As discussed in the Waiver Request #2, moving this crest curve to the north would further increase the runoff area contributing to Final Reach #400, discharging under NH Route 155. The RCP proposed with a minimum of 2' of cover, with more in most locations, is an effective balance of the elevation and drainage constraints the project faces.

4. Identification of Waiver Request: Proposed utility drop poles providing power service to the site above ground.

- One proposed drop pole on the southern side of NH Route 155 and two proposed drop poles on site adjacent to the NH Route 155 sidewalk per Eversource request.

1. Explanation:

The applicant is proposing a site plan with all utilities underground, with the exception of the proposed drop poles required by Eversource along NH Route 155.

2. Waiver Justification:

a. Granting the waiver will properly carry out the purpose and intent of the regulations.

The purpose and intent of the regulation is to create a visually appealing project that is not inhibited by visually unappealing utility items, specifically utility poles. With all other utilities proposed underground, this objective is achieved within the site. The utility drop poles are adjacent to NH Route 155, which is consistent with existing utility poles provided along NH Route 155. There is a pre-existing utility pole located at the front of the site that is proposed to remain and used as part of the development.

b. Strict conformity to the regulations would pose an unnecessary hardship to the applicant.

Requiring the applicant to meet this requirement would pose and unnecessary hardship to the applicant by causing difficulty with Eversource. These drop poles are what they have requested to provide power to the project.

Respectfully Submitted,
BERRY SURVEYING & ENGINEERING

Kevin R. Poulin, PE
Project Engineer

Christopher R. Berry
Principal, President

City of Dover, New Hampshire
CONDITIONAL USE PERMIT APPLICATION

[Revision Date: October 19, 2020]

Office Use Only	Project #:		Date Received:	
	Amount Paid:		Time Received:	

APPLICANT AND OWNER INFORMATION

Name of Applicant: 239 Knox Marsh Realty, LLC Telephone # 603-349-0470

Address of Applicant: P.O. Box 720, Middleton, MA 01949

E-Mail Address: Gilaleixo@gmail.com

Name of Property Owner (if different from applicant): _____ Telephone #_____

Address of Property Owner: _____

PROPERTY INFORMATION

Assessor's Map # H Lot(s) # 37A

Address of Property: 239 Knox Marsh Road

Zoning District(s) Commercial (C) Overlay District(s) Secondary Groundwater Recharge

Existing Use of Property: Vacant/Former Single Family

CONDITIONAL USE PERMIT INFORMATION

Type of Conditional Use Permit (Check All That Apply):

☐ Conservation District	☐ RCM Use Overlay District	☐ Gateway District
☒ Groundwater Protection	☐ Off-Street Parking and Loading	☐ Alternative Treatment Center
☐ Wetland Protection District	☐ Central Business District	☐ Heritage Residential District

Describe Proposed Use or Activity That Requires Conditional Use Permit and Describe Any Impacts:

Please find attached narrative

List Any Associated State or Federal Permits That Have Been or Will Be Applied For and Indicate Their Status: NHDES Alteration of Terrain, NHDES Sewer Discharge, NHDOT Driveway Permit, EPA NOI (Not yet Submitted)

Name of Professional That Prepared Plans: Kenneth A. Berry, PE, LLS

Address 335 Second Crown Point Road, Barrington, NH 03825 Telephone #: 603-332-2863

Professional License #: 14243 (PE), 805 (LLS) E-mail address: K.berry@berrysurveying.com crberry@metrocast.net

SIGNATURES

I/We hereby submit this application to the City of Dover Planning Board and attest that to the best of my knowledge all of the information on this application form and in the accompanying application materials and documentation is true and accurate. As applicant or as agent, I attest that I am duly authorized to act in this capacity.

Signature of Property Owner: _____ Date: 11-26-24

Signature of Applicant (if different from owner): _____ Date: _____

Signature of Agent: _____ Date: 11-26-24

AUTHORIZATION TO ENTER SUBJECT PROPERTY

I, and my successors, hereby authorize members of the Dover Planning Board, Planning Department and other pertinent City Departments and boards to enter my property for the purpose of evaluating this application, including performing inspections during the application phase, post-approval phase, construction phase and occupancy phase. It is understood that these individuals must use all reasonable care, courtesy, and diligence when on the property.

Signature of Property Owner: _____ Date: 11-26-24

CITY OF DOVER CONDITIONAL USE
LIST OF ABUTTERS

Pursuant to RSA 676:4, the State Law of New Hampshire, the City of Dover is required to notify the applicant, abutters (including holders of conservation easements), and any professional whose seal is on the plan, of the public hearing by certified mail, return receipt requested. Staff will provide the abutter information, while the applicant must provide accurate contact information for the owner, applicant and professional agents representing the project.

Owner:

TAX MAP	LOT #	PROPERTY OWNER	MAILING ADDRESS

Applicant (if different from owner):

APPLICANT NAME	APPLICANT COMPANY	MAILING ADDRESS

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	MAILING ADDRESS

Conservation Easement Holder:

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	MAILING ADDRESS

BERRY SURVEYING & ENGINEERING
335 Second Crown Point Road
Barrington, NH 03825
Phone: (603) 332-2863
Fax: (603) 335-4623
www.BerrySurveying.Com

November 26, 2024

To: City of Dover Planning Board
288 Central Ave
Dover, NH 03820

RE: "Residences and Lodges at Kelly Brook"
239 Knox Marsh Realty, LLC
239 Knox Marsh Road
Mixed-Use TDR Site Plan
Map H, Lot 37A
Environmental Conditional Use Permit Request

Mr. Hunt and the Dover Conservation Commission,

Berry Surveying & Engineering (BS&E,) on behalf of 239 Knox Marsh Realty, LLC respectfully requests the City of Dover Planning Board to accept the following Conditional Use Permit:

- More than 20% impervious (40.2%) within the secondary groundwater protection zone.
  -Conditional Use Permit P22-46 was previously approved for the subject parcel as 33.8% impervious.

1. Identification of Conditional Use Permit

Regulations in the zoning ordinance do not allow for more than 20% impervious cover in the secondary groundwater recharge zone. However, Section 170-33 states that a conditional use permit may be granted by the planning board, given the following standards, as shown below, are met.

Below we show the project's compliance with the standards required to grant a Conditional Use Permit, and we provide justification for its approval.

2. Compliance with the following standards

a) The proposed development plan incorporates a stormwater drainage plan, approved by the Planning Board and prepared by a professional engineer certified to practice in the State of New Hampshire

- **A full drainage analysis was conducted as part of the application. The drainage analysis was designed to be not**

only compliant with the City of Dover regulations but also with Alteration of Terrain (AoT) regulations. Alteration of Terrain Standards do not allow for infiltration on this particular subject parcel due to restrictive soil conditions and standards put forth by Env-Wq 1500 Alteration of Terrain. A waiver for Ground Water Recharge Volume (GRV) has been requested at the state level. Please find the AoT waiver request, located after part B, for further justification. This Site Plan proposes 40.2% impervious.

b) Groundwater Protection Zone of all development-generated stormwater runoff from a ten (10) year storm. Furthermore, the stormwater drainage plan shall provide for the removal of oil and gasoline from parking LOT runoff by use of treatment swales, oil/gas separators or other device, prior to retention and percolation of the runoff.

- **Swales and sediment forebays will be constructed as part of the development. These are designed to capture the runoff and retain any debris, sediment, and hydrocarbons before the runoff gets into the proposed ponds. If anything gets through the swales/forebays, the ponds will act as a second level of protection, preventing pollutants from getting to the final discharge points. Subsurface gravel wetlands are proposed on site, which provide a high level of nitrogen and phosphorous treatment in addition to other common pollutants found on this type of site.**

  With a waiver to GRV being requested at the state level, no infiltration is to take place on site and all site generated stormwater is to be discharged as surface water. Infiltration of stormwater generated by the 10-YR 24 Hr storm event is not able to occur due to site soil restrictions.

<u>The following paragraphs are the language submitted and approved by NHDES for the GRV waiver request.</u>

NHDES Alteration of Terrain GRV Waiver Request

"Identification of Waivers Requested:

1. Waiver requested to not satisfy Ground Water Recharge (GRV) requirement as put forth by Env-Wq 1507.04(b).

1) Explanation:

This waiver request is being submitted to allow for the Ground Water Recharge requirements put forth by Env-Wq 1507.04(b) due to soil conditions on site as shown in the Site Specific Soils Map (SSSM).

1) Waiver Justification:

a. Granting the request will not result in an adverse impact on the environment, public health, public safety, or abutting properties that is more significant than the impact that would result from complying with the rule as written.

Granting this request will not result in adverse impact on the environment, public health, public safety, or abutting properties that is more significant than the impact of complying with the rules as written. This is due to site conditions not allowing for compliance. On-Site soils that are being replaced with impervious surfaces are; Winsdor Variant, Buxton, and Scantic. The Windsor Variant has limited recognition across the state, primarily only being in Strafford County, which is why it is not found in the KSat Values for New Hampshire Soils (Ksat NH Manual). While the Windsor Variant experiences Ksat of 6-20 in/hr in the "B" horizon according the Ksat NH, a silt loam "C" horizon exists a silt loam "C" horizon exists with a significantly more restrictive Ksat.

Using the NH State-Wide Numerical Soil Legend (Key to the Soils of New Hampshire) 2011 Catena, the Windsor Variant is located within Section C, Marine or Glaciolacustrine Deposits, Soils Developed in Silt and Clay. From this section Eldridge soil contains similar textures and a restrictive "C" horizon. Using the Ksat NH Manual,
Eldridge soil has a "C" horizon Ksat of 0.06-0.6 in/hr. By applying this restrictive "C" horizon to the Windsor Variant, infiltration would be prohibited in the proposed condition.

Buxton consists of restrictive "B" and "C" horizons of 0.1-0.6 in/hr and 0.0-0.2 in/hr, respectively. Scantic consists of restrictive "B" and "C"

horizons as well, with 0.0-0.2 in/hr and 0.0-0.2 in/hr, respectively. With restrictive "B" and "C" horizons across the subject parcel, compliance with Env-Wq 1507.04(b) is not possible.

b. Granting the request is consistent with the intent and purposes of the rule being waived.

Utilizing the justification put forth in part a, granting this waiver request is consistent with the intent and purposes of the rule being waived. There is no location of site that is able to provide the minimum Ksat requirement of 0.5 in/hr in order to satisfy the GRV requirements of Env-Wq 1507.04(b)."

End of NHDES Alteration of Terrain GRV Waiver Request

3.) Section F Dover Performance Standards

a) Post-development Infiltrations Volumes shall be no greater than predevelopment volumes as determined by use of the Development Review Model as described in Subsection G below.

As a wavier for groundwater recharge volume is requested due to Alteration of Terrain Standards, post-development infiltration volumes infiltration volumes are not greater than the pre-development volumes, meeting the performance standard.

b) Stormwater shall be treated by the use of a stormwater treatment system designed to remove no less than 80% of the annual load of total suspended solids. The removal rate shall be accomplished using best management practices installed in advance of the final infiltration system.

Utilizing the NH Stormwater Manual Pollutant removals information, the following performance can be expected from subsurface gravel wetlands:

Subsurface Gravel Wetland:

- *Total Suspended Solids (TSS) reduction of 95%*
- *Total Nitrogen (TN) reduction of 85%*
- *Total Phosphorous (TP) reduction of 64%*

These removal efficiencies meet the performance standard.

c) No stormwater infiltration system shall be located within the 200-day travel time of an existing or proposed municipal well as depicted on the map referenced in Subsection B above. In absence of a defined 200-day-travel-time radius, the applicant shall submit a technical evaluation from a professional engineer, hydrologist or geologist that documents that the proposed discharge is consistent with the stated purposed and intent of this requirement.

As no infiltration systems are proposed on site due to NHDES Alteration of Terrain requirements, this performance standard is met.

BERRY SURVEYING & ENGINEERING

Kevin R. Poulin, PE
Project Engineer

Christopher R. Berry
Principal, President

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Drainage Analysis
&
Erosion and Sediment Control Plan

Prepared for:

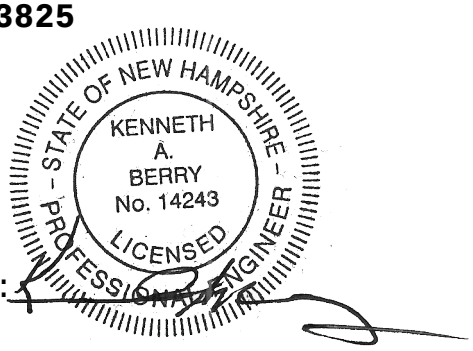
239 Knox Marsh Realty, LLC
P.O. Box 720
Middleton, MA 01949

LOCATION

Proposed Mixed Use Site Plan
"Residences and Lodges at Kelly Brook"
Tibetan Drive
Tax Map H, Lot 37A
239 Knox Marsh Road, Dover, NH 03820
Previous NHDES Alteration of Terrain Permit #: AoT-2183/AoT-2183-A

Prepared by:

Berry Surveying & Engineering
335 Second Crown Point Road
Barrington, NH 03825



Project Number:
DB 2024-034

November 26, 2024

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USGS Quadrangle Location Map

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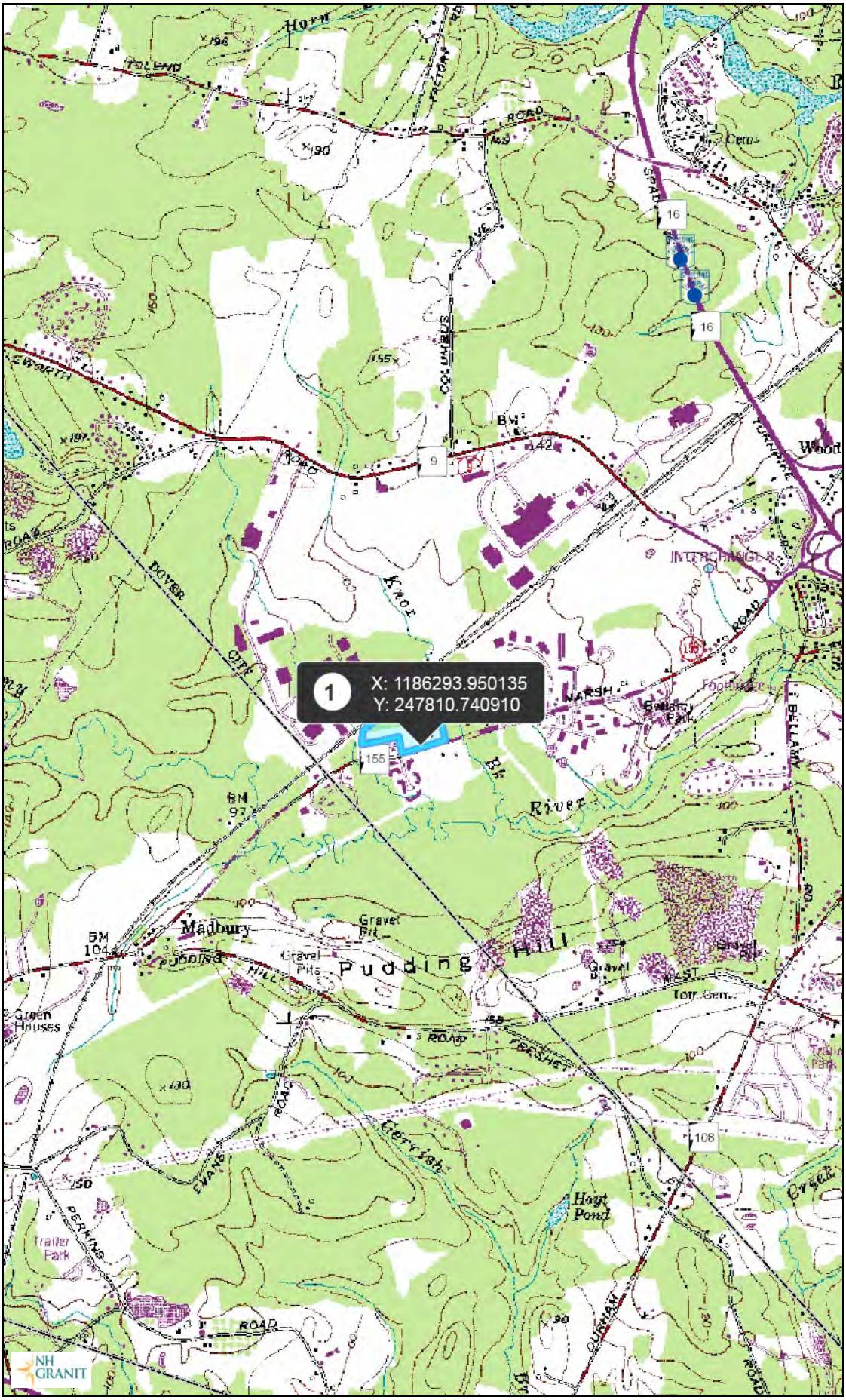
Appendix I - Existing Conditions Analysis
25 Yr - 24 Hr. Full Summary
2 Yr - 24 Hr. Node Listing
10 Yr - 24 Hr. Node Listing
25 Yr - 24 Hr. Node Listing
50 Yr - 24 Hr. Node Listing
100 Yr - 24 Hr. Node Listing

Appendix II - Proposed Conditions Analysis
25 Yr - 24 Hr. Full Summary
2 Yr - 24 Hr. Node Listing
10 Yr - 24 Hr. Node Listing
25 Yr - 24 Hr. Node Listing
50 Yr - 24 Hr. Node Listing
100 Yr - 24 Hr. Node Listing

Appendix III - Calculations, Charts, & Graphs
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AoT Stormwater Treatment Spreadsheets
NRCS USDA Web-Soil Map
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Ksat Values in N.H., SSSNNE
Inspection and Maintenance Manual Stormwater System Management
UNHSC Gravel Wetland Inspection Documentation
Stormtech Sc-740 Chamber Submittal Documents
Watershed Report Card, 303(d) List, & ORW List
Filtrexx Silt Soxx Specification Sheets
Waiver for Groundwater Recharge Volume

Enclosed:	W-1 Sheet	Existing Conditions Watershed Plan	Sheet 1
	W-2 Sheet	Post Construction Watershed Plan	Sheet 2
	Erosion & Sediment Control Plan		

Map by NH GRANIT



Legend

- State
- County
- City/Town

Map Scale

1: 24,000

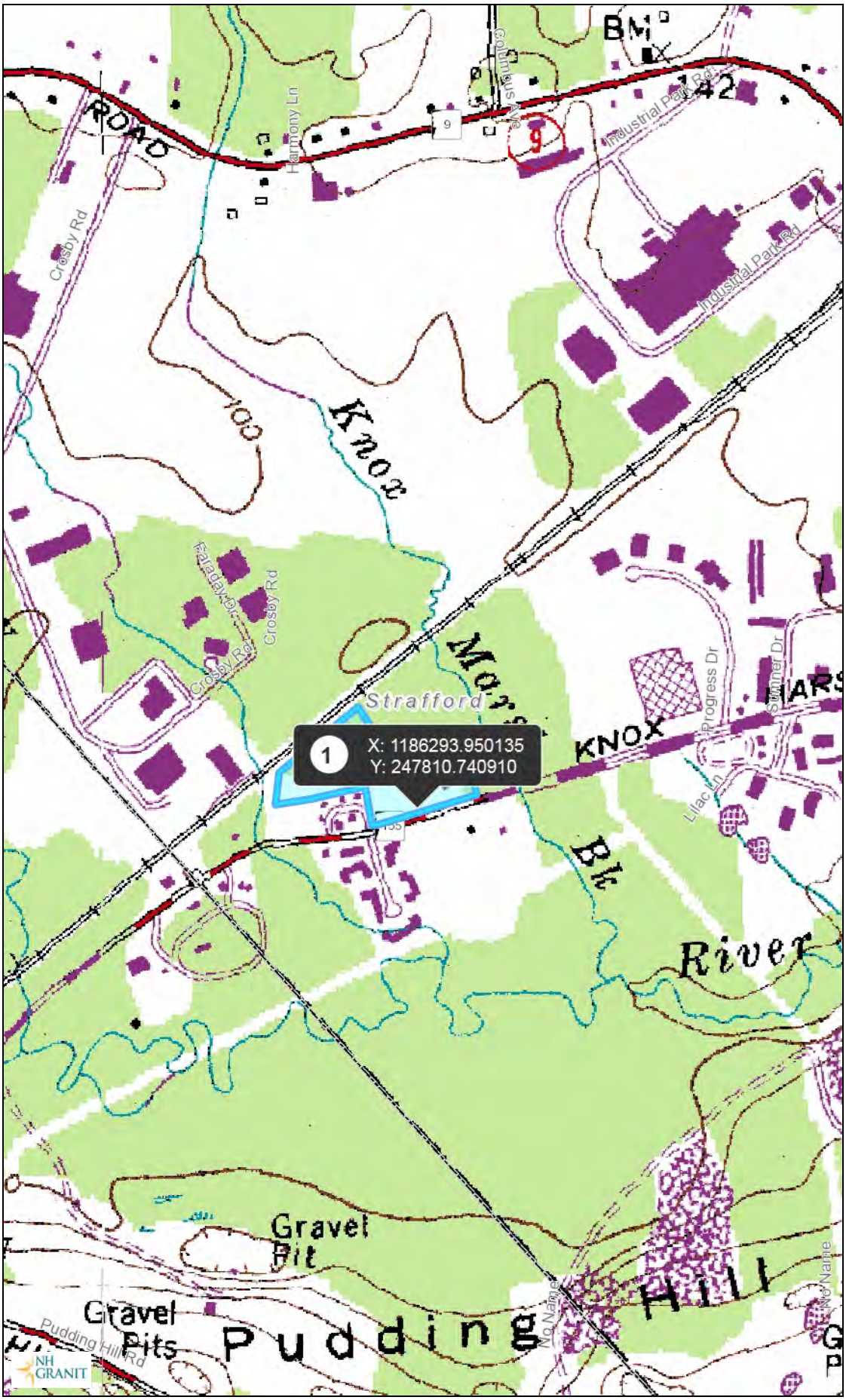
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Map Generated: 12/19/2019

Notes



Map by NH GRANIT



Legend

- State
- County
- City/Town

Map Scale

1: 10,000

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Map Generated: 12/19/2019

Notes



DESIGN METHOD OBJECTIVES

The owner / developer of Tax Map H, Lot 37A, 239 Knox Marsh Realty, LLC is proposing to develop the property at 239 Knox Marsh Road. The site was the location of a single residential structure, which has since been razed. Proposed development includes one building consisting of 84 lodging units, a road consisting of over 2,000 linear feet of roadway/circulation/parking lanes, and two buildings, each containing 90-single occupancy units.

Pre-Existing and Proposed Conditions analyses were conducted for the purpose of estimating the peak rate of stormwater run-off and to subsequently design adequate mitigation of drainage. There are three existing drainage discharge points which was identified in the existing analysis and duplicated in the proposed conditions analysis. Designing two watershed models we have compared the differences in these rates of peak run-off and surface water volume. Sheet W1, Existing Conditions Watershed Plan, outlines the characteristics of the site in its existing or pre-construction conditions. The second analysis displays the proposed (post-construction) conditions (See Sheet W2). The analysis was conducted using data for; 2 Yr – 24 Hr (3.60”), 10 Yr – 24 Hr (5.44”), 25 Yr -24 Hr (6.88”), 50 Yr – 24 Hr (8.23”), and 100 YR-24 Hr (9.84”) storm events. Storm event analysis was accomplished using the USDA SCS TR-20 method within the HydroCAD Stormwater Modeling System environment. Rainfall quantities are based on the Extreme Precipitation Table for this location from the Northeast Regional Climate Center / Cornell University (http://precip.eas.cornell.edu). As Dover is considered a part of the Coastal Region, a 15% escalation on rain fall depths has been applied to this application.

1.0 Pre-Existing Conditions Analysis:

Reference: Sheet W1 – Pre-Existing Conditions Watershed Plan (Enclosed)
Pre-Existing Conditions Plan

The parcel was previously used for residential and Christmas tree farm purposes. Since the original survey taking place in spring of 2020 multiple alterations of the site have taken place. Structures located on the parcel were razed in 2022. Clearing of the site was started in Fall of 2023 and concluded in Spring of 2024. Currently the site is cleared, leveled, and partially construction per AoT Permit #2183/#2183-A. The current conditions are shown on the Demolition Plan. The soils within the watershed are made up of multiple soil types, containing Hydrologic Soil Group (HSG) A, C & D. See Site Specific Soils Map and report for more information. The parcel consists of Windsor Variant Well Drained soils, Buxton Moderately Drained soils, and Scantic Poorly Drained soils.

The land area analyzed consists of 10.76 acres, 3.25 acres of which is offsite. The area is naturally divided into three subcatchments by existing topography. Each of the three existing subcatchments is analyzed with an individual final reach. The limit of the poorly drained jurisdictional wetlands is the limit of the drainage analysis to the north. The property sits between two separate receiving brooks with relating streams (the Kelly

Brook and Knox Marsh Brook, NHRIV600030903-08). **Final Reaches #100 & #200** below generally drain to a wetland that divides between the two streams.

Final Reach #100

Subcatchment #1 is land area in the eastern portion of the property and drains off site. **Final Reach #100** is a nonpoint reach to the north and east of the parcel, generally following the property line.

Final Reach #200

Subcatchment #2 is land area in the center portion of the property extending nearly to the edge of Knox Marsh Road and drains off site to the north. **Final Reach #200** is a nonpoint reach to the north and northeast of the parcel, along the delineated wetland line.

Final Reach #400

Subcatchment #4 is made up of a portion of Knox Marsh Road (NH Route 155) and the adjacent land extending just over the property line. Runoff flows toward a cross culvert near a southwestern corner of the parcel which flows to an inlet depression **(Pond #4)** and under Knox Marsh Road to an offsite outlet point being analyzed as **Final Reach #400**.

2.0 Proposed Conditions Analysis:

Reference: Sheet W2 - Proposed Conditions Watershed Plan (Enclosed)
Proposed Grading & Drainage Plan

The proposal for development includes one building consisting of 84 lodging units, a road consisting of over 2,000 linear feet of roadway/circulation/parking lanes, and two buildings, each containing 90-single occupancy units. The residential buildings will be referred to as "northern" or "southern" residential building. The proposal is supported by detention ponds, StormTech Chambers, and three subsurface gravel wetlands. A waiver for infiltration of the GRV had previously been approved by NHDES Alteration of Terrain due to site soil conditions. This waiver is requested again for the proposed application. Revisions to the completed construction are required as part of this application.

Final Reach #100

Subcatchment #1 is the area remaining, to the south and east of the parcel, after the proposed construction of the site plan, **Subsurface Gravel Wetland #101 (Pond #101)**, and the related discharge level spreader. Runoff still flows directly to **Final Reach #100**.

Subcatchment #11 is made up of the paved and grassed area in front of the lodging building, extending to Knox Marsh Road, and drains to **Subsurface Gravel Wetland #101** (**Pond #101P**) sediment forebay. Once runoff is treated in the gravel wetland it is directed to **Final Reach #100** through an outlet structure and level spreader.

Subcatchment #17 consists solely of the roof area of the lodging building, which is collected and drained directly into **Stormtech Detention Pond #106** (**Pond #106P**), which outlets to **Subsurface Gravel Wetland #101** (**Pond #101P)**.

Subcatchment #38 consists of grassed and paved area to the northeast of the lodging building and captured in **Catch Basin #8 (Pond #C08P)** which outlets to a sediment forebay within **Subsurface Gravel Wetland #101** (**Pond #101P)**.

Final Reach #200

Subcatchment #2 from the Existing Condition Analysis is divided into multiple subcatchments by the proposed site plan construction. The portion that remains as proposed **Subcatchment #2** is defined by the edge of the western parking lot and the outside berm of **Subsurface Gravel Wetland #103** (**Pond #103P)**. Runoff still flows directly to **Final Reach #200.**

Subcatchment #13 is the developed area to the north and west of the northern residential building, where **Subsurface Gravel Wetland #103 (Pond #103P)** is proposed to be constructed. This area consists of the grassed area of **Pond #103P** and the paved parking areas and circulation lane that flow directly into the sediment forebay of **Pond #103P**. Runoff is discharged from the pond to a level spreader and **Final Reach #200**.

Subcatchment #15 is made up of the paved land area to the north of the proposed lodging building and encompasses the grassed area of proposed **Detention Pond #105 (Pond #105P).** Runoff flows from **Pond #105** via outlet control structure and from there is directed through **Catch Basin #7 (Pond #C07P)** and **Drain Manhole #6 (Pond #D06P)** to **Pond #103P** and eventually to **Final Reach #200.** While no overflow is shown at the 100Yr-24-hour storm event, **Reaches #15 & #15A** are provided for an overflow of **Pond #105P** to **Final Reach #100**.

Subcatchment #16 consists of the paved area to the south and grassed area to the west of the southern residential building, which is routed via conveyance swale and berm to the **inlet sump #16** (**Pond #16P**). A ponding area is established by a berm to be constructed for the inlet sump. **Pond #16P** is discharged to **Pond #103P** via **Catch Basin #2** (**Pond C02P**) and **Drain Manhole #1** (**Pond D01P**).

Subcatchment #18 consists solely of the roof area of the southern residential building. Runoff is collected and routed to **Pond #105P** for detention before treatment

in **Pond #103P**. Runoff is routed **to Pond #105P** via **Catch Basin #4** (**Pond C04P**) and **Drain Manhole #4** (**Pond D04P**).

Subcatchment #19 consists solely of the roof area of the northern residential building, which is collected and drained directly into **Stormtech Detention Pond #102** (**Pond #102P**), which outlets to **Subsurface Gravel Wetland #103** (**Pond #103P)**.

Subcatchment #32 consists of the western portion of the circulation lane between the two residential buildings. Runoff is collected via **Catch Basin #2 (Pond #C02P)** and routed via **Drain Manhole #1 (Pond #D01P)** to **Pond #103P** for treatment.

Subcatchment #33 consists of the central portion of the circulation lane between the two residential buildings. Runoff is collected via **Catch Basin #3 (Pond #C03P)** and routed via **Catch Basin #2 (Pond #C02P)** and **Drain Manhole #1 (Pond #D01P)** to **Pond #103P** for treatment.

Subcatchment #34 consists of the eastern portion of the circulation lane between the two residential buildings. Runoff is collected via **Catch Basin #4 (Pond #C04P)** and routed via **Drain Manhole #4 (Pond #D04P)** to **Pond #105P** for detention prior to treatment in **Pond #103P**.

Subcatchment #35 consists of the western portion of Tibetan Drive near the second internal intersection. Runoff is collected via **Catch Basin #5 (Pond #C05P)** and routed via **Drain Manhole #4 (Pond #D04P)** to **Pond #105P** for detention prior to treatment in **Pond #103P**.

Subcatchment #36 consists of the eastern portion of Tibetan Drive near the second internal intersection. Runoff is collected via **Catch Basin #6 (Pond #C06P)** and routed via **Drain Manhole #4 (Pond #D04P)** to **Pond #105P** for detention prior to treatment in **Pond #103P**.

Subcatchment #37 consists of a portion of the circulation lane to the north of the northern residential building. Runoff is collected via **Catch Basin #7 (Pond #C07P)** and routed via **Drain Manhole #6 (Pond #D06P)** to **Pond #103P** for treatment.

Final Reach #400

Subcatchment #4 is reduced in size due to the proposed development and construction.

Subcatchment #14, consisting of a portion of the parking area in front of the southern residential building, flows to **Subsurface Gravel Wetland #104 (Pond #104)** which discharges through an outlet structure and level spreader into **Pond #4** prior to discharge through the existing NHDOT culvert and **Final Reach #400**.

Subcatchment #20 is made up of a small portion of land near the property line near the abutting development between the parcel and Route 155. Runoff is directed to a yard drain **(Pond #20P)** before it flows off the property. **Pond #20P** outlets to **Pond #4** through an underdrain pipe before flowing to **Final Reach #400.**

Subcatchment #21 consists of **Catch Basin #1 (Pond #C01P)**, receiving NH Route 155 pavement that is blocked by the proposed sidewalk/curbing and discharges to **Final Reach #400**.

Stormwater Treatment:

Treatment takes place within the subsurface gravel wetlands designed to support the development on site. Pre-treatment will be provided in the sediment forebays of the subsurface gravel wetlands as well as the isolator rows of the Stormtech detention systems. The water quality volume capability is treated within the provided treatment area of the practices, with ponds providing storage for additional stormwater treatment above the water quality volume. A Groundwater Recharge Volume waiver was approved by Alteration of Terrain for AoT#2183/#2183-A due to on-site soil conditions. This waiver is being requested again for the project. A waiver is also requested for the volumetric increase at Final Reach #400 in accordance with the Dover Site Review Regulations.

3.0 FULL COMPARATIVE ANALYSIS

ANALYSIS COMPONENT PEAK RATE DISCHARGE (Cubic Feet / Second)

		2 Yr	10 Yr	25 Yr	50 Yr	100 Yr
Final Reach #100	Existing	2.23	4.83	7.01	9.12	11.66
	Proposed	1.15	2.16	2.98	4.90	9.71
Final Reach #200	Existing	4.02	9.00	13.30	17.49	22.58
	Proposed	1.43	5.90	12.39	17.30	22.33
Final Reach #400	Existing	0.83	2.67	4.35	5.52	6.30
	Proposed	0.59	2.02	3.39	4.26	4.97

ANALYSIS COMPONENT VOLUME (ACRE FEET) (OVER 24 HOURS)

		2 Yr	10 Yr	25 Yr	50 Yr	100 Yr
Final Reach #100	Existing	0.202	0.421	0.609	0.794	1.021
	Proposed	0.167	0.335	0.552	0.758	1.019
Final Reach #200	Existing	0.592	1.269	1.862	2.448	3.171
	Proposed	0.592	1.244	1.789	2.309	2.949
Final Reach #400	Existing	0.145	0.387	0.618	0.855	1.158
	Proposed	0.181	0.437	0.718	1.001	1.356

4.0 EROSION and SEDIMENT CONTROL PLAN & BEST MANAGEMENT PRACTICES (BMP's)

Reference: Proposed Site Plans and Grading Plans
Erosion & Sediment Control Plan
Erosion & Sediment Control Details

The proposed site development is protected from erosion and the abutting properties are protected from sediment by the use of Best Management Practices as outlined in the New Hampshire Stormwater Manual, Volume 2, Post-Construction Best Management Practices Selection & Design (December 2008, NHDES & US EPA). Any area disturbed by construction will be re-stabilized within 14 calendar days (**City of Dover**) and abutting properties will not be adversely affected by this development. All swales and drainage structures will be constructed and stabilized prior to having run-off directed to them. Reference is also made to the Stormwater System Management: Inspection & Maintenance Manual and included plan with attachments which has been written specifically for this project and available to the owner.

Perimeter Control (Silt Fence / Silt Soxx / Erosion Control Mix Berm)

The plan set demonstrates the location of perimeter sediment control. The Erosion and Sediment Control Details, Sheet E-101, has the specifications for installation and maintenance of the silt fence, Filtrexx mulch filled Silt Soxx (or approved equal), and Erosion Control Mix Berm. There are locations on the site, for example bio-media rain garden protection, where Silt Soxx protection is specified.

Detention Ponds

Description: Detention Ponds are also constructed ponds with the purpose of detaining runoff but not for infiltration purposes. The pond is equipped with an outlet structure and stage-discharge orifice system. Construction specifications are included in the plan set and New Hampshire Stormwater Manual, Volume 2, Section 4-6, Conveyance Practices, 2. Detention Basins.

Maintenance Considerations:
Detention Ponds should be inspected at least twice annually and following any rainfall event exceeding 2.5 inches in a twenty-four hour period. Maintenance rehabilitation will be conducted as warranted by each inspection. Trash and debris will be removed at each inspection.

Any pilot channel within the detention pond and the sump in front of the primary discharge need to be maintained and kept clear of vegetated material.

Also on an annual basis the vegetation should be inspected to ensure healthy condition. Invasive species need to be removed along with dead or diseased vegetation.

Subsurface Gravel Wetland

Description: A Gravel Wetland (NHDES SWM 4-3 Treatment Practice 2D) or Subsurface Gravel Wetland consists of a forebay and multiple flow-through treatment cells. During smaller rain events, the surface water runoff is intended to pass from the forebay, into the gravel media through perforated pipes and structures where it passes through an anaerobic environment where the Water Quality Volume will have 24-72 hours of contact time. The forebay is required to contain 10% of the WQV and each of the two cell must contain 45% of the WQV. During larger storm events, the system works as a detention pond. The design of a Subsurface Gravel Wetland will be constructed in accordance with the most current version of the Design Specifications provided by the UNH Stormwater Center and SWM Volume 2, Section 4-3 Treatment Practices, 2d Gravel Wetlands.

Maintenance Considerations: The outlet configuration of the anaerobic subsurface gravel consists of a small discharge orifice that is located in a threaded cap. This goose-neck feature is designed to be disassembled to allow cleaning. This outlet orifice is located within a concrete outlet structure that also contains a control stack used to control and detain runoff in the system. Although this is designed to be "clean water" after the filtering process, the outlet structure in general is going to require periodic maintenance to ensure that it is discharging runoff properly. If the Subsurface Gravel Wetland retains runoff on the surface for more than 72 hours the performance is not correct and maintenance is required.

Debris will need to be removed from the inlet and outlet structures as well as any buildup of sediment. The surface of the ponded area is intended to have wetland plants which may require periodic replanting, depending on the sediment loading. Sediment buildup in the forebay must be removed to maintain the minimum required volume. See also 9 and 10 of the attached UNHSC Subsurface Gravel Wetland Design Specifications 2009, and / or UNHSC Subsurface Gravel Wetland Design Specifications 2016 with Maintenance Guidelines and Checklist. See also Design and Maintenance of Subsurface Gravel Wetlands, (for NHDOT) by UNHSC. (Check List, Page 24 & 25, Attached)

ADS StormTech Chamber: Detention System

Description: The StormTech Chamber System and Isolator Row are trademark products of the Advance Drainage System (ADS) company. The purchase and installation of this system will conform to ADS proprietary rights. The design engineer has specifically used the Isolator Row and StormTech Chamber specifications in the design of this installation. The design is based on the StormTech SC-740 Chambers with an Isolator Row for sediment isolation. The system is designed as a detention practice. The system has a series of perforated underdrains to collect and distribute runoff to the other structure. The volume in the washed crushed stone and in the specified chambers will act as detention in connection with the Outlet Structure discharge stack. Runoff that enters this system does so at the isolator row. P-102 contains 98 chambers in 5 rows of 14 chambers. P-106 contains 65 chambers in 5 rows of 13 chambers. The top of the outlet

structure stack is designed to pass larger storm events, with an orifice on the base of the internal stack for smaller storm events. Multiple inspection ports are located throughout the system.

Inspection: Semi-annual and severe rain storm event inspections will be conducted by a trained individual with the capability to observe the condition of the pre-treatment measures and the condition of the Isolator Row especially regarding the depth and extent of sediment buildup. The Isolator Row should initially be inspected semi-annually however this schedule may need to be adjusted based on findings, condition of the pre-treatment measures, and use of the parking facilities. See list of known qualified inspection / maintenance professionals below. The inlet structure and outlet structure must also be inspected. The inspection process requires the removal of Drain Manhole covers.

Maintenance Considerations: Sediment collected in the Isolator Row will be removed with the JetVac process, consisting of high-pressure water scouring and suction retrieval of the captured sediment and pollutants. The orifice cover plate installed to ensure that runoff is routed to the Isolator Row must be in place and if not re-installed to the original specifications. The stack in the outlet structure must be maintained to ensure that there is no buildup that prevents the proper operation of the outlet.

The stormwater practice should be dry within 72 hours of the end of a storm event.

A copy of the ADS StormTech SC-740 Chamber manual and ADS StormTech Isolator Row O&M Manual are attached.

After the system construction and before operation of the site, it is recommended that a long-term agreement for Inspection and Maintenance be established.

As for Isolator Row inspection and maintenance, Catch Basin maintenance, the regional ADS, Inc. representatives recommend using any of the following contacts:

Stormwater Compliance, LLC;
Attn: Nathan Marles, 1-877-271-9055; nmarles@lidtech.com
163 Thadeus Street, Portland, ME 04106
Info@stormwatercomp.com

Ted Berry Company;
Attn: Dave Beauchamp, 207-897-3348; david.beauchamp@tedberrycompany.com
521 Federal Road, Livermore, ME 04253
Info@tedberrycompany.com

Bellemore Septic Sewer & Drain
Attn: Ray Bellemore, 603-641-6640
raymond@bellemore.com
PO Box 10369

Bedford, NH 03110

ADS / StormTech Contact: Aaron Cheever, PE, Advance Drainage Systems, Inc.
aaron.cheever@ads-pipe.com 1-978-302-0650

Vegetated Stabilization

All areas that are disturbed during construction will be stabilized with vegetated material within 30 days of breaking ground. Construction will be managed in such a manner that erosion is prevented and that no abutter's property will be subjected to any siltation, unless otherwise permitted. All areas to be planted with grass for long-term cover will follow the specification and on Sheet E-102 using seeding mixture C, as follows:

Mixture	Pounds per Acre	Pounds per 1,000 Sq. Ft.
Tall Fescue	24	0.55
Creeping Red Fescue	24	0.55
Total	48	1.10

Conservation Mix

Mixture	Pounds per Acre	Pounds per 1,000 Sq. Ft.
Virginia Wild Rye	Native	FACW-
Little Bluestem	Native	FACU
Big Bluestem	Native	FAC
Red Fescue	Native	FACU
Switch Grass	Native	FAC
Partridge Pea	Native	FACU
Showy Tick Trefoil	Native	FAC
Butterfly Milkweed	Native	NI
Beggar Ticks	Native	FACW
Purple Joe Pye Weed	Native	FAC
Black Eyed Susan	Native	FACU-
Total	**25**	**0.57**

Conservation Mix will used to stabilize all 2:1 slopes and all land area disturbed within the wetland buffer. (If applicable).

Stabilized Construction Entrance

A temporary gravel construction entrance provides an area where mud can be dislodged from tires before the vehicle leaves the construction site to reduce the amount of mud and sediment transported onto paved municipal and state roads. The stone size for the pad should be 3" coarse aggregate, and the pad itself constructed to a minimum length of 75' for the full width of the access road. The aggregate should be placed at least six

inches thick. A plan view and profile are shown on Sheet E-101- Erosion & Sediment Control Detail Plan. (If applicable).

Environmental Dust Control

Dust will be controlled on the site by the use of multiple Best Management Practices. Mulching and temporary seeding will be the first line of protection to be utilized where problems occur. If dust problems are not solved by these applications, the use of water and calcium chloride can be applied. Calcium chloride will be applied at a rate that will keep the surface moist but not cause pollution.

Drainage Swales / Stormwater Conveyance Channels

Drainage swales will be stabilized with vegetation for long term cover as outlined below, and on Sheet E-102 using seed mixture C. As a general rule, velocities in the swale should not exceed 3.0 feet per second for a vegetated swale although velocities as high as 4.5 FPS are allowed under certain soil conditions (If applicable).

Outlet Protection

Description: Outlet protection is typically provided at stormwater discharge conduits from structural best management practices to reduce the velocity of concentrated stormwater flows to prevent scour and minimize the potential for downstream erosion. Outlet protection is also provided where conduits discharge runoff into an in-ground stormwater management practice (e.g., pond or swale) to prevent scour where flow enters the BMP. See SWM Volume 2, 4-6.6 Conveyance Practices, Outlet Protection, page 172.

Level Spreader

Description: A level spreader is an outlet structure constructed at zero percent grade across a slope used to convert concentrated flow to "sheet flow." It disperses or "spreads" flow thinly over a receiving area, usually consisting of undisturbed, vegetated ground. The conversion of concentrated flow to shallow, sheet flow allows runoff to be discharged at non-erosive velocities onto natural ground. To stabilize the outlet, a stone berm is provided to dissipate flow energy, and help disperse flows along the length of the outlet. Level lips are not designed to remove pollutants from stormwater; however, some suspended sediment and associated phosphorous, nitrogen, metals and hydrocarbons will settle out of the runoff through settlement, filtration, infiltration, absorption, decomposition and volatilization. See SWM Volume 2, 4-6.6 Conveyance Practices, Stone Berm Level Spreader, page 162.

Maintenance Considerations: Inspect at least once annually for accumulation of sediment and debris and for signs of erosion within approach channel, spreader channel or down-slope of the spreader. Remove debris whenever observed during inspection. Remove sediment when accumulation exceeds 25% of spreader channel depth. Mow as

required by landscaping design. At a minimum, mow annually to control woody vegetation within the spreader. Snow should not be stored within or down-slope of the level spreader or its approach channel. Repair any erosion and re-grade or replace stone berm material, as warranted by inspection. Reconstruct the spreader if down-slope channelization indicates that the spreader is not level or that discharge has become concentrated, and corrections cannot be made through minor re-grading.

Rolled Erosion Control Blanket

Description: Rolled Erosion Control Blankets, such as North American Green BioNet series (or equal), consist of interlocking fiber mesh which is bio-degradable, used to stabilize sloping earth while vegetation is being established. The product comes in rolls that are laid out over the earth, normally over-lapped, and secured to the soil by the use of anchors or staples. The RECB may be anchored in the earth at the top of the slope to prevent wash-out. Construction specifications are included in the plan set and New Hampshire Stormwater Manual, Volume 3, 4-1 Erosion Control Practices, Temporary Erosion Control Blanket. See the chart on E-102 for compatible products with given slopes.

Construction Considerations: It is recommended that the blanket be installed in the same direction as the water flow or perpendicular to the slope. The manufacturer will recommend the amount of over-lap from one row to the next and on longer slopes between sections. Care must be taken that the RECB is laid directly on the earth / topsoil and that any existing vegetation not cause tenting as this will cause an issue with the blanket not staying in place. The staples or stakes are to be placed according to the manufacturer based on the slope of the receiving soil and forces that may be encountered. Care must be taken to utilize the correct product as specified. The choice of product are all different and in most cases are not interchangeable. NHDES or NH F&G may specify that some RECBs not be used in some applications.

Maintenance Considerations: RECBs will be inspected during the regular inspection schedule and any construction corrections made if the blanket is compromised.

Stockpiled Sediment or Soil

Stockpiled materials including topsoil, excavated materials, borrow materials imported onto the site, construction aggregates, and sediment removed from temporary sediment traps will be located in designated areas at least 50 feet away form concentrated flows. All stockpiles will have erosion protection in the form of silt fence and diversion swales will be applied to protect the material and surrounding areas. Inactive stockpiles will be seeded for temporary stabilization. Erosion control measures will be inspected in accordance with the schedule for all other activities on site.

At a minimum, you must comply with following (EPA CGP 2022) "Do no hose down or sweep soil or sediment accumulated on pavement or other impervious surfaces into any

stormwater conveyance (unless connected to a sediment basin, sediment trap, or similar effective control,) storm drain inlet, or surface water."

Construction Sequence

1.) Cut and remove trees in construction area only as required, relocate any project T.B.M.

2.) Construct and/or install temporary and permanent sediment erosion and detention control facilities as specified. Erosion and sediment control measures shall be installed prior to any soil land disturbance and must be reviewed and approved by the community services department.

3.) Erosion, sediment and detention control facility shall be installed & stabilized prior to directing runoff to them. Temporary diversions may be required. Post construction storm water management practices must be initiated and stabilized early in the process. Runoff must be directed to temporary practices until stormwater BMPs are stabilized.

4.) Clear, cut and dispose of debris in approved facility

5.) Construct temporary culverts as required, or directed

6.) Construct roadways for access to desired construction areas. All roads shall be stabilized immediately. See best management practices for blasting on sheet C-102.

7.) Install pipe and construction associated appurtenances as required or directed. Install stormwater BMPs. All disturbed areas shall stabilized immediately after grading.

8.) Start building construction.

9.) Begin permanent and temporary seeding and mulching. All cut and fill slopes and disturbed areas shall be seeded or mulched as required, or directed. No area is allowed to be disturbed for a length of time that exceeds 45 days before being stabilized. Daily, or as required. All roadways and parking areas shall be stabilized within 72 hours of achieving finished grades. All cut and fill slopes shall be stabilized within 72 hours of achieving finished grades. Limit the length of exposure of unstabilized soil to 45 days or less.

10.) Construct temporary berms, drains ditches, silt fences, sediment traps, etc. Mulch and seed as required.

11.) Inspect and maintain all erosion and sediment control measures during construction. All SWPPP inspections must be conducted by a qualified professional such as a professional engineer (PE), a certified professional in erosion and sediment control (CPESC), a certified erosion sediment and storm water inspector (CESSWI), or a certified professional in storm water quality (CPSWQ). Inspection reports shall be

submitted to the community services department. Erosion and sediment control practices are to be inspected weekly and after 0.5" of rainfall.

12.) Complete permanent seeding and landscaping.

13.) Remove temporary erosion control measures after seeding areas have established themselves and site improvements are complete.

14.) Smooth and revegetate all disturbed areas.

15.) Finish paving all roadways.

Temporary Erosion Control Measures

1. The smallest practical area of land shall be exposed at any one time.

2. Erosion, sediment and detention measures shall be installed as shown on the plans and at locations as required, directed by the engineer.
3. All disturbed areas shall be returned to original grades and elevations. Disturbed areas shall be loamed with a minimum of 4" of loam and seeded with not less than one pound of seed per 50 square yards of area. (see seed specifications this sheet)

4. All disturbed areas will be restabilized within 45 days. At any one time, no more than 5 acres, (217,800 Sq. Ft.) Will be disturbed.

5. Silt fences and perimeter barriers shall be inspected periodically and after every rain during the life of the project. All damaged areas shall be repaired, sediment deposits shall periodically be removed and disposed of.

6. After all disturbed areas have been stabilized, the temporary erosion and sediment control measures are to be removed and the area disturbed by the removal smoothed and re-vegetated.

7. Per the EPA CGP requirements there will be reports of the erosion control inspections IAW SWPPP prepared by BS&E. All erosion controls shall be inspected weekly and within 24 hours after 0.25" or greater rain event.

8. Ditches, swales, and basins shall be stabilized prior to directing runoff to them.

9. Do not traffic exposed soil surfaces with construction equipment. If feasible, perform excavations with equipment positioned outside the limits of the infiltration system.

10. Roadways, driveways and cut and fill slopes must be stabilized within 72 hours of achieving final grade.

11. Stabilization means:

11.1. A minimum of 85% of vegetative cover has been established.

11.2. A minimum of 3 inches of non-erosive material such as stone or rip rap has been installed, or

11.3. Erosion control blankets have been installed.

12. This project is to be managed in a manner that meets the requirements and intent of RSA 430:53 and chapter AGR 3800 relative to invasive species.

13. The NHDES stormwater manual, in three volumes, dated December 2008, is a part of this plan set and the more restrictive will govern. (NH SWM)

Inspection and Maintenance Schedule

Fencing (if used) will be inspected during and after storm events to ensure that the fence still has integrity and is not allowing sediment to pass. Depending on SWPPP criteria, all controls will be inspected either once every 7 days and after storm events. Inspection reports must be submitted to City of Dover Engineering Department. See also Stormwater System Management: Inspection & Maintenance Manual published separately also by Berry Surveying & Engineering. See also Storm Water Pollution Prevention Plan (SWPPP) developed in accordance with EPA NPDES requirements & the City of Dover Stormwater regulations. Stabilization is required within 14 calendar days IAW Chapter 153-14, Site Development Criteria.

Corrective Action measures will be made in accordance with SWPPP requirements and records maintained on site by the Contractor.

5.0 Demonstration of Compliance with Dover Chapter 153-14

The following list of standards from chapter 153-14 are shown to demonstrate compliance with Dover stormwater regulations, starting with section 3: Design Standards. Our demonstration of compliance is *italicized* after each standard:

(3) Design standards.

(a) Minimum protections and management standards.

[1] Where applicable, all development must comply with the EPA Phase II Stormwater Rules and the City's MS4 permit, as amended.

Acknowledgement of project compliance with the EPA Phase II stormwater rules is shown in project specific notes, E&SC Notes, note #9. As the impact of the proposal is greater than one acre, a Stormwater Pollution

Prevention Plan (SWPPP) will be developed and a Notice of Intent (NOI) submitted to the EPA.

[2] Existing surface waters, including ponds, rivers, perennial and intermittent streams (natural or channelized), and wetlands (including vernal pools), shall be protected by the minimum buffer setback as specified in Chapter **170**, Zoning, § 170-27.1. Stormwater and erosion and sediment control best management practices (BMPs) shall be located outside the specified buffer zone unless otherwise approved by the Planning Board.

Please find Grading & Drainage/Watershed Plans showing stormwater BMPs locations. Conditional Use Permit approval was previously received for disturbance within the 50' wetland buffer.

[3] Low-impact development (LID) site planning and design strategies shall be used to the most extent practicable (MEP) in order to reduce the generation of the stormwater runoff volume for both new and redevelopment projects. An owner/applicant must document why LID strategies are not appropriate if not used to manage stormwater.

Please find subsurface gravel wetland designs. Reference is made to the US EPA Low Impact Development (LID) and green infrastructure resources.

[4] All proposed stormwater practices and measures shall be installed and maintained in accordance with manufacturers' specifications and performance specifications outlined in the New Hampshire Stormwater Management Manual Volume 2 (December 2008 or current revision) a copy of which can be found on the NHDES website.

Please find Inspection & Maintenance Manual included in the drainage binder. The NH Stormwater Manuals are referenced in the I & M Manual in the Introduction on Page 2.

[5] All storage facilities for fuel, chemicals, chemical or industrial wastes, and biodegradable raw materials shall meet the regulations of the NHDES, including but not limited to those involving underground storage tanks, aboveground storage tanks, hazardous waste and best management practices for groundwater protection (Part Env-Wq 401).

Please find note shown in project specific notes, E&SC Notes, note #8. Prior to construction, a stormwater pollution prevention plan will be developed in accordance with US EPA CGP 2022.

[6] Salt and other deicing materials shall be stored under cover or located such that no direct discharges to receiving waters are possible. Snow storage

areas shall be located such that no direct discharges to receiving waters are possible. See the NHDES guidance fact sheet on road salt and snow disposal.

Please find the topic Snow Storage Areas & Winter Maintenance within the Inspection & Maintenance Manual included in the drainage binder.

[7] The use of sodium-chloride-based materials for winter maintenance shall be the minimum necessary for safety. The use of sodium-chloride-based materials is discouraged within the groundwater protection districts.

Please find the topic Snow Storage Areas & Winter Maintenance within the Inspection & Maintenance Manual included in the drainage binder.

[8] Impervious surfaces for parking areas and roads shall be minimized to the extent possible.

Impervious surfaces for parking surfaces and roads are minimized to the extent practical, providing pavement only where required for the number of project parking spaces and circulation.

[9] Stormwater runoff from new impervious surfaces shall be directed to a best management practice for flow mitigation, treatment and/or infiltration.

Stormwater runoff is conveyed a series of detention basins and subsurface gravel wetlands for mitigation and treatment.

(b) Stormwater management for new development.

[1] Runoff of impervious surfaces shall be treated to provide 80% removal of total suspended solids (TSS) and 50% removal of both total nitrogen and phosphorus. Removal rates shall be determined using approved manufacturer's pollutant removal efficiency analysis or the pollutant removal efficiencies outlined in the New Hampshire Stormwater Management Manual Volume 1, Appendix E (December 2008 or current revision), a copy of which is available from the NHDES website.

Subsurface Gravel Wetland:

- *Total Suspended Solids (TSS) reduction of 95%*
- *Total Nitrogen (TN) reduction of 85%*
- *Total Phosphorous (TP) reduction of 64%*

[2] Rainfall amount shall be based on current extreme precipitation estimates obtained from the Northeast Regional Climate Center.

Extreme Precipitation Tables are included in the drainage binder and have been used for analysis.

[3] Measures shall be taken to control the post-development peak rate runoff so that it does not exceed predevelopment runoff for the two-, ten-, twenty-five- and fifty-year, twenty-four-hour storm events.

Please find comparative analysis, Section 3.3 of this document, for this demonstration at all final reaches.

[4] Measures shall be taken to control the post-development surface water runoff volume so that it does not exceed predevelopment runoff for the two-, ten-, twenty-five- and fifty-year, twenty-four-hour storm events. For sites where infiltration/recharge is limited or not practicable, the owner/applicant must demonstrate that the project will not cause or contribute to flooding or functional impairments to streets, adjacent properties, and downstream properties.

Please find comparative analysis, Section 3.3 of this document, for this demonstration of stormwater volumes. A waiver to this section has been proposed for Final Reach #400, where the peak rate of runoff is reduced from the existing condition.

[5] Infiltration rates for designing groundwater recharge practices shall be determined in accordance with Section Env-Wq 1504.14.

A waiver to Ground Water Recharge Volume was previously approved in the prior AoT Permit due to on-site soil conditions, which would be requested for this application. The waiver request is included within the drainage package.

[6] Stormwater conveyance practices shall be sized appropriately to convey the ten-year, twenty-four-hour storm event without overtopping or causing flooding on the property.

All Practices have been sized within these parameters. The grassed conveyance swales have been modeled, including ponding height, to confirm this.

[7] For large projects adding greater than or equal to 10 acres of impervious cover, or projects located in known areas of flooding concern, or specifically within areas with a 1% chance of being inundated by water in any given year, the owner/applicant shall submit a supplementary report that describes how the project will not increase the future flooding potential and complies with the AoT requirements pertaining to floodplain impacts as described in Section Env-Wq 1503.09, regardless of whether an AoT permit is required.

This standard is not applicable for this project.

[8] The design of the stormwater management systems shall take into account upstream and upgradient runoff that flows onto, over, or through the site to be developed or redeveloped and provide for this contribution of runoff.

Off-site stormwater flow has been accounted for in the project design. Please find watershed sheets within the drainage binder. It has been determined by topographic survey and on-site observations that with the exception of Final Reach #400, off-site runoff does not enter onto the locus parcel.

[9] Seasonal high-water table elevations must be accounted for in all BMP design criteria.

The seasonal high-water table elevations are shown in the test pit data.

[10] Access for maintenance of stormwater facilities must be included as part of the design, where necessary. Access easements may be required.

All practices have been designed to be maintained and located in open or paved areas. See the appropriate sections of the Inspection and Maintenance Manual for specified maintenance activity.

[11] Plantings in treatment areas shall be native grasses, shrubs and/or other native plants in sufficient numbers and density to prevent soil erosion and to achieve water-quality treatment.

See Section 4.0 Vegetative Stabilization, of this narrative, for BMP plantings and stabilization seeding descriptions. The applicant is following USDA NRCS seeding recommendations.

(c) Stormwater management for redevelopment. In order to determine the stormwater requirements for redevelopment projects, the percentage of the site covered by existing impervious areas must be calculated. Stormwater requirements for redevelopment will vary based upon the amount of site surface area that is covered by existing impervious surfaces.

[1] For sites meeting the definition of a redevelopment project and having less than 40% existing impervious surface coverage, the stormwater management requirements will be the same as new development projects, with the important distinction that the applicant can meet those requirements either on site or at an approved off-site location (i.e., off-site mitigation). The applicant must satisfactorily demonstrate that impervious area reduction, LID strategies and BMPs have been implemented on site to the MEP.

This standard is not applicable.

[2] For sites meeting the definition of a redevelopment project and having more than 40% existing impervious surface coverage, stormwater shall be managed in accordance with one or more of the following techniques, listed in order of preference:

This standard is not applicable for this project.

[a] Implement measures on site that result in mitigation and treatment of at least 30% of the existing impervious cover as well as 50% of the additional proposed impervious surfaces and pavement areas through the application of LID; or

[b] Implement other LID techniques on site to the MEP to provide mitigation and treatment for at least 50% of the entire site area.

This standard is not applicable for this project.

[3] The owner/applicant may utilize off-site mitigation to meet the redevelopment requirements when the following standards have been met:

This standard is not applicable for this project.

[a] The owner/applicant shall demonstrate, to the satisfaction of the Planning Board, that on-site treatment has been implemented to the MEP.

[b] The owner/applicant shall find an approved, off-site location within the same watershed as the project site or within the drainage area of the same receiving water body.

[c] Off-site mitigation shall be equivalent to no less than the total area of impervious cover not treated on site.

[d] The owner/applicant shall submit a full design of the proposed off-site measures for review and approval.

[e] The owner/applicant must also demonstrate that there is no downstream drainage or flooding impact as a result of not providing on-site management.

(d) Erosion control standards during construction. The following standards shall be applied in project planning and shall be implemented prior to and during construction activity:

[1] All proposed measures shall meet, at a minimum, the design standards for best management practices set forth in the New Hampshire Stormwater Management Manual Volume 3 (December 2008 or current revision), a copy of which is available from the NHDES website.

See Inspection & Maintenance Manual and note is shown in project specific notes, E&SC Notes, note #10A.

[2] When a project requires a stormwater permit from the EPA Construction General Permit (CGP) Program, copies of the stormwater pollution prevention plan (SWPPP) inspections shall be provided to the Community Services Department.

Copies will be provided when developed and published prior to NOI submittal and construction. Note is shown in project specific notes, E&SC Notes, note #10G.

[3] Stripping of vegetation shall be done in a manner that minimizes soil erosion. Whenever practical, natural vegetation shall be retained, protected, or supplemented.

There is to be no disturbance outside of the limit of construction. Erosion & sediment control measures are to be in place prior to the start of land grubbing. Note is shown in project specific notes, E&SC Notes, note #10B.

[4] The area of land disturbance shall be kept to a minimum and be limited to an area only large enough to accommodate construction activities for a particular construction phase.

This project phasing plan is to be followed and is shown as sheet #7 in the plan set.

[5] Off-site surface water and runoff from undisturbed areas shall be diverted away from disturbed areas where feasible, or measures to convey stormwater through the project area without causing erosion of sediment must be included. Integrity of downstream drainage systems shall be maintained.

Please find Erosion & Sediment Control Plans, sheets #27 & 28.

[6] Appropriate erosion and sediment control measures shall be installed prior to any soil land disturbance and must be reviewed and approved by the Community Services Department.

Note is shown in project specific notes, E&SC Notes, note #10B.

[7] Perimeter site controls shall not be placed within wetland areas, stream channels or wetland buffers.

No perimeter controls are shown within wetland areas or stream channels. Previous Conditional Use Approval was obtained for the wetland buffer impact areas.

[8] Disturbed soil areas shall be either temporarily or permanently stabilized. In areas where final grading has not occurred, temporary stabilization measures should be in place within seven calendar days for exposed soil areas that are within 100 feet of a surface water body or a wetland and no more than 14 calendar days for all other areas. Permanent stabilization should be in place within three calendar days following completion of final grading of exposed soil areas.

Note is shown in project specific notes, E&SC Notes, note #10C.

[9] All temporary erosion and sediment control measures shall be maintained in functioning condition until final site stabilization is accomplished. A proposed BMP inspection schedule shall be included in the submittal.

Note is shown in project specific notes, E&SC Notes, note #10D, and Inspection & Maintenance Manual.

[10] Additional temporary stabilization for the winter season consistent with NHDES guidelines shall be in place for disturbed areas that are not permanently stabilized by October 1, or at the discretion of the Community Services Department.

Please find winter stabilization note E22, sheet E-102.

[11] Special stabilization details shall be provided with the submission for any land disturbance on slopes equal to or steeper than 3:1.

Please find Rolled Erosion Control Blanket (RECB) Slope Stabilization Detail E21, sheet E-102.

[12] All temporary erosion and sediment control measures shall be removed after final site stabilization. Trapped sediment and other disturbed soil areas resulting from the removal of temporary measures shall be permanently stabilized within 30 calendar days unless conditions dictate otherwise.

Note is shown in project specific notes, E&SC Notes, note #10D, and find Inspection & Maintenance Manual containing this statement.

[13] For projects proposing to disturb and expose soils in areas of 10 acres or more at one time, a temporary (or permanent) sediment basin must be provided with storage for a calculated volume of runoff from a drainage area from a two-year, twenty-four-hour storm, or equivalent control measures, where

attainable, until final stabilization of the site. Alternatively, the sediment basin can be sized to provide 3,600 cubic feet of storage per acre of drainage area until final stabilization of the site. In determining appropriate locations and number of sediment basins needed, the operators may consider such factors as erodibility of site soils, slope lengths, available area on site, construction period and other unique site considerations.

This standard is not applicable for this project.

[14] Use of temporary sediment basins should avoid any additional vegetation clearing or site land disturbance not otherwise needed for post-construction. Sediment basin locations must be reviewed by the Community Services Department prior to construction and must consider the potential for off-site impacts, including public safety, especially as it relates to sediment movement and/or sediment basin failure, and alternative sediment controls must be used where site limitations preclude a safe design.

The limit of construction is not to be expanded beyond the staked construction limits. Note is shown in project specific notes, E&SC Notes, note #7.

(e) Installation and construction inspections. The owner/applicant shall be responsible for inspection requirements as follow:

[1] The Community Services Department or its designated agent shall have access to the site to complete routine inspections.

The applicant acknowledges this standard. Note is shown in project specific notes, E&SC Notes, note #10E.

[2] The Community Services Department shall be notified 24 hours prior to installation of a stormwater BMP in order to schedule an inspection. These inspections shall be completed during normal working hours.

Note is shown in project specific notes, E&SC Notes, note #10E.

[3] The Planning Board or Community Services Department may require the design engineer and/or an independent third party to provide inspection and oversight of the construction of the stormwater management facilities and erosion and sediment control measures at its discretion. Such oversight may be especially important for implementing techniques such as porous pavement or subsurface stormwater infiltration systems. The owner/applicant shall be responsible for all fees associated with third-party inspections.

Note is shown in project specific notes, E&SC Notes, note #10F.

[4] All SWPPP inspections must be conducted by a qualified professional such as a professional engineer (PE), a certified professional in erosion and sediment control (CPESC), a certified erosion sediment and stormwater inspector (CESSWI), or a certified professional in stormwater quality (CPSWQ). Inspection reports shall be submitted to the Community Services Department.

Note is shown in project specific notes, E&SC Notes, note #10G.

[5] The owner is ultimately responsible for the installation, construction, inspection, and disposition of all stormwater management and erosion control measures required by the provisions of these regulations.

Note is shown in project specific notes, E&SC Notes, note #10H.

(f) Stormwater management plan (SWMP) submittal requirements. At the discretion of the Planning Board or Community Services Department, a technical review by an independent third party may be required of any SWMP prepared under these regulations. Such a review shall be performed by a qualified professional consultant and the expense of which shall be the full responsibility of the owner/applicant.

Much of the standards required in the Stormwater Management Plan (SWMP) are already covered in the Erosion & Sediment Control Plan in Section 4 above. Some items are already covered in the Stormwater System Management: Inspection and Maintenance Manual which is an attached document. The Stormwater Pollution Prevention Plan, as required by the US EPA CGP must be prepared prior to the submittal of a Notice of Intent which is required for this project as it exceeds one-acre in area of disturbance. Note is shown in project specific notes, E&SC Notes, note #9.

[1] For projects requiring minimum protection standards, a plan including the following information shall be submitted:

[a] Description of erosion and sediment control measures as well as sequence for final stabilization of the project site.

Please find Erosion & Sediment Control Plan Section 4 of this document, specifically section 4.0.

[b] Proposed changes in impervious cover areas and any changes in pre- and post-development drainage patterns.

Please find W1 Pre-Existing watershed and W2 Proposed watershed plans within the drainage binder. This is covered in detail in Section 1 and Section 2 of this document.

[c] Description of LID proposed measures.

Please see Section 4.0 of this drainage narrative. Low impact development measures include the implementation of subsurface gravel wetlands for treatment.

[2] For projects requiring new development or redevelopment standards, a drainage report that contains the following items shall be submitted:

[a] Description of construction period and earth movement schedule, including anticipated project start and completion dates, sequence and duration of grading and construction activities, sequence and timing of installation and/or application of soil erosion and sediment control measures as well as sequence for final stabilization of the project site.

Please find Section 4.0 in this drainage narrative containing the construction sequence.

[b] Description of the on-site and adjacent wetlands, streams and other water resources, including methods used to identify these resources, and a description of any buffer setbacks that may apply, steep slopes, critical habitat, existing vegetation, areas with a 1% chance of being inundated by water in any given year, and whether any downstream water bodies are listed as impaired according to NHDES's most recent 303(d) list.

Please find Pre-Existing Conditions Plan. There is no flood zone or steep slope on site. A wetland has been identified in the northern portion of the site with a 50' buffer provided. A Conditional Use Permit was previously approved for disturbance within the wetland buffer.

[c] Soils information for proposed disturbed areas shall be delineated by a certified soil scientist. For all other areas that contribute runoff to the project site, soil types may be identified in accordance with Natural Resources Conservation Service (NRCS) countywide soil survey.

Please find Site Specific Soils Survey (sheet #6) and W-1 Pre-Existing Watershed Plans.

[d] Description of existing drainage patterns, receiving water bodies or drainage infrastructure and soil types for recharge potential.

Please find W-1 Pre-Existing Watershed Plan, Site Specific Soils Survey (sheet #6).

[e] Watershed area limits, including any off-site and upstream areas contributing flow to shared drainage channels and/or infrastructure.

Please find W-1 Pre-Existing Watershed Plan & W-2 Proposed Watershed Plan within the drainage binder.

[f] Description of proposed changes in impervious cover areas and any changes in pre- and post-development drainage patterns.

Please find sections 1.0 and 2.0 of this narrative as well as W-1 Pre-Existing Watershed Plan, Existing Drainage Analysis, W-2 Proposed Watershed Plan & Proposed Drainage Analysis. The pre-existing impervious area and proposed impervious area are documented on the Site Plan.

[g] Methods and assumptions used to calculate pre- and post-development runoff volume, peak discharge, and discharge velocity for the specified design storm events.

Please find Section 1.0 & 2.0 of this drainage narrative discussing the Pre-existing and proposed development conditions.

[h] Methods and assumptions used to calculate the pollutant load removal.

Subsurface Gravel Wetland:

- *Total Suspended Solids (TSS) reduction of 95%*
- *Total Nitrogen (TN) reduction of 85%*
- *Total Phosphorous (TP) reduction of 64%*

[i] Description of LID measures that are proposed to limit the development footprint, preserve existing vegetation and mimic existing hydrology to the extent feasible.

Please find Section 4.0 of this drainage narrative describing stormwater BMPs used for the design. Low impact development measures include the implementation of subsurface gravel wetlands and detention ponds.

[j] If not used, provide rationale why LID measures are not practical for the site.

Subsurface gravel wetlands are proposed on site and qualify as low impact development.

[k] Describe measures and calculations for proposed practices used to achieve no net increase in runoff volumes leaving the site.

Please find comparative analysis demonstrating the 2-100YR 24Hr storm events, Section 3.1. The descriptions of subcatchments, ponds, and final Reaches are in Section 2. A waiver has been requested for volume at Final Reach #400. See waiver request for justification.

[l] Provide calculations for the infiltration or exfiltration system.

A waiver was previously approved for groundwater recharge volume on site for the Alteration of Terrain Permit and will be applied for again. Waiver is attached in the drainage binder.

[m] If an increase in post-development runoff volume is anticipated due to limited applicability for LID measures and site constraints, provide an assessment and supporting calculations to demonstrate no adverse impacts to downstream infrastructure, adjacent properties or aquatic habitat.

Please find wavier request attached with the Site Plan submission for justification of the stormwater volume increase at Final Reach #400.

[n] Descriptions, details, and design criteria and calculations for all structural, nonstructural, permanent, and temporary erosion and sedimentation control measures and BMPs. This information should include seeding mixtures and rates, types of sod, methods of seedbed preparation, expected seeding dates (or limitations on seeding time frames), type and rate of lime and fertilizer application, and type and quantity of mulching for temporary and permanent control facilities.

Please find section 4.0 of this narrative, the Inspection & Maintenance Manual and Plan, as well as the Erosion & Sediment Control Plan. Type and rate of lime and fertilizer will be determined on site by testing the topsoil for requirements.

[o] Where proposed changes are anticipated within mapped limits of the areas with a 1% chance of being inundated by water in any given year, provide hydrologic and hydraulic analysis to show no net increase in flood elevations.

There is no disturbance proposed within any flood zones.

[p] Proposed schedule for the inspection and maintenance of all erosion control measures on site prior to achieving final site stabilization.

Please find Section 4.0 of this document, and the Stormwater System Operation: Inspection & Maintenance Manual. EPA and NHDES will require an inspection every 7 days and after a storm event greater than 0.25".

[q] Describe procedures for removing temporary erosion control measures and removal of accumulated sediment captured by such measures.

The maintenance requirements for each erosion and sediment control method are detailed within the Construction Detail on Sheets E-101 and E-102

[r] Any other specific study, calculation, or investigation as requested by the City.

No additional studies or investigations have been requested at this time.

[s] Describe procedures to limit and/or optimize the use of deicing materials and minimize off-site increases in chloride levels in adjacent surface water and groundwater.

Please find Inspection & Maintenance Manual.

[t] Provide a maintenance and inspection plan for post-construction monitoring of stormwater BMPs to ensure long-term performance and functionality, including details of who will be responsible for inspections and maintenance, proposed schedule, documentation, submittal procedures and contingency plans if future maintenance is required.

Please find Inspection & Maintenance Manual and plan.

[u] Provide copies of pertinent state and federal permits.

Copies of all state and federal permits will be provided when received.

(g) Long-term operation and maintenance. The owner shall be responsible for continued inspection and maintenance requirements.

[1] An operation and maintenance manual shall be created with the following information:

[a] The names of the responsible qualified professionals who will implement the required reporting, inspections, and maintenance activities.

Please find Inspection & Maintenance Manual.

[b] An inspection checklist, identifying item or BMP, inspection frequency, and components to be inspected. The list shall clearly outline performance thresholds and triggers for maintenance.

Please find Inspection & Maintenance Manual.

[c] Snow and ice removal shall be performed by a contractor certified by the "Green SnoPro" Program, or approved equivalent, following best management practices for the application of deicing materials.

Please find Inspection & Maintenance Manual.

[d] Deicing log to track amount and type of deicing material applied.

Please find Inspection & Maintenance Manual.

[e] A site plan clearly identifying the locations of all stormwater practices to be inspected and maintained.

Please find Inspection & Maintenance Plans within the drainage binder.

[f] Inspection and maintenance log to be submitted to the City of Dover Community Services Department on an annual basis. Documents shall be submitted no later than December 15 of each year.

Please find Inspection & Maintenance Manual.

[2] The owner of record shall record at the Registry of Deeds documentation sufficient to provide notice to all persons that may acquire any property subject to the requirements and responsibilities described in the approved stormwater management plan. The notice shall comply with the applicable requirements for recording contained in RSA 477 and 478. The notice need not set forth the requirements at length, so long as it is sufficient to provide notice to prospective purchasers of the requirements for maintenance and reporting.

Please find note #29 of project specific notes, sheet #2.

6.0 CONCLUSION

At all five storm events, peak rates of runoff are modeled to be reduced in the proposed analysis, as compared to the pre-existing peak rates of discharge at all three Final Reaches. A waiver to GRV has been requested. A waiver has been requested for the volumetric increase at Final Reach #400. All stormwater discharged from the site is in the form of surface water.

The volume of stormwater discharge from the site at the final reach is minimally increased at the two-year event due to the construction of the proposed building and paved area. The 2Yr.-24Hr. peak rate of runoff is less than 2CFS from the developed area, allowed by Env-Wq 1507.05(b)(1)(b) for Channel Protection Volume purposes.

A Site Specific, Terrain Alteration Permit (RSA 485: A-17) is required for this site plan due to the area of disturbance being greater than 100,000 SF. The impact is approximately 300,250 square feet (2 phases), so that an EPA Notice of Intent will be required to be filed prior to construction and a Stormwater Pollution Prevention Plan prepared.

Respectfully Submitted,
BERRY SURVEYING & ENGINEERING

Christopher R. Berry, SIT
Principal, President

Kenneth A. Berry PE, LLS,
CPSWQ, CPESC, CESSWI
Principal, VP - Technical Operations

Kevin R. Poulin, PE
Design Engineer / Project Manager

Appendix I –Existing Conditions Analysis

25 Yr - 24 Hr. Full Summary
2 Yr - 24 Hr. Node Listing
10 Yr -24 Hr. Node Listing
25 Yr -24 Hr. Node Listing
50 Yr - 24 Hr. Node Listing
100 Yr -24 Hr. Node Listing

SOILS LEGEND

Site Specific Soils

Symbol	Slopes	Taxonomic Soil Name	Hydrologic Soil Group
Wf	A,B,C	Windsor Variant	C
Bz	A,B,C	Buxton	C
Sc	A,B	Scantic	D

NRCS Soils

Symbol	Slopes	Taxonomic Soil Name	Hydrologic Soil Group
Wd	A	Windsor Loamy Sand	A
Wf	B	Windsor Loamy Sand	A
Bz	A	Buxton Silt Loam	C
Sc	A	Suffield Silt Loam	D

Slopes: A = 0-3% B = 3-8% C = 8-15% D = 15-25% E = 25- 50% F = 50%+

Denominators: /ED = Excessively Drained /MWD = Moderately Well Drained /SPD = Somewhat Poorly Drained /P = Poorly Drained /VP = Very Poorly Drained /Rk = Rocky

STATE OF NEW HAMPSHIRE · DEIDRA L. BENJAMIN · No. 295 · CERTIFIED WETLAND SCIENTIST

DEIDRA BENJAMIN, CWS #295

STATE OF NEW HAMPSHIRE · JOHN P. HAYES, III · CWS 18 · CERTIFIED WETLAND SCIENTIST

JOHN P. HAYES III, CSS #87

JURISDICTIONAL WETLANDS WERE DELINEATED BY DEIDRA BENJAMIN, CWS, IN SPRING OF 2020 UTILIZING THE FOLLOWING STANDARDS:

1) FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, VERSION 7.0. 2010. L.M. VASILAS, G.W. HURT, AND C.V. NOBLE (EDS.). UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, IN COOPERATION WITH THE NATIONAL TECHNICAL COMMITTEE FOR HYDRIC SOILS.
2) FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND. VERSION 3. APRIL 2004. NEIWPCC WETLANDS WORKGROUP. WILMINGTON, MA 01887.
3) NORTH AMERICAN DIGITAL FLORA: NATIONAL WETLAND PLANT LIST, VERSION 2.1.0 (HTTP://WETLAND_PLANTS.USACE.ARMY.MIL). U.S. ARMY CORPS OF ENGINEERS, ENGINEER RESEARCH AND DEVELOPMENT CENTER, COLD REGIONS RESEARCH AND ENGINEERING LABORATORY, HANOVER, NH, AND BONAP, CHAPEN HILL.
4) STATE OF NEW HAMPSHIRE 2014 WETLAND PLANT LIST: LICHVAR, R.W., M. BUTTERWICH, N.C. MELVIN, AND W.N. KIRCHNER. 2014. THE NATIONAL WETLAND PLANT LIST: 2014 UPDATE OF WETLAND RATINGS. PHYTONEURON 2014–41:1–42.
5) CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL. JANUARY 1987. WETLANDS RESEARCH PROGRAM TECHNICAL REPORT Y–87–1.
6) REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION. JANUARY 2012, VERSION 2. U.S. ARMY CORPS OF ENGINEERS. ENVIRONMENTAL LABORATORY ERDC/EL TR–12–1.
7) CLASSIFICATION OF WETLANDS AND DEEPWATER HABITATS OF THE UNITED STATES. DECEMBER 1979. L. COWARDIN, V. CARTER, F. GOLET, AND E. LAROE. US DEPARTMENT OF THE INTERIOR. FISH AND WILDLIFE SERVICE. FWS/OBS–79/31.

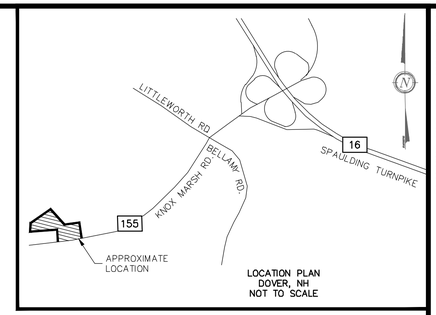
SYMBOLS LEGEND:

SUBCATCHMENT AREA SYMBOL

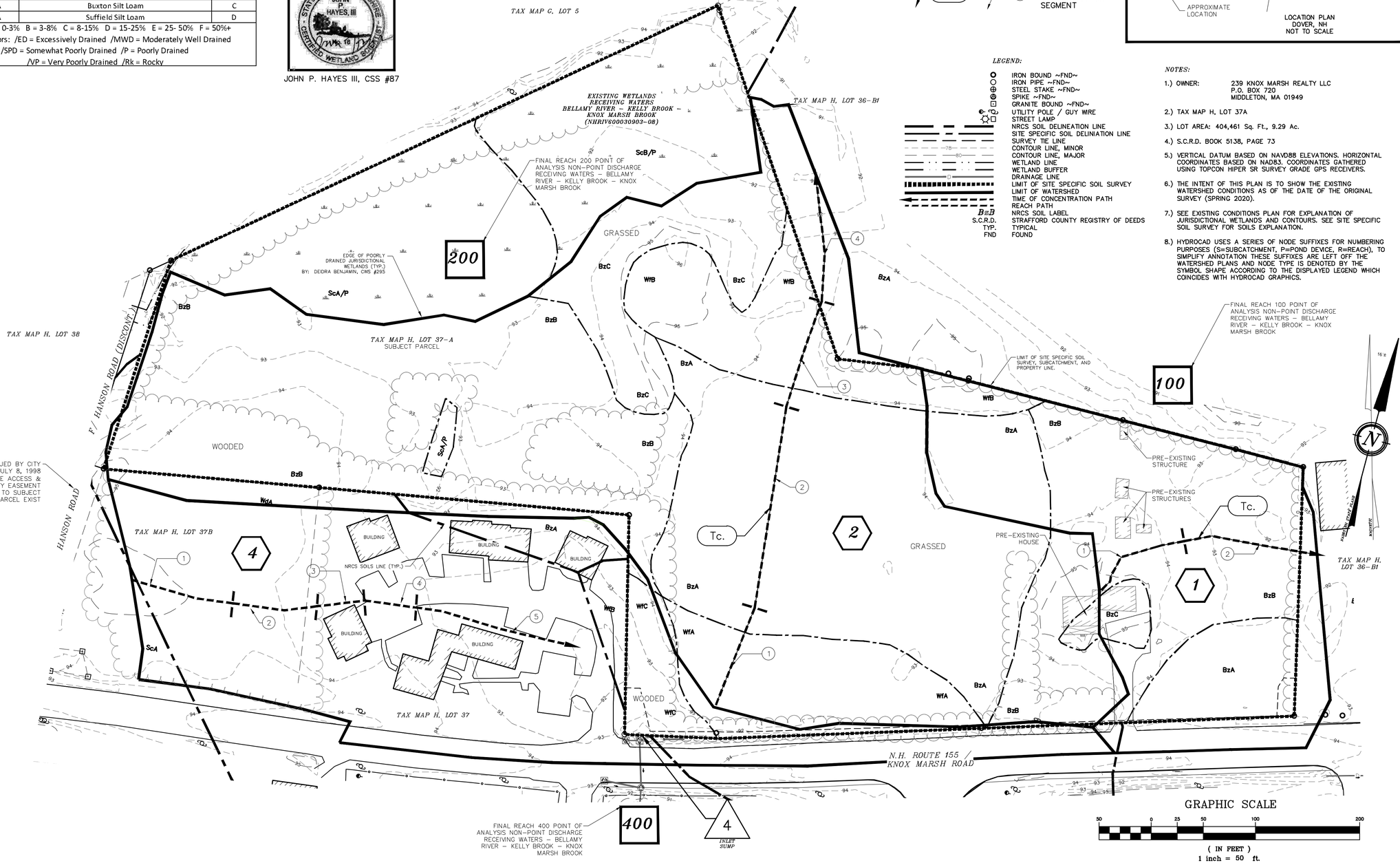
FLOW REACH SYMBOL

POND DEVICE SYMBOL

TIME OF CONCENTRATION SEGMENT



LOCATION PLAN
DOVER, NH
NOT TO SCALE



LEGEND:

- IRON BOUND ~FND~
- IRON PIPE ~FND~
- STEEL STAKE ~FND~
- SPIKE ~FND~
- GRANITE BOUND ~FND~
- UTILITY POLE / GUY WIRE
- STREET LAMP
- NRCS SOIL DELINEATION LINE
- SITE SPECIFIC SOIL DELINIATION LINE
- SURVEY TIE LINE
- CONTOUR LINE, MINOR
- CONTOUR LINE, MAJOR
- WETLAND LINE
- WETLAND BUFFER
- DRAINAGE LINE
- LIMIT OF SITE SPECIFIC SOIL SURVEY
- LIMIT OF WATERSHED
- TIME OF CONCENTRATION PATH
- REACH PATH
- BzB — NRCS SOIL LABEL
- S.C.R.D. — STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. — TYPICAL
- FND — FOUND

NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37A

3.) LOT AREA: 404,461 Sq. Ft., 9.29 Ac.

4.) S.C.R.D. BOOK 5138, PAGE 73

5.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

6.) THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING WATERSHED CONDITIONS AS OF THE DATE OF THE ORIGINAL SURVEY (SPRING 2020).

7.) SEE EXISTING CONDITIONS PLAN FOR EXPLANATION OF JURISDICTIONAL WETLANDS AND CONTOURS. SEE SITE SPECIFIC SOIL SURVEY FOR SOILS EXPLANATION.

8.) HYDROCAD USES A SERIES OF NODE SUFFIXES FOR NUMBERING PURPOSES (S=SUBCATCHMENT, P=POND DEVICE, R=REACH), TO SIMPLIFY ANNOTATION THESE SUFFIXES ARE LEFT OFF THE WATERSHED PLANS AND NODE TYPE IS DENOTED BY THE SYMBOL SHAPE ACCORDING TO THE DISPLAYED LEGEND WHICH COINCIDES WITH HYDROCAD GRAPHICS.

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

PLANNING FILE #SITE–XXXX–XXXX

REVISION	DATE	DESCRIPTION

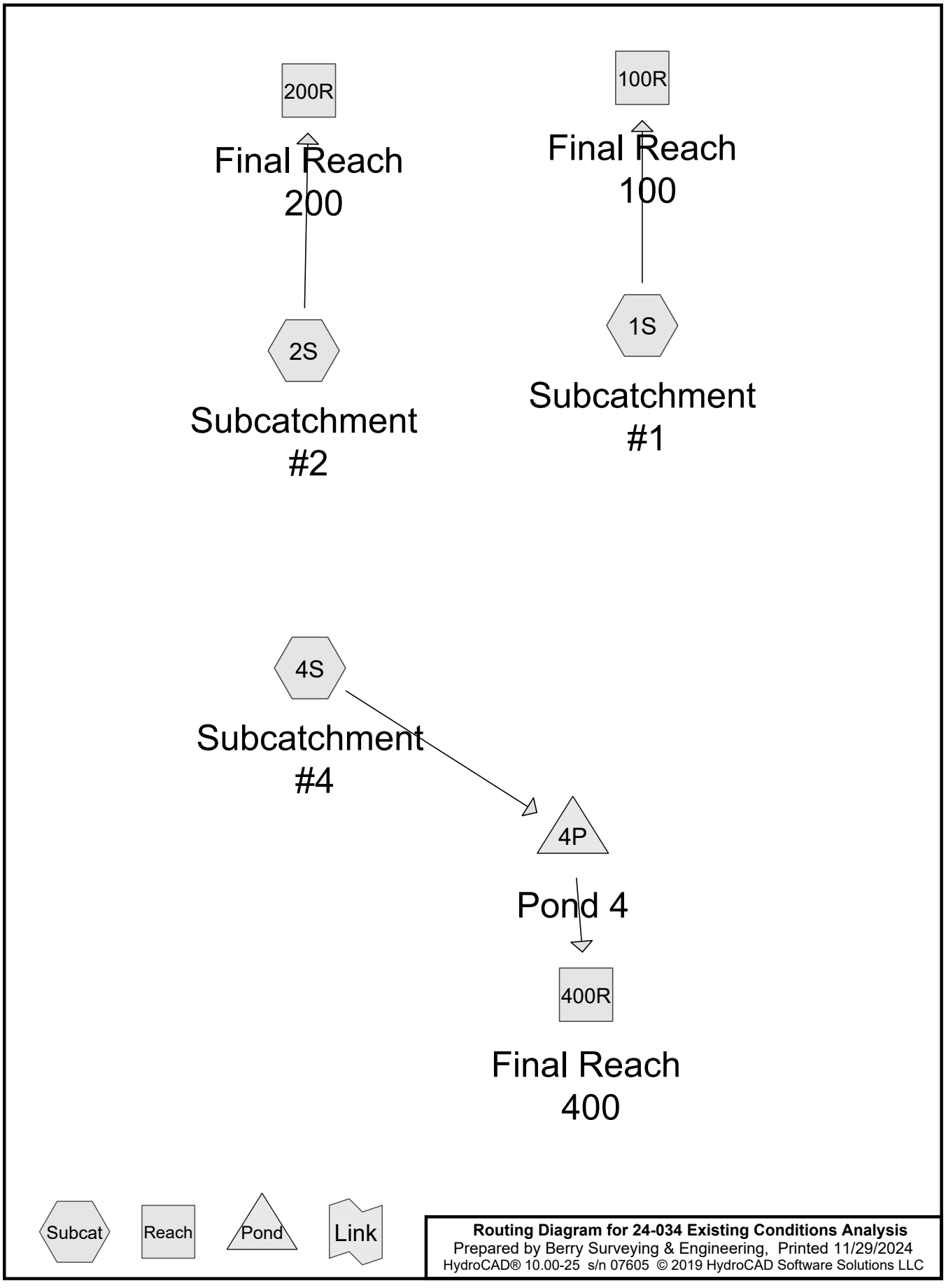
SWPPP EPA SITE MAP (PRE–EXISTING)
W–1 PRE–EXISTING WATERSHED PLAN

LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 – 034

STATE OF NEW HAMPSHIRE · KENNETH A. BERRY · No. 14414 · LICENSED PROFESSIONAL ENGINEER



Routing Diagram for 24-034 Existing Conditions Analysis
Prepared by Berry Surveying & Engineering, Printed 11/29/2024
HydroCAD® 10.00-25 s/n 07605 © 2019 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.837	39	>75% Grass cover, Good, HSG A (1S, 2S, 4S)
3.656	74	>75% Grass cover, Good, HSG C (1S, 2S, 4S)
0.036	80	>75% Grass cover, Good, HSG D (2S, 4S)
0.722	98	Paved parking, HSG A (1S, 4S)
0.091	98	Paved parking, HSG C (1S, 2S)
0.186	98	Roofs, HSG A (4S)
0.123	98	Roofs, HSG C (1S, 2S, 4S)
0.800	30	Woods, Good, HSG A (2S, 4S)
1.605	70	Woods, Good, HSG C (1S, 2S, 4S)
0.043	77	Woods, Good, HSG D (4S)
2.662	72	Woods/grass comb., Good, HSG C (1S, 2S)
10.762	**69**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
2.545	HSG A	1S, 2S, 4S
0.000	HSG B	
8.138	HSG C	1S, 2S, 4S
0.079	HSG D	2S, 4S
0.000	Other	
10.762		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.837	0.000	3.656	0.036	0.000	4.529	>75% Grass cover, Good	1S, 2S, 4S
0.722	0.000	0.091	0.000	0.000	0.813	Paved parking	1S, 2S, 4S
0.186	0.000	0.123	0.000	0.000	0.309	Roofs	1S, 2S, 4S
0.800	0.000	1.605	0.043	0.000	2.449	Woods, Good	1S, 2S, 4S
0.000	0.000	2.662	0.000	0.000	2.662	Woods/grass comb., Good	1S, 2S
2.545	**0.000**	**8.138**	**0.079**	**0.000**	**10.762**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	4P	89.38	88.92	46.0	0.0100	0.024	15.0	0.0	0.0

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment #1 Runoff Area=81,039 sf 6.80% Impervious Runoff Depth>3.93"
Flow Length=230' Tc=12.0 min CN=74 Runoff=7.01 cfs 0.609 af

Subcatchment 2S: Subcatchment #2 Runoff Area=263,231 sf 0.62% Impervious Runoff Depth>3.70"
Flow Length=300' Tc=38.1 min CN=72 Runoff=13.30 cfs 1.862 af

Subcatchment 4S: Subcatchment #4 Runoff Area=124,509 sf 33.49% Impervious Runoff Depth>2.59"
Flow Length=431' Tc=35.4 min CN=61 Runoff=4.44 cfs 0.618 af

Reach 100R: Final Reach 100 Inflow=7.01 cfs 0.609 af
Outflow=7.01 cfs 0.609 af

Reach 200R: Final Reach 200 Inflow=13.30 cfs 1.862 af
Outflow=13.30 cfs 1.862 af

Reach 400R: Final Reach 400 Inflow=4.35 cfs 0.618 af
Outflow=4.35 cfs 0.618 af

Pond 4P: Pond 4 Peak Elev=91.17' Storage=196 cf Inflow=4.44 cfs 0.618 af
15.0" Round Culvert n=0.024 L=46.0' S=0.0100 '/' Outflow=4.35 cfs 0.618 af

Total Runoff Area = 10.762 ac Runoff Volume = 3.089 af Average Runoff Depth = 3.44"
89.58% Pervious = 9.640 ac 10.42% Impervious = 1.122 ac

Summary for Subcatchment 1S: Subcatchment #1

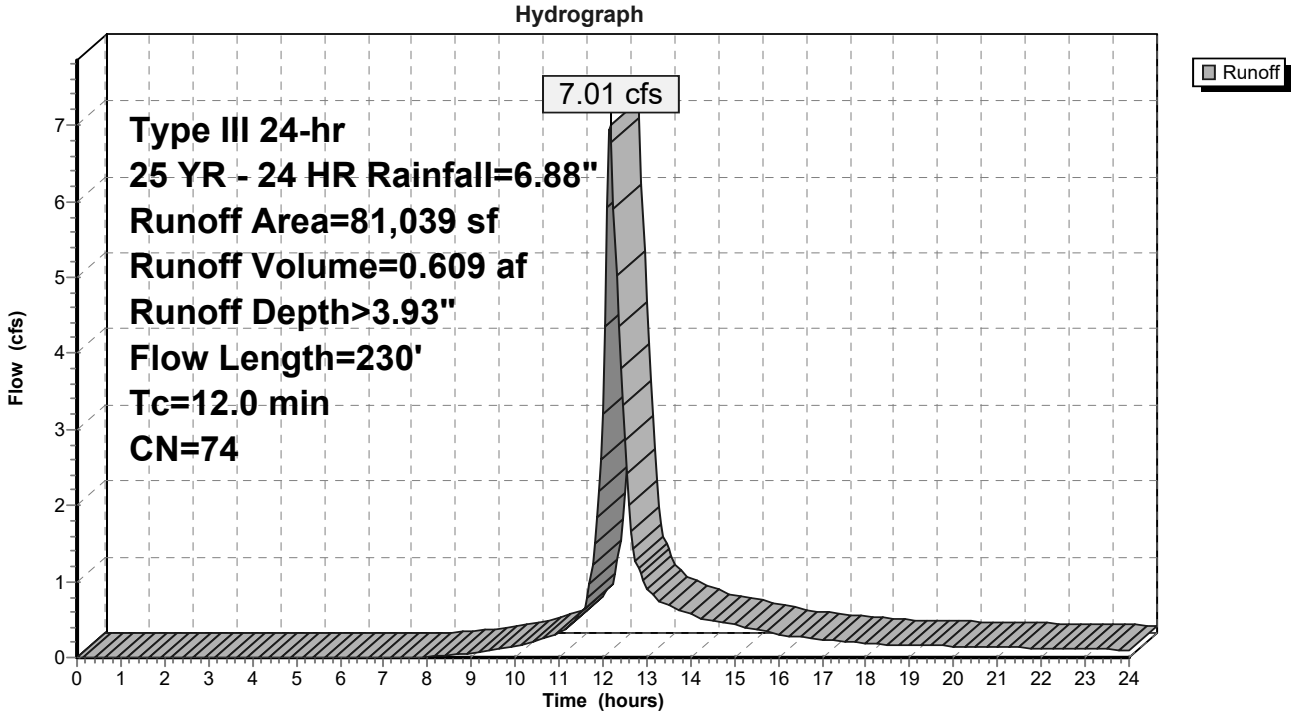
Runoff = 7.01 cfs @ 12.17 hrs, Volume= 0.609 af, Depth> 3.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR - 24 HR Rainfall=6.88"

Area (sf)	CN	Description
1,532	98	Roofs, HSG C
32,685	74	>75% Grass cover, Good, HSG C
3,645	98	Paved parking, HSG C
6,003	70	Woods, Good, HSG C
36,697	72	Woods/grass comb., Good, HSG C
140	39	>75% Grass cover, Good, HSG A
337	98	Paved parking, HSG A
81,039	74	Weighted Average
75,525		93.20% Pervious Area
5,514		6.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	100	0.0215	0.19		**Sheet Flow, Segment #1** Grass: Short n= 0.150 P2= 3.62"
3.1	130	0.0101	0.70		**Shallow Concentrated Flow, Segment #3** Short Grass Pasture Kv= 7.0 fps
12.0	230	Total			

Subcatchment 1S: Subcatchment #1



Summary for Subcatchment 2S: Subcatchment #2

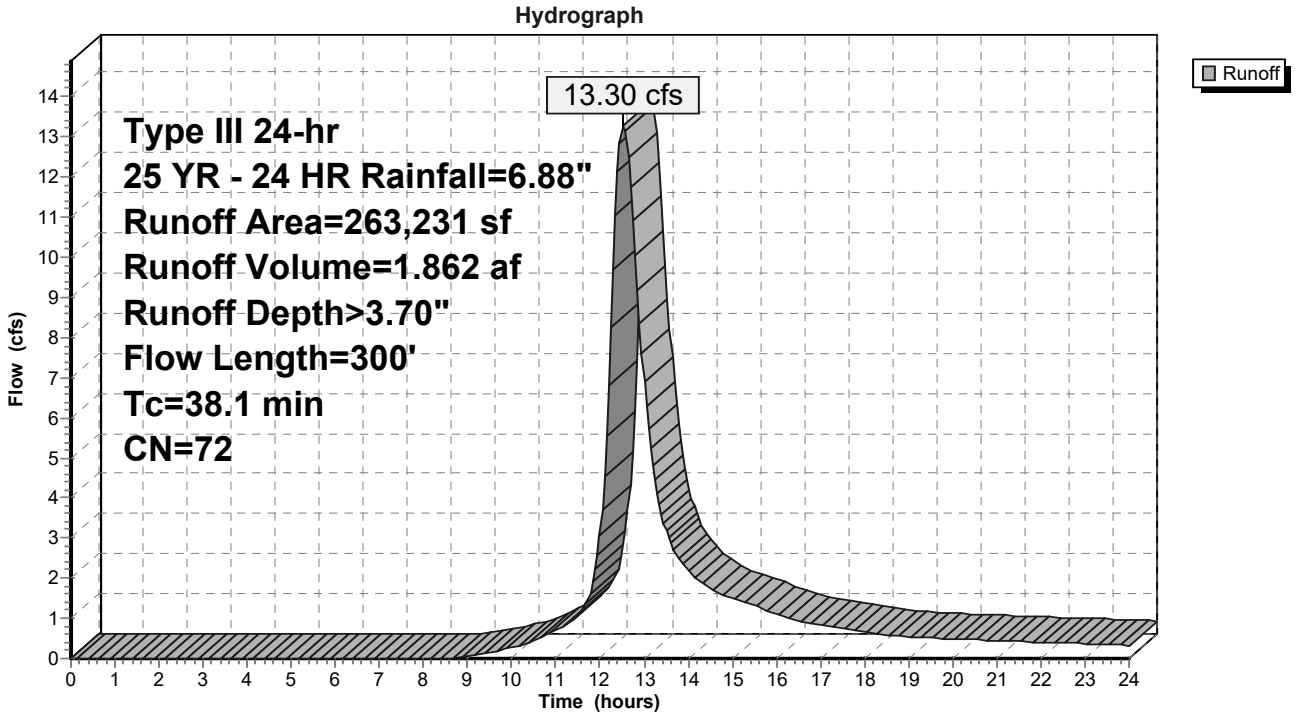
Runoff = 13.30 cfs @ 12.53 hrs, Volume= 1.862 af, Depth> 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR - 24 HR Rainfall=6.88"

	Area (sf)	CN	Description
*	1,307	98	Roofs, HSG C
*	51,801	74	>75% Grass cover, Good, HSG C
*	338	98	Paved parking, HSG C
*	21,772	70	Woods, Good, HSG C
*	79,263	72	Woods/grass comb., Good, HSG C
*	1,330	80	>75% Grass cover, Good, HSG D
	1,315	39	>75% Grass cover, Good, HSG A
	4,054	30	Woods, Good, HSG A
	69,204	74	>75% Grass cover, Good, HSG C
	32,847	70	Woods, Good, HSG C
	263,231	72	Weighted Average
	261,586		99.38% Pervious Area
	1,645		0.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
31.7	100	0.0065	0.05		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.62"
3.9	82	0.0049	0.35		**Shallow Concentrated Flow, Segment #3** Woodland Kv= 5.0 fps
2.5	118	0.0122	0.77		**Shallow Concentrated Flow, Segment #3** Short Grass Pasture Kv= 7.0 fps
38.1	300	Total			

Subcatchment 2S: Subcatchment #2



Summary for Subcatchment 4S: Subcatchment #4

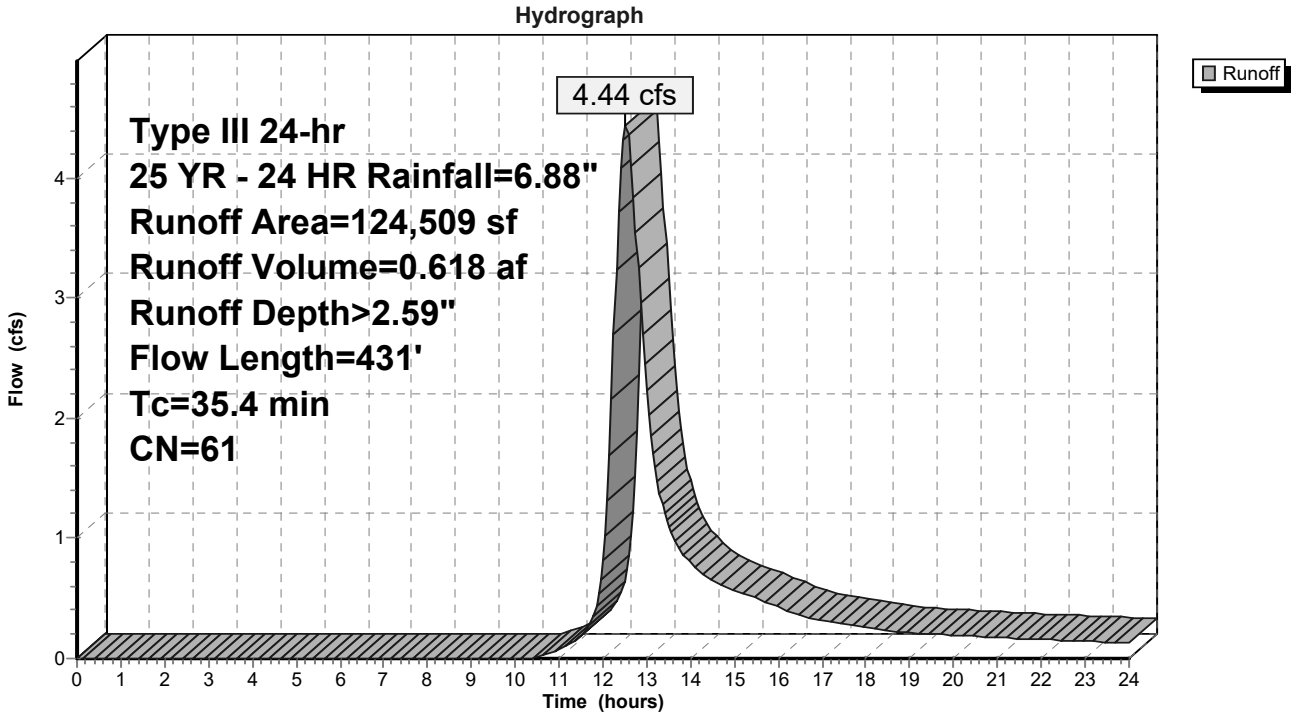
Runoff = 4.44 cfs @ 12.52 hrs, Volume= 0.618 af, Depth> 2.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR - 24 HR Rainfall=6.88"

Area (sf)	CN	Description
8,104	98	Roofs, HSG A
31,095	98	Paved parking, HSG A
34,998	39	>75% Grass cover, Good, HSG A
30,806	30	Woods, Good, HSG A
2,499	98	Roofs, HSG C
5,578	74	>75% Grass cover, Good, HSG C
247	80	>75% Grass cover, Good, HSG D
9,302	70	Woods, Good, HSG C
1,880	77	Woods, Good, HSG D
124,509	61	Weighted Average
82,811		66.51% Pervious Area
41,698		33.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.6	100	0.0100	0.06		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.62"
2.7	81	0.0100	0.50		**Shallow Concentrated Flow, Segment 2** Woodland Kv= 5.0 fps
1.1	48	0.0100	0.70		**Shallow Concentrated Flow, Segment 3** Short Grass Pasture Kv= 7.0 fps
0.6	49	0.0050	1.44		**Shallow Concentrated Flow, Segment 4** Paved Kv= 20.3 fps
4.4	153	0.0070	0.59		**Shallow Concentrated Flow, Segment 5** Short Grass Pasture Kv= 7.0 fps
35.4	431	Total			

Subcatchment 4S: Subcatchment #4



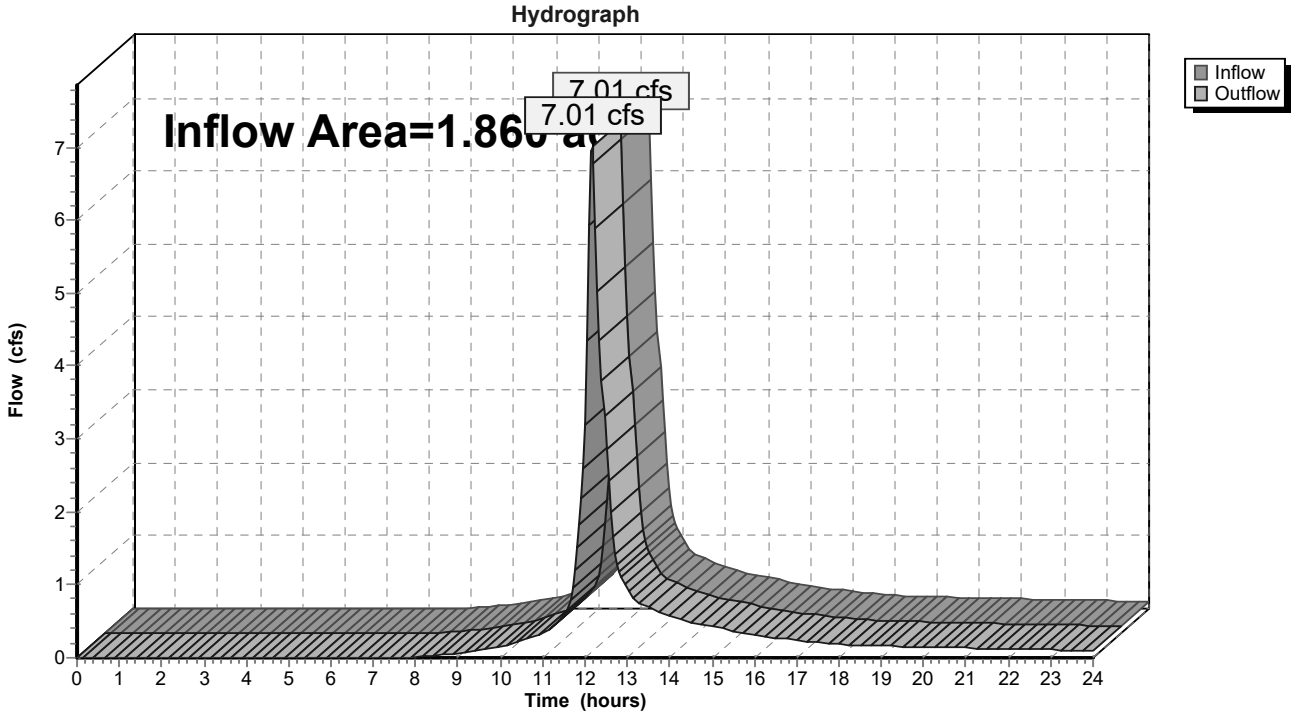
Summary for Reach 100R: Final Reach 100

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.860 ac, 6.80% Impervious, Inflow Depth > 3.93" for 25 YR - 24 HR event
Inflow = 7.01 cfs @ 12.17 hrs, Volume= 0.609 af
Outflow = 7.01 cfs @ 12.17 hrs, Volume= 0.609 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 100R: Final Reach 100



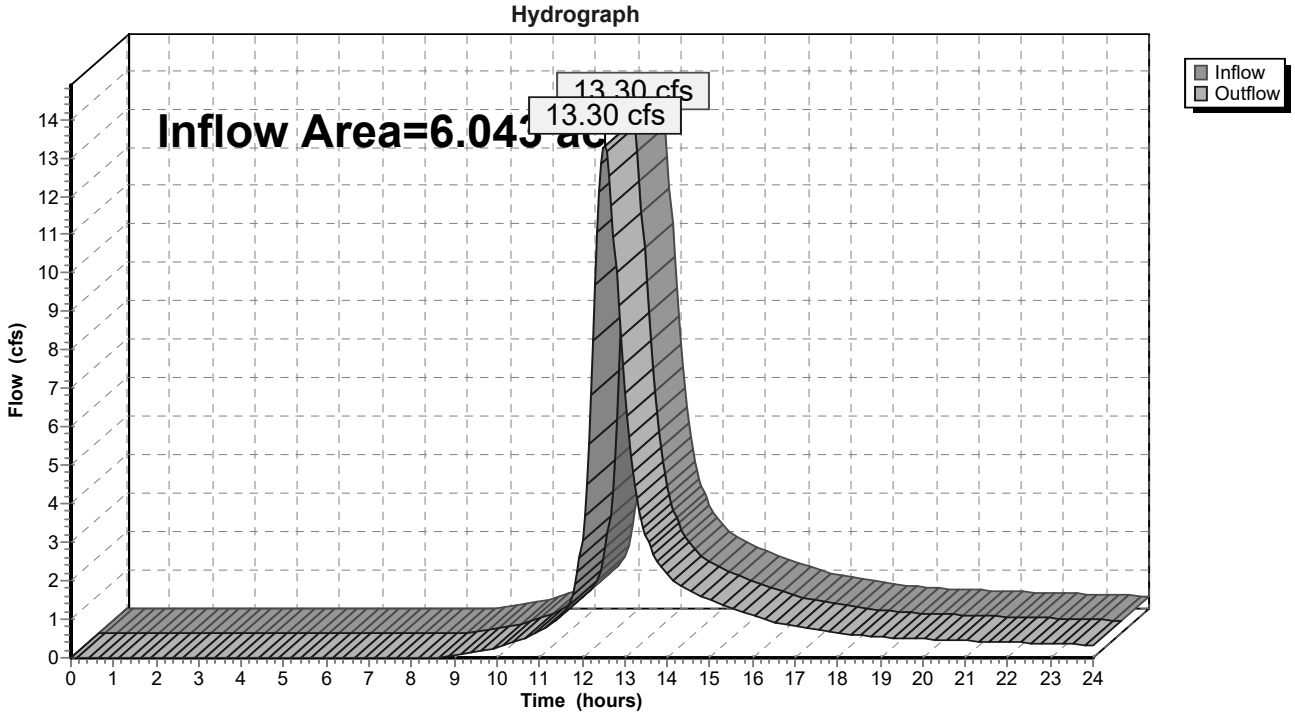
Summary for Reach 200R: Final Reach 200

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 6.043 ac, 0.62% Impervious, Inflow Depth > 3.70" for 25 YR - 24 HR event
Inflow = 13.30 cfs @ 12.53 hrs, Volume= 1.862 af
Outflow = 13.30 cfs @ 12.53 hrs, Volume= 1.862 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 200R: Final Reach 200



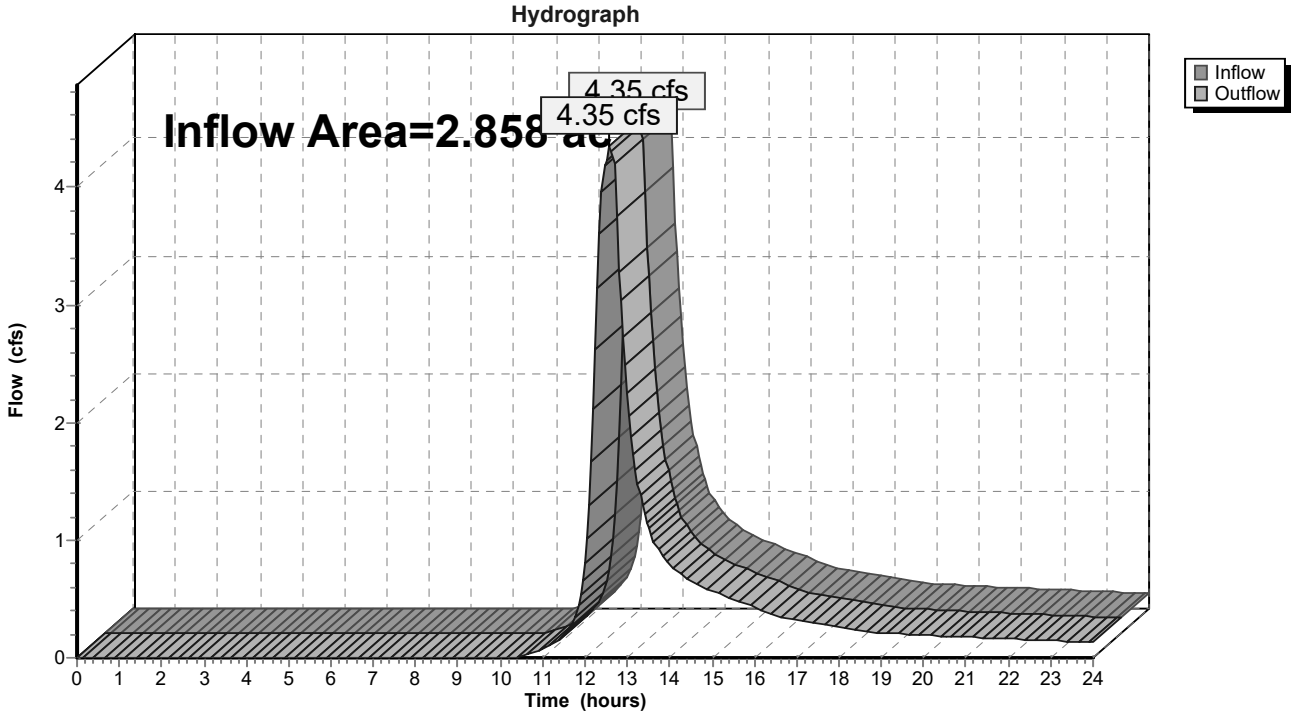
Summary for Reach 400R: Final Reach 400

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 2.858 ac, 33.49% Impervious, Inflow Depth > 2.59" for 25 YR - 24 HR event
Inflow = 4.35 cfs @ 12.59 hrs, Volume= 0.618 af
Outflow = 4.35 cfs @ 12.59 hrs, Volume= 0.618 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 400R: Final Reach 400



Summary for Pond 4P: Pond 4

Inflow Area = 2.858 ac, 33.49% Impervious, Inflow Depth > 2.59" for 25 YR - 24 HR event
Inflow = 4.44 cfs @ 12.52 hrs, Volume= 0.618 af
Outflow = 4.35 cfs @ 12.59 hrs, Volume= 0.618 af, Atten= 2%, Lag= 3.9 min
Primary = 4.35 cfs @ 12.59 hrs, Volume= 0.618 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 91.17' @ 12.59 hrs Surf.Area= 571 sf Storage= 196 cf
Flood Elev= 93.00' Surf.Area= 32,300 sf Storage= 17,712 cf

Plug-Flow detention time= 0.3 min calculated for 0.616 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (874.5 - 874.3)

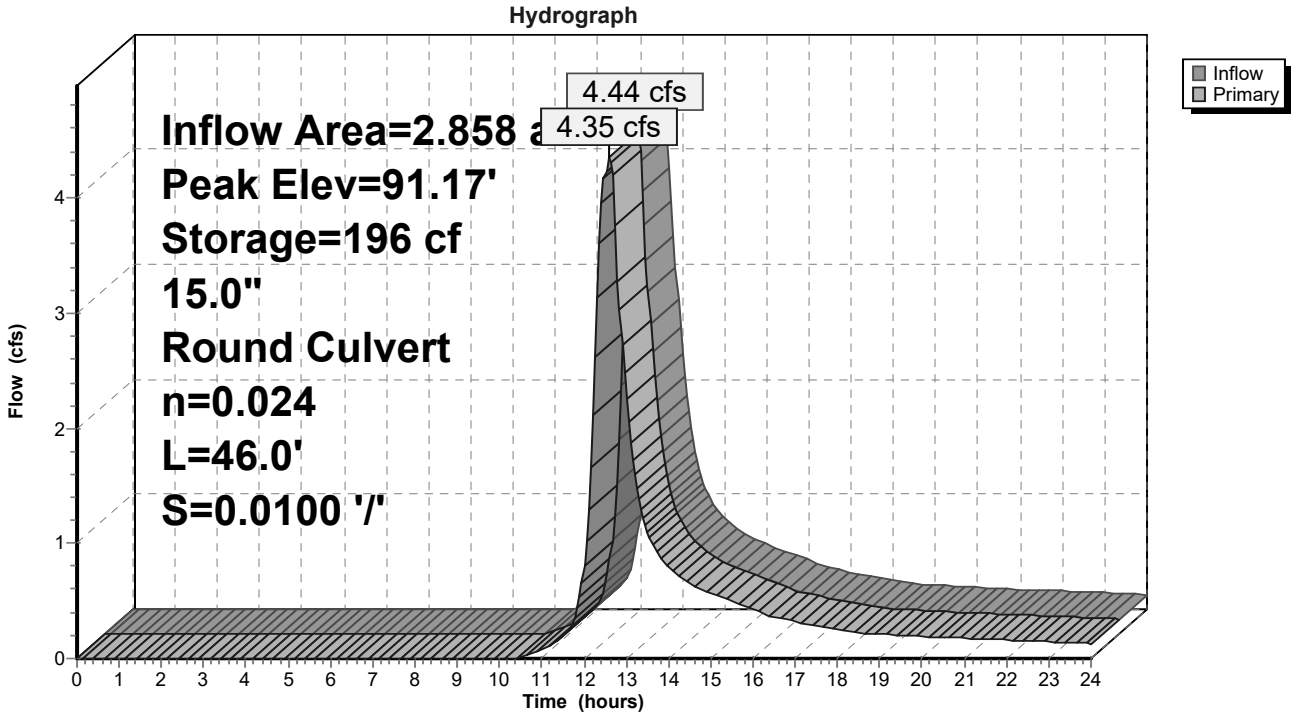
Volume	Invert	Avail.Storage	Storage Description
#1	89.38'	17,712 cf	**Open Water Storage (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
89.38	10	14.0	0	0	10
90.00	25	32.8	11	11	82
91.00	245	81.2	116	127	524
92.00	3,959	366.9	1,730	1,856	10,714
93.00	32,300	1,051.6	15,856	17,712	88,007

Device	Routing	Invert	Outlet Devices
#1	Primary	89.38'	**15.0" Round 15" CMP** L= 46.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 89.38' / 88.92' S= 0.0100 '/' Cc= 0.900 n= 0.024, Flow Area= 1.23 sf

Primary OutFlow Max=4.34 cfs @ 12.59 hrs HW=91.17' TW=0.00' (Dynamic Tailwater)
1=15" CMP (Barrel Controls 4.34 cfs @ 3.53 fps)

Pond 4P: Pond 4



Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment #1 Runoff Area=81,039 sf 6.80% Impervious Runoff Depth>1.31"
Flow Length=230' Tc=12.0 min CN=74 Runoff=2.23 cfs 0.202 af

Subcatchment 2S: Subcatchment #2 Runoff Area=263,231 sf 0.62% Impervious Runoff Depth>1.17"
Flow Length=300' Tc=38.1 min CN=72 Runoff=4.02 cfs 0.592 af

Subcatchment 4S: Subcatchment #4 Runoff Area=124,509 sf 33.49% Impervious Runoff Depth>0.61"
Flow Length=431' Tc=35.4 min CN=61 Runoff=0.83 cfs 0.145 af

Reach 100R: Final Reach 100 Inflow=2.23 cfs 0.202 af
Outflow=2.23 cfs 0.202 af

Reach 200R: Final Reach 200 Inflow=4.02 cfs 0.592 af
Outflow=4.02 cfs 0.592 af

Reach 400R: Final Reach 400 Inflow=0.83 cfs 0.145 af
Outflow=0.83 cfs 0.145 af

Pond 4P: Pond 4 Peak Elev=89.93' Storage=9 cf Inflow=0.83 cfs 0.145 af
15.0" Round Culvert n=0.024 L=46.0' S=0.0100 '/' Outflow=0.83 cfs 0.145 af

Total Runoff Area = 10.762 ac Runoff Volume = 0.940 af Average Runoff Depth = 1.05"
89.58% Pervious = 9.640 ac 10.42% Impervious = 1.122 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment #1 Runoff Area=81,039 sf 6.80% Impervious Runoff Depth>2.71"
Flow Length=230' Tc=12.0 min CN=74 Runoff=4.83 cfs 0.421 af

Subcatchment 2S: Subcatchment #2 Runoff Area=263,231 sf 0.62% Impervious Runoff Depth>2.52"
Flow Length=300' Tc=38.1 min CN=72 Runoff=9.00 cfs 1.269 af

Subcatchment 4S: Subcatchment #4 Runoff Area=124,509 sf 33.49% Impervious Runoff Depth>1.62"
Flow Length=431' Tc=35.4 min CN=61 Runoff=2.67 cfs 0.387 af

Reach 100R: Final Reach 100 Inflow=4.83 cfs 0.421 af
Outflow=4.83 cfs 0.421 af

Reach 200R: Final Reach 200 Inflow=9.00 cfs 1.269 af
Outflow=9.00 cfs 1.269 af

Reach 400R: Final Reach 400 Inflow=2.67 cfs 0.387 af
Outflow=2.67 cfs 0.387 af

Pond 4P: Pond 4 Peak Elev=90.45' Storage=36 cf Inflow=2.67 cfs 0.387 af
15.0" Round Culvert n=0.024 L=46.0' S=0.0100 '/' Outflow=2.67 cfs 0.387 af

Total Runoff Area = 10.762 ac Runoff Volume = 2.077 af Average Runoff Depth = 2.32"
89.58% Pervious = 9.640 ac 10.42% Impervious = 1.122 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment #1 Runoff Area=81,039 sf 6.80% Impervious Runoff Depth>3.93"
Flow Length=230' Tc=12.0 min CN=74 Runoff=7.01 cfs 0.609 af

Subcatchment 2S: Subcatchment #2 Runoff Area=263,231 sf 0.62% Impervious Runoff Depth>3.70"
Flow Length=300' Tc=38.1 min CN=72 Runoff=13.30 cfs 1.862 af

Subcatchment 4S: Subcatchment #4 Runoff Area=124,509 sf 33.49% Impervious Runoff Depth>2.59"
Flow Length=431' Tc=35.4 min CN=61 Runoff=4.44 cfs 0.618 af

Reach 100R: Final Reach 100 Inflow=7.01 cfs 0.609 af
Outflow=7.01 cfs 0.609 af

Reach 200R: Final Reach 200 Inflow=13.30 cfs 1.862 af
Outflow=13.30 cfs 1.862 af

Reach 400R: Final Reach 400 Inflow=4.35 cfs 0.618 af
Outflow=4.35 cfs 0.618 af

Pond 4P: Pond 4 Peak Elev=91.17' Storage=196 cf Inflow=4.44 cfs 0.618 af
15.0" Round Culvert n=0.024 L=46.0' S=0.0100 '/' Outflow=4.35 cfs 0.618 af

Total Runoff Area = 10.762 ac Runoff Volume = 3.089 af Average Runoff Depth = 3.44"
89.58% Pervious = 9.640 ac 10.42% Impervious = 1.122 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment #1 Runoff Area=81,039 sf 6.80% Impervious Runoff Depth>5.12"
Flow Length=230' Tc=12.0 min CN=74 Runoff=9.12 cfs 0.794 af

Subcatchment 2S: Subcatchment #2 Runoff Area=263,231 sf 0.62% Impervious Runoff Depth>4.86"
Flow Length=300' Tc=38.1 min CN=72 Runoff=17.49 cfs 2.448 af

Subcatchment 4S: Subcatchment #4 Runoff Area=124,509 sf 33.49% Impervious Runoff Depth>3.59"
Flow Length=431' Tc=35.4 min CN=61 Runoff=6.26 cfs 0.856 af

Reach 100R: Final Reach 100 Inflow=9.12 cfs 0.794 af
Outflow=9.12 cfs 0.794 af

Reach 200R: Final Reach 200 Inflow=17.49 cfs 2.448 af
Outflow=17.49 cfs 2.448 af

Reach 400R: Final Reach 400 Inflow=5.52 cfs 0.855 af
Outflow=5.52 cfs 0.855 af

Pond 4P: Pond 4 Peak Elev=91.79' Storage=1,149 cf Inflow=6.26 cfs 0.856 af
15.0" Round Culvert n=0.024 L=46.0' S=0.0100 '/' Outflow=5.52 cfs 0.855 af

Total Runoff Area = 10.762 ac Runoff Volume = 4.097 af Average Runoff Depth = 4.57"
89.58% Pervious = 9.640 ac 10.42% Impervious = 1.122 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment #1 Runoff Area=81,039 sf 6.80% Impervious Runoff Depth>6.59"
Flow Length=230' Tc=12.0 min CN=74 Runoff=11.66 cfs 1.021 af

Subcatchment 2S: Subcatchment #2 Runoff Area=263,231 sf 0.62% Impervious Runoff Depth>6.30"
Flow Length=300' Tc=38.1 min CN=72 Runoff=22.58 cfs 3.171 af

Subcatchment 4S: Subcatchment #4 Runoff Area=124,509 sf 33.49% Impervious Runoff Depth>4.86"
Flow Length=431' Tc=35.4 min CN=61 Runoff=8.55 cfs 1.159 af

Reach 100R: Final Reach 100 Inflow=11.66 cfs 1.021 af
Outflow=11.66 cfs 1.021 af

Reach 200R: Final Reach 200 Inflow=22.58 cfs 3.171 af
Outflow=22.58 cfs 3.171 af

Reach 400R: Final Reach 400 Inflow=6.30 cfs 1.158 af
Outflow=6.30 cfs 1.158 af

Pond 4P: Pond 4 Peak Elev=92.28' Storage=3,634 cf Inflow=8.55 cfs 1.159 af
15.0" Round Culvert n=0.024 L=46.0' S=0.0100 '/' Outflow=6.30 cfs 1.158 af

Total Runoff Area = 10.762 ac Runoff Volume = 5.350 af Average Runoff Depth = 5.97"
89.58% Pervious = 9.640 ac 10.42% Impervious = 1.122 ac

Appendix II - Proposed Conditions Analysis

25 Yr - 24 Hr. Full Summary
2 Yr - 24 Hr. Node Listing
10 Yr -24 Hr. Node Listing
25 Yr -24 Hr. Node Listing
50 Yr - 24 Hr. Node Listing
100 Yr -24 Hr. Node Listing

SOILS LEGEND

Site Specific Soils

Symbol	Slopes	Taxonomic Soil Name	Hydrologic Soil Group
Wf	A,B,C	Windsor Variant	C
Bz	A,B,C	Buxton	C
Sc	A,B	Scantic	D

NRCS Soils

Symbol	Slopes	Taxonomic Soil Name	Hydrologic Soil Group
Wd	A	Windsor Loamy Sand	A
Wf	B	Windsor Loamy Sand	A
Bz	A	Buxton Silt Loam	C
Sc	A	Suffield Silt Loam	D

Slopes: A = 0-3% B = 3-8% C = 8-15% D = 15-25% E = 25- 50% F = 50%+
Denominators: /ED = Excessively Drained /MWD = Moderately Well Drained /SPD = Somewhat Poorly Drained /P = Poorly Drained /VP = Very Poorly Drained /Rk = Rocky

DEIDRA BENJAMIN, CWS #295

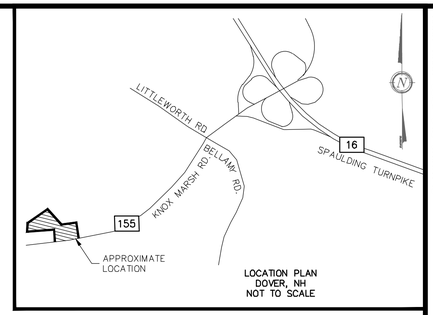
JOHN P. HAYES III, CSS #87

JURISDICTIONAL WETLANDS WERE DELINEATED BY DEIDRA BENJAMIN, CWS, IN SPRING OF 2020 UTILIZING THE FOLLOWING STANDARDS:

1) FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, VERSION 7.0. 2010. L.M. VASILAS, G.W. HURT, AND C.V. NOBLE (EDS.). UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, IN COOPERATION WITH THE NATIONAL TECHNICAL COMMITTEE FOR HYDRIC SOILS.
2) FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND. VERSION 3. APRIL 2004. NEIWPCC WETLANDS WORKGROUP. WILMINGTON, MA 01887.
3) NORTH AMERICAN DIGITAL FLORA: NATIONAL WETLAND PLANT LIST, VERSION 2.1.0 (HTTP://WETLAND_PLANTS.USACE.ARMY.MIL). U.S. ARMY CORPS OF ENGINEERS, ENGINEER RESEARCH AND DEVELOPMENT CENTER, COLD REGIONS RESEARCH AND ENGINEERING LABORATORY, HANOVER, NH, AND BONAP, CHAPEN HILL.
4) STATE OF NEW HAMPSHIRE 2014 WETLAND PLANT LIST. LICHVAR, R.W., M. BUTTERWICH, N.C. MELVIN, AND W.N. KIRCHNER. 2014. THE NATIONAL WETLAND PLANT LIST: 2014 UPDATE OF WETLAND RATINGS. PHYTONEURON 2014-41:1-42.
5) CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL. JANUARY 1987. WETLANDS RESEARCH PROGRAM TECHNICAL REPORT Y-87-1.
6) REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION. JANUARY 2012, VERSION 2. U.S. ARMY CORPS OF ENGINEERS. ENVIRONMENTAL LABORATORY ERDC/EL TR-12-1.
7) CLASSIFICATION OF WETLANDS AND DEEPWATER HABITATS OF THE UNITED STATES. DECEMBER 1979. L. COWARDIN, V. CARTER, F. GOLET, AND E. LAROE. US DEPARTMENT OF THE INTERIOR. FISH AND WILDLIFE SERVICE. FWS/OBS-79/31.

SYMBOLS LEGEND:

SUBCATCHMENT AREA SYMBOL
FLOW REACH SYMBOL
POND DEVICE SYMBOL
TIME OF CONCENTRATION SEGMENT

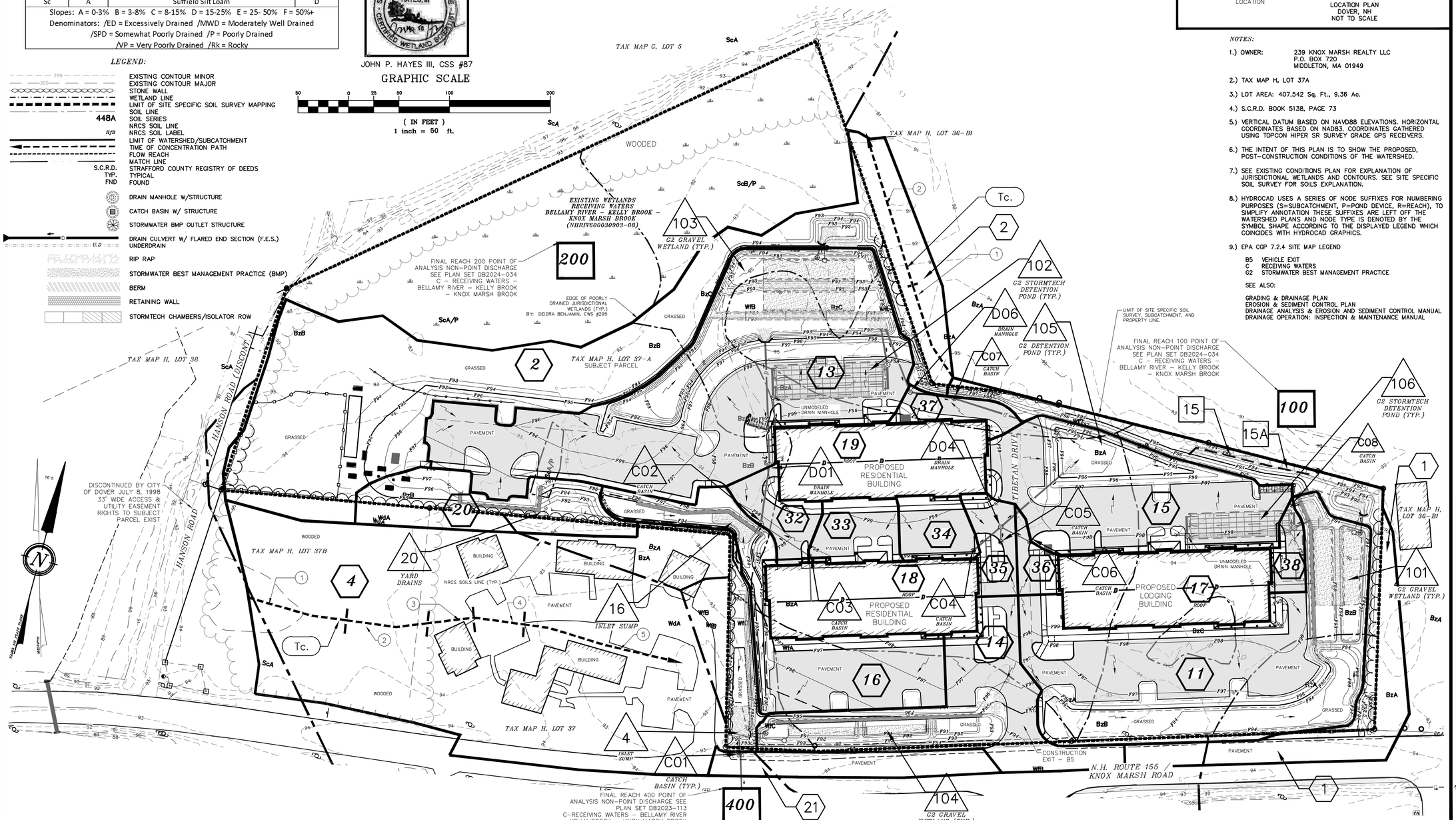


LOCATION PLAN
DOVER, NH
NOT TO SCALE

LEGEND:

- EXISTING CONTOUR MINOR
- EXISTING CONTOUR MAJOR
- STONE WALL
- WETLAND LINE
- LIMIT OF SITE SPECIFIC SOIL SURVEY MAPPING
- SOIL LINE
- 448A — SOIL SERIES
- NRCS SOIL LINE
- NRCS SOIL LABEL
- LIMIT OF WATERSHED/SUBCATCHMENT
- TIME OF CONCENTRATION PATH
- FLOW REACH
- MATCH LINE
- S.C.R.D. — STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. — TYPICAL
- FND — FOUND
- DRAIN MANHOLE W/STRUCTURE
- CATCH BASIN W/ STRUCTURE
- STORMWATER BMP OUTLET STRUCTURE
- DRAIN CULVERT W/ FLARED END SECTION (F.E.S.) UNDERDRAIN
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- BERM
- RETAINING WALL
- STORMTECH CHAMBERS/ISOLATOR ROW

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.



NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37A

3.) LOT AREA: 407,542 Sq. Ft., 9.36 Ac.

4.) S.C.R.D. BOOK 5138, PAGE 73

5.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

6.) THE INTENT OF THIS PLAN IS TO SHOW THE PROPOSED, POST-CONSTRUCTION CONDITIONS OF THE WATERSHED.

7.) SEE EXISTING CONDITIONS PLAN FOR EXPLANATION OF JURISDICTIONAL WETLANDS AND CONTOURS. SEE SITE SPECIFIC SOIL SURVEY FOR SOILS EXPLANATION.

8.) HYDROCAD USES A SERIES OF NODE SUFFIXES FOR NUMBERING PURPOSES (S=SUBCATCHMENT, P=POND DEVICE, R=REACH), TO SIMPLIFY ANNOTATION THESE SUFFIXES ARE LEFT OFF THE WATERSHED PLANS AND NODE TYPE IS DENOTED BY THE SYMBOL SHAPE ACCORDING TO THE DISPLAYED LEGEND WHICH COINCIDES WITH HYDROCAD GRAPHICS.

9.) EPA CGP 7.2.4 SITE MAP LEGEND

B5 VEHICLE EXIT
C RECEIVING WATERS
G2 STORMWATER BEST MANAGEMENT PRACTICE

SEE ALSO:

GRADING & DRAINAGE PLAN
EROSION & SEDIMENT CONTROL PLAN
DRAINAGE ANALYSIS & EROSION AND SEDIMENT CONTROL MANUAL
DRAINAGE OPERATION: INSPECTION & MAINTENANCE MANUAL

PLANNING FILE #SITE-XXXX-XXXX

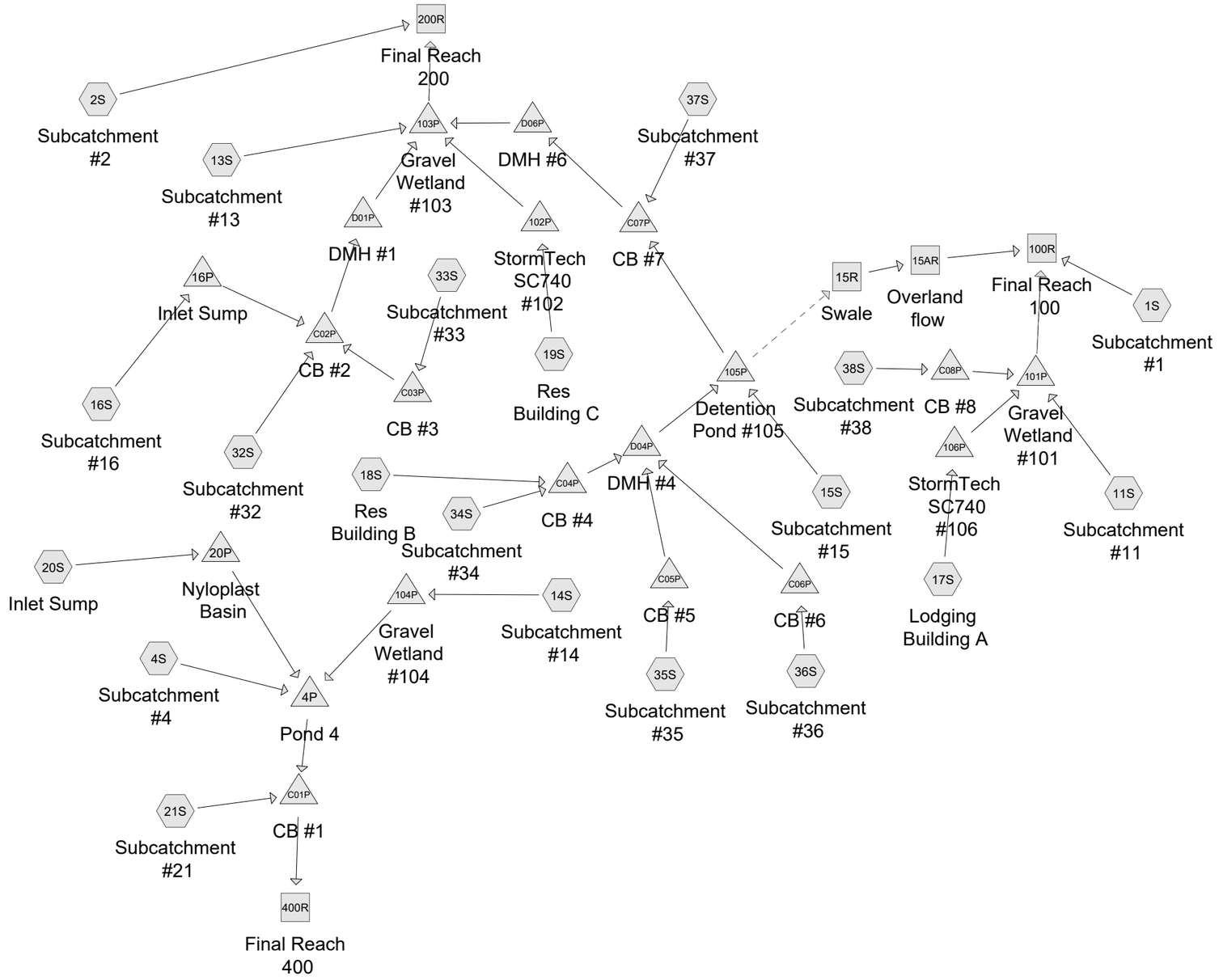
REVISION	DATE	DESCRIPTION

SWPPP EPA SITE MAP (PROPOSED)
W-2 PROPOSED WATERSHED PLAN
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

KENNETH A. BERRY No. 14243 LICENSED PROFESSIONAL ENGINEER - STATE OF NEW HAMPSHIRE -



Routing Diagram for 24-034 Proposed Conditions Analysis

Prepared by Berry Surveying & Engineering, Printed 12/3/2024

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.750	39	>75% Grass cover, Good, HSG A (4S, 20S)
3.936	74	>75% Grass cover, Good, HSG C (1S, 2S, 4S, 11S, 13S, 14S, 15S, 16S, 20S, 32S, 33S, 34S, 35S, 36S, 37S, 38S)
0.014	80	>75% Grass cover, Good, HSG D (4S, 20S)
0.119	96	Gravel surface, HSG C (2S, 11S, 13S, 14S, 15S, 16S, 20S)
0.000	96	Gravel surface, HSG D (13S)
0.807	98	Paved parking, HSG A (1S, 4S, 11S, 14S, 21S)
2.509	98	Paved parking, HSG C (1S, 2S, 11S, 13S, 14S, 15S, 16S, 32S, 33S, 34S, 35S, 36S, 37S, 38S)
0.022	98	Paved parking, HSG D (13S)
0.186	98	Roofs, HSG A (4S)
1.205	98	Roofs, HSG C (4S, 11S, 13S, 14S, 15S, 16S, 17S, 18S, 19S, 32S, 33S, 34S, 35S, 36S, 37S, 38S)
0.801	30	Woods, Good, HSG A (2S, 4S, 20S)
0.370	70	Woods, Good, HSG C (1S, 2S)
0.043	77	Woods, Good, HSG D (4S)
10.762	**79**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
2.545	HSG A	1S, 2S, 4S, 11S, 14S, 20S, 21S
0.000	HSG B	
8.138	HSG C	1S, 2S, 4S, 11S, 13S, 14S, 15S, 16S, 17S, 18S, 19S, 20S, 32S, 33S, 34S, 35S, 36S, 37S, 38S
0.079	HSG D	4S, 13S, 20S
0.000	Other	
10.762		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.750	0.000	3.936	0.014	0.000	4.700	>75% Grass cover, Good	1S, 2S, 4S, 11S, 13S, 14S, 15S, 16S, 20S, 32S, 33S, 34S, 35S, 36S, 37S, 38S
0.000	0.000	0.119	0.000	0.000	0.119	Gravel surface	2S, 11S, 13S, 14S, 15S, 16S, 20S
0.807	0.000	2.509	0.022	0.000	3.338	Paved parking	1S, 2S, 4S, 11S, 13S, 14S, 15S, 16S, 21S, 32S, 33S, 34S, 35S, 36S, 37S, 38S
0.186	0.000	1.205	0.000	0.000	1.391	Roofs	4S, 11S, 13S, 14S, 15S, 16S, 17S, 18S, 19S, 32S, 33S, 34S, 35S, 36S, 37S, 38S

Ground Covers (all nodes) (continued)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.801	0.000	0.370	0.043	0.000	1.214	Woods, Good	1S, 2S, 4S, 20S
2.545	**0.000**	**8.138**	**0.079**	**0.000**	**10.762**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	4P	89.51	88.92	59.0	0.0100	0.024	15.0	0.0	0.0
2	16P	93.75	93.60	8.0	0.0188	0.012	18.0	0.0	0.0
3	20P	89.75	89.50	350.0	0.0007	0.012	8.0	0.0	0.0
4	101P	91.92	91.75	17.0	0.0100	0.010	6.0	0.0	0.0
5	101P	91.92	91.75	16.0	0.0106	0.010	12.0	0.0	0.0
6	102P	92.75	92.50	33.7	0.0074	0.012	18.0	0.0	0.0
7	103P	91.92	91.75	16.0	0.0106	0.012	6.0	0.0	0.0
8	103P	91.92	91.75	12.0	0.0142	0.012	15.0	0.0	0.0
9	104P	90.33	90.00	33.7	0.0098	0.012	6.0	0.0	0.0
10	104P	90.33	90.00	13.5	0.0244	0.012	12.0	0.0	0.0
11	105P	93.75	93.22	103.0	0.0051	0.012	18.0	0.0	0.0
12	106P	92.75	92.50	15.0	0.0167	0.012	18.0	0.0	0.0
13	C01P	89.34	88.92	42.0	0.0100	0.012	15.0	0.0	0.0
14	C02P	93.50	93.20	55.0	0.0055	0.012	18.0	0.0	0.0
15	C03P	93.90	93.60	53.5	0.0056	0.012	12.0	0.0	0.0
16	C04P	94.61	94.45	32.0	0.0050	0.012	18.0	0.0	0.0
17	C05P	94.51	94.45	10.7	0.0056	0.012	12.0	0.0	0.0
18	C06P	94.60	94.45	28.5	0.0053	0.012	12.0	0.0	0.0
19	C07P	93.12	92.92	40.0	0.0050	0.012	18.0	0.0	0.0
20	C08P	93.25	93.15	9.0	0.0111	0.012	12.0	0.0	0.0
21	D01P	93.10	92.50	120.0	0.0050	0.012	18.0	0.0	0.0
22	D04P	94.35	93.95	78.0	0.0051	0.012	18.0	0.0	0.0
23	D06P	92.82	92.50	62.5	0.0051	0.012	18.0	0.0	0.0

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment #1 Runoff Area=24,233 sf 27.47% Impervious Runoff Depth>4.58"
Tc=6.0 min CN=80 Runoff=2.90 cfs 0.212 af

Subcatchment 2S: Subcatchment #2 Runoff Area=67,977 sf 0.09% Impervious Runoff Depth>3.71"
Flow Length=251' Tc=25.7 min CN=72 Runoff=4.12 cfs 0.482 af

Subcatchment 4S: Subcatchment #4 Runoff Area=106,193 sf 30.27% Impervious Runoff Depth>2.31"
Flow Length=431' Tc=35.4 min CN=58 Runoff=3.31 cfs 0.469 af

Subcatchment 11S: Subcatchment #11 Runoff Area=47,072 sf 44.01% Impervious Runoff Depth>5.13"
Tc=6.0 min CN=85 Runoff=6.20 cfs 0.462 af

Subcatchment 13S: Subcatchment #13 Runoff Area=60,719 sf 52.40% Impervious Runoff Depth>5.36"
Tc=6.0 min CN=87 Runoff=8.25 cfs 0.623 af

Subcatchment 14S: Subcatchment #14 Runoff Area=22,059 sf 53.15% Impervious Runoff Depth>5.36"
Tc=6.0 min CN=87 Runoff=3.00 cfs 0.226 af

Subcatchment 15S: Subcatchment #15 Runoff Area=28,560 sf 62.85% Impervious Runoff Depth>5.70"
Tc=6.0 min CN=90 Runoff=4.05 cfs 0.312 af

Subcatchment 16S: Subcatchment #16 Runoff Area=20,779 sf 53.27% Impervious Runoff Depth>5.36"
Tc=6.0 min CN=87 Runoff=2.82 cfs 0.213 af

Subcatchment 17S: Lodging Building A Runoff Area=15,097 sf 100.00% Impervious Runoff Depth>6.64"
Tc=6.0 min CN=98 Runoff=2.28 cfs 0.192 af

Subcatchment 18S: Res Building B Runoff Area=15,097 sf 100.00% Impervious Runoff Depth>6.64"
Tc=6.0 min CN=98 Runoff=2.28 cfs 0.192 af

Subcatchment 19S: Res Building C Runoff Area=15,097 sf 100.00% Impervious Runoff Depth>6.64"
Tc=6.0 min CN=98 Runoff=2.28 cfs 0.192 af

Subcatchment 20S: Inlet Sump Runoff Area=12,580 sf 0.00% Impervious Runoff Depth>3.01"
Tc=6.0 min CN=65 Runoff=0.99 cfs 0.072 af

Subcatchment 21S: Subcatchment #21 Runoff Area=6,962 sf 100.00% Impervious Runoff Depth>6.64"
Tc=6.0 min CN=98 Runoff=1.05 cfs 0.088 af

Subcatchment 32S: Subcatchment #32 Runoff Area=4,612 sf 86.88% Impervious Runoff Depth>6.28"
Tc=6.0 min CN=95 Runoff=0.69 cfs 0.055 af

Subcatchment 33S: Subcatchment #33 Runoff Area=5,193 sf 77.18% Impervious Runoff Depth>6.05"
Tc=6.0 min CN=93 Runoff=0.76 cfs 0.060 af

Subcatchment 34S: Subcatchment #34 Runoff Area=4,481 sf 86.03% Impervious Runoff Depth>6.28"
Tc=6.0 min CN=95 Runoff=0.67 cfs 0.054 af

Subcatchment 35S: Subcatchment #35 Runoff Area=4,153 sf 78.57% Impervious Runoff Depth>6.05"
Tc=6.0 min CN=93 Runoff=0.61 cfs 0.048 af

Subcatchment 36S: Subcatchment #36 Runoff Area=2,332 sf 82.33% Impervious Runoff Depth>6.17"
Tc=6.0 min CN=94 Runoff=0.34 cfs 0.028 af

Subcatchment 37S: Subcatchment #37 Runoff Area=3,187 sf 74.65% Impervious Runoff Depth>5.93"
Tc=6.0 min CN=92 Runoff=0.46 cfs 0.036 af

Subcatchment 38S: Subcatchment #38 Runoff Area=2,410 sf 89.54% Impervious Runoff Depth>6.28"
Tc=6.0 min CN=95 Runoff=0.36 cfs 0.029 af

Reach 15AR: Overland flow Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.030 L=30.0' S=0.0167 '/' Capacity=158.86 cfs Outflow=0.00 cfs 0.000 af

Reach 15R: Swale Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.035 L=70.0' S=0.0071 '/' Capacity=31.36 cfs Outflow=0.00 cfs 0.000 af

Reach 100R: Final Reach 100 Inflow=2.98 cfs 0.552 af
Outflow=2.98 cfs 0.552 af

Reach 200R: Final Reach 200 Inflow=12.39 cfs 1.789 af
Outflow=12.39 cfs 1.789 af

Reach 400R: Final Reach 400 Inflow=3.39 cfs 0.718 af
Outflow=3.39 cfs 0.718 af

Pond 4P: Pond 4 Peak Elev=90.99' Storage=2,014 cf Inflow=3.61 cfs 0.634 af
15.0" Round Culvert n=0.024 L=59.0' S=0.0100 '/' Outflow=3.26 cfs 0.629 af

Pond 16P: Inlet Sump Peak Elev=94.68' Storage=1,335 cf Inflow=2.82 cfs 0.213 af
18.0" Round Culvert n=0.012 L=8.0' S=0.0188 '/' Outflow=1.60 cfs 0.211 af

Pond 20P: Nyloplast Basin Peak Elev=91.82' Storage=33 cf Inflow=0.99 cfs 0.072 af
8.0" Round Culvert n=0.012 L=350.0' S=0.0007 '/' Outflow=0.85 cfs 0.072 af

Pond 101P: Gravel Wetland #101 Peak Elev=94.03' Storage=12,605 cf Inflow=6.63 cfs 0.608 af
Primary=0.08 cfs 0.109 af Secondary=1.12 cfs 0.227 af Tertiary=0.13 cfs 0.004 af Outflow=1.33 cfs 0.340 af

Pond 102P: StormTech SC740 #102 Peak Elev=94.84' Storage=5,368 cf Inflow=2.28 cfs 0.192 af
Outflow=0.08 cfs 0.099 af

Pond 103P: Gravel Wetland #103 Peak Elev=94.40' Storage=27,139 cf Inflow=14.51 cfs 1.710 af
Primary=0.20 cfs 0.251 af Secondary=4.56 cfs 0.876 af Tertiary=3.53 cfs 0.180 af Outflow=8.29 cfs 1.307 af

Pond 104P: Gravel Wetland #104 Peak Elev=92.96' Storage=6,789 cf Inflow=3.00 cfs 0.226 af
Primary=0.12 cfs 0.093 af Secondary=0.00 cfs 0.000 af Outflow=0.12 cfs 0.093 af

Pond 105P: Detention Pond #105 Peak Elev=95.76' Storage=5,793 cf Inflow=7.91 cfs 0.633 af
Primary=3.32 cfs 0.626 af Secondary=0.00 cfs 0.000 af Outflow=3.32 cfs 0.626 af

Pond 106P: StormTech SC740 #106 Peak Elev=94.98' Storage=4,788 cf Inflow=2.28 cfs 0.192 af
Outflow=0.10 cfs 0.116 af

Pond C01P: CB #1 Peak Elev=90.34' Storage=13 cf Inflow=3.39 cfs 0.718 af
15.0" Round Culvert n=0.012 L=42.0' S=0.0100 '/' Outflow=3.39 cfs 0.718 af

Pond C02P: CB #2 Peak Elev=94.60' Storage=0.000 af Inflow=2.89 cfs 0.327 af
18.0" Round Culvert n=0.012 L=55.0' S=0.0055 '/' Outflow=2.89 cfs 0.327 af

Pond C03P: CB #3 Peak Elev=94.63' Storage=0.000 af Inflow=0.76 cfs 0.060 af
12.0" Round Culvert n=0.012 L=53.5' S=0.0056 '/' Outflow=0.75 cfs 0.060 af

Pond C04P: CB #4 Peak Elev=95.82' Storage=0.000 af Inflow=2.95 cfs 0.246 af
18.0" Round Culvert n=0.012 L=32.0' S=0.0050 '/' Outflow=2.94 cfs 0.246 af

Pond C05P: CB #5 Peak Elev=95.80' Storage=0.000 af Inflow=0.61 cfs 0.048 af
12.0" Round Culvert n=0.012 L=10.7' S=0.0056 '/' Outflow=0.59 cfs 0.048 af

Pond C06P: CB #6 Peak Elev=95.80' Storage=0.000 af Inflow=0.34 cfs 0.028 af
12.0" Round Culvert n=0.012 L=28.5' S=0.0053 '/' Outflow=0.33 cfs 0.027 af

Pond C07P: CB #7 Peak Elev=94.77' Storage=21 cf Inflow=3.59 cfs 0.662 af
18.0" Round Culvert n=0.012 L=40.0' S=0.0050 '/' Outflow=3.59 cfs 0.662 af

Pond C08P: CB #8 Peak Elev=94.03' Storage=10 cf Inflow=0.36 cfs 0.029 af
12.0" Round Culvert n=0.012 L=9.0' S=0.0111 '/' Outflow=0.36 cfs 0.029 af

Pond D01P: DMH #1 Peak Elev=94.48' Storage=0.000 af Inflow=2.89 cfs 0.327 af
18.0" Round Culvert n=0.012 L=120.0' S=0.0050 '/' Outflow=2.89 cfs 0.327 af

Pond D04P: DMH #4 Peak Elev=95.80' Storage=0.000 af Inflow=3.87 cfs 0.321 af
18.0" Round Culvert n=0.012 L=78.0' S=0.0051 '/' Outflow=3.86 cfs 0.321 af

Pond D06P: DMH #6 Peak Elev=94.54' Storage=0.000 af Inflow=3.59 cfs 0.662 af
18.0" Round Culvert n=0.012 L=62.5' S=0.0051 '/' Outflow=3.58 cfs 0.661 af

Total Runoff Area = 10.762 ac Runoff Volume = 4.045 af Average Runoff Depth = 4.51"
56.06% Pervious = 6.033 ac 43.94% Impervious = 4.729 ac

Summary for Subcatchment 1S: Subcatchment #1

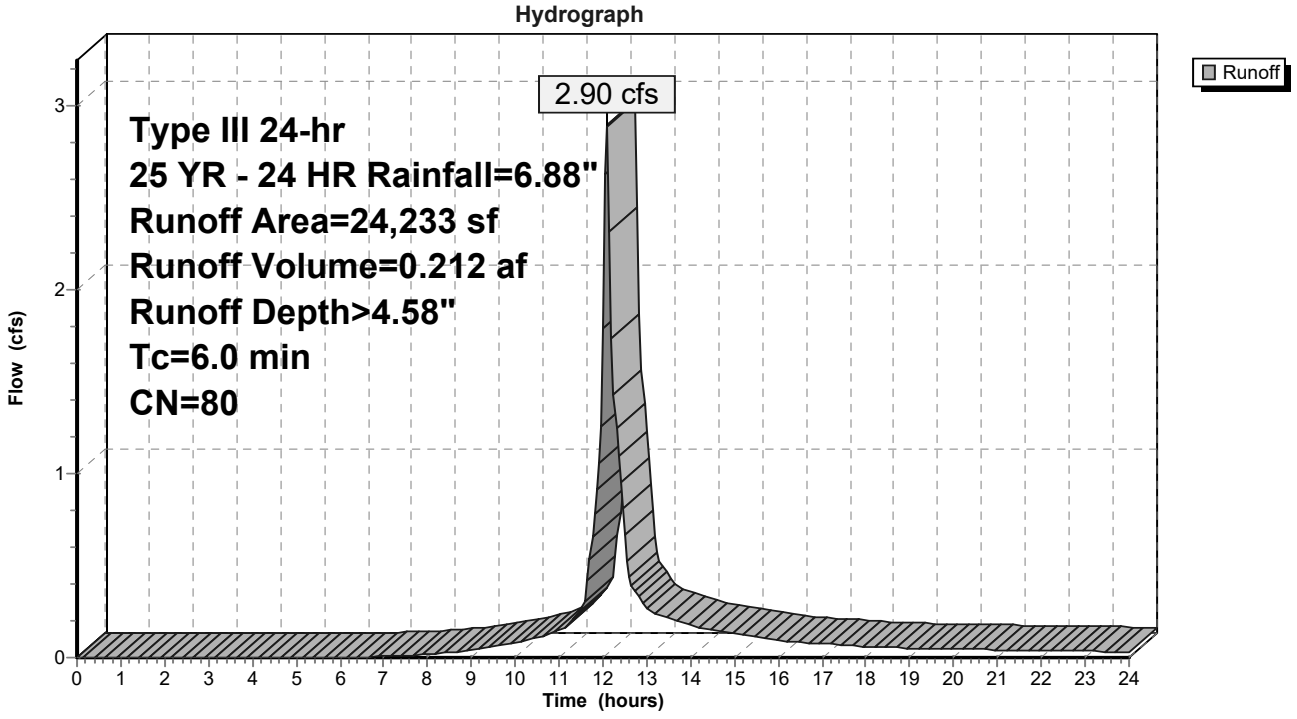
Runoff = 2.90 cfs @ 12.09 hrs, Volume= 0.212 af, Depth> 4.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR - 24 HR Rainfall=6.88"

Area (sf)	CN	Description
1,822	98	Paved parking, HSG A
4,834	98	Paved parking, HSG C
12,530	74	>75% Grass cover, Good, HSG C
5,047	70	Woods, Good, HSG C
24,233	80	Weighted Average
17,577		72.53% Pervious Area
6,656		27.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Segment #1**

Subcatchment 1S: Subcatchment #1



Summary for Subcatchment 2S: Subcatchment #2

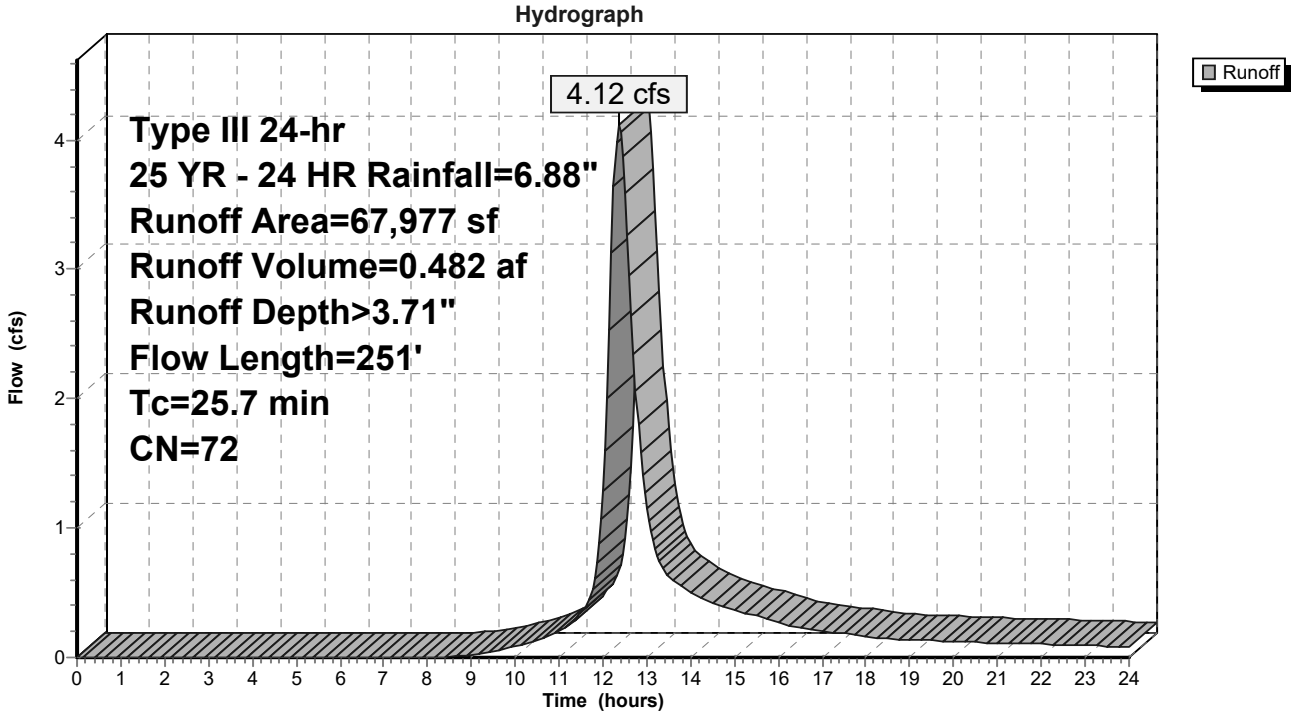
Runoff = 4.12 cfs @ 12.36 hrs, Volume= 0.482 af, Depth> 3.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR - 24 HR Rainfall=6.88"

Area (sf)	CN	Description
2,447	30	Woods, Good, HSG A
53,685	74	>75% Grass cover, Good, HSG C
11,054	70	Woods, Good, HSG C
63	98	Paved parking, HSG C
728	96	Gravel surface, HSG C
67,977	72	Weighted Average
67,914		99.91% Pervious Area
63		0.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.3	100	0.0175	0.08		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.62"
4.4	151	0.0132	0.57		**Shallow Concentrated Flow, Segment #2** Woodland Kv= 5.0 fps
25.7	251	Total			

Subcatchment 2S: Subcatchment #2



Summary for Subcatchment 4S: Subcatchment #4

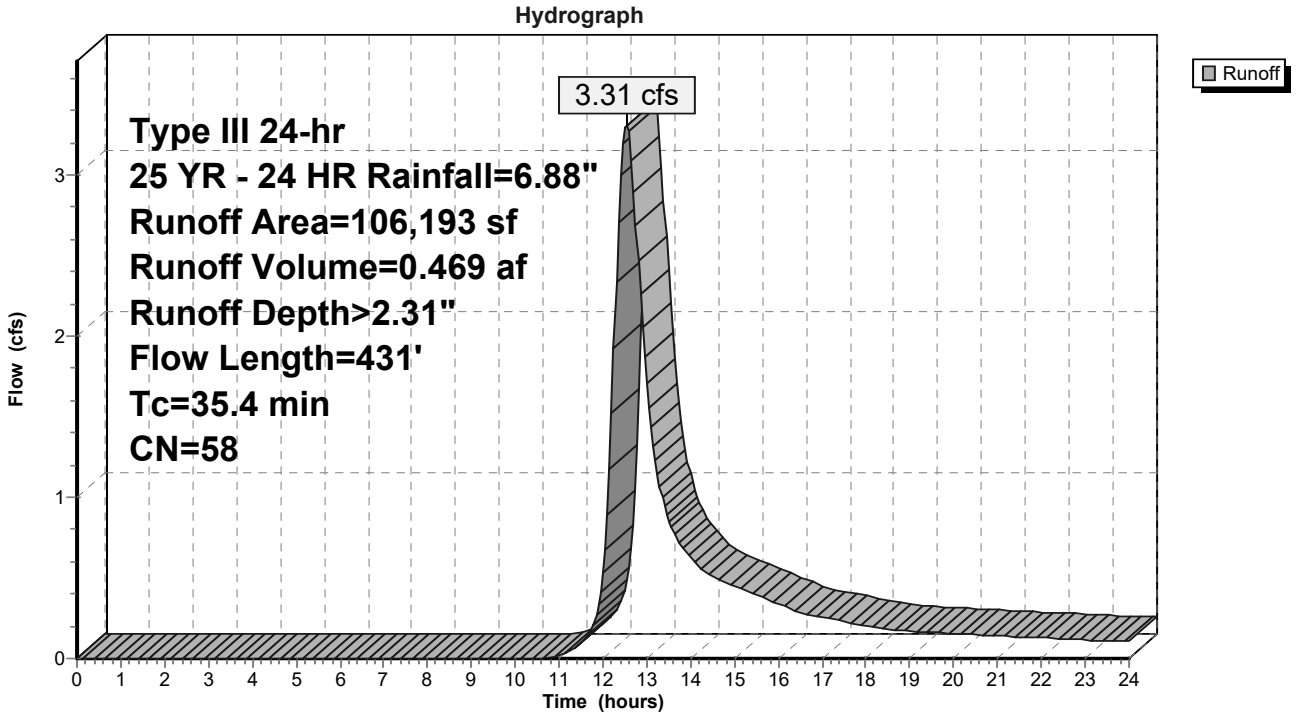
Runoff = 3.31 cfs @ 12.53 hrs, Volume= 0.469 af, Depth> 2.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR - 24 HR Rainfall=6.88"

Area (sf)	CN	Description
8,104	98	Roofs, HSG A
21,545	98	Paved parking, HSG A
31,380	39	>75% Grass cover, Good, HSG A
30,806	30	Woods, Good, HSG A
2,499	98	Roofs, HSG C
9,732	74	>75% Grass cover, Good, HSG C
247	80	>75% Grass cover, Good, HSG D
1,880	77	Woods, Good, HSG D
106,193	58	Weighted Average
74,045		69.73% Pervious Area
32,148		30.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.6	100	0.0100	0.06		**Sheet Flow, Segment #1** Woods: Light underbrush n= 0.400 P2= 3.62"
2.7	81	0.0100	0.50		**Shallow Concentrated Flow, Segment 2** Woodland Kv= 5.0 fps
1.1	48	0.0100	0.70		**Shallow Concentrated Flow, Segment 3** Short Grass Pasture Kv= 7.0 fps
0.6	49	0.0050	1.44		**Shallow Concentrated Flow, Segment 4** Paved Kv= 20.3 fps
4.4	153	0.0070	0.59		**Shallow Concentrated Flow, Segment 5** Short Grass Pasture Kv= 7.0 fps
35.4	431	Total			

Subcatchment 4S: Subcatchment #4



Summary for Subcatchment 11S: Subcatchment #11

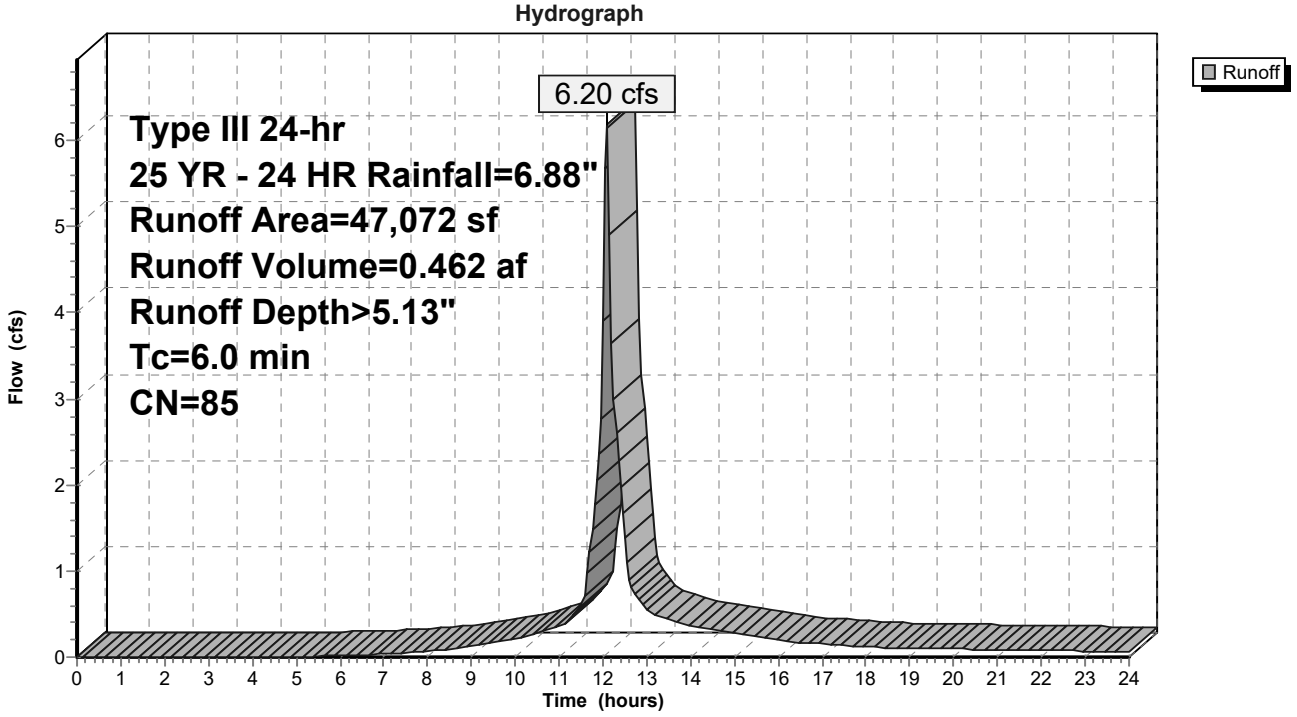
Runoff = 6.20 cfs @ 12.09 hrs, Volume= 0.462 af, Depth> 5.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR - 24 HR Rainfall=6.88"

Area (sf)	CN	Description
784	98	Paved parking, HSG A
19,507	98	Paved parking, HSG C
25,326	74	>75% Grass cover, Good, HSG C
1,031	96	Gravel surface, HSG C
424	98	Roofs, HSG C
47,072	85	Weighted Average
26,357		55.99% Pervious Area
20,715		44.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Segment #1**

Subcatchment 11S: Subcatchment #11



Summary for Subcatchment 13S: Subcatchment #13

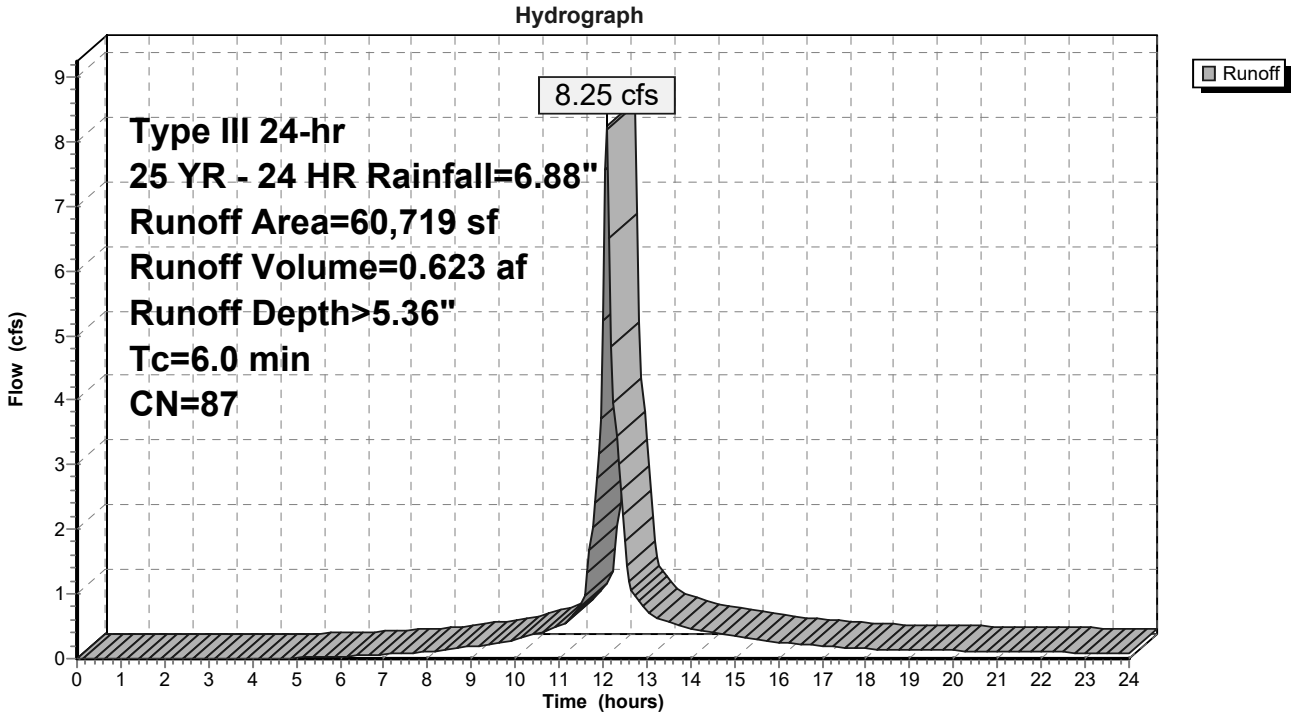
Runoff = 8.25 cfs @ 12.09 hrs, Volume= 0.623 af, Depth> 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR - 24 HR Rainfall=6.88"

Area (sf)	CN	Description
27,691	74	>75% Grass cover, Good, HSG C
1,206	96	Gravel surface, HSG C
30,155	98	Paved parking, HSG C
3	96	Gravel surface, HSG D
947	98	Paved parking, HSG D
717	98	Roofs, HSG C
60,719	87	Weighted Average
28,900		47.60% Pervious Area
31,819		52.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct Entry**

Subcatchment 13S: Subcatchment #13



Summary for Subcatchment 14S: Subcatchment #14

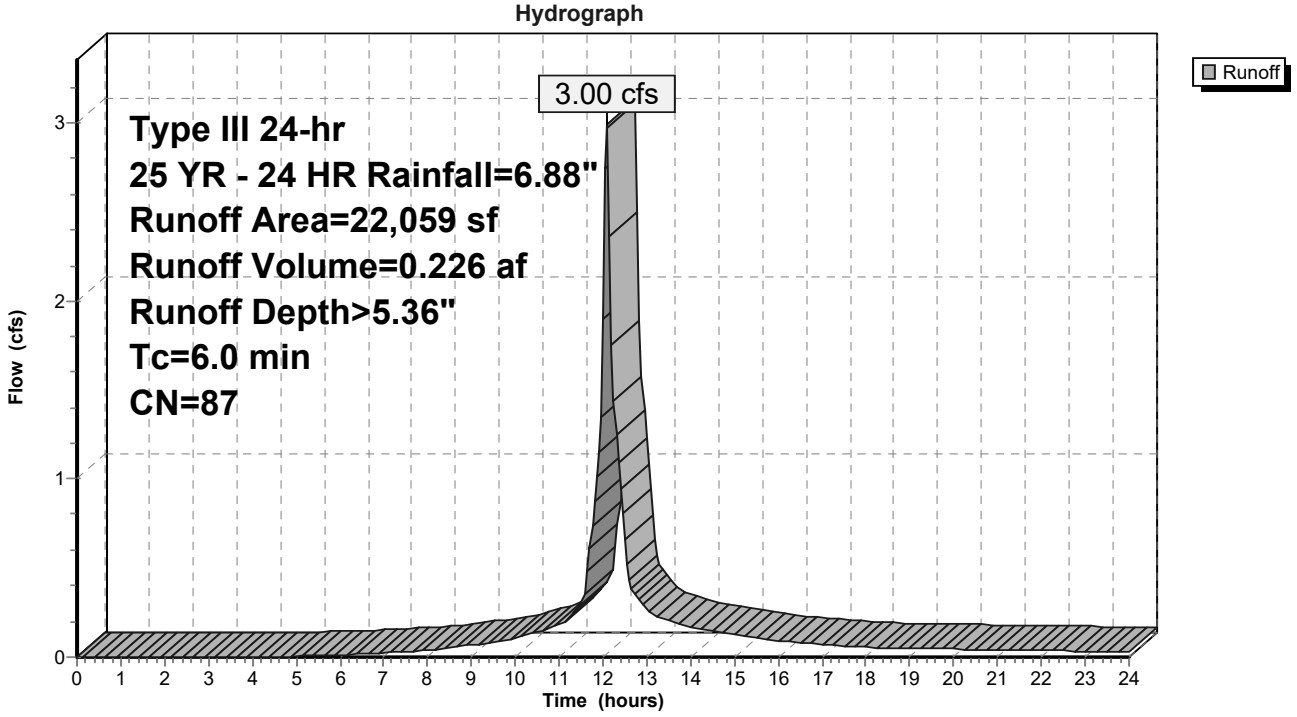
Runoff = 3.00 cfs @ 12.09 hrs, Volume= 0.226 af, Depth> 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR - 24 HR Rainfall=6.88"

Area (sf)	CN	Description
4,053	98	Paved parking, HSG A
9,842	74	>75% Grass cover, Good, HSG C
493	96	Gravel surface, HSG C
7,279	98	Paved parking, HSG C
392	98	Roofs, HSG C
22,059	87	Weighted Average
10,335		46.85% Pervious Area
11,724		53.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Segment #1**

Subcatchment 14S: Subcatchment #14



Summary for Subcatchment 15S: Subcatchment #15

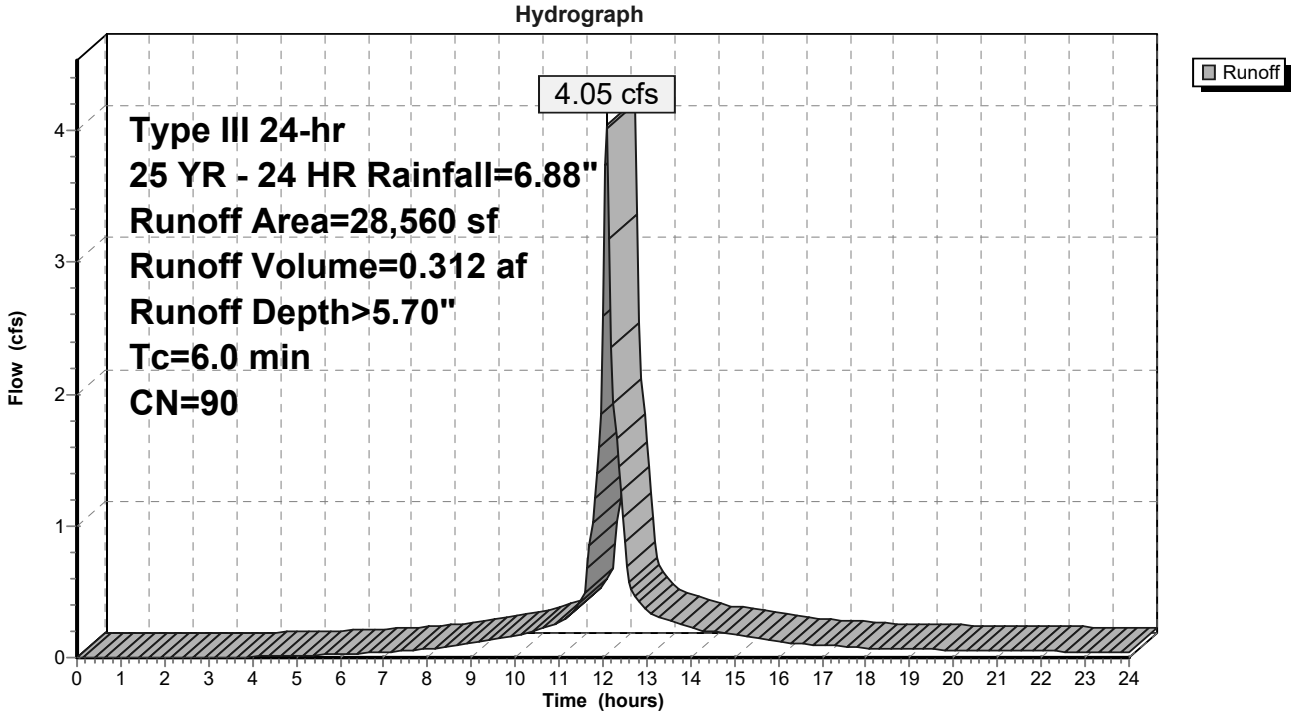
Runoff = 4.05 cfs @ 12.09 hrs, Volume= 0.312 af, Depth> 5.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR - 24 HR Rainfall=6.88"

Area (sf)	CN	Description
16,732	98	Paved parking, HSG C
9,785	74	>75% Grass cover, Good, HSG C
824	96	Gravel surface, HSG C
1,219	98	Roofs, HSG C
28,560	90	Weighted Average
10,609		37.15% Pervious Area
17,951		62.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct Entry**

Subcatchment 15S: Subcatchment #15



Summary for Subcatchment 16S: Subcatchment #16

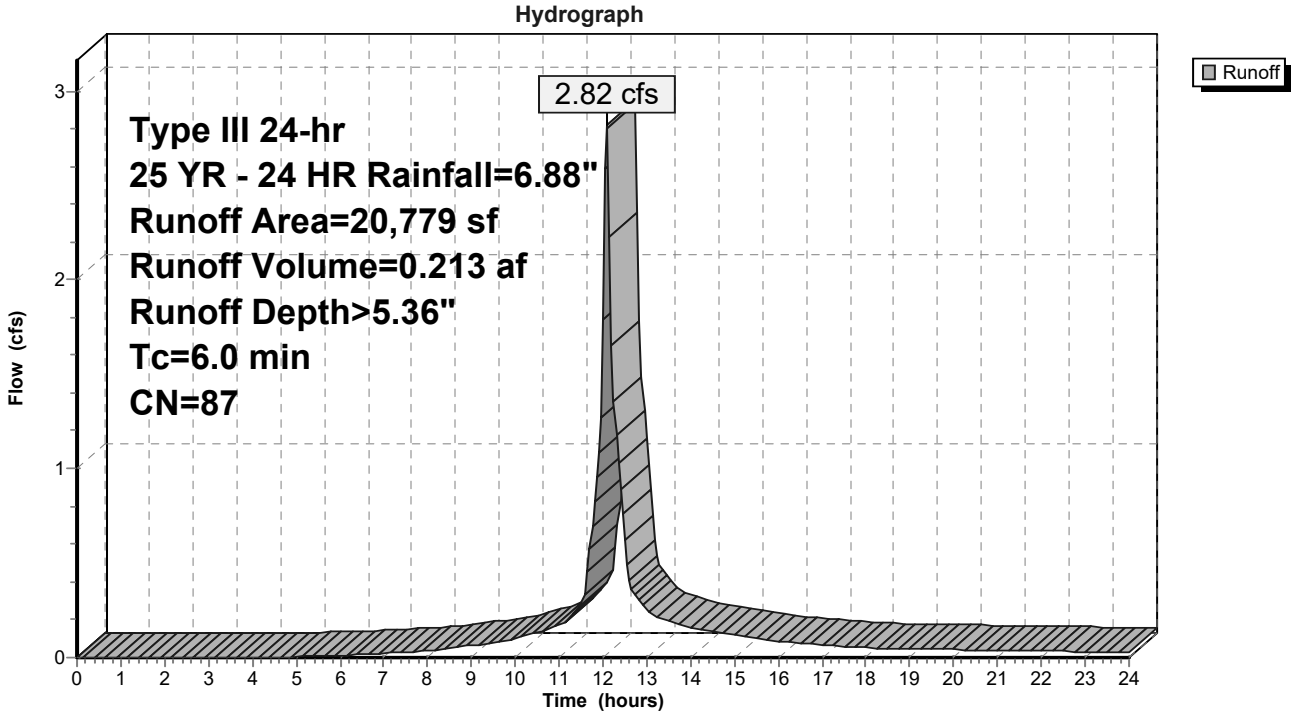
Runoff = 2.82 cfs @ 12.09 hrs, Volume= 0.213 af, Depth> 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR - 24 HR Rainfall=6.88"

Area (sf)	CN	Description
10,785	98	Paved parking, HSG C
9,206	74	>75% Grass cover, Good, HSG C
503	96	Gravel surface, HSG C
285	98	Roofs, HSG C
20,779	87	Weighted Average
9,709		46.73% Pervious Area
11,070		53.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct Entry**

Subcatchment 16S: Subcatchment #16



Summary for Subcatchment 17S: Lodging Building A

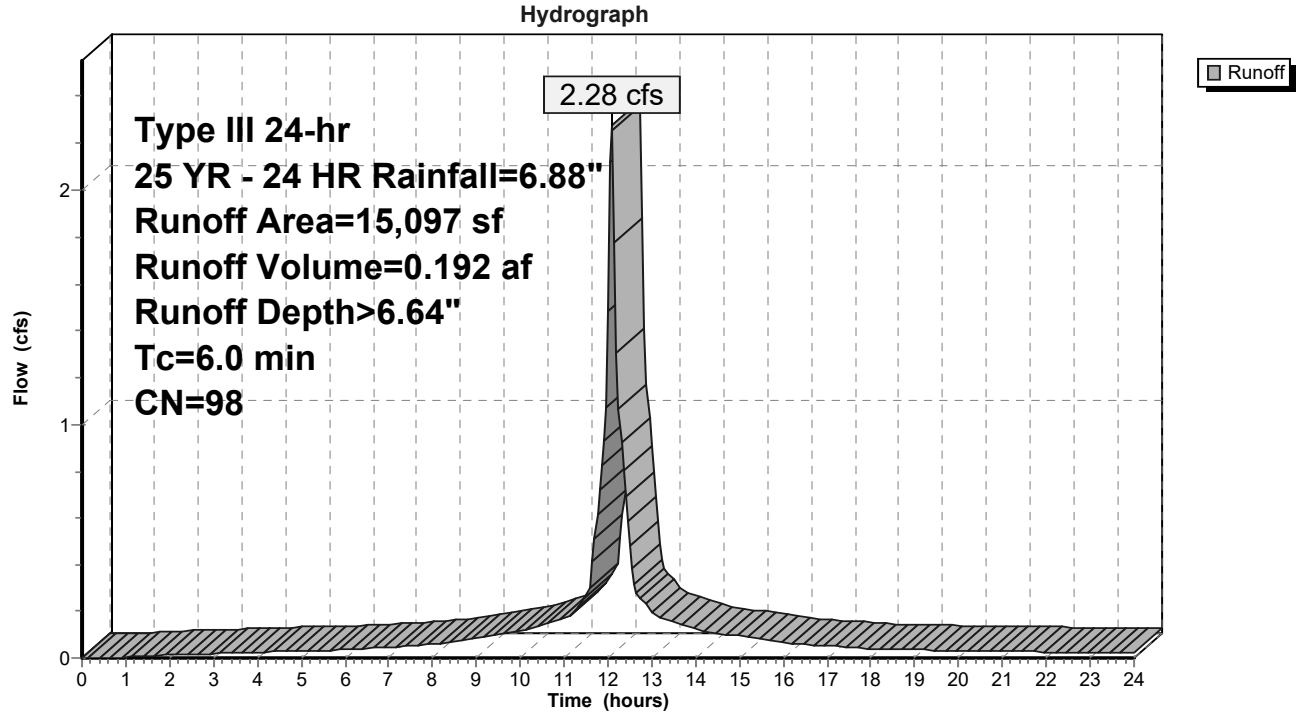
Runoff = 2.28 cfs @ 12.09 hrs, Volume= 0.192 af, Depth> 6.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR - 24 HR Rainfall=6.88"

Area (sf)	CN	Description
15,097	98	Roofs, HSG C
15,097		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct**

Subcatchment 17S: Lodging Building A



Summary for Subcatchment 18S: Res Building B

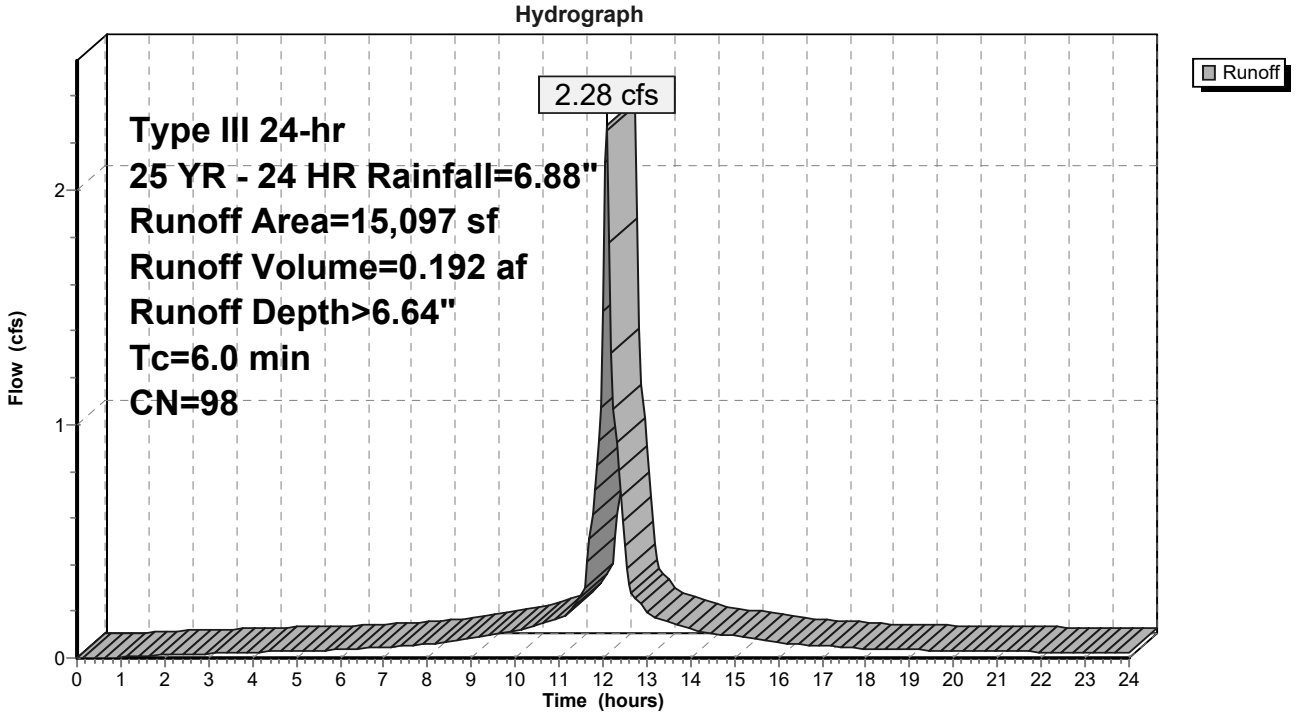
Runoff = 2.28 cfs @ 12.09 hrs, Volume= 0.192 af, Depth> 6.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR - 24 HR Rainfall=6.88"

Area (sf)	CN	Description
15,097	98	Roofs, HSG C
15,097		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct**

Subcatchment 18S: Res Building B



Summary for Subcatchment 19S: Res Building C

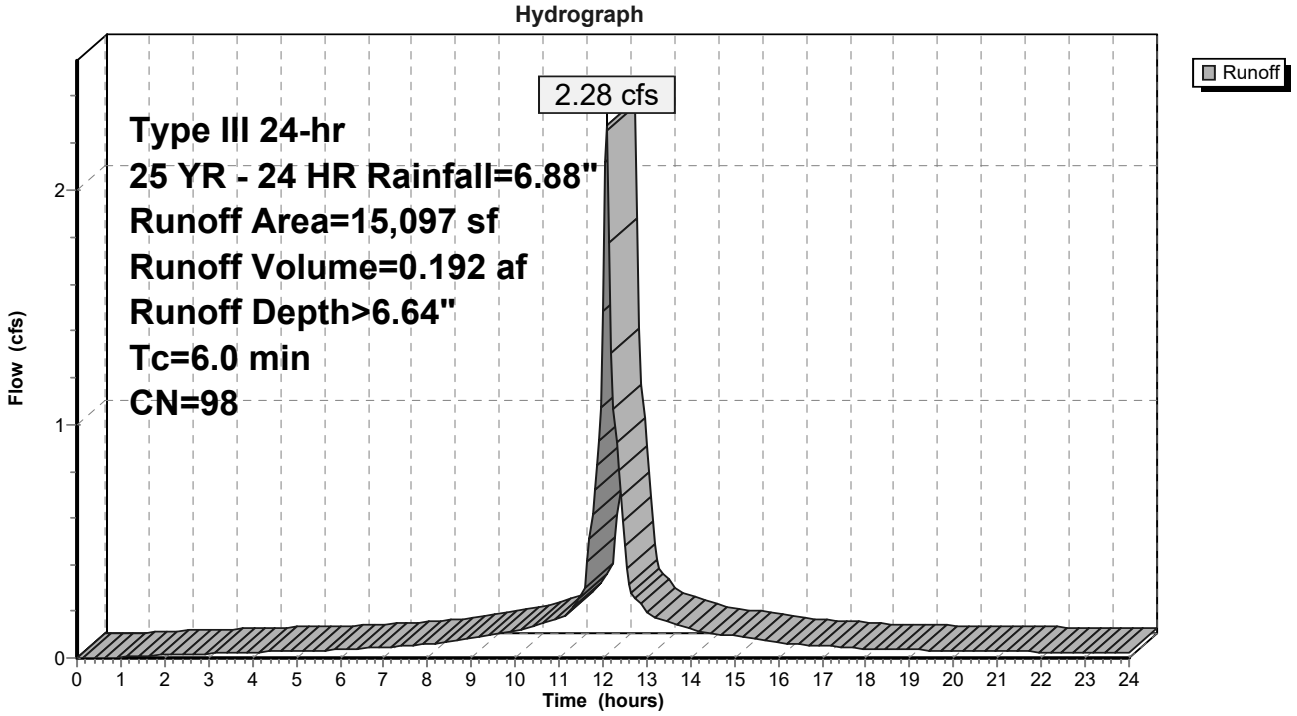
Runoff = 2.28 cfs @ 12.09 hrs, Volume= 0.192 af, Depth> 6.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR - 24 HR Rainfall=6.88"

Area (sf)	CN	Description
15,097	98	Roofs, HSG C
15,097		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct**

Subcatchment 19S: Res Building C



Summary for Subcatchment 20S: Inlet Sump

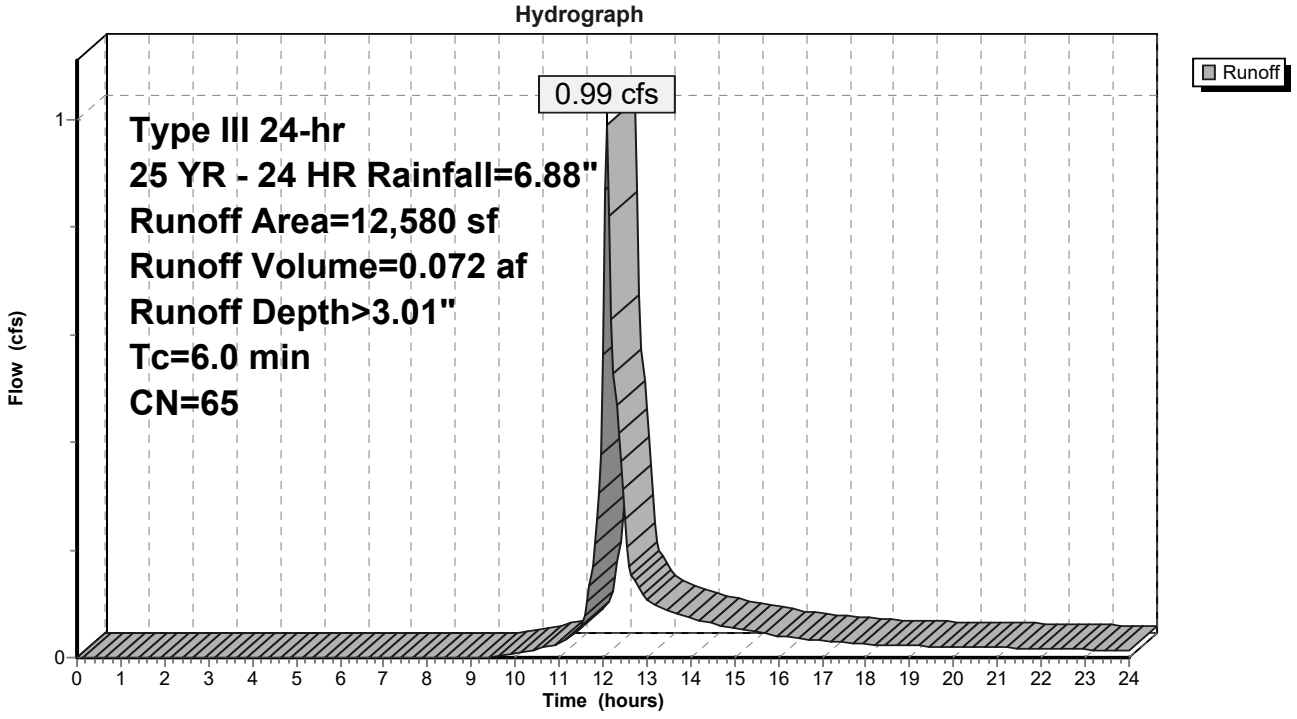
Runoff = 0.99 cfs @ 12.10 hrs, Volume= 0.072 af, Depth> 3.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR - 24 HR Rainfall=6.88"

Area (sf)	CN	Description
1,307	39	>75% Grass cover, Good, HSG A
1,658	30	Woods, Good, HSG A
8,863	74	>75% Grass cover, Good, HSG C
389	96	Gravel surface, HSG C
363	80	>75% Grass cover, Good, HSG D
12,580	65	Weighted Average
12,580		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct Entry**

Subcatchment 20S: Inlet Sump



Summary for Subcatchment 21S: Subcatchment #21

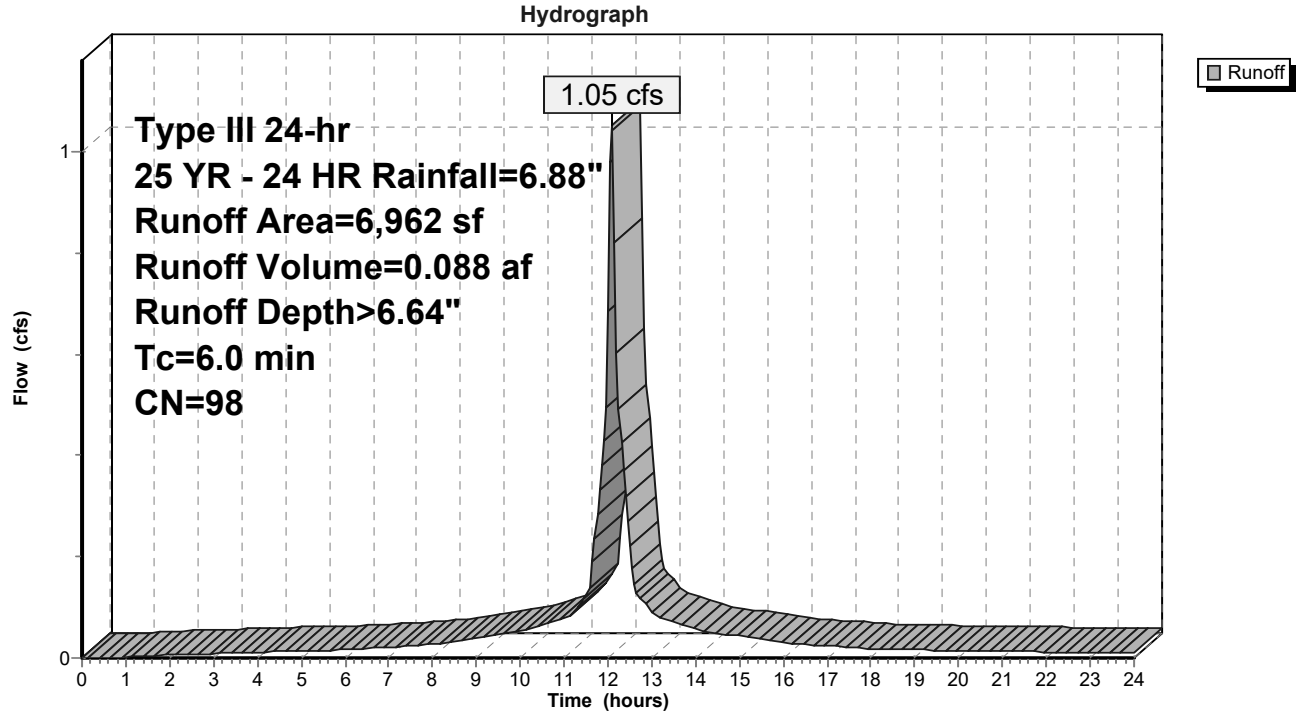
Runoff = 1.05 cfs @ 12.09 hrs, Volume= 0.088 af, Depth> 6.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR - 24 HR Rainfall=6.88"

Area (sf)	CN	Description
6,962	98	Paved parking, HSG A
6,962		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Segment #1**

Subcatchment 21S: Subcatchment #21



Summary for Subcatchment 32S: Subcatchment #32

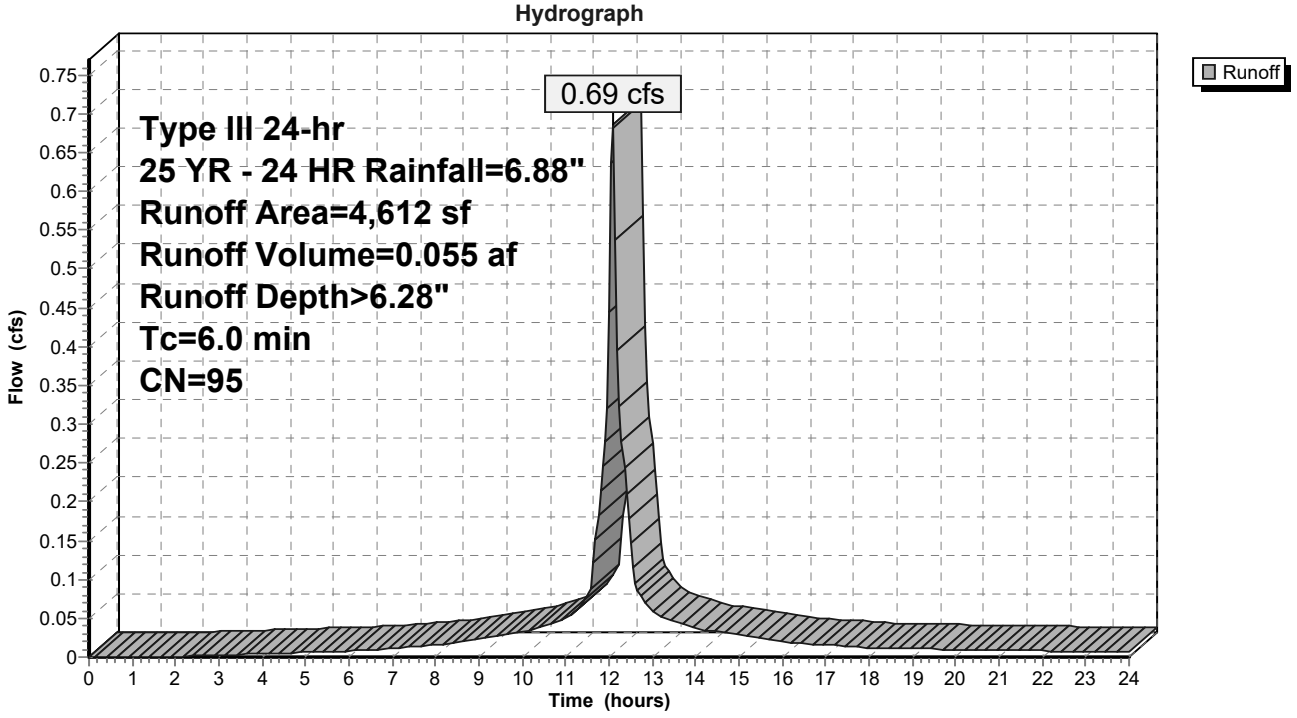
Runoff = 0.69 cfs @ 12.09 hrs, Volume= 0.055 af, Depth> 6.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR - 24 HR Rainfall=6.88"

Area (sf)	CN	Description
3,845	98	Paved parking, HSG C
605	74	>75% Grass cover, Good, HSG C
162	98	Roofs, HSG C
4,612	95	Weighted Average
605		13.12% Pervious Area
4,007		86.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct Entry**

Subcatchment 32S: Subcatchment #32



Summary for Subcatchment 33S: Subcatchment #33

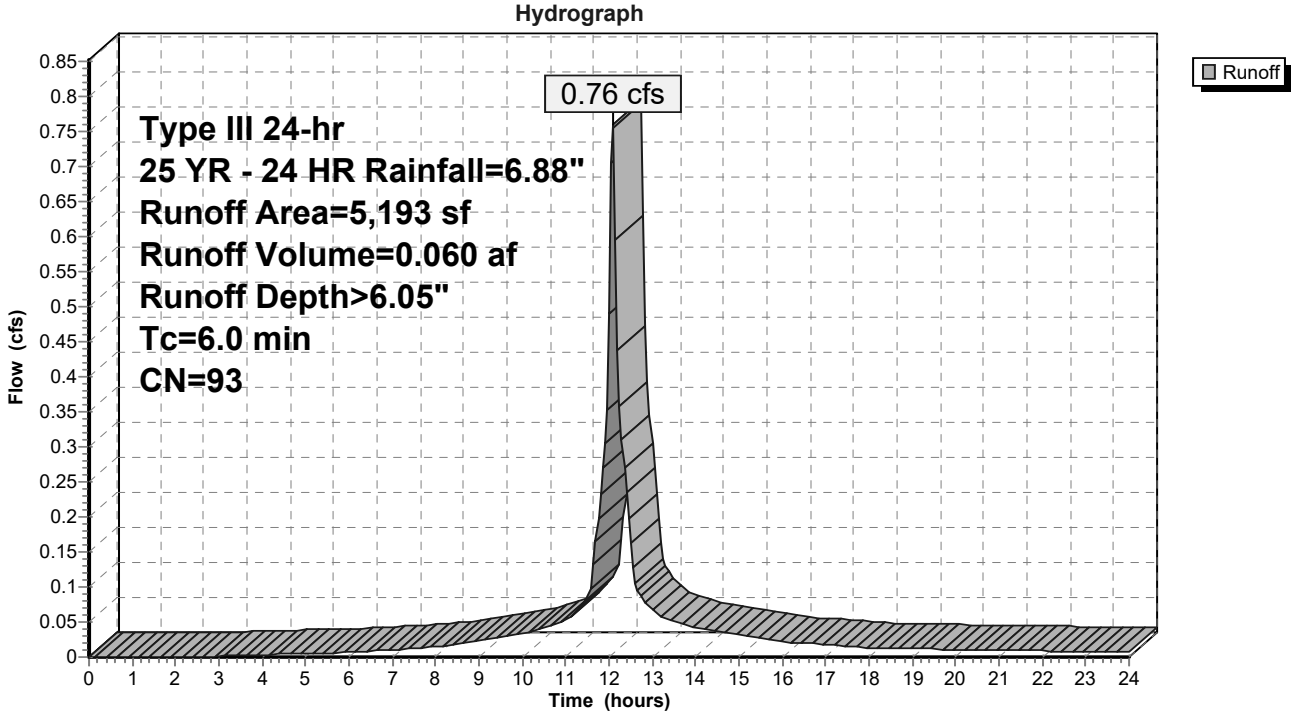
Runoff = 0.76 cfs @ 12.09 hrs, Volume= 0.060 af, Depth> 6.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR - 24 HR Rainfall=6.88"

Area (sf)	CN	Description
3,609	98	Paved parking, HSG C
1,185	74	>75% Grass cover, Good, HSG C
399	98	Roofs, HSG C
5,193	93	Weighted Average
1,185		22.82% Pervious Area
4,008		77.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct Entry**

Subcatchment 33S: Subcatchment #33



Summary for Subcatchment 34S: Subcatchment #34

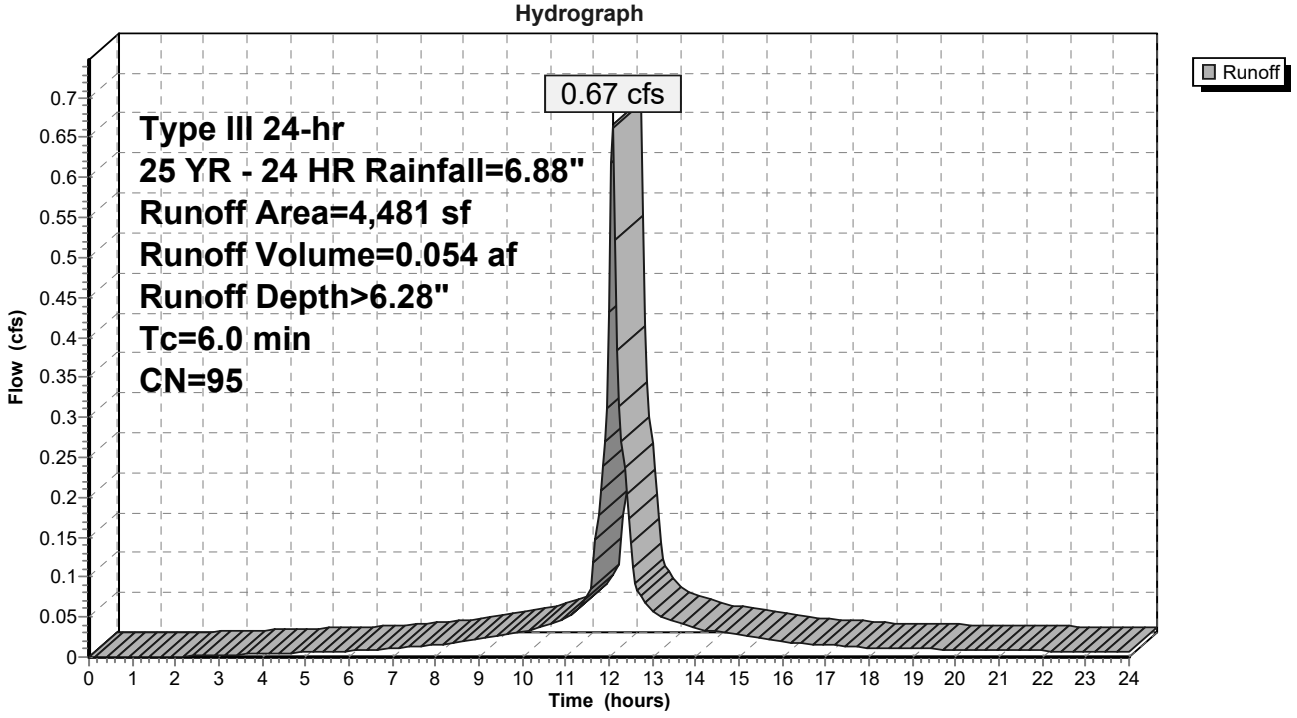
Runoff = 0.67 cfs @ 12.09 hrs, Volume= 0.054 af, Depth> 6.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR - 24 HR Rainfall=6.88"

Area (sf)	CN	Description
3,439	98	Paved parking, HSG C
626	74	>75% Grass cover, Good, HSG C
416	98	Roofs, HSG C
4,481	95	Weighted Average
626		13.97% Pervious Area
3,855		86.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct Entry**

Subcatchment 34S: Subcatchment #34



Summary for Subcatchment 35S: Subcatchment #35

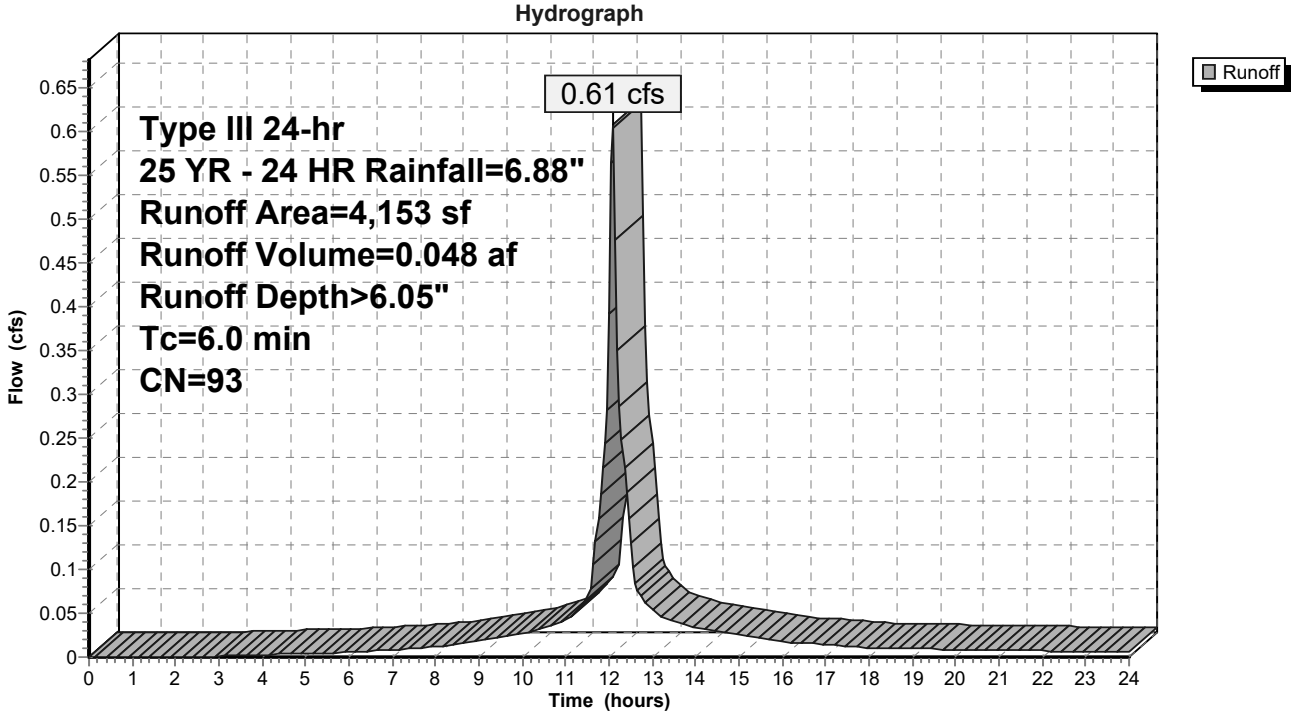
Runoff = 0.61 cfs @ 12.09 hrs, Volume= 0.048 af, Depth> 6.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR - 24 HR Rainfall=6.88"

Area (sf)	CN	Description
2,963	98	Paved parking, HSG C
890	74	>75% Grass cover, Good, HSG C
300	98	Roofs, HSG C
4,153	93	Weighted Average
890		21.43% Pervious Area
3,263		78.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct Entry**

Subcatchment 35S: Subcatchment #35



Summary for Subcatchment 36S: Subcatchment #36

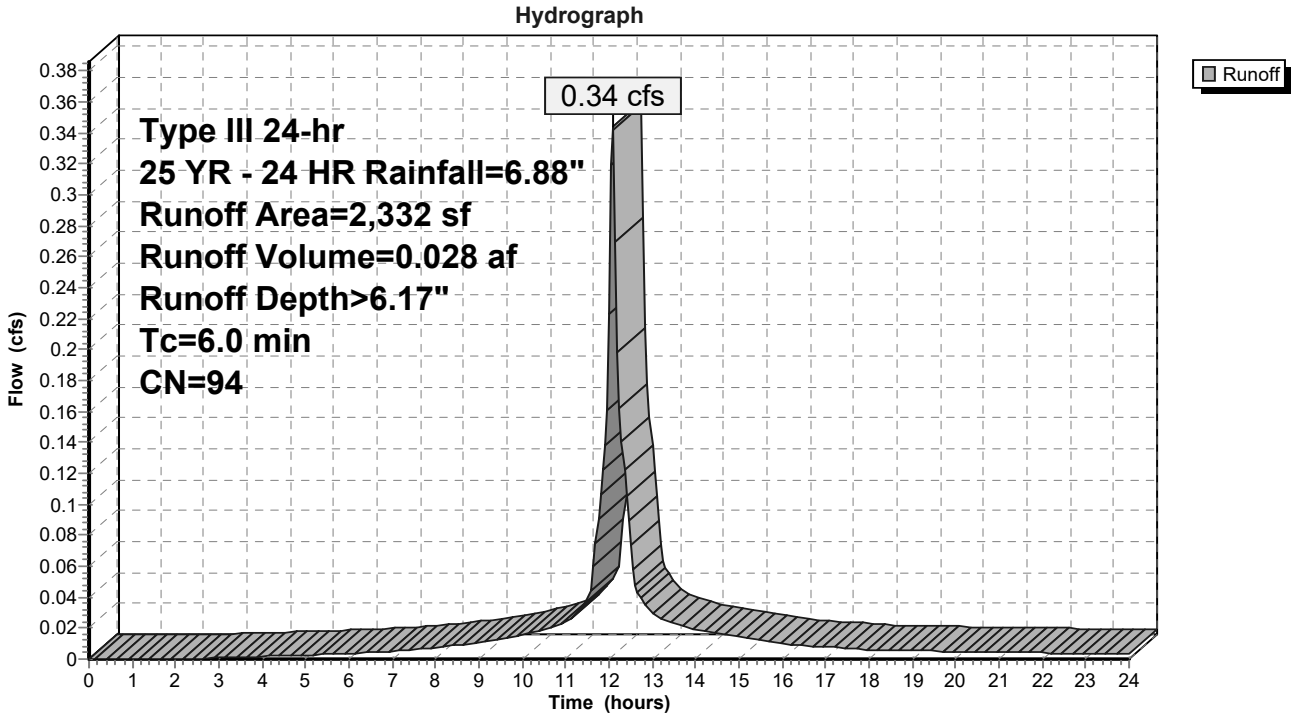
Runoff = 0.34 cfs @ 12.09 hrs, Volume= 0.028 af, Depth> 6.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR - 24 HR Rainfall=6.88"

Area (sf)	CN	Description
1,795	98	Paved parking, HSG C
412	74	>75% Grass cover, Good, HSG C
125	98	Roofs, HSG C
2,332	94	Weighted Average
412		17.67% Pervious Area
1,920		82.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct Entry**

Subcatchment 36S: Subcatchment #36



Summary for Subcatchment 37S: Subcatchment #37

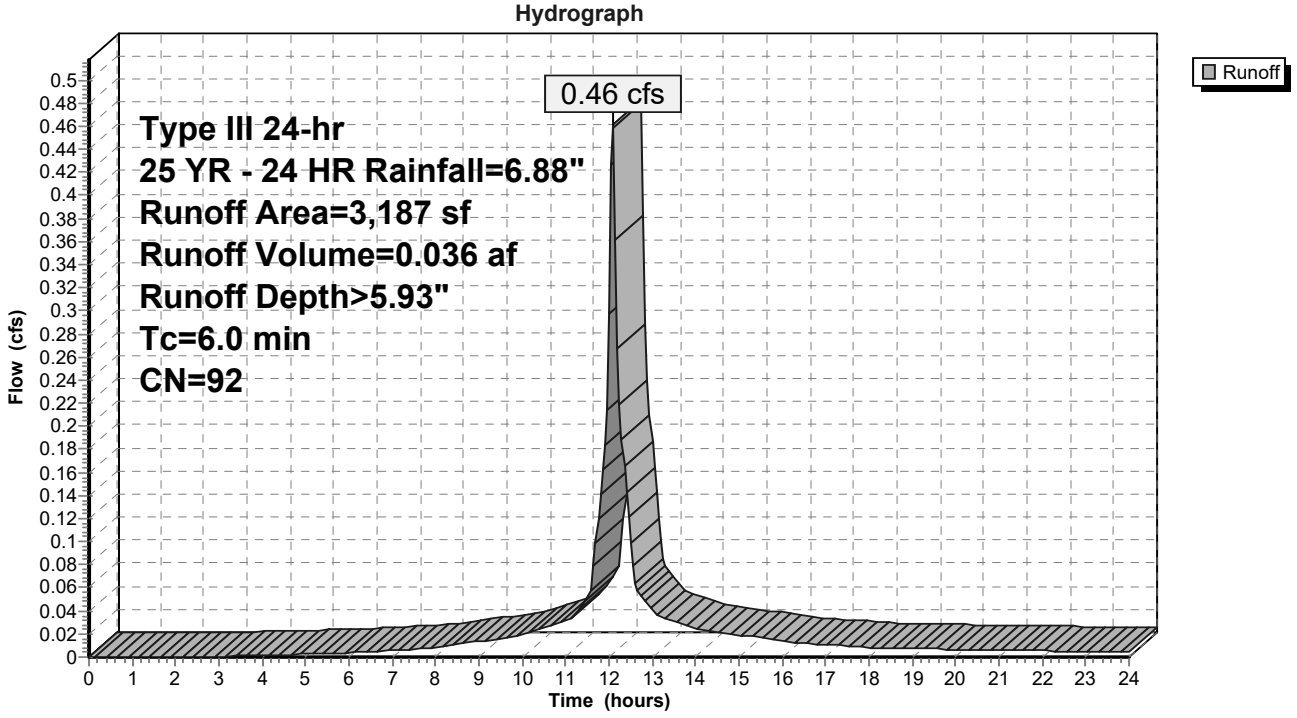
Runoff = 0.46 cfs @ 12.09 hrs, Volume= 0.036 af, Depth> 5.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR - 24 HR Rainfall=6.88"

Area (sf)	CN	Description
2,283	98	Paved parking, HSG C
808	74	>75% Grass cover, Good, HSG C
96	98	Roofs, HSG C
3,187	92	Weighted Average
808		25.35% Pervious Area
2,379		74.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct Entry**

Subcatchment 37S: Subcatchment #37



Summary for Subcatchment 38S: Subcatchment #38

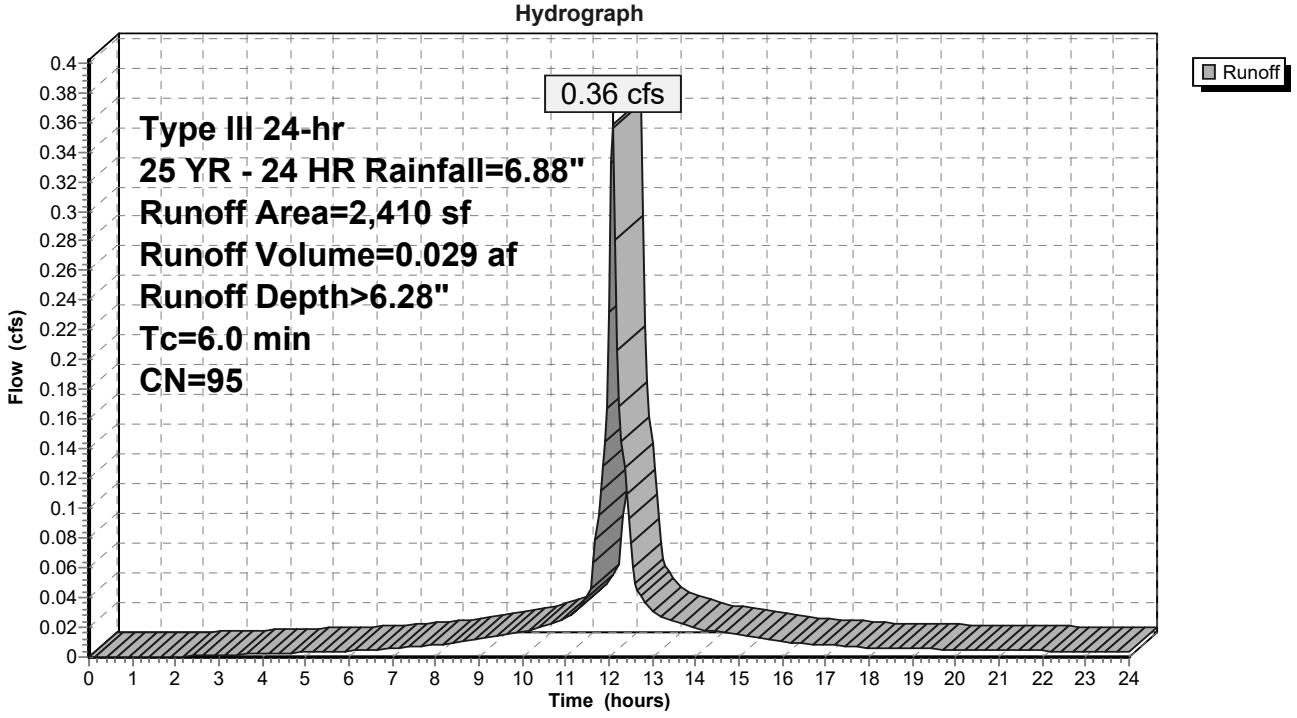
Runoff = 0.36 cfs @ 12.09 hrs, Volume= 0.029 af, Depth> 6.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR - 24 HR Rainfall=6.88"

Area (sf)	CN	Description
1,999	98	Paved parking, HSG C
252	74	>75% Grass cover, Good, HSG C
159	98	Roofs, HSG C
2,410	95	Weighted Average
252		10.46% Pervious Area
2,158		89.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct Entry**

Subcatchment 38S: Subcatchment #38



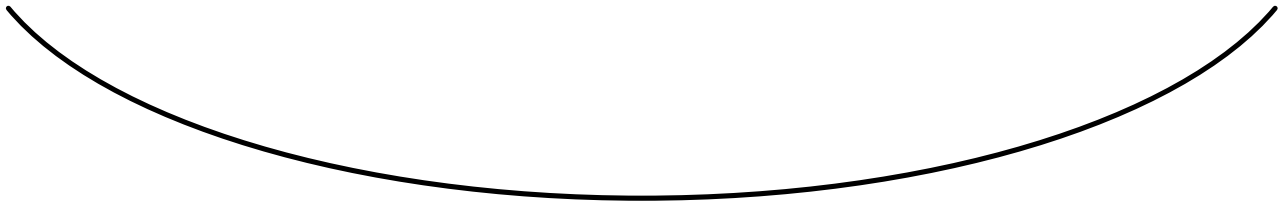
Summary for Reach 15AR: Overland flow

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

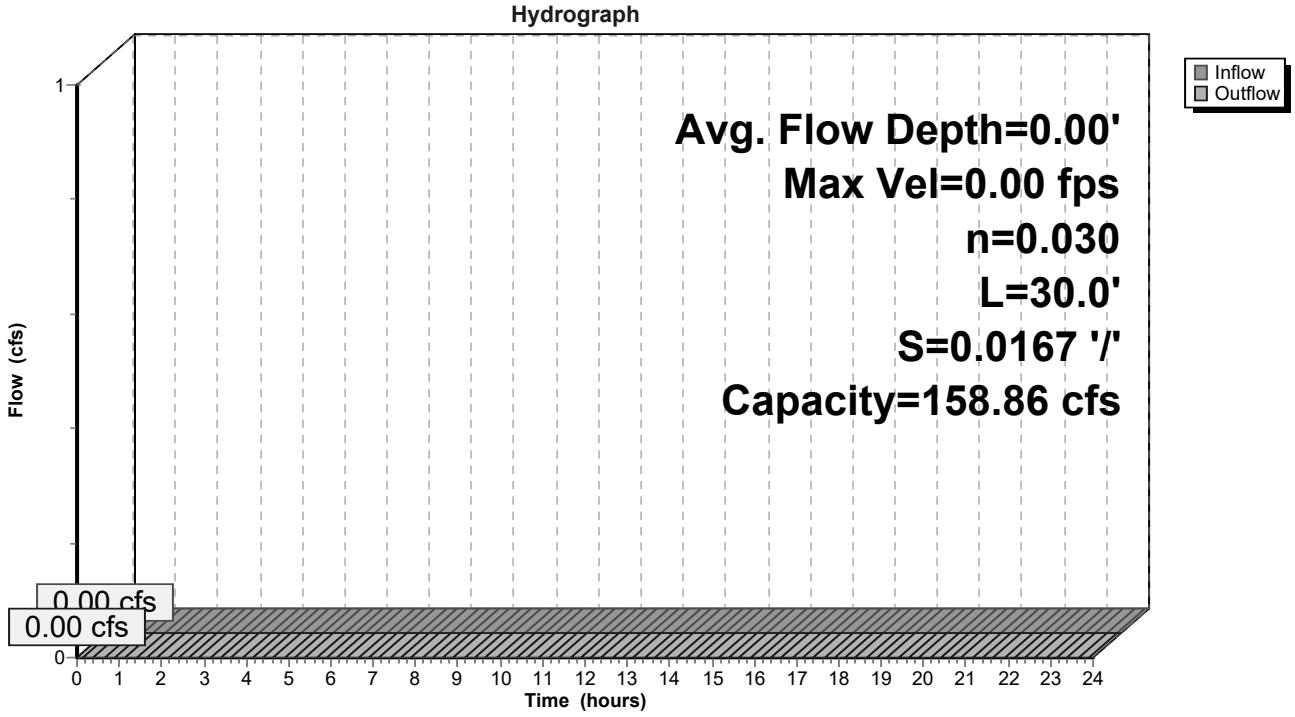
Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.50' Flow Area= 25.0 sf, Capacity= 158.86 cfs

25.00' x 1.50' deep Parabolic Channel, n= 0.030 Earth, dense weeds
Length= 30.0' Slope= 0.0167 '/'
Inlet Invert= 92.50', Outlet Invert= 92.00'



‡

Reach 15AR: Overland flow



Summary for Reach 15R: Swale

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

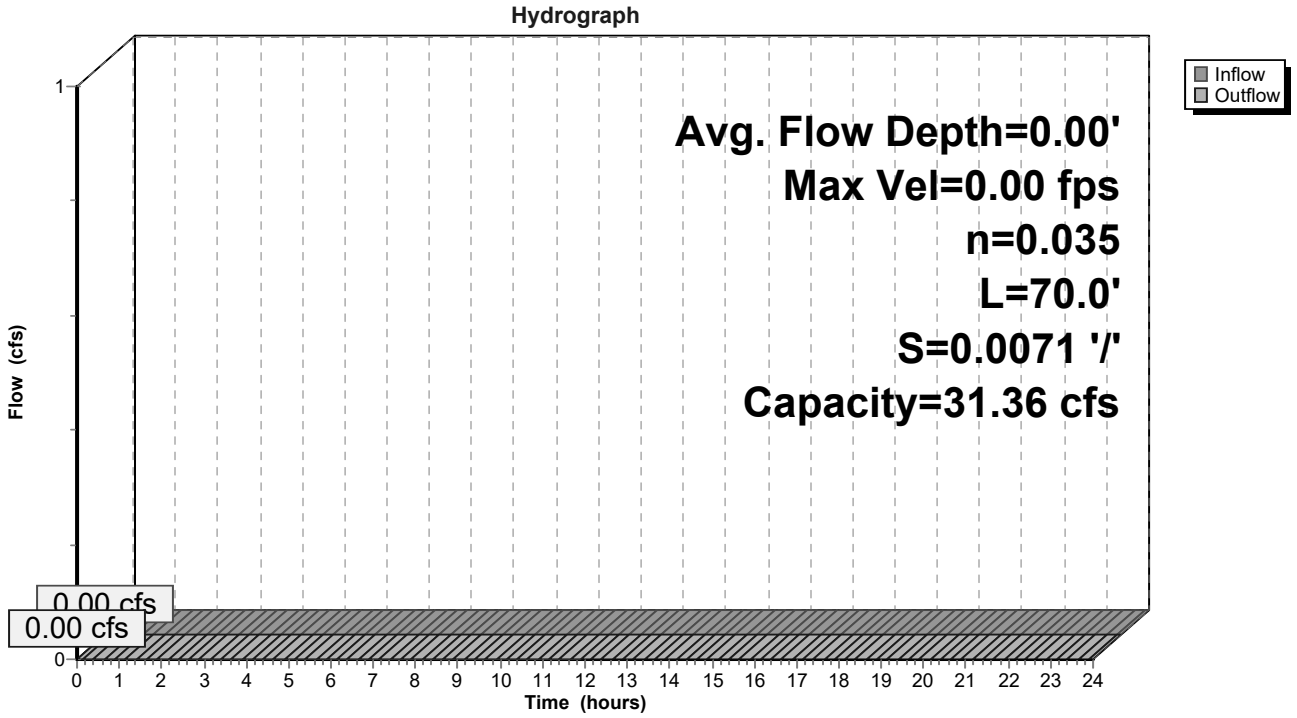
Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.50' Flow Area= 9.8 sf, Capacity= 31.36 cfs

2.00' x 1.50' deep channel, n= 0.035 Riprap, 6-inch
Side Slope Z-value= 3.0 '/' Top Width= 11.00'
Length= 70.0' Slope= 0.0071 '/'
Inlet Invert= 93.00', Outlet Invert= 92.50'



‡

Reach 15R: Swale



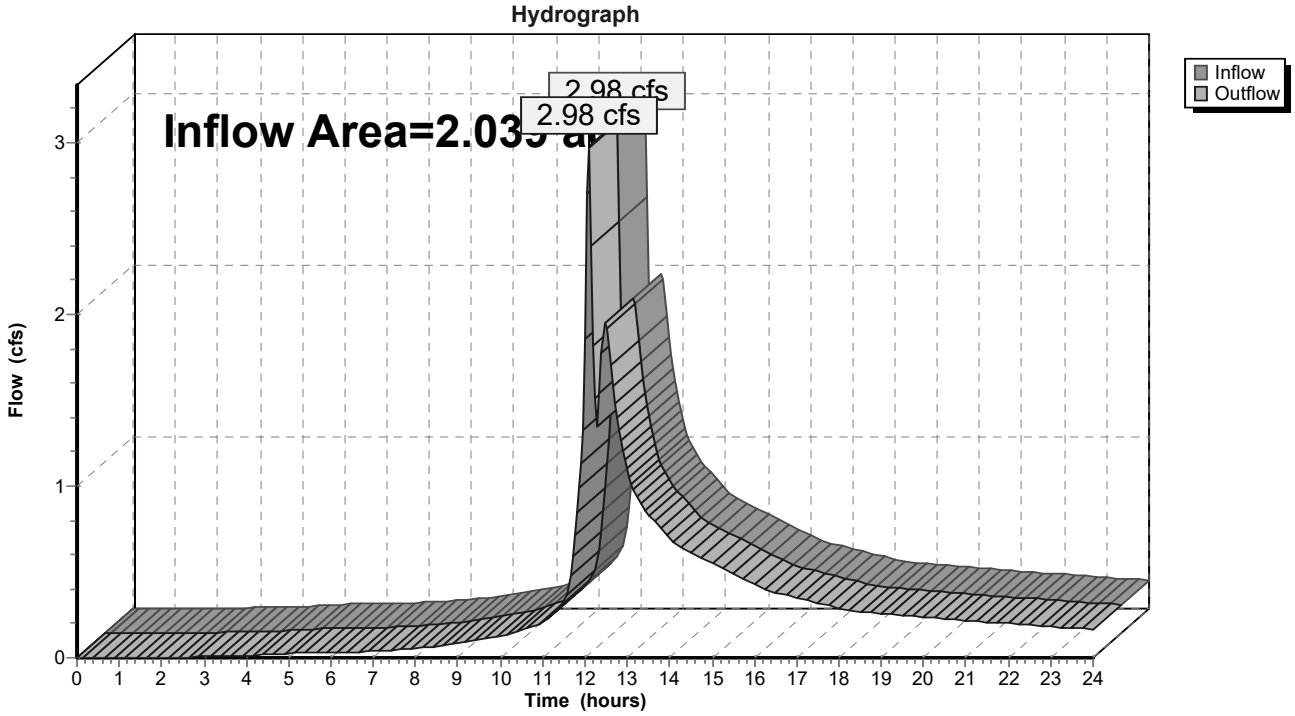
Summary for Reach 100R: Final Reach 100

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 2.039 ac, 50.25% Impervious, Inflow Depth > 3.25" for 25 YR - 24 HR event
Inflow = 2.98 cfs @ 12.09 hrs, Volume= 0.552 af
Outflow = 2.98 cfs @ 12.09 hrs, Volume= 0.552 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 100R: Final Reach 100



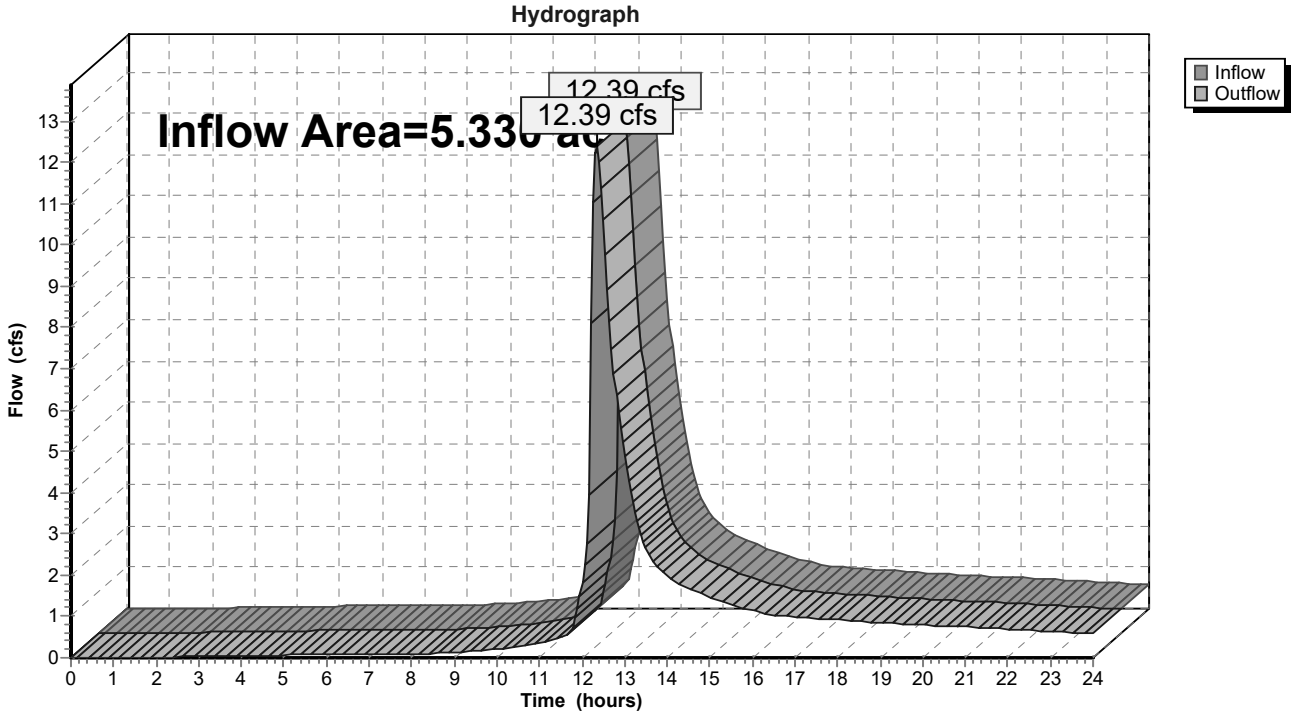
Summary for Reach 200R: Final Reach 200

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 5.330 ac, 47.60% Impervious, Inflow Depth > 4.03" for 25 YR - 24 HR event
Inflow = 12.39 cfs @ 12.34 hrs, Volume= 1.789 af
Outflow = 12.39 cfs @ 12.34 hrs, Volume= 1.789 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 200R: Final Reach 200



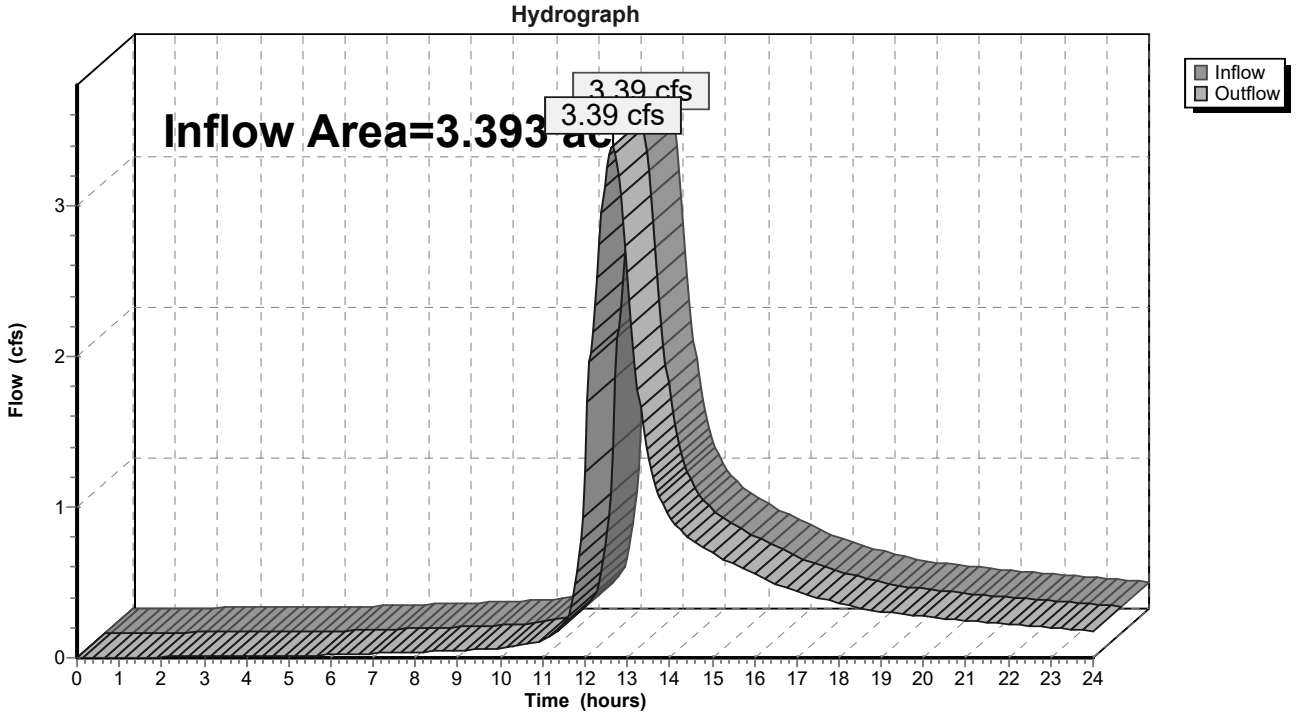
Summary for Reach 400R: Final Reach 400

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 3.393 ac, 34.40% Impervious, Inflow Depth > 2.54" for 25 YR - 24 HR event
Inflow = 3.39 cfs @ 12.64 hrs, Volume= 0.718 af
Outflow = 3.39 cfs @ 12.64 hrs, Volume= 0.718 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 400R: Final Reach 400



Summary for Pond 4P: Pond 4

Inflow Area = 3.233 ac, 31.15% Impervious, Inflow Depth > 2.35" for 25 YR - 24 HR event
Inflow = 3.61 cfs @ 12.50 hrs, Volume= 0.634 af
Outflow = 3.26 cfs @ 12.65 hrs, Volume= 0.629 af, Atten= 10%, Lag= 8.9 min
Primary = 3.26 cfs @ 12.65 hrs, Volume= 0.629 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 90.99' @ 12.66 hrs Surf.Area= 1,974 sf Storage= 2,014 cf
Flood Elev= 92.50' Surf.Area= 14,979 sf Storage= 10,779 cf

Plug-Flow detention time= 13.8 min calculated for 0.628 af (99% of inflow)
Center-of-Mass det. time= 9.9 min (906.1 - 896.2)

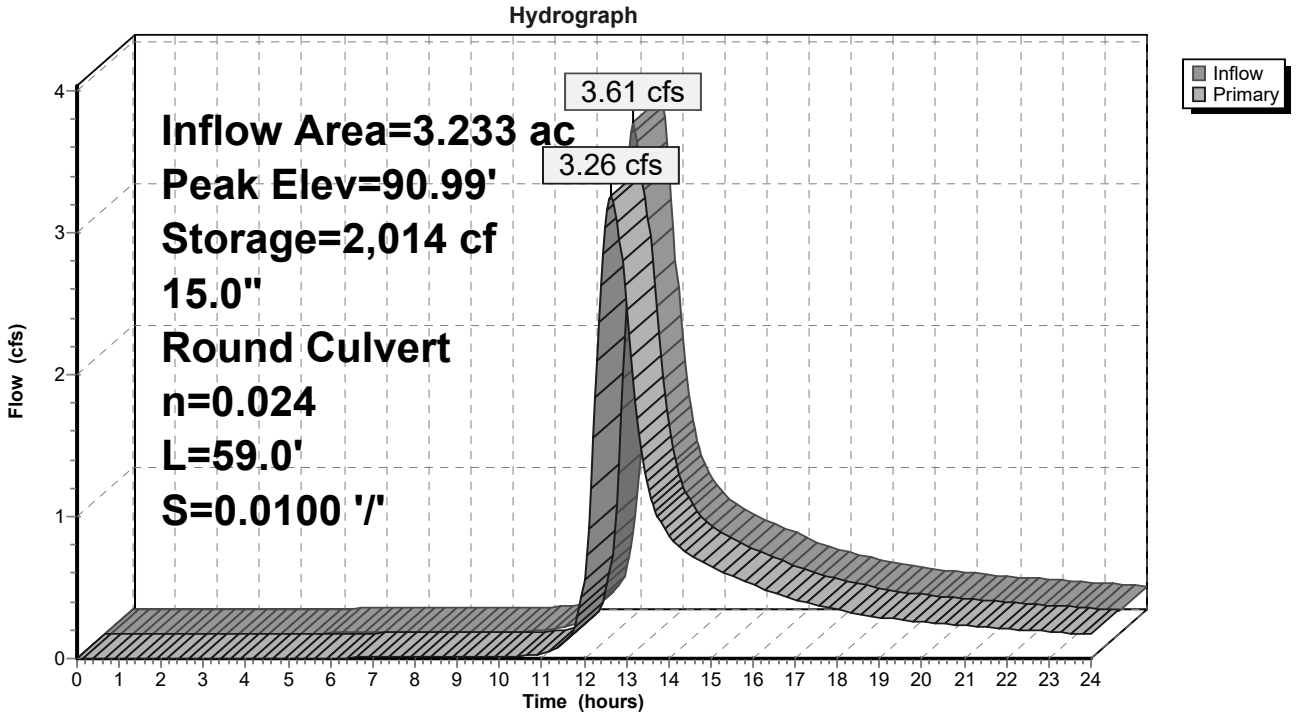
Volume	Invert	Avail.Storage	Storage Description
#1	89.50'	21,457 cf	**Open Water Storage (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
89.50	431	86.9	0	0	431
90.00	1,297	195.8	413	413	2,882
91.00	1,984	265.4	1,628	2,041	5,447
92.00	5,795	515.0	3,723	5,764	20,952
93.00	28,445	768.7	15,693	21,457	46,877

Device	Routing	Invert	Outlet Devices
#1	Primary	89.51'	**15.0" Round 15" CMP** L= 59.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 89.51' / 88.92' S= 0.0100 '/' Cc= 0.900 n= 0.024, Flow Area= 1.23 sf

Primary OutFlow Max=3.25 cfs @ 12.65 hrs HW=90.99' TW=90.34' (Dynamic Tailwater)
1=15" CMP (Outlet Controls 3.25 cfs @ 2.83 fps)

Pond 4P: Pond 4



Summary for Pond 16P: Inlet Sump

Inflow Area = 0.477 ac, 53.27% Impervious, Inflow Depth > 5.36" for 25 YR - 24 HR event
Inflow = 2.82 cfs @ 12.09 hrs, Volume= 0.213 af
Outflow = 1.60 cfs @ 12.20 hrs, Volume= 0.211 af, Atten= 43%, Lag= 6.5 min
Primary = 1.60 cfs @ 12.20 hrs, Volume= 0.211 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 94.68' @ 12.22 hrs Surf.Area= 2,351 sf Storage= 1,335 cf
Flood Elev= 95.50' Surf.Area= 4,472 sf Storage= 4,101 cf

Plug-Flow detention time= 33.3 min calculated for 0.211 af (99% of inflow)
Center-of-Mass det. time= 28.6 min (818.1 - 789.5)

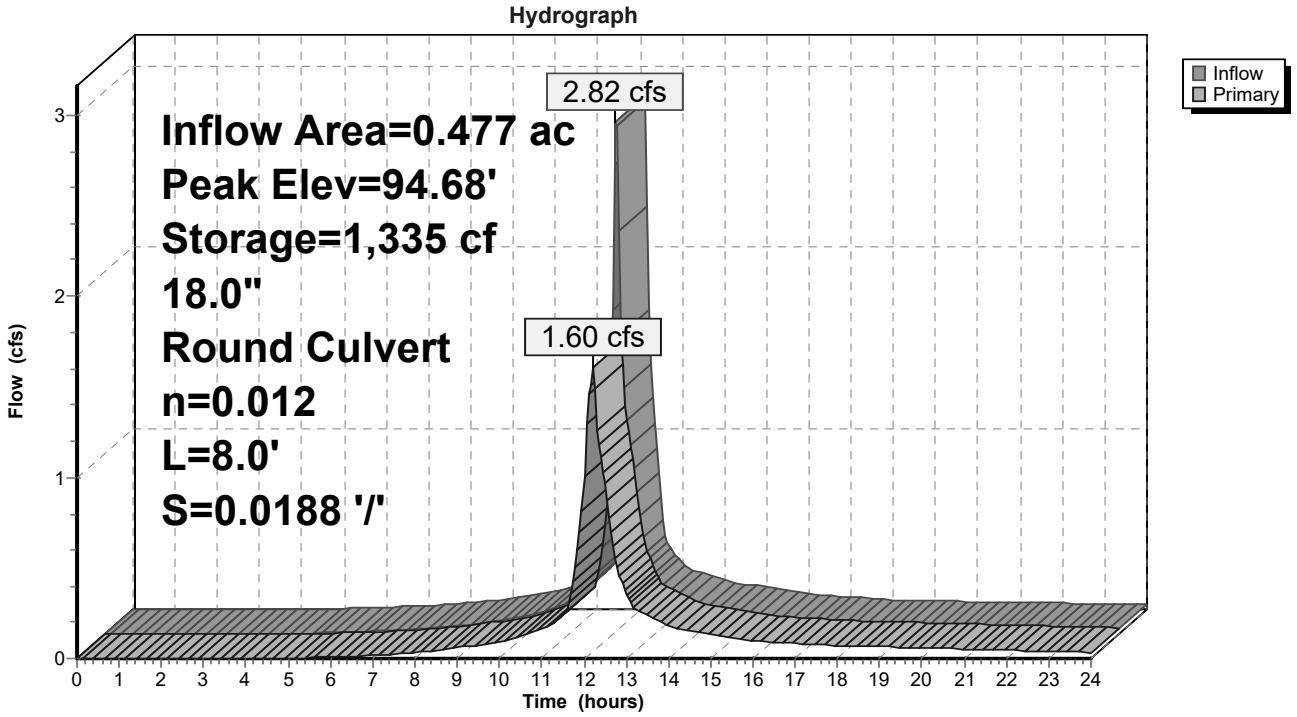
Volume	Invert	Avail.Storage	Storage Description
#1	93.75'	4,101 cf	**Ponding Area (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
93.75	472	118.0	0	0	472
94.00	1,106	260.5	192	192	4,764
95.00	3,111	675.0	2,024	2,216	35,625
95.50	4,472	781.2	1,885	4,101	47,937

Device	Routing	Invert	Outlet Devices
#1	Primary	93.75'	**18.0" Round 18" RCP** L= 8.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 93.75' / 93.60' S= 0.0188 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=1.51 cfs @ 12.20 hrs HW=94.67' TW=94.58' (Dynamic Tailwater)
↑—**1=18" RCP** (Outlet Controls 1.51 cfs @ 1.89 fps)

Pond 16P: Inlet Sump



Summary for Pond 20P: Nyloplast Basin

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=14)

Inflow Area = 0.289 ac, 0.00% Impervious, Inflow Depth > 3.01" for 25 YR - 24 HR event
Inflow = 0.99 cfs @ 12.10 hrs, Volume= 0.072 af
Outflow = 0.85 cfs @ 12.09 hrs, Volume= 0.072 af, Atten= 14%, Lag= 0.0 min
Primary = 0.85 cfs @ 12.09 hrs, Volume= 0.072 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 91.82' @ 12.15 hrs Surf.Area= 454 sf Storage= 33 cf
Flood Elev= 93.00' Surf.Area= 1,367 sf Storage= 1,287 cf

Plug-Flow detention time= 0.4 min calculated for 0.072 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (842.5 - 842.2)

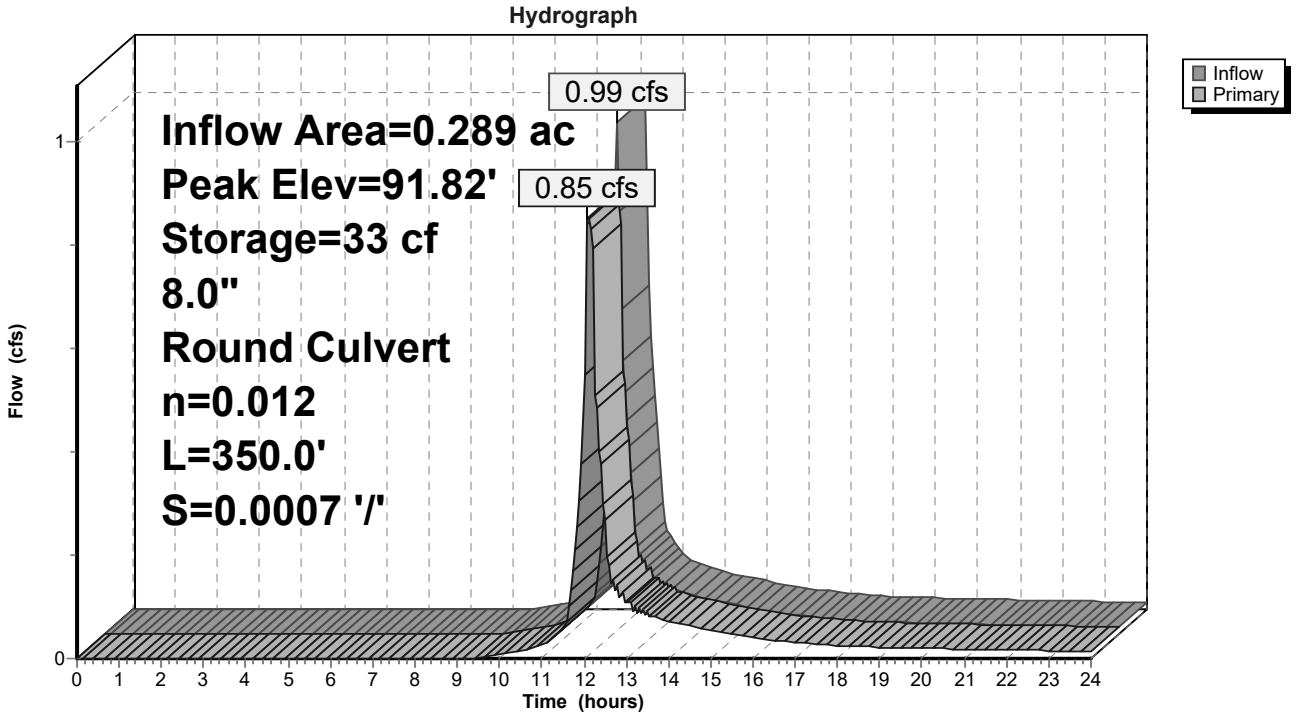
Volume	Invert	Avail.Storage	Storage Description
#1	91.75'	1,281 cf	**Ponding Area (Irregular)**Listed below (Recalc)
#2	89.75'	6 cf	**2.00'D x 2.00'H 2' Structure**
		1,287 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
91.75	341	90.1	0	0	341
92.00	814	151.8	140	140	1,529
92.50	1,199	181.3	500	640	2,315
93.00	1,364	207.9	640	1,281	3,145

Device	Routing	Invert	Outlet Devices
#1	Primary	89.75'	**8.0" Round 8" HDPE N-12** L= 350.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 89.75' / 89.50' S= 0.0007 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Primary OutFlow Max=0.83 cfs @ 12.09 hrs HW=91.78' TW=90.26' (Dynamic Tailwater)
↑**1=8" HDPE N-12** (Outlet Controls 0.83 cfs @ 2.37 fps)

Pond 20P: Nyloplast Basin



Summary for Pond 101P: Gravel Wetland #101

[80] Warning: Exceeded Pond C08P by 0.06' @ 12.20 hrs (0.45 cfs 0.114 af)

Inflow Area = 1.483 ac, 58.80% Impervious, Inflow Depth > 4.92" for 25 YR - 24 HR event
Inflow = 6.63 cfs @ 12.09 hrs, Volume= 0.608 af
Outflow = 1.33 cfs @ 12.54 hrs, Volume= 0.340 af, Atten= 80%, Lag= 27.1 min
Primary = 0.08 cfs @ 12.54 hrs, Volume= 0.109 af
Secondary = 1.12 cfs @ 12.54 hrs, Volume= 0.227 af
Tertiary = 0.13 cfs @ 12.54 hrs, Volume= 0.004 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 94.03' @ 12.54 hrs Surf.Area= 29,677 sf Storage= 12,605 cf
Flood Elev= 94.50' Surf.Area= 33,501 sf Storage= 19,418 cf

Plug-Flow detention time= 254.6 min calculated for 0.340 af (56% of inflow)
Center-of-Mass det. time= 115.3 min (934.4 - 819.1)

Volume	Invert	Avail.Storage	Storage Description
#1	91.92'	25 cf	**4.00'D x 1.98'H Outlet Structure**
#2	92.50'	370 cf	**Sediment Forebay #1 (Irregular)**Listed below (Recalc)
#3	92.50'	3,249 cf	**Sediment Forebay #2 (Irregular)**Listed below (Recalc)
#4	92.25'	2,154 cf	**Cell #1 (Irregular)** Listed below (Recalc)
#5	92.25'	2,131 cf	**Cell #2 (Irregular)** Listed below (Recalc)
#6	93.25'	4,294 cf	**Cell Open Water Storage (Irregular)**Listed below (Recalc)
#7	94.00'	7,194 cf	**Open Water Storage (Irregular)**Listed below (Recalc)
		19,418 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
92.50	79	45.1	0	0	79
93.00	199	61.4	67	67	220
94.00	421	85.4	303	370	510

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
92.50	82	38.6	0	0	82
93.00	595	166.0	150	150	2,157
93.25	2,096	217.7	317	467	3,736
94.00	5,605	521.1	2,782	3,249	21,576

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
92.25	1,400	183.9	0	0	1,400
92.50	2,122	256.6	437	437	3,949
93.00	2,345	265.0	1,116	1,553	4,321
93.25	2,462	267.1	601	2,154	4,432

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
92.25	1,279	177.2	0	0	1,279
92.50	2,037	252.7	411	411	3,862
93.00	2,374	258.9	1,102	1,513	4,145
93.25	2,572	262.9	618	2,131	4,324

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
93.25	5,490	320.3	0	0	5,490
94.00	5,965	332.3	4,294	4,294	6,160

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
94.00	12,409	830.5	0	0	12,409
94.50	16,463	1,069.1	7,194	7,194	48,480

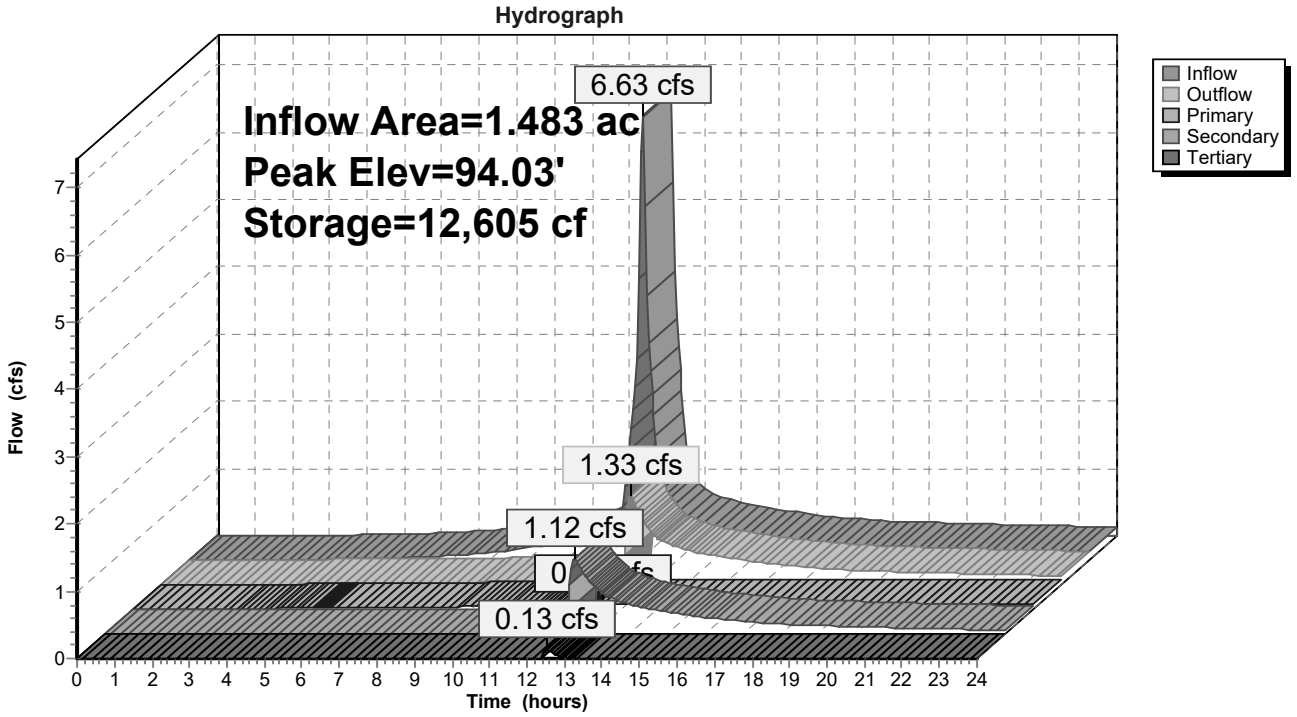
Device	Routing	Invert	Outlet Devices
#1	Primary	91.92'	**6.0" Round 6" HDPE N-12** L= 17.0' Ke= 0.500 Inlet / Outlet Invert= 91.92' / 91.75' S= 0.0100 '/' Cc= 0.900 n= 0.010 Concrete pipe, straight & clean, Flow Area= 0.20 sf
#2	Secondary	91.92'	**12.0" Round 12" RCP** L= 16.0' Ke= 0.500 Inlet / Outlet Invert= 91.92' / 91.75' S= 0.0106 '/' Cc= 0.900 n= 0.010 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#3	Device 1	91.92'	**1.5" Vert. 1.5" Orifice Goose Neck** C= 0.600
#4	Device 2	93.94'	**48.0" Horiz. 4' Structure** C= 0.600 Limited to weir flow at low heads
#5	Tertiary	94.00'	**10.0' long x 7.0' breadth 10' Emergency Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78

Primary OutFlow Max=0.08 cfs @ 12.54 hrs HW=94.03' TW=0.00' (Dynamic Tailwater)
↑└─**1=6" HDPE N-12** (Passes 0.08 cfs of 1.29 cfs potential flow)
  ↑└─**3=1.5" Orifice Goose Neck** (Orifice Controls 0.08 cfs @ 6.89 fps)

Secondary OutFlow Max=1.11 cfs @ 12.54 hrs HW=94.03' TW=0.00' (Dynamic Tailwater)
↑└─**2=12" RCP** (Passes 1.11 cfs of 4.80 cfs potential flow)
  ↑└─**4=4' Structure** (Weir Controls 1.11 cfs @ 0.98 fps)

Tertiary OutFlow Max=0.13 cfs @ 12.54 hrs HW=94.03' TW=0.00' (Dynamic Tailwater)
↑└─**5=10' Emergency Spillway** (Weir Controls 0.13 cfs @ 0.42 fps)

Pond 101P: Gravel Wetland #101



Summary for Pond 102P: StormTech SC740 #102

Inflow Area = 0.347 ac,100.00% Impervious, Inflow Depth > 6.64" for 25 YR - 24 HR event
Inflow = 2.28 cfs @ 12.09 hrs, Volume= 0.192 af
Outflow = 0.08 cfs @ 16.03 hrs, Volume= 0.099 af, Atten= 96%, Lag= 236.4 min
Primary = 0.08 cfs @ 16.03 hrs, Volume= 0.099 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 94.84' @ 15.37 hrs Surf.Area= 3,807 sf Storage= 5,368 cf
Flood Elev= 96.25' Surf.Area= 3,807 sf Storage= 8,073 cf

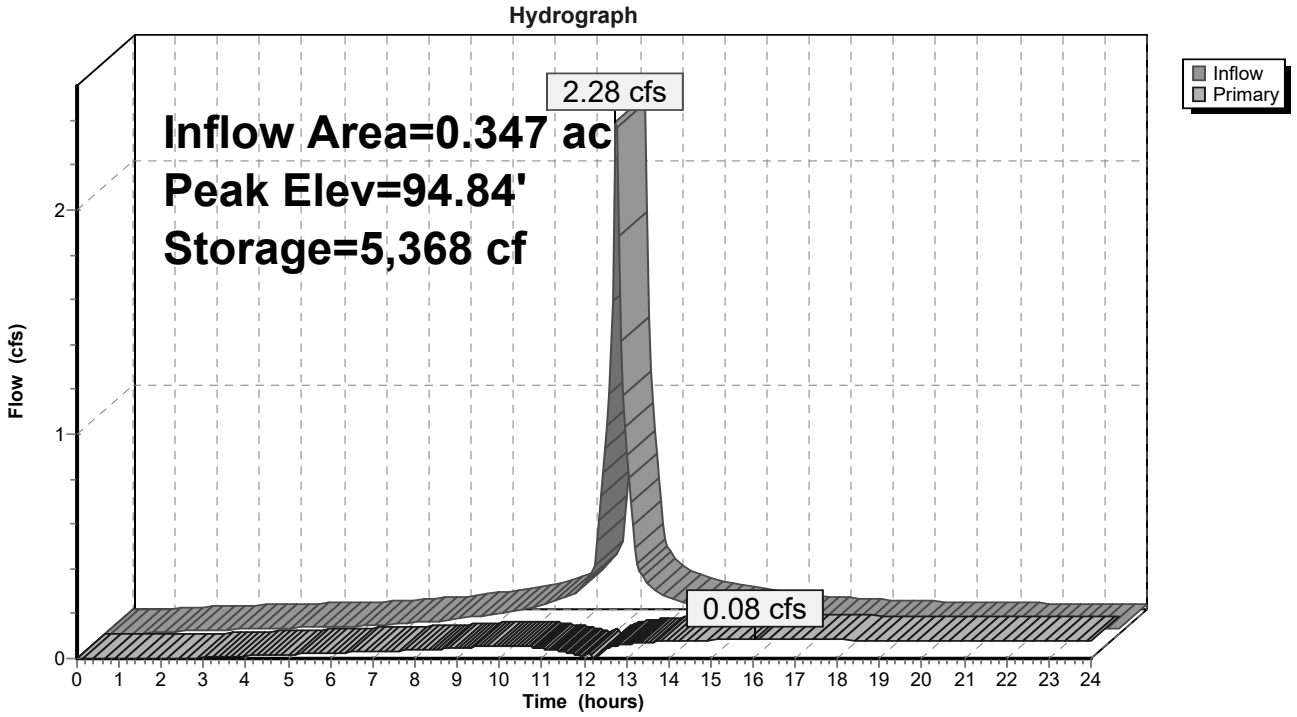
Plug-Flow detention time= 342.1 min calculated for 0.099 af (52% of inflow)
Center-of-Mass det. time= 213.9 min (956.7 - 742.8)

Volume	Invert	Avail.Storage	Storage Description
#1	92.75'	3,502 cf	**34.75'W x 109.00'L x 3.50'H Stone** 13,257 cf Overall - 4,502 cf Embedded = 8,755 cf x 40.0% Voids
#2	93.25'	4,502 cf	**ADS_StormTech SC-740 +Cap** x 98 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
#3	92.75'	98 cf	**5.00'D x 5.00'H Outlet Structure**
		8,102 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	92.75'	**18.0" Round 18" HDPE N-12** L= 33.7' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 92.75' / 92.50' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	92.75'	**2.0" Vert. 3" Orifice** C= 0.600
#3	Device 1	95.75'	**18.0" Horiz. 18" Int. Stack** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.08 cfs @ 16.03 hrs HW=94.83' TW=94.20' (Dynamic Tailwater)
└─**1=18" HDPE N-12** (Passes 0.08 cfs of 6.73 cfs potential flow)
  ├─**2=3" Orifice** (Orifice Controls 0.08 cfs @ 3.81 fps)
  └─**3=18" Int. Stack** (Controls 0.00 cfs)

Pond 102P: StormTech SC740 #102



Summary for Pond 103P: Gravel Wetland #103

[80] Warning: Exceeded Pond 102P by 0.12' @ 12.15 hrs (0.04 cfs 0.001 af)

Inflow Area = 3.770 ac, 67.27% Impervious, Inflow Depth > 5.44" for 25 YR - 24 HR event
Inflow = 14.51 cfs @ 12.10 hrs, Volume= 1.710 af
Outflow = 8.29 cfs @ 12.33 hrs, Volume= 1.307 af, Atten= 43%, Lag= 14.0 min
Primary = 0.20 cfs @ 12.33 hrs, Volume= 0.251 af
Secondary = 4.56 cfs @ 12.33 hrs, Volume= 0.876 af
Tertiary = 3.53 cfs @ 12.33 hrs, Volume= 0.180 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 94.40' @ 12.33 hrs Surf.Area= 31,366 sf Storage= 27,139 cf
Flood Elev= 95.00' Surf.Area= 32,983 sf Storage= 38,090 cf

Plug-Flow detention time= 200.5 min calculated for 1.304 af (76% of inflow)
Center-of-Mass det. time= 108.1 min (912.6 - 804.6)

Volume	Invert	Avail.Storage	Storage Description
#1	91.92'	28 cf	**4.00'D x 2.23'H Outlet Structure**
#2	92.25'	4,287 cf	**Cell 1 (Irregular)** Listed below (Recalc)
#3	92.25'	4,099 cf	**Cell 2 (Irregular)** Listed below (Recalc)
#4	93.50'	25,593 cf	**Open Water Storage (Irregular)** Listed below (Recalc)
#5	92.50'	4,083 cf	**Sediment Forebay (Irregular)** Listed below (Recalc)
		38,090 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
92.25	1,797	216.6	0	0	1,797
92.50	3,184	347.3	614	614	7,662
93.00	3,681	362.9	1,715	2,329	8,562
93.50	4,155	374.2	1,958	4,287	9,250

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
92.25	1,797	216.6	0	0	1,797
92.50	2,882	243.9	580	580	2,799
93.00	3,568	328.9	1,609	2,189	6,676
93.50	4,077	342.3	1,910	4,099	7,411

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
93.50	15,320	728.3	0	0	15,320
94.00	16,467	741.0	7,945	7,945	16,850
94.50	17,586	750.4	8,512	16,457	18,026
95.00	18,967	820.6	9,136	25,593	26,811

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
92.50	1,819	357.2	0	0	1,819
93.00	4,483	584.2	1,526	1,526	18,826
93.50	5,771	642.7	2,557	4,083	24,546

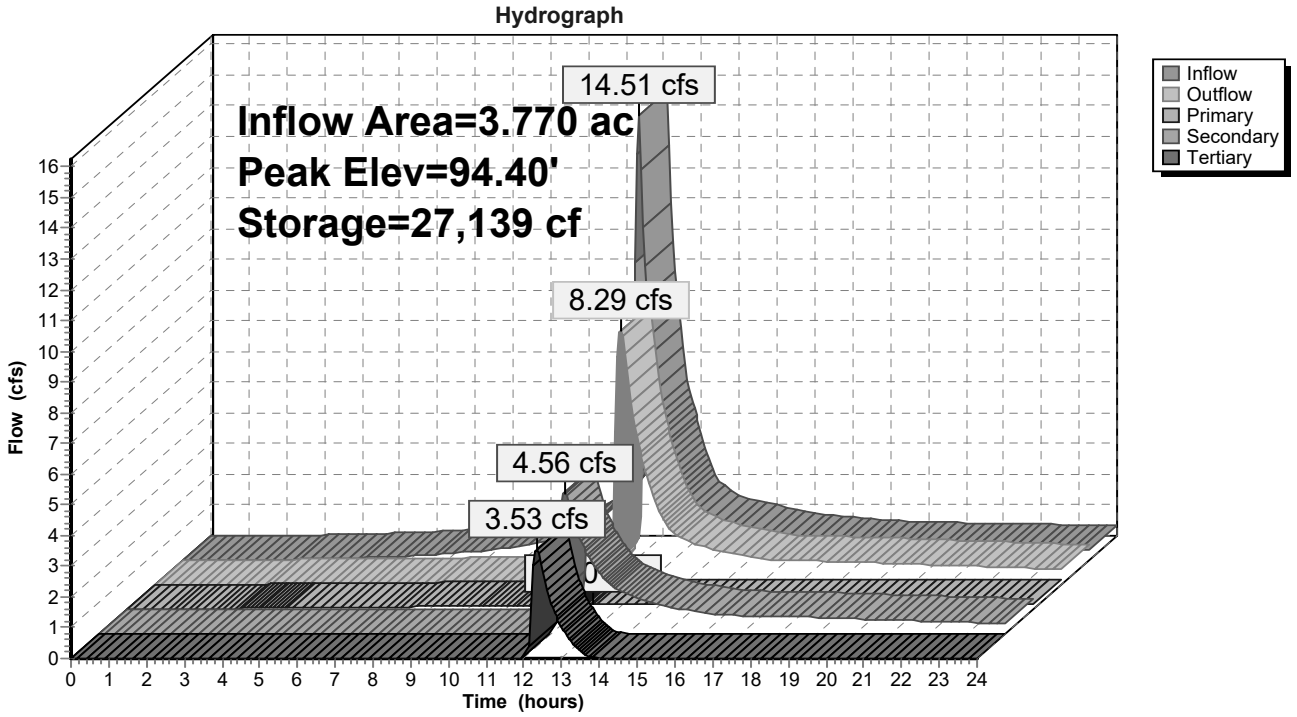
Device	Routing	Invert	Outlet Devices
#1	Primary	91.92'	**6.0" Round 6" HDPE N-12** L= 16.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 91.92' / 91.75' S= 0.0106 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#2	Secondary	91.92'	**15.0" Round 15" RCP** L= 12.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 91.92' / 91.75' S= 0.0142 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#3	Device 1	91.92'	**2.2" Vert. 2.25" Orifice Goose Neck** C= 0.600
#4	Device 2	93.50'	**4.0" Vert. 4" Orifice (2) X 2.00** C= 0.600
#5	Device 2	94.19'	**48.0" Horiz. 4' Structure** C= 0.600 Limited to weir flow at low heads
#6	Tertiary	94.25'	**25.0' long x 11.0' breadth 25' Emergency Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.53 2.59 2.70 2.68 2.67 2.68 2.66 2.64

Primary OutFlow Max=0.20 cfs @ 12.33 hrs HW=94.40' TW=0.00' (Dynamic Tailwater)
└─**1=6" HDPE N-12** (Passes 0.20 cfs of 1.11 cfs potential flow)
  └─**3=2.25" Orifice Goose Neck** (Orifice Controls 0.20 cfs @ 7.43 fps)

Secondary OutFlow Max=4.55 cfs @ 12.33 hrs HW=94.40' TW=0.00' (Dynamic Tailwater)
└─**2=15" RCP** (Passes 4.55 cfs of 6.35 cfs potential flow)
  ├─**4=4" Orifice (2)** (Orifice Controls 0.72 cfs @ 4.11 fps)
  └─**5=4' Structure** (Weir Controls 3.83 cfs @ 1.48 fps)

Tertiary OutFlow Max=3.51 cfs @ 12.33 hrs HW=94.40' TW=0.00' (Dynamic Tailwater)
└─**6=25' Emergency Spillway** (Weir Controls 3.51 cfs @ 0.97 fps)

Pond 103P: Gravel Wetland #103



Summary for Pond 104P: Gravel Wetland #104

Inflow Area = 0.506 ac, 53.15% Impervious, Inflow Depth > 5.36" for 25 YR - 24 HR event
Inflow = 3.00 cfs @ 12.09 hrs, Volume= 0.226 af
Outflow = 0.12 cfs @ 15.22 hrs, Volume= 0.093 af, Atten= 96%, Lag= 187.7 min
Primary = 0.12 cfs @ 15.22 hrs, Volume= 0.093 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 92.96' @ 15.22 hrs Surf.Area= 8,095 sf Storage= 6,789 cf
Flood Elev= 94.00' Surf.Area= 10,045 sf Storage= 12,384 cf

Plug-Flow detention time= 347.6 min calculated for 0.093 af (41% of inflow)
Center-of-Mass det. time= 223.1 min (1,012.6 - 789.5)

Volume	Invert	Avail.Storage	Storage Description
#1	90.33'	43 cf	**4.00'D x 3.42'H Outlet Structure**
#2	91.00'	1,416 cf	**Sediment Forebay (Irregular)** Listed below (Recalc)
#3	91.00'	897 cf	**Cell 1 (Irregular)** Listed below (Recalc)
#4	91.00'	1,195 cf	**Cell 2 (Irregular)** Listed below (Recalc)
#5	92.00'	8,833 cf	**Open water storage (Irregular)** Listed below (Recalc)
		12,384 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
91.00	165	49.3	0	0	165
91.50	570	108.8	174	174	915
92.00	693	117.9	315	489	1,088
93.00	1,183	152.4	927	1,416	1,843

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
91.00	768	145.0	0	0	768
91.50	893	151.8	415	415	945
92.00	1,038	159.7	482	897	1,156

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
91.00	855	158.3	0	0	855
91.50	1,248	206.2	523	523	2,247
92.00	1,444	214.6	672	1,195	2,548

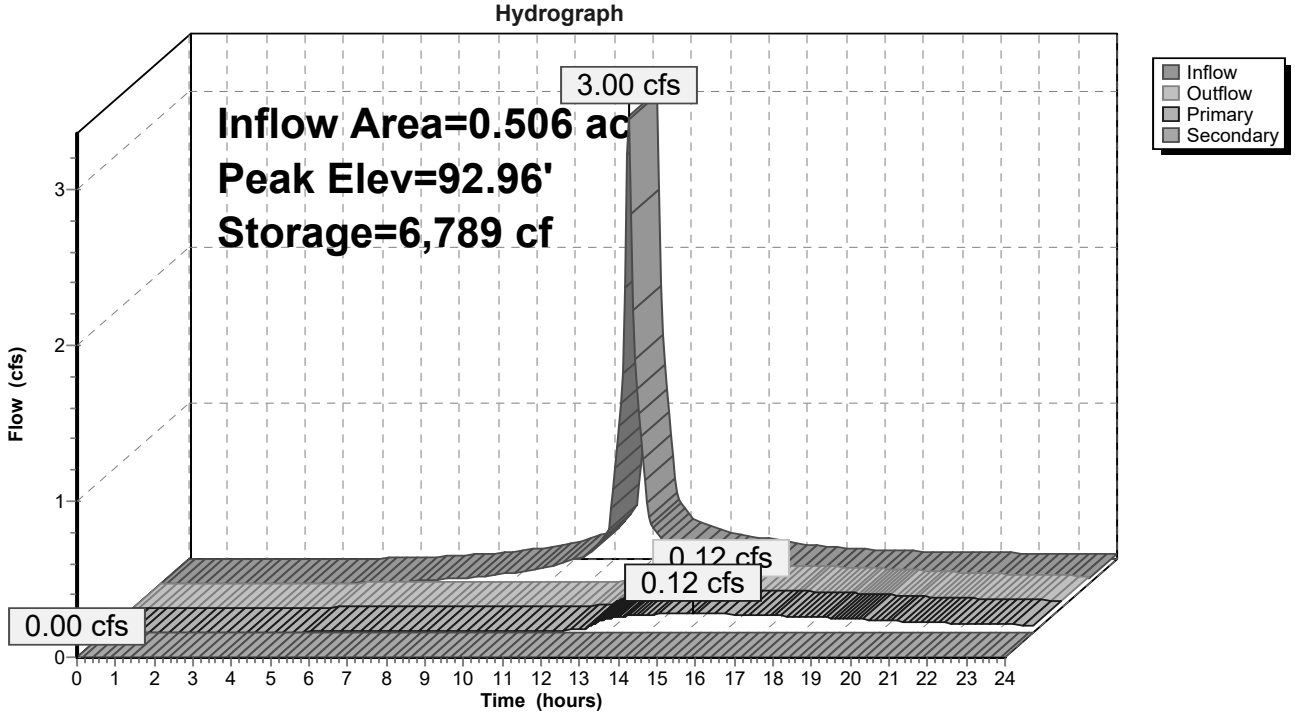
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
92.00	2,552	351.7	0	0	2,552
93.00	4,543	490.4	3,500	3,500	11,856
93.75	5,684	526.6	3,827	7,327	14,811
94.00	6,367	575.4	1,506	8,833	19,092

Device	Routing	Invert	Outlet Devices
#1	Primary	90.33'	**6.0" Round 6" HDPE N-12** L= 33.7' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 90.33' / 90.00' S= 0.0098 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#2	Secondary	90.33'	**12.0" Round 12" RCP** L= 13.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 90.33' / 90.00' S= 0.0244 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#3	Device 1	90.33'	**0.7" Vert. 0.75" Orifice Goose Neck** C= 0.600
#4	Device 1	92.65'	**3.0" Vert. 3" Orifice** C= 0.600
#5	Device 2	93.50'	**15.0" W x 3.0" H Vert. 3"T X 15"W Box Orifice** C= 0.600
#6	Device 2	93.79'	**48.0" Horiz. 4' Structure** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.12 cfs @ 15.22 hrs HW=92.96' TW=90.08' (Dynamic Tailwater)
└─**1=6" HDPE N-12** (Passes 0.12 cfs of 1.15 cfs potential flow)
  ├─**3=0.75" Orifice Goose Neck** (Orifice Controls 0.02 cfs @ 7.76 fps)
  └─**4=3" Orifice** (Orifice Controls 0.10 cfs @ 2.05 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=90.33' TW=89.50' (Dynamic Tailwater)
└─**2=12" RCP** (Controls 0.00 cfs)
  ├─**5=3"T X 15"W Box Orifice** (Controls 0.00 cfs)
  └─**6=4' Structure** (Controls 0.00 cfs)

Pond 104P: Gravel Wetland #104



Summary for Pond 105P: Detention Pond #105

Inflow Area = 1.254 ac, 77.05% Impervious, Inflow Depth > 6.05" for 25 YR - 24 HR event
Inflow = 7.91 cfs @ 12.09 hrs, Volume= 0.633 af
Outflow = 3.32 cfs @ 12.21 hrs, Volume= 0.626 af, Atten= 58%, Lag= 7.3 min
Primary = 3.32 cfs @ 12.21 hrs, Volume= 0.626 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 95.76' @ 12.31 hrs Surf.Area= 4,540 sf Storage= 5,793 cf
Flood Elev= 97.00' Surf.Area= 6,791 sf Storage= 12,731 cf

Plug-Flow detention time= 40.7 min calculated for 0.626 af (99% of inflow)
Center-of-Mass det. time= 33.6 min (799.3 - 765.8)

Volume	Invert	Avail.Storage	Storage Description
#1	93.75'	12,731 cf	**Open Water Storage (Irregular)** Listed below (Recalc)

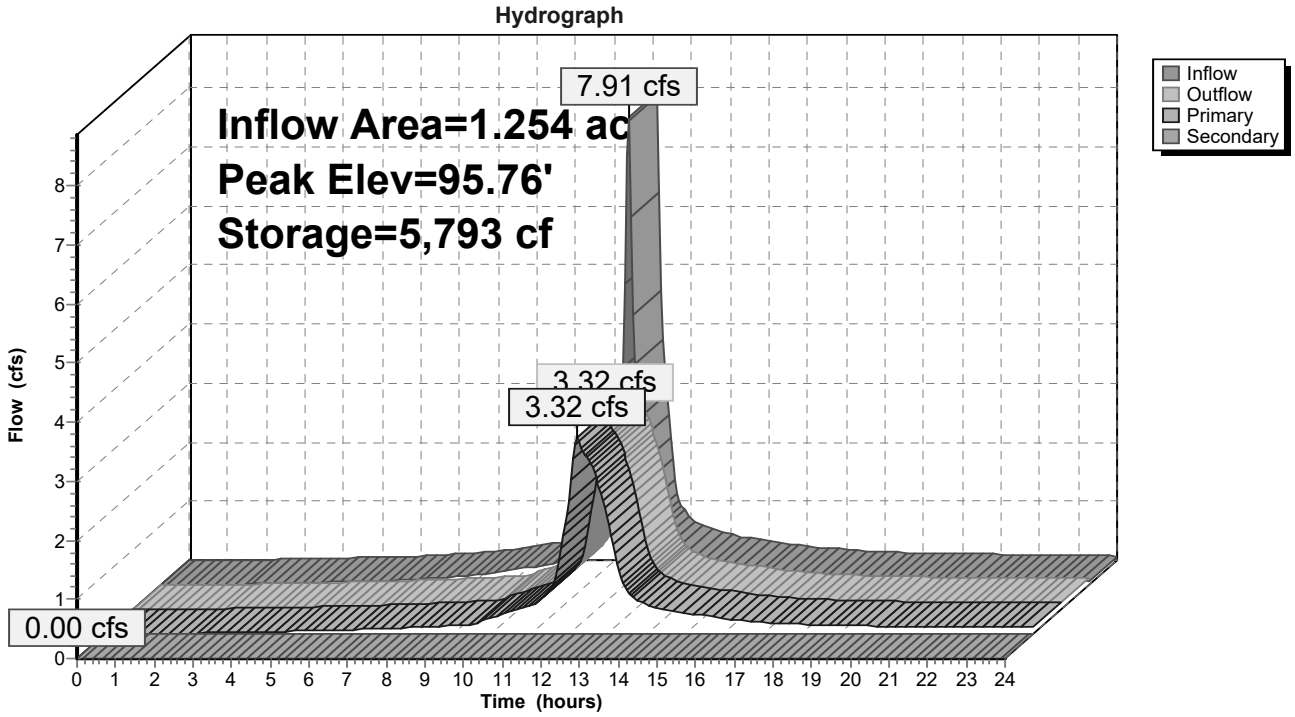
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
93.75	30	22.0	0	0	30
94.00	1,688	169.5	162	162	2,278
95.00	3,555	326.9	2,564	2,726	8,500
96.00	4,876	389.9	4,198	6,924	12,112
97.00	6,791	463.8	5,807	12,731	17,150

Device	Routing	Invert	Outlet Devices
#1	Primary	93.75'	**18.0" Round 18" HDPE N-12** L= 103.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 93.75' / 93.22' S= 0.0051 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	93.75'	**3.0" Vert. 3" Orifice** C= 0.600
#3	Device 1	94.30'	**6.0" Vert. 6" Orifice (3) X 3.00** C= 0.600
#4	Device 1	96.25'	**48.0" Horiz. 48" Outlet Structure** C= 0.600 Limited to weir flow at low heads
#5	Secondary	96.50'	**10.0' long x 7.0' breadth 10' Emergency Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78

Primary OutFlow Max=3.20 cfs @ 12.21 hrs HW=95.72' TW=94.63' (Dynamic Tailwater)
└**1=18" HDPE N-12** (Passes 3.20 cfs of 8.33 cfs potential flow)
  ├**2=3" Orifice** (Orifice Controls 0.25 cfs @ 5.02 fps)
  ├**3=6" Orifice (3)** (Orifice Controls 2.96 cfs @ 5.02 fps)
  └**4=48" Outlet Structure** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=93.75' TW=93.00' (Dynamic Tailwater)
└**5=10' Emergency Spillway** (Controls 0.00 cfs)

Pond 105P: Detention Pond #105



Summary for Pond 106P: StormTech SC740 #106

Inflow Area = 0.347 ac,100.00% Impervious, Inflow Depth > 6.64" for 25 YR - 24 HR event
Inflow = 2.28 cfs @ 12.09 hrs, Volume= 0.192 af
Outflow = 0.10 cfs @ 14.70 hrs, Volume= 0.116 af, Atten= 95%, Lag= 157.1 min
Primary = 0.10 cfs @ 14.70 hrs, Volume= 0.116 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 94.98' @ 14.56 hrs Surf.Area= 3,623 sf Storage= 4,788 cf
Flood Elev= 96.25' Surf.Area= 3,623 sf Storage= 6,905 cf

Plug-Flow detention time= 296.5 min calculated for 0.116 af (61% of inflow)
Center-of-Mass det. time= 185.6 min (928.3 - 742.8)

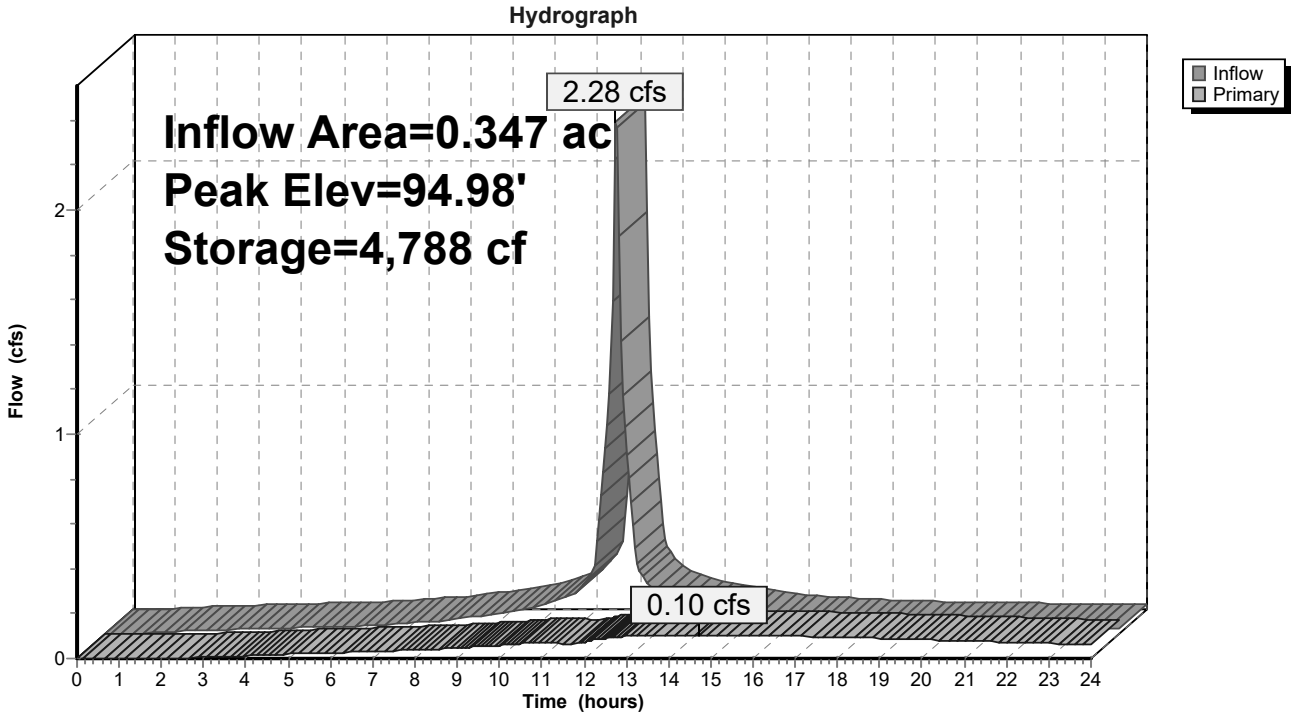
Volume	Invert	Avail.Storage	Storage Description
#1	92.75'	3,850 cf	**Stone (Irregular)** Listed below (Recalc) 12,611 cf Overall - 2,986 cf Embedded = 9,624 cf x 40.0% Voids
#2	93.25'	2,986 cf	**ADS_StormTech SC-740 +Cap** x 65 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
#3	92.75'	98 cf	**5.00'D x 5.00'H Outlet Structure**
		6,934 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
92.75	3,603	363.5	0	0	3,603
96.25	3,603	363.5	12,611	12,611	4,875

Device	Routing	Invert	Outlet Devices
#1	Primary	92.75'	**18.0" Round 18" HDPE N-12** L= 15.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 92.75' / 92.50' S= 0.0167 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	92.75'	**2.0" Vert. 3" Orifice** C= 0.600
#3	Device 1	95.50'	**18.0" Horiz. 18" Int. Stack** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.10 cfs @ 14.70 hrs HW=94.98' TW=93.98' (Dynamic Tailwater)
↑**1=18" HDPE N-12** (Passes 0.10 cfs of 8.50 cfs potential flow)
↑**2=3" Orifice** (Orifice Controls 0.10 cfs @ 4.81 fps)
3=18" Int. Stack (Controls 0.00 cfs)

Pond 106P: StormTech SC740 #106



Summary for Pond C01P: CB #1

Inflow Area = 3.393 ac, 34.40% Impervious, Inflow Depth > 2.54" for 25 YR - 24 HR event
Inflow = 3.39 cfs @ 12.64 hrs, Volume= 0.718 af
Outflow = 3.39 cfs @ 12.64 hrs, Volume= 0.718 af, Atten= 0%, Lag= 0.0 min
Primary = 3.39 cfs @ 12.64 hrs, Volume= 0.718 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 90.34' @ 12.64 hrs Surf.Area= 13 sf Storage= 13 cf
Flood Elev= 93.14' Surf.Area= 13 sf Storage= 48 cf

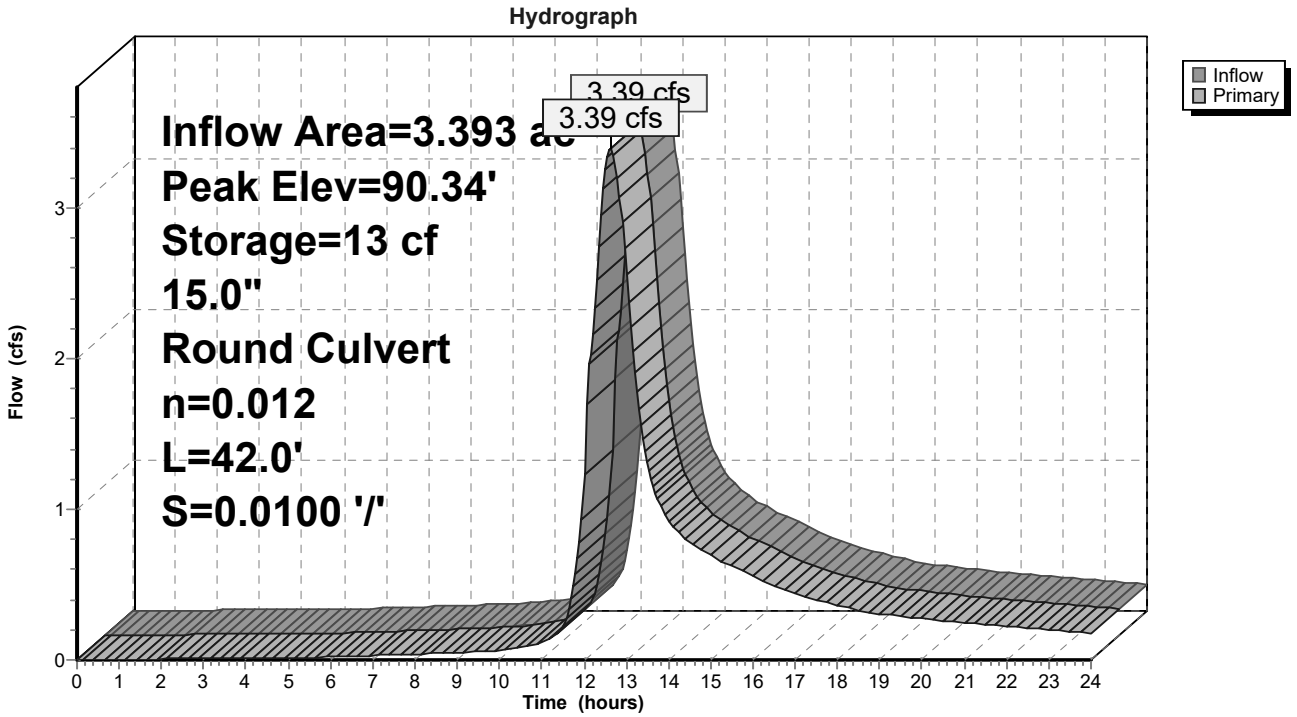
Plug-Flow detention time= 0.1 min calculated for 0.716 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (886.0 - 885.9)

Volume	Invert	Avail.Storage	Storage Description
#1	89.34'	48 cf	**4.00'D x 3.80'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	89.34'	**15.0" Round 15" RCP** L= 42.0' Ke= 0.500 Inlet / Outlet Invert= 89.34' / 88.92' S= 0.0100 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.39 cfs @ 12.64 hrs HW=90.34' TW=0.00' (Dynamic Tailwater)
↑—**1=15" RCP** (Barrel Controls 3.39 cfs @ 4.40 fps)

Pond C01P: CB #1



Summary for Pond C02P: CB #2

Inflow Area = 0.702 ac, 62.40% Impervious, Inflow Depth > 5.59" for 25 YR - 24 HR event
Inflow = 2.89 cfs @ 12.10 hrs, Volume= 0.327 af
Outflow = 2.89 cfs @ 12.10 hrs, Volume= 0.327 af, Atten= 0%, Lag= 0.0 min
Primary = 2.89 cfs @ 12.10 hrs, Volume= 0.327 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 94.60' @ 12.27 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 97.85' Surf.Area= 0.000 ac Storage= 0.001 af

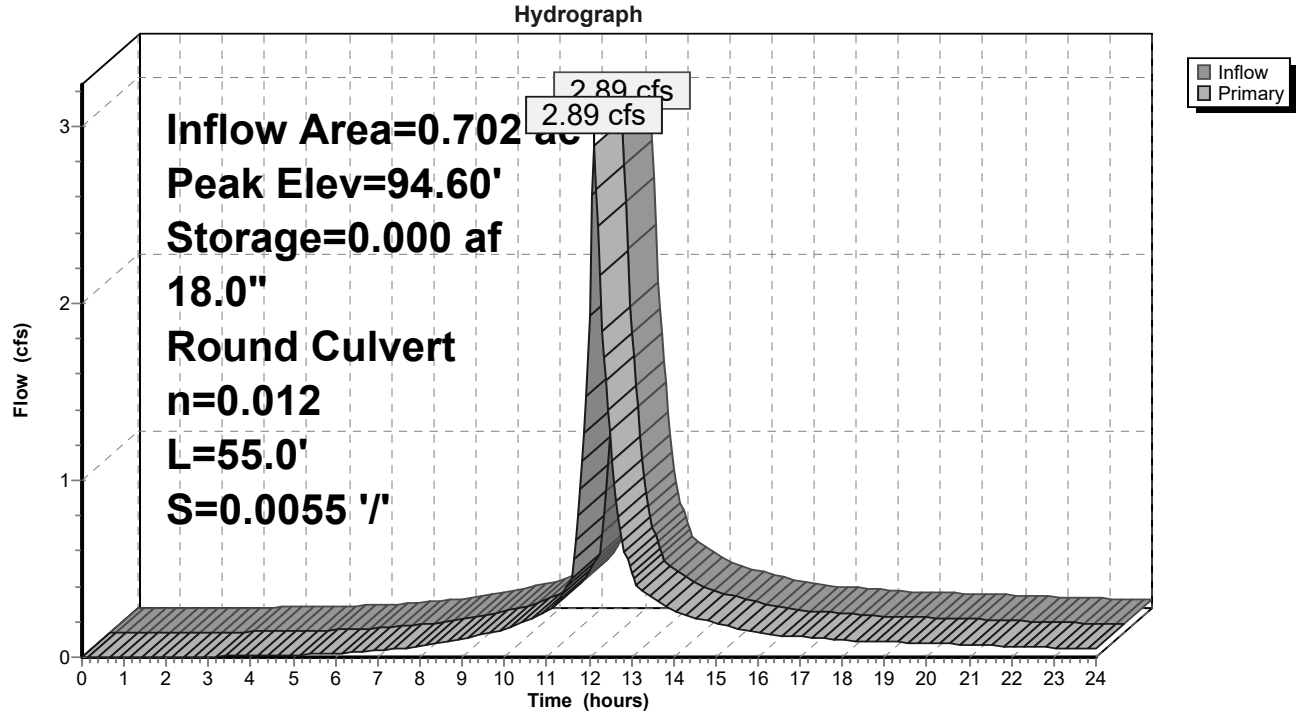
Plug-Flow detention time= 0.5 min calculated for 0.327 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (799.6 - 799.4)

Volume	Invert	Avail.Storage	Storage Description
#1	93.50'	0.001 af	**4.00'D x 4.35'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	93.50'	**18.0" Round 18" RCP** L= 55.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 93.50' / 93.20' S= 0.0055 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=2.42 cfs @ 12.10 hrs HW=94.55' TW=94.30' (Dynamic Tailwater)
↑**1=18" RCP** (Outlet Controls 2.42 cfs @ 2.59 fps)

Pond C02P: CB #2



Summary for Pond C03P: CB #3

Inflow Area = 0.119 ac, 77.18% Impervious, Inflow Depth > 6.05" for 25 YR - 24 HR event
Inflow = 0.76 cfs @ 12.09 hrs, Volume= 0.060 af
Outflow = 0.75 cfs @ 12.09 hrs, Volume= 0.060 af, Atten= 1%, Lag= 0.1 min
Primary = 0.75 cfs @ 12.09 hrs, Volume= 0.060 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 94.63' @ 12.17 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 97.80' Surf.Area= 0.000 ac Storage= 0.001 af

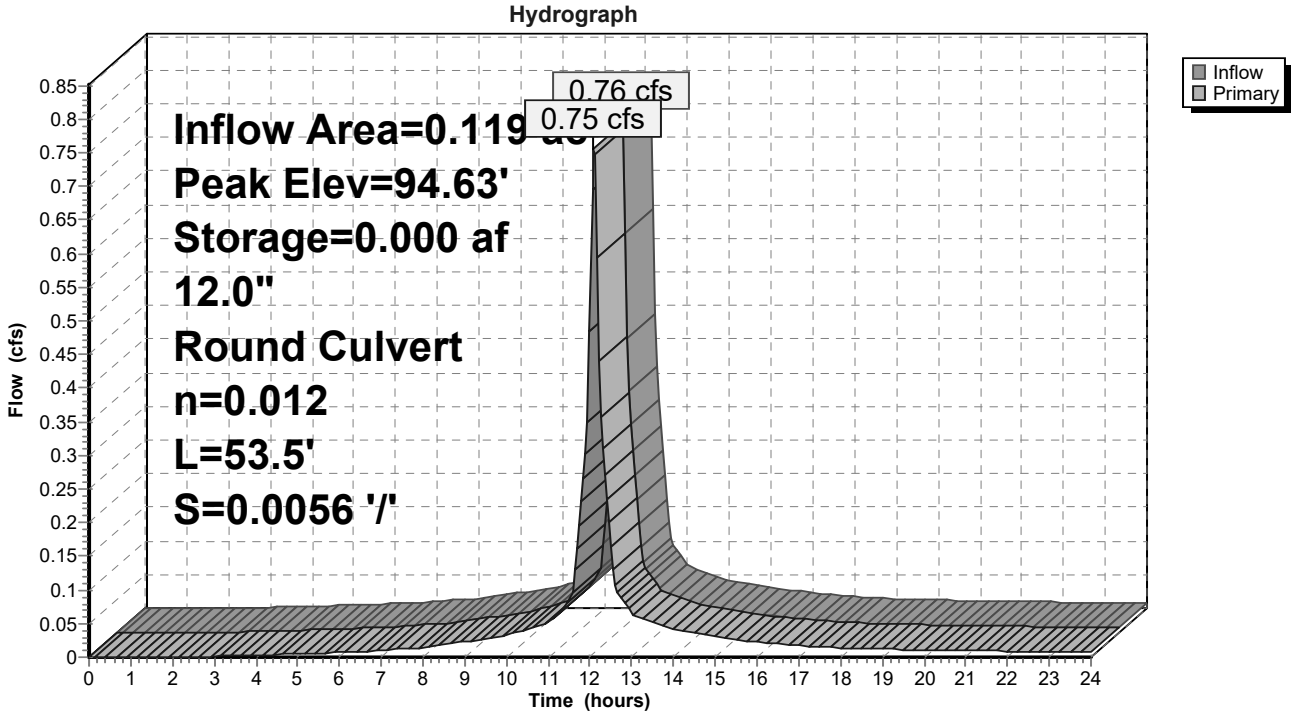
Plug-Flow detention time= 1.1 min calculated for 0.060 af (100% of inflow)
Center-of-Mass det. time= 0.9 min (769.7 - 768.8)

Volume	Invert	Avail.Storage	Storage Description
#1	93.90'	0.001 af	**4.00'D x 3.90'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	93.90'	**12.0" Round 12" RCP** L= 53.5' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 93.90' / 93.60' S= 0.0056 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.40 cfs @ 12.09 hrs HW=94.57' TW=94.52' (Dynamic Tailwater)
1=12" RCP (Outlet Controls 0.40 cfs @ 1.01 fps)

Pond C03P: CB #3



Summary for Pond C04P: CB #4

Inflow Area = 0.449 ac, 96.80% Impervious, Inflow Depth > 6.56" for 25 YR - 24 HR event
Inflow = 2.95 cfs @ 12.09 hrs, Volume= 0.246 af
Outflow = 2.94 cfs @ 12.09 hrs, Volume= 0.246 af, Atten= 0%, Lag= 0.0 min
Primary = 2.94 cfs @ 12.09 hrs, Volume= 0.246 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 95.82' @ 12.35 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 98.05' Surf.Area= 0.000 ac Storage= 0.001 af

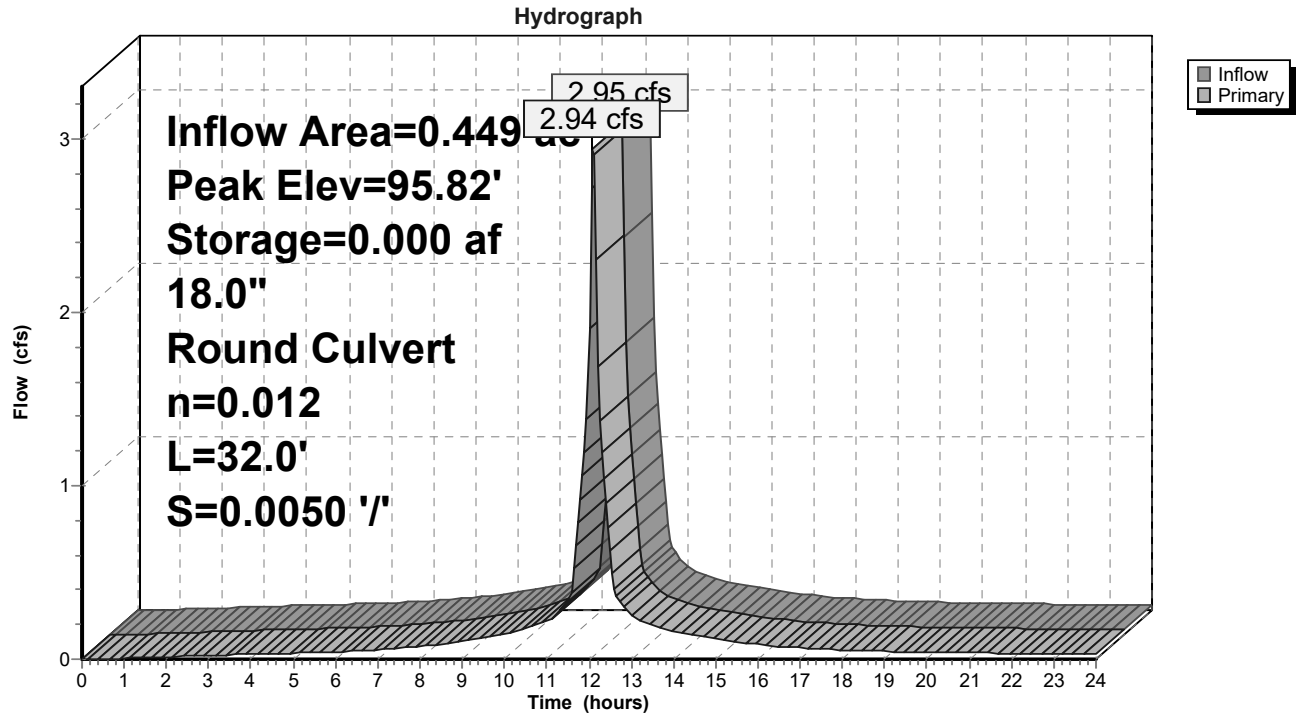
Plug-Flow detention time= 0.3 min calculated for 0.245 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (746.8 - 746.5)

Volume	Invert	Avail.Storage	Storage Description
#1	94.61'	0.001 af	**4.00'D x 3.44'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	94.61'	**18.0" Round 18" RCP** L= 32.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 94.61' / 94.45' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=1.89 cfs @ 12.09 hrs HW=95.71' TW=95.61' (Dynamic Tailwater)
↑**1=18" RCP** (Outlet Controls 1.89 cfs @ 1.89 fps)

Pond C04P: CB #4



Summary for Pond C05P: CB #5

Inflow Area = 0.095 ac, 78.57% Impervious, Inflow Depth > 6.05" for 25 YR - 24 HR event
Inflow = 0.61 cfs @ 12.09 hrs, Volume= 0.048 af
Outflow = 0.59 cfs @ 12.09 hrs, Volume= 0.048 af, Atten= 2%, Lag= 0.1 min
Primary = 0.59 cfs @ 12.09 hrs, Volume= 0.048 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 95.80' @ 12.37 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 98.25' Surf.Area= 0.000 ac Storage= 0.001 af

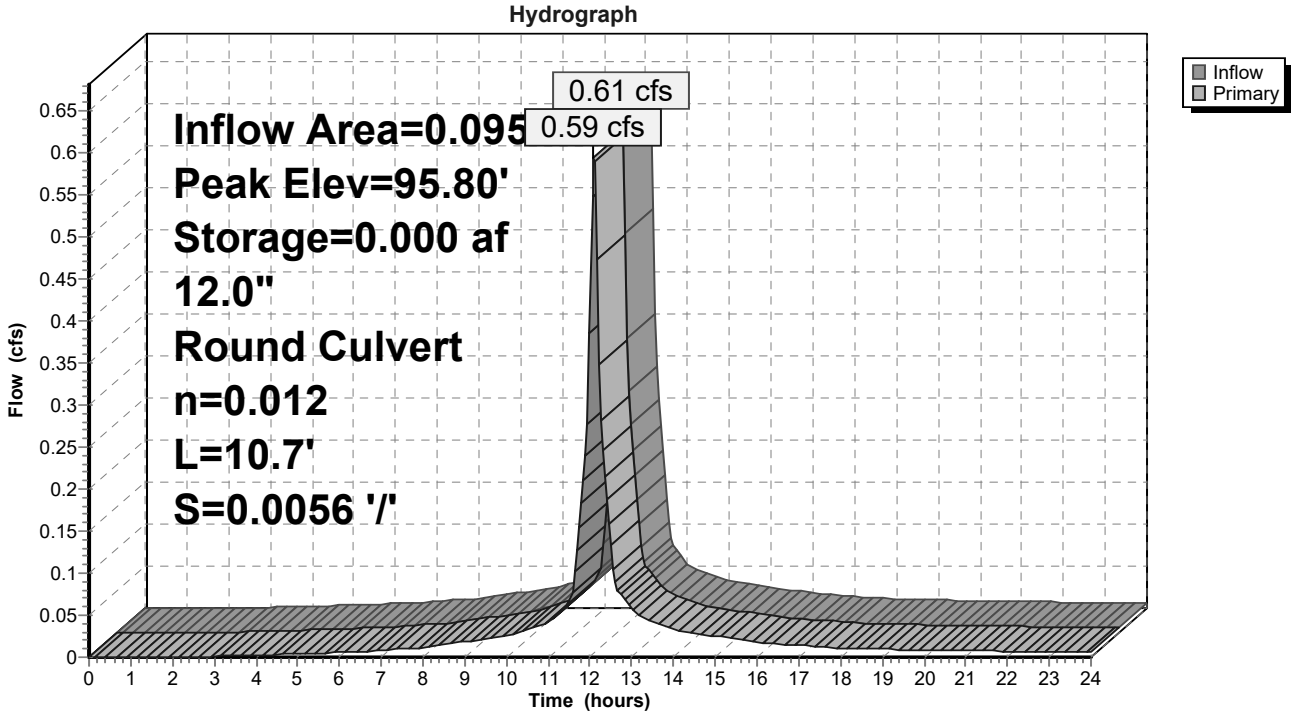
Plug-Flow detention time= 1.0 min calculated for 0.048 af (100% of inflow)
Center-of-Mass det. time= 0.9 min (769.7 - 768.8)

Volume	Invert	Avail.Storage	Storage Description
#1	94.51'	0.001 af	**4.00'D x 3.74'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	94.51'	**12.0" Round 12" RCP** L= 10.7' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 94.51' / 94.45' S= 0.0056 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=95.49' TW=95.61' (Dynamic Tailwater)
↑**1=12" RCP** (Controls 0.00 cfs)

Pond C05P: CB #5



Summary for Pond C06P: CB #6

Inflow Area = 0.054 ac, 82.33% Impervious, Inflow Depth > 6.17" for 25 YR - 24 HR event
Inflow = 0.34 cfs @ 12.09 hrs, Volume= 0.028 af
Outflow = 0.33 cfs @ 12.09 hrs, Volume= 0.027 af, Atten= 4%, Lag= 0.1 min
Primary = 0.33 cfs @ 12.09 hrs, Volume= 0.027 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 95.80' @ 12.37 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 98.25' Surf.Area= 0.000 ac Storage= 0.001 af

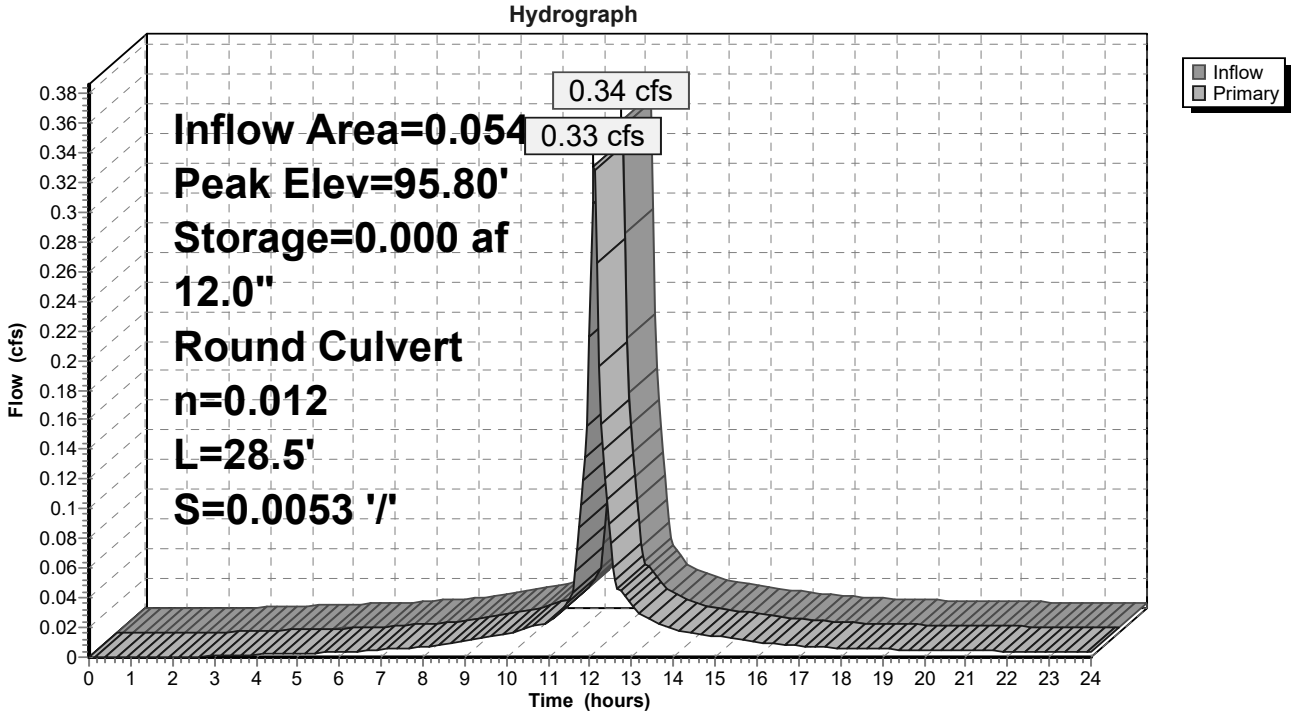
Plug-Flow detention time= 1.5 min calculated for 0.027 af (100% of inflow)
Center-of-Mass det. time= 1.2 min (765.8 - 764.6)

Volume	Invert	Avail.Storage	Storage Description
#1	94.60'	0.001 af	**4.00'D x 3.65'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	94.60'	**12.0" Round 12" RCP** L= 28.5' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 94.60' / 94.45' S= 0.0053 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=95.48' TW=95.61' (Dynamic Tailwater)
↑**1=12" RCP** (Controls 0.00 cfs)

Pond C06P: CB #6



Summary for Pond C07P: CB #7

Inflow Area = 1.327 ac, 76.92% Impervious, Inflow Depth > 5.98" for 25 YR - 24 HR event
Inflow = 3.59 cfs @ 12.18 hrs, Volume= 0.662 af
Outflow = 3.59 cfs @ 12.18 hrs, Volume= 0.662 af, Atten= 0%, Lag= 0.0 min
Primary = 3.59 cfs @ 12.18 hrs, Volume= 0.662 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 94.77' @ 12.36 hrs Surf.Area= 13 sf Storage= 21 cf
Flood Elev= 98.05' Surf.Area= 13 sf Storage= 62 cf

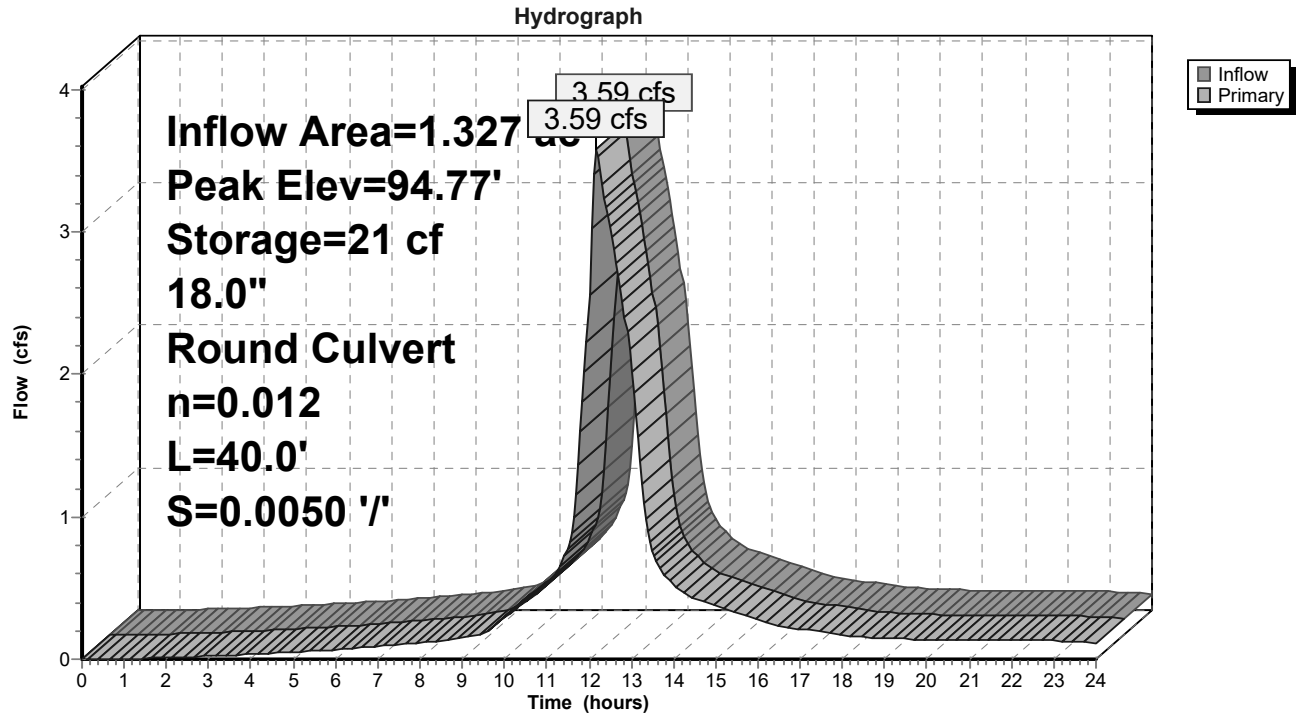
Plug-Flow detention time= 0.4 min calculated for 0.662 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (798.1 - 797.9)

Volume	Invert	Avail.Storage	Storage Description
#1	93.12'	62 cf	**4.00'D x 4.93'H 4' structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	93.12'	**18.0" Round 18" HDPE N-12** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 93.12' / 92.92' S= 0.0050 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.81 cfs @ 12.18 hrs HW=94.58' TW=94.40' (Dynamic Tailwater)
↑—**1=18" HDPE N-12** (Inlet Controls 2.81 cfs @ 1.60 fps)

Pond C07P: CB #7



Summary for Pond C08P: CB #8

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=3)

Inflow Area = 0.055 ac, 89.54% Impervious, Inflow Depth > 6.28" for 25 YR - 24 HR event
Inflow = 0.36 cfs @ 12.09 hrs, Volume= 0.029 af
Outflow = 0.36 cfs @ 12.09 hrs, Volume= 0.029 af, Atten= 1%, Lag= 0.0 min
Primary = 0.36 cfs @ 12.09 hrs, Volume= 0.029 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 94.03' @ 12.59 hrs Surf.Area= 13 sf Storage= 10 cf
Flood Elev= 97.50' Surf.Area= 13 sf Storage= 53 cf

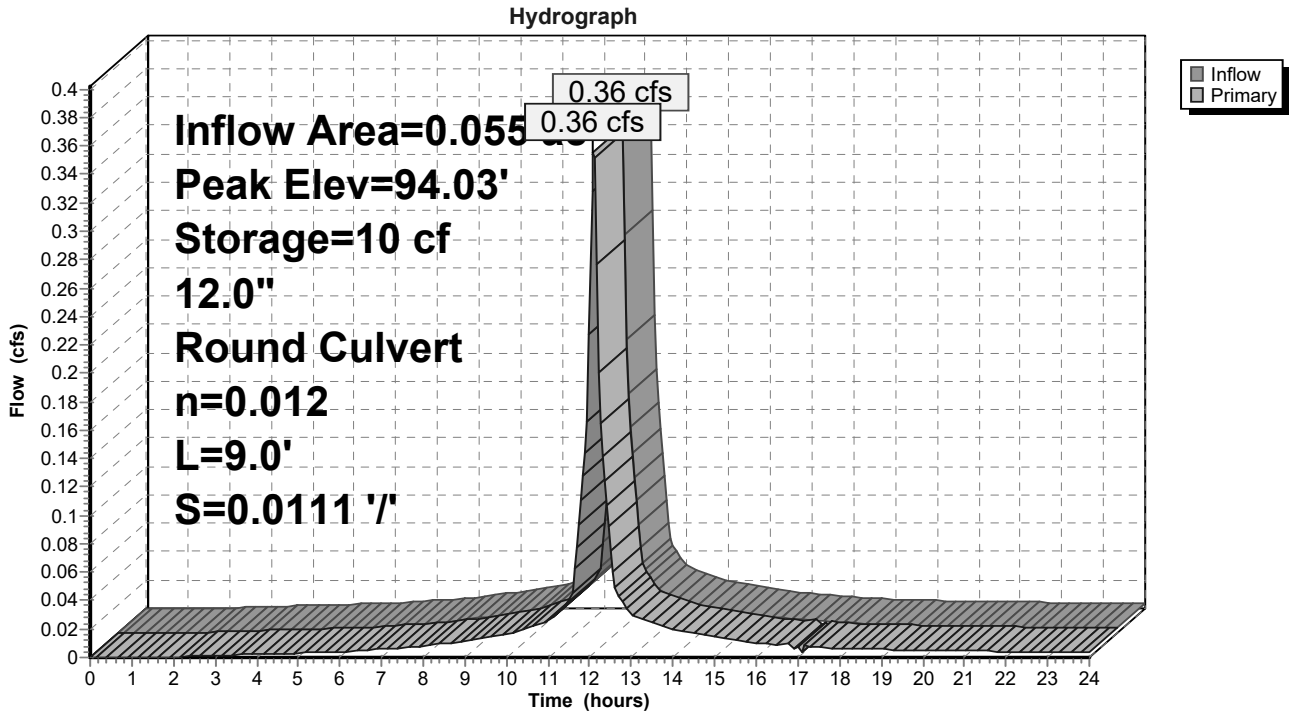
Plug-Flow detention time= 5.5 min calculated for 0.029 af (99% of inflow)
Center-of-Mass det. time= 0.7 min (760.7 - 760.0)

Volume	Invert	Avail.Storage	Storage Description
#1	93.25'	53 cf	**4.00'D x 4.25'H 4' structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	93.25'	**12.0" Round 12" HDPE N-12** L= 9.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 93.25' / 93.15' S= 0.0111 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.08 cfs @ 12.09 hrs HW=93.64' TW=93.63' (Dynamic Tailwater)
1=12" HDPE N-12 (Outlet Controls 0.08 cfs @ 0.40 fps)

Pond C08P: CB #8



Summary for Pond D01P: DMH #1

Inflow Area = 0.702 ac, 62.40% Impervious, Inflow Depth > 5.59" for 25 YR - 24 HR event
Inflow = 2.89 cfs @ 12.10 hrs, Volume= 0.327 af
Outflow = 2.89 cfs @ 12.10 hrs, Volume= 0.327 af, Atten= 0%, Lag= 0.0 min
Primary = 2.89 cfs @ 12.10 hrs, Volume= 0.327 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 94.48' @ 12.32 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 99.25' Surf.Area= 0.000 ac Storage= 0.002 af

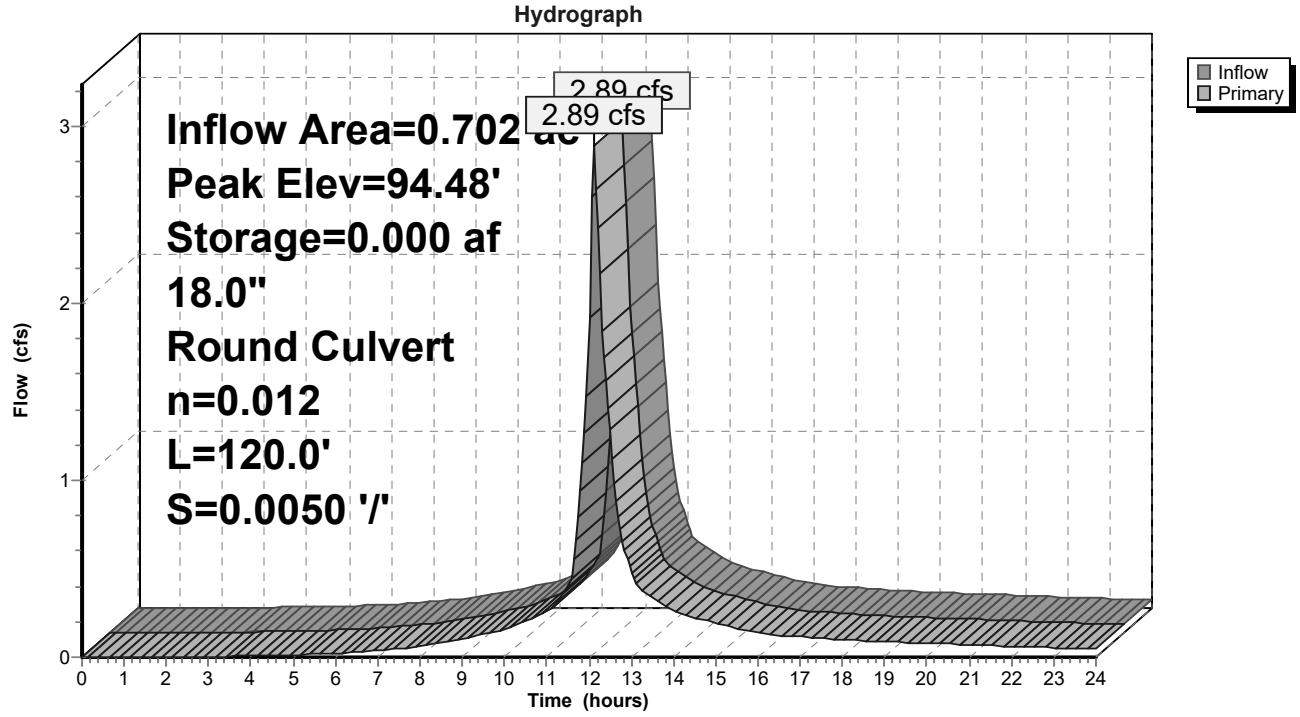
Plug-Flow detention time= 0.7 min calculated for 0.326 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (799.9 - 799.6)

Volume	Invert	Avail.Storage	Storage Description
#1	93.10'	0.002 af	**4.00'D x 6.15'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	93.10'	**18.0" Round 18" HDPE N-12** L= 120.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 93.10' / 92.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=2.16 cfs @ 12.10 hrs HW=94.30' TW=94.12' (Dynamic Tailwater)
↑**1=18" HDPE N-12** (Outlet Controls 2.16 cfs @ 1.94 fps)

Pond D01P: DMH #1



Summary for Pond D04P: DMH #4

[80] Warning: Exceeded Pond C05P by 0.16' @ 12.05 hrs (1.53 cfs 0.036 af)
[80] Warning: Exceeded Pond C06P by 0.18' @ 12.05 hrs (1.33 cfs 0.032 af)

Inflow Area = 0.598 ac, 92.60% Impervious, Inflow Depth > 6.44" for 25 YR - 24 HR event
Inflow = 3.87 cfs @ 12.09 hrs, Volume= 0.321 af
Outflow = 3.86 cfs @ 12.09 hrs, Volume= 0.321 af, Atten= 0%, Lag= 0.0 min
Primary = 3.86 cfs @ 12.09 hrs, Volume= 0.321 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 95.80' @ 12.32 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 98.30' Surf.Area= 0.000 ac Storage= 0.001 af

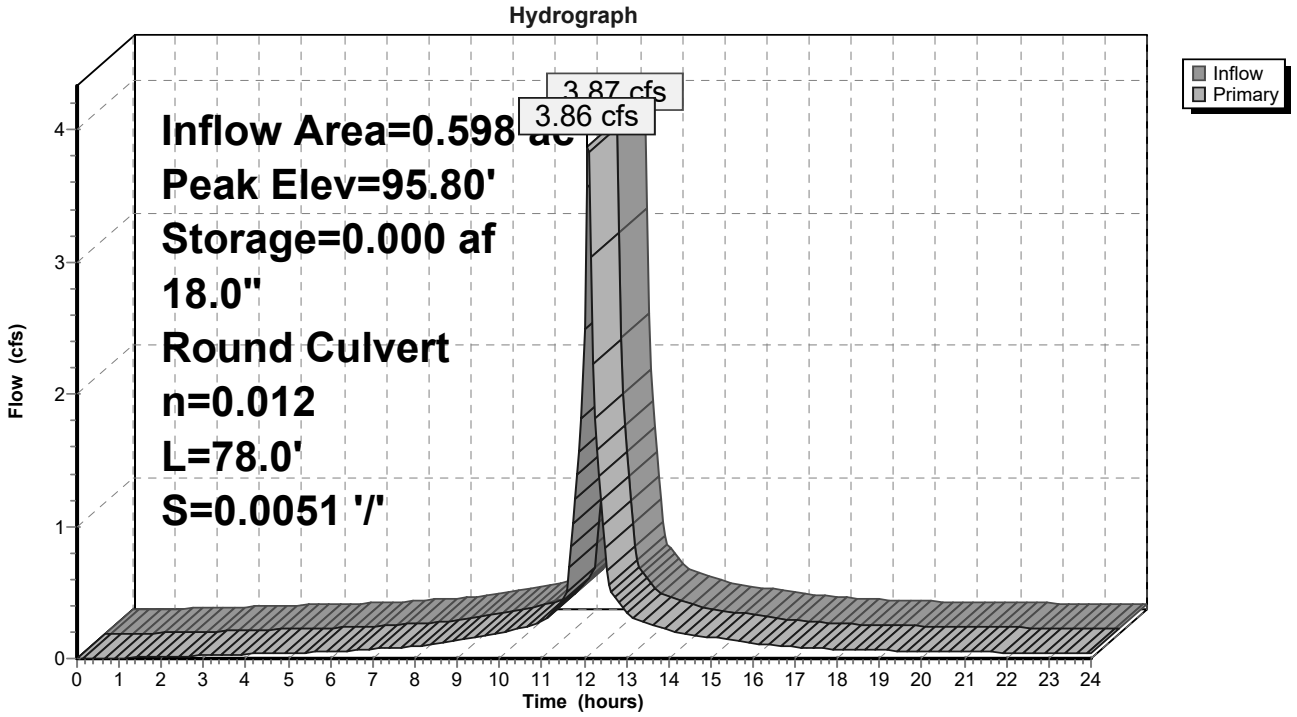
Plug-Flow detention time= 0.3 min calculated for 0.321 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (752.0 - 751.8)

Volume	Invert	Avail.Storage	Storage Description
#1	94.35'	0.001 af	**4.00'D x 3.95'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	94.35'	**18.0" Round 18" RCP** L= 78.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 94.35' / 93.95' S= 0.0051 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=2.65 cfs @ 12.09 hrs HW=95.61' TW=95.41' (Dynamic Tailwater)
1=18" RCP (Outlet Controls 2.65 cfs @ 2.27 fps)

Pond D04P: DMH #4



Summary for Pond D06P: DMH #6

Inflow Area = 1.327 ac, 76.92% Impervious, Inflow Depth > 5.98" for 25 YR - 24 HR event
Inflow = 3.59 cfs @ 12.18 hrs, Volume= 0.662 af
Outflow = 3.58 cfs @ 12.18 hrs, Volume= 0.661 af, Atten= 0%, Lag= 0.0 min
Primary = 3.58 cfs @ 12.18 hrs, Volume= 0.661 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 94.54' @ 12.35 hrs Surf.Area= 0.000 ac Storage= 0.000 af
Flood Elev= 98.05' Surf.Area= 0.000 ac Storage= 0.002 af

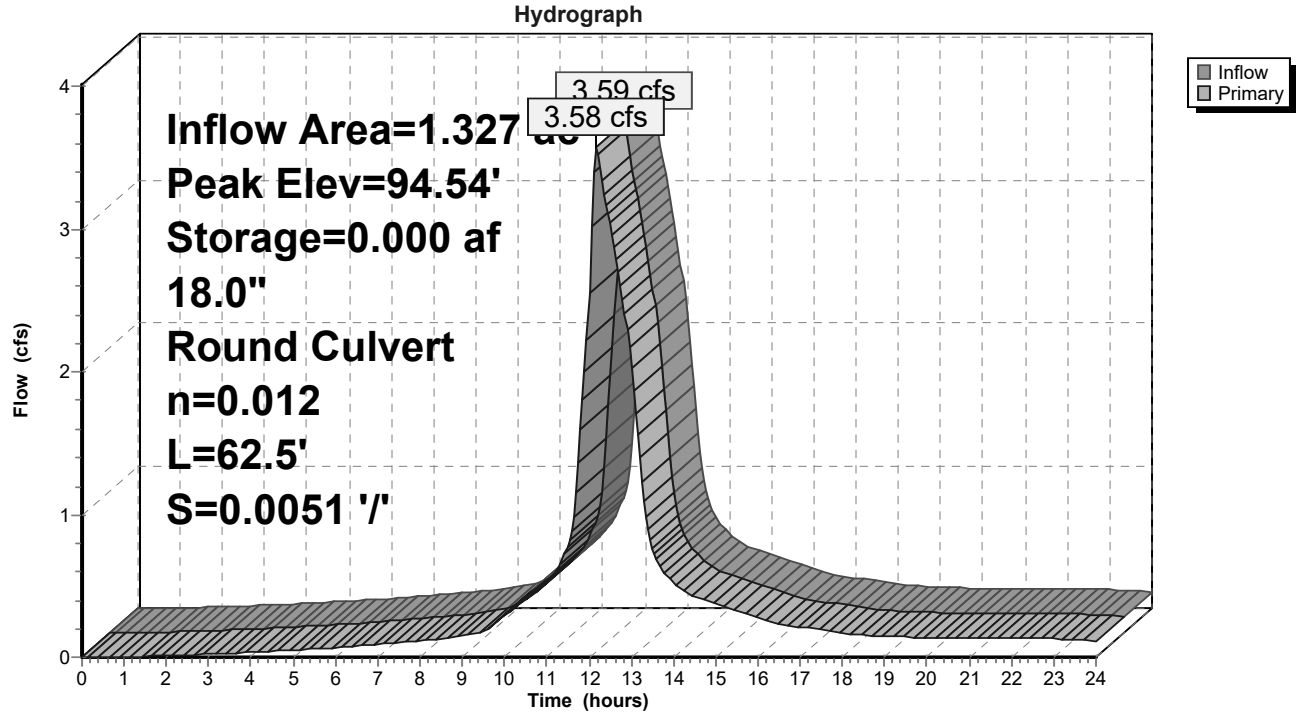
Plug-Flow detention time= 0.5 min calculated for 0.661 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (798.2 - 798.1)

Volume	Invert	Avail.Storage	Storage Description
#1	92.82'	0.002 af	**4.00'D x 5.86'H 4' Structure**

Device	Routing	Invert	Outlet Devices
#1	Primary	92.82'	**18.0" Round 18" HDPE N-12** L= 62.5' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 92.82' / 92.50' S= 0.0051 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=2.46 cfs @ 12.18 hrs HW=94.40' TW=94.31' (Dynamic Tailwater)
↑**1=18" HDPE N-12** (Outlet Controls 2.46 cfs @ 1.64 fps)

Pond D06P: DMH #6



Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment #1 Runoff Area=24,233 sf 27.47% Impervious Runoff Depth>1.71"
Tc=6.0 min CN=80 Runoff=1.09 cfs 0.079 af

Subcatchment 2S: Subcatchment #2 Runoff Area=67,977 sf 0.09% Impervious Runoff Depth>1.18"
Flow Length=251' Tc=25.7 min CN=72 Runoff=1.24 cfs 0.153 af

Subcatchment 4S: Subcatchment #4 Runoff Area=106,193 sf 30.27% Impervious Runoff Depth>0.49"
Flow Length=431' Tc=35.4 min CN=58 Runoff=0.50 cfs 0.099 af

Subcatchment 11S: Subcatchment #11 Runoff Area=47,072 sf 44.01% Impervious Runoff Depth>2.10"
Tc=6.0 min CN=85 Runoff=2.61 cfs 0.189 af

Subcatchment 13S: Subcatchment #13 Runoff Area=60,719 sf 52.40% Impervious Runoff Depth>2.27"
Tc=6.0 min CN=87 Runoff=3.62 cfs 0.264 af

Subcatchment 14S: Subcatchment #14 Runoff Area=22,059 sf 53.15% Impervious Runoff Depth>2.27"
Tc=6.0 min CN=87 Runoff=1.32 cfs 0.096 af

Subcatchment 15S: Subcatchment #15 Runoff Area=28,560 sf 62.85% Impervious Runoff Depth>2.54"
Tc=6.0 min CN=90 Runoff=1.88 cfs 0.139 af

Subcatchment 16S: Subcatchment #16 Runoff Area=20,779 sf 53.27% Impervious Runoff Depth>2.27"
Tc=6.0 min CN=87 Runoff=1.24 cfs 0.090 af

Subcatchment 17S: Lodging Building A Runoff Area=15,097 sf 100.00% Impervious Runoff Depth>3.36"
Tc=6.0 min CN=98 Runoff=1.19 cfs 0.097 af

Subcatchment 18S: Res Building B Runoff Area=15,097 sf 100.00% Impervious Runoff Depth>3.36"
Tc=6.0 min CN=98 Runoff=1.19 cfs 0.097 af

Subcatchment 19S: Res Building C Runoff Area=15,097 sf 100.00% Impervious Runoff Depth>3.36"
Tc=6.0 min CN=98 Runoff=1.19 cfs 0.097 af

Subcatchment 20S: Inlet Sump Runoff Area=12,580 sf 0.00% Impervious Runoff Depth>0.80"
Tc=6.0 min CN=65 Runoff=0.23 cfs 0.019 af

Subcatchment 21S: Subcatchment #21 Runoff Area=6,962 sf 100.00% Impervious Runoff Depth>3.36"
Tc=6.0 min CN=98 Runoff=0.55 cfs 0.045 af

Subcatchment 32S: Subcatchment #32 Runoff Area=4,612 sf 86.88% Impervious Runoff Depth>3.04"
Tc=6.0 min CN=95 Runoff=0.35 cfs 0.027 af

Subcatchment 33S: Subcatchment #33 Runoff Area=5,193 sf 77.18% Impervious Runoff Depth>2.83"
Tc=6.0 min CN=93 Runoff=0.37 cfs 0.028 af

Subcatchment 34S: Subcatchment #34 Runoff Area=4,481 sf 86.03% Impervious Runoff Depth>3.04"
Tc=6.0 min CN=95 Runoff=0.34 cfs 0.026 af

Subcatchment 35S: Subcatchment #35 Runoff Area=4,153 sf 78.57% Impervious Runoff Depth>2.83"
Tc=6.0 min CN=93 Runoff=0.30 cfs 0.022 af

Subcatchment 36S: Subcatchment #36 Runoff Area=2,332 sf 82.33% Impervious Runoff Depth>2.93"
Tc=6.0 min CN=94 Runoff=0.17 cfs 0.013 af

Subcatchment 37S: Subcatchment #37 Runoff Area=3,187 sf 74.65% Impervious Runoff Depth>2.73"
Tc=6.0 min CN=92 Runoff=0.22 cfs 0.017 af

Subcatchment 38S: Subcatchment #38 Runoff Area=2,410 sf 89.54% Impervious Runoff Depth>3.04"
Tc=6.0 min CN=95 Runoff=0.18 cfs 0.014 af

Reach 15AR: Overland flow Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.030 L=30.0' S=0.0167 '/' Capacity=158.86 cfs Outflow=0.00 cfs 0.000 af

Reach 15R: Swale Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.035 L=70.0' S=0.0071 '/' Capacity=31.36 cfs Outflow=0.00 cfs 0.000 af

Reach 100R: Final Reach 100 Inflow=1.15 cfs 0.167 af
Outflow=1.15 cfs 0.167 af

Reach 200R: Final Reach 200 Inflow=1.43 cfs 0.592 af
Outflow=1.43 cfs 0.592 af

Reach 400R: Final Reach 400 Inflow=0.59 cfs 0.181 af
Outflow=0.59 cfs 0.181 af

Pond 4P: Pond 4 Peak Elev=90.03' Storage=453 cf Inflow=0.56 cfs 0.139 af
15.0" Round Culvert n=0.024 L=59.0' S=0.0100 '/' Outflow=0.51 cfs 0.136 af

Pond 16P: Inlet Sump Peak Elev=94.26' Storage=527 cf Inflow=1.24 cfs 0.090 af
18.0" Round Culvert n=0.012 L=8.0' S=0.0188 '/' Outflow=0.81 cfs 0.090 af

Pond 20P: Nyloplast Basin Peak Elev=90.23' Storage=2 cf Inflow=0.23 cfs 0.019 af
8.0" Round Culvert n=0.012 L=350.0' S=0.0007 '/' Outflow=0.23 cfs 0.019 af

Pond 101P: Gravel Wetland #101 Peak Elev=93.59' Storage=7,787 cf Inflow=2.88 cfs 0.263 af
Primary=0.07 cfs 0.088 af Secondary=0.00 cfs 0.000 af Tertiary=0.00 cfs 0.000 af Outflow=0.07 cfs 0.088 af

Pond 102P: StormTech SC740 #102 Peak Elev=93.93' Storage=2,841 cf Inflow=1.19 cfs 0.097 af
Outflow=0.07 cfs 0.045 af

Pond 103P: Gravel Wetland #103 Peak Elev=93.88' Storage=18,444 cf Inflow=7.19 cfs 0.766 af
Primary=0.17 cfs 0.207 af Secondary=0.39 cfs 0.232 af Tertiary=0.00 cfs 0.000 af Outflow=0.56 cfs 0.439 af

Pond 104P: Gravel Wetland #104 Peak Elev=92.20' Storage=3,288 cf Inflow=1.32 cfs 0.096 af
Primary=0.02 cfs 0.021 af Secondary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.021 af

Pond 105P: Detention Pond #105 Peak Elev=95.00' Storage=2,725 cf Inflow=3.85 cfs 0.297 af
Primary=2.14 cfs 0.296 af Secondary=0.00 cfs 0.000 af Outflow=2.14 cfs 0.296 af

Pond 106P: StormTech SC740 #106 Peak Elev=93.84' Storage=2,176 cf Inflow=1.19 cfs 0.097 af
Outflow=0.09 cfs 0.060 af

Pond C01P: CB #1 Peak Elev=89.70' Storage=4 cf Inflow=0.59 cfs 0.181 af
15.0" Round Culvert n=0.012 L=42.0' S=0.0100 '/' Outflow=0.59 cfs 0.181 af

Pond C02P: CB #2 Peak Elev=94.11' Storage=0.000 af Inflow=1.42 cfs 0.145 af
18.0" Round Culvert n=0.012 L=55.0' S=0.0055 '/' Outflow=1.42 cfs 0.144 af

Pond C03P: CB #3 Peak Elev=94.29' Storage=0.000 af Inflow=0.37 cfs 0.028 af
12.0" Round Culvert n=0.012 L=53.5' S=0.0056 '/' Outflow=0.37 cfs 0.028 af

Pond C04P: CB #4 Peak Elev=95.34' Storage=0.000 af Inflow=1.52 cfs 0.123 af
18.0" Round Culvert n=0.012 L=32.0' S=0.0050 '/' Outflow=1.52 cfs 0.123 af

Pond C05P: CB #5 Peak Elev=95.18' Storage=0.000 af Inflow=0.30 cfs 0.022 af
12.0" Round Culvert n=0.012 L=10.7' S=0.0056 '/' Outflow=0.29 cfs 0.022 af

Pond C06P: CB #6 Peak Elev=95.17' Storage=0.000 af Inflow=0.17 cfs 0.013 af
12.0" Round Culvert n=0.012 L=28.5' S=0.0053 '/' Outflow=0.16 cfs 0.013 af

Pond C07P: CB #7 Peak Elev=94.02' Storage=11 cf Inflow=2.27 cfs 0.313 af
18.0" Round Culvert n=0.012 L=40.0' S=0.0050 '/' Outflow=2.27 cfs 0.313 af

Pond C08P: CB #8 Peak Elev=93.59' Storage=4 cf Inflow=0.18 cfs 0.014 af
12.0" Round Culvert n=0.012 L=9.0' S=0.0111 '/' Outflow=0.18 cfs 0.014 af

Pond D01P: DMH #1 Peak Elev=93.88' Storage=0.000 af Inflow=1.42 cfs 0.144 af
18.0" Round Culvert n=0.012 L=120.0' S=0.0050 '/' Outflow=1.42 cfs 0.144 af

Pond D04P: DMH #4 Peak Elev=95.17' Storage=0.000 af Inflow=1.97 cfs 0.159 af
18.0" Round Culvert n=0.012 L=78.0' S=0.0051 '/' Outflow=1.97 cfs 0.159 af

Pond D06P: DMH #6 Peak Elev=93.88' Storage=0.000 af Inflow=2.27 cfs 0.313 af
18.0" Round Culvert n=0.012 L=62.5' S=0.0051 '/' Outflow=2.26 cfs 0.313 af

Total Runoff Area = 10.762 ac Runoff Volume = 1.612 af Average Runoff Depth = 1.80"
56.06% Pervious = 6.033 ac 43.94% Impervious = 4.729 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment #1 Runoff Area=24,233 sf 27.47% Impervious Runoff Depth>3.28"
Tc=6.0 min CN=80 Runoff=2.09 cfs 0.152 af

Subcatchment 2S: Subcatchment #2 Runoff Area=67,977 sf 0.09% Impervious Runoff Depth>2.53"
Flow Length=251' Tc=25.7 min CN=72 Runoff=2.79 cfs 0.329 af

Subcatchment 4S: Subcatchment #4 Runoff Area=106,193 sf 30.27% Impervious Runoff Depth>1.40"
Flow Length=431' Tc=35.4 min CN=58 Runoff=1.90 cfs 0.285 af

Subcatchment 11S: Subcatchment #11 Runoff Area=47,072 sf 44.01% Impervious Runoff Depth>3.77"
Tc=6.0 min CN=85 Runoff=4.62 cfs 0.340 af

Subcatchment 13S: Subcatchment #13 Runoff Area=60,719 sf 52.40% Impervious Runoff Depth>3.98"
Tc=6.0 min CN=87 Runoff=6.22 cfs 0.462 af

Subcatchment 14S: Subcatchment #14 Runoff Area=22,059 sf 53.15% Impervious Runoff Depth>3.98"
Tc=6.0 min CN=87 Runoff=2.26 cfs 0.168 af

Subcatchment 15S: Subcatchment #15 Runoff Area=28,560 sf 62.85% Impervious Runoff Depth>4.30"
Tc=6.0 min CN=90 Runoff=3.10 cfs 0.235 af

Subcatchment 16S: Subcatchment #16 Runoff Area=20,779 sf 53.27% Impervious Runoff Depth>3.98"
Tc=6.0 min CN=87 Runoff=2.13 cfs 0.158 af

Subcatchment 17S: Lodging Building A Runoff Area=15,097 sf 100.00% Impervious Runoff Depth>5.20"
Tc=6.0 min CN=98 Runoff=1.80 cfs 0.150 af

Subcatchment 18S: Res Building B Runoff Area=15,097 sf 100.00% Impervious Runoff Depth>5.20"
Tc=6.0 min CN=98 Runoff=1.80 cfs 0.150 af

Subcatchment 19S: Res Building C Runoff Area=15,097 sf 100.00% Impervious Runoff Depth>5.20"
Tc=6.0 min CN=98 Runoff=1.80 cfs 0.150 af

Subcatchment 20S: Inlet Sump Runoff Area=12,580 sf 0.00% Impervious Runoff Depth>1.95"
Tc=6.0 min CN=65 Runoff=0.63 cfs 0.047 af

Subcatchment 21S: Subcatchment #21 Runoff Area=6,962 sf 100.00% Impervious Runoff Depth>5.20"
Tc=6.0 min CN=98 Runoff=0.83 cfs 0.069 af

Subcatchment 32S: Subcatchment #32 Runoff Area=4,612 sf 86.88% Impervious Runoff Depth>4.85"
Tc=6.0 min CN=95 Runoff=0.54 cfs 0.043 af

Subcatchment 33S: Subcatchment #33 Runoff Area=5,193 sf 77.18% Impervious Runoff Depth>4.63"
Tc=6.0 min CN=93 Runoff=0.59 cfs 0.046 af

Subcatchment 34S: Subcatchment #34 Runoff Area=4,481 sf 86.03% Impervious Runoff Depth>4.85"
Tc=6.0 min CN=95 Runoff=0.52 cfs 0.042 af

Subcatchment 35S: Subcatchment #35 Runoff Area=4,153 sf 78.57% Impervious Runoff Depth>4.63"
Tc=6.0 min CN=93 Runoff=0.47 cfs 0.037 af

Subcatchment 36S: Subcatchment #36 Runoff Area=2,332 sf 82.33% Impervious Runoff Depth>4.74"
Tc=6.0 min CN=94 Runoff=0.27 cfs 0.021 af

Subcatchment 37S: Subcatchment #37 Runoff Area=3,187 sf 74.65% Impervious Runoff Depth>4.52"
Tc=6.0 min CN=92 Runoff=0.36 cfs 0.028 af

Subcatchment 38S: Subcatchment #38 Runoff Area=2,410 sf 89.54% Impervious Runoff Depth>4.85"
Tc=6.0 min CN=95 Runoff=0.28 cfs 0.022 af

Reach 15AR: Overland flow Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.030 L=30.0' S=0.0167 '/' Capacity=158.86 cfs Outflow=0.00 cfs 0.000 af

Reach 15R: Swale Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.035 L=70.0' S=0.0071 '/' Capacity=31.36 cfs Outflow=0.00 cfs 0.000 af

Reach 100R: Final Reach 100 Inflow=2.16 cfs 0.335 af
Outflow=2.16 cfs 0.335 af

Reach 200R: Final Reach 200 Inflow=5.90 cfs 1.244 af
Outflow=5.90 cfs 1.244 af

Reach 400R: Final Reach 400 Inflow=2.02 cfs 0.437 af
Outflow=2.02 cfs 0.437 af

Pond 4P: Pond 4 Peak Elev=90.55' Storage=1,215 cf Inflow=2.07 cfs 0.372 af
15.0" Round Culvert n=0.024 L=59.0' S=0.0100 '/' Outflow=1.91 cfs 0.368 af

Pond 16P: Inlet Sump Peak Elev=94.49' Storage=934 cf Inflow=2.13 cfs 0.158 af
18.0" Round Culvert n=0.012 L=8.0' S=0.0188 '/' Outflow=1.31 cfs 0.157 af

Pond 20P: Nyloplast Basin Peak Elev=91.06' Storage=4 cf Inflow=0.63 cfs 0.047 af
8.0" Round Culvert n=0.012 L=350.0' S=0.0007 '/' Outflow=0.63 cfs 0.047 af

Pond 101P: Gravel Wetland #101 Peak Elev=93.97' Storage=11,886 cf Inflow=4.97 cfs 0.448 af
Primary=0.08 cfs 0.104 af Secondary=0.23 cfs 0.079 af Tertiary=0.00 cfs 0.000 af Outflow=0.31 cfs 0.183 af

Pond 102P: StormTech SC740 #102 Peak Elev=94.45' Storage=4,332 cf Inflow=1.80 cfs 0.150 af
Outflow=0.06 cfs 0.074 af

Pond 103P: Gravel Wetland #103 Peak Elev=94.32' Storage=25,761 cf Inflow=11.41 cfs 1.291 af
Primary=0.19 cfs 0.237 af Secondary=2.52 cfs 0.636 af Tertiary=1.08 cfs 0.042 af Outflow=3.79 cfs 0.915 af

Pond 104P: Gravel Wetland #104 Peak Elev=92.76' Storage=5,761 cf Inflow=2.26 cfs 0.168 af
Primary=0.04 cfs 0.040 af Secondary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.040 af

Pond 105P: Detention Pond #105 Peak Elev=95.42' Storage=4,321 cf Inflow=6.14 cfs 0.484 af
Primary=2.89 cfs 0.482 af Secondary=0.00 cfs 0.000 af Outflow=2.89 cfs 0.482 af

Pond 106P: StormTech SC740 #106 Peak Elev=94.48' Storage=3,691 cf Inflow=1.80 cfs 0.150 af
Outflow=0.08 cfs 0.086 af

Pond C01P: CB #1 Peak Elev=90.06' Storage=9 cf Inflow=2.02 cfs 0.437 af
15.0" Round Culvert n=0.012 L=42.0' S=0.0100 '/' Outflow=2.02 cfs 0.437 af

Pond C02P: CB #2 Peak Elev=94.36' Storage=0.000 af Inflow=2.30 cfs 0.246 af
18.0" Round Culvert n=0.012 L=55.0' S=0.0055 '/' Outflow=2.30 cfs 0.246 af

Pond C03P: CB #3 Peak Elev=94.46' Storage=0.000 af Inflow=0.59 cfs 0.046 af
12.0" Round Culvert n=0.012 L=53.5' S=0.0056 '/' Outflow=0.59 cfs 0.046 af

Pond C04P: CB #4 Peak Elev=95.58' Storage=0.000 af Inflow=2.33 cfs 0.192 af
18.0" Round Culvert n=0.012 L=32.0' S=0.0050 '/' Outflow=2.32 cfs 0.192 af

Pond C05P: CB #5 Peak Elev=95.48' Storage=0.000 af Inflow=0.47 cfs 0.037 af
12.0" Round Culvert n=0.012 L=10.7' S=0.0056 '/' Outflow=0.46 cfs 0.037 af

Pond C06P: CB #6 Peak Elev=95.48' Storage=0.000 af Inflow=0.27 cfs 0.021 af
12.0" Round Culvert n=0.012 L=28.5' S=0.0053 '/' Outflow=0.26 cfs 0.021 af

Pond C07P: CB #7 Peak Elev=94.53' Storage=18 cf Inflow=3.08 cfs 0.509 af
18.0" Round Culvert n=0.012 L=40.0' S=0.0050 '/' Outflow=3.07 cfs 0.509 af

Pond C08P: CB #8 Peak Elev=93.97' Storage=9 cf Inflow=0.28 cfs 0.022 af
12.0" Round Culvert n=0.012 L=9.0' S=0.0111 '/' Outflow=0.28 cfs 0.022 af

Pond D01P: DMH #1 Peak Elev=94.32' Storage=0.000 af Inflow=2.30 cfs 0.246 af
18.0" Round Culvert n=0.012 L=120.0' S=0.0050 '/' Outflow=2.29 cfs 0.246 af

Pond D04P: DMH #4 Peak Elev=95.48' Storage=0.000 af Inflow=3.04 cfs 0.250 af
18.0" Round Culvert n=0.012 L=78.0' S=0.0051 '/' Outflow=3.04 cfs 0.250 af

Pond D06P: DMH #6 Peak Elev=94.40' Storage=0.000 af Inflow=3.07 cfs 0.509 af
18.0" Round Culvert n=0.012 L=62.5' S=0.0051 '/' Outflow=3.07 cfs 0.509 af

Total Runoff Area = 10.762 ac Runoff Volume = 2.934 af Average Runoff Depth = 3.27"
56.06% Pervious = 6.033 ac 43.94% Impervious = 4.729 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment #1 Runoff Area=24,233 sf 27.47% Impervious Runoff Depth>4.58"
Tc=6.0 min CN=80 Runoff=2.90 cfs 0.212 af

Subcatchment 2S: Subcatchment #2 Runoff Area=67,977 sf 0.09% Impervious Runoff Depth>3.71"
Flow Length=251' Tc=25.7 min CN=72 Runoff=4.12 cfs 0.482 af

Subcatchment 4S: Subcatchment #4 Runoff Area=106,193 sf 30.27% Impervious Runoff Depth>2.31"
Flow Length=431' Tc=35.4 min CN=58 Runoff=3.31 cfs 0.469 af

Subcatchment 11S: Subcatchment #11 Runoff Area=47,072 sf 44.01% Impervious Runoff Depth>5.13"
Tc=6.0 min CN=85 Runoff=6.20 cfs 0.462 af

Subcatchment 13S: Subcatchment #13 Runoff Area=60,719 sf 52.40% Impervious Runoff Depth>5.36"
Tc=6.0 min CN=87 Runoff=8.25 cfs 0.623 af

Subcatchment 14S: Subcatchment #14 Runoff Area=22,059 sf 53.15% Impervious Runoff Depth>5.36"
Tc=6.0 min CN=87 Runoff=3.00 cfs 0.226 af

Subcatchment 15S: Subcatchment #15 Runoff Area=28,560 sf 62.85% Impervious Runoff Depth>5.70"
Tc=6.0 min CN=90 Runoff=4.05 cfs 0.312 af

Subcatchment 16S: Subcatchment #16 Runoff Area=20,779 sf 53.27% Impervious Runoff Depth>5.36"
Tc=6.0 min CN=87 Runoff=2.82 cfs 0.213 af

Subcatchment 17S: Lodging Building A Runoff Area=15,097 sf 100.00% Impervious Runoff Depth>6.64"
Tc=6.0 min CN=98 Runoff=2.28 cfs 0.192 af

Subcatchment 18S: Res Building B Runoff Area=15,097 sf 100.00% Impervious Runoff Depth>6.64"
Tc=6.0 min CN=98 Runoff=2.28 cfs 0.192 af

Subcatchment 19S: Res Building C Runoff Area=15,097 sf 100.00% Impervious Runoff Depth>6.64"
Tc=6.0 min CN=98 Runoff=2.28 cfs 0.192 af

Subcatchment 20S: Inlet Sump Runoff Area=12,580 sf 0.00% Impervious Runoff Depth>3.01"
Tc=6.0 min CN=65 Runoff=0.99 cfs 0.072 af

Subcatchment 21S: Subcatchment #21 Runoff Area=6,962 sf 100.00% Impervious Runoff Depth>6.64"
Tc=6.0 min CN=98 Runoff=1.05 cfs 0.088 af

Subcatchment 32S: Subcatchment #32 Runoff Area=4,612 sf 86.88% Impervious Runoff Depth>6.28"
Tc=6.0 min CN=95 Runoff=0.69 cfs 0.055 af

Subcatchment 33S: Subcatchment #33 Runoff Area=5,193 sf 77.18% Impervious Runoff Depth>6.05"
Tc=6.0 min CN=93 Runoff=0.76 cfs 0.060 af

Subcatchment 34S: Subcatchment #34 Runoff Area=4,481 sf 86.03% Impervious Runoff Depth>6.28"
Tc=6.0 min CN=95 Runoff=0.67 cfs 0.054 af

Subcatchment 35S: Subcatchment #35 Runoff Area=4,153 sf 78.57% Impervious Runoff Depth>6.05"
Tc=6.0 min CN=93 Runoff=0.61 cfs 0.048 af

Subcatchment 36S: Subcatchment #36 Runoff Area=2,332 sf 82.33% Impervious Runoff Depth>6.17"
Tc=6.0 min CN=94 Runoff=0.34 cfs 0.028 af

Subcatchment 37S: Subcatchment #37 Runoff Area=3,187 sf 74.65% Impervious Runoff Depth>5.93"
Tc=6.0 min CN=92 Runoff=0.46 cfs 0.036 af

Subcatchment 38S: Subcatchment #38 Runoff Area=2,410 sf 89.54% Impervious Runoff Depth>6.28"
Tc=6.0 min CN=95 Runoff=0.36 cfs 0.029 af

Reach 15AR: Overland flow Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.030 L=30.0' S=0.0167 '/' Capacity=158.86 cfs Outflow=0.00 cfs 0.000 af

Reach 15R: Swale Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.035 L=70.0' S=0.0071 '/' Capacity=31.36 cfs Outflow=0.00 cfs 0.000 af

Reach 100R: Final Reach 100 Inflow=2.98 cfs 0.552 af
Outflow=2.98 cfs 0.552 af

Reach 200R: Final Reach 200 Inflow=12.39 cfs 1.789 af
Outflow=12.39 cfs 1.789 af

Reach 400R: Final Reach 400 Inflow=3.39 cfs 0.718 af
Outflow=3.39 cfs 0.718 af

Pond 4P: Pond 4 Peak Elev=90.99' Storage=2,014 cf Inflow=3.61 cfs 0.634 af
15.0" Round Culvert n=0.024 L=59.0' S=0.0100 '/' Outflow=3.26 cfs 0.629 af

Pond 16P: Inlet Sump Peak Elev=94.68' Storage=1,335 cf Inflow=2.82 cfs 0.213 af
18.0" Round Culvert n=0.012 L=8.0' S=0.0188 '/' Outflow=1.60 cfs 0.211 af

Pond 20P: Nyloplast Basin Peak Elev=91.82' Storage=33 cf Inflow=0.99 cfs 0.072 af
8.0" Round Culvert n=0.012 L=350.0' S=0.0007 '/' Outflow=0.85 cfs 0.072 af

Pond 101P: Gravel Wetland #101 Peak Elev=94.03' Storage=12,605 cf Inflow=6.63 cfs 0.608 af
Primary=0.08 cfs 0.109 af Secondary=1.12 cfs 0.227 af Tertiary=0.13 cfs 0.004 af Outflow=1.33 cfs 0.340 af

Pond 102P: StormTech SC740 #102 Peak Elev=94.84' Storage=5,368 cf Inflow=2.28 cfs 0.192 af
Outflow=0.08 cfs 0.099 af

Pond 103P: Gravel Wetland #103 Peak Elev=94.40' Storage=27,139 cf Inflow=14.51 cfs 1.710 af
Primary=0.20 cfs 0.251 af Secondary=4.56 cfs 0.876 af Tertiary=3.53 cfs 0.180 af Outflow=8.29 cfs 1.307 af

Pond 104P: Gravel Wetland #104 Peak Elev=92.96' Storage=6,789 cf Inflow=3.00 cfs 0.226 af
Primary=0.12 cfs 0.093 af Secondary=0.00 cfs 0.000 af Outflow=0.12 cfs 0.093 af

Pond 105P: Detention Pond #105 Peak Elev=95.76' Storage=5,793 cf Inflow=7.91 cfs 0.633 af
Primary=3.32 cfs 0.626 af Secondary=0.00 cfs 0.000 af Outflow=3.32 cfs 0.626 af

Pond 106P: StormTech SC740 #106 Peak Elev=94.98' Storage=4,788 cf Inflow=2.28 cfs 0.192 af
Outflow=0.10 cfs 0.116 af

Pond C01P: CB #1 Peak Elev=90.34' Storage=13 cf Inflow=3.39 cfs 0.718 af
15.0" Round Culvert n=0.012 L=42.0' S=0.0100 '/' Outflow=3.39 cfs 0.718 af

Pond C02P: CB #2 Peak Elev=94.60' Storage=0.000 af Inflow=2.89 cfs 0.327 af
18.0" Round Culvert n=0.012 L=55.0' S=0.0055 '/' Outflow=2.89 cfs 0.327 af

Pond C03P: CB #3 Peak Elev=94.63' Storage=0.000 af Inflow=0.76 cfs 0.060 af
12.0" Round Culvert n=0.012 L=53.5' S=0.0056 '/' Outflow=0.75 cfs 0.060 af

Pond C04P: CB #4 Peak Elev=95.82' Storage=0.000 af Inflow=2.95 cfs 0.246 af
18.0" Round Culvert n=0.012 L=32.0' S=0.0050 '/' Outflow=2.94 cfs 0.246 af

Pond C05P: CB #5 Peak Elev=95.80' Storage=0.000 af Inflow=0.61 cfs 0.048 af
12.0" Round Culvert n=0.012 L=10.7' S=0.0056 '/' Outflow=0.59 cfs 0.048 af

Pond C06P: CB #6 Peak Elev=95.80' Storage=0.000 af Inflow=0.34 cfs 0.028 af
12.0" Round Culvert n=0.012 L=28.5' S=0.0053 '/' Outflow=0.33 cfs 0.027 af

Pond C07P: CB #7 Peak Elev=94.77' Storage=21 cf Inflow=3.59 cfs 0.662 af
18.0" Round Culvert n=0.012 L=40.0' S=0.0050 '/' Outflow=3.59 cfs 0.662 af

Pond C08P: CB #8 Peak Elev=94.03' Storage=10 cf Inflow=0.36 cfs 0.029 af
12.0" Round Culvert n=0.012 L=9.0' S=0.0111 '/' Outflow=0.36 cfs 0.029 af

Pond D01P: DMH #1 Peak Elev=94.48' Storage=0.000 af Inflow=2.89 cfs 0.327 af
18.0" Round Culvert n=0.012 L=120.0' S=0.0050 '/' Outflow=2.89 cfs 0.327 af

Pond D04P: DMH #4 Peak Elev=95.80' Storage=0.000 af Inflow=3.87 cfs 0.321 af
18.0" Round Culvert n=0.012 L=78.0' S=0.0051 '/' Outflow=3.86 cfs 0.321 af

Pond D06P: DMH #6 Peak Elev=94.54' Storage=0.000 af Inflow=3.59 cfs 0.662 af
18.0" Round Culvert n=0.012 L=62.5' S=0.0051 '/' Outflow=3.58 cfs 0.661 af

Total Runoff Area = 10.762 ac Runoff Volume = 4.045 af Average Runoff Depth = 4.51"
56.06% Pervious = 6.033 ac 43.94% Impervious = 4.729 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment #1 Runoff Area=24,233 sf 27.47% Impervious Runoff Depth>5.84"
Tc=6.0 min CN=80 Runoff=3.66 cfs 0.271 af

Subcatchment 2S: Subcatchment #2 Runoff Area=67,977 sf 0.09% Impervious Runoff Depth>4.87"
Flow Length=251' Tc=25.7 min CN=72 Runoff=5.42 cfs 0.634 af

Subcatchment 4S: Subcatchment #4 Runoff Area=106,193 sf 30.27% Impervious Runoff Depth>3.25"
Flow Length=431' Tc=35.4 min CN=58 Runoff=4.78 cfs 0.661 af

Subcatchment 11S: Subcatchment #11 Runoff Area=47,072 sf 44.01% Impervious Runoff Depth>6.43"
Tc=6.0 min CN=85 Runoff=7.67 cfs 0.579 af

Subcatchment 13S: Subcatchment #13 Runoff Area=60,719 sf 52.40% Impervious Runoff Depth>6.67"
Tc=6.0 min CN=87 Runoff=10.15 cfs 0.775 af

Subcatchment 14S: Subcatchment #14 Runoff Area=22,059 sf 53.15% Impervious Runoff Depth>6.67"
Tc=6.0 min CN=87 Runoff=3.69 cfs 0.281 af

Subcatchment 15S: Subcatchment #15 Runoff Area=28,560 sf 62.85% Impervious Runoff Depth>7.03"
Tc=6.0 min CN=90 Runoff=4.93 cfs 0.384 af

Subcatchment 16S: Subcatchment #16 Runoff Area=20,779 sf 53.27% Impervious Runoff Depth>6.67"
Tc=6.0 min CN=87 Runoff=3.47 cfs 0.265 af

Subcatchment 17S: Lodging Building A Runoff Area=15,097 sf 100.00% Impervious Runoff Depth>7.99"
Tc=6.0 min CN=98 Runoff=2.73 cfs 0.231 af

Subcatchment 18S: Res Building B Runoff Area=15,097 sf 100.00% Impervious Runoff Depth>7.99"
Tc=6.0 min CN=98 Runoff=2.73 cfs 0.231 af

Subcatchment 19S: Res Building C Runoff Area=15,097 sf 100.00% Impervious Runoff Depth>7.99"
Tc=6.0 min CN=98 Runoff=2.73 cfs 0.231 af

Subcatchment 20S: Inlet Sump Runoff Area=12,580 sf 0.00% Impervious Runoff Depth>4.08"
Tc=6.0 min CN=65 Runoff=1.35 cfs 0.098 af

Subcatchment 21S: Subcatchment #21 Runoff Area=6,962 sf 100.00% Impervious Runoff Depth>7.99"
Tc=6.0 min CN=98 Runoff=1.26 cfs 0.106 af

Subcatchment 32S: Subcatchment #32 Runoff Area=4,612 sf 86.88% Impervious Runoff Depth>7.63"
Tc=6.0 min CN=95 Runoff=0.83 cfs 0.067 af

Subcatchment 33S: Subcatchment #33 Runoff Area=5,193 sf 77.18% Impervious Runoff Depth>7.39"
Tc=6.0 min CN=93 Runoff=0.92 cfs 0.073 af

Subcatchment 34S: Subcatchment #34 Runoff Area=4,481 sf 86.03% Impervious Runoff Depth>7.63"
Tc=6.0 min CN=95 Runoff=0.80 cfs 0.065 af

Subcatchment 35S: Subcatchment #35 Runoff Area=4,153 sf 78.57% Impervious Runoff Depth>7.39"
Tc=6.0 min CN=93 Runoff=0.73 cfs 0.059 af

Subcatchment 36S: Subcatchment #36 Runoff Area=2,332 sf 82.33% Impervious Runoff Depth>7.51"
Tc=6.0 min CN=94 Runoff=0.42 cfs 0.033 af

Subcatchment 37S: Subcatchment #37 Runoff Area=3,187 sf 74.65% Impervious Runoff Depth>7.27"
Tc=6.0 min CN=92 Runoff=0.56 cfs 0.044 af

Subcatchment 38S: Subcatchment #38 Runoff Area=2,410 sf 89.54% Impervious Runoff Depth>7.63"
Tc=6.0 min CN=95 Runoff=0.43 cfs 0.035 af

Reach 15AR: Overland flow Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.030 L=30.0' S=0.0167 '/' Capacity=158.86 cfs Outflow=0.00 cfs 0.000 af

Reach 15R: Swale Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.035 L=70.0' S=0.0071 '/' Capacity=31.36 cfs Outflow=0.00 cfs 0.000 af

Reach 100R: Final Reach 100 Inflow=4.90 cfs 0.758 af
Outflow=4.90 cfs 0.758 af

Reach 200R: Final Reach 200 Inflow=17.30 cfs 2.309 af
Outflow=17.30 cfs 2.309 af

Reach 400R: Final Reach 400 Inflow=4.26 cfs 1.001 af
Outflow=4.26 cfs 1.001 af

Pond 4P: Pond 4 Peak Elev=91.59' Storage=3,787 cf Inflow=5.43 cfs 0.901 af
15.0" Round Culvert n=0.024 L=59.0' S=0.0100 '/' Outflow=4.12 cfs 0.895 af

Pond 16P: Inlet Sump Peak Elev=94.86' Storage=1,806 cf Inflow=3.47 cfs 0.265 af
18.0" Round Culvert n=0.012 L=8.0' S=0.0188 '/' Outflow=1.78 cfs 0.263 af

Pond 20P: Nyloplast Basin Peak Elev=92.08' Storage=213 cf Inflow=1.35 cfs 0.098 af
8.0" Round Culvert n=0.012 L=350.0' S=0.0007 '/' Outflow=0.85 cfs 0.098 af

Pond 101P: Gravel Wetland #101 Peak Elev=94.10' Storage=13,455 cf Inflow=8.18 cfs 0.756 af
Primary=0.09 cfs 0.113 af Secondary=2.54 cfs 0.350 af Tertiary=0.72 cfs 0.025 af Outflow=3.34 cfs 0.488 af

Pond 102P: StormTech SC740 #102 Peak Elev=95.30' Storage=6,487 cf Inflow=2.73 cfs 0.231 af
Outflow=0.11 cfs 0.121 af

Pond 103P: Gravel Wetland #103 Peak Elev=94.47' Storage=28,343 cf Inflow=17.28 cfs 2.103 af
Primary=0.20 cfs 0.261 af Secondary=6.47 cfs 1.086 af Tertiary=6.33 cfs 0.328 af Outflow=12.99 cfs 1.675 af

Pond 104P: Gravel Wetland #104 Peak Elev=93.22' Storage=8,091 cf Inflow=3.69 cfs 0.281 af
Primary=0.18 cfs 0.142 af Secondary=0.00 cfs 0.000 af Outflow=0.18 cfs 0.142 af

Pond 105P: Detention Pond #105 Peak Elev=96.11' Storage=7,485 cf Inflow=9.56 cfs 0.772 af
Primary=3.40 cfs 0.760 af Secondary=0.00 cfs 0.000 af Outflow=3.40 cfs 0.760 af

Pond 106P: StormTech SC740 #106 Peak Elev=95.51' Storage=5,808 cf Inflow=2.73 cfs 0.231 af
Outflow=0.15 cfs 0.142 af

Pond C01P: CB #1 Peak Elev=90.51' Storage=15 cf Inflow=4.26 cfs 1.002 af
15.0" Round Culvert n=0.012 L=42.0' S=0.0100 '/' Outflow=4.26 cfs 1.001 af

Pond C02P: CB #2 Peak Elev=94.79' Storage=0.000 af Inflow=3.36 cfs 0.403 af
18.0" Round Culvert n=0.012 L=55.0' S=0.0055 '/' Outflow=3.36 cfs 0.403 af

Pond C03P: CB #3 Peak Elev=94.81' Storage=0.000 af Inflow=0.92 cfs 0.073 af
12.0" Round Culvert n=0.012 L=53.5' S=0.0056 '/' Outflow=0.91 cfs 0.073 af

Pond C04P: CB #4 Peak Elev=96.16' Storage=0.000 af Inflow=3.54 cfs 0.296 af
18.0" Round Culvert n=0.012 L=32.0' S=0.0050 '/' Outflow=3.53 cfs 0.296 af

Pond C05P: CB #5 Peak Elev=96.14' Storage=0.000 af Inflow=0.73 cfs 0.059 af
12.0" Round Culvert n=0.012 L=10.7' S=0.0056 '/' Outflow=0.72 cfs 0.059 af

Pond C06P: CB #6 Peak Elev=96.14' Storage=0.000 af Inflow=0.42 cfs 0.033 af
12.0" Round Culvert n=0.012 L=28.5' S=0.0053 '/' Outflow=0.40 cfs 0.033 af

Pond C07P: CB #7 Peak Elev=94.93' Storage=23 cf Inflow=3.89 cfs 0.804 af
18.0" Round Culvert n=0.012 L=40.0' S=0.0050 '/' Outflow=3.88 cfs 0.804 af

Pond C08P: CB #8 Peak Elev=94.10' Storage=11 cf Inflow=0.43 cfs 0.035 af
12.0" Round Culvert n=0.012 L=9.0' S=0.0111 '/' Outflow=0.43 cfs 0.035 af

Pond D01P: DMH #1 Peak Elev=94.63' Storage=0.000 af Inflow=3.36 cfs 0.403 af
18.0" Round Culvert n=0.012 L=120.0' S=0.0050 '/' Outflow=3.35 cfs 0.403 af

Pond D04P: DMH #4 Peak Elev=96.14' Storage=0.001 af Inflow=4.64 cfs 0.388 af
18.0" Round Culvert n=0.012 L=78.0' S=0.0051 '/' Outflow=4.64 cfs 0.388 af

Pond D06P: DMH #6 Peak Elev=94.65' Storage=0.001 af Inflow=3.88 cfs 0.804 af
18.0" Round Culvert n=0.012 L=62.5' S=0.0051 '/' Outflow=3.87 cfs 0.804 af

Total Runoff Area = 10.762 ac Runoff Volume = 5.123 af Average Runoff Depth = 5.71"
56.06% Pervious = 6.033 ac 43.94% Impervious = 4.729 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment #1 Runoff Area=24,233 sf 27.47% Impervious Runoff Depth>7.36"
Tc=6.0 min CN=80 Runoff=4.57 cfs 0.341 af

Subcatchment 2S: Subcatchment #2 Runoff Area=67,977 sf 0.09% Impervious Runoff Depth>6.31"
Flow Length=251' Tc=25.7 min CN=72 Runoff=6.99 cfs 0.821 af

Subcatchment 4S: Subcatchment #4 Runoff Area=106,193 sf 30.27% Impervious Runoff Depth>4.47"
Flow Length=431' Tc=35.4 min CN=58 Runoff=6.66 cfs 0.908 af

Subcatchment 11S: Subcatchment #11 Runoff Area=47,072 sf 44.01% Impervious Runoff Depth>7.99"
Tc=6.0 min CN=85 Runoff=9.42 cfs 0.720 af

Subcatchment 13S: Subcatchment #13 Runoff Area=60,719 sf 52.40% Impervious Runoff Depth>8.24"
Tc=6.0 min CN=87 Runoff=12.39 cfs 0.958 af

Subcatchment 14S: Subcatchment #14 Runoff Area=22,059 sf 53.15% Impervious Runoff Depth>8.24"
Tc=6.0 min CN=87 Runoff=4.50 cfs 0.348 af

Subcatchment 15S: Subcatchment #15 Runoff Area=28,560 sf 62.85% Impervious Runoff Depth>8.62"
Tc=6.0 min CN=90 Runoff=5.97 cfs 0.471 af

Subcatchment 16S: Subcatchment #16 Runoff Area=20,779 sf 53.27% Impervious Runoff Depth>8.24"
Tc=6.0 min CN=87 Runoff=4.24 cfs 0.328 af

Subcatchment 17S: Lodging Building A Runoff Area=15,097 sf 100.00% Impervious Runoff Depth>9.59"
Tc=6.0 min CN=98 Runoff=3.27 cfs 0.277 af

Subcatchment 18S: Res Building B Runoff Area=15,097 sf 100.00% Impervious Runoff Depth>9.59"
Tc=6.0 min CN=98 Runoff=3.27 cfs 0.277 af

Subcatchment 19S: Res Building C Runoff Area=15,097 sf 100.00% Impervious Runoff Depth>9.59"
Tc=6.0 min CN=98 Runoff=3.27 cfs 0.277 af

Subcatchment 20S: Inlet Sump Runoff Area=12,580 sf 0.00% Impervious Runoff Depth>5.42"
Tc=6.0 min CN=65 Runoff=1.80 cfs 0.131 af

Subcatchment 21S: Subcatchment #21 Runoff Area=6,962 sf 100.00% Impervious Runoff Depth>9.59"
Tc=6.0 min CN=98 Runoff=1.51 cfs 0.128 af

Subcatchment 32S: Subcatchment #32 Runoff Area=4,612 sf 86.88% Impervious Runoff Depth>9.23"
Tc=6.0 min CN=95 Runoff=0.99 cfs 0.081 af

Subcatchment 33S: Subcatchment #33 Runoff Area=5,193 sf 77.18% Impervious Runoff Depth>8.99"
Tc=6.0 min CN=93 Runoff=1.11 cfs 0.089 af

Subcatchment 34S: Subcatchment #34 Runoff Area=4,481 sf 86.03% Impervious Runoff Depth>9.23"
Tc=6.0 min CN=95 Runoff=0.96 cfs 0.079 af

Subcatchment 35S: Subcatchment #35 Runoff Area=4,153 sf 78.57% Impervious Runoff Depth>8.99"
Tc=6.0 min CN=93 Runoff=0.88 cfs 0.071 af

Subcatchment 36S: Subcatchment #36 Runoff Area=2,332 sf 82.33% Impervious Runoff Depth>9.11"
Tc=6.0 min CN=94 Runoff=0.50 cfs 0.041 af

Subcatchment 37S: Subcatchment #37 Runoff Area=3,187 sf 74.65% Impervious Runoff Depth>8.86"
Tc=6.0 min CN=92 Runoff=0.68 cfs 0.054 af

Subcatchment 38S: Subcatchment #38 Runoff Area=2,410 sf 89.54% Impervious Runoff Depth>9.23"
Tc=6.0 min CN=95 Runoff=0.52 cfs 0.043 af

Reach 15AR: Overland flow Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.030 L=30.0' S=0.0167 '/' Capacity=158.86 cfs Outflow=0.00 cfs 0.000 af

Reach 15R: Swale Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.035 L=70.0' S=0.0071 '/' Capacity=31.36 cfs Outflow=0.00 cfs 0.000 af

Reach 100R: Final Reach 100 Inflow=9.71 cfs 1.019 af
Outflow=9.71 cfs 1.019 af

Reach 200R: Final Reach 200 Inflow=22.33 cfs 2.949 af
Outflow=22.33 cfs 2.949 af

Reach 400R: Final Reach 400 Inflow=4.97 cfs 1.356 af
Outflow=4.97 cfs 1.356 af

Pond 4P: Pond 4 Peak Elev=92.15' Storage=6,772 cf Inflow=7.42 cfs 1.235 af
15.0" Round Culvert n=0.024 L=59.0' S=0.0100 '/' Outflow=4.81 cfs 1.228 af

Pond 16P: Inlet Sump Peak Elev=95.06' Storage=2,395 cf Inflow=4.24 cfs 0.328 af
18.0" Round Culvert n=0.012 L=8.0' S=0.0188 '/' Outflow=2.32 cfs 0.324 af

Pond 20P: Nyloplast Basin Peak Elev=92.42' Storage=549 cf Inflow=1.80 cfs 0.131 af
8.0" Round Culvert n=0.012 L=350.0' S=0.0007 '/' Outflow=0.86 cfs 0.131 af

Pond 101P: Gravel Wetland #101 Peak Elev=94.17' Storage=14,487 cf Inflow=10.02 cfs 0.947 af
Primary=0.09 cfs 0.117 af Secondary=4.63 cfs 0.494 af Tertiary=1.73 cfs 0.066 af Outflow=6.44 cfs 0.677 af

Pond 102P: StormTech SC740 #102 Peak Elev=95.80' Storage=7,381 cf Inflow=3.27 cfs 0.277 af
Outflow=0.30 cfs 0.153 af

Pond 103P: Gravel Wetland #103 Peak Elev=94.54' Storage=29,718 cf Inflow=20.25 cfs 2.580 af
Primary=0.20 cfs 0.272 af Secondary=6.59 cfs 1.308 af Tertiary=10.16 cfs 0.548 af Outflow=16.95 cfs 2.128 af

Pond 104P: Gravel Wetland #104 Peak Elev=93.55' Storage=9,788 cf Inflow=4.50 cfs 0.348 af
Primary=0.23 cfs 0.191 af Secondary=0.05 cfs 0.006 af Outflow=0.28 cfs 0.197 af

Pond 105P: Detention Pond #105 Peak Elev=96.38' Storage=8,915 cf Inflow=11.52 cfs 0.939 af
Primary=5.09 cfs 0.923 af Secondary=0.00 cfs 0.000 af Outflow=5.09 cfs 0.923 af

Pond 106P: StormTech SC740 #106 Peak Elev=95.64' Storage=6,016 cf Inflow=3.27 cfs 0.277 af
Outflow=0.97 cfs 0.184 af

Pond C01P: CB #1 Peak Elev=90.67' Storage=17 cf Inflow=4.97 cfs 1.356 af
15.0" Round Culvert n=0.012 L=42.0' S=0.0100 '/' Outflow=4.97 cfs 1.356 af

Pond C02P: CB #2 Peak Elev=94.97' Storage=0.000 af Inflow=3.88 cfs 0.495 af
18.0" Round Culvert n=0.012 L=55.0' S=0.0055 '/' Outflow=3.87 cfs 0.494 af

Pond C03P: CB #3 Peak Elev=95.01' Storage=0.000 af Inflow=1.11 cfs 0.089 af
12.0" Round Culvert n=0.012 L=53.5' S=0.0056 '/' Outflow=1.10 cfs 0.089 af

Pond C04P: CB #4 Peak Elev=96.48' Storage=0.001 af Inflow=4.24 cfs 0.356 af
18.0" Round Culvert n=0.012 L=32.0' S=0.0050 '/' Outflow=4.22 cfs 0.356 af

Pond C05P: CB #5 Peak Elev=96.46' Storage=0.001 af Inflow=0.88 cfs 0.071 af
12.0" Round Culvert n=0.012 L=10.7' S=0.0056 '/' Outflow=0.86 cfs 0.071 af

Pond C06P: CB #6 Peak Elev=96.45' Storage=0.001 af Inflow=0.50 cfs 0.041 af
12.0" Round Culvert n=0.012 L=28.5' S=0.0053 '/' Outflow=0.48 cfs 0.041 af

Pond C07P: CB #7 Peak Elev=95.55' Storage=31 cf Inflow=5.41 cfs 0.977 af
18.0" Round Culvert n=0.012 L=40.0' S=0.0050 '/' Outflow=5.40 cfs 0.976 af

Pond C08P: CB #8 Peak Elev=94.18' Storage=12 cf Inflow=0.52 cfs 0.043 af
12.0" Round Culvert n=0.012 L=9.0' S=0.0111 '/' Outflow=0.51 cfs 0.042 af

Pond D01P: DMH #1 Peak Elev=94.77' Storage=0.000 af Inflow=3.87 cfs 0.494 af
18.0" Round Culvert n=0.012 L=120.0' S=0.0050 '/' Outflow=3.87 cfs 0.494 af

Pond D04P: DMH #4 Peak Elev=96.45' Storage=0.001 af Inflow=5.57 cfs 0.468 af
18.0" Round Culvert n=0.012 L=78.0' S=0.0051 '/' Outflow=5.55 cfs 0.468 af

Pond D06P: DMH #6 Peak Elev=94.94' Storage=0.001 af Inflow=5.40 cfs 0.976 af
18.0" Round Culvert n=0.012 L=62.5' S=0.0051 '/' Outflow=5.41 cfs 0.976 af

Total Runoff Area = 10.762 ac Runoff Volume = 6.442 af Average Runoff Depth = 7.18"
56.06% Pervious = 6.033 ac 43.94% Impervious = 4.729 ac

Appendix III - Calculations, Charts, & Graphs

Extreme Precipitation Tables
Rip Rap Calculations
AoT Stormwater Treatment Spreadsheets
NRCS USDA Web-Soil Map
Site Specific Soils Map & Report
Ksat Values in N.H., SSSNNE
Inspection and Maintenance Manual Stormwater System Management
UNHSC Gravel Wetland Inspection Documentation
Stormtech Sc-740 Chamber Submittal Documents
Watershed Report Card, 303(d) List, & ORW List
Filtrexx Silt Soxx Specification Sheets
Waiver for Groundwater Recharge Volume

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	New Hampshire
Location	
Longitude	70.911 degrees West
Latitude	43.178 degrees North
Elevation	0 feet
Date/Time	Thu, 29 Oct 2020 14:25:29 -0400

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.65	0.81	1.03	**1yr**	0.70	0.98	1.20	1.54	1.99	2.60	2.85	**1yr**	2.30	2.74	3.14	3.87	4.44	**1yr**
2yr	0.32	0.49	0.61	0.81	1.01	1.28	**2yr**	0.87	1.17	1.50	1.91	2.44	3.13	3.48	**2yr**	2.77	3.35	3.84	4.57	5.21	**2yr**
5yr	0.37	0.57	0.72	0.96	1.23	1.58	**5yr**	1.06	1.44	1.85	2.38	3.06	3.96	4.46	**5yr**	3.50	4.29	4.90	5.78	6.54	**5yr**
10yr	0.40	0.63	0.80	1.09	1.41	1.84	**10yr**	1.22	1.69	2.17	2.82	3.65	4.73	5.38	**10yr**	4.19	5.17	5.90	6.90	7.77	**10yr**
25yr	0.46	0.73	0.94	1.29	1.72	2.26	**25yr**	1.48	2.09	2.69	3.51	4.59	5.98	6.90	**25yr**	5.30	6.64	7.54	8.73	9.76	**25yr**
50yr	0.51	0.82	1.06	1.48	1.99	2.65	**50yr**	1.72	2.45	3.17	4.17	5.47	7.16	8.33	**50yr**	6.33	8.01	9.08	10.43	11.61	**50yr**
100yr	0.58	0.93	1.20	1.70	2.31	3.11	**100yr**	1.99	2.88	3.73	4.94	6.51	8.56	10.07	**100yr**	7.57	9.68	10.94	12.47	13.81	**100yr**
200yr	0.64	1.04	1.35	1.94	2.69	3.65	**200yr**	2.32	3.39	4.41	5.87	7.77	10.24	12.17	**200yr**	9.06	11.70	13.18	14.91	16.44	**200yr**
500yr	0.75	1.24	1.61	2.34	3.28	4.51	**500yr**	2.83	4.20	5.47	7.34	9.79	12.98	15.64	**500yr**	11.49	15.04	16.87	18.91	20.72	**500yr**

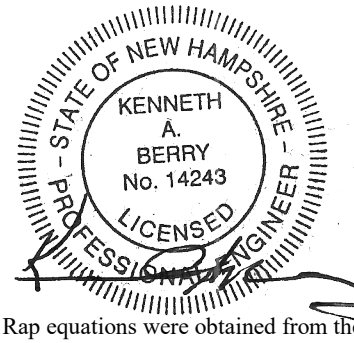
Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.24	0.37	0.45	0.60	0.74	0.90	**1yr**	0.64	0.88	0.91	1.25	1.55	2.04	2.48	**1yr**	1.81	2.38	2.92	3.35	4.05	**1yr**
2yr	0.31	0.49	0.60	0.81	1.00	1.18	**2yr**	0.86	1.16	1.36	1.83	2.36	3.04	3.38	**2yr**	2.69	3.25	3.73	4.45	5.06	**2yr**
5yr	0.35	0.54	0.67	0.91	1.16	1.40	**5yr**	1.00	1.37	1.61	2.15	2.78	3.70	4.11	**5yr**	3.27	3.96	4.58	5.40	6.10	**5yr**
10yr	0.38	0.59	0.73	1.02	1.32	1.60	**10yr**	1.14	1.57	1.82	2.45	3.14	4.26	4.78	**10yr**	3.77	4.59	5.31	6.24	7.01	**10yr**
25yr	0.44	0.67	0.83	1.18	1.55	1.91	**25yr**	1.34	1.87	2.11	2.85	3.67	5.04	5.79	**25yr**	4.46	5.57	6.48	7.56	8.43	**25yr**
50yr	0.48	0.73	0.91	1.31	1.77	2.19	**50yr**	1.53	2.14	2.36	3.21	4.12	5.78	6.69	**50yr**	5.11	6.44	7.53	8.74	9.68	**50yr**
100yr	0.54	0.81	1.02	1.47	2.02	2.51	**100yr**	1.74	2.46	2.64	3.59	4.61	6.61	7.73	**100yr**	5.85	7.43	8.76	10.09	11.08	**100yr**
200yr	0.60	0.90	1.14	1.65	2.30	2.88	**200yr**	1.99	2.81	2.93	4.02	5.16	7.57	8.93	**200yr**	6.70	8.58	10.19	11.67	12.72	**200yr**
500yr	0.70	1.04	1.34	1.94	2.77	3.47	**500yr**	2.39	3.39	3.40	4.67	6.01	9.01	10.78	**500yr**	7.97	10.37	12.44	14.15	15.20	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.43	0.53	0.71	0.87	1.08	**1yr**	0.75	1.05	1.23	1.74	2.21	2.83	3.05	**1yr**	2.50	2.93	3.37	4.17	4.76	**1yr**
2yr	0.33	0.51	0.62	0.84	1.04	1.24	**2yr**	0.90	1.22	1.48	1.95	2.50	3.25	3.59	**2yr**	2.87	3.45	3.96	4.72	5.39	**2yr**
5yr	0.39	0.60	0.75	1.03	1.31	1.58	**5yr**	1.13	1.54	1.85	2.49	3.19	4.22	4.80	**5yr**	3.73	4.61	5.23	6.17	6.94	**5yr**
10yr	0.46	0.70	0.87	1.21	1.57	1.92	**10yr**	1.35	1.87	2.23	3.04	3.84	5.19	5.98	**10yr**	4.59	5.75	6.55	7.58	8.46	**10yr**
25yr	0.55	0.84	1.05	1.49	1.96	2.47	**25yr**	1.69	2.41	2.87	3.95	4.92	6.93	8.02	**25yr**	6.13	7.71	8.73	9.96	11.02	**25yr**
50yr	0.64	0.97	1.21	1.74	2.34	2.98	**50yr**	2.02	2.91	3.48	4.80	5.97	8.55	10.03	**50yr**	7.57	9.64	10.87	12.25	13.47	**50yr**
100yr	0.74	1.12	1.40	2.03	2.78	3.59	**100yr**	2.40	3.51	4.21	5.87	7.24	10.55	12.55	**100yr**	9.34	12.07	13.52	15.08	16.47	**100yr**
200yr	0.86	1.29	1.63	2.37	3.30	4.35	**200yr**	2.85	4.26	5.12	7.18	8.78	13.06	15.72	**200yr**	11.56	15.11	16.83	18.54	20.18	**200yr**
500yr	1.05	1.56	2.00	2.91	4.13	5.59	**500yr**	3.57	5.46	6.61	9.39	11.34	17.35	21.17	**500yr**	15.36	20.36	22.49	24.42	26.41	**500yr**

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RIP RAP CALCULATIONS

24-034 239 Knox Marsh Realty LLC

Barrington, NH

Berry Surveying & Engineering

335 Second Crown Point Road

Barrington, NH

26-Nov-24

Rip Rap equations were obtained from the *Stormwater Management and Erosion Control Handbook for Urban and Developing Areas in New Hampshire*. Rip Rap was sized for the 25 year storm event. (Some d50 sizes and T values have been modified)

TAILWATER < HALF THE Do

La = (1.8 x Q) / Do 1.5 + (7 x Do) Q = Peak Flow & Do is Pipe Diameter

W = La + 3*Do or defined channel width

d50 = (0.02 x Q4/3) / (Tw x Do) Tw = Tailwater Depth

T = Largest Stone Size x 1.5

Culvert or Catch Basin	Tailwater (Feet) Tw	Discharge (C.F.S.) Q	Diameter of Pipe Do	Length of Rip Rap La (feet)	Width of Rip Rap W (feet)	d50-Stone Rip Rap d50(ft.)	Actual Size	Thickness
12" RCP (Pond #101P)	0.20	1.20	1.00	8.4	11.4	0.13	0.50	1.20
15" RCP (Pond #103P)	0.25	4.79	1.25	13.3	17.1	0.49	0.50	1.20

TAILWATER > HALF THE Do

La = (3.0 x Q) / Do 3/2 + (7 x Do) Q = Peak Flow & Do is Pipe Diameter

W = 0.4La + 3*Do or defined channel width

d50 = (0.02 x Q4/3) / (Tw x Do) Tw = Tailwater Depth

T = Largest Stone Size x 1.5

Culvert or Catch Basin	Tailwater (Feet) Tw	Discharge (C.F.S.) Q	Diameter of Pipe Do	Length of Rip Rap La (feet)	Width of Rip Rap W (feet)	d50-Stone Rip Rap d50(ft.)	Actual Size	Thickness
18" HDPE (Pond #102P)	1.90	0.08	1.50	10.6	8.7	0.00	0.50	1.20
18" HDPE (Pond #D06P)	1.90	3.58	1.50	15.3	10.6	0.04	0.50	1.20
18" HDPE (Pond #D01P)	1.90	2.97	1.50	14.5	10.3	0.03	0.50	1.20
18" HDPE (Pond #16P)	0.95	2.82	1.50	14.3	10.2	0.05	0.50	1.20
18" RCP (Pond #D04P)	1.89	3.86	1.50	15.6	10.8	0.04	0.50	1.20
18" HDPE (Pond #106P)	1.53	0.10	1.50	10.6	8.8	0.00	0.50	1.20
12" HDPE (Pond #C08P)	0.88	0.36	1.00	7.7	6.1	0.01	0.50	1.20
12" RCP (Pond #104P)	0.99	0.12	1.00	7.2	5.9	0.00	0.50	1.20

Please note that the designer chose to use the 25 Year Event for the dimensional calculations.

Table 7-24 -- Recommended Rip Rap Gradation Ranges				
d50 Size =	0.5	Feet	6	Inches
% of Weight Smaller		Size of Stone (Inches)		
Than the Given d50 Size		From		To
100%		9		12
85%		8		11
50%		6		9
15%		2		3

GRAVEL WETLAND DESIGN CRITERIA
(Env-Wq 1508.05)

Type/Node Name: **Gravel Wetland #101 (Pond 101P)**

Enter the node name in the drainage analysis if applicable.

1.48	ac	A = Area draining to the practice	
0.87	ac	A_I = Impervious area draining to the practice	
0.59	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.58	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.86	ac-in	WQV= 1" x Rv x A	
3,118	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
312	cf	10% x WQV (check calc for sediment forebay)	
1,403	cf	45% x WQV (check calc for gravel wetland treatment bay volume)	
3,734	cf	V_{SED} = Sediment forebay volume	**≥ 10%WQV**
2,154	cf	V_{TB1} = Volume of treatment bay 1 [1]	**≥ 45%WQV**
2,131	cf	V_{TB2} = Volume of treatment bay 2 [1]	**≥ 45%WQV**
0.07	cfs	$2Q_{avg}$ = 2* WQV / 24 hrs * (1hr / 3600 sec) [2]	
92.97	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.06	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	**< $2Q_{avg}$**
28.87	hours	T_{ED} = Drawdown time of extended detention = 2WQV/Q_{WQV}	**≥ 24-hrs**
3.00	:1	Pond side slopes	**≥ 3:1**
89.83	ft	Elevation of SHWT	
87.83	ft	SHWT - 2 feet	
91.92	ft	Epp = Elevation of the permanent pool (elevation of lowest orifice) [3]	**≤ E_{SHWT} - 2 ft**
17,15	ft	Length of the flow path between the inlet and outlet in each cell	**≥ 15 ft**
Angle Grate		What mechanism is proposed to prevent the outlet structure from clogging (applicable for orifices/weirs with a dimension of ≤6")?	
94.10	ft	Peak elevation of the 50-year storm event (E_{50})	
94.50	ft	Berm elevation of the pond	
YES		E_{50} ≤ the berm elevation?	**← yes**

Qualified professional that developed the planting plan

Name, Profession: KAB/KRP

1. Volume stored above the wetland soil and below the high flow by-pass.

2. To ensure orifice is sized so that WQV is released at a relatively stable rate.

3. 4" to 8" below the wetland soil. If lowest orifice is higher than (SHWT - 2 feet), and saturated hydraulic conductivity (Ksat) is greater than 0.015 in/hr, the system must be lined.

Designer's Notes: Ksat Buxton > than 0.015 in/hr. System to be lined w/ low perm material

Summary for Pond 101P: Gravel Wetland #101

[80] Warning: Exceeded Pond C08P by 0.08' @ 12.15 hrs (0.69 cfs 0.095 af)

Inflow Area = 1.483 ac, 58.80% Impervious, Inflow Depth > 6.12" for 50 YR - 24 HR event
Inflow = 8.18 cfs @ 12.09 hrs, Volume= 0.756 af
Outflow = 3.34 cfs @ 12.32 hrs, Volume= 0.488 af, Atten= 59%, Lag= 13.9 min
Primary = 0.09 cfs @ 12.32 hrs, Volume= 0.113 af
Secondary = 2.54 cfs @ 12.32 hrs, Volume= 0.350 af
Tertiary = 0.72 cfs @ 12.32 hrs, Volume= 0.025 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 94.10' @ 12.32 hrs Surf.Area= 30,183 sf Storage= 13,455 cf
Flood Elev= 94.50' Surf.Area= 33,501 sf Storage= 19,418 cf

Plug-Flow detention time= 217.4 min calculated for 0.487 af (64% of inflow)
Center-of-Mass det. time= 91.3 min (906.3 - 815.0)

Volume	Invert	Avail.Storage	Storage Description
#1	91.92'	25 cf	**4.00'D x 1.98'H Outlet Structure**
#2	92.50'	370 cf	**Sediment Forebay #1 (Irregular)**Listed below (Recalc)
#3	92.50'	3,249 cf	**Sediment Forebay #2 (Irregular)**Listed below (Recalc)
#4	92.25'	2,154 cf	**Cell #1 (Irregular)** Listed below (Recalc)
#5	92.25'	2,131 cf	**Cell #2 (Irregular)** Listed below (Recalc)
#6	93.25'	4,294 cf	**Cell Open Water Storage (Irregular)**Listed below (Recalc)
#7	94.00'	7,194 cf	**Open Water Storage (Irregular)**Listed below (Recalc)
		19,418 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
92.50	79	45.1	0	0	79
93.00	199	61.4	67	67	220
94.00	421	85.4	303	370	510

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
92.50	82	38.6	0	0	82
93.00	595	166.0	150	150	2,157
93.25	2,096	217.7	317	467	3,736
94.00	5,605	521.1	2,782	3,249	21,576

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
92.25	1,400	183.9	0	0	1,400
92.50	2,122	256.6	437	437	3,949
93.00	2,345	265.0	1,116	1,553	4,321
93.25	2,462	267.1	601	2,154	4,432

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
92.25	1,279	177.2	0	0	1,279
92.50	2,037	252.7	411	411	3,862
93.00	2,374	258.9	1,102	1,513	4,145
93.25	2,572	262.9	618	2,131	4,324

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
93.25	5,490	320.3	0	0	5,490
94.00	5,965	332.3	4,294	4,294	6,160

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
94.00	12,409	830.5	0	0	12,409
94.50	16,463	1,069.1	7,194	7,194	48,480

Device	Routing	Invert	Outlet Devices
#1	Primary	91.92'	**6.0" Round 6" HDPE N-12** L= 14.5' Ke= 0.500 Inlet / Outlet Invert= 91.92' / 91.75' S= 0.0117 '/' Cc= 0.900 n= 0.010 Concrete pipe, straight & clean, Flow Area= 0.20 sf
#2	Secondary	91.92'	**12.0" Round 12" RCP** L= 16.0' Ke= 0.500 Inlet / Outlet Invert= 91.92' / 91.75' S= 0.0106 '/' Cc= 0.900 n= 0.010 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#3	Device 1	91.92'	**1.5" Vert. 1.5" Orifice Goose Neck** C= 0.600
#4	Device 2	93.94'	**48.0" Horiz. 4' Structure** C= 0.600 Limited to weir flow at low heads
#5	Tertiary	94.00'	**10.0' long x 7.0' breadth 10' Emergency Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78

Primary OutFlow Max=0.09 cfs @ 12.32 hrs HW=94.10' TW=0.00' (Dynamic Tailwater)
↑└─**1=6" HDPE N-12** (Passes 0.09 cfs of 1.31 cfs potential flow)
  ↑└─**3=1.5" Orifice Goose Neck** (Orifice Controls 0.09 cfs @ 7.00 fps)

Secondary OutFlow Max=2.52 cfs @ 12.32 hrs HW=94.10' TW=0.00' (Dynamic Tailwater)
↑└─**2=12" RCP** (Passes 2.52 cfs of 4.89 cfs potential flow)
  ↑└─**4=4' Structure** (Weir Controls 2.52 cfs @ 1.29 fps)

Tertiary OutFlow Max=0.71 cfs @ 12.32 hrs HW=94.10' TW=0.00' (Dynamic Tailwater)
↑└─**5=10' Emergency Spillway** (Weir Controls 0.71 cfs @ 0.74 fps)

Stage-Area-Storage for Pond 101P: Gravel Wetland #101

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
91.92	0	92.98	3,186	94.04	12,726
91.94	0	93.00	3,296	94.06	12,982
91.96	1	93.02	3,408	94.08	13,241
91.98	1	93.04	3,522	94.10	13,503
92.00	1	93.06	3,639	94.12	13,768
92.02	1	93.08	3,758	94.14	14,036
92.04	2	93.10	3,879	94.16	14,307
92.06	2	93.12	4,004	94.18	14,582
92.08	2	93.14	4,132	94.20	14,859
92.10	2	93.16	4,262	94.22	15,140
92.12	3	93.18	4,396	94.24	15,424
92.14	3	93.20	4,533	94.26	15,711
92.16	3	93.22	4,674	94.28	16,002
92.18	3	93.24	4,818	94.30	16,296
92.20	4	93.26	4,970	94.32	16,593
92.22	4	93.28	5,129	94.34	16,893
92.24	4	93.30	5,289	94.36	17,197
92.26	31	93.32	5,451	94.38	17,504
92.28	87	93.34	5,616	94.40	17,814
92.30	145	93.36	5,781	94.42	18,128
92.32	206	93.38	5,949	94.44	18,446
92.34	268	93.40	6,119	94.46	18,766
92.36	333	93.42	6,291	94.48	19,090
92.38	400	93.44	6,464	94.50	**19,418**
92.40	470	93.46	6,640		
92.42	542	93.48	6,818		
92.44	617	93.50	6,997		
92.46	694	93.52	7,179		
92.48	773	93.54	7,363		
92.50	855	93.56	7,549		
92.52	942	93.58	7,737		
92.54	1,030	93.60	7,927		
92.56	1,119	93.62	8,120		
92.58	1,208	93.64	8,314		
92.60	1,298	93.66	8,511		
92.62	1,389	93.68	8,711		
92.64	1,481	93.70	8,912		
92.66	1,573	93.72	9,116		
92.68	1,667	93.74	9,322		
92.70	1,761	93.76	9,530		
92.72	1,857	93.78	9,741		
92.74	1,953	93.80	9,954		
92.76	2,050	93.82	10,170		
92.78	2,148	93.84	10,388		
92.80	2,247	93.86	10,609		
92.82	2,347	93.88	10,832		
92.84	2,448	93.90	11,058		
92.86	2,551	93.92	11,286		
92.88	2,654	93.94	11,516		
92.90	2,758	93.96	11,749		
92.92	2,864	93.98	11,985		
92.94	2,970	94.00	12,224		
92.96	3,078	94.02	12,473		

WQV = 3,118 CF
WQV Elev: = 92.97'

Stage-Discharge for Pond 101P: Gravel Wetland #101

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
91.92	0.00	0.00	0.00	0.00
91.97	0.00	0.00	0.00	0.00
92.02	0.01	0.01	0.00	0.00
92.07	0.02	0.02	0.00	0.00
92.12	0.02	0.02	0.00	0.00
92.17	0.03	0.03	0.00	0.00
92.22	0.03	0.03	0.00	0.00
92.27	0.03	0.03	0.00	0.00
92.32	0.03	0.03	0.00	0.00
92.37	0.04	0.04	0.00	0.00
92.42	0.04	0.04	0.00	0.00
92.47	0.04	0.04	0.00	0.00
92.52	0.04	0.04	0.00	0.00
92.57	0.05	0.05	0.00	0.00
92.62	0.05	0.05	0.00	0.00
92.67	0.05	0.05	0.00	0.00
92.72	0.05	0.05	0.00	0.00
92.77	0.05	0.05	0.00	0.00
92.82	0.05	0.05	0.00	0.00
92.87	0.06	0.06	0.00	0.00
92.92	0.06	0.06	0.00	0.00
92.97	0.06	0.06	0.00	0.00
93.02	0.06	0.06	0.00	0.00
93.07	0.06	0.06	0.00	0.00
93.12	0.06	0.06	0.00	0.00
93.17	0.06	0.06	0.00	0.00
93.22	0.07	0.07	0.00	0.00
93.27	0.07	0.07	0.00	0.00
93.32	0.07	0.07	0.00	0.00
93.37	0.07	0.07	0.00	0.00
93.42	0.07	0.07	0.00	0.00
93.47	0.07	0.07	0.00	0.00
93.52	0.07	0.07	0.00	0.00
93.57	0.07	0.07	0.00	0.00
93.62	0.08	0.08	0.00	0.00
93.67	0.08	0.08	0.00	0.00
93.72	0.08	0.08	0.00	0.00
93.77	0.08	0.08	0.00	0.00
93.82	0.08	0.08	0.00	0.00
93.87	0.08	0.08	0.00	0.00
93.92	0.08	0.08	0.00	0.00
93.97	0.30	0.08	0.21	0.00
94.02	1.08	0.08	0.93	0.07
94.07	2.46	0.09	1.93	0.44
94.12	4.22	0.09	3.14	1.00
94.17	6.30	0.09	4.53	1.68
94.22	7.65	0.09	5.07	2.49
94.27	8.66	0.09	5.14	3.43
94.32	9.78	0.09	5.21	4.47
94.37	11.00	0.09	5.28	5.63
94.42	12.35	0.09	5.35	6.91
94.47	**13.83**	**0.09**	**5.41**	**8.32**

WQV Elev: = 92.97'
WV Discharge = 0.06 CFS

GRAVEL WETLAND DESIGN CRITERIA
(Env-Wq 1508.05)

Type/Node Name: **Gravel Wetland #103 (Pond 103P)**

Enter the node name in the drainage analysis if applicable.

3.77	ac	A = Area draining to the practice	
2.54	ac	A_I = Impervious area draining to the practice	
0.67	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.66	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
2.47	ac-in	WQV= 1" x Rv x A	
8,970	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
897	cf	10% x WQV (check calc for sediment forebay)	
4,036	cf	45% x WQV (check calc for gravel wetland treatment bay volume)	
4,083	cf	V_{SED} = Sediment forebay volume	**≥ 10%WQV**
4,287	cf	V_{TB1} = Volume of treatment bay 1 [1]	**≥ 45%WQV**
4,099	cf	V_{TB2} = Volume of treatment bay 2 [1]	**≥ 45%WQV**
0.21	cfs	$2Q_{avg}$ = 2* WQV / 24 hrs * (1hr / 3600 sec) [2]	
93.24	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.14	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	**< $2Q_{avg}$**
35.59	hours	T_{ED} = Drawdown time of extended detention = 2WQV/Q_{WQV}	**≥ 24-hrs**
3.00	:1	Pond side slopes	**≥ 3:1**
93.75	ft	Elevation of SHWT	
91.75	ft	SHWT - 2 feet	
91.92	ft	Epp = Elevation of the permanent pool (elevation of lowest orifice) [3]	**≤ E_{SHWT} - 2 ft**
18, 18	ft	Length of the flow path between the inlet and outlet in each cell	**≥ 15 ft**
Angle	Grate	What mechanism is proposed to prevent the outlet structure from clogging (applicable for orifices/weirs with a dimension of ≤6")?	
94.47	ft	Peak elevation of the 50-year storm event (E_{50})	
95.00	ft	Berm elevation of the pond	
YES		E_{50} ≤ the berm elevation?	**← yes**

Qualified professional that developed the planting plan

Name, Profession: KAB/KRP

1. Volume stored above the wetland soil and below the high flow by-pass.

2. To ensure orifice is sized so that WQV is released at a relatively stable rate.

3. 4" to 8" below the wetland soil. If lowest orifice is higher than (SHWT - 2 feet), and saturated hydraulic conductivity (Ksat) is greater than 0.015 in/hr, the system must be lined.

Designer's Notes: Ksat Buxton & Windsor > than 0.015 in/hr. System to be lined w/ low perm material

Summary for Pond 103P: Gravel Wetland #103

[80] Warning: Exceeded Pond 102P by 0.14' @ 12.00 hrs (0.04 cfs 0.002 af)

Inflow Area = 3.770 ac, 67.27% Impervious, Inflow Depth > 6.68" for 50 YR - 24 HR event
Inflow = 17.37 cfs @ 12.09 hrs, Volume= 2.099 af
Outflow = 13.03 cfs @ 12.20 hrs, Volume= 1.672 af, Atten= 25%, Lag= 6.5 min
Primary = 0.20 cfs @ 12.20 hrs, Volume= 0.262 af
Secondary = 6.47 cfs @ 12.20 hrs, Volume= 1.084 af
Tertiary = 6.37 cfs @ 12.20 hrs, Volume= 0.327 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 94.47' @ 12.20 hrs Surf.Area= 31,525 sf Storage= 28,359 cf
Flood Elev= 95.00' Surf.Area= 32,983 sf Storage= 38,090 cf

Plug-Flow detention time= 173.5 min calculated for 1.672 af (80% of inflow)
Center-of-Mass det. time= 89.2 min (887.6 - 798.3)

Volume	Invert	Avail.Storage	Storage Description
#1	91.92'	28 cf	**4.00'D x 2.23'H Outlet Structure**
#2	92.25'	4,287 cf	**Cell 1 (Irregular)** Listed below (Recalc)
#3	92.25'	4,099 cf	**Cell 2 (Irregular)** Listed below (Recalc)
#4	93.50'	25,593 cf	**Open Water Storage (Irregular)** Listed below (Recalc)
#5	92.50'	4,083 cf	**Sediment Forebay (Irregular)** Listed below (Recalc)
		38,090 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
92.25	1,797	216.6	0	0	1,797
92.50	3,184	347.3	614	614	7,662
93.00	3,681	362.9	1,715	2,329	8,562
93.50	4,155	374.2	1,958	4,287	9,250

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
92.25	1,797	216.6	0	0	1,797
92.50	2,882	243.9	580	580	2,799
93.00	3,568	328.9	1,609	2,189	6,676
93.50	4,077	342.3	1,910	4,099	7,411

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
93.50	15,320	728.3	0	0	15,320
94.00	16,467	741.0	7,945	7,945	16,850
94.50	17,586	750.4	8,512	16,457	18,026
95.00	18,967	820.6	9,136	25,593	26,811

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
92.50	1,819	357.2	0	0	1,819
93.00	4,483	584.2	1,526	1,526	18,826
93.50	5,771	642.7	2,557	4,083	24,546

Device	Routing	Invert	Outlet Devices
#1	Primary	91.92'	**6.0" Round 6" HDPE N-12** L= 16.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 91.92' / 91.75' S= 0.0106 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#2	Secondary	91.92'	**15.0" Round 15" RCP** L= 12.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 91.92' / 91.75' S= 0.0142 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#3	Device 1	91.92'	**2.2" Vert. 2.25" Orifice Goose Neck** C= 0.600
#4	Device 2	93.50'	**4.0" Vert. 4" Orifice (2) X 2.00** C= 0.600
#5	Device 2	94.19'	**48.0" Horiz. 4' Structure** C= 0.600 Limited to weir flow at low heads
#6	Tertiary	94.25'	**25.0' long x 11.0' breadth 25' Emergency Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.53 2.59 2.70 2.68 2.67 2.68 2.66 2.64

Primary OutFlow Max=0.20 cfs @ 12.20 hrs HW=94.47' TW=0.00' (Dynamic Tailwater)
└─**1=6" HDPE N-12** (Passes 0.20 cfs of 1.13 cfs potential flow)
└─**3=2.25" Orifice Goose Neck** (Orifice Controls 0.20 cfs @ 7.54 fps)

Secondary OutFlow Max=6.46 cfs @ 12.20 hrs HW=94.47' TW=0.00' (Dynamic Tailwater)
└─**2=15" RCP** (Inlet Controls 6.46 cfs @ 5.27 fps)
├─**4=4" Orifice (2)** (Passes < 0.75 cfs potential flow)
└─**5=4' Structure** (Passes < 5.93 cfs potential flow)

Tertiary OutFlow Max=6.36 cfs @ 12.20 hrs HW=94.47' TW=0.00' (Dynamic Tailwater)
└─**6=25' Emergency Spillway** (Weir Controls 6.36 cfs @ 1.18 fps)

Stage-Area-Storage for Pond 103P: Gravel Wetland #103

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
91.92	0	92.98	5,825	94.04	21,101
91.94	0	93.00	6,058	94.06	21,433
91.96	1	93.02	6,294	94.08	21,765
91.98	1	93.04	6,531	94.10	22,099
92.00	1	93.06	6,770	94.12	22,433
92.02	1	93.08	7,011	94.14	22,769
92.04	2	93.10	7,254	94.16	23,105
92.06	2	93.12	7,499	94.18	23,442
92.08	2	93.14	7,745	94.20	23,779
92.10	2	93.16	7,993	94.22	24,118
92.12	3	93.18	8,243	94.24	24,458
92.14	3	93.20	8,494	94.26	24,798
92.16	3	93.22	8,748	94.28	25,139
92.18	3	93.24	9,003	94.30	25,482
92.20	4	93.26	9,260	94.32	25,825
92.22	4	93.28	9,519	94.34	26,169
92.24	4	93.30	9,780	94.36	26,514
92.26	41	93.32	10,042	94.38	26,860
92.28	116	93.34	10,307	94.40	27,206
92.30	195	93.36	10,573	94.42	27,554
92.32	278	93.38	10,841	94.44	27,903
92.34	365	93.40	11,111	94.46	28,252
92.36	455	93.42	11,383	94.48	28,602
92.38	549	93.44	11,656	94.50	28,954
92.40	648	93.46	11,932	94.52	29,306
92.42	750	93.48	12,209	94.54	29,659
92.44	856	93.50	12,489	94.56	30,014
92.46	967	93.52	12,796	94.58	30,369
92.48	1,082	93.54	13,104	94.60	30,726
92.50	1,201	93.56	13,413	94.62	31,083
92.52	1,361	93.58	13,723	94.64	31,442
92.54	1,522	93.60	14,033	94.66	31,802
92.56	1,687	93.62	14,345	94.68	32,163
92.58	1,854	93.64	14,657	94.70	32,525
92.60	2,024	93.66	14,971	94.72	32,888
92.62	2,197	93.68	15,285	94.74	33,253
92.64	2,372	93.70	15,600	94.76	33,618
92.66	2,550	93.72	15,917	94.78	33,985
92.68	2,732	93.74	16,234	94.80	34,352
92.70	2,916	93.76	16,552	94.82	34,721
92.72	3,103	93.78	16,871	94.84	35,091
92.74	3,293	93.80	17,191	94.86	35,462
92.76	3,486	93.82	17,511	94.88	35,834
92.78	3,682	93.84	17,833	94.90	36,207
92.80	3,882	93.86	18,156	94.92	36,581
92.82	4,085	93.88	18,479	94.94	36,957
92.84	4,290	93.90	18,804	94.96	37,333
92.86	4,499	93.92	19,129	94.98	37,711
92.88	4,712	93.94	19,455	95.00	**38,090**
92.90	4,928	93.96	19,783		
92.92	5,147	93.98	20,111		
92.94	5,369	94.00	20,440	WQV = 8,970 CF	
92.96	5,595	94.02	20,770	WQV Elev: = 93.24'	

Stage-Discharge for Pond 103P: Gravel Wetland #103

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
91.92	0.00	0.00	0.00	0.00
92.02	0.02	0.02	0.00	0.00
92.12	0.04	0.04	0.00	0.00
92.22	0.06	0.06	0.00	0.00
92.32	0.07	0.07	0.00	0.00
92.42	0.08	0.08	0.00	0.00
92.52	0.09	0.09	0.00	0.00
92.62	0.10	0.10	0.00	0.00
92.72	0.11	0.11	0.00	0.00
92.82	0.11	0.11	0.00	0.00
92.92	0.12	0.12	0.00	0.00
93.02	0.13	0.13	0.00	0.00
93.12	0.13	0.13	0.00	0.00
93.22	0.14	0.14	0.00	0.00
93.32	0.15	0.15	0.00	0.00
93.42	0.15	0.15	0.00	0.00
93.52	0.16	0.16	0.00	0.00
93.62	0.23	0.16	0.07	0.00
93.72	0.36	0.17	0.20	0.00
93.82	0.50	0.17	0.33	0.00
93.92	0.60	0.18	0.42	0.00
94.02	0.68	0.18	0.50	0.00
94.12	0.75	0.18	0.57	0.00
94.22	1.03	0.19	0.84	0.00
94.32	3.97	0.19	2.61	1.17
94.42	9.89	0.20	5.26	4.43
94.52	15.70	0.20	6.56	8.95
94.62	21.45	0.21	6.72	14.52
94.72	28.26	0.21	6.88	21.17
94.82	36.12	0.21	7.04	28.87
94.92	**44.33**	**0.22**	**7.19**	**36.92**

WQV Elev: = 93.24'
WQV Discharge = 0.14 CFS

GRAVEL WETLAND DESIGN CRITERIA
(Env-Wq 1508.05)

Type/Node Name: **Gravel Wetland #104 (Pond 104P)**

Enter the node name in the drainage analysis if applicable.

0.51	ac	A = Area draining to the practice	
0.27	ac	A_I = Impervious area draining to the practice	
0.53	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.53	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.27	ac-in	WQV= 1" x Rv x A	
970	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
97	cf	10% x WQV (check calc for sediment forebay)	
437	cf	45% x WQV (check calc for gravel wetland treatment bay volume)	
1,416	cf	V_{SED} = Sediment forebay volume	**≥ 10%WQV**
897	cf	V_{TB1} = Volume of treatment bay 1 [1]	**≥ 45%WQV**
1,195	cf	V_{TB2} = Volume of treatment bay 2 [1]	**≥ 45%WQV**
0.02	cfs	$2Q_{avg}$ = 2* WQV / 24 hrs * (1hr / 3600 sec) [2]	
91.45	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.01	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	**< $2Q_{avg}$**
53.91	hours	T_{ED} = Drawdown time of extended detention = 2WQV/Q_{WQV}	**≥ 24-hrs**
3.00	:1	Pond side slopes	**≥ 3:1**
90.00	ft	Elevation of SHWT	
88.00	ft	SHWT - 2 feet	
90.33	ft	Epp = Elevation of the permanent pool (elevation of lowest orifice) [3]	**≤ E_{SHWT} - 2 ft**
58,65	ft	Length of the flow path between the inlet and outlet in each cell	**≥ 15 ft**
Angle	Grate	What mechanism is proposed to prevent the outlet structure from clogging (applicable for orifices/weirs with a dimension of ≤6")?	
93.22	ft	Peak elevation of the 50-year storm event (E_{50})	
94.00	ft	Berm elevation of the pond	
YES		E_{50} ≤ the berm elevation?	**← yes**

Qualified professional that developed the planting plan

Name, Profession: KAB/KRP

1. Volume stored above the wetland soil and below the high flow by-pass.

2. To ensure orifice is sized so that WQV is released at a relatively stable rate.

3. 4" to 8" below the wetland soil. If lowest orifice is higher than (SHWT - 2 feet), and saturated hydraulic conductivity (Ksat) is greater than 0.015 in/hr, the system must be lined.

Designer's Notes: Ksat Windsor Variant > than 0.015 in/hr. System to be lined w/ low perm material

Summary for Pond 104P: Gravel Wetland #104

Inflow Area = 0.506 ac, 53.15% Impervious, Inflow Depth > 6.67" for 50 YR - 24 HR event
Inflow = 3.69 cfs @ 12.09 hrs, Volume= 0.281 af
Outflow = 0.18 cfs @ 14.50 hrs, Volume= 0.142 af, Atten= 95%, Lag= 144.6 min
Primary = 0.18 cfs @ 14.50 hrs, Volume= 0.142 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 93.22' @ 14.50 hrs Surf.Area= 8,546 sf Storage= 8,091 cf
Flood Elev= 94.00' Surf.Area= 10,045 sf Storage= 12,384 cf

Plug-Flow detention time= 344.1 min calculated for 0.142 af (51% of inflow)
Center-of-Mass det. time= 230.6 min (1,014.2 - 783.6)

Volume	Invert	Avail.Storage	Storage Description
#1	90.33'	43 cf	**4.00'D x 3.42'H Outlet Structure**
#2	91.00'	1,416 cf	**Sediment Forebay (Irregular)** Listed below (Recalc)
#3	91.00'	897 cf	**Cell 1 (Irregular)** Listed below (Recalc)
#4	91.00'	1,195 cf	**Cell 2 (Irregular)** Listed below (Recalc)
#5	92.00'	8,833 cf	**Open water storage (Irregular)** Listed below (Recalc)
		12,384 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
91.00	165	49.3	0	0	165
91.50	570	108.8	174	174	915
92.00	693	117.9	315	489	1,088
93.00	1,183	152.4	927	1,416	1,843

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
91.00	768	145.0	0	0	768
91.50	893	151.8	415	415	945
92.00	1,038	159.7	482	897	1,156

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
91.00	855	158.3	0	0	855
91.50	1,248	206.2	523	523	2,247
92.00	1,444	214.6	672	1,195	2,548

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
92.00	2,552	351.7	0	0	2,552
93.00	4,543	490.4	3,500	3,500	11,856
93.75	5,684	526.6	3,827	7,327	14,811
94.00	6,367	575.4	1,506	8,833	19,092

Device	Routing	Invert	Outlet Devices
#1	Primary	90.33'	**6.0" Round 6" HDPE N-12** L= 33.7' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 90.33' / 90.00' S= 0.0098 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#2	Secondary	90.33'	**12.0" Round 12" RCP** L= 13.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 90.33' / 90.00' S= 0.0244 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#3	Device 1	90.33'	**0.7" Vert. 0.75" Orifice Goose Neck** C= 0.600
#4	Device 1	92.65'	**3.0" Vert. 3" Orifice** C= 0.600
#5	Device 2	93.50'	**15.0" W x 3.0" H Vert. 3"T X 15"W Box Orifice** C= 0.600
#6	Device 2	93.79'	**48.0" Horiz. 4' Structure** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.18 cfs @ 14.50 hrs HW=93.22' TW=90.23' (Dynamic Tailwater)
- **1=6" HDPE N-12** (Passes 0.18 cfs of 1.21 cfs potential flow)
  - **3=0.75" Orifice Goose Neck** (Orifice Controls 0.02 cfs @ 8.15 fps)
  - **4=3" Orifice** (Orifice Controls 0.16 cfs @ 3.22 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=90.33' TW=89.50' (Dynamic Tailwater)
- **2=12" RCP** (Controls 0.00 cfs)
  - **5=3"T X 15"W Box Orifice** (Controls 0.00 cfs)
  - **6=4' Structure** (Controls 0.00 cfs)

Stage-Area-Storage for Pond 104P: Gravel Wetland #104

Elevation (feet)	Storage (cubic-feet)
90.33	0
90.38	1
90.43	1
90.48	2
90.53	3
90.58	3
90.63	4
90.68	4
90.73	5
90.78	6
90.83	6
90.88	7
90.93	8
90.98	8
91.03	63
91.08	157
91.13	256
91.18	358
91.23	465
91.28	577
91.33	693
91.38	814
91.43	940
91.48	1,072
91.53	1,208
91.58	1,347
91.63	1,487
91.68	1,631
91.73	1,776
91.78	1,924
91.83	2,074
91.88	2,226
91.93	2,381
91.98	2,539
92.03	2,701
92.08	2,870
92.13	3,044
92.18	3,224
92.23	3,409
92.28	3,600
92.33	3,797
92.38	4,000
92.43	4,209
92.48	4,424
92.53	4,645
92.58	4,873
92.63	5,106
92.68	5,347
92.73	5,593
92.78	5,847
92.83	6,107
92.88	6,373
92.93	6,647
92.98	6,928
93.03	7,179
93.08	7,411
93.13	7,646
93.18	7,885
93.23	8,128
93.28	8,374
93.33	8,625
93.38	8,879
93.43	9,136
93.48	9,398
93.53	9,664
93.58	9,933
93.63	10,206
93.68	10,483
93.73	10,765
93.78	11,050
93.83	11,342
93.88	11,640
93.93	11,945
93.98	**12,257**

WQV = 970 CF
WQV Elev: = 91.45'

Stage-Discharge for Pond 104P: Gravel Wetland #104

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
90.33	0.00	0.00	0.00
90.38	0.00	0.00	0.00
90.43	0.00	0.00	0.00
90.48	0.00	0.00	0.00
90.53	0.01	0.01	0.00
90.58	0.01	0.01	0.00
90.63	0.01	0.01	0.00
90.68	0.01	0.01	0.00
90.73	0.01	0.01	0.00
90.78	0.01	0.01	0.00
90.83	0.01	0.01	0.00
90.88	0.01	0.01	0.00
90.93	0.01	0.01	0.00
90.98	0.01	0.01	0.00
91.03	0.01	0.01	0.00
91.08	0.01	0.01	0.00
91.13	0.01	0.01	0.00
91.18	0.01	0.01	0.00
91.23	0.01	0.01	0.00
91.28	0.01	0.01	0.00
91.33	0.01	0.01	0.00
91.38	0.01	0.01	0.00
91.43	0.01	0.01	0.00
91.48	0.01	0.01	0.00
91.53	0.01	0.01	0.00
91.58	0.01	0.01	0.00
91.63	0.01	0.01	0.00
91.68	0.01	0.01	0.00
91.73	0.02	0.02	0.00
91.78	0.02	0.02	0.00
91.83	0.02	0.02	0.00
91.88	0.02	0.02	0.00
91.93	0.02	0.02	0.00
91.98	0.02	0.02	0.00
92.03	0.02	0.02	0.00
92.08	0.02	0.02	0.00
92.13	0.02	0.02	0.00
92.18	0.02	0.02	0.00
92.23	0.02	0.02	0.00
92.28	0.02	0.02	0.00
92.33	0.02	0.02	0.00
92.38	0.02	0.02	0.00
92.43	0.02	0.02	0.00
92.48	0.02	0.02	0.00
92.53	0.02	0.02	0.00
92.58	0.02	0.02	0.00
92.63	0.02	0.02	0.00
92.68	0.02	0.02	0.00
92.73	0.03	0.03	0.00
92.78	0.05	0.05	0.00
92.83	0.07	0.07	0.00
92.88	0.10	0.10	0.00
92.93	0.11	0.11	0.00
92.98	0.13	0.13	0.00
93.03	0.14	0.14	0.00
93.08	0.15	0.15	0.00
93.13	0.16	0.16	0.00
93.18	0.17	0.17	0.00
93.23	0.18	0.18	0.00
93.28	0.19	0.19	0.00
93.33	0.20	0.20	0.00
93.38	0.21	0.21	0.00
93.43	0.21	0.21	0.00
93.48	0.22	0.22	0.00
93.53	0.25	0.23	0.02
93.58	0.33	0.24	0.09
93.63	0.43	0.24	0.19
93.68	0.55	0.25	0.31
93.73	0.70	0.25	0.44
93.78	0.83	0.26	0.57
93.83	1.27	0.27	1.00
93.88	2.13	0.27	1.86
93.93	3.26	0.28	2.98
93.98	**4.58**	**0.28**	**4.29**

WQV Elev: = 91.45'
WQV Discharge = 0.01 CFS

Summary for Pond 102P: StormTech SC740 #102

Inflow Area = 0.347 ac,100.00% Impervious, Inflow Depth > 3.36" for 2 YR - 24 HR event
Inflow = 1.19 cfs @ 12.09 hrs, Volume= 0.097 af
Outflow = 0.07 cfs @ 11.92 hrs, Volume= 0.045 af, Atten= 94%, Lag= 0.0 min
Primary = 0.07 cfs @ 11.92 hrs, Volume= 0.045 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 93.93' @ 16.25 hrs Surf.Area= 3,807 sf Storage= 2,829 cf
Flood Elev= 96.25' Surf.Area= 3,807 sf Storage= 8,073 cf

Plug-Flow detention time= 337.1 min calculated for 0.045 af (47% of inflow)
Center-of-Mass det. time= 204.1 min (957.7 - 753.6)

Volume	Invert	Avail.Storage	Storage Description
#1	92.75'	3,502 cf	**34.75'W x 109.00'L x 3.50'H Stone** 13,257 cf Overall - 4,502 cf Embedded = 8,755 cf x 40.0% Voids
#2	93.25'	4,502 cf	**ADS_StormTech SC-740 +Cap** x 98 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
#3	92.75'	98 cf	**5.00'D x 5.00'H Outlet Structure**
		8,102 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	92.75'	**18.0" Round 18" HDPE N-12** L= 33.7' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 92.75' / 92.50' S= 0.0074 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	92.75'	**2.0" Vert. 3" Orifice** C= 0.600
#3	Device 1	95.75'	**18.0" Horiz. 18" Int. Stack** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.07 cfs @ 11.92 hrs HW=93.28' TW=92.88' (Dynamic Tailwater)
└─**1=18" HDPE N-12** (Passes 0.07 cfs of 1.17 cfs potential flow)
  ├─**2=3" Orifice** (Orifice Controls 0.07 cfs @ 3.03 fps)
  └─**3=18" Int. Stack** (Controls 0.00 cfs)

Summary for Pond 106P: StormTech SC740 #106

Inflow Area = 0.347 ac,100.00% Impervious, Inflow Depth > 3.36" for 2 YR - 24 HR event
Inflow = 1.19 cfs @ 12.09 hrs, Volume= 0.097 af
Outflow = 0.09 cfs @ 12.11 hrs, Volume= 0.060 af, Atten= 93%, Lag= 1.6 min
Primary = 0.09 cfs @ 12.11 hrs, Volume= 0.060 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 93.84' @ 13.89 hrs Surf.Area= 3,623 sf Storage= 2,176 cf
Flood Elev= 96.25' Surf.Area= 3,623 sf Storage= 6,905 cf

Plug-Flow detention time= 245.9 min calculated for 0.060 af (62% of inflow)
Center-of-Mass det. time= 140.0 min (893.6 - 753.6)

Volume	Invert	Avail.Storage	Storage Description
#1	92.75'	3,850 cf	**Stone (Irregular)** Listed below (Recalc) 12,611 cf Overall - 2,986 cf Embedded = 9,624 cf x 40.0% Voids
#2	93.25'	2,986 cf	**ADS_StormTech SC-740 +Cap** x 65 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
#3	92.75'	98 cf	**5.00'D x 5.00'H Outlet Structure**
		6,934 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
92.75	3,603	363.5	0	0	3,603
96.25	3,603	363.5	12,611	12,611	4,875

Device	Routing	Invert	Outlet Devices
#1	Primary	92.75'	**18.0" Round 18" HDPE N-12** L= 15.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 92.75' / 92.50' S= 0.0167 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	92.75'	**2.0" Vert. 3" Orifice** C= 0.600
#3	Device 1	95.50'	**18.0" Horiz. 18" Int. Stack** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.08 cfs @ 12.11 hrs HW=93.51' TW=92.95' (Dynamic Tailwater)
↑**1=18" HDPE N-12** (Passes 0.08 cfs of 2.46 cfs potential flow)
↑**2=3" Orifice** (Orifice Controls 0.08 cfs @ 3.60 fps)
3=18" Int. Stack (Controls 0.00 cfs)

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Strafford County, New Hampshire



January 19, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:3,810 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Strafford County, New Hampshire
Survey Area Data: Version 20, May 29, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Sep 9, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Be	Biddeford silty clay loam	3.6	5.9%
BzA	Buxton silt loam, 0 to 3 percent slopes	9.4	15.3%
DeB	Deerfield loamy fine sand, 3 to 8 percent slopes	2.1	3.4%
Ml	Mixed alluvial land, wet	0.0	0.0%
ScA	Scantic silt loam, 0 to 3 percent slopes	16.2	26.5%
SfC	Suffield silt loam, 8 to 15 percent slopes	2.0	3.2%
WdA	Windsor loamy sand, 0 to 3 percent slopes	20.0	32.6%
WfB	Windsor loamy fine sand, clay subsoil variant, 0 to 8 percent slopes	8.1	13.1%
Totals for Area of Interest		**61.4**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a

given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Strafford County, New Hampshire

Be—Biddeford silty clay loam

Map Unit Setting

National map unit symbol: 9d6m
Elevation: 0 to 200 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Biddeford and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Biddeford

Setting

Landform: Marine terraces
Parent material: Glaciomarine

Typical profile

H1 - 0 to 7 inches: silty clay loam
H2 - 7 to 26 inches: silty clay
H3 - 26 to 41 inches: silty clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water capacity: Moderate (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: C/D
Hydric soil rating: Yes

Minor Components

Not named wet

Percent of map unit: 10 percent
Landform: Marine terraces
Hydric soil rating: Yes

Scantic

Percent of map unit: 5 percent
Landform: Marine terraces

Hydric soil rating: Yes

BzA—Buxton silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 9d6n
Elevation: 0 to 280 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Buxton and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Buxton

Setting

Parent material: Glaciomarine

Typical profile

H1 - 0 to 10 inches: silt loam
H2 - 10 to 28 inches: silty clay loam
H3 - 28 to 43 inches: silty clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Ecological site: F145XY006CT - Semi-Rich Moist Lake Plain
Hydric soil rating: No

Minor Components

Scantic

Percent of map unit: 10 percent
Landform: Marine terraces

Hydric soil rating: Yes

Not named

Percent of map unit: 5 percent
Hydric soil rating: No

DeB—Deerfield loamy fine sand, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2xfg9
Elevation: 0 to 1,190 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Farmland of local importance

Map Unit Composition

Deerfield and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Deerfield

Setting

Landform: Kame terraces, outwash plains, outwash terraces, outwash deltas
Landform position (three-dimensional): Tread
Down-slope shape: Convex, linear, concave
Across-slope shape: Concave, linear, convex
Parent material: Sandy outwash derived from granite, gneiss, and/or quartzite

Typical profile

Ap - 0 to 9 inches: loamy fine sand
Bw - 9 to 25 inches: loamy fine sand
BC - 25 to 33 inches: fine sand
Cg - 33 to 60 inches: sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: About 15 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Sodium adsorption ratio, maximum: 11.0
Available water capacity: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Windsor

Percent of map unit: 7 percent
Landform: Outwash terraces, outwash deltas, kame terraces, outwash plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear, convex, concave
Across-slope shape: Concave, linear, convex
Hydric soil rating: No

Wareham

Percent of map unit: 5 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Sudbury

Percent of map unit: 2 percent
Landform: Outwash deltas, kame terraces, outwash plains, outwash terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear, concave, convex
Across-slope shape: Concave, linear, convex
Hydric soil rating: No

Ninigret

Percent of map unit: 1 percent
Landform: Kame terraces, outwash terraces, outwash plains
Landform position (three-dimensional): Tread
Down-slope shape: Convex, linear
Across-slope shape: Convex, concave
Hydric soil rating: No

MI—Mixed alluvial land, wet

Map Unit Setting

National map unit symbol: 9d86
Elevation: 300 to 1,800 feet
Mean annual precipitation: 30 to 50 inches
Mean annual air temperature: 45 to 54 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Mixed alluvial land: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mixed Alluvial Land

Setting

Landform: Flood plains

Typical profile

H1 - 0 to 5 inches: loam
H2 - 5 to 72 inches: very gravelly silt loam

Properties and qualities

Slope: 0 to 2 percent
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to very high (0.06 to 20.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: FrequentNone
Frequency of ponding: Occasional
Calcium carbonate, maximum content: 15 percent
Available water capacity: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydric soil rating: Yes

ScA—Scantic silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 9d8s
Elevation: 0 to 260 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of local importance

Map Unit Composition

Scantic and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Scantic

Setting

Landform: Marine terraces

Typical profile

H1 - 0 to 13 inches: silt loam
H2 - 13 to 23 inches: silty clay loam

H3 - 23 to 40 inches: silty clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D
Hydric soil rating: Yes

Minor Components

Not named wet

Percent of map unit: 5 percent
Landform: Marine terraces
Hydric soil rating: Yes

Biddeford

Percent of map unit: 5 percent
Landform: Marine terraces
Hydric soil rating: Yes

Swanton

Percent of map unit: 5 percent
Landform: Marine terraces
Hydric soil rating: Yes

SfC—Suffield silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9d8v
Elevation: 0 to 250 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Suffield and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Suffield

Typical profile

H1 - 0 to 19 inches: silt loam
H2 - 19 to 28 inches: silt loam
H3 - 28 to 41 inches: silty clay

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 7.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F144AY017NH - Well Drained Lake Plain
Hydric soil rating: No

Minor Components

Not named

Percent of map unit: 9 percent
Hydric soil rating: No

Buxton

Percent of map unit: 5 percent
Hydric soil rating: No

Rock outcrop

Percent of map unit: 1 percent
Hydric soil rating: No

WdA—Windsor loamy sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2svkg
Elevation: 0 to 990 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of local importance

Map Unit Composition

Windsor, loamy sand, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Windsor, Loamy Sand

Setting

Landform: Dunes, deltas, outwash terraces, outwash plains
Landform position (three-dimensional): Tread, riser
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Loose sandy glaciofluvial deposits derived from granite and/or loose sandy glaciofluvial deposits derived from schist and/or loose sandy glaciofluvial deposits derived from gneiss

Typical profile

O - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: loamy sand
Bw - 3 to 25 inches: loamy sand
C - 25 to 65 inches: sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Deerfield, loamy sand

Percent of map unit: 10 percent
Landform: Outwash plains, terraces, deltas
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Hinckley, loamy sand

Percent of map unit: 5 percent
Landform: Deltas, outwash plains, eskers, kames

Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest, head slope, rise
Down-slope shape: Convex
Across-slope shape: Convex, linear
Hydric soil rating: No

WfB—Windsor loamy fine sand, clay subsoil variant, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9d9b
Elevation: 0 to 280 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Windsor variant and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Windsor Variant

Typical profile

H1 - 0 to 26 inches: loamy fine sand
H2 - 26 to 30 inches: loamy sand
H3 - 30 to 42 inches: silt loam

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Not named

Percent of map unit: 15 percent
Hydric soil rating: No

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2/18/20

Christopher Berry
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Job # 20-004

Site Specific Soil Survey 2/17/20
239 Know Marsh Road Dover, NH

Dear Chris,

This letter report presents the findings of a Site Specific Soil Survey conducted on the referenced property by John P. Hayes III, 0n February 7, 2020. The soil survey was conducted in accordance with the New Hampshire Supplement of the Site-Specific Soil Mapping Standard For New Hampshire and Vermont, Version 5.0, December 2017, Special Publication # 3, published by the Society of Soil Scientist of Northern New England.

The portion of the property that is subject of the soil survey is located on the northwest side of Knox Marsh road, and southeast of the railroad line, in Dover NH. The parcel is 9.36 acres in size. The plans used for these soil maps are a 50 scale plan, where 1 inch equals 50 feet, with two foot contours.

The purpose of the soil survey is to provide the client with soils information for urban and suburban or rural land planning. Soil characteristics on the property were evaluated through observation of numerous test holes and hand auger probes conducted throughout the property. Slope phases were determined with the use of the topography provided on the plan. The Site-specific Soil Map Units identified are taken from the New Hampshire State-Wide Numerical Soils Legend, Issue #10 January 2011, and are briefly described below. Official Series Descriptions (OSD) for each of these soil series are enclosed with this report. The soil map units comply with the Range In Characteristics described in the OSD. Dissimilar inclusions are noted above. Limits of the Site Specific mapping units are highlighted on the plan. Portions of the soil map with the map unit denominator P, are poorly drained soils.

MAP UNIT #	SOIL TAXANOMIC NAME	DESCRIPTION
BzA (State No. 232)	**Buxton**	The Buxton series consists of very deep, moderately well drained soils that formed in glaciolacustrine or glaciomarine deposits on coastal lowlands and river valleys. Permeability is moderate or moderately slow in the surface horizon, moderately slow or slow in the upper part of the subsoil, and slow or very slow in the lower part of the subsoil and in the substratum. The hydrologic soil group is C. Slope ranges from 0% to 3%.
BzB (State No. 232)	**Buxton**	The Buxton series consists of very deep, moderately well drained soils that formed in glaciolacustrine or glaciomarine deposits on coastal lowlands and river valleys. Permeability is moderate or moderately slow in the surface horizon, moderately slow or slow in the upper part of the subsoil, and slow or very slow in the lower part of the subsoil and in the substratum. The hydrologic soil group is C. Slope ranges from 3% to 8%.
BzC (State No. 232)	**Buxton**	The Buxton series consists of very deep, moderately well drained soils that formed in glaciolacustrine or glaciomarine deposits on coastal lowlands and river valleys. Permeability is moderate or moderately slow in the surface horizon, moderately slow or slow in the upper part of the subsoil, and slow or very slow in the lower part of the subsoil and in the substratum. The hydrologic soil group is C. Slope ranges from 8% to 15%.
ScA P (State No. 233)	**Scantic**	The Scantic series consists of very deep, poorly drained soils formed in glaciomarine or glaciolacustrine deposits on coastal lowlands and river valleys.Saturated hydraulic conductivity of the surface and subsurface horizons is moderately high or high and low or moderately slow in the subsoil and substratum. The hydrologic soil group is D. Slope ranges from 0% to 3%.
ScB P (State No. 233)	**Scantic**	The Scantic series consists of very deep, poorly drained soils formed in glaciomarine or glaciolacustrine deposits on coastal lowlands and river valleys.Saturated hydraulic conductivity of the surface and subsurface horizons is moderately high or high and low or moderately slow in the subsoil and substratum. The hydrologic soil group is D. Slope ranges from 3% to 8%.
WfA (State No. 327)	**Windsor Variant (clay Subsoil)**	The Windsor Variant series consists of very deep, excessively drained soils formed in sandy outwash or eolian deposits, that have a clay subsoil. They are nearly level through very steep soils on glaciofluvial landforms. Saturated hydraulic conductivity is high or very high. Due to the resrtictive subsoil layer in these soils, the hydrologic soil group is C. Slope ranges from 0% to 3%.

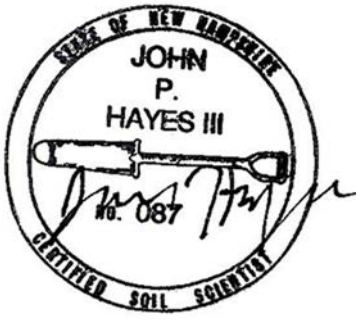
MAP UNIT #	SOIL TAXANOMIC NAME	DESCRIPTION
WfB (State No. 327)	**Windsor Variant (clay Subsoil)**	The Windsor Variant series consists of very deep, excessively drained soils formed in sandy outwash or eolian deposits, that have a clay subsoil. They are nearly level through very steep soils on glaciofluvial landforms. Saturated hydraulic conductivity is high or very high. Due to the resrtictive subsoil layer in these soils, the hydrologic soil group is C. Slope ranges from 3% to 8%.
WfC (State No. 327)	**Windsor Variant (clay Subsoil)**	The Windsor Variant series consists of very deep, excessively drained soils formed in sandy outwash or eolian deposits, that have a clay subsoil. They are nearly level through very steep soils on glaciofluvial landforms. Saturated hydraulic conductivity is high or very high. Due to the resrtictive subsoil layer in these soils, the hydrologic soil group is C. Slope ranges from 8% to 15%.

Slope Phases

Alpha Slope Symbol	Range
A	**0 – 3%**
B	**3 – 8%**
C	**8 – 15%**
D	**15 – 25%**
E	**25 – 50%**
F	**> 50%**

I trust that this Soil Survey and report meet your current planning needs. Please do not hesitate to contact me if you have any questions.

Sincerely:



John P. Hayes III CSS, CWS

LOCATION WINDSOR CT+MA NH NY RI VT

Established Series
Rev. MFF-SMF-DCP
03/2014

WINDSOR SERIES

The Windsor series consists of very deep, excessively drained soils formed in sandy outwash or eolian deposits. They are nearly level through very steep soils on glaciofluvial landforms. Slope ranges from 0 through 60 percent. Saturated hydraulic conductivity is high or very high. Mean annual temperature is about 10 degrees C and mean annual precipitation is about 1092 mm.

TAXONOMIC CLASS: Mixed, mesic Typic Udipsamments

TYPICAL PEDON: Windsor loamy sand - forested, 3 percent slope, at an elevation of about 24 meters. (Colors are for moist soil.)

Oe--0 to 3 cm; black (10YR 2/1) moderately decomposed forest plant material; many very fine and fine roots; very strongly acid; abrupt smooth boundary. (0 to 8 cm thick.)

A--3 to 8 cm; very dark grayish brown (10YR 3/2) loamy sand; weak medium granular structure; very friable; many very fine and fine roots; strongly acid; abrupt wavy boundary. (3 to 25 cm thick.)

Bw1--8 to 23 cm; strong brown (7.5YR 5/6) loamy sand; very weak fine granular structure; very friable; many fine and medium roots; strongly acid; gradual wavy boundary.

Bw2--23 to 53 cm; yellowish brown (10YR 5/6) loamy sand; very weak fine granular structure; very friable; common fine and medium roots; strongly acid; gradual wavy boundary.

Bw3--53 to 64 cm; light yellowish brown (10YR 6/4) sand; single grain; loose; few coarse roots; strongly acid; clear wavy boundary. (Combined thickness of the Bw horizons is 23 to 86 cm.)

C--64 to 165 cm; pale brown (10YR 6/3) and light brownish gray (10YR 6/2) sand; single grain; loose; few coarse roots; strongly acid.

TYPE LOCATION: Hartford County, Connecticut; town of South Windsor, 1100 feet northwest along Chapel Road from the intersection of Chapel Road and Ellington Road and 100 feet due south of Chapel Road. USGS Manchester, CT topographic quadrangle, Latitude 41 degrees, 48 minutes, 35 seconds N., Longitude 72 degrees, 36 minutes, 22 seconds W., NAD 1983

RANGE IN CHARACTERISTICS: Thickness of the solum ranges from 25 to 92 cm. Rock fragments, dominantly fine gravel, range from 0 through 10 percent by volume in the solum and from 0 to 15 percent in the substratum. Thin strata of gravel or thin subhorizons of coarse sand or loamy coarse sand are present in some pedons. Unless limed, reaction in the solum commonly is extremely acid to moderately acid, but the range includes slightly acid. Unless limed, reaction in the substratum commonly is very strongly acid to slightly acid, but the range includes neutral.

O horizons are present in some pedons.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3, and chroma of 1 to 3. Many pedons have an Ap horizon up to 12 inches thick with value of 3 or 4 and chroma of 2 to 4. The A or Ap horizon is loamy fine sand, loamy sand, fine sand, or sand. It has weak or moderate granular structure and is very friable, friable, or loose.

Some pedons have a thin E horizon with hue 7.5YR or 10YR, value of 4 to 6, and chroma of 1 or 2.

The upper part of the Bw horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8. The lower part of Bw horizon has hue of 7.5YR to 5Y, value of 4 to 7, and chroma of 3 to 6. The Bw horizon is loamy sand or loamy fine sand in the upper part and loamy fine sand, loamy sand, fine sand, or sand in the lower part. The Bw horizon has weak granular or weak subangular blocky structure, or it is massive or single grain. Consistence is very friable or loose.

Some pedons have a BC horizon similar to the lower part of the Bw horizon.

The C horizon has hue of 5YR to 5Y, value of 4 to 7, and chroma of 1 to 6. It is fine sand, sand, coarse sand, loamy fine sand, or loamy sand. The horizon is massive or single grain and consistence is very friable or loose.

COMPETING SERIES: These are the Acquango, Aldo, Bigapple, Biltmore, Boplain, Breeze, Caesar, Chute, Dabney, Hodge, Oakville, Osolo, Pahuk, Penwood, Perks, Pinegrove, Plainfield, Poquonock, Ronda, Samoa, Sardak, Sarpy, Scotah, Spessard, Suncook, Tyner, and Wapanucket series. Aquango, Aldo, Biltmore, Boplain, Chute, Dabney, Hodge, Osolo, Pahuk, Perks, Ronda, Samoa, Sardak, Spessard, and Tyner soils are from outside of LRRs L, R, and S. Acquango soils are very slightly to moderately saline within the soil profile. Aldo soils have a water table and saturation within the series control section for as much as one month per year in 6 out of 10 years. Bigapple soils formed in human transported soil material from dredging activities. Biltmore and Spessard soils are well drained. Breeze soils formed in human transported sandy soil materials intermingled with construction debris. Caesar soils contain more coarse sand. Chute, Hodge, and Sarpy soils contain free carbonates and do not have a B horizon. Dabney soils do not have a B horizon and receive more than 152 cm of precipitation annually. Oakville soils typically average 50 percent or more fine sand in the subsoil. Osolo soils have a solum thicker than 1.5 m. Penwood soils have hue of 5YR or redder in the B horizon. Pahuk, Perks, Samoa, and Suncook soils do not have a B horizon. Plainfield soils are less moist in all parts of the control section for the 120 days following the summer solstice. Poquonock soils have a densic contact with in 1 m. Ronda soils formed in alluvium from residuum sources. Sardak soils formed in alluvium and are calcareous. Tyner soils have a thicker solum. Wapanucket soils are underlain by glaciolacustrine deposits with in the series control section.

GEOGRAPHIC SETTING: Windsor soils are nearly level through very steep soils typically on glaciofluvial landforms but include late-Wisconsin-aged dunes. The steeper slopes are typically on terrace escarpments. Slope ranges from 0 to 60 percent. The soils formed in outwash or eolian deposits of poorly graded sands and loamy sands derived mainly from crystalline rocks. Mean annual temperature ranges from 7 to 12 degrees C, and the mean annual precipitation typically ranges from 965 to 1270 mm, but the range includes as low as 660 mm in some places east of Adirondack Mountains in the Champlain Valley of New York. The growing season ranges from 120 to 190 days.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the Deerfield, Hinckley, Merrimac, Quonset, Suncook, Agawam, Hadley, Haven, Occum, Pootatuck, Scarboro, Sudbury, Walpole, Wareham, and Winooski soils on nearby landscapes. The moderately well drained Deerfield and Sudbury, the somewhat poorly drained and poorly drained Walpole and Wareham, and the very poorly drained Scarboro soils are common drainage associates. Agawam and Haven soils are coarse-loamy over sandy or sandy-skeletal or coarse-loamy terrace associates, respectively. Hadley, Occum, Pootatuck, and Winooski soils are on nearby flood plains.

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY: Excessively drained. Surface runoff is negligible to medium. Saturated hydraulic conductivity is high or very high.

USE AND VEGETATION: Most areas are forested or in low growing brushy vegetation. Some areas are used

for silage corn, hay, and pasture. Small areas, mostly irrigated, are used for shade tobacco, vegetables and nursery stock. Some areas are in community development. Common trees are white, black, and northern red oak, eastern white pine, pitch pine, gray birch, poplar, red maple, and sugar maple.

DISTRIBUTION AND EXTENT: Late Wisconsin glaciofluvial or eolian landforms in Connecticut, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont; MLRAs 101, 142, 144A, and 145. The series is of large extent.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Amherst, Massachusetts.

SERIES ESTABLISHED: Connecticut Valley Area, 1899.

REMARKS: The use of the Windsor series in Maine, and in MLRAs 141, 144B, and 143 is relict to before temperature classes in soil taxoonomy. These have been removed from the SC file.

Diagnostic horizons and features recognized in this pedon include:
1. Ochric epipedon - the zone from 0 to 8 cm (Oe and A horizons).
2. Particle-size class - averages sandy in the control section from 25 to 100 cm.
3. No cambic horizon and development of color - the zone from 8 to 64 cm demonstrates development of color with no illuvial accumulation of material (Bw horizons).

ADDITIONAL DATA: Reference samples from pedons 54MA023005, 63VT011001, 63VT011002, 64NH017003, 64NH017004, 70CT003003, 70MA011003, 70VT017002, 73MA005003, 73MA005004, 91MA023006, 95NH013001, 96NH013004, 98NY045002, 98NY085002, S07VT011004.

National Cooperative Soil Survey
U.S.A.

LOCATION SCANTIC ME+MA NH NY VT

Established Series
Rev. KJL-GBJ-WDH
06/2016

SCANTIC SERIES

The Scantic series consists of very deep, poorly drained soils formed in glaciomarine or glaciolacustrine deposits on coastal lowlands and river valleys. Slope ranges from 0 to 8 percent. Saturated hydraulic conductivity of the surface and subsurface horizons is moderately high or high and low or moderately slow in the subsoil and substratum. Mean annual temperature is about 7 degrees C, and mean annual precipitation is about 1168 mm inches at the type location.

TAXONOMIC CLASS: Fine, illitic, nonacid, frigid Typic Epiaquepts

TYPICAL PEDON: Scantic silt loam, on a 1 percent slope in an idle field. (Colors are for moist soil unless otherwise noted.)

Ap1--0 to 10 cm; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak very fine granular structure; very friable; many very fine, fine, medium and coarse roots; moderately acid; abrupt smooth boundary.

Ap2--10 to 23 cm; dark grayish brown (2.5Y 4/2) silt loam, light brownish gray (2.5Y 6/2) dry; moderate very fine granular structure; very friable; common very fine, fine, medium and coarse roots; common medium distinct olive gray (5Y 5/2) irregularly shaped iron depletions throughout; moderately acid; abrupt wavy boundary. (Combined thickness of the Ap horizons is 13 to 23 cm.)

Eg--23 to 28 cm; olive gray (5Y 5/2) silt loam; weak medium platy structure parting to weak very fine subangular blocky; friable; common very fine, fine, medium and coarse roots; common medium prominent light olive brown (2.5Y 5/6) masses of iron accumulation in the matrix and along root channels; moderately acid; abrupt smooth boundary. (0 to 20 cm thick)

Bg1--28 to 41 cm; olive gray (5Y 5/2) silty clay loam; moderate thin platy structure; firm; common very fine, fine, and medium and few coarse roots; common medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix and along pores; many coarse prominent olive brown (2.5Y 4/4) masses of iron accumulation in the matrix and along pores; common medium faint gray (5Y 6/1) irregularly shaped iron depletions in the matrix; light olive gray (5Y 6/2) silt coatings on walls of earthworm channels and on 50 percent of faces of peds; few medium dark gray (5Y 4/1) oxide coats on faces of peds; slightly acid; clear wavy boundary.

Bg2--41 to 56 cm; olive gray (5Y 5/2) silty clay; weak medium platy structure parting to moderate very fine subangular blocky; firm; few very fine and fine roots; few pores; common medium faint gray (5Y 6/1) irregularly shaped iron depletions in the matrix; common medium prominent light olive brown (2.5Y 5/4) masses of iron accumulation in the matrix and along pores; light olive gray (5Y 6/2) silt coatings on walls of earthworm channels and on 50 percent of faces of peds; few fine prominent dark reddish brown (5YR 2/2) oxide coats on faces of peds; slightly acid; gradual wavy boundary.

Bg3--56 to 74 cm; olive gray (5Y 4/2) silty clay; moderate very fine and fine subangular blocky structure; firm; few pores; common medium prominent light olive brown (2.5Y 5/6) masses of iron accumulation in the matrix

and along pores; common medium faint olive gray (5Y 5/2) irregularly shaped iron depletions in the matrix; gray (5Y 6/1) silt coatings on 50 percent of faces of peds and pores; common medium prominent dark reddish brown (5YR 2/2) oxide coats on 10 percent of faces of peds; slightly acid; clear wavy boundary. (Combined thickness of the Bg horizon is 23 to 89 cm.)

Cg--74 to 1165 cm; olive gray (5Y 4/2) clay; weak thick platy structure; firm; few medium prominent light olive brown (2.5Y 5/6) masses of iron accumulation in the matrix; few fine faint gray (5Y 5/1) irregularly shaped iron depletions in the matrix; gray (5Y 6/1) silt coatings on 50 percent of faces of peds; many medium prominent dark reddish brown (5YR 2/2) oxide coats on 30 percent of faces of peds; slightly acid.

TYPE LOCATION: Washington County, Maine; Town of Whitneyville; 0.25 mile south of railroad track on U.S. Route 1A, and 200 feet northwest of the road; USGS Whitneyville topographic quadrangle; lat. 44 degrees 42 minutes 34 seconds N. and long. 67 degrees 31 minutes 29 seconds W., NAD 27.

RANGE IN CHARACTERISTICS: Thickness of the solum ranges from 63 to 127 cm. Depth to bedrock is more than 152 cm. The soil is commonly free of rock fragments but a few pedons contain up to 3 percent gravel. Stones cover from 0 to 3 percent of the surface. Reaction ranges from very strongly acid to slightly acid in the surface and subsurface horizons, unless limed, and from strongly acid to neutral in the upper part of the subsoil. The reaction in the lower part of the subsoil and in the substratum is moderately acid to neutral.

In undisturbed areas some pedons have an O horizon that ranges from 3 to 18 cm thick that is neutral or has a hue of 5YR to 10YR, value of 2 to 3 and a chroma of 0 to 2. It is muck or mucky peat.

The Ap horizon has hue of 10YR to 5Y, value of 3 to 5 and chroma of 1 or 2. It has weak or moderate, very fine to coarse granular structure. Undisturbed areas have an A horizon 5 to 13 cm thick, that has hue of 10YR, value of 3 and chroma of 1 or 2. It is silt loam, silty clay loam, or loam. Consistence is very friable or friable.

The Eg horizon, has hue of 2.5Y or 5Y, value of 4 or 5 and chroma of 1 or 2 and few or common redoximorphic features. It has weak or moderate, thin to thick platy, fine or medium granular or very fine subangular blocky structure. It is silt loam, silty clay loam, or loam. Consistence is very friable or friable.

The Bg horizon has hue of 2.5Y or 5Y, value of 4 to 6 and chroma of 1 or 2 and has faint to prominent redoximorphic features. It is silt loam, silty clay loam, or silty clay. It has subangular blocky or platy structure but some pedons have primary structure that is prismatic. Consistence is friable or firm.

The BCg horizon, where present, has hue of 2.5Y or 5Y, or 5BG value of 4 to 6 and chroma of 1 or 2 with faint to prominent redoximorphic features. It is silty clay loam, silty clay, or clay. It has platy or angular blocky structure but some pedons have primary structure that is prismatic. Consistence is friable to very firm.

The Cg horizon is neutral or has hue of 2.5Y, 5Y or 10Y, value of 4 to 6 and chroma of 0 to 2 and redoximorphic features are less abundant than in the B horizon or are lacking. It is silty clay loam, silty clay, or clay. Platy or prismatic structure is dominant but some pedons are massive. Consistence is firm or very firm. Patchy or discontinuous oxide coatings are common in the B and C horizons in pedons from marine deposits and are less common or lacking in those from lacustrine deposits.

COMPETING SERIES: There are currently no other series in the same family. The Lamoine, Swanton, and Swanville series are similar soils in related families. Lamoine soils have dominant chroma of 3 or more between the A or Ap horizon and 76 cm below the mineral soil surface. Swanton soils have a coarse-loamy over clayey particle-size class. Swanville soils have less clay in the particle-size control section.

GEOGRAPHIC SETTING: Scantic soils are on coastal lowlands and river valleys. Slope ranges from 0 to 8 percent. The soils formed in medium, moderately fine and fine textured glaciomarine or glaciolacustrine deposits. The climate is humid and cool temperate. Mean annual temperature ranges from about 6 to almost 8 degrees C , and mean annual precipitation ranges from 863 to 1219 mm. The frost-free season ranges from 90 to

160 days. Elevation ranges from about 2 to 275 m above mean sea level.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the Biddeford, Buxton, Elmwood, Lamoine, Melrose, Swanton, and Whately soils. The Biddeford, Buxton and Lamoine soils are members of a drainage sequence with Scantic soils on the same landscape, Buxton and Lamoine soils are in higher positions and Biddeford soils are in depressions. The Elmwood, Melrose, Swanton and Whately soils all have a coarse-loamy over clayey particle-size class. Elmwood and Melrose soils are in higher positions on the landscape. Swanton soils are in similar positions and Whately soils are in depressions.

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY: Poorly drained. Surface runoff is slow. Saturated hydraulic conductivity of the surface and subsurface horizons is moderately high or high and low or moderately slow in the subsoil and substratum.

USE AND VEGETATION: Mostly idle or woodland, some areas are used for growing hay and pasture. Common tree species include red maple, elm, gray birch, white ash, balsam fir, red and white spruce, tamarack, and some eastern white pine.

DISTRIBUTION AND EXTENT: MLRAs 142, 143, and 144B in Maine, Massachusetts, New Hampshire, New York, and Vermont. The series is of large extent.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Amherst, Massachusetts

SERIES ESTABLISHED: Penobscot County, Maine, 1947.

REMARKS: Previous revisions reflect a change in classification from Typic Haplaquepts to conform with Keys To Soil Taxonomy, sixth edition, 1994. Historic correlations of Scantic may have occurred in presumed or isolated frigid areas in MLRAs 144A and 145.

Diagnostic horizons and features recognized in this pedon are:
1. Ochric epipedon - the zone from 0 to 28 cm (Ap and Eg horizons).
2. Cambic horizon - the zone from 28 to 89 cm (Bg horizon).
3. Nonacid - the pH is 5.0 or more in 0.01M calcium chloride in at least some part of the control section (25 to 100 cm).
4. Aquic conditions - redoximorphic features at 10 cm.
5. Episaturation - a perched water table.

ADDITIONAL DATA: Source of data used in establishing taxonomic class and range in characteristics is Maine Agricultural Experiment Station, Technical Bulletin 94, September 1979.
Soil interpretation record numbers for the Scantic series are: Scantic, ME0044; Scantic, stony, ME0062.

National Cooperative Soil Survey
U.S.A.

LOCATION BUXTON ME+MA NH NY VT

Established Series
Rev. GBJ-PAH-WDH-NRB
12/2015

BUXTON SERIES

The Buxton series consists of very deep, moderately well drained soils that formed in glaciolacustrine or glaciomarine deposits on coastal lowlands and river valleys. Slope ranges from 3 to 50 percent. Permeability is moderate or moderately slow in the surface horizon, moderately slow or slow in the upper part of the subsoil, and slow or very slow in the lower part of the subsoil and in the substratum. Mean annual temperature is about 7 degrees C, and mean annual precipitation is about 1118 mm at the type location.

TAXONOMIC CLASS: Fine, illitic, frigid Aquic Dystric Eutrudepts

TYPICAL PEDON: Buxton silt loam, on a 13 percent slope in an abandoned hayfield. (Colors are for moist soil unless otherwise noted.)

Ap--0 to 20 cm; dark brown (10YR 3/3) silt loam, pale brown (10YR 6/3) dry; strong medium granular structure; friable; many very fine and common fine and medium roots; moderately acid; abrupt smooth boundary. (13 to 25 cm thick)

Bw1--20 to 41 cm; dark yellowish brown (10YR 4/4) silt loam; moderate very fine and fine granular structure; friable; common very fine and few fine and medium roots; slightly acid; abrupt wavy boundary.

Bw2--41 to 53 cm; light olive brown (2.5Y 5/4) silty clay loam; moderate thin and medium platy structure parting to weak very fine angular blocky; firm; common very fine roots; common medium prominent olive gray (5Y 5/2) iron depletions, and common medium prominent brown (7.5YR 4/4) masses of iron accumulation; slightly acid; clear wavy boundary. (Combined thickness of the B horizon is 20 to 66 cm.)

BC--53 to 89 cm; olive (5Y 5/3) silty clay; weak very coarse prismatic structure parting to weak fine and medium angular blocky; firm; few very fine roots; light brownish gray (2.5Y 6/2) faces of prisms and a few faint silt films on faces of peds within prisms; common prominent dark reddish brown (5YR 2/2) oxide coatings on faces of peds within prisms; common medium faint olive gray (5Y 5/2) iron depletions, and common medium prominent brown (7.5YR 4/4) masses of iron accumulation; slightly acid; gradual wavy boundary. (13 to 51 cm thick)

C--89 to 165 cm; olive gray (5Y 4/2) silty clay; weak very coarse prismatic structure parting to weak fine and medium angular blocky; very firm; olive gray (5Y 5/2) faces of prisms; many prominent dark reddish brown (5YR 2/2) oxide coatings on faces of peds within prisms; common medium prominent yellowish brown (10YR 5/6) masses of iron accumulation that increase in size and abundance with depth; slightly acid.

TYPE LOCATION: Hancock County, Maine; Town of Hancock; 1 mile west of junction of U.S. Route 1 and Maine Route 182, 200 feet north of U.S. Route 1 in an abandoned hayfield; USGS Hancock topographic quadrangle; lat. 44 degrees 32 minutes 19 seconds N. and long. 68 degrees 20 minutes 22 seconds W., NAD 27.

RANGE IN CHARACTERISTICS: Thickness of the solum ranges from 46 to 140 cm. Depth to bedrock is more than 152 cm. Rock fragment content throughout the soil is less than 5 percent by volume. Stones cover from 0 to 3 percent of the surface. Iron depletions occur within 61 cm of the mineral soil surface. Reaction

ranges from very strongly acid to slightly acid in the surface horizon, unless limed, from strongly acid to neutral in the subsoil, and from moderately acid to neutral in the substratum.

The Ap horizon has hue of 7.5YR to 2.5Y, with value and chroma of 2 to 5. Some undisturbed areas have an A horizon 3 to 15 cm thick, that has hue of 7.5YR to 2.5Y, with value and chroma of 2 to 5. They are silt loam or silty clay loam. They have weak to strong, very fine to medium granular structure. Consistence is very friable or friable.

The B horizon has hue of 7.5YR to 5Y, value of 3 to 6 and chroma of 2 to 8, with chroma of 2 being inherited. It is silt loam, silty clay loam, or silty clay. It has weak or moderate, very fine to medium granular, very fine to coarse blocky or thin to thick platy structure. Consistence is friable or firm.

The BC horizon has hue of 2.5Y or 5Y, value of 4 to 6 and chroma of 2 to 4. It is silt loam, silty clay loam, or silty clay. It has blocky or platy structure or has primary structure that is prismatic. Consistence is firm or very firm.

The C horizon has hue of 2.5Y or 5Y, value of 4 to 6 and chroma of 2 to 6. It is silty clay loam, silty clay, or clay. It has blocky, platy or prismatic structure, all of which are considered inherited, or the horizon is massive. Consistence is firm or very firm. Common or many black to dark reddish brown patchy oxide coatings are on faces of peds. Some pedons have films on faces of peds that appear to be silt.

COMPETING SERIES: There are currently no other series in the same family. Similar soils in related families are the Boothbay and Elmwood series. Boothbay soils have a fine-silty particle-size class. Elmwood soils have a coarse-loamy over clayey particle-size class.

GEOGRAPHIC SETTING: Buxton soils are on coastal lowlands and river valleys. Slope ranges from 3 to 50 percent. The soils formed in medium, moderately fine, and fine textured glaciolacustrine or glaciomarine deposits. The climate is humid and cool temperate. Mean annual precipitation ranges from 860 to 1220 mm, and mean annual temperature ranges from 6 to 8 degrees C. The frost-free season ranges from 90 to 160 days. Elevation ranges from 2 to 274 meters above mean sea level.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the Biddeford, Elmwood, Lamoine, Melrose, Scantic, Swanton and Whately soils. The very poorly drained Biddeford soils are in depressions on the landscape. The somewhat poorly drained Lamoine soils and poorly drained Scantic soils are in lower positions on the landscape. The Elmwood, Melrose, Swanton, and Whately soils all have a coarse-loamy over clayey particle-size class. Elmwood soils are in similar positions on the landscape; Melrose soils are in higher positions; Swanton soils are in lower positions and Whately soils are in depressions.

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY: Moderately well drained. Surface runoff is medium or rapid depending on slope. Saturated Hydraulic Conductivity is moderately high in the surface horizon and the upper part of the subsoil, and low to moderately low in the lower part of the subsoil and in the substratum.

USE AND VEGETATION: Cleared areas are used mainly for hay, forage crops, or pasture. Some areas are used for silage corn or vegetables. The remaining areas are forested. Common tree species include eastern white pine, balsam fir, paper birch, white spruce, eastern hemlock, and northern red oak.

DISTRIBUTION AND EXTENT: Maine, Massachusetts, New Hampshire, New York, and Vermont. The series is of large extent.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Amherst, Massachusetts

SERIES ESTABLISHED: York County, Maine, 1941.

S.S.S.M. SOILS LEGEND

SYMBOL	SOIL TAXONOMIC NAME	HYDROLOGIC SOIL GROUP
WfA	WINDSOR VARIANT	C
WfB	WINDSOR VARIANT	C
WfC	WINDSOR VARIANT	C
BzA	BUXTON MODERATELY DRAINED	C
BzB	BUXTON MODERATELY DRAINED	C
BzC	BUXTON MODERATELY DRAINED	C
ScA/P	SCANTIC POORLY DRAINED	D
ScB/P	SCANTIC POORLY DRAINED	D

SLOPE: A = 0–3% B = 3–8% C = 8–15% D = 15–25% E = 25–50% F = 50%+

DENOMINATOR: /VPD = VERY POORLY DRAINED /PD = POORLY DRAINED /SWPD = SOMEWHAT POORLY DRAINED /MWD = MODERATELY WELL DRAINED

NRCS SOILS LEGEND

SYMBOL	SOIL TAXONOMIC NAME	HYDROLOGIC SOIL GROUP
WdA	WINDSOR LOAMY SAND	A
WfB	WINDSOR LOAMY SAND	A
BzA	BUXTON SILT LOAM	C

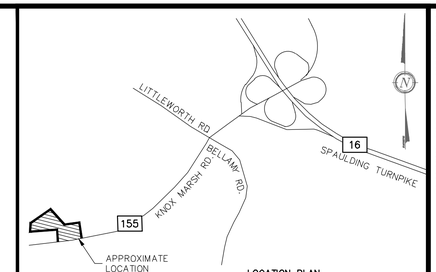
SLOPE: A = 0–3% B = 3–8% C = 8–15% D = 15–25% E = 25–50% F = 50%+

DENOMINATOR: /VPD = VERY POORLY DRAINED /PD = POORLY DRAINED /SWPD = SOMEWHAT POORLY DRAINED /MWD = MODERATELY WELL DRAINED

LEGEND:

- IRON BOUND ~FND~
- IRON PIPE ~FND~
- GRANITE BOUND ~FND~
- UTILITY POLE/GUY WIRE
- BENCHMARK
- MATCH LINE & POINT
- WETLAND LINE
- EXISTING CONTOUR MINOR
- EXISTING CONTOUR MAJOR
- OFF SITE NRCS SOIL LINE
- SITE SPECIFIC SOIL DELINEATION
- LIMIT OF SOIL SURVEY

BzA SOIL LABEL
S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
TYP. TYPICAL
FND FOUND
TBA TO BE ABANDONED



LOCATION PLAN
DOVER, NH
NOT TO SCALE

NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37A

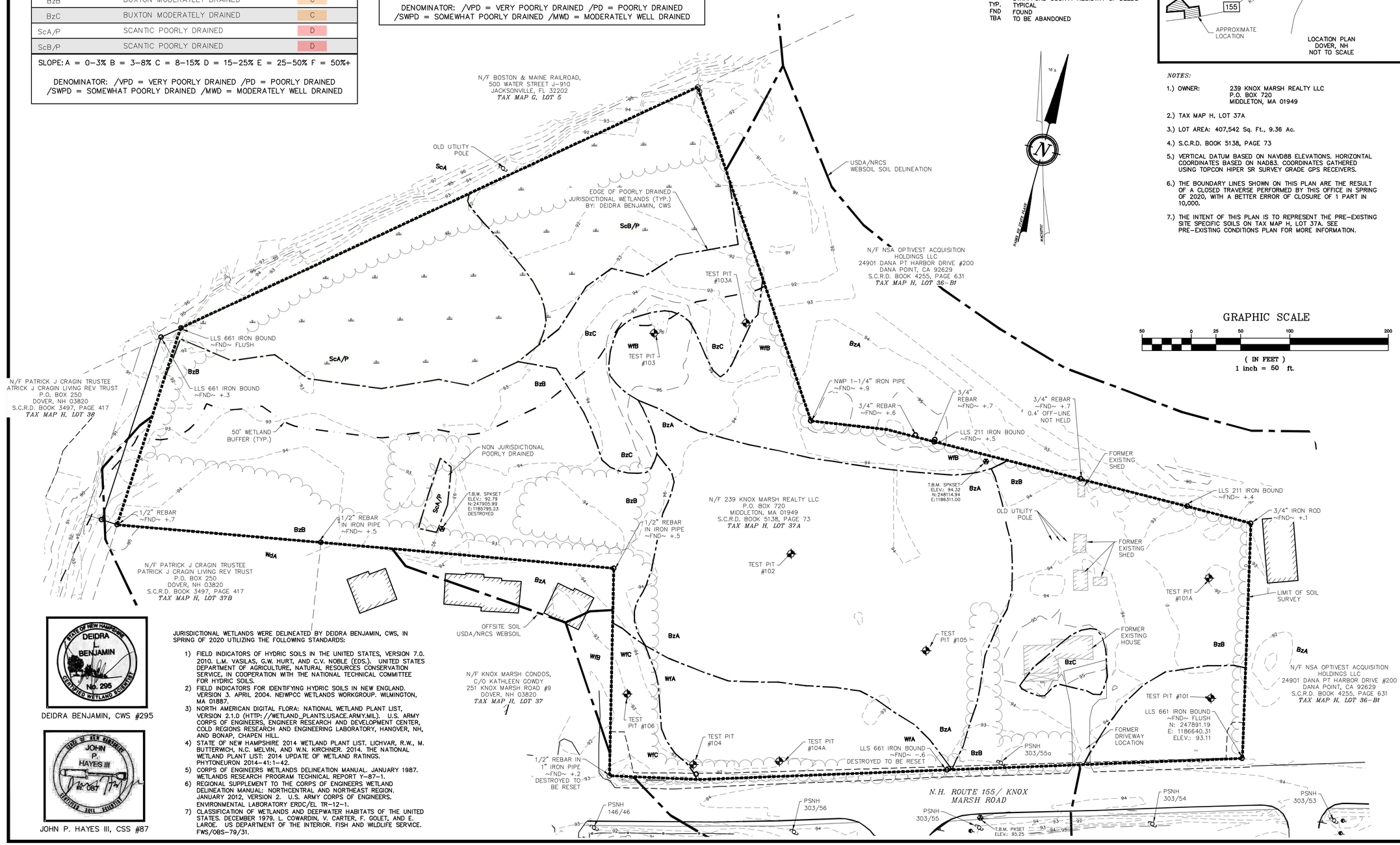
3.) LOT AREA: 407,542 Sq. Ft., 9.36 Ac.

4.) S.C.R.D. BOOK 5138, PAGE 73

5.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

6.) THE BOUNDARY LINES SHOWN ON THIS PLAN ARE THE RESULT OF A CLOSED TRAVERSE PERFORMED BY THIS OFFICE IN SPRING OF 2020, WITH A BETTER ERROR OF CLOSURE OF 1 PART IN 10,000.

7.) THE INTENT OF THIS PLAN IS TO REPRESENT THE PRE-EXISTING SITE SPECIFIC SOILS ON TAX MAP H, LOT 37A. SEE PRE-EXISTING CONDITIONS PLAN FOR MORE INFORMATION.



GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

JURISDICTIONAL WETLANDS WERE DELINEATED BY DEIDRA BENJAMIN, CWS, IN SPRING OF 2020 UTILIZING THE FOLLOWING STANDARDS:

1) FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, VERSION 7.0. 2010. L.M. VASILAS, G.W. HURT, AND C.V. NOBLE (EDS.). UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, IN COOPERATION WITH THE NATIONAL TECHNICAL COMMITTEE FOR HYDRIC SOILS.
2) FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND. VERSION 3. APRIL 2004. NEIWPCC WETLANDS WORKGROUP. WILMINGTON, MA 01887.
3) NORTH AMERICAN DIGITAL FLORA: NATIONAL WETLAND PLANT LIST, VERSION 2.1.0 (HTTP://WETLAND_PLANTS.USACE.ARMY.MIL). U.S. ARMY CORPS OF ENGINEERS, ENGINEER RESEARCH AND DEVELOPMENT CENTER, COLD REGIONS RESEARCH AND ENGINEERING LABORATORY, HANOVER, NH, AND BONAP, CHAPEN HILL.
4) STATE OF NEW HAMPSHIRE 2014 WETLAND PLANT LIST. LICHVAR, R.W., M. BUTTERWICH, N.C. MELVIN, AND W.N. KIRCHNER. 2014. THE NATIONAL WETLAND PLANT LIST: 2014 UPDATE OF WETLAND RATINGS. PHYTONEURON 2014-41:1-42.
5) CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL. JANUARY 1987. WETLANDS RESEARCH PROGRAM TECHNICAL REPORT Y-87-1.
6) REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION. JANUARY 2012, VERSION 2. U.S. ARMY CORPS OF ENGINEERS. ENVIRONMENTAL LABORATORY ERDC/EL TR-12-1.
7) CLASSIFICATION OF WETLANDS AND DEEPWATER HABITATS OF THE UNITED STATES. DECEMBER 1979. L. COWARDIN, V. CARTER, F. GOLET, AND E. LAROE. US DEPARTMENT OF THE INTERIOR. FISH AND WILDLIFE SERVICE. FWS/OBS-79/31.

STATE OF NEW HAMPSHIRE
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STATE OF NEW HAMPSHIRE
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No. 087
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JOHN P. HAYES III, CSS #87

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

PRE-EXISTING SITE SPECIFIC SOILS MAP
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

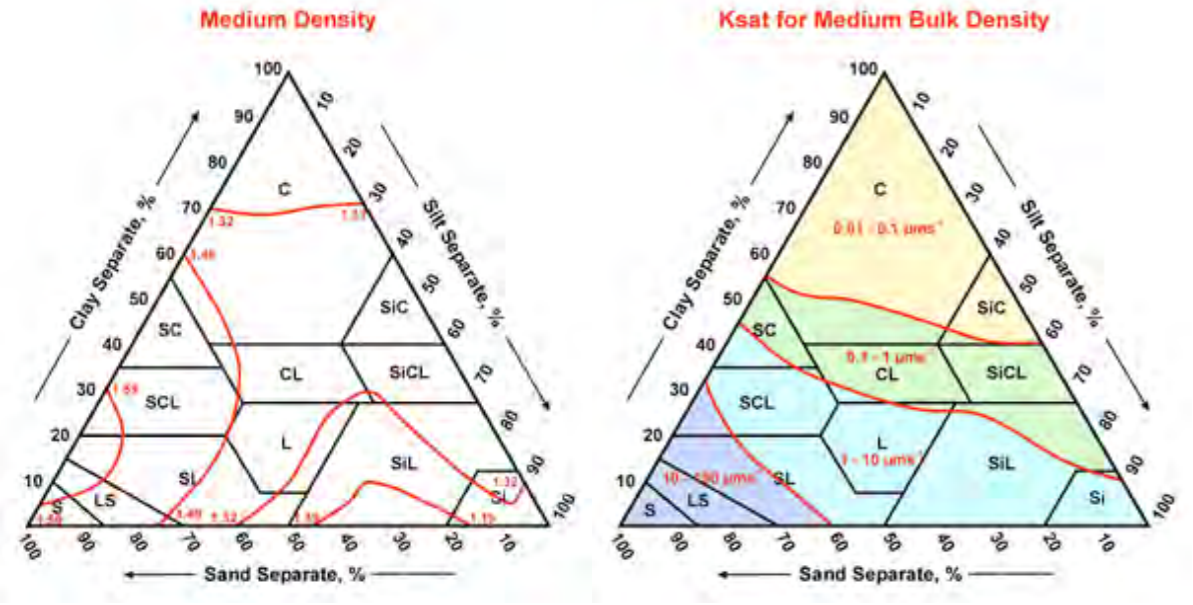
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

STATE OF NEW HAMPSHIRE
No. 805
KENNETH A. BERRY
LICENSED LAND SURVEYOR
SIGNATURE

NOT FOR CONSTRUCTION

K_{sat} VALUES
FOR
NEW HAMPSHIRE SOILS
(Including Hydrologic and DES Soil Lot Sizing Groups)



From: **Guide for Estimating Ksat from Soil Properties** (**Exhibit 618-9**). (http://soils.usda.gov/technical/handbook/contents/part618ex.html)

Sponsored by the Society of Soil Scientists of Northern New England
SSSNNE Special Publication No. 5
September, 2009

K_{sat} VALUES FOR NEW HAMPSHIRE SOILS

ABOUT THE SOCIETY OF SOIL SCIENTISTS OF NORTHERN NEW ENGLAND

The Society of Soil Scientists of Northern New England (SSSNNE) is a non-profit professional organization of soil scientists, both in the private and public sectors, which is dedicated to the advancement of soil science. The Society fosters the profession of soil classification, mapping and interpretation, and encourages the dissemination of information concerning soil science. With the intent of contributing to the general human welfare, the Society seeks to educate the public on the wise use of soils and the associated natural resources.

INTRODUCTION

The publication "K_{sat} Values for New Hampshire Soils" is designed to assist soil scientists, engineers, and other professionals by assembling tables of existing data for all soil series currently on the state soil legend with regard to K_{sat} values and hydrologic groupings (Hyd.Grp.). The need for this information has become more important since the adoption by the New Hampshire Department of Environmental Services of the revised Alteration of Terrain rules for stormwater management. Additional information has been provided for each soil series with regard to landform, temperature regime (Temp.), soil textures, NHDES Soil Lot Size Groupings (Group), whether the soil is a Spodosol (Spodosol?) and other information which will be valuable to a variety of soil information users.

The data for each soil series has been sorted 3 ways for ease of searching:

Table A-Sorted by Numerical Legend
Table B-Sorted by Soil Series Name
Table C-Sorted by NHDES Soil Group for Establishing Lot Size

The report represents cumulative efforts by private soil scientists and NHDES staff with assistance from the USDA Natural Resource Conservation Service.

Comments or inquires on the information in this publication may be directed to the Board of Directors at the following address:

Society of Soil Scientists
of Northern New England
PO Box 76
Durham, NH 03824

SATURATED HYDRAULIC CONDUCTIVITY (K_{SAT})

K_{sat} refers to the ease with which pores in a saturated soil transmit water. The estimates presented here are expressed in terms of inches per hour (NRCS official data presents K_{sat} in both micrometers per second and inches per hour). K_{sat} values are based on soil characteristics observed in the field, particularly structure, consistence, porosity, and texture. (USDA NRCS, Web Soil Survey)

Saturated flow occurs when the soil water pressure is positive; that is, when the soil matric potential is zero (satiated wet condition). In most soils this situation takes place when about 95 percent of the total pore space is filled with water. The remaining 5 percent is filled with entrapped air. Saturated hydraulic conductivity cannot be used to describe water movement under unsaturated conditions. (Soil Survey Manual, 1993)

It is commonly known that soil features (and thus data) for a certain soil series name may be slightly different from one county soil survey to the next and the range in characteristics (via the Typical Pedon) may be slightly different. For example – a Marlow soil (series) in Carroll County may have a higher sand content in its B horizon as opposed to a Marlow soil (series) in Coos County; resulting in a slightly different Ksat range for the B horizon.

The K_{sat} data for this publication was obtained from the USDA-NRCS Soil Data Mart using the Typical Pedon from the county that best reflected the soil and/or had the most acres of that soil. This data is presented in B and C horizons only as it is assumed that the topsoil (A or A_p horizon) will be removed in typical construction practices.

References:

Web Soil Survey. *Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at http://websoilsurvey.nrcs.usda.gov/.*

Soil Data Mart. *http://soildatamart.nrcs.usda.gov/.*

Soil Survey Manual. *Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.*

HYDROLOGIC SOIL GROUPS

Hydrologic group is a group of soils having the same runoff potential under similar storm and cover conditions.

Hydrologic groups are used in equations that estimate runoff from rainfall. These estimates are needed for solving hydrologic problems that arise in planning stormwater management, watershed protection, and flood-prevention projects and for planning or designing structures for the use, control, and disposal of water.

Classifications assigned to soils were based on the use of rainfall-runoff data from small watersheds and infiltrometer plots. From these data, relationships between soil properties and hydrologic groups were established. Assignment of soils to hydrologic groups is based on the relationship between soil properties and hydrologic groups. Wetness characteristics, permeability after prolonged wetting, and depth to very slowly permeable layers are properties that assist in estimating hydrologic groups. Minimum annual steady ponded infiltration rate for a bare ground surface determines the hydrologic soil groups.

Soil properties that influence runoff potential are those that influence the minimum rate of infiltration for a bare soil after prolonged wetting and when not frozen. These properties are depth to a seasonally high water table, intake rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. (The influence of ground cover is treated independently, not in hydrologic soil groups.).

The soils in the United States are placed into four groups, A, B, C, and D, and three dual classes, *A/D, B/D,* and *C/D.* In the definitions of the classes, infiltration rate is the rate at which water enters the soil at the surface and is controlled by the surface conditions. Transmission rate is the rate at which water moves in the soil and is controlled by soil properties. Definitions of the classes are as follows:

Group A- Saturated hydraulic conductivity is very high or in the upper half of high and internal free water occurrence is very deep. Soils in this group have low runoff potential when thoroughly wet. Water is transmitted freely through the soil. Group A soils typically have less than 10 percent clay and more than 90 percent sand or gravel and have gravel or sand textures. Some soils having loamy sand, sandy loam, loam or silt loam textures may be placed in this group if they are well aggregated, of low bulk density, or contain greater than 35 percent rock fragments. The limits on the diagnostic physical characteristics of group A are as follows. The saturated hydraulic conductivity of all soil layers exceeds 40.0 micrometers per second (5.67 inches per hour). The depth to any water impermeable layer is greater than 50 centimeters [20 inches]. The depth to the water table is greater than 60 centimeters [24 inches]. Soils that are deeper than 100 centimeters [40 inches] to a water impermeable layer are in group A if the saturated hydraulic conductivity of all soil layers within 100 centimeters [40 inches] of the surface exceeds 10 micrometers per second (1.42 inches per hour).

Group B- Saturated hydraulic conductivity is in the lower half of high or in the upper half of moderately high and free water occurrence is deep or very deep. Soils in this group have moderately low runoff potential when thoroughly wet. Water transmission through the soil is unimpeded. Group B soils typically have between 10 percent and 20 percent clay and 50 percent to 90 percent sand and have loamy sand or sandy loam textures. Some soils having loam, silt loam, silt, or sandy clay loam textures may be placed in this group if they are well aggregated, of low bulk density, or contain greater than 35 percent rock fragments. The limits on the diagnostic physical characteristics of group B are as follows. The saturated hydraulic conductivity in the least transmissive layer between the surface and 50 centimeters [20 inches] ranges from 10.0 micrometers per second (1.42 inches per hour) to 40.0 micrometers per second (5.67 inches per hour). The depth to any water impermeable layer is greater than 50 centimeters [20 inches]. The depth to the water table is greater than 60 centimeters [24 inches]. Soils that are deeper than 100 centimeters [40 inches] to a water impermeable layer or water table are in group B if the saturated hydraulic conductivity of all soil layers within 100 centimeters [40 inches] of the surface exceeds 4.0 micrometers per second (0.57 inches per hour) but is less than 10.0 micrometers per second (1.42 inches per hour).

Group C- Saturated hydraulic conductivity is in the lower half of moderately high or in the upper half of moderately low and internal free water occurrence is deeper than shallow. Soils in this group have moderately high runoff potential when thoroughly wet. Water transmission through the soil is somewhat restricted. Group C soils typically have between 20 percent and 40 percent clay and less than 50 percent sand and have loam, silt loam, sandy clay loam, clay loam, and silty clay loam textures. Some soils having clay, silty clay, or sandy clay textures may be placed in this group if they are well aggregated, of low bulk density, or contain greater than 35 percent rock fragments. The limits on the diagnostic physical characteristics of group C are as follows. The saturated hydraulic conductivity in the least transmissive layer between the surface and 50 centimeters [20 inches] is between 1.0 micrometers per second (0.14 inches per hour) and 10.0 micrometers per second (1.42 inches per hour). The depth to any water impermeable layer is greater than 50 centimeters [20 inches]. The depth to the water table is greater than 60 centimeters [24 inches]. Soils that are deeper than 100 centimeters [40 inches] to a restriction or water table are in group C if the saturated hydraulic conductivity of all soil layers within 100 centimeters [40 inches] of the surface exceeds 0.40 micrometers per second (0.06 inches per hour) but is less than 4.0 micrometers per second (0.57 inches per hour). .

Group D- Saturated hydraulic conductivity is below the upper half of moderately low, and/or internal free water occurrence is shallow or very shallow and transitory through permanent. Soils in this group have high runoff potential when thoroughly wet. Water movement through the soil is restricted or very restricted. Group D soils typically have greater than 40 percent clay, less than 50 percent sand, and have clayey textures. In some areas, they also have high shrink-swell potential. All soils with a depth to a water impermeable layer less than 50 centimeters [20 inches] and all soils with a water table within 60 centimeters [24 inches] of the surface are in this group, although some may have a dual classification, as described in the next section, if they can be adequately drained. The limits on the physical diagnostic characteristics of group D are as follows. For soils with a water impermeable layer at a depth between 50 centimeters and 100 centimeters [20 and 40 inches], the saturated hydraulic conductivity in the least transmissive soil layer is less than or equal to 1.0 micrometers per second (0.14 inches per hour). For soils that are deeper than 100 centimeters [40 inches] to a restriction or water table, the saturated hydraulic

conductivity of all soil layers within 100 centimeters [40 inches] of the surface is less than or equal to 0.40 micrometers per second (0.06 inches per hour).

Dual hydrologic soil groups-Certain wet soils are placed in group D based solely on the presence of a water table within 60 centimeters [24 inches] of the surface even though the saturated hydraulic conductivity may be favorable for water transmission. If these soils can be adequately drained, then they are assigned to dual hydrologic soil groups *(A/D, B/D,* and *C/D)* based on their saturated hydraulic conductivity and the water table depth when drained. The first letter applies to the drained condition and the second to the undrained condition. For the purpose of hydrologic soil group, adequately drained means that the seasonal high water table is kept at least 60 centimeters [24 inches] below the surface in a soil where it would be higher in a natural state.

References:

National Engineering Handbook, Natural Resource Conservation Service, U.S. Department of Agriculture.

Soil Data Mart. *http://soildatamart.nrcs.usda.gov/*.

Soil Survey Manual. *Soil Survey Division Staff. 1993. Soil survey manual. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 18.*

TABLE A

NUMERICAL LEGEND

Soil Series	legend number	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Group	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Occum	1	0.6	2.0	6.00	20.0	B	2	Flood Plain (Bottom Land)	mesic	loamy	no	loamy over loamy sand
Suncook	2	6.0	20.0	6.00	20.0	A	1	Flood Plain (Bottomland)	mesic	sandy	no	occasionally flooded
Lim	3	0.6	2.0	6.00	20.0	C	5	Flood Plain (Bottom Land)	mesic	loamy	no	
Pootatuck	4	0.6	6.0	6.00	20.0	B	3	Flood Plain (Bottom Land)	mesic	loamy	no	single grain in C
Rippowam	5	0.6	6.0	6.00	20.0	C	5	Flood Plain (Bottom Land)	mesic	loamy	no	
Saco	6	0.6	2.0	6.00	20.0	D	6	Flood Plain (Bottom Land)	mesic	silty	no	strata
Hadley	8	0.6	2.0	0.60	6.0	B	2	Flood Plain (Bottom Land)	mesic	silty	no	strata of fine sand
Winooski	9	0.6	6.0	0.60	6.0	B		Flood Plain (Bottom Land)	mesic	silty over loamy	no	
Merrimac	10	2.0	20.0	6.00	20.0	A	1	Outwash and Stream Terraces	mesic	gravelly sand	no	loamy cap
Gloucester	11	6.0	20.0	6.00	20.0	A	1	Sandy Till	mesic	sandy-skeletal	no	loamy cap
Hinckley	12	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	sandy-skeletal	no	
Sheepscot	14	6.0	20.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	gravelly coarse sand
Searsport	15	6.0	20.0	6.00	20.0	D	6	Outwash and Stream Terraces	frigid	sandy	no	organic over sand
Saugatuck	16	0.06	0.2	6.00	20.0	C	5	Outwash and Stream Terraces	mesic	sandy	yes	ortstein
Colton, gravelly	21	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	gravelly surface
Colton	22	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	
Masardis	23	6.0	20.0	6.00	20.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	slate, loamy cap
Agawam	24	6.0	20.0	20.00	100.0	B	2	Outwash and Stream Terraces	mesic	loamy over sandy	no	loamy over sand/gravel
Windsor	26	6.0	20.0	6.00	20.0	A	1	Outwash and Stream Terraces	mesic	sandy	no	
Groveton	27	0.6	2.0	0.60	6.0	B	2	Outwash and Stream Terraces	frigid	loamy	yes	loamy over sandy
Madawaska	28	0.6	2.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	loamy over sandy	yes	sandy or sandy-skeletal
Woodbridge	29	0.6	2.0	0.00	0.6	C	3	Firm, platy, loamy till	mesic	loamy	no	sandy loam in Cd
Unadilla	30	0.6	2.0	2.00	20.0	B	2	Terraces and glacial lake plains	mesic	silty	no	silty over gravelly
Hartland	31	0.6	2.0	0.20	2.0	B	2	Terraces and glacial lake plains	mesic	silty	no	very fine sandy loam
Boxford	32	0.1	0.2	0.00	0.2	C	3	Silt and Clay Deposits	mesic	fine	no	silty clay loam
Scitico	33	0.0	0.2	0.00	0.2	C	5	Silt and Clay Deposits	mesic	fine	no	
Wareham	34	6.0	20.0	6.00	20.0	C	5	Outwash and Stream Terraces	mesic	sandy	no	
Champlain	35	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	gravelly sand	no	
Adams	36	6.0	20.0	20.00	99.0	A	1	Outwash and Stream Terraces	frigid	sandy	yes	
Melrose	37	2.0	6.0	0.00	0.2	C	3	Sandy/loamy over silt/clay	frigid	loamy over clayey	no	silty clay loam in C
Eldridge	38	6.0	20.0	0.06	0.6	C	3	Sandy/loamy over silt/clay	mesic	sandy over loamy	no	
Millis	39					C	3	Firm, platy, sandy till	frigid	loamy	yes	loamy sand in Cd
Canton	42	2.0	6.0	6.00	20.0	B	2	Loose till, sandy textures	mesic	loamy over sandy	no	loamy over loamy sand
Montauk	44	0.6	6.0	0.06	0.6	C	3	Firm, platy, sandy till	mesic	loamy	no	loamy sand in Cd
Henniker	46	0.6	2.0	0.06	0.6	C	3	Firm, platy, sandy till	frigid	loamy	no	loamy sand in Cd
Madawaska, aquentic	48	0.6	2.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	loamy over sandy	yes	sandy or sandy-skeletal
Whitman	49	0.0	0.2	0.00	0.2	D	6	Firm, platy, loamy till	mesic	loamy	no	mucky loam
Hermon	55	2.0	20.0	6.00	20.0	A	1	Sandy Till	frigid	sandy-skeletal	yes	loamy cap
Becket	56	0.6	2.0	0.06	0.6	C	3	Firm, platy, sandy till	frigid	loamy	yes	gravelly sandy loam in Cd
Waumbeck	58	2.0	20.0	6.00	20.0	B	3	Loose till, sandy textures	frigid	sandy-skeletal	yes	very cobbly loamy sand
Charlton	62	0.6	6.0	0.60	6.0	B	2	Loose till, loamy textures	mesic	loamy	no	fine sandy loam
Paxton	66	0.6	2.0	0.00	0.2	C	3	Firm, platy, loamy till	mesic	loamy	no	
Sutton	68	0.6	6.0	0.60	6.0	B	3	Loose till, loamy textures	mesic	loamy	no	
Berkshire	72	0.6	6.0	0.60	6.0	B	2	Loose till, loamy textures	frigid	loamy	yes	fine sandy loam
Marlow	76	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	fine sandy loam in Cd
Peru	78	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	
Thorndike	84	0.6	2.0	0.60	2.0	C/D	4	Friable till, silty, schist & phyllite	frigid	loamy-skeletal	yes	less than 20 in. deep
Hollis	86	0.6	6.0	0.60	6.0	C/D	4	Loose till, bedrock	mesic	loamy	no	less than 20 in. deep
Winnecook	88	0.6	2.0	0.60	2.0	C	4	Friable till, silty, schist & phyllite	frigid	loamy-skeletal	yes	20 to 40 in. deep
Chatfield	89	0.6	6.0	0.60	6.0	B	4	Loose till, bedrock	mesic	loamy	no	20 to 40 in. deep
Hogback	91	2.0	6.0	2.00	6.0	C	4	Loose till, bedrock	frigid	loamy	yes	less than 20 in. deep
Lyman	92	2.0	6.0	2.00	6.0	A/D	4	Loose till, bedrock	frigid	loamy	yes	less than 20 in. deep
Woodstock	93	2.0	6.0	2.00	6.0	C/D	4	Loose till, bedrock	frigid	loamy	no	less than 20 in. deep
Rawsonville	98	0.6	6.0	0.60	6.0	C	4	Loose till, bedrock	frigid	loamy	yes	20 to 40 in. deep
Tunbridge	99	0.6	6.0	0.60	6.0	C	4	Loose till, bedrock	frigid	loamy	yes	20 to 40 in. deep

Soil Series	legend number	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Group	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Ondawa	101	0.6	6.0	6.00	20.0	B	2	Flood Plain (Bottom Land)	frigid	loamy	no	loamy over loamy sand
Sunday	102	6.0	20.0	6.00	20.0	A	1	Flood Plain (Bottomland)	frigid	sandy	no	occasionally flooded
Winooski	103	0.6	6.0	0.60	6.0	B	3	Flood Plain (Bottom Land)	mesic	silty	no	very fine sandy loam
Podunk	104	0.6	6.0	6.00	20.0	B	3	Flood Plain (Bottom Land)	frigid	loamy	no	loamy to coarse sand in C
Rumney	105	0.6	6.0	6.00	20.0	C	5	Flood Plain (Bottom Land)	frigid	loamy	no	
Hadley	108	0.6	2.0	0.60	6.0	B	2	Flood Plain (Bottom Land)	mesic	silty	no	strata of fine sand, occ flooded
Limerick	109	0.6	2.0	0.60	2.0	C	5	Flood Plain (Bottom Land)	mesic	silty	no	
Scarboro	115	6.0	20.0	6.00	20.0	D	6	Outwash and Stream Terraces	mesic	sandy	no	organic over sand, non stony
Finch	116					C	3	Outwash and Stream Terraces	frigid	sandy	yes	cemented (ortstein)
Sudbury	118	2.0	6.0	2.00	20.0	B	3	Outwash and Stream Terraces	mesic	sandy	no	loam over gravelly sand
Telos	123	0.6	2.0	0.02	0.2	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd
Chesuncook	126	0.6	2.0	0.02	0.2	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd
Allagash	127	0.6	2.0	6.00	20.0	B	2	Outwash and Stream Terraces	frigid	loamy over sandy	yes	loamy over sandy
Elliottsville	128	0.6	2.0	0.60	2.0	B	4	Friable till, silty, schist & phyllite	frigid	loamy	yes	20 to 40 in. deep
Hitchcock	130	0.6	2.0	0.06	0.6	B	3	Terraces and glacial lake plains	mesic	silty	no	silt loam to silt in C
Burnham	131	0.2	6.0	0.02	0.2	D	6	Firm, platy, silty till, schist & phylitte	frigid	loamy	no	organic over silt
Dartmouth	132	0.6	2.0	0.06	0.6	B	3	Terraces and glacial lake plains	mesic	silty	no	thin strata silty clay loam
Monson	133	0.6	2.0	0.60	2.0	D	4	Friable till, silty, schist & phyllite	frigid	loamy	yes	less than 20 in. deep
Maybid	134	0.0	0.2	0.00	0.2	D	6	Silt and Clay Deposits	mesic	fine	no	silt over clay
Shapleigh	136					C/D	4	Sandy Till	mesic	sandy	yes	less than 20 in. deep
Monadnock	142	0.6	2.0	2.00	6.0	B	2	Loose till, sandy textures	frigid	loamy over sandy, sandy-skeletal	yes	gravelly loamy sand in C
Acton	146	2.0	20.0	2.00	20.0	B	3	Loose till, sandy textures	mesic	sandy-skeletal	no	cobbly loamy sand
Vassalboro	150					D	6	Organic Materials - Freshwater	frigid	peat	no	deep organic
Success	154	2.0	6.0	6.00	20.0	A	1	Sandy Till	frigid	sandy-skeletal	yes	cemented
Canterbury	166	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	no	loam in Cd
Sunapee	168	0.6	2.0	0.60	6.0	B	3	Loose till, loamy textures	frigid	loamy	yes	
Waskish	195					D	6	Organic Materials - Freshwater	frigid	peat	no	deep organic
Ondawa	201	0.6	6.0	6.00	20.0	B	2	Flood Plain (Bottom Land)	frigid	loamy	no	occ flood, loamy over l. sand
Sunday	202	6.0	20.0	6.00	20.0	A	1	Flood Plain (Bottomland)	frigid	sandy	no	frequently flooded
Fryeburg	208	0.6	2.0	2.00	6.0	B	2	Flood Plain (Bottom Land)	frigid	silty	no	very fine sandy loam
Charles	209	0.6	100.0	0.60	100.0	C	5	Flood Plain (Bottom Land)	frigid	silty	no	
Warwick	210	2.0	6.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	loamy-skeletal	no	loamy over slate gravel
Naumburg	214	6.0	20.0	6.00	20.0	C	5	Outwash and Stream Terraces	frigid	sandy	yes	
Boscawen	220	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	no	loamy cap
Bemis	224	0.6	0.2	0.00	0.2	C	5	Firm, platy, loamy till	cryic	loamy	no	
Bice	226	0.6	6.0	0.60	6.0	B	2	Loose till, loamy textures	frigid	loamy	no	sandy loam
Lanesboro	228	0.6	2.0	0.06	0.2	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	channery silt loam in Cd
Poocham	230	0.6	2.0	0.20	2.0	B	3	Terraces and glacial lake plains	mesic	silty	no	silt loam in C
Buxton	232	0.1	0.6	0.00	0.2	C	3	Silt and Clay Deposits	frigid	fine	no	silty clay
Scantic	233	0.0	0.2	0.00	0.2	D	5	Silt and Clay Deposits	frigid	fine	no	
Biddeford	234	0.0	0.2	0.00	0.2	D	6	Silt and Clay Deposits	frigid	fine	no	organic over clay
Buckland	237	0.6	2.0	0.06	0.2	C	3	Firm, platy, loamy till	frigid	loamy	no	loam in Cd
Elmridge	238	2.0	6.0	0.00	0.2	C	3	Sandy/loamy over silt/clay	mesic	loamy over clayey	no	
Brayton	240	0.6	2.0	0.06	0.6	C	5	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	
Lyme	246	0.6	6.0	0.60	6.0	C	5	Loose till, sandy textures	frigid	loamy	no	
Millsite	251	0.6	6.0	0.60	6.0	C	4	Loose till, bedrock	frigid	loamy	no	20 to 40 in. deep
Macomber	252	0.6	2.0	0.60	2.0	C	4	Friable till, silty, schist & phyllite	frigid	loamy-skeletal	yes	20 to 40 in. deep
Lombard	259	0.6	6.0	2.00	20.0	C/D	2	Weathered bedrock, phyllite	frigid	loamy	no	very channery
Sunapee var	269	0.6	2.0	0.60	6.0	B	3	Loose till, loamy textures	frigid	loamy	yes	frigid dystrudept
Chatfield Var.	289	0.6	6.0	0.60	6.0	B	3	Loose till, bedrock	mesic	loamy	no	mwd to swpd
Greenwood	295					A/D	6	Organic Materials - Freshwater	frigid	hemic	no	deep organic
Catden	296					A/D	6	Organic Materials - Freshwater	mesic	sapric	no	deep organic
Lovewell	307	0.6	2.0	0.60	2.0	B	3	Flood Plain (Bottom Land)	frigid	silty	no	very fine sandy loam
Quonset	310	2.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	sandy-skeletal	no	shale
Deerfield	313	6.0	20.0	20.00	100.0	B	3	Outwash and Stream Terraces	mesic	sandy	no	single grain in C

Soil Series	legend number	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Group	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Pipestone	314					B	5	Outwash and Stream Terraces	mesic	sandy	yes	
Mashpee	315	6.0	20.0	6.00	20.0	B	5	Outwash and Stream Terraces	mesic	sandy	yes	
Bernardston	330	0.6	2.0	0.06	0.2	C	3	Firm, platy, silty till, schist & phyllite	mesic	loamy	no	channery silt loam in Cd
Roundabout	333	0.2	2.0	0.06	0.6	C	5	Terraces and glacial lake plains	frigid	silty	no	silt loam in the C
Pittstown	334	0.6	2.0	0.06	0.2	C	3	Firm, platy, silty till, schist & phyllite	mesic	loamy	no	channery silt loam in Cd
Elmwood	338	2.0	6.0	0.00	0.2	C	3	Sandy/loamy over silt/clay	frigid	loamy over clayey	no	
Stissing	340	0.6	2.0	0.06	0.2	C	5	Firm, platy, silty till, schist & phyllite	mesic	loamy	no	
Cardigan	357	0.6	2.0	0.60	2.0	B	4	Friable till, silty, schist & phyllite	mesic	loamy	no	20 to 40 in. deep
Kearsarge	359	0.6	2.0	0.60	2.0	B	4	Friable till, silty, schist & phyllite	mesic	loamy	no	less than 20 in. deep
Dutchess	366	0.6	2.0	0.60	2.0	B	2	Friable till, silty, schist & phyllite	mesic	loamy	no	very channery
Dixfield	378	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	fine sandy loam in Cd
Timakwa	393			6.00	100.0	D	6	Organic Materials - Freshwater	mesic	sandy or sandy-skeletal	no	organic over sand
Chocorua	395			6.00	20.0	D	6	Organic Materials - Freshwater	frigid	sandy or sandy-skeletal	no	organic over sand
Ipswich	397					D	6	Tidal Flat	mesic	hemic/sapric	no	deep organic
Suncook	402	6.0	20.0	6.00	20.0	A	1	Flood Plain (Bottomland)	mesic	sandy	no	frequent flooding
Metallak	404	6.0	100.0	6.00	100.0	B	3	Flood Plain (Bottom Land)	frigid	loamy over sandy	no	sandy or sandy-skeletal
Medomak	406	0.6	2.0	0.60	2.0	D	6	Flood Plain (Bottom Land)	frigid	silty	no	organic over silt
Haven	410	0.6	2.0	20.00	100.0	B	2	Outwash and Stream Terraces	mesic	loamy over sandy	no	loamy over sand/gravel
Duane	413	6.0	20.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	cemented (ortstein)
Moosilauke	414	6.0	20.0	6.00	20.0	C	5	Loose till, sandy textures	frigid	sandy	no	
Grange	433	0.6	2.0	0.60	2.0	C	5	Outwash and Stream Terraces	frigid	co. loamy over sandy (skeletal)	no	
Swanton	438	2.0	6.0	0.00	0.2	C	5	Sandy/loamy over silt/clay	frigid	co. loamy over clayey	no	
Shaker	439	2.0	6.0	0.00	0.2	C	5	Sandy/loamy over silt/clay	mesic	co. loamy over clayey	no	
Chichester	442	0.6	2.0	2.00	6.0	B		Loose till, sandy textures	frigid	loamy over sandy	no	loamy over loamy sand
Newfields	444	0.6	2.0	0.60	2.0	B	3	Loose till, sandy textures	mesic	loamy over sandy	no	sandy or sandy-skeletal
Scituate	448	0.6	2.0	0.06	0.2	C	3	Firm, platy, sandy till	mesic	loamy	no	loamy sand in Cd
Metacomet	458	0.6	2.0	0.06	0.6	C	3	Firm, platy, sandy till	frigid	loamy	no	loamy sand in Cd
Pennichuck	460	0.6	2.0	0.60	2.0	B	4	Friable till, silty, schist & phyllite	mesic	loamy-skeletal	no	20 to 40 in. deep
Gilmanton	478	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	no	fine sandy loam in Cd
Ossipee	495			0.20	2.0	D	6	Organic Materials - Freshwater	frigid	loamy	no	organic over loam
Natchaug	496			0.20	2.0	D	6	Organic Materials - Freshwater	mesic	loamy	no	organic over loam
Pawcatuck	497			20.00	100.0	D	6	Tidal Flat	mesic	sandy or sandy-skeletal	no	organic over sand
Abenaki	501	0.6	2.0	6.00	99.0	B	2	Outwash and Stream Terraces	frigid	loamy over sandy-skeletal	no	loamy over gravelly
Cohas	505	0.6	2.0	0.60	100.0	C	5	Flood Plain (Bottom Land)	frigid	co. loamy over sandy (skeletal)	no	
Hoosic	510	2.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	sandy-skeletal	no	slate, loamy cap
Ninigret	513	0.6	6.0	6.00	20.0	B	3	Outwash and Stream Terraces	mesic	loamy over sandy	no	sandy or sandy-skeletal
Leicester	514	0.6	6.0	0.60	20.0	C	5	Loose till, loamy textures	mesic	loamy	no	
Au Gres	516					B	5	Outwash and Stream Terraces	frigid	sandy	yes	single grain, loose
Machias	520	2.0	6.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	sandy or sandy-skeletal	yes	strata sand/gravel in C
Stetson	523	0.6	6.0	6.00	20.0	B	2	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	loamy over gravelly
Caesar	526	20.0	100.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	coarse sand	no	
Scio	531	0.6	2.0	0.60	2.0	B	3	Terraces and glacial lake plains	mesic	silty	no	gravelly sand in 2C
Belgrade	532	0.6	2.0	0.06	2.0	B	3	Terraces and glacial lake plains	mesic	silty	no	strata of fine sand
Raynham	533	0.2	2.0	0.06	0.2	C	5	Terraces and glacial lake plains	mesic	silty	no	
Binghamville	534	0.2	2.0	0.06	0.2	D	5	Terraces and glacial lake plains	mesic	silty	no	
Suffield	536	0.6	2.0	0.00	0.2	C	3	Sandy/loamy over silt/clay	mesic	silty over clayey	no	deep to clay C
Squamscott	538	6.0	20.0	0.06	0.6	C	5	Sandy/loamy over silt/clay	mesic	sandy over loamy	yes	
Raypol	540	0.6	2.0	6.00	100.0	D	5	Outwash and Stream Terraces	mesic	co. loamy over sandy (skeletal)	no	
Walpole	546	2.0	6.0	6.00	20.0	C	5	Outwash and Stream Terraces	mesic	sandy	no	
Peacham	549	0.6	2.0	0.00	0.2	D	6	Firm, platy, silty till, schist & phylitte	frigid	loamy	no	organic over loam
Skerry	558	0.6	2.0	0.06	0.6	C	3	Firm, platy, sandy till	frigid	loamy	yes	loamy sand in Cd
Plaisted	563	0.6	2.0	0.06	0.6	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd
Howland	566	0.6	2.0	0.06	0.2	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	silt loam, platy in Cd
Monarda	569	0.2	2.0	0.02	0.2	D	5	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	
Bangor	572	0.6	2.0	0.60	2.0	B	2	Friable till, silty, schist & phyllite	frigid	loamy	yes	silt loam

Soil Series	legend number	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Group	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Dixmont	578	0.6	2.0	0.60	2.0	C	3	Friable till, silty, schist & phyllite	frigid	loamy	yes	silt loam, platy in C
Cabot	589	0.6	2.0	0.06	0.2	D	5	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	
Westbrook	597			0.00	2.0	D	6	Tidal Flat	mesic	loamy	no	organic over loam
Mundal	610	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	gravelly sandy loam in Cd
Croghan	613	20.0	100.0	20.00	100.0	B	3	Outwash and Stream Terraces	frigid	sandy	yes	single grain in C
Kinsman	614	6.0	20.0	6.00	20.0	C	5	Outwash and Stream Terraces	frigid	sandy	yes	
Salmon	630	0.6	2.0	0.60	2.0	B	2	Terraces and glacial lake plains	frigid	silty	yes	very fine sandy loam
Nicholville	632	0.6	2.0	0.60	2.0	C	3	Terraces and glacial lake plains	frigid	silty	yes	very fine sandy loam
Pemi	633	0.6	2.0	0.06	0.6	C	5	Terraces and glacial lake plains	frigid	silty	no	
Pillsbury	646	0.6	2.0	0.06	0.2	C	5	Firm, platy, loamy till	frigid	silty	no	
Ridgebury	656	0.6	6.0	0.00	0.2	C	5	Firm, platy, loamy till	mesic	loamy	no	
Canaan	663	2.0	20.0	2.00	20.0	C	4	Weathered Bedrock Till	frigid	loamy-skeletal	yes	less than 20 in. deep
Redstone	665	2.0	6.0	6.00	20.0	A	1	Weathered Bedrock Till	frigid	fragmental	yes	loamy cap
Sisk	667	0.6	2.0	0.00	0.6	C	3	Firm, platy, loamy till	cryic	loamy	yes	sandy loam in Cd
Surplus	669	0.6	2.0	0.00	0.6	C	3	Firm, platy, loamy till	cryic	loamy	yes	mwd, sandy loam in Cd
Glebe	671	2.0	6.0	2.00	6.0	C	4	Loose till, bedrock	cryic	loamy	yes	20 to 40 in. deep
Saddleback	673	0.6	2.0	0.60	2.0	C/D	4	Loose till, bedrock	cryic	loamy	yes	less than 20 in. deep
Ricker	674	2.0	6.0	2.00	6.0	A	4	Organic over bedrock (up to 4" of mineral)	cryic	fibric to hemic	no	well drained, less than 20 in. deep
Houghtonville	795	0.6	6.0	0.60	6.0	B	2	Loose till, loamy textures	frigid	loamy	yes	cobbly fine sandy loam
Matunuck	797			20.00	100.0	D	6	Tidal Flat	mesic	sandy	no	organic over sand
Meadowsedge	894					D	6	Organic Materials - Freshwater	frigid	peat	no	deep organic
Bucksport	895					D	6	Organic Materials - Freshwater	frigid	sapric	no	deep organic
Colonel	927	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	loam in Cd
Pondicherry	992			6.00	20.0	D	6	Organic Materials - Freshwater	frigid	sandy or sandy-skeletal	no	organic over sand
Wonsqueak	995			0.20	2.0	D	6	Organic Materials - Freshwater	frigid	loamy	no	organic over loam
Glover	NA	0.6	2.0	0.60	2	D	4	Friable till, silty, schist & phyllite	frigid	loamy	no	less than 20 in. deep

no longer recognized

organic materials

TABLE B

SOIL SERIES

Soil Series	legend number	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Group	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Abenaki	501	0.6	2.0	6.00	99.0	B	2	Outwash and Stream Terraces	frigid	loamy over sandy-skeletal	no	loamy over gravelly
Acton	146	2.0	20.0	2.00	20.0	B	3	Loose till, sandy textures	mesic	sandy-skeletal	no	cobbly loamy sand
Adams	36	6.0	20.0	20.00	99.0	A	1	Outwash and Stream Terraces	frigid	sandy	yes	
Agawam	24	6.0	20.0	20.00	100.0	B	2	Outwash and Stream Terraces	mesic	loamy over sandy	no	loamy over sand/gravel
Allagash	127	0.6	2.0	6.00	20.0	B	2	Outwash and Stream Terraces	frigid	loamy over sandy	yes	loamy over sandy
Au Gres	516					B	5	Outwash and Stream Terraces	frigid	sandy	yes	single grain, loose
Bangor	572	0.6	2.0	0.60	2.0	B	2	Friable till, silty, schist & phyllite	frigid	loamy	yes	silt loam
Becket	56	0.6	2.0	0.06	0.6	C	3	Firm, platy, sandy till	frigid	loamy	yes	gravelly sandy loam in Cd
Belgrade	532	0.6	2.0	0.06	2.0	B	3	Terraces and glacial lake plains	mesic	silty	no	strata of fine sand
Bemis	224	0.6	0.2	0.00	0.2	C	5	Firm, platy, loamy till	cryic	loamy	no	
Berkshire	72	0.6	6.0	0.60	6.0	B	2	Loose till, loamy textures	frigid	loamy	yes	fine sandy loam
Bernardston	330	0.6	2.0	0.06	0.2	C	3	Firm, platy, silty till, schist & phyllite	mesic	loamy	no	channery silt loam in Cd
Bice	226	0.6	6.0	0.60	6.0	B	2	Loose till, loamy textures	frigid	loamy	no	sandy loam
Biddeford	234	0.0	0.2	0.00	0.2	D	6	Silt and Clay Deposits	frigid	fine	no	organic over clay
Binghamville	534	0.2	2.0	0.06	0.2	D	5	Terraces and glacial lake plains	mesic	silty	no	
Boscawen	220	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	no	loamy cap
Boxford	32	0.1	0.2	0.00	0.2	C	3	Silt and Clay Deposits	mesic	fine	no	silty clay loam
Brayton	240	0.6	2.0	0.06	0.6	C	5	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	
Buckland	237	0.6	2.0	0.06	0.2	C	3	Firm, platy, loamy till	frigid	loamy	no	loam in Cd
Bucksport	895					D	6	Organic Materials - Freshwater	frigid	sapric	no	deep organic
Burnham	131	0.2	6.0	0.02	0.2	D	6	Firm, platy, silty till, schist & phylitte	frigid	loamy	no	organic over silt
Buxton	232	0.1	0.6	0.00	0.2	C	3	Silt and Clay Deposits	frigid	fine	no	silty clay
Cabot	589	0.6	2.0	0.06	0.2	D	5	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	
Caesar	526	20.0	100.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	coarse sand	no	
Canaan	663	2.0	20.0	2.00	20.0	C	4	Weathered Bedrock Till	frigid	loamy-skeletal	yes	less than 20 in. deep
Canterbury	166	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	no	loam in Cd
Canton	42	2.0	6.0	6.00	20.0	B	2	Loose till, sandy textures	mesic	loamy over sandy	no	loamy over loamy sand
Cardigan	357	0.6	2.0	0.60	2.0	B	4	Friable till, silty, schist & phyllite	mesic	loamy	no	20 to 40 in. deep
Catden	296					A/D	6	Organic Materials - Freshwater	mesic	sapric	no	deep organic
Champlain	35	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	gravelly sand	no	
Charles	209	0.6	100.0	0.60	100.0	C	5	Flood Plain (Bottom Land)	frigid	silty	no	
Charlton	62	0.6	6.0	0.60	6.0	B	2	Loose till, loamy textures	mesic	loamy	no	fine sandy loam
Chatfield	89	0.6	6.0	0.60	6.0	B	4	Loose till, bedrock	mesic	loamy	no	20 to 40 in. deep
Chatfield Var.	289	0.6	6.0	0.60	6.0	B	3	Loose till, bedrock	mesic	loamy	no	mwd to swpd
Chesuncook	126	0.6	2.0	0.02	0.2	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd
Chichester	442	0.6	2.0	2.00	6.0	B		Loose till, sandy textures	frigid	loamy over sandy	no	loamy over loamy sand
Chocorua	395			6.00	20.0	D	6	Organic Materials - Freshwater	frigid	sandy or sandy-skeletal	no	organic over sand
Cohas	505	0.6	2.0	0.60	100.0	C	5	Flood Plain (Bottom Land)	frigid	co. loamy over sandy (skeletal)	no	
Colonel	927	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	loam in Cd
Colton	22	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	
Colton, gravelly	21	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	gravelly surface
Croghan	613	20.0	100.0	20.00	100.0	B	3	Outwash and Stream Terraces	frigid	sandy	yes	single grain in C
Dartmouth	132	0.6	2.0	0.06	0.6	B	3	Terraces and glacial lake plains	mesic	silty	no	thin strata silty clay loam
Deerfield	313	6.0	20.0	20.00	100.0	B	3	Outwash and Stream Terraces	mesic	sandy	no	single grain in C
Dixfield	378	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	fine sandy loam in Cd
Dixmont	578	0.6	2.0	0.60	2.0	C	3	Friable till, silty, schist & phyllite	frigid	loamy	yes	silt loam, platy in C
Duane	413	6.0	20.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	cemented (ortstein)
Dutchess	366	0.6	2.0	0.60	2.0	B	2	Friable till, silty, schist & phyllite	mesic	loamy	no	very channery
Eldridge	38	6.0	20.0	0.06	0.6	C	3	Sandy/loamy over silt/clay	mesic	sandy over loamy	no	
Elliottsville	128	0.6	2.0	0.60	2.0	B	4	Friable till, silty, schist & phyllite	frigid	loamy	yes	20 to 40 in. deep
Elmridge	238	2.0	6.0	0.00	0.2	C	3	Sandy/loamy over silt/clay	mesic	loamy over clayey	no	
Elmwood	338	2.0	6.0	0.00	0.2	C	3	Sandy/loamy over silt/clay	frigid	loamy over clayey	no	
Finch	116					C	3	Outwash and Stream Terraces	frigid	sandy	yes	cemented (ortstein)

Soil Series	legend number	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Group	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Fryeburg	208	0.6	2.0	2.00	6.0	B	2	Flood Plain (Bottom Land)	frigid	silty	no	very fine sandy loam
Gilmanton	478	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	no	fine sandy loam in Cd
Glebe	671	2.0	6.0	2.00	6.0	C	4	Loose till, bedrock	cryic	loamy	yes	20 to 40 in. deep
Gloucester	11	6.0	20.0	6.00	20.0	A	1	Sandy Till	mesic	sandy-skeletal	no	loamy cap
Glover	NA	0.6	2.0	0.60	2	D	4	Friable till, silty, schist & phyllite	frigid	loamy	no	less than 20 in. deep
Grange	433	0.6	2.0	0.60	2.0	C	5	Outwash and Stream Terraces	frigid	co. loamy over sandy (skeletal)	no	
Greenwood	295					A/D	6	Organic Materials - Freshwater	frigid	hemic	no	deep organic
Groveton	27	0.6	2.0	0.60	6.0	B	2	Outwash and Stream Terraces	frigid	loamy	yes	loamy over sandy
Hadley	8	0.6	2.0	0.60	6.0	B	2	Flood Plain (Bottom Land)	mesic	silty	no	strata of fine sand
Hadley	108	0.6	2.0	0.60	6.0	B	2	Flood Plain (Bottom Land)	mesic	silty	no	strata of fine sand, occ flooded
Hartland	31	0.6	2.0	0.20	2.0	B	2	Terraces and glacial lake plains	mesic	silty	no	very fine sandy loam
Haven	410	0.6	2.0	20.00	100.0	B	2	Outwash and Stream Terraces	mesic	loamy over sandy	no	loamy over sand/gravel
Henniker	46	0.6	2.0	0.06	0.6	C	3	Firm, platy, sandy till	frigid	loamy	no	loamy sand in Cd
Hermon	55	2.0	20.0	6.00	20.0	A	1	Sandy Till	frigid	sandy-skeletal	yes	loamy cap
Hinckley	12	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	sandy-skeletal	no	
Hitchcock	130	0.6	2.0	0.06	0.6	B	3	Terraces and glacial lake plains	mesic	silty	no	silt loam to silt in C
Hogback	91	2.0	6.0	2.00	6.0	C	4	Loose till, bedrock	frigid	loamy	yes	less than 20 in. deep
Hollis	86	0.6	6.0	0.60	6.0	C/D	4	Loose till, bedrock	mesic	loamy	no	less than 20 in. deep
Hoosic	510	2.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	sandy-skeletal	no	slate, loamy cap
Houghtonville	795	0.6	6.0	0.60	6.0	B	2	Loose till, loamy textures	frigid	loamy	yes	cobbly fine sandy loam
Howland	566	0.6	2.0	0.06	0.2	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	silt loam, platy in Cd
Ipswich	397					D	6	Tidal Flat	mesic	hemic/sapric	no	deep organic
Kearsarge	359	0.6	2.0	0.60	2.0	B	4	Friable till, silty, schist & phyllite	mesic	loamy	no	less than 20 in. deep
Kinsman	614	6.0	20.0	6.00	20.0	C	5	Outwash and Stream Terraces	frigid	sandy	yes	
Lanesboro	228	0.6	2.0	0.06	0.2	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	channery silt loam in Cd
Leicester	514	0.6	6.0	0.60	20.0	C	5	Loose till, loamy textures	mesic	loamy	no	
Lim	3	0.6	2.0	6.00	20.0	C	5	Flood Plain (Bottom Land)	mesic	loamy	no	
Limerick	109	0.6	2.0	0.60	2.0	C	5	Flood Plain (Bottom Land)	mesic	silty	no	
Lombard	259	0.6	6.0	2.00	20.0	C/D	2	Weathered bedrock, phyllite	frigid	loamy	no	very channery
Lovewell	307	0.6	2.0	0.60	2.0	B	3	Flood Plain (Bottom Land)	frigid	silty	no	very fine sandy loam
Lyman	92	2.0	6.0	2.00	6.0	A/D	4	Loose till, bedrock	frigid	loamy	yes	less than 20 in. deep
Lyme	246	0.6	6.0	0.60	6.0	C	5	Loose till, sandy textures	frigid	loamy	no	
Machias	520	2.0	6.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	sandy or sandy-skeletal	yes	strata sand/gravel in C
Macomber	252	0.6	2.0	0.60	2.0	C	4	Friable till, silty, schist & phyllite	frigid	loamy-skeletal	yes	20 to 40 in. deep
Madawaska	28	0.6	2.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	loamy over sandy	yes	sandy or sandy-skeletal
Madawaska, aquer	48	0.6	2.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	loamy over sandy	yes	sandy or sandy-skeletal
Marlow	76	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	fine sandy loam in Cd
Masardis	23	6.0	20.0	6.00	20.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	slate, loamy cap
Mashpee	315	6.0	20.0	6.00	20.0	B	5	Outwash and Stream Terraces	mesic	sandy	yes	
Matunuck	797			20.00	100.0	D	6	Tidal Flat	mesic	sandy	no	organic over sand
Maybid	134	0.0	0.2	0.00	0.2	D	6	Silt and Clay Deposits	mesic	fine	no	silt over clay
Meadowsedge	894					D	6	Organic Materials - Freshwater	frigid	peat	no	deep organic
Medomak	406	0.6	2.0	0.60	2.0	D	6	Flood Plain (Bottom Land)	frigid	silty	no	organic over silt
Melrose	37	2.0	6.0	0.00	0.2	C	3	Sandy/loamy over silt/clay	frigid	loamy over clayey	no	silty clay loam in C
Merrimac	10	2.0	20.0	6.00	20.0	A	1	Outwash and Stream Terraces	mesic	gravelly sand	no	loamy cap
Metacomet	458	0.6	2.0	0.06	0.6	C	3	Firm, platy, sandy till	frigid	loamy	no	loamy sand in Cd
Metallak	404	6.0	100.0	6.00	100.0	B	3	Flood Plain (Bottom Land)	frigid	loamy over sandy	no	sandy or sandy-skeletal
Millis	39					C	3	Firm, platy, sandy till	frigid	loamy	yes	loamy sand in Cd
Millsite	251	0.6	6.0	0.60	6.0	C	4	Loose till, bedrock	frigid	loamy	no	20 to 40 in. deep
Monadnock	142	0.6	2.0	2.00	6.0	B	2	Loose till, sandy textures	frigid	oamy over sandy, sandy-skeleta	yes	gravelly loamy sand in C
Monarda	569	0.2	2.0	0.02	0.2	D	5	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	
Monson	133	0.6	2.0	0.60	2.0	D	4	Friable till, silty, schist & phyllite	frigid	loamy	yes	less than 20 in. deep
Montauk	44	0.6	6.0	0.06	0.6	C	3	Firm, platy, sandy till	mesic	loamy	no	loamy sand in Cd
Moosilauke	414	6.0	20.0	6.00	20.0	C	5	Loose till, sandy textures	frigid	sandy	no	

Soil Series	legend number	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Group	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Mundal	610	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	gravelly sandy loam in Cd
Natchaug	496			0.20	2.0	D	6	Organic Materials - Freshwater	mesic	loamy	no	organic over loam
Naumburg	214	6.0	20.0	6.00	20.0	C	5	Outwash and Stream Terraces	frigid	sandy	yes	
Newfields	444	0.6	2.0	0.60	2.0	B	3	Loose till, sandy textures	mesic	loamy over sandy	no	sandy or sandy-skeletal
Nicholville	632	0.6	2.0	0.60	2.0	C	3	Terraces and glacial lake plains	frigid	silty	yes	very fine sandy loam
Ninigret	513	0.6	6.0	6.00	20.0	B	3	Outwash and Stream Terraces	mesic	loamy over sandy	no	sandy or sandy-skeletal
Occum	1	0.6	2.0	6.00	20.0	B	2	Flood Plain (Bottom Land)	mesic	loamy	no	loamy over loamy sand
Ondawa	101	0.6	6.0	6.00	20.0	B	2	Flood Plain (Bottom Land)	frigid	loamy	no	loamy over loamy sand
Ondawa	201	0.6	6.0	6.00	20.0	B	2	Flood Plain (Bottom Land)	frigid	loamy	no	occ flood, loamy over l. sand
Ossipee	495			0.20	2.0	D	6	Organic Materials - Freshwater	frigid	loamy	no	organic over loam
Pawcatuck	497			20.00	100.0	D	6	Tidal Flat	mesic	sandy or sandy-skeletal	no	organic over sand
Paxton	66	0.6	2.0	0.00	0.2	C	3	Firm, platy, loamy till	mesic	loamy	no	
Peacham	549	0.6	2.0	0.00	0.2	D	6	Firm, platy, silty till, schist & phylitte	frigid	loamy	no	organic over loam
Pemi	633	0.6	2.0	0.06	0.6	C	5	Terraces and glacial lake plains	frigid	silty	no	
Pennichuck	460	0.6	2.0	0.60	2.0	B	4	Friable till, silty, schist & phyllite	mesic	loamy-skeletal	no	20 to 40 in. deep
Peru	78	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	
Pillsbury	646	0.6	2.0	0.06	0.2	C	5	Firm, platy, loamy till	frigid	silty	no	
Pipestone	314					B	5	Outwash and Stream Terraces	mesic	sandy	yes	
Pittstown	334	0.6	2.0	0.06	0.2	C	3	Firm, platy, silty till, schist & phyllite	mesic	loamy	no	channery silt loam in Cd
Plaisted	563	0.6	2.0	0.06	0.6	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd
Podunk	104	0.6	6.0	6.00	20.0	B	3	Flood Plain (Bottom Land)	frigid	loamy	no	loamy to coarse sand in C
Pondicherry	992			6.00	20.0	D	6	Organic Materials - Freshwater	frigid	sandy or sandy-skeletal	no	organic over sand
Poocham	230	0.6	2.0	0.20	2.0	B	3	Terraces and glacial lake plains	mesic	silty	no	silt loam in C
Pootatuck	4	0.6	6.0	6.00	20.0	B	3	Flood Plain (Bottom Land)	mesic	loamy	no	single grain in C
Quonset	310	2.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	sandy-skeletal	no	shale
Rawsonville	98	0.6	6.0	0.60	6.0	C	4	Loose till, bedrock	frigid	loamy	yes	20 to 40 in. deep
Raynham	533	0.2	2.0	0.06	0.2	C	5	Terraces and glacial lake plains	mesic	silty	no	
Raypol	540	0.6	2.0	6.00	100.0	D	5	Outwash and Stream Terraces	mesic	co. loamy over sandy (skeletal)	no	
Redstone	665	2.0	6.0	6.00	20.0	A	1	Weathered Bedrock Till	frigid	fragmental	yes	loamy cap
Ricker	674	2.0	6.0	2.00	6.0	A	4	rganic over bedrock (up to 4" of minera	cryic	fibric to hemic	no	well drained, less than 20 in. deep
Ridgebury	656	0.6	6.0	0.00	0.2	C	5	Firm, platy, loamy till	mesic	loamy	no	
Rippowam	5	0.6	6.0	6.00	20.0	C	5	Flood Plain (Bottom Land)	mesic	loamy	no	
Roundabout	333	0.2	2.0	0.06	0.6	C	5	Terraces and glacial lake plains	frigid	silty	no	silt loam in the C
Rumney	105	0.6	6.0	6.00	20.0	C	5	Flood Plain (Bottom Land)	frigid	loamy	no	
Saco	6	0.6	2.0	6.00	20.0	D	6	Flood Plain (Bottom Land)	mesic	silty	no	strata
Saddleback	673	0.6	2.0	0.60	2.0	C/D	4	Loose till, bedrock	cryic	loamy	yes	less than 20 in. deep
Salmon	630	0.6	2.0	0.60	2.0	B	2	Terraces and glacial lake plains	frigid	silty	yes	very fine sandy loam
Saugatuck	16	0.06	0.2	6.00	20.0	C	5	Outwash and Stream Terraces	mesic	sandy	yes	ortstein
Scantic	233	0.0	0.2	0.00	0.2	D	5	Silt and Clay Deposits	frigid	fine	no	
Scarboro	115	6.0	20.0	6.00	20.0	D	6	Outwash and Stream Terraces	mesic	sandy	no	organic over sand, non stony
Scio	531	0.6	2.0	0.60	2.0	B	3	Terraces and glacial lake plains	mesic	silty	no	gravelly sand in 2C
Scitico	33	0.0	0.2	0.00	0.2	C	5	Silt and Clay Deposits	mesic	fine	no	
Scituate	448	0.6	2.0	0.06	0.2	C	3	Firm, platy, sandy till	mesic	loamy	no	loamy sand in Cd
Searsport	15	6.0	20.0	6.00	20.0	D	6	Outwash and Stream Terraces	frigid	sandy	no	organic over sand
Shaker	439	2.0	6.0	0.00	0.2	C	5	Sandy/loamy over silt/clay	mesic	co. loamy over clayey	no	
Shapleigh	136					C/D	4	Sandy Till	mesic	sandy	yes	less than 20 in. deep
Sheepscot	14	6.0	20.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	gravelly coarse sand
Sisk	667	0.6	2.0	0.00	0.6	C	3	Firm, platy, loamy till	cryic	loamy	yes	sandy loam in Cd
Skerry	558	0.6	2.0	0.06	0.6	C	3	Firm, platy, sandy till	frigid	loamy	yes	loamy sand in Cd
Squamscott	538	6.0	20.0	0.06	0.6	C	5	Sandy/loamy over silt/clay	mesic	sandy over loamy	yes	
Stetson	523	0.6	6.0	6.00	20.0	B	2	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	loamy over gravelly
Stissing	340	0.6	2.0	0.06	0.2	C	5	Firm, platy, silty till, schist & phyllite	mesic	loamy	no	
Success	154	2.0	6.0	6.00	20.0	A	1	Sandy Till	frigid	sandy-skeletal	yes	cemented
Sudbury	118	2.0	6.0	2.00	20.0	B	3	Outwash and Stream Terraces	mesic	sandy	no	loam over gravelly sand

Soil Series	legend number	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Group	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Suffield	536	0.6	2.0	0.00	0.2	C	3	Sandy/loamy over silt/clay	mesic	silty over clayey	no	deep to clay C
Sunapee	168	0.6	2.0	0.60	6.0	B	3	Loose till, loamy textures	frigid	loamy	yes	
Sunapee var	269	0.6	2.0	0.60	6.0	B	3	Loose till, loamy textures	frigid	loamy	yes	frigid dystrudept
Suncook	2	6.0	20.0	6.00	20.0	A	1	Flood Plain (Bottomland)	mesic	sandy	no	occasionally flooded
Suncook	402	6.0	20.0	6.00	20.0	A	1	Flood Plain (Bottomland)	mesic	sandy	no	frequent flooding
Sunday	102	6.0	20.0	6.00	20.0	A	1	Flood Plain (Bottomland)	frigid	sandy	no	occasionally flooded
Sunday	202	6.0	20.0	6.00	20.0	A	1	Flood Plain (Bottomland)	frigid	sandy	no	frequently flooded
Surplus	669	0.6	2.0	0.00	0.6	C	3	Firm, platy, loamy till	cryic	loamy	yes	mwd, sandy loam in Cd
Sutton	68	0.6	6.0	0.60	6.0	B	3	Loose till, loamy textures	mesic	loamy	no	
Swanton	438	2.0	6.0	0.00	0.2	C	5	Sandy/loamy over silt/clay	frigid	co. loamy over clayey	no	
Telos	123	0.6	2.0	0.02	0.2	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd
Thorndike	84	0.6	2.0	0.60	2.0	C/D	4	Friable till, silty, schist & phyllite	frigid	loamy-skeletal	yes	less than 20 in. deep
Timakwa	393			6.00	100.0	D	6	Organic Materials - Freshwater	mesic	sandy or sandy-skeletal	no	organic over sand
Tunbridge	99	0.6	6.0	0.60	6.0	C	4	Loose till, bedrock	frigid	loamy	yes	20 to 40 in. deep
Unadilla	30	0.6	2.0	2.00	20.0	B	2	Terraces and glacial lake plains	mesic	silty	no	silty over gravelly
Vassalboro	150					D	6	Organic Materials - Freshwater	frigid	peat	no	deep organic
Walpole	546	2.0	6.0	6.00	20.0	C	5	Outwash and Stream Terraces	mesic	sandy	no	
Wareham	34	6.0	20.0	6.00	20.0	C	5	Outwash and Stream Terraces	mesic	sandy	no	
Warwick	210	2.0	6.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	loamy-skeletal	no	loamy over slate gravel
Waskish	195					D	6	Organic Materials - Freshwater	frigid	peat	no	deep organic
Waumbeck	58	2.0	20.0	6.00	20.0	B	3	Loose till, sandy textures	frigid	sandy-skeletal	yes	very cobbly loamy sand
Westbrook	597			0.00	2.0	D	6	Tidal Flat	mesic	loamy	no	organic over loam
Whitman	49	0.0	0.2	0.00	0.2	D	6	Firm, platy, loamy till	mesic	loamy	no	mucky loam
Windsor	26	6.0	20.0	6.00	20.0	A	1	Outwash and Stream Terraces	mesic	sandy	no	
Winnecook	88	0.6	2.0	0.60	2.0	C	4	Friable till, silty, schist & phyllite	frigid	loamy-skeletal	yes	20 to 40 in. deep
Winooski	9	0.6	6.0	0.60	6.0	B		Flood Plain (Bottom Land)	mesic	silty over loamy	no	
Winooski	103	0.6	6.0	0.60	6.0	B	3	Flood Plain (Bottom Land)	mesic	silty	no	very fine sandy loam
Wonsqueak	995			0.20	2.0	D	6	Organic Materials - Freshwater	frigid	loamy	no	organic over loam
Woodbridge	29	0.6	2.0	0.00	0.6	C	3	Firm, platy, loamy till	mesic	loamy	no	sandy loam in Cd
Woodstock	93	2.0	6.0	2.00	6.0	C/D	4	Loose till, bedrock	frigid	loamy	no	less than 20 in. deep

no longer recognized
organic materials

TABLE C

NHDES SOIL GROUPINGS

SSSNNE
Special Publilcation No. 5
September, 2009

Soil Series	number	NHDES Soil Group	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Adams	36	1	6.0	20.0	20.00	99.0	A	Outwash and Stream Terraces	frigid	sandy	yes	
Boscawen	220	1	6.0	20.0	20.00	100.0	A	Outwash and Stream Terraces	frigid	sandy-skeletal	no	loamy cap
Caesar	526	1	20.0	100.0	20.00	100.0	A	Outwash and Stream Terraces	mesic	coarse sand	no	
Champlain	35	1	6.0	20.0	20.00	100.0	A	Outwash and Stream Terraces	frigid	gravelly sand	no	
Colton	22	1	6.0	20.0	20.00	100.0	A	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	
Colton, gravelly	21	1	6.0	20.0	20.00	100.0	A	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	gravelly surface
Gloucester	11	1	6.0	20.0	6.00	20.0	A	Sandy Till	mesic	sandy-skeletal	no	loamy cap
Hermon	55	1	2.0	20.0	6.00	20.0	A	Sandy Till	frigid	sandy-skeletal	yes	loamy cap
Hinckley	12	1	6.0	20.0	20.00	100.0	A	Outwash and Stream Terraces	mesic	sandy-skeletal	no	
Hoosic	510	1	2.0	20.0	20.00	100.0	A	Outwash and Stream Terraces	mesic	sandy-skeletal	no	slate, loamy cap
Masardis	23	1	6.0	20.0	6.00	20.0	A	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	slate, loamy cap
Merrimac	10	1	2.0	20.0	6.00	20.0	A	Outwash and Stream Terraces	mesic	gravelly sand	no	loamy cap
Quonset	310	1	2.0	20.0	20.00	100.0	A	Outwash and Stream Terraces	mesic	sandy-skeletal	no	shale
Redstone	665	1	2.0	6.0	6.00	20.0	A	Weathered Bedrock Till	frigid	fragmental	yes	loamy cap
Success	154	1	2.0	6.0	6.00	20.0	A	Sandy Till	frigid	sandy-skeletal	yes	cemented
Suncook	2	1	6.0	20.0	6.00	20.0	A	Flood Plain (Bottomland)	mesic	sandy	no	occasionally flooded
Suncook	402	1	6.0	20.0	6.00	20.0	A	Flood Plain (Bottomland)	mesic	sandy	no	frequent flooding
Sunday	102	1	6.0	20.0	6.00	20.0	A	Flood Plain (Bottomland)	frigid	sandy	no	occasionally flooded
Sunday	202	1	6.0	20.0	6.00	20.0	A	Flood Plain (Bottomland)	frigid	sandy	no	frequently flooded
Warwick	210	1	2.0	6.0	20.00	100.0	A	Outwash and Stream Terraces	mesic	loamy-skeletal	no	loamy over slate gravel
Windsor	26	1	6.0	20.0	6.00	20.0	A	Outwash and Stream Terraces	mesic	sandy	no	
Abenaki	501	2	0.6	2.0	6.00	99.0	B	Outwash and Stream Terraces	frigid	loamy over sandy-skeletal	no	loamy over gravelly
Agawam	24	2	6.0	20.0	20.00	100.0	B	Outwash and Stream Terraces	mesic	loamy over sandy	no	loamy over sand/gravel
Allagash	127	2	0.6	2.0	6.00	20.0	B	Outwash and Stream Terraces	frigid	loamy over sandy	yes	loamy over sandy
Bangor	572	2	0.6	2.0	0.60	2.0	B	Friable till, silty, schist & phyllite	frigid	loamy	yes	silt loam
Berkshire	72	2	0.6	6.0	0.60	6.0	B	Loose till, loamy textures	frigid	loamy	yes	fine sandy loam
Bice	226	2	0.6	6.0	0.60	6.0	B	Loose till, loamy textures	frigid	loamy	no	sandy loam
Canton	42	2	2.0	6.0	6.00	20.0	B	Loose till, sandy textures	mesic	loamy over sandy	no	loamy over loamy sand
Charlton	62	2	0.6	6.0	0.60	6.0	B	Loose till, loamy textures	mesic	loamy	no	fine sandy loam
Dutchess	366	2	0.6	2.0	0.60	2.0	B	Friable till, silty, schist & phyllite	mesic	loamy	no	very channery
Fryeburg	208	2	0.6	2.0	2.00	6.0	B	Flood Plain (Bottom Land)	frigid	silty	no	very fine sandy loam
Groveton	27	2	0.6	2.0	0.60	6.0	B	Outwash and Stream Terraces	frigid	loamy	yes	loamy over sandy
Hadley	8	2	0.6	2.0	0.60	6.0	B	Flood Plain (Bottom Land)	mesic	silty	no	strata of fine sand
Hadley	108	2	0.6	2.0	0.60	6.0	B	Flood Plain (Bottom Land)	mesic	silty	no	strata of fine sand, occ flooded
Hartland	31	2	0.6	2.0	0.20	2.0	B	Terraces and glacial lake plains	mesic	silty	no	very fine sandy loam
Haven	410	2	0.6	2.0	20.00	100.0	B	Outwash and Stream Terraces	mesic	loamy over sandy	no	loamy over sand/gravel
Houghtonville	795	2	0.6	6.0	0.60	6.0	B	Loose till, loamy textures	frigid	loamy	yes	cobbly fine sandy loam
Lombard	259	2	0.6	6.0	2.00	20.0	C/D	Weathered bedrock, phyllite	frigid	loamy	no	very channery
Monadnock	142	2	0.6	2.0	2.00	6.0	B	Loose till, sandy textures	frigid	oamy over sandy, sandy-skeleta	yes	gravelly loamy sand in C
Occum	1	2	0.6	2.0	6.00	20.0	B	Flood Plain (Bottom Land)	mesic	loamy	no	loamy over loamy sand
Ondawa	101	2	0.6	6.0	6.00	20.0	B	Flood Plain (Bottom Land)	frigid	loamy	no	loamy over loamy sand
Ondawa	201	2	0.6	6.0	6.00	20.0	B	Flood Plain (Bottom Land)	frigid	loamy	no	occ flood, loamy over l. sand
Salmon	630	2	0.6	2.0	0.60	2.0	B	Terraces and glacial lake plains	frigid	silty	yes	very fine sandy loam
Stetson	523	2	0.6	6.0	6.00	20.0	B	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	loamy over gravelly
Unadilla	30	2	0.6	2.0	2.00	20.0	B	Terraces and glacial lake plains	mesic	silty	no	silty over gravelly
Chichester	442	2	0.6	2.0	2.00	6.0	B	Loose till, sandy textures	frigid	loamy over sandy	no	loamy over loamy sand
Acton	146	3	2.0	20.0	2.00	20.0	B	Loose till, sandy textures	mesic	sandy-skeletal	no	cobbly loamy sand
Becket	56	3	0.6	2.0	0.06	0.6	C	Firm, platy, sandy till	frigid	loamy	yes	gravelly sandy loam in Cd
Belgrade	532	3	0.6	2.0	0.06	2.0	B	Terraces and glacial lake plains	mesic	silty	no	strata of fine sand
Bernardston	330	3	0.6	2.0	0.06	0.2	C	Firm, platy, silty till, schist & phyllite	mesic	loamy	no	channery silt loam in Cd
Boxford	32	3	0.1	0.2	0.00	0.2	C	Silt and Clay Deposits	mesic	fine	no	silty clay loam

Soil Series	number	NHDES Soil Group	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Buckland	237	3	0.6	2.0	0.06	0.2	C	Firm, platy, loamy till	frigid	loamy	no	loam in Cd
Buxton	232	3	0.1	0.6	0.00	0.2	C	Silt and Clay Deposits	frigid	fine	no	silty clay
Canterbury	166	3	0.6	2.0	0.06	0.6	C	Firm, platy, loamy till	frigid	loamy	no	loam in Cd
Chatfield Var.	289	3	0.6	6.0	0.60	6.0	B	Loose till, bedrock	mesic	loamy	no	mwd to swpd
Chesuncook	126	3	0.6	2.0	0.02	0.2	C	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd
Colonel	927	3	0.6	2.0	0.06	0.6	C	Firm, platy, loamy till	frigid	loamy	yes	loam in Cd
Croghan	613	3	20.0	100.0	20.00	100.0	B	Outwash and Stream Terraces	frigid	sandy	yes	single grain in C
Dartmouth	132	3	0.6	2.0	0.06	0.6	B	Terraces and glacial lake plains	mesic	silty	no	thin strata silty clay loam
Deerfield	313	3	6.0	20.0	20.00	100.0	B	Outwash and Stream Terraces	mesic	sandy	no	single grain in C
Dixfield	378	3	0.6	2.0	0.06	0.6	C	Firm, platy, loamy till	frigid	loamy	yes	fine sandy loam in Cd
Dixmont	578	3	0.6	2.0	0.60	2.0	C	Friable till, silty, schist & phyllite	frigid	loamy	yes	silt loam, platy in C
Duane	413	3	6.0	20.0	6.00	20.0	B	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	cemented (ortstein)
Eldridge	38	3	6.0	20.0	0.06	0.6	C	Sandy/loamy over silt/clay	mesic	sandy over loamy	no	
Elmridge	238	3	2.0	6.0	0.00	0.2	C	Sandy/loamy over silt/clay	mesic	loamy over clayey	no	
Elmwood	338	3	2.0	6.0	0.00	0.2	C	Sandy/loamy over silt/clay	frigid	loamy over clayey	no	
Finch	116	3					C	Outwash and Stream Terraces	frigid	sandy	yes	cemented (ortstein)
Gilmanton	478	3	0.6	2.0	0.06	0.6	C	Firm, platy, loamy till	frigid	loamy	no	fine sandy loam in Cd
Henniker	46	3	0.6	2.0	0.06	0.6	C	Firm, platy, sandy till	frigid	loamy	no	loamy sand in Cd
Hitchcock	130	3	0.6	2.0	0.06	0.6	B	Terraces and glacial lake plains	mesic	silty	no	silt loam to silt in C
Howland	566	3	0.6	2.0	0.06	0.2	C	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	silt loam, platy in Cd
Lanesboro	228	3	0.6	2.0	0.06	0.2	C	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	channery silt loam in Cd
Lovewell	307	3	0.6	2.0	0.60	2.0	B	Flood Plain (Bottom Land)	frigid	silty	no	very fine sandy loam
Machias	520	3	2.0	6.0	6.00	20.0	B	Outwash and Stream Terraces	frigid	sandy or sandy-skeletal	yes	strata sand/gravel in C
Madawaska	28	3	0.6	2.0	6.00	20.0	B	Outwash and Stream Terraces	frigid	loamy over sandy	yes	sandy or sandy-skeletal
Madawaska, aquer	48	3	0.6	2.0	6.00	20.0	B	Outwash and Stream Terraces	frigid	loamy over sandy	yes	sandy or sandy-skeletal
Marlow	76	3	0.6	2.0	0.06	0.6	C	Firm, platy, loamy till	frigid	loamy	yes	fine sandy loam in Cd
Melrose	37	3	2.0	6.0	0.00	0.2	C	Sandy/loamy over silt/clay	frigid	loamy over clayey	no	silty clay loam in C
Metacomet	458	3	0.6	2.0	0.06	0.6	C	Firm, platy, sandy till	frigid	loamy	no	loamy sand in Cd
Metallak	404	3	6.0	100.0	6.00	100.0	B	Flood Plain (Bottom Land)	frigid	loamy over sandy	no	sandy or sandy-skeletal
Millis	39	3					C	Firm, platy, sandy till	frigid	loamy	yes	loamy sand in Cd
Montauk	44	3	0.6	6.0	0.06	0.6	C	Firm, platy, sandy till	mesic	loamy	no	loamy sand in Cd
Mundal	610	3	0.6	2.0	0.06	0.6	C	Firm, platy, loamy till	frigid	loamy	yes	gravelly sandy loam in Cd
Newfields	444	3	0.6	2.0	0.60	2.0	B	Loose till, sandy textures	mesic	loamy over sandy	no	sandy or sandy-skeletal
Nicholville	632	3	0.6	2.0	0.60	2.0	C	Terraces and glacial lake plains	frigid	silty	yes	very fine sandy loam
Ninigret	513	3	0.6	6.0	6.00	20.0	B	Outwash and Stream Terraces	mesic	loamy over sandy	no	sandy or sandy-skeletal
Paxton	66	3	0.6	2.0	0.00	0.2	C	Firm, platy, loamy till	mesic	loamy	no	
Peru	78	3	0.6	2.0	0.06	0.6	C	Firm, platy, loamy till	frigid	loamy	yes	
Pittstown	334	3	0.6	2.0	0.06	0.2	C	Firm, platy, silty till, schist & phyllite	mesic	loamy	no	channery silt loam in Cd
Plaisted	563	3	0.6	2.0	0.06	0.6	C	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd
Podunk	104	3	0.6	6.0	6.00	20.0	B	Flood Plain (Bottom Land)	frigid	loamy	no	loamy to coarse sand in C
Poocham	230	3	0.6	2.0	0.20	2.0	B	Terraces and glacial lake plains	mesic	silty	no	silt loam in C
Pootatuck	4	3	0.6	6.0	6.00	20.0	B	Flood Plain (Bottom Land)	mesic	loamy	no	single grain in C
Scio	531	3	0.6	2.0	0.60	2.0	B	Terraces and glacial lake plains	mesic	silty	no	gravelly sand in 2C
Scituate	448	3	0.6	2.0	0.06	0.2	C	Firm, platy, sandy till	mesic	loamy	no	loamy sand in Cd
Sheepscot	14	3	6.0	20.0	6.00	20.0	B	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	gravelly coarse sand
Sisk	667	3	0.6	2.0	0.00	0.6	C	Firm, platy, loamy till	cryic	loamy	yes	sandy loam in Cd
Skerry	558	3	0.6	2.0	0.06	0.6	C	Firm, platy, sandy till	frigid	loamy	yes	loamy sand in Cd
Sudbury	118	3	2.0	6.0	2.00	20.0	B	Outwash and Stream Terraces	mesic	sandy	no	loam over gravelly sand
Suffield	536	3	0.6	2.0	0.00	0.2	C	Sandy/loamy over silt/clay	mesic	silty over clayey	no	deep to clay C
Sunapee	168	3	0.6	2.0	0.60	6.0	B	Loose till, loamy textures	frigid	loamy	yes	
Sunapee var	269	3	0.6	2.0	0.60	6.0	B	Loose till, loamy textures	frigid	loamy	yes	frigid dystrudept
Surplus	669	3	0.6	2.0	0.00	0.6	C	Firm, platy, loamy till	cryic	loamy	yes	mwd, sandy loam in Cd
Sutton	68	3	0.6	6.0	0.60	6.0	B	Loose till, loamy textures	mesic	loamy	no	
Telos	123	3	0.6	2.0	0.02	0.2	C	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd

Soil Series	number	NHDES Soil Group	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Waumbeck	58	3	2.0	20.0	6.00	20.0	B	Loose till, sandy textures	frigid	sandy-skeletal	yes	very cobbly loamy sand
Winooski	103	3	0.6	6.0	0.60	6.0	B	Flood Plain (Bottom Land)	mesic	silty	no	very fine sandy loam
Woodbridge	29	3	0.6	2.0	0.00	0.6	C	Firm, platy, loamy till	mesic	loamy	no	sandy loam in Cd
Winooski	9	3	0.6	6.0	0.60	6.0	B	Flood Plain (Bottom Land)	mesic	silty over loamy	no	
Canaan	663	4	2.0	20.0	2.00	20.0	C	Weathered Bedrock Till	frigid	loamy-skeletal	yes	less than 20 in. deep
Cardigan	357	4	0.6	2.0	0.60	2.0	B	Friable till, silty, schist & phyllite	mesic	loamy	no	20 to 40 in. deep
Chatfield	89	4	0.6	6.0	0.60	6.0	B	Loose till, bedrock	mesic	loamy	no	20 to 40 in. deep
Elliottsville	128	4	0.6	2.0	0.60	2.0	B	Friable till, silty, schist & phyllite	frigid	loamy	yes	20 to 40 in. deep
Glebe	671	4	2.0	6.0	2.00	6.0	C	Loose till, bedrock	cryic	loamy	yes	20 to 40 in. deep
Glover	NA	4	0.6	2.0	0.60	2	D	Friable till, silty, schist & phyllite	frigid	loamy	no	less than 20 in. deep
Hogback	91	4	2.0	6.0	2.00	6.0	C	Loose till, bedrock	frigid	loamy	yes	less than 20 in. deep
Hollis	86	4	0.6	6.0	0.60	6.0	C/D	Loose till, bedrock	mesic	loamy	no	less than 20 in. deep
Kearsarge	359	4	0.6	2.0	0.60	2.0	B	Friable till, silty, schist & phyllite	mesic	loamy	no	less than 20 in. deep
Lyman	92	4	2.0	6.0	2.00	6.0	A/D	Loose till, bedrock	frigid	loamy	yes	less than 20 in. deep
Macomber	252	4	0.6	2.0	0.60	2.0	C	Friable till, silty, schist & phyllite	frigid	loamy-skeletal	yes	20 to 40 in. deep
Millsite	251	4	0.6	6.0	0.60	6.0	C	Loose till, bedrock	frigid	loamy	no	20 to 40 in. deep
Monson	133	4	0.6	2.0	0.60	2.0	D	Friable till, silty, schist & phyllite	frigid	loamy	yes	less than 20 in. deep
Pennichuck	460	4	0.6	2.0	0.60	2.0	B	Friable till, silty, schist & phyllite	mesic	loamy-skeletal	no	20 to 40 in. deep
Rawsonville	98	4	0.6	6.0	0.60	6.0	C	Loose till, bedrock	frigid	loamy	yes	20 to 40 in. deep
Ricker	674	4	2.0	6.0	2.00	6.0	A	rganic over bedrock (up to 4" of minera	cryic	fibric to hemic	no	well drained, less than 20 in. deep
Saddleback	673	4	0.6	2.0	0.60	2.0	C/D	Loose till, bedrock	cryic	loamy	yes	less than 20 in. deep
Shapleigh	136	4					C/D	Sandy Till	mesic	sandy	yes	less than 20 in. deep
Thorndike	84	4	0.6	2.0	0.60	2.0	C/D	Friable till, silty, schist & phyllite	frigid	loamy-skeletal	yes	less than 20 in. deep
Tunbridge	99	4	0.6	6.0	0.60	6.0	C	Loose till, bedrock	frigid	loamy	yes	20 to 40 in. deep
Winnecook	88	4	0.6	2.0	0.60	2.0	C	Friable till, silty, schist & phyllite	frigid	loamy-skeletal	yes	20 to 40 in. deep
Woodstock	93	4	2.0	6.0	2.00	6.0	C/D	Loose till, bedrock	frigid	loamy	no	less than 20 in. deep
Au Gres	516	5					B	Outwash and Stream Terraces	frigid	sandy	yes	single grain, loose
Bemis	224	5	0.6	0.2	0.00	0.2	C	Firm, platy, loamy till	cryic	loamy	no	
Binghamville	534	5	0.2	2.0	0.06	0.2	D	Terraces and glacial lake plains	mesic	silty	no	
Brayton	240	5	0.6	2.0	0.06	0.6	C	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	
Cabot	589	5	0.6	2.0	0.06	0.2	D	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	
Charles	209	5	0.6	100.0	0.60	100.0	C	Flood Plain (Bottom Land)	frigid	silty	no	
Cohas	505	5	0.6	2.0	0.60	100.0	C	Flood Plain (Bottom Land)	frigid	co. loamy over sandy (skeletal)	no	
Grange	433	5	0.6	2.0	0.60	2.0	C	Outwash and Stream Terraces	frigid	co. loamy over sandy (skeletal)	no	
Kinsman	614	5	6.0	20.0	6.00	20.0	C	Outwash and Stream Terraces	frigid	sandy	yes	
Leicester	514	5	0.6	6.0	0.60	20.0	C	Loose till, loamy textures	mesic	loamy	no	
Lim	3	5	0.6	2.0	6.00	20.0	C	Flood Plain (Bottom Land)	mesic	loamy	no	
Limerick	109	5	0.6	2.0	0.60	2.0	C	Flood Plain (Bottom Land)	mesic	silty	no	
Lyme	246	5	0.6	6.0	0.60	6.0	C	Loose till, sandy textures	frigid	loamy	no	
Mashpee	315	5	6.0	20.0	6.00	20.0	B	Outwash and Stream Terraces	mesic	sandy	yes	
Monarda	569	5	0.2	2.0	0.02	0.2	D	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	
Moosilauke	414	5	6.0	20.0	6.00	20.0	C	Loose till, sandy textures	frigid	sandy	no	
Naumburg	214	5	6.0	20.0	6.00	20.0	C	Outwash and Stream Terraces	frigid	sandy	yes	
Pemi	633	5	0.6	2.0	0.06	0.6	C	Terraces and glacial lake plains	frigid	silty	no	
Pillsbury	646	5	0.6	2.0	0.06	0.2	C	Firm, platy, loamy till	frigid	silty	no	
Pipestone	314	5					B	Outwash and Stream Terraces	mesic	sandy	yes	
Raynham	533	5	0.2	2.0	0.06	0.2	C	Terraces and glacial lake plains	mesic	silty	no	
Raypol	540	5	0.6	2.0	6.00	100.0	D	Outwash and Stream Terraces	mesic	co. loamy over sandy (skeletal)	no	
Ridgebury	656	5	0.6	6.0	0.00	0.2	C	Firm, platy, loamy till	mesic	loamy	no	
Rippowam	5	5	0.6	6.0	6.00	20.0	C	Flood Plain (Bottom Land)	mesic	loamy	no	
Roundabout	333	5	0.2	2.0	0.06	0.6	C	Terraces and glacial lake plains	frigid	silty	no	silt loam in the C
Rumney	105	5	0.6	6.0	6.00	20.0	C	Flood Plain (Bottom Land)	frigid	loamy	no	

Soil Series	number	NHDES Soil Group	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Saugatuck	16	5	0.06	0.2	6.00	20.0	C	Outwash and Stream Terraces	mesic	sandy	yes	ortstein
Scantic	233	5	0.0	0.2	0.00	0.2	D	Silt and Clay Deposits	frigid	fine	no	
Scitico	33	5	0.0	0.2	0.00	0.2	C	Silt and Clay Deposits	mesic	fine	no	
Shaker	439	5	2.0	6.0	0.00	0.2	C	Sandy/loamy over silt/clay	mesic	co. loamy over clayey	no	
Squamscott	538	5	6.0	20.0	0.06	0.6	C	Sandy/loamy over silt/clay	mesic	sandy over loamy	yes	
Stissing	340	5	0.6	2.0	0.06	0.2	C	Firm, platy, silty till, schist & phyllite	mesic	loamy	no	
Swanton	438	5	2.0	6.0	0.00	0.2	C	Sandy/loamy over silt/clay	frigid	co. loamy over clayey	no	
Walpole	546	5	2.0	6.0	6.00	20.0	C	Outwash and Stream Terraces	mesic	sandy	no	
Wareham	34	5	6.0	20.0	6.00	20.0	C	Outwash and Stream Terraces	mesic	sandy	no	
Biddeford	234	6	0.0	0.2	0.00	0.2	D	Silt and Clay Deposits	frigid	fine	no	organic over clay
Bucksport	895	6					D	Organic Materials - Freshwater	frigid	sapric	no	deep organic
Burnham	131	6	0.2	6.0	0.02	0.2	D	Firm, platy, silty till, schist & phylitte	frigid	loamy	no	organic over silt
Catden	296	6					A/D	Organic Materials - Freshwater	mesic	sapric	no	deep organic
Chocorua	395	6			6.00	20.0	D	Organic Materials - Freshwater	frigid	sandy or sandy-skeletal	no	organic over sand
Greenwood	295	6					A/D	Organic Materials - Freshwater	frigid	hemic	no	deep organic
Ipswich	397	6					D	Tidal Flat	mesic	hemic/sapric	no	deep organic
Matunuck	797	6			20.00	100.0	D	Tidal Flat	mesic	sandy	no	organic over sand
Maybid	134	6	0.0	0.2	0.00	0.2	D	Silt and Clay Deposits	mesic	fine	no	silt over clay
Meadowsedge	894	6					D	Organic Materials - Freshwater	frigid	peat	no	deep organic
Medomak	406	6	0.6	2.0	0.60	2.0	D	Flood Plain (Bottom Land)	frigid	silty	no	organic over silt
Natchaug	496	6			0.20	2.0	D	Organic Materials - Freshwater	mesic	loamy	no	organic over loam
Ossipee	495	6			0.20	2.0	D	Organic Materials - Freshwater	frigid	loamy	no	organic over loam
Pawcatuck	497	6			20.00	100.0	D	Tidal Flat	mesic	sandy or sandy-skeletal	no	organic over sand
Peacham	549	6	0.6	2.0	0.00	0.2	D	Firm, platy, silty till, schist & phylitte	frigid	loamy	no	organic over loam
Pondicherry	992	6			6.00	20.0	D	Organic Materials - Freshwater	frigid	sandy or sandy-skeletal	no	organic over sand
Saco	6	6	0.6	2.0	6.00	20.0	D	Flood Plain (Bottom Land)	mesic	silty	no	strata
Scarboro	115	6	6.0	20.0	6.00	20.0	D	Outwash and Stream Terraces	mesic	sandy	no	organic over sand, non stony
Searsport	15	6	6.0	20.0	6.00	20.0	D	Outwash and Stream Terraces	frigid	sandy	no	organic over sand
Timakwa	393	6			6.00	100.0	D	Organic Materials - Freshwater	mesic	sandy or sandy-skeletal	no	organic over sand
Vassalboro	150	6					D	Organic Materials - Freshwater	frigid	peat	no	deep organic
Waskish	195	6					D	Organic Materials - Freshwater	frigid	peat	no	deep organic
Westbrook	597	6			0.00	2.0	D	Tidal Flat	mesic	loamy	no	organic over loam
Whitman	49	6	0.0	0.2	0.00	0.2	D	Firm, platy, loamy till	mesic	loamy	no	mucky loam
Wonsqueak	995	6			0.20	2.0	D	Organic Materials - Freshwater	frigid	loamy	no	organic over loam

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organic materials

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Stormwater System Management:

Inspection and Maintenance Manual

Prepared for:

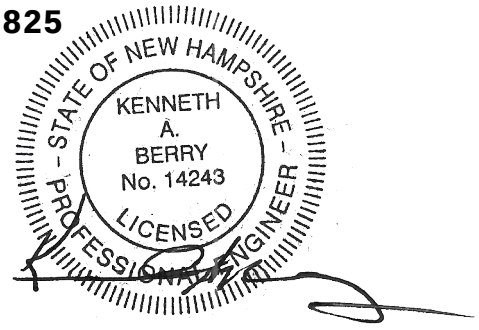
239 Knox Marsh Realty, LLC
P.O. Box 720
Middleton, MA 01949

LOCATION

Proposed Mixed Use Site Plan
"Residences and Lodges at Kelly Brook"
Tibetan Drive
Tax Map H, Lot 37A
239 Knox Marsh Road, Dover, NH 03820
Previous NHDES Alteration of Terrain Permit
#: AoT-2183/AoT-2183-A

Prepared by:

Berry Surveying & Engineering
335 Second Crown Point Road
Barrington, NH 03825



Project Number:
DB 2024-034

November 26, 2024

Inspection and Maintenance Manual

Stormwater System Management

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NHDES Green SnoPro Utilization Chart Attached – 1 Page
UNH Stormwater Center Subsurface Gravel Wetland Design Specifications 10 Pages
NHDOT Design and Maintenance of Subsurface Gravel Wetlands, 2/2015 43 Pages

Introduction

The Best Management Practices (BMP) described in this manual are specified in more detail within the plan set giving design details and specifications. The New Hampshire Stormwater Manual, Volume 2, Post-Construction Best Management Practices Selection & Design (December 2008, NHDES & US EPA) is included by reference to this manual. Additional details, construction specifications, and example drawings are provided within this reference. (http://des.nh.gov/organization/divisions/water/stormwater/)

The BMP's are covered below in the general order in which the stormwater flows. Each BMP has a description and maintenance consideration listed. A Check List table is proved after the narrative to summarize the maintenance responsibilities and schedule. A Log Form is also provided for the owners use.

For details regarding the design of the Stormwater System see also Drainage Analysis & Erosion and Sediment Control Plan, originally dated **November 26, 2024**, as revised. See also plan set completed for **239 Knox Marsh Realty, LLC**, originally dated **November 26, 2024**, as revised.

239 Knox Marsh Realty, LLC, Gil Aleixo, Managing Member as the operator, and heirs, successors, and assigns are responsible for the operation, inspection, and maintenance of the Stormwater Management System. A significant step in this responsibility is the inspection and maintenance of each component of the system. Ongoing, semi-annual, and annual inspection and maintenance requirement are documented below and must be followed diligently. Failure of any component of the system can result in surface water run-off ponding and/or freezing in the roadway and parking lots, leaving the developed site untreated, and/or causing violations to issued permits. The owner / developer must maintain, and have available, plans of the Stormwater System in order to properly inspect and maintain the system. (Reduced copies attached.) The responsible party will conduct the inspections, complete the required maintenance, maintain the Inspection & Maintenance Checklists and Logs, and provide copies with the Annual Report to the City of Dover, Community Services, DPW / Engineering Department and provided a copy to NHDES AoT by December 15th of each year. Upon sale or transfer of the project, copies of the Inspection & Maintenance Manual complete with attachments and plans must be transferred to the incoming management / ownership team and will require notification of NHDES Alteration of Terrain.

The owner of Tax Map H, Lot 37A, 239 Knox Marsh Realty, LLC, are proposing a Mixed-Use Site Development consisting of an 84-unit lodging building and two 90 single occupancy unit buildings. This includes nearly 2,000 linear feet of roadway/parking/circulation lanes, parking areas, three subsurface gravel wetlands, Stormtech Chamber Detention Ponds, and open water detention areas.

The following practices and drainage features will all require periodic inspections and maintenance based on this manual and drainage layout:

Conveyance Swales

Culvert Pipes, Flared End Sections, and Headwalls.

Catch Basins, Yard Drains, & Drain Manholes.

Internal Parking Trench Drains with cleanouts & retaining wall underdrains with cleanouts.

Detention Pond #105 with Outlet Structure and a spillway.

Stormtech SC740 Detention Pond #102 with isolator row, outlet structure with internal stack and control orifice, inlet structure w/ weir, underdrains, cleanouts.

Stormtech SC740 Detention Pond #106 with isolator row, outlet structure with internal stack and control orifice, inlet structure w/ weir, underdrains, cleanouts.

Sediment Forebays for Subsurface Gravel Wetlands #101, #103, and #104.

Subsurface Gravel Wetland #101 with inlets, clean-outs, outlet structure, and a spillway.

Subsurface Gravel Wetland #103 with inlets, clean-outs, outlet structure, and a spillway.

Subsurface Gravel Wetland #104 with inlets, clean-outs and outlet structure.

Rip Rap Level Spreaders.

Note: In addition to the inspection and maintenance requirements contained in this narrative, attached in the appendix is a NHDOT document entitled Design and Maintenance of Subsurface Gravel Wetlands, dated February 2015, which is a part of the inspection and maintenance requirements for the operation of a Subsurface Gravel Wetland.

Conveyance Swales & Treatment Swales

Description: "Swales are stabilized channels designed to convey runoff at non-erosive velocities." (NHDES SWM) They will be trapezoidal or parabolic in section view. A conveyance swale is intended to move surface water runoff from one point to another where as a treatment swale will slow the velocity to a point where sediment will settle out of the stormwater flow. A treatment swale will be constructed to a width of between four and eight feet and have a minimum length of 100 feet. The flow characteristics will also meet design criteria. See SWM Volume 2, 4.3 Treatment Practices, 5. Treatment Swales, page 123.

Project Intent: The swales are individually designed in the drainage analysis and specified on the design plans. The designed swales must have greater than 85% vegetated growth prior to receiving runoff. The bottom of a treatment swale must be above the seasonal high-water table.

Maintenance Considerations: Grassed swales will be inspected twice annually, removing accumulated sediment and gross solids. Grass will be mowed periodically but to a depth of not less than 4 inches. Any damage to the vegetation will be repaired and woody vegetation and invasive vegetation will be removed.

Culvert Pipes, Flared End Sections / Headwalls

Description: Culvert pipes are placed to route surface water runoff from catch basins to drain manholes, and drain manholes to a discharge point conveying the runoff in such a manner that erosion does not take place. Culvert pipes are often terminated with flared end sections or headwalls.

Maintenance Considerations: The entrance and exit of the culvert pipe should be cleaned of any trash and sediment build-up. The culvert should be clear to let runoff pass through the culvert unobstructed. Flared end sections and headwalls should be inspected for erosion and destabilization, with repairs made as required.

Catch Basins (Without Sumps), Yard Drains & Drain Manholes

Description: Catch Basins and Yard Drains are used throughout the site to capture and, along with culvert pipes and manhole, route surface water runoff to stormwater treatment and detention infrastructure. During construction the catch basins will be protected by inlet protection per the approved construction plans. The practice of street sweeping on a bi-annual basis will help reduce maintenance of these catch basins and culvert pipes.

Note: Deep sump catch basins are not allowed to be used on this proposed development due to wildlife concerns and any manufacturer sump resulting in a catch

basin must be filled with washed crushed stone. Sediment should be trapped in the sediment forebays but is also a concern in earlier structures. See construction details for specifications of these conveyance practices.

Maintenance Considerations: Sediment must be removed from Catch Basins, Yard Drains, and Drain Manholes on a regular basis, at least twice a year and more often if post-winter maintenance and street sweeping is not conducted. Inspections should be conducted periodically. At a minimum they should be cleaned after snow-melt and after leaf-drop. Disposal of all material, sediment, and debris must be done in accordance with state and federal regulations. Culvert pipes will be inspected to ensure that surface water runoff is capable of leaving the structures. Drain manholes will be inspected to make sure there is not sediment build-up or blockages.

Internal Parking Trench Drains w/ cleanouts & Retaining Wall Underdrains w/ Cleanouts

Description: In all three buildings, an internal trench drain run the length of the building to capture water or snow melt transported via vehicle into the building. Each of the slot drains is provided with a Nyloplast cleanout on the on the uphill and downhill ends, before discharge into the stormwater management system. Each retaining wall on-site is provided with an underdrain at the back of the wall, with a cleanout on the uphill end, that discharges to daylight. This underdrain will be provided with its own headwall or be connected to a larger headwall (See I&M Plan).

Maintenance Considerations: The exit of the culvert pipes should be cleaned of any trash and sediment build-up. Riprap outlet protection shall not prevent the outlet from being free flowing, as applicable. The culvert should be clear to let collected water pass through the culvert unobstructed. Flared end sections and headwalls should be inspected for erosion and destabilization, with repairs made as required. The underdrains will require yearly jetting to ensure full operation. The Nyloplast cleanout grate can be removed for sediment jetting. The trench drain grate has bolted grate segments that can be removed for maintenance as needed.

Detention Ponds

Description: Detention Ponds are also constructed ponds with the purpose of detaining runoff but not necessarily for infiltration purposes. During construction it is important that the ground surface not be exposed to traffic or construction equipment to preserve the infiltration capabilities of the existing soil. Construction specifications are included in the plan set and New Hampshire Stormwater Manual, Volume 2, Section 4-6, Conveyance Practices, 2. Detention Basins.

Maintenance Considerations:
Detention Ponds should be inspected at least twice annually and following any rainfall event exceeding 0.25 inches in a twenty-four hour period. Maintenance rehabilitation will be conducted as warranted by each inspection. Trash and debris will be removed at each inspection.

Any pilot channel within the detention pond and the sump in front of the primary discharge need to be maintained and kept clear of vegetated material.

Also on an annual basis the vegetation should be inspected to ensure healthy condition. Invasive species need to be removed along with dead or diseased vegetation.

ADS StormTech Chamber: Detention System

Description: The StormTech Chamber System and Isolator Row are trademark products of the Advance Drainage System (ADS) company. The purchase and installation of this system will conform to ADS proprietary rights. The design engineer has specifically used the Isolator Row and StormTech Chamber specifications in the design of this installation. The design is based on the StormTech SC-740 Chambers with an Isolator Row for sediment isolation. The system is designed as a detention practice. The system has a series of perforated underdrains to collect and distribute runoff to the other structure. The volume in the washed crushed stone and in the specified chambers will act as detention in connection with the Outlet Structure discharge stack. Runoff that enters this system does so at the isolator row. P-102 contains 98 chambers in 5 rows of 14 chambers. P-106 contains 65 chambers in 5 rows of 13 chambers. The top of the outlet structure stack is designed to pass larger storm events, with an orifice on the base of the internal stack for smaller storm events. Multiple inspection ports are located throughout the system.

Inspection: Semi-annual and severe rain storm event inspections will be conducted by a trained individual with the capability to observe the condition of the pre-treatment measures and the condition of the Isolator Row especially regarding the depth and extent of sediment buildup. The Isolator Row should initially be inspected semi-annually however this schedule may need to be adjusted based on findings, condition of the pre-treatment measures, and use of the parking facilities. See list of known qualified inspection / maintenance professionals below. The inlet structure and outlet structure must also be inspected. The inspection process requires the removal of Drain Manhole covers.

Maintenance Considerations: Sediment collected in the Isolator Row will be removed with the JetVac process, consisting of high-pressure water scouring and suction retrieval of the captured sediment and pollutants. The orifice cover plate installed to ensure that

runoff is routed to the Isolator Row must be in place and if not re-installed to the original specifications. The stack in the outlet structure must be maintained to ensure that there is no buildup that prevents the proper operation of the outlet.

The stormwater practice should be dry within 72 hours of the end of a storm event.

A copy of the ADS StormTech SC-740 Chamber manual and ADS StormTech Isolator Row O&M Manual are attached.

After the system construction and before operation of the site, it is recommended that a long-term agreement for Inspection and Maintenance be established.

As for Isolator Row inspection and maintenance, Catch Basin maintenance, the regional ADS, Inc. representatives recommend using any of the following contacts:

Stormwater Compliance, LLC;
Attn: Nathan Marles, 1-877-271-9055; nmarles@lidtech.com
163 Thadeus Street, Portland, ME 04106
Info@stormwatercomp.com

Ted Berry Company;
Attn: Dave Beauchamp, 207-897-3348; david.beauchamp@tedberrycompany.com
521 Federal Road, Livermore, ME 04253
Info@tedberrycompany.com

Bellemore Septic Sewer & Drain
Attn: Ray Bellemore, 603-641-6640
raymond@bellemore.com
PO Box 10369
Bedford, NH 03110

ADS / StormTech Contact: Aaron Cheever, PE, Advance Drainage Systems, Inc.
aaron.cheever@ads-pipe.com 1-978-302-0650

Sediment Forebay

Description: A sediment forebay is designed to reduce the velocity of incoming surface water runoff allowing sediment to fall out of suspension initially pre-treating the runoff before it is sent to a treatment structure. This earthen basin will have vegetated side-slopes and a check dam to further reduce and pretreat the runoff. At the point of incoming runoff, the basin will be protected by rip rap outlet protection construction and the outgoing edge will be protected with rip rap. The check dam will be constructed from one side of the basin to the other and cause runoff to either go through or over. The volume of the forebay is generally 10% the volume of the Water

Quality Volume (WQV) for gravel wetlands, and 25% for rain gardens. A dewatering drain is designed into the two-foot berm of the forebay. Construction specifications are included in the plan set and New Hampshire Stormwater Manual, Volume 2, 4-4 Pretreatment Practices 1, Sediment Forebays.

Maintenance Considerations: The basin and slopes will be periodically mowed, at least twice per year ensuring that woody material does not get an opportunity to grow. Sediment accumulated in the basin will be removed and properly disposed of when it reaches half the height of the check dam. Erosion or other damage to the basin will be repaired and revegetated. (See Outlet Protection) Inspect and clean the dewatering drain to ensure runoff is not trapped for more than 72 hours in the forebay.

Subsurface Gravel Wetland

Description: A Gravel Wetland (NHDES SWM 4-3 Treatment Practice 2D) or Subsurface Gravel Wetland consists of a forebay and multiple flow-through treatment cells. During smaller rain events, the surface water runoff is intended to pass from the forebay, into the gravel media through perforated pipes and structures where it passes through an anaerobic environment where the Water Quality Volume will have 24-72 hours of contact time. The forebay is required to contain 10% of the WQV and each of the two cell must contain 45% of the WQV. During larger storm events, the system works as a detention pond. The design of a Subsurface Gravel Wetland will be constructed in accordance with the most current version of the Design Specifications provided by the UNH Stormwater Center and SWM Volume 2, Section 4-3 Treatment Practices, 2d Gravel Wetlands.

Maintenance Considerations: The outlet configuration of the anaerobic subsurface gravel consists of a small discharge orifice that is located in a threaded cap. This goose-neck feature is designed to be disassembled to allow cleaning. This outlet orifice is located within a concrete outlet structure that also contains a control stack used to control and detain runoff in the system. Although this is designed to be "clean water" after the filtering process, the outlet structure in general is going to require periodic maintenance to ensure that it is discharging runoff properly. If the Subsurface Gravel Wetland retains runoff on the surface for more than 72 hours the performance is not correct and maintenance is required.

Debris will need to be removed from the inlet and outlet structures as well as any buildup of sediment. The surface of the ponded area is intended to have wetland plants which may require periodic replanting, depending on the sediment loading. Sediment buildup in the forebay must be removed to maintain the minimum required volume. See also 9 and 10 of the attached UNHSC Subsurface Gravel Wetland Design Specifications 2009, and / or UNHSC Subsurface Gravel Wetland Design Specifications 2016 with Maintenance Guidelines and Checklist. See also Design and Maintenance of Subsurface Gravel Wetlands, dated February 2015, attached. Specifically Attachment B,

Regular Inspection and Maintenance Guidance for Gravel Wetland Stormwater Management Device and Checklist for Inspection of Gravel Wetland. (NHDOT)

Rip Rap Outlet Protection, Level Spreaders, & Emergency Spillways

Description: Outlet Protection consists of a riprap apron or preformed scour hole that is designed to provide velocity reduction of the surface water run-off that is leaving a culvert. The design is dependent on the culvert size, soil conditions, velocity, and quantity of the run-off. There are to be no bend or curves at the intersection of the conduit and apron. Level spreaders are intended to provide a level lip where surface water runoff is allowed to continue downhill closer to sheet flow. The level lip is to be constructed as level as possible for the entire length. Emergency Spillways are rip rap reinforced outlets near the top of the berm that allow runoff to leave a practice during periods of very high flow. Ref.: NHDES SWM Volume 2, Section 4-6 Conveyance Practices, 6. Outlet Protection and 1. Detention Ponds, Note 3, Page 158.

Maintenance Considerations: The riprap outlet protection will be inspected annually for damage, which must be corrected immediately. Any sediment buildup will be removed and disposed of correctly. Sediment and subsequent vegetation will build up in the Level Spreader. This material will be cleaned out along with any gross solids and disposed of properly. (See invasive species below) Any rip rap that has been displaced from the original construction will be repaired, especially recreating the level lip.

Stabilization for Long Term Cover

Vegetated Stabilization – Original Planting

All areas that are disturbed during construction will be stabilized with vegetated material within 30 days of breaking ground. Construction will be managed in such a manner that erosion is prevented and that no abutter's property will be subjected to any siltation, unless otherwise permitted. All areas to be planted with grass for long-term cover will follow the specification and on Sheet E-102 using seeding mixture C, as follows:

Mixture	Pounds per Acre	Pounds per 1,000 Sq. Ft.
Tall Fescue	24	0.55
Creeping Red Fescue	24	0.55
Total	48	1.10

Conservation Mix

Virginia Wild Rye	Native	FACW-
Little Bluestem	Native	FACU
Big Bluestem	Native	FAC
Red Fescue	Native	FACU
Switch Grass	Native	FAC
Partridge Pea	Native	FACU
Showy Tick Trefoil	Native	FAC
Butterfly Milkweed	Native	NI
Beggar Ticks	Native	FACW
Purple Joe Pye Weed	Native	FAC
Black Eyed Susan	Native	FACU-
Total	**25**	**0.57**

Conservation Mix to be provided by New England Wetland Plants, Inc., Amherst, MA as outline in their New England Conservation / Wildlife Mix or approved equal. Mix to be applied at a rate of 25 lbs. per acre or one-lb. per 1750 square feet. Ratio of seed is proprietary and substitutions are not allowed.

Conservation Mix will used to stabilize all 2:1 slopes and all land area disturbed within the wetland buffer.

Stormwater BMP Mix:
The grass that is planted within a stormwater BMP will be a mix designed for both inundation and dry conditions such as Ernst Seeds, Retention Basin Floor Mix ERNMX-126.

Maintenance Considerations: Permanent seeded areas for long-term cover will be inspected on a periodic basis looking for signs of growth loss or erosion. Any areas found to be damaged will be repaired and replanted to reestablish the growth. The grass should be mowed at least twice per year and any dead material removed. Any woody growth that becomes established will need to be cut and removed.

Long-term maintenance of the land cover is critical and must be maintained at least 85% grass / vegetation coverage, must be inspected for concentrated flow, rills, and channels; and must be repaired as necessary to prevent erosion.

Street Sweeping

Description:
Street sweeping is a pollution prevention practice that removes sediment, debris and trash that accumulates along streets and roads from winter sanding practices and everyday use. Street sweeping is often performed to improve aesthetics and to reduce

the export of sand to the drainage network and receiving waters. In addition to sediment, debris and trash, other pollutants that may be minimized through street sweeping include some nutrients, oxygen-demanding substances and trace metals. See SWM Volume 2, 4-2, Source Control BMPS, Street Sweeping, page 52.
Maintenance Considerations: Inspect and maintain street sweeping equipment in accordance with manufacturer's recommendations.

Snow Removal & Winter Maintenance

Description: Drainage and stormwater systems need to be maintained during the winter months so that surface water runoff from a rain storm do not become a impounded and become an icing problem. Catch basins must remain viable and where sheet flow is a design factor, the edge of pavement and should to be maintained so that runoff can leave the pavement area. Sand and salt should be used at the rate that prevents sedimentation problems or excess salt deposited but yet enough to allow for protection for pedestrians and vehicles.

Maintenance Considerations: Catch basins are required to be kept viable by removing snow that is block surface water runoff from entering the structure. The edge of pavement where surface water sheet flow is designed to leave the paved area, the edge of pavement and shoulder need to be plowed to allow runoff to leave the pavement. Snow is to be piled in designated areas and removed from the site when the on-site storage locations have been exceeded. At the end of the winter season, sediment is to be swept from the paved surfaces and removed from the drainage system. (Sumps if provided, sediment forebays, swale lines.) (See catch basin and drainage pipe maintenance.) NHDES offers training (Green SnowPro Certification) for contractors and owners. https://www.des.nh.gov/land/roads/road-salt-reduction/green-snowpro-certification Please find attached NHDES Green SnoPro Utilization Chart which is required to be used.

Control of Invasive Plants

During maintenance activities, check for the presence of invasive plants and remove in a safe manner as described on the following pages. They should be controlled as described on the following pages.

Invasive plants are introduced, alien, or non-native plants, which have been moved by people from their native habitat to a new area. Some exotic plants are imported for human use such as landscaping, erosion control, or food crops. They also can arrive as "hitchhikers" among shipments of other plants, seeds, packing materials, or fresh produce. Some exotic plants become invasive and cause harm by:

- becoming weedy and overgrown;
- killing established shade trees;

- obstructing pipes and drainage systems;
- forming dense beds in water;
- lowering water levels in lakes, streams, and wetlands;
- destroying natural communities;
- promoting erosion on stream banks and hillsides; and
- resisting control except by hazardous chemical.

Annual Report

Description: The owner is responsible to keep an **I & M Activity Log** that documents inspection, maintenance and repairs to the storm water management system, and a **Deicing Log** to track the amount and type of deicing material applied to the site. The original owner is responsible to ensure that any subsequent owner (s) have copies of the Inspection & Maintenance Manual, Stormwater System Management, copies of past logs and check lists. This includes any owner association that might become involved with the property. The Annual Report will be prepared and submitted to the City of Dover Community Services Engineering Department / DPW with copies of both logs and check lists no later than December 15th of each year and provided to NHDES on that same date. Upon an ownership change, the Annual Report will include the Transfer of Ownership Responsibility Forms duplicated from the form found below.

The plan that accompanies this manual includes one sheet, "Stormwater System Management: Inspection, & Maintenance Plan". The owners and municipality will also maintain a complete set of the approved original design plans.

Respectfully,
BERRY SURVEYING & ENGINEERING

Kevin R. Poulin, PE
Project Engineer / Manager

Kenneth A. Berry, PE, LLS
CPSWQ, CPESC, CESSWI
Principal, VP – Technical Operations

STORMWATER SYSTEM: INSPECTION AND MAINTENANCE MANUAL

Inspection & Maintenance Manual Checklist

Proposed Mixed Use Site Plan
Residences & Lodges at Kelly Brook
Tibetan Drive

239 Knox Marsh Realty, LLC
P.O. Box 720
Middleton, MA 01949

☑	Date	BMP / System	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance / Cleanout Threshold
		Pavement Sweeping	Three Times Per Year	N/A	N/A
		Litter/Trash Removal	Routinely	Inspect dumpsters, outdoor waste receptacles area, and yard areas.	Parcel will be free of litter/trash.
		Deicing Agents	N/A	N/A	Use salt as the primary agent for roadway safety during winter.
		Invasive Species	Two times per year.	Inspect for Invasive Species	Remove and dispose invasive species.
		Closed Drainage System:			
		Drainage Pipes & Inlet Sumps	2 times per year	Check for sediment accumulation & clogging.	Less than 2" sediment depth

☑	Date	BMP / System	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance / Cleanout Threshold
		Yard Drains & Cleanouts	2 times per year	Check for sediment accumulation & clogging.	Less than 2" sediment depth
		Subsurface Gravel Wetland & system clean-outs.	Annually	72-Hour drawdown time evaluation and vegetation evaluation. Underdrain flushing.	Remove dead & diseased vegetation along with all debris, take corrective measures of filtration media if required. Flush underdrain clean-outs with a hose.
		ADS StormTech Chamber Pond	Annually	72-Hour drawdown time evaluation and vegetation evaluation. Underdrain flushing.	Remove all debris, take corrective measures of filtration media if required. Flush underdrain clean-outs with a hose.
		ADS Stormtech Chamber Pond	Annually	Evaluate the volume of sediment in the isolator row.	When required, vacuum the isolator row and remove the accumulated sediment.
		Riprap Outlet Protection	Annually	Check for sediment buildup and structure damage.	Remove excess sediment and repair damage.

☑	Date	BMP / System	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance / Cleanout Threshold
		Internal Trench Drains and Retaining Wall Under Drains	2 times per year	Check for sediment and debris accumulation buildup. Ensure viability.	Remove sediment & debris when required. Remove Invasive Species. Jet drainage lines as required.
		Winter Maintenance	Ongoing	Remove snow as directed.	Ongoing
		Post Winter Maintenance	Annually	Remove excess sand, gross solids, and repair vegetation and plantings	Parcel will be free of excess sand, litter/trash. Vegetation per approved plans.
		Annual Report	1 time per year	Submit Annual Report to Dover Engineering Dept. / DPW, NHDES AoT, and kept on file by the owner.	Report to be submitted on or before December 15th each year. Copies submitted to NHDES by that date.

See also Design and Maintenance of Subsurface Gravel Wetlands, dated February 2015, attached. Specifically Attachment B, Regular Inspection and Maintenance Guidance for Gravel Wetland Stormwater Management Device and Checklist for Inspection of Gravel Wetland.

The following practices and drainage features will all require periodic inspections and maintenance based on this manual and drainage layout:

Conveyance Swales

Culvert Pipes, Flared End Sections, and Headwalls.

Catch Basins, Yard Drains, & Drain Manholes.

Internal Parking Trench Drains with cleanouts & retaining wall underdrains with cleanouts.

Detention Pond #105 with Outlet Structure and a spillway.

Stormtech SC740 Detention Pond #102 with isolator row, outlet structure with internal stack and control orifice, inlet structure w/ weir, underdrains, cleanouts.

Stormtech SC740 Detention Pond #106 with isolator row, outlet structure with internal stack and control orifice, inlet structure w/ weir, underdrains, cleanouts.

Sediment Forebays for Subsurface Gravel Wetlands #101, #103, and #104.

Subsurface Gravel Wetland #101 with inlets, clean-outs, outlet structure, and a spillway.

Subsurface Gravel Wetland #103 with inlets, clean-outs, outlet structure, and a spillway.

Subsurface Gravel Wetland #104 with inlets, clean-outs and outlet structure.

Rip Rap Level Spreaders.

STORMWATER SYSTEM OPERATION AND MAINTENANCE PLAN

Inspection & Maintenance Manual Log Form

Proposed Mixed Use Site Plan
Residences & Lodges at Kelly Brook
Tibetan Drive

239 Knox Marsh Realty, LLC
P.O. Box 720
Middleton, MA 01949

BMP / System	Date Inspected	Inspector	Cleaning/Repair (List Items & Comments)	Repair Date	Performed By:

STORMWATER SYSTEM OPERATION AND MAINTENANCE PLAN

Deicing Log Form

Proposed Mixed Use Site Plan
Residences & Lodges at Kelly Brook
Tibetan Drive

239 Knox Marsh Realty, LLC
P.O. Box 720
Middleton, MA 01949

Date	Amount Applied	Performed By:	Date	Amount Applied	Performed By:

STORMWATER SYSTEM OPERATION & MAINTENANCE PLAN CERTIFICATION

Owner	Responsibility
Name: 239 Knox Marsh Realty, LLC Gil Aleixo, Managing Member Address: P.O. Box 720 Middleton, MA 01949 Telephone: (603) 349-0470 (Mobile) E-mail Address: gilaleixo@gmail.com	The owner is responsible for the conduct of all construction activities, and ultimate compliance with all the provisions of the Stormwater System Operation & Maintenance Plan and the implementation of the Inspection and Maintenance Manual.

OWNER CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction and supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signed: _____ Date: _____

Printed Name:

Representing:

Pavement Temp. (°F) and Trend (↑ ↓)	Weather Condition	Maintenance Actions	Application Rate (lbs/per 1000 sq.ft.)			
			Salt Prewetted/Pretreated with salt brine	Salt Prewetted/Pretreated with other blends	Dry salt	Winter sand
>30 ↑	Snow	Plow, treat intersections only				Not recommended
	Frz. Rain	Apply chemical				Not recommended
30 ↓	Snow	Plow and apply chemical				Not recommended
	Frz. Rain	Apply chemical				Not recommended
25 - 30 ↑	Snow	Plow and apply chemical				Not recommended
	Frz. Rain	Apply chemical				Not recommended
25 - 30 ↓	Snow	Plow and apply chemical				Not recommended
	Frz. Rain	Apply chemical				3.25
20 - 25 ↑	Snow or frz. Rain	Plow and Apply chemical				3.25 for frz. Rain
20 - 25 ↓	Snow	Plow and apply chemical				Not recommended
	Frz. Rain	Apply chemical				3.25
15 - 20 ↑	Snow	Plow and apply chemical				Not recommended
	Frz. Rain	Apply chemical				3.25
15 - 20 ↓	Snow or Frz. Rain	Plow and apply chemical				3.25 for frz. Rain
0 to 15 ↑↓	Snow	Plow, treat with blends, sand hazardous areas	Not recommended		Not recommended	5.0 and spot-treat as needed
< 0	Snow	Plow, treat with blends, sand hazardous areas	Not recommended		Not recommended	5.0 and spot-treat as needed

Table 19. Application Rates for Deicing

These rates & table format are based on road application guidelines (Mn Snow & Ice Control Field Handbook, Manual 2005-1). Develop your own application rates by adjusting your current rates incrementally downward toward these guidelines. Where temperature categories overlap, select the rate most applicable to your situation.

Control of Invasive Plants

New Hampshire
Department of Agriculture,
Markets & Food
Douglas Cygan
603-271-3488
doug.cygan@agr.nh.gov

This guide lists garden plants and weeds which are already causing significant changes to natural areas in the Mid-Atlantic. **Measures for controlling each species are indicated by number, e.g., (3), in the text with a full explanation at the end of this article.** Click on the word Control: to jump to that section. Then click your "back" button to return to the text. Following each section suggested alternative plants are given. These alternatives are native plants, well adapted and needing little care, attractive to birds and butterflies, and an important part of the food web for our indigenous species.

INVASIVE TREES

NORWAY MAPLE (*Acer platanoides*) has large leaves similar to sugar maple. To easily confirm that the plant is Norway maple, break off a leaf and if it's truly Norway maple it will exude milky white sap. Fall foliage is yellow. (Exception: cultivars such as 'Crimson King,' which have red leaves in spring or summer, may have red autumn leaves.) The leaves turn color late, usually in late October after native trees have dropped their foliage. This tree suppresses growth of grass, garden plants, and forest understory beneath it, at least as far as the drip-line. Its wind-borne seeds can germinate and grow in deep shade. The presence of young Norway maples in our woodlands is increasing.
Control: (1); (7), (8), (9), or (10); (11) in mid-October to early November, before the leaves turn color.

TREE OF HEAVEN (*Ailanthus altissima*), is incredibly tough and can grow in the poorest conditions. It produces huge quantities of wind-borne seeds, grows rapidly, and secretes a toxin that kills other plants. Its long compound leaves, with 11-25 lance-shaped leaflets, smell like peanut butter or burnt coffee when crushed. Once established, this tree cannot be removed by mechanical means alone.
Control: (1) - seedlings only. Herbicide - use Garlon 3a (9) with no more than a 1" gap between cuts, or (10); plus (11) on re-growth. Or paint bottom 12" of bark with Garlon 4 Ultra (in February or March to protect surrounding plants). USE MAXIMUM STRENGTH SPECIFIED ON LABEL for all herbicide applications on Ailanthus. Glyphosate is not effective against Ailanthus.

INVASIVE SHRUBS

AUTUMN OLIVE (*Eleagnus umbellata*): Formerly recommended for erosion control and wildlife value, these have proved highly invasive and diminish the overall quality of wildlife habitat.
Control: (1) - up to 4" diameter trunks; (7) or (10) or bury stump. Do not mow.
MULTIFLORA ROSE (*Rosa multiflora*), formerly recommended for erosion control, hedges, and wildlife habitat, becomes a huge shrub that chokes out all other vegetation and is too dense for many species of birds to nest in, though a few favor it. In shade, it grows up trees like a vine. It is covered with white flowers in June. (Our native roses have fewer flowers, mostly pink.) Distinguish multiflora by its size, and by the presence of very hard, curved thorns, and a fringed edge to the leaf stalk.
Control: (1) - pull seedlings, dig out larger plants at least 6" from the crown and 6" down; (4) on extensive infestations; (10) or (11). It may remain green in winter, so herbicide may *applied when other plants are dormant. For foliar application, mix Rodeo with extra sticker-spreader, or use Roundup Sure Shot Foam on small plants.*

BUSH HONEYSUCKLES (*Lonicera spp.*), including Belle, Amur, Morrow's, and Tatarian honeysuckle. (In our region, assume that any honeysuckle is exotic unless it is a scarlet-flowered vine). Bush honeysuckles create denser shade than native shrubs, reducing plant diversity and eliminating nest sites for many forest interior species.
Control: (2) on ornamentals; (1); on shady sites only, brush cut in early spring and again in early fall (3); (4) during the growing season; (7); or (10) late in the growing season.

BLUNT-LEAVED PRIVET (*Ligustrum* obtusifolium). *Control:* (1); (7) or (10); or trim off all flowers. Do not cut back or mow.

BURNING BUSH, WINGED EUONYMUS (*Euonymus alatus*), identified by wide, corky wings on the branches.
Control: (1); (7) or (10); or trim off all flowers.

JAPANESE BARBERRY (*Berberis thunbergii*), and all cultivars and varieties.
Control: (1); (7) or (10); or trim off all flowers.

INVASIVE WOODY VINES

All of these vines shade out the shrubs and young trees of the forest understory, eventually killing them, and changing the open structure of the forest into a dense tangle. DO NOT PLANT NEXT TO OPEN SPACE.

JAPANESE HONEYSUCKLE (*Lonicera japonica*), including Hall's honeysuckle, has gold-and-white flowers with a heavenly scent and sweet nectar in June. This is probably the familiar honeysuckle of your childhood. It is a rampant grower that spirals around trees, often strangling them.
Control: (1); (3); (10); (11) in fall or early spring when native vegetation is dormant. Plan to re-treat repeatedly.

ORIENTAL BITTERSWEET (*Celastrus orbiculatus*) has almost completely displaced American bittersweet (*C. scandens*). The Asian plant has its flowers and bright orange seed capsules in clusters all along the stem, while the native species bears them only at the branch tips.
Control: (1); keep ornamental plants cut back, remove all fruits as soon as they open, and bag or burn fruits; to eradicate use Garlon 3a (10).

JAPANESE KNOTWEED, MEXICAN BAMBOO (*Polygonum cuspidatum*) can grow in shade. The stems have knotty joints, reminiscent of bamboo. It grows 6-10' tall and has large pointed oval or triangular leaves.
Control: Cut at least 3 times each growing season and/or treat with Rodeo (10) or (11). In gardens, heavy mulch or dense shade may kill it.

INVASIVE HERBACEOUS PLANTS

GARLIC MUSTARD (*Alliaria petiolata*, *A. officinalis*), a white-flowered biennial with rough, scalloped leaves (kidney-, heart- or arrow-shaped), recognizable by the smell of garlic and taste of mustard when its leaves are crushed. (The odor fades by fall.)
Control: Pull before it flowers in spring (1), removing crown and roots. Tamp down soil afterwards. Once it has flowered, cut (2), being careful not to scatter seed, then bag and burn or send to the landfill. (11) may be appropriate in some settings.

JAPANESE STILT GRASS (*Microstegium vimineum*) can be identified by its lime-green color and a line of silvery hairs down the middle of the 2-3" long blade. It tolerates sun or dense shade and quickly invades areas left bare or disturbed by tilling or flooding. An annual grass, it builds up a large seed bank in the soil.

Control: Easily pulled in early to mid-summer (1) - be sure to pull before it goes to seed. If seeds have formed, bag and burn or send to landfill. Mowing weekly or when it has just begun to flower may prevent it from setting seed (3). Use glyphosate (11) or herbicidal soap (less effective) on large infestations. Follow up with (5) in spring.

MILE-A-MINUTE VINE, DEVIL'S TAIL TEARTHUMB (*Polygonum perfoliatum*), a rapidly growing annual vine with triangular leaves, barbed stems, and turquoise berries in August which are spread by birds. It quickly covers and shades out herbaceous plants.
Control: same as for stilt grass.

SPOTTED KNAPWEED (*Centaurea maculosa*), a biennial with thistle-like flowers.
Control: Do NOT pull (1) unless the plant is young and the ground is very soft - the tap root will break off and produce several new plants. Wear sturdy gloves. (2); (6); (10) or (11).

CONTROL MEASURES

(1) PULL seedlings and small or shallow-rooted plants when soil is moist. Dig out larger plants, including the root systems. Use a forked spade or weed wrench for trees or shrubs.
(2) DEADHEAD to prevent spread of seeds of invasive plants. Cut off seeds or fruits before they ripen. Bag, and burn or send to a landfill.
(3) MOW or CUTTING at least 4 times a season to deplete plants' store of nutrients and carbohydrates, reduce seed formation, and kill or minimize spread of plants. If necessary, repeat each year.
(4) CONTROLLED BURNING during the spring, repeated over several years, allows native vegetation to compete more effectively with the invasive species. This requires a permit. Spot treatment with glyphosate in late fall can be used to make this method more effective.
(5) Use a CORN-BASED PRE-EMERGENCE HERBICIDE on annual weeds. This product is also an organic fertilizer, i.e., it can stimulate growth of existing plants, including weeds, so it is appropriate for lawns and gardens but may not be appropriate in woodlands.
(6) In lawns, SPOT TREAT with BROAD-LEAF WEEDKILLER. Good lawn-care practices (test soil; use lime and fertilizer only when soil test shows a need; mow high and frequently; leave clippings on lawn) reduce weed infestations.
(7) CUT DOWN the tree. Grind out the stump, or clip off re-growth.
(8) GIRDLE tree: cut through the bark and growing layer (cambium) all around the trunk, about 6" above the ground. Girdling is most effective in spring when the sap is rising, and from middle to late summer when the tree is sending down food to the roots. Clip off sucker sprouts.
(9) FRILL: Using a machete, hatchet or similar device, hack scars (several holes in larger trees) downward into the cambium layer, and squirt in glyphosate (or triclopyr if recommended in text above). Follow label directions for Injection and Frill Applications. This is most effective from middle to late summer. Clip off any sucker sprouts or treat with glyphosate.
(10) CUT STEM / CUT STUMP WITH GLYPHOSATE (or triclopyr if specified above). Follow label directions for Cut Stump Application. Clip off sucker sprouts or paint with glyphosate. See Note on Herbicides.
(11) FOLIAR SPRAY WITH GLYPHOSATE herbicide (see Note on Herbicides). Use a backpack or garden sprayer or mist blower, following label directions. Avoid overspray and/or dripping onto non-target plants, because glyphosate kills most plants except moss. If it rolls off waxy or grass-like foliage, use additional sticker-spreader. Deciduous trees, shrubs, and perennials move nutrients down to the roots in late summer. Glyphosate is particularly effective at this time and when plants have just gone out of flowering. Several invasive species retain their foliage after native plants have lost theirs, and resume growth earlier in spring than most natives. This allows you to treat them without harming the natives. However, the plant must be actively growing for the herbicide to work. Retreatments may be necessary the following year if suckering occurs or the plant hasn't been entirely killed.

NOTE ON HERBICIDES: It is highly recommended that small populations try to be controlled using non-chemical methods wherever feasible. However, for large infestations, and for a few plants specified above, herbicide use is essential. Apply herbicides carefully to avoid non-target plants, glyphosate is the least environmentally damaging herbicide in most cases. Add food coloring for visibility, and a soap-based sticker such as Cide-Kick. Glyphosate is ineffective on some

plants; for these, triclopyr (Garlon) may be indicated. When using herbicides, read the entire label and observe all precautions listed, including proper disposal. If in doubt, call your local Cooperative Extension Service.

LEGEND:

- UTILITY POLE/GUY WIRE
- TEST PIT
- TEMPORARY BENCHMARK (T.B.M.)
- E101 / E6 — DETAIL SHEET / DETAIL
- POORLY DRAINED JURISDICTIONAL WETLAND
- WETLAND BUFFER
- 176 — CONTOUR MINOR, EXISTING
- 175 — CONTOUR MAJOR, EXISTING
- P176 — CONTOUR MINOR, PROPOSED
- P175 — CONTOUR MAJOR, PROPOSED
- BUILDING SETBACK LINE
- TREELINE
- ROAD CENTERLINE
- SHOULDER
- PAVEMENT SEAM
- GUARD RAIL
- D — DRAIN CULVERT W/ FLARED END SECTION (F.E.S.)
- BITUMINOUS CONCRETE
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- BERM
- RETAINING WALL
- STORMTECH CHAMBERS/ISOLATOR ROW
- LIMIT OF STORMTECH CHAMBER STONE/GENERAL STONE
- DRAIN MANHOLE W/STRUCTURE
- CATCH BASIN W/ STRUCTURE
- STORMWATER BMP OUTLET STRUCTURE

N/F BOSTON & MAINE RAILROAD,
IRON HORSE PARK
500 WATER STREET J-910
JACKSONVILLE, FL 32202
TAX MAP G, LOT 5

RIP RAP SPILLWAY

RIP RAP LEVEL SPREADER

PIPES IN HEADWALL (2)

OUTLET STRUCTURES #103 A&B
SEE P-103 FOR DETAILS

GRAVEL WETLAND #103
SEE P-103 FOR DETAILS

SEDIMENT FOREBAY

UNDER DRAIN CLEANOUTS

DRAIN MANHOLE W/ WEIR PLATE

EDGE OF POORLY DRAINED JURISDICTIONAL WETLANDS (TYP.)
BY: DEIDRA BENJAMIN, CWS

50' WETLAND BUFFER (TYP.)

DRAIN MANHOLE

UNDERDRAIN CLEANOUT

UNDERDRAIN CLEANOUT

YARD DRAIN WITH CULVERT

INLET SUMP

YARD DRAIN CLEANOUT

CONVEYANCE SWALES

DRAIN MANHOLE

ISOLATOR ROW

INSPECTION PORTS

STORMTECH DETENTION POND #102
SEE P-102 FOR DETAILS

OUTLET STRUCTURE #102

DRAIN MANHOLE

CATCH BASIN

NYLOPLAST CLEANOUT
INTERNAL TRENCH DRAIN
PROPOSED 90 SINGLE OCCUPANCY UNITS BUILDING "C" GARAGE FF = 99.35

CATCH BASINS

NYLOPLAST CLEANOUT
PROPOSED 90 SINGLE OCCUPANCY UNITS BUILDING "E" PARKING FF = 99.00
NYLOPLAST CLEANOUT
INTERNAL TRENCH DRAIN

TIBETAN DRIVE

CATCH BASIN

DRAIN MANHOLE

INLET SUMP

PIPES IN HEADWALL (4)

OUTLET STRUCTURE #104 A&B
SEE P-104 FOR DETAILS

N.H. ROUTE 155 / KNOX MARSH ROAD

SEDIMENT FOREBAY

GRAVEL WETLAND #104
SEE P-104 FOR DETAILS

UNDERDRAIN CLEANOUT

DRAIN MANHOLE

OUTLET STRUCTURE #105
DETENTION POND #105
SEE P-105 FOR DETAILS

RIP RAP SPILLWAY

RIP RAP LEVEL SPREADER

INSPECTION PORTS

ISOLATOR ROW

STORMTECH DETENTION POND #106
SEE P-106 FOR DETAILS

OUTLET STRUCTURE #106

RETAINING WALL UD OUTLET

RIP RAP LEVEL SPREADER

UNDER DRAIN CLEANOUTS

DRAIN MANHOLE W/ WEIR PLATE

CATCH BASIN

NYLOPLAST CLEANOUT
PROPOSED 84 SUITE LODGING UNITS BUILDING "A" PARKING FF = 98.60
NYLOPLAST CLEANOUT
INTERNAL TRENCH DRAIN

DRAIN MANHOLE

PIPES IN HEADWALL (2)

OUTLET STRUCTURES #101 A&B
SEE P-101 FOR DETAILS

RIP RAP SPILLWAY

SEDIMENT FOREBAY

GRAVEL WETLAND #101
SEE P-101 FOR DETAILS

UNDER DRAIN CLEANOUTS

RIP RAP LEVEL SPREADER / PLUNGE POOL

SEDIMENT FOREBAY

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37A

3.) LOT AREA: 407,542 Sq. Ft., 9.36 Ac.

4.) S.C.R.D. BOOK 5138, PAGE 73

5.) THE INTENT OF THIS PLAN IS TO DEMONSTRATE THE DRAINAGE INFRASTRUCTURE THAT REQUIRES PERIODIC INSPECTION AND MAINTENANCE. IT IS TO ACCOMPANY A DOCUMENT ENTITLES "INSPECTION AND MAINTENANCE MANUAL, STORMWATER SYSTEM MANAGEMENT PUBLISHED BY BERRY SURVEYING & ENGINEERING ON THE SAME DATE.

NOTE: HALF SCALE PLANS, (11-INCHES X 17-INCHES) WILL HAVE A SCALE THAT IS TWICE THE PUBLISHED SCALE.

16°±
MAGNETIC
NORTH

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

STORMWATER OPERATION: INSPECTION & MAINTENANCE PLAN
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY No. 14248
PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

MAINTENANCE REQUIREMENTS

ACTIVITY	FREQUENCY
CLOGGING AND SYSTEM PERFORMANCE	
INSPECT INLETS AND OUTLETS TO ENSURE GOOD CONDITION AND NO EVIDENCE OF DETERIORATION. CHECK TO SEE IF HIGH-FLOW BYPASS IS FUNCTIONING. REMEDY: REPAIR OR REPLACE ANY DAMAGED STRUCTUAL PARTS, INLETS AND OUTLETS. CLEAR OR REMOVE DEBRIS OR RESTRICTIONS.	ANNUALLY, MORE FREQUENTLY IN THE FIRST YEAR OF OPERATION
CHECK FOR INTERNAL EROSION, EVIDENCE OF SHORT-CIRCUITING, AND ANIMAL BURROWS. REMEDY: SOIL EROSION FROM SHORT-CIRCUITING OR ANIMAL BOROUGHS SHOULD BE REPAIRED WHEN THEY OCCUR.	
CHECK THAT THE SYSTEM IS FULLY DRAINING WITHIN A 24-48 HOUR PERIOD AFTER RAIN EVENTS. REMEDY: REPAIR OR RESTORE HYDRAULIC INLET OR OUTLET CONFIGURATION.	
VEGETATION	
CHECK FOR ROBUST VEGETATION COVERAGE THROUGHOUT THE SYSTEM AND DEAD OR DYING PLANTS REMEDY: VEGETATION SHOULD COVER > 75% OF THE SYSTEM AND SHOULD BE RESEEDED AND CARED FOR AS NEEDED	ANNUALLY, OR AS NEEDED
CUT AND REMOVE VEGETATION FROM GRAVEL WETLAND SYSTEM AND FOREBAY IN ORDER TO MAINTAIN NITROGEN REMOVAL PERFORMANCE REMEDY: THE VEGETATION SHOULD BE CUT AND REMOVED FROM THE SYSTEM TO PREVENT NITROGEN FROM CYCLING BACK INTO THE SYSTEM	ONCE EVERY 3 YEARS

3/8" WASHED CRUSHED STONE*

SIEVE SIZE	% PASSING BY WEIGHT
1/2"	100
3/8"	95 – 100
# 4	22 – 55
# 8	0 – 10

* EQUIVALENT TO STANDARD WASHED STONE – SECTION 702 OF NHDOT NHDOT STANDARD SPECIFICATIONS

1-1/2" WASHED CRUSHED STONE*

SIEVE SIZE	% PASSING BY WEIGHT
2"	100
1-1/2"	90 – 100
1"	20 – 55
1/2"	0 –15
3/8"	0 –5

* EQUIVALENT TO STANDARD WASHED STONE – SECTION 702 OF NHDOT NHDOT STANDARD SPECIFICATIONS

WETLAND SOIL

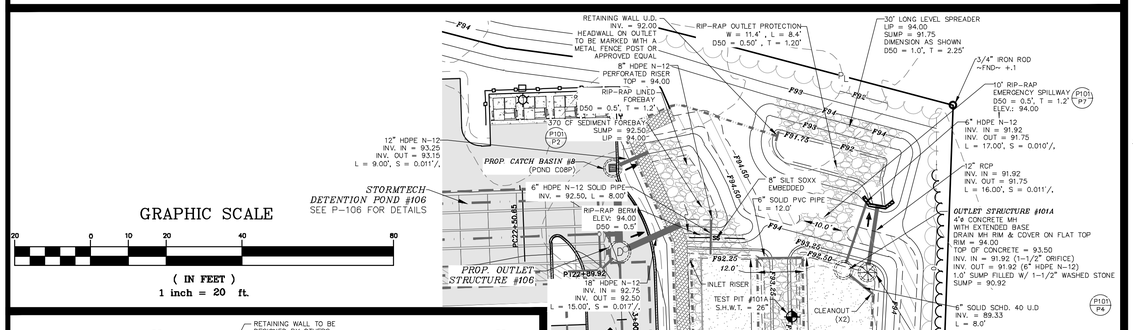
SIEVE SIZE	% PASSING BY WEIGHT
0.5	100
#10"	90 – 75
#100	40 – 50
#200	25 –50
SIEVE SIZE	**% PASSING TOLERANCES**
0.5	±10.0
#10	±5.0
#100	±5.0
#200	±5.0

DESIGN REFERENCES

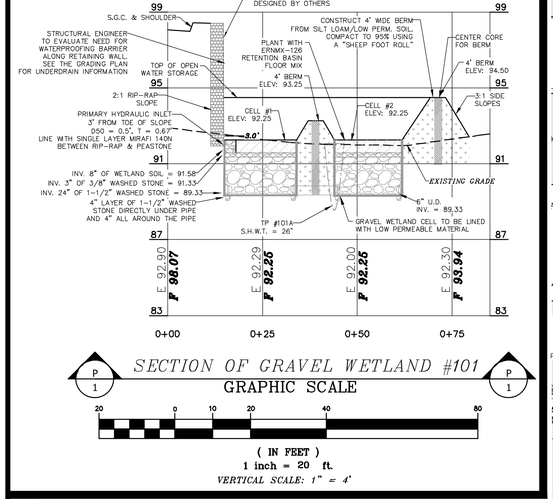
1 UNH STORMWATER CENTER

CONSTRUCTION NOTE: THE DESIGN ENGINEER IS TO BE ON SITE PRIOR TO AND DURING THE PLACEMENT OF THE RESERVOIR STONE, AND TO WITNESS THE INSTALLATION OF THE UNDER-DRAIN AND INTER-CHAMBER PIPES. PLEASE PROVIDE 24 HOURS NOTICE PRIOR TO REQUESTED INSPECTION. A LETTER CERTIFYING AS TO THE CONSTRUCTION BY THE OWNER AND DESIGN ENGINEER IS REQUIRED AS A CONDITION OF THE ALTERATION OF TERRAIN PERMIT AND THE CITY OF DOVER

P1



PLAN VIEW GRAVEL WETLAND #101

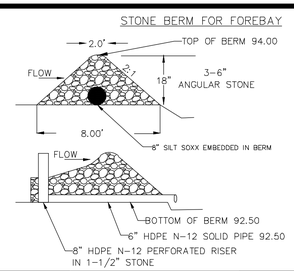


SECTION OF GRAVEL WETLAND #101

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

P2

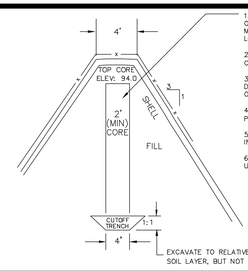
STONE BERM FOR FOREBAY



P3

LOW PERMEABILITY MATERIAL GRADATION

SIEVE SIZE	% PASSING BY WEIGHT
#4	95 – 100
#40	60 – 95
#100	40 – 60
#200	25 – 45



1.) 2" CORE IS TO BE CONSTRUCTED OF COMPACTED LOAM MATERIAL MEETING THE REQUIREMENT OF THE LOW PERM SPECIFICATION

2.) CORE IS TO BE INSTALLED & COMPACTED IN 12" LIFTS.

3.) INSTALLATION OF ENTIRE DRAINAGE STRUCTURE IS TO BE OVERSEEN BY DESIGN ENGINEER.

4.) GENERAL FILL MATERIALS ARE TO PLACED & COMPACTED IN 12" LIFTS.

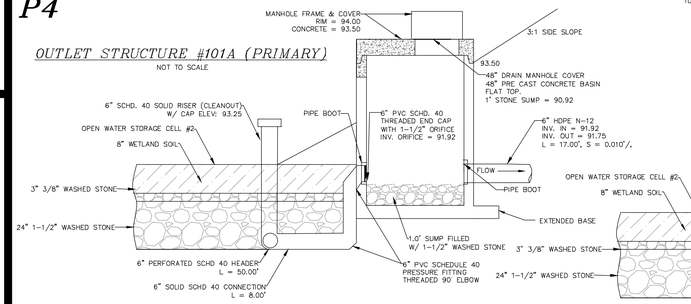
5.) GENERAL FILL MATERIAL MAY BE INSTALLED USING ONSITE MATERIALS.

6.) CORE IS TO BE CONSTRUCTED UNDERNEATH THE PROPOSED SPILLWAY.

P4

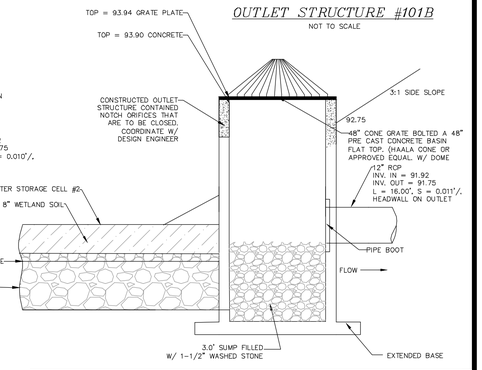
OUTLET STRUCTURE #101A (PRIMARY)

NOT TO SCALE



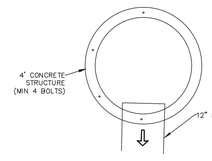
OUTLET STRUCTURE #101B

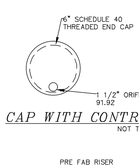
NOT TO SCALE



TOP VIEW (101B)

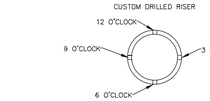
NOT TO SCALE

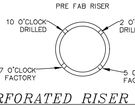




CAP WITH CONTROL ORIFICE (101A)

NOT TO SCALE

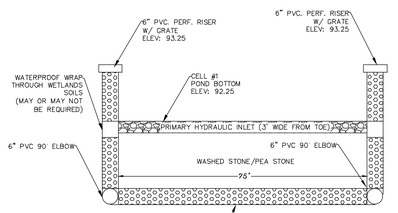




PERFORATED RISER DETAIL

NOT TO SCALE

P5

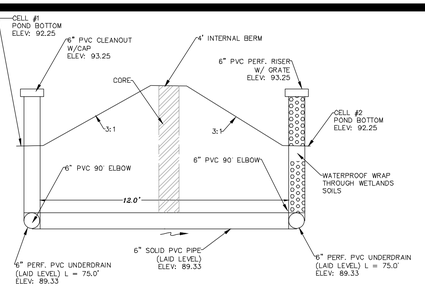


GRAVEL WETLAND INLET SYSTEM

NOT TO SCALE

NOTE: THERE IS NO WETLAND SOIL IN THE GRAVEL WETLAND INLET SYSTEM

P6

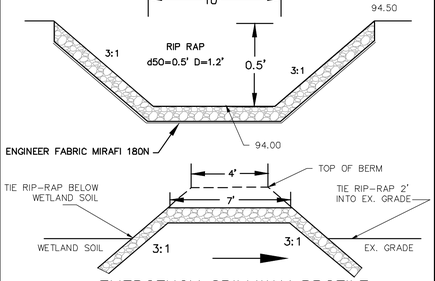


GRAVEL WETLAND CONNECTION SYSTEM

P7

SPILLWAY DETAILS

NOT TO SCALE



EMERGENCY SPILLWAY PROFILE

P8

Retention Basin Floor Mix - Low Maintenance - ERNMX-126

	Botanical Name	Common Name	Price/Lb
20.00 %	*Panicum clandestinum, 'Tioga*	Deertongue, 'Tioga	22.00
20.00 %	*Festuca ovina, Fults*	Alkaligrass, Fults	9.35
18.00 %	*Elymus virginicus, Madison-NY Ecotype*	Virginia Wildrye, Madison-NY Ecotype	9.95
15.00 %	*Agrostis stolonifera, 'Penncross'*	Creeping Bentgrass, 'Penncross'	14.40
13.00 %	*Poa palustris*	Fowl Bluegrass	35.80
10.00 %	*Carex vulpinoidea, PA Ecotype*	Fox Sedge, PA Ecotype	28.80
3.00 %	*Carex scoparia, PA Ecotype*	Blunt Broom Sedge, PA Ecotype	81.60
1.00 %	*Juncus effusus*	Soft Rush	48.00
100.00 %		**Mix Price/Lb Bulk:**	**$15.98**

Seeding Rate: 20-40 lbs per acre, or 0.5-1 lb/1,000 sq ft with a cover crop. For a cover crop use one of the following: grain rye (1 Sep to 30 Apr; 30 lbs/acre), Japanese millet (1 May to 31 Aug; 10 lbs/acre), or barnyard grass (1 May to 31 Aug; 10 lbs/acre).

NOTE: TO BE USED FOR STORMWATER BMPS

Grasses & Grass-like Species - Herbaceous Perennial; Stormwater Management

The hardy inexpensive grass and grass-like species are ideal for retention basins that may have high salt inflows and where mowing may be required. Mix formulations are subject to change without notice depending on the availability of existing and new products. While the formula may change, the guiding philosophy and function of the mix will not.

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

GRAVEL WETLAND #101
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY & SURVEYING ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 – 034

STATE OF NEW HAMPSHIRE – KENNETH A. BERRY No. 14015 – LICENSED PROFESSIONAL ENGINEER

P-101

SHEET 19 OF 60

NOT FOR CONSTRUCTION

P1

MAINTENANCE REQUIREMENTS

ACTIVITY	FREQUENCY
CLOGGING AND SYSTEM PERFORMANCE	
INSPECT INLETS AND OUTLETS TO ENSURE GOOD CONDITION AND NO EVIDENCE OF DETERIORATION. CHECK TO SEE IF HIGH-FLOW BYPASS IS FUNCTIONING. REMEDY: REPAIR OR REPLACE ANY DAMAGED STRUCTUAL PARTS, INLETS AND OUTLETS. CLEAR OR REMOVE DEBRIS OR RESTRICTIONS.	ANNUALLY, MORE FREQUENTLY IN THE FIRST YEAR OF OPERATION
CHECK FOR INTERNAL EROSION, EVIDENCE OF SHORT-CIRCUITING, AND ANIMAL BURROWS. REMEDY: SOIL EROSION FROM SHORT-CIRCUITING OR ANIMAL BOROUGHS SHOULD BE REPAIRED WHEN THEY OCCUR.	
CHECK THAT THE SYSTEM IS FULLY DRAINING WITHIN A 24-48 HOUR PERIOD AFTER RAIN EVENTS. REMEDY: REPAIR OR RESTORE HYDRAULIC INLET OR OUTLET CONFIGUARTION.	
VEGETATION	
CHECK FOR ROBUST VEGETATION COVERAGE THROUGHOUT THE SYSTEM AND DEAD OR DYING PLANTS REMEDY: VEGETATION SHOULD COVER > 75% OF THE SYSTEM AND SHOULD BE RESEEDED AND CARED FOR AS NEEDED	ANNUALLY, OR AS NEEDED
CUT AND REMOVE VEGETATION FROM GRAVEL WETLAND SYSTEM AND FOREBAY IN ORDER TO MAINTAIN NITROGEN REMOVAL PERFORMANCE REMEDY: THE VEGETATION SHOULD BE CUT AND REMOVED FROM THE SYSTEM TO PREVENT NITROGEN FROM CYCLING BACK INTO THE SYSTEM	ONCE EVERY 3 YEARS

3/8" WASHED CRUSHED STONE*

SIEVE SIZE	% PASSING BY WEIGHT
1/2"	100
3/8"	95 – 100
# 4	22 – 55
# 8	0 – 10

* EQUIVALENT TO STANDARD WASHED STONE – SECTION 702 OF NHDOT NHDOT STANDARD SPECIFICATIONS

1-1/2" WASHED CRUSHED STONE*

SIEVE SIZE	% PASSING BY WEIGHT
2"	100
1-1/2"	90 – 100
1"	20 – 55
1/2"	0 -15
3/8"	0 -5

* EQUIVALENT TO STANDARD WASHED STONE – SECTION 702 OF NHDOT NHDOT STANDARD SPECIFICATIONS

WETLAND SOIL

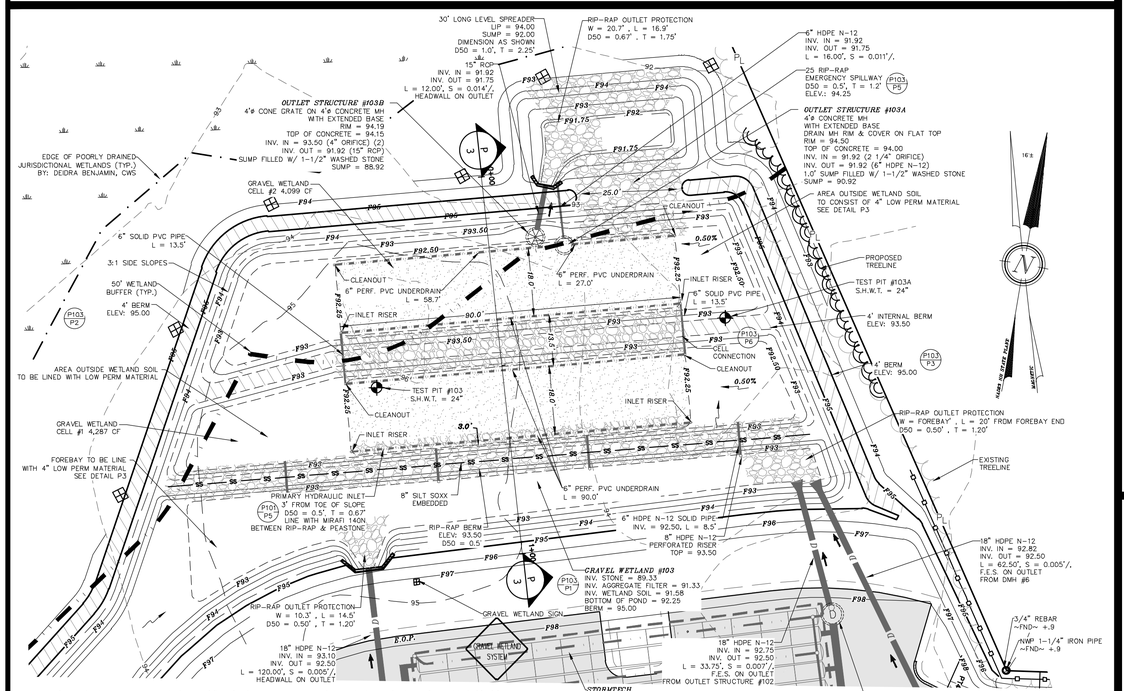
SIEVE SIZE	% PASSING BY WEIGHT
0.5	100
#10	90 – 75
#100	40 – 50
#200	25 -50

SIEVE SIZE	% PASSING TOLERANCES
0.5	±10.0
#10	±5.0
#100	±5.0
#200	±5.0

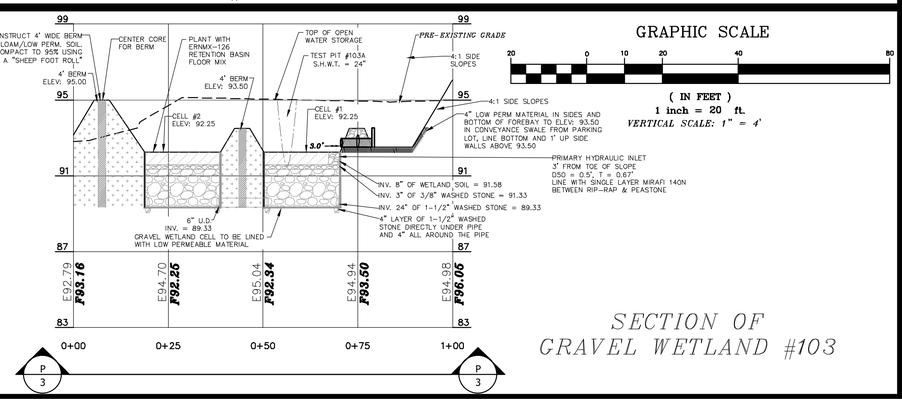
DESIGN REFERENCES

1 UNH STORMWATER CENTER

CONSTRUCTION NOTE: THE DESIGN ENGINEER IS TO BE ON SITE PRIOR TO AND DURING THE PLACEMENT OF THE RESERVOIR STONE, AND TO WITNESS THE INSTALLATION OF THE UNDER-DRAIN AND INTER-CHAMBER PIPES. PLEASE PROVIDE 24 HOURS NOTICE PRIOR TO REQUESTED INSPECTION. A LETTER CERTIFYING AS TO THE CONSTRUCTION BY THE OWNER AND DESIGN ENGINEER IS REQUIRED AS A CONDITION OF THE ALTERATION OF TERRAIN PERMIT AND THE CITY OF DOVER



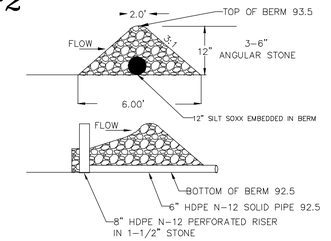
PLAN VIEW GRAVEL WETLAND #103



SECTION OF GRAVEL WETLAND #103

P2

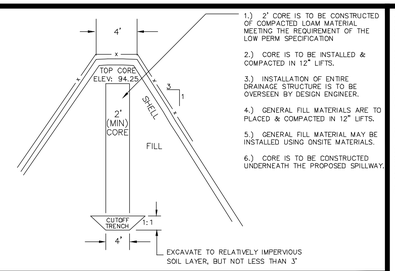
STONE BERM FOR FOREBAY



P3

LOW PERMEABILITY MATERIAL GRADATION

SIEVE SIZE	% PASSING BY WEIGHT
#4	95 – 100
#40	60 – 95
#100	40 – 60
#200	25 – 45



1.) 2" CORE IS TO BE CONSTRUCTED OF COMPACTED LOAM MATERIAL MEETING THE REQUIREMENT OF THE LOW PERM SPECIFICATION

2.) CORE IS TO BE INSTALLED & COMPACTED IN 12" LIFTS.

3.) INSTALLATION OF ENTIRE DRAINAGE STRUCTURE IS TO BE OVERSEEN BY DESIGN ENGINEER.

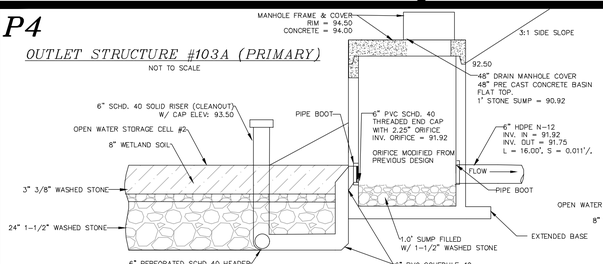
4.) GENERAL FILL MATERIALS ARE TO PLACED & COMPACTED IN 12" LIFTS.

5.) GENERAL FILL MATERIAL MAY BE INSTALLED USING ONSITE MATERIALS.

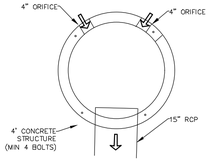
6.) CORE IS TO BE CONSTRUCTED UNDERNEATH THE PROPOSED SPILLWAY.

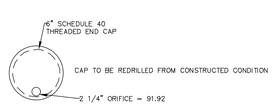
P4

OUTLET STRUCTURE #103A (PRIMARY)
NOT TO SCALE

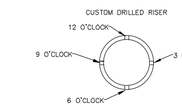


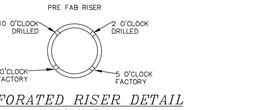
TOP VIEW (103B)
NOT TO SCALE





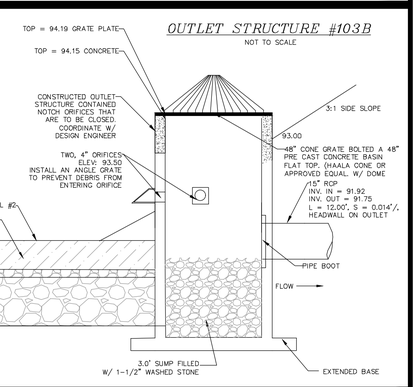
CAP WITH CONTROL ORIFICE
NOT TO SCALE



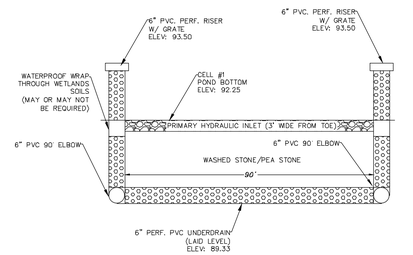


PERFORATED RISER DETAIL
NOT TO SCALE

OUTLET STRUCTURE #103B
NOT TO SCALE



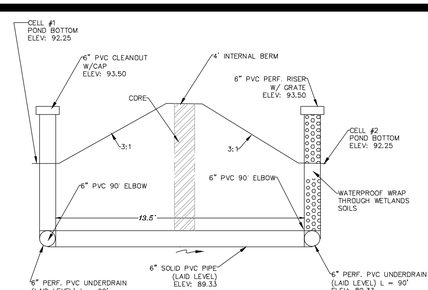
P5



GRAVEL WETLAND INLET SYSTEM
NOT TO SCALE

NOTE: THERE IS NO WETLAND SOIL IN THE GRAVEL WETLAND INLET SYSTEM

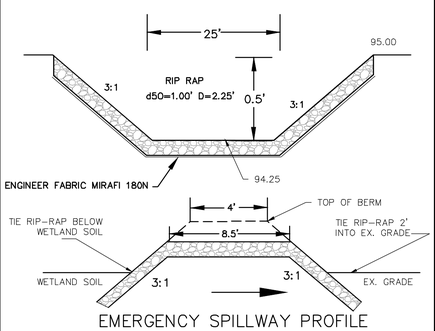
P6



GRAVEL WETLAND CONNECTION SYSTEM
NOT TO SCALE

P7

SPILLWAY DETAILS
NOT TO SCALE



EMERGENCY SPILLWAY PROFILE

P8

Retention Basin Floor Mix - Low Maintenance - ERNMX-126

	Botanical Name	Common Name	Price/Lb
20.00 %	*Panicum clandestinum, Tioga*	Deertongue, Tioga	22.08
20.00 %	*Poa chelida ebense, Paths*	Alkaligrass, Fults	4.36
18.00 %	*Elymus virginicus, Madison-NY Ecotype*	Virginia Wildrye, Madison-NY Ecotype	5.96
15.00 %	*Agrostis stolonifera, 'Penncross'*	Creeping Bentgrass, 'Penncross'	14.40
15.00 %	*Poa palustris*	Fowl Bluegrass	15.80
10.00 %	*Carex lupulina, PA Ecotype*	Fox Sedge, PA Ecotype	25.80
3.00 %	*Carex scoparia, PA Ecotype*	Blunt Broom Sedge, PA Ecotype	81.60
1.00 %	*Juncus effusus*	Soft Rush	48.00
100.00 %		**Mix Price/Lb Bulk:**	**$15.90**

Seeding Rate: 20-40 lbs per acre, or 0.5-1 lb/1,000 sq ft with a cover crop. For a cover crop use one of the following: grain rye (1 Sep to 30 Apr; 30 lbs/acre), Japanese millet (1 May to 31 Aug; 10 lbs/acre), or barnyard grass (1 May to 31 Aug; 10 lbs/acre).

NOTE: TO BE USED FOR STORMWATER BMPS

Grasses & Grass-like Species - Herbaceous Perennial; Stormwater Management

The hardy inexpensive grass and grass-like species are ideal for retention basins that may have high salt inflows and where mowing may be required. Mix formulations are subject to change without notice depending on the availability of existing and new products. While the formula may change, the guiding philosophy and function of the mix will not.

P-103

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

GRAVEL WETLAND #103
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 – 034

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

P1

MAINTENANCE REQUIREMENTS

ACTIVITY	FREQUENCY
CLOGGING AND SYSTEM PERFORMANCE	
INSPECT INLETS AND OUTLETS TO ENSURE GOOD CONDITION AND NO EVIDENCE OF DETERIORATION. CHECK TO SEE IF HIGH-FLOW BYPASS IS FUNCTIONING. REMEDY: REPAIR OR REPLACE ANY DAMAGED STRUCTUAL PARTS, INLETS AND OUTLETS. CLEAR OR REMOVE DEBRIS OR RESTRICTIONS.	ANNUALLY, MORE FREQUENTLY IN THE FIRST YEAR OF OPERATION
CHECK FOR INTERNAL EROSION, EVIDENCE OF SHORT-CIRCUITING, AND ANIMAL BURROWS. REMEDY: SOIL EROSION FROM SHORT-CIRCUITING OR ANIMAL BOROUGHS SHOULD BE REPAIRED WHEN THEY OCCUR.	
CHECK THAT THE SYSTEM IS FULLY DRAINING WITHIN A 24-48 HOUR PERIOD AFTER RAIN EVENTS. REMEDY: REPAIR OR RESTORE HYDRAULIC INLET OR OUTLET CONFIGUARTION.	
VEGETATION	
CHECK FOR ROBUST VEGETATION COVERAGE THROUGHOUT THE SYSTEM AND DEAD OR DYING PLANTS REMEDY: VEGETATION SHOULD COVER > 75% OF THE SYSTEM AND SHOULD BE RESEEDED AND CARED FOR AS NEEDED	ANNUALLY, OR AS NEEDED
CUT AND REMOVE VEGETATION FROM GRAVEL WETLAND SYSTEM AND FOREBAY IN ORDER TO MAINTAIN NITROGEN REMOVAL PERFORMANCE REMEDY: THE VEGETATION SHOULD BE CUT AND REMOVED FROM THE SYSTEM TO PREVENT NITROGEN FROM CYCLING BACK INTO THE SYSTEM	ONCE EVERY 3 YEARS

3/8" WASHED CRUSHED STONE*

SIEVE SIZE	% PASSING BY WEIGHT
1/2"	100
3/8"	95 – 100
# 4	22 – 55
# 8	0 – 10

* EQUIVALENT TO STANDARD WASHED STONE – SECTION 702 OF NHDOT NHDOT STANDARD SPECIFICATIONS

1-1/2" WASHED CRUSHED STONE*

SIEVE SIZE	% PASSING BY WEIGHT
2"	100
1-1/2"	90 – 100
1"	20 – 55
1/2"	0 -15
3/8"	0 -5

* EQUIVALENT TO STANDARD WASHED STONE – SECTION 702 OF NHDOT NHDOT STANDARD SPECIFICATIONS

WETLAND SOIL

SIEVE SIZE	% PASSING BY WEIGHT
0.5	100
#10	90 – 75
#100	40 – 50
#200	25 -50
SIEVE SIZE	**% PASSING TOLERANCES**
0.5	±10.0
#10	±5.0
#100	±5.0
#200	±5.0

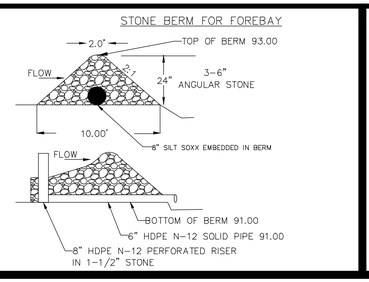
DESIGN REFERENCES

1 UNH STORMWATER CENTER

CONSTRUCTION NOTE: THE DESIGN ENGINEER IS TO BE ON SITE PRIOR TO AND DURING THE PLACEMENT OF THE RESERVOIR STONE, AND TO WITNESS THE INSTALLATION OF THE UNDER-DRAIN AND INTER-CHAMBER PIPES. PLEASE PROVIDE 24 HOURS NOTICE PRIOR TO REQUESTED INSPECTION. A LETTER CERTIFYING AS TO THE CONSTRUCTION BY THE OWNER AND DESIGN ENGINEER IS REQUIRED AS A CONDITION OF THE ALTERATION OF TERRAIN PERMIT AND THE CITY OF DOVER

P2

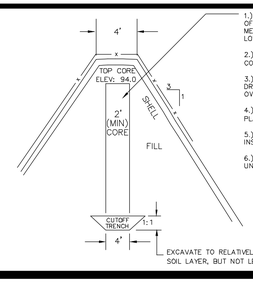
STONE BERM FOR FOREBAY



P3

LOW PERMEABILITY MATERIAL GRADATION

SIEVE SIZE	% PASSING BY WEIGHT
#4	95 – 100
#40	60 – 95
#100	40 – 60
#200	25 – 45



1.) 2" CORE IS TO BE CONSTRUCTED OF COMPACTED LOAM MATERIAL MEETING THE REQUIREMENT OF THE LOW PERM SPECIFICATION

2.) CORE IS TO BE INSTALLED & COMPACTED IN 12" LIFTS.

3.) INSTALLATION OF ENTIRE DRAINAGE STRUCTURE IS TO BE OVERSEEN BY DESIGN ENGINEER.

4.) GENERAL FILL MATERIALS ARE TO PLACED & COMPACTED IN 12" LIFTS.

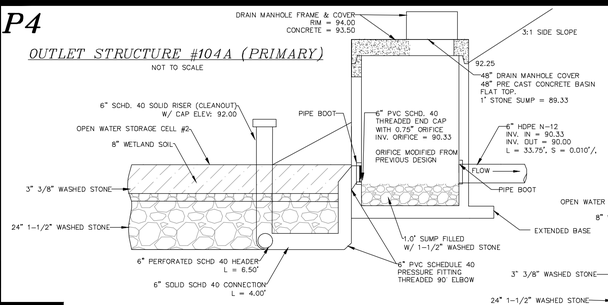
5.) GENERAL FILL MATERIAL MAY BE INSTALLED USING ONSITE MATERIALS.

6.) CORE IS TO BE CONSTRUCTED UNDERNEATH THE PROPOSED SPILLWAY.

P4

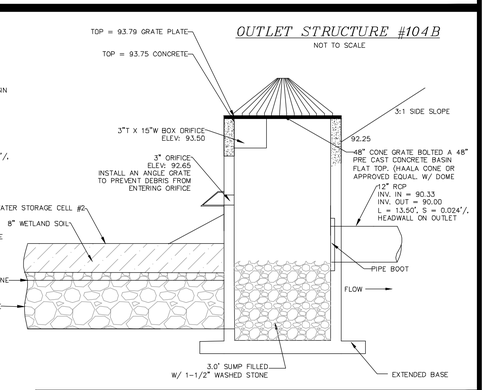
OUTLET STRUCTURE #104A (PRIMARY)

NOT TO SCALE



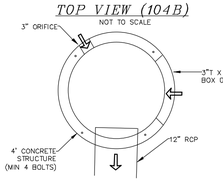
OUTLET STRUCTURE #104B

NOT TO SCALE



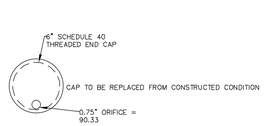
TOP VIEW (104B)

NOT TO SCALE



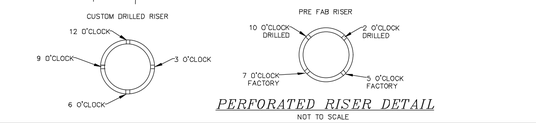
CAP WITH CONTROL ORIFICE

NOT TO SCALE

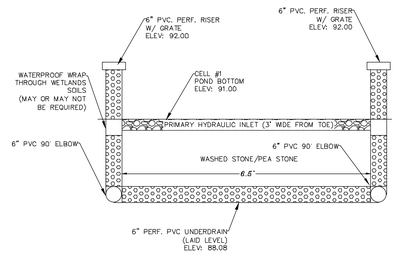


PERFORATED RISER DETAIL

NOT TO SCALE



P5

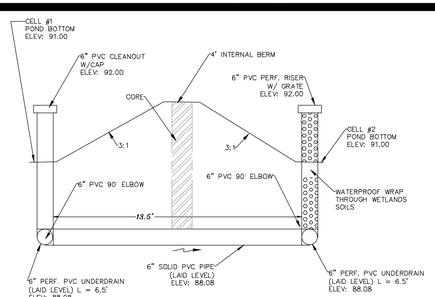


GRAVEL WETLAND INLET SYSTEM

NOT TO SCALE

NOTE: THERE IS NO WETLAND SOIL IN THE GRAVEL WETLAND INLET SYSTEM

P6



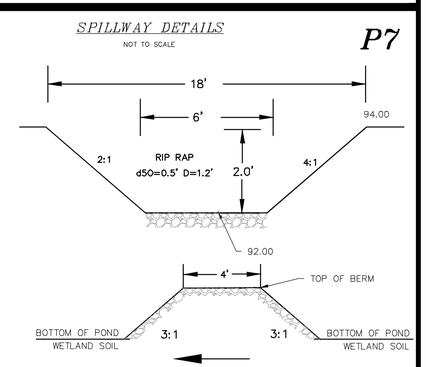
GRAVEL WETLAND CONNECTION SYSTEM

NOT TO SCALE

P7

SPILLWAY DETAILS

NOT TO SCALE



GRAVEL WETLAND CELL SPILLWAY PROFILE

P8

Retention Basin Floor Mix - Low Maintenance - ERNMX-126

	Botanical Name	Common Name	Price/Lb
20.00 %	*Panicum clandestinum, 'Tioga*	Deertongue, 'Tioga	22.00
20.00 %	*Panicvalia dichana, Hutz*	Alkaligrass, Hutz	4.56
18.00 %	*Elymus virginicus, Madison-NY Ecotype*	Virginia Wildrye, Madison-NY Ecotype	9.96
15.00 %	*Agrostis stolonifera, 'Pennacross'*	Creeping Bentgrass, 'Pennacross'	14.40
15.00 %	*Poa palustris*	Fowl Bluegrass	16.80
10.00 %	*Carex haltoidea, PA Ecotype*	Fox Sedge, PA Ecotype	28.80
1.00 %	*Carex scoparia, PA Ecotype*	Blunt Broom Sedge, PA Ecotype	81.60
1.00 %	*Juncus effusus*	Soft Rush	48.00
100.00 %		Mix Price/Lb Bulk:	$15.98

Seeding Rate: 20-40 lbs per acre, or 0.5-1 lb/1,000 sq ft with a cover crop. For a cover crop use one of the following: grain rye (1 Sep to 30 Apr; 30 lbs/acre), Japanese millet (1 May to 31 Aug; 10 lbs/acre), or barnyard grass (1 May to 31 Aug 10 lbs/acre).

NOTE: TO BE USED FOR STORMWATER BMPS

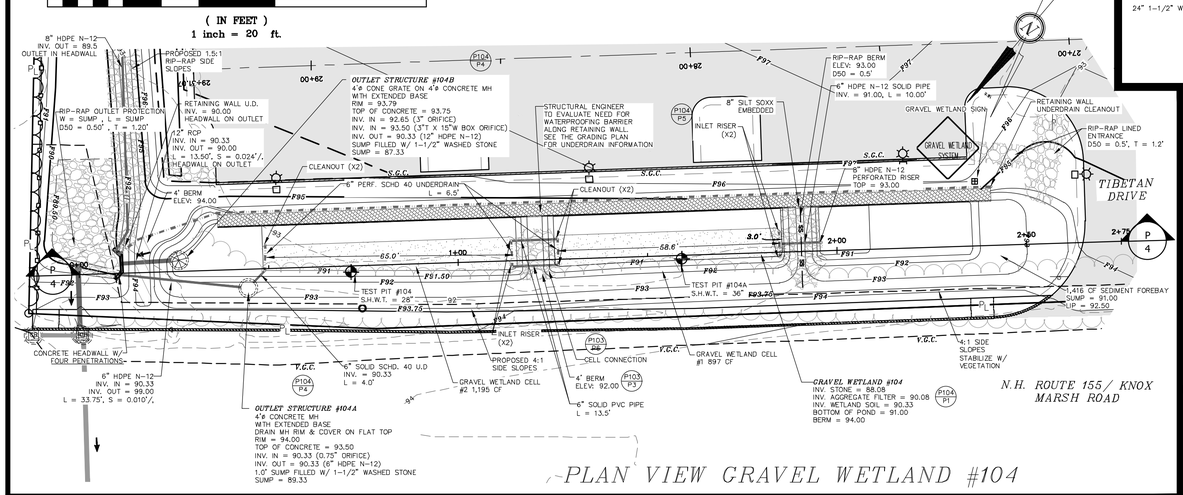
Grasses & Grass-like Species - Herbaceous Perennial; Stormwater Management

The hardy inexpensive grass and grass-like species are ideal for retention basins that may have high salt inflows and where mowing may be required. Mix formulations are subject to change without notice depending on the availability of existing and new products. While the formula may change, the guiding philosophy and function of the mix will not.

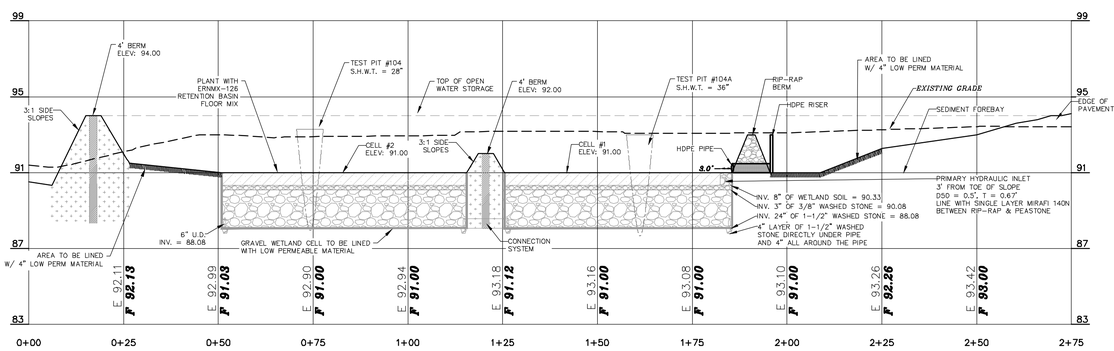
GRAPHIC SCALE



(IN FEET)
1 inch = 20 ft.

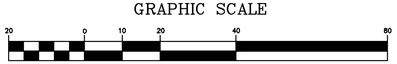


PLAN VIEW GRAVEL WETLAND #104



SECTION OF GRAVEL WETLAND #104

GRAPHIC SCALE



(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

GRAVEL WETLAND #104
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 – 034

STATE OF NEW HAMPSHIRE – KENNETH A. BERRY No. 14243 – PROFESSIONAL ENGINEER

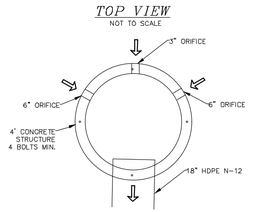
P-104

SHEET 21 OF 60

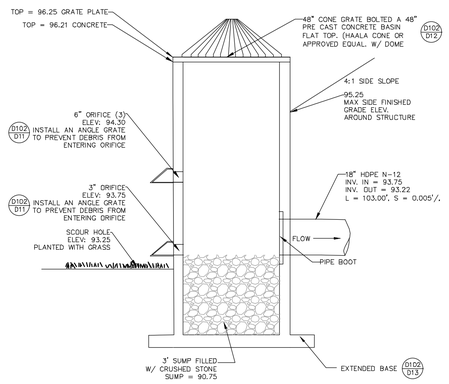
NOT FOR CONSTRUCTION

P1

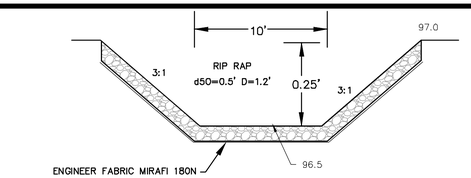
TOP VIEW
NOT TO SCALE

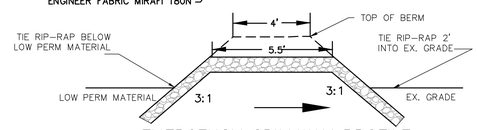


OUTLET STRUCTURE #105
NOT TO SCALE



P2



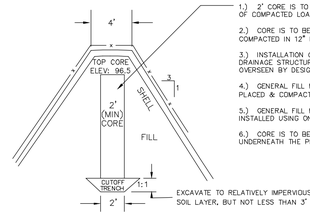


EMERGENCY SPILLWAY PROFILE

SPILLWAY DETAILS

NOT TO SCALE

P3



1.) 2' CORE IS TO BE CONSTRUCTED OF COMPACTED LOAM MATERIAL.

2.) CORE IS TO BE INSTALLED & COMPACTED IN 12" LIFTS.

3.) INSTALLATION OF ENTIRE DRAINAGE STRUCTURE IS TO BE OVERSEEN BY DESIGN ENGINEER.

4.) GENERAL FILL MATERIALS ARE TO PLACED & COMPACTED IN 12" LIFTS.

5.) GENERAL FILL MATERIAL MAY BE INSTALLED USING ONSITE MATERIALS.

6.) CORE IS TO BE CONSTRUCTED UNDERNEATH THE PROPOSED SPILLWAY.

EXCAVATE TO RELATIVELY IMPERVIOUS SOIL LAYER, BUT NOT LESS THAN 3'

LOW PERMEABILITY MATERIAL GRADATION

SIEVE SIZE	% PASSING BY WEIGHT
#4	95 – 100
#40	60 – 95
#100	40 – 60
#200	25 – 45

P4

Retention Basin Floor Mix - Low Maintenance - ERNMX-126

	Botanical Name	Common Name	Price/Lb
20.00 %	*Panicum clandestinum, Tioga*	Deertongue, Tioga	22.68
20.00 %	*Perennials alabaxs, Fults*	Alkaligrass, Fults	4.56
18.00 %	*Elymus virginicus, Madison-NY Ecotype*	Virginia Wildrye, Madison-NY Ecotype	9.96
15.00 %	*Agrostis stolonifera, 'Penncross'*	Creeping Bentgrass, 'Penncross'	14.40
15.00 %	*Poa palustris*	Fowl Bluegrass	16.80
10.00 %	*Carex vulpinoidea, PA Ecotype*	Fox Sedge, PA Ecotype	28.80
1.00 %	*Carex scoparia, PA Ecotype*	Blunt Broom Sedge, PA Ecotype	83.60
1.00 %	*Juncus effusus*	Soft Rush	46.00
100.00 %		**Mix Price/Lb Bulk:**	**$15.98**

Seeding Rate: 20-40 lbs per acre, or 0.5-1 lb/1,000 sq ft with a cover crop. For a cover crop use one of the following: grain rye (1 Sep to 30 Apr; 30 lbs/acre), Japanese millet (1 May to 31 Aug; 10 lbs/acre), or barnyard grass (1 May to 31 Aug; 10 lbs/acre).

NOTE: TO BE USED FOR STORMWATER BMPS

Grasses & Grass-like Species - Herbaceous Perennial; Stormwater Management

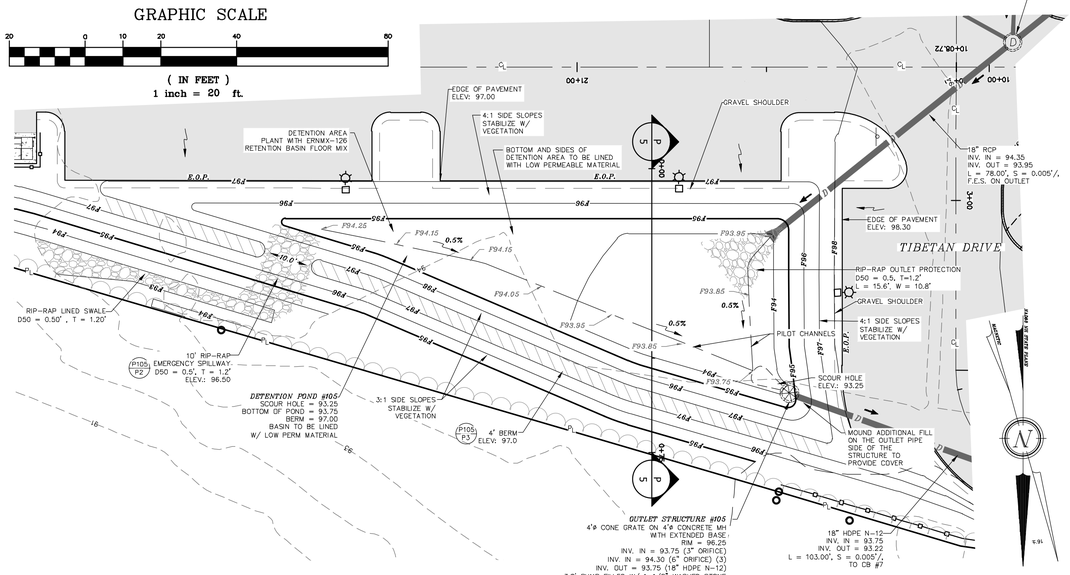
The hardy inexpensive grass and grass-like species are ideal for retention basins that may have high salt inflows and where mowing may be required. Mix formulations are subject to change without notice depending on the availability of existing and new products. While the formula may change, the guiding philosophy and function of the mix will not.

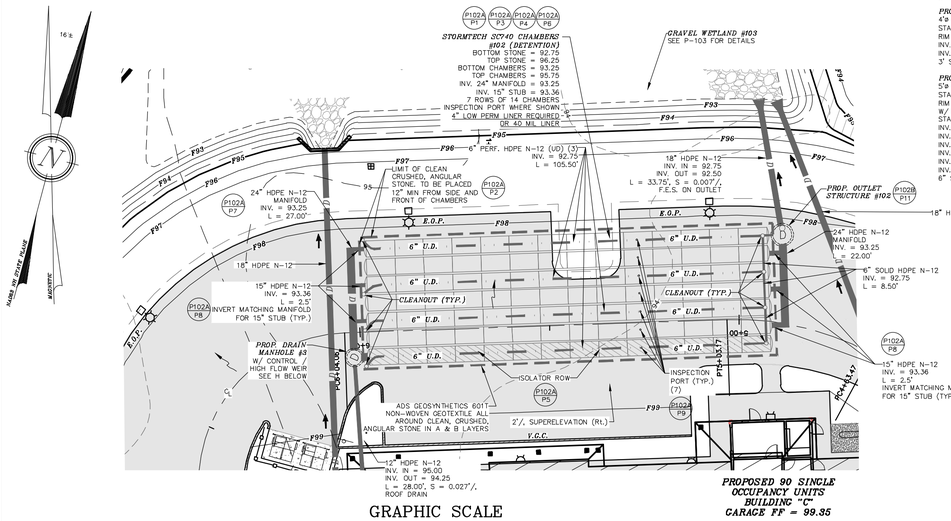
PLAN VIEW DETENTION POND #105

GRAPHIC SCALE

20 0 10 20 40 60

(IN FEET)
1 inch = 20 ft.


DRAIN MANHOLE #4
22'20+01
00+12
00+01
EDGE OF PAVEMENT ELEV: 97.00
GRAVEL SHOULDER
4:1 SIDE SLOPES STABILIZE W/ VEGETATION
DETENTION AREA PLANT WITH ERNMX-126 RETENTION BASIN FLOOR MIX
BOTTOM AND SIDES OF DETENTION AREA TO BE LINED WITH LOW PERMEABLE MATERIAL
E.O.P.
16" RCP INV. IN = 94.35 INV. OUT = 93.95 L = 78.00', S = 0.005'/, F.E.S. ON OUTLET
EDGE OF PAVEMENT ELEV: 98.30
TIBETAN DRIVE
RIP-RAP OUTLET PROTECTION D50 = 0.5, T=1.2' L = 15.6', W = 10.8'
GRAVEL SHOULDER
PILOT CHANNELS
4:1 SIDE SLOPES STABILIZE W/ VEGETATION
SCOUR HOLE ELEV.: 93.25
MOUND ADDITIONAL FILL ON THE OUTLET PIPE SIDE OF THE STRUCTURE TO PROVIDE COVER
RIP-RAP LINED SWALE D50 = 0.50' , T = 1.20'
10' RIP-RAP EMERGENCY SPILLWAY D50 = 0.5', T = 1.2' ELEV: 96.50
P105 P2
DETENTION POND #105 SCOUR HOLE = 93.25 BOTTOM OF POND = 93.75 BERM = 97.00 BASIN TO BE LINED W/ LOW PERM MATERIAL
3:1 SIDE SLOPES STABILIZE W/ VEGETATION
4' BERM ELEV: 97.0
OUTLET STRUCTURE #105 4'ø CONE GRATE ON 4'ø CONCRETE MH WITH EXTENDED BASE: RIM = 96.25 INV. IN = 93.75 (3" ORIFICE) INV. IN = 94.30 (6" ORIFICE) (3) INV. OUT = 93.75 (18" HDPE N-12) 3.0' SUMP FILLED W/ 1-1/2" WASHED STONE SUMP = 90.75
18" HDPE N-12 INV. IN = 93.75 INV. OUT = 93.22 L = 103.00', S = 0.005'/, TO CB #7
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GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

A REPRESENTATIVE FROM BS&E WILL BE ON SITE DURING THE CONSTRUCTION OF THE STORMTECH SYSTEM

PROPOSED 90 SINGLE OCCUPANCY UNITS BUILDING "C" CARAGE FF = 99.35

PLAN VIEW STORMTECH SC-740 CHAMBERS DETENTION POND #102 SEE SHEET 102B FOR DETAILS

STRUCTURES TABLE:

PROP. DRAIN MANHOLE #3
4'ø STRUCTURE W/ NH STANDARD RIM
STA: 6+01.75 (Lt. 6.65')
RIM = 98.68 (FLUSH)
INV. IN = 94.25 (12" HDPE N-12) (BUILDING C ROOF)
INV. OUT = 93.25 (24" HDPE N-12) (2) (P-102)
3' SUMP = 90.25

PROP. OUTLET STRUCTURE #102 (POND 102P)
5'ø STRUCTURE W/ NH STANDARD RIM
STA: 4+91.35 (Rt. 23.10')
RIM = 98.10 (FLUSH)
W/ INTERNAL 18" STACK
STACK TOP = 95.75
INV. IN = 92.75 (2" ORIFICE AT BASE OF STACK)
INV. IN = 92.75 (6" HDPE UNDERDRAIN)
INV. IN = 93.36 (15" HDPE N-12) (MANIFOLD)
INV. IN = 93.25 (24" HDPE N-12) (MANIFOLD)
INV. IN = 92.75 (6" HDPE N-12) (U.D.)
INV. OUT = 92.75 (18" HDPE N-12) (GW #103)
6" SUMP FILLED W/ 1 1/2" STONE

P1

1. ALL DESIGN SPECIFICATIONS FOR STORMTECH SC-740 CHAMBERS SHALL BE IN ACCORDANCE WITH THE STORMTECH DESIGN MANUAL, ADVANCED DRAINAGE SYSTEM, INC (ADS STORMTECH)
2. THE INSTALLATION OF STORMTECH SC-740 CHAMBERS SHALL BE IN ACCORDANCE WITH THE LATEST STORMTECH INSTALLATION INSTRUCTIONS
3. THE CONTRACTOR IS ADVISED TO REVIEW AND UNDERSTAND THE INSTALLATION INSTRUCTIONS PRIOR TO BEGINNING SYSTEM INSTALLTION. CALL **1-888-892-2694** OR VISIT **WWW.STORMTECH.COM** TO RECIEVE A COPY OF THE LATEST STORMTECH INSTALLATION INSTRUCTIONS
4. CHAMBERS SHALL MEET THE DESIGN REQUIREMENTS AND LOAD FACTORS SPECIFIED IN SECTION 12.12 OF THE LATEST EDITION OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

SC-740 NOTES

P2

ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

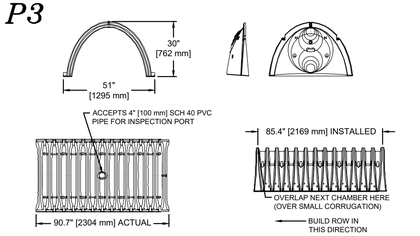
	MATERIAL LOCATION	DESCRIPTION	AASHTO M43 DESIGNATION[1]	COMPACTION/DENSITY REQUIREMENT
D	FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISH GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THIS LAYER.	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE 'B' LAYER TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THIS LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, < 35% FINES. MOST PAVEMENT SUB-BASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTION AFTER 12" (305 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) LIFTS TO A MIN. 95% STANDARD PROCTOR DENSITY. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs [53 kN]. DYNAMIC FORCE NOT TO EXCEED 20,000 lbs [89 kN]
B	EMBEDMENT STONE SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE UP TO THE 'C' LAYER.	CLEAN, CRUSHED, ANGULAR STONE, NOMINAL SIZE DISTRIBUTION BETWEEN 3/4 - 2 INCH [19 - 51 mm]	3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	FOUNDATION STONE BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE, NOMINAL SIZE DISTRIBUTION BETWEEN 3/4 - 2 INCH [19 - 51 mm]	3, 35, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A 95% STANDARD PROCTOR DENSITY*.

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE.

2. AS AN ALTERNATE TO PROCTOR TESTING AND FIELD DENSITY MEASUREMENTS ON OPEN GRADED STONE, STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9in [229 mm] (MAX) LIFTS USING TWO FULL COVERAGES WITH AN APPROPRIATE COMPACTOR.

STORMTECH ACCEPTABLE FILL MATERIALS

P3



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W x H x INSTALLED LENGTH)	51.0" x 30.0" x 85.4" [1295 mm x 762 mm x 2169 mm]
CHAMBER STORAGE	45.9 CUBIC FEET [1.30 m3]
MINIMUM INSTALLED STORAGE	74.9 CUBIC FEET [2.12 m3]
WEIGHT	75 lbs. [33.6 kg]

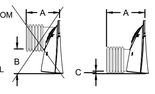
STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"

PART#	STUB	A	B	C
SC740EPE06T	6" [150 mm]	10.90" [277 mm]	18.50" [470 mm]	N/A
SC740EPE06B	6" [150 mm]	10.90" [277 mm]	N/A	0.50" [13 mm]
SC740EPE08T	8" [200 mm]	12.20" [310 mm]	N/A	N/A
SC740EPE08B	8" [200 mm]	12.20" [310 mm]	N/A	0.60" [15 mm]
SC740EPE10T	10" [250 mm]	13.40" [340 mm]	14.50" [368 mm]	N/A
SC740EPE10B	10" [250 mm]	13.40" [340 mm]	N/A	0.70" [18 mm]
SC740EPE12T	12" [300 mm]	14.70" [373 mm]	12.50" [318 mm]	N/A
SC740EPE12B	12" [300 mm]	14.70" [373 mm]	N/A	1.20" [30 mm]
SC740EPE15T	15" [375 mm]	18.40" [467 mm]	9.00" [229 mm]	N/A
SC740EPE15B	15" [375 mm]	18.40" [467 mm]	N/A	1.30" [33 mm]
SC740EPE18T	18" [450 mm]	19.70" [500 mm]	5.00" [127 mm]	N/A
SC740EPE18B	18" [450 mm]	19.70" [500 mm]	N/A	1.60" [41 mm]
*SC740EPE24B	24" [600 mm]	18.50" [470 mm]	N/A	0.10" [3 mm]

NOTE: ALL DIMENSIONS ARE NOMINAL

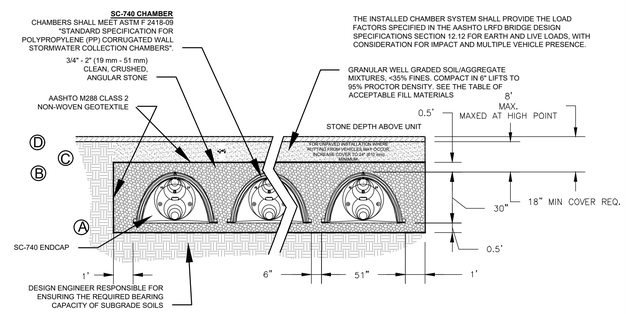
ALL STUBS, EXCEPT FOR THE SC740EPE24B ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

*FOR THE SC740EPE24B THE 24" [600 mm] STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 1.75" [44 mm]. BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.



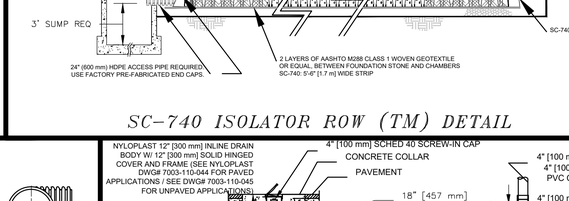
SC-740 TECHNICAL SPEC.

P4



SC-740 STANDARD CROSS SECTION

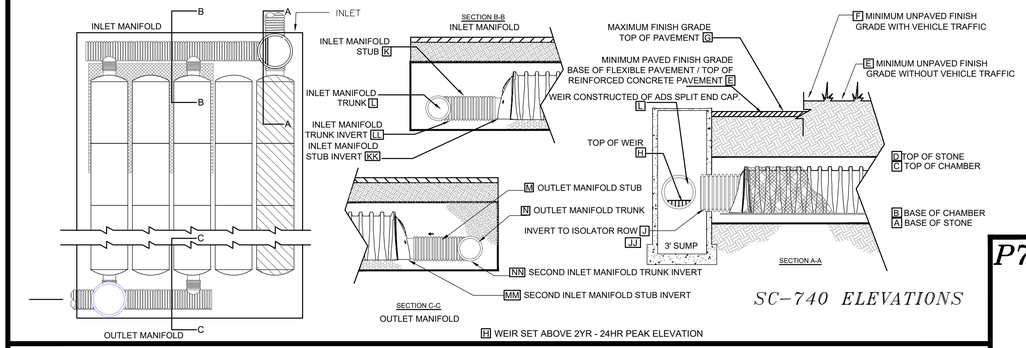
P5



SC-740 ISOLATOR ROW (TM) DETAIL

P6

	A	B	C	D	E	F	G	H	J	JJ	K	KK	L	LL	M	MM	N	NN
BED 1/ONLY	92.75	93.25	95.75	96.25	98.05	N/A	98.72	94.00	93.25	24" HDPE	15" HDPE	93.36	24" HDPE	93.25	15" HDPE	93.36	24" HDPE	93.25



H WEIR SET ABOVE 2YR - 24HR PEAK ELEVATION

SC-740 ELEVATIONS

CONSTRUCTION NOTE: THE DESIGN ENGINEER IS TO BE ON SITE PRIOR TO AND DURING THE PLACEMENT OF THE RESERVOIR STONE, AND TO WITNESS THE INSTALLATION OF THE UNDER-DRAIN AND CHAMBERS. PLEASE PROVIDE 24 HOURS NOTICE PRIOR TO REQUESTED INSPECTION. A LETTER CERTIFYING AS TO THE CONSTRUCTION BY THE OWNER AND DESIGN ENGINEER IS REQUIRED AS A CONDITION OF THE ALTERATION OF TERRAIN PERMIT AND THE CITY OF DOVER

EXISTING LEGEND:

- IRON BOUND/IRON ROD (FND)
- IRON PIPE (FND)
- STONE BOUND (FND)
- UTILITY POLE / GUY WIRE
- SINGLE POST SIGN
- TEMPORARY BENCHMARK
- TESTHOLE
- PERIMETER BOUNDARY LINE
- BUILDING SETBACK LINE
- OVERHEAD UTILITIES (OHU)
- EXISTING CONTOUR MINOR (116)
- EXISTING CONTOUR MAJOR (115)
- POORLY DRAINED WETLAND LINE
- 50' WETLAND BUFFER LINE
- TREE LINE
- FND FOUND
- TYP TYPICAL
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS

PROPOSED LEGEND:

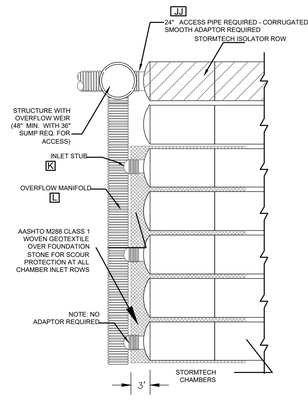
- TEMPORARY BENCHMARK (T.B.M.)
- E101 / E6 DETAIL SHEET / DETAIL
- P176 CONTOUR MINOR, PROPOSED
- P175 CONTOUR MAJOR, PROPOSED
- ROAD CENTERLINE
- SHOULDER
- PAVEMENT SEAM
- DRAIN CULVERT W/ FLARED END SECTION (F.E.S.)
- UNDERDRAIN
- GUARD RAIL
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- RETAINING WALL
- STORMTECH CHAMBERS/ISOLATOR ROW
- DRAIN MANHOLE W/STRUCTURE
- CATCH BASIN W/ STRUCTURE
- STORMWATER BMP OUTLET STRUCTURE

1-1/2" WASHED CRUSHED STONE * (AASHTO NO. 4)

SIEVE SIZE	% PASSING BY WEIGHT
2"	100
1-1/2"	90 – 100
1"	20 – 55
1/2"	0 –15
3/8"	0 –5

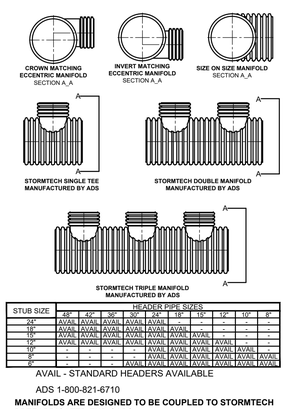
* EQUIVALENT TO STANDARD WASHED STONE – SECTION 702 OF NHDOT NHDOT STANDARD SPECIFICATIONS

P7



SC-740 MANIFOLD DETAIL

P8



STUB SIZE	HEADER PIPE SIZES								
	48"	42"	36"	30"	24"	18"	15"	12"	10"	8"
24"	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	-	-	-	-	-
18"	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	-	-	-	-
15"	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	-	-	-
12"	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	-	-
10"	-	-	-	-	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	-
8"	-	-	-	-	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL
6"	-	-	-	-	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL

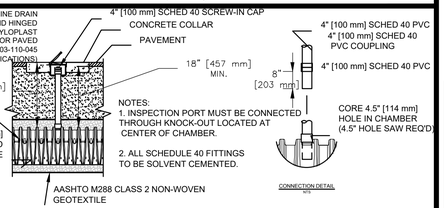
AVAIL - STANDARD HEADERS AVAILABLE

ADS 1-800-821-6710

MANIFOLDS ARE DESIGNED TO BE COUPLED TO STORMTECH PREFABRICATED END CAPS.
WHEN USING STANDARD END CAPS, CORRUGATED PIPE UP TO 18 INCHES CAN BE INSERTED DIRECTLY INTO THE END CAP. FOR 24" INLET PIPES, A CORRUGATED TO SMOOTH PIPE ADAPTER IS REQUIRED.

MANIFOLDS

P9



SC-740 INSPECTION PORT DETAIL

P10

INSPECTION AND MAINTENANCE:

DUE TO THE CRITICAL NATURE OF INSPECTION AND MAINTENANCE STORMTECH SYSTEM AS DETAILED IN THE DESIGN MANUAL, ADVANCED DRAINAGE SYSTEM, INC (ADS STORMTECH) THE FOLLOWING THREE FIRMS ARE RECOMMENDED FOR THIS TASK. IT IS HIGHLY RECOMMENDED THAT THE OPERATOR OF THE PROPERTY HAVE A LONG TERM INSPECTION AND MAINTENANCE CONTACT WITH A FIRM THAT CAN COMPLETE THESE VITAL SERVICES.

AS FOR ISOLATOR ROW MAINTENANCE, CB MAINTENANCE, ETC., REGIONAL ADS REPRESENTATIVES RECOMMEND USING ANY OF THE FOLLOWING CONTACTS:

STORMWATER COMPLIANCE, LLC;
ATTN: NATHAN MARLES, 1-877-271-9055; NMARLES@LIDTECH.COM
163 THADEUS STREET, PORTLAND, ME 04106
INFO@STORMWATERCOMP.COM

TED BERRY COMPANY;
ATTN: DAVE BEAUCHAMP, 207-897-3348; DAVID.BEAUCHAMP@TEDBERRYCOMPANY.COM
521 FEDERAL ROAD, LIVERMORE, ME 04253
INFL@TEDBERRYCOMPANY.COM

BELLEMORE SEPTIC, SEWER, & DRAIN;
ATTN: RAY BELLEMORE, 603-641-6640; RAYMOND@BELLEMORE.COM
PO BOX 10369, BEDFORD, NH 03110

CONTACT AARON CHEEVER, P.E., ADVANCE DRAINAGE SYSTEMS, INC.
AARON.CHEEVER@ADS-PIPE.COM 1-978-302-0650
FOR PRODUCT AND PRICING

P-102A

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

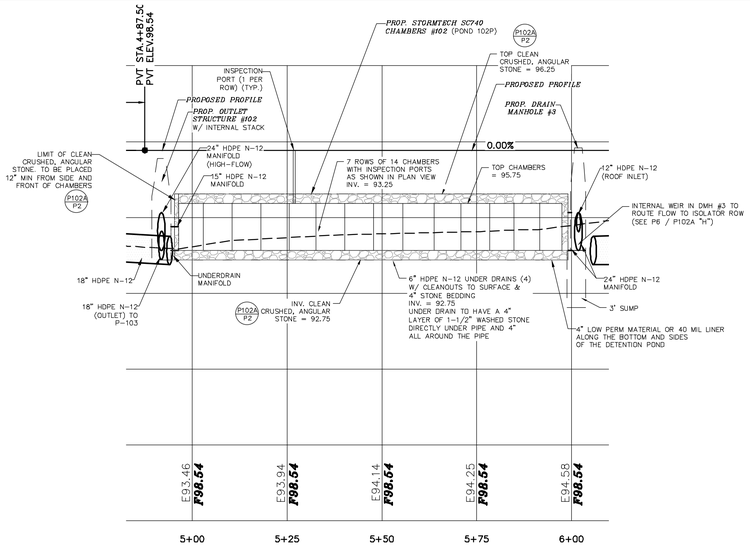
STORMTECH SC740 CHAMBER DETENTION POND #102A
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 – 034

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14245
PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION



SECTION OF STORMTECH DETENTION #102

A 102 A 102

GRAPHIC SCALE

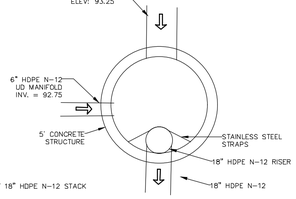
20 0 10 20 40 80

(IN FEET) VERTICAL SCALE: 1" = 4'
1 inch = 20 ft.

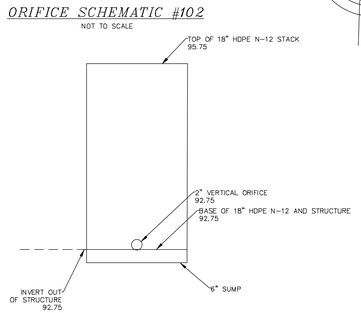
LOW PERMEABILITY MATERIAL GRADATION

SIEVE SIZE	% PASSING BY WEIGHT
#4	95 – 100
#40	60 – 95
#100	40 – 60
#200	25 – 45

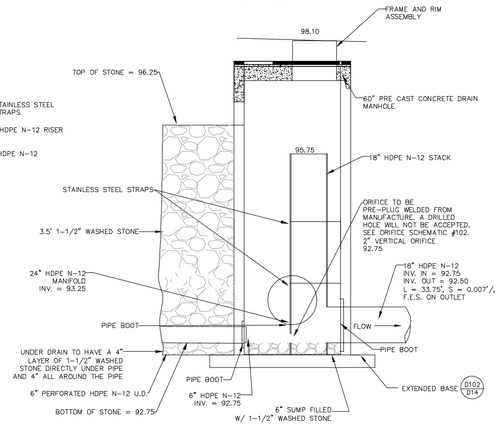
P11



TOP VIEW
NOT TO SCALE (NO FRAME AND RIM IN THIS VIEW)



ORIFICE SCHEMATIC #102
NOT TO SCALE



OUTLET STRUCTURE #102
NOT TO SCALE

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

STORMTECH SC740 CHAMBER DETENTION POND #102B DETAILS
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

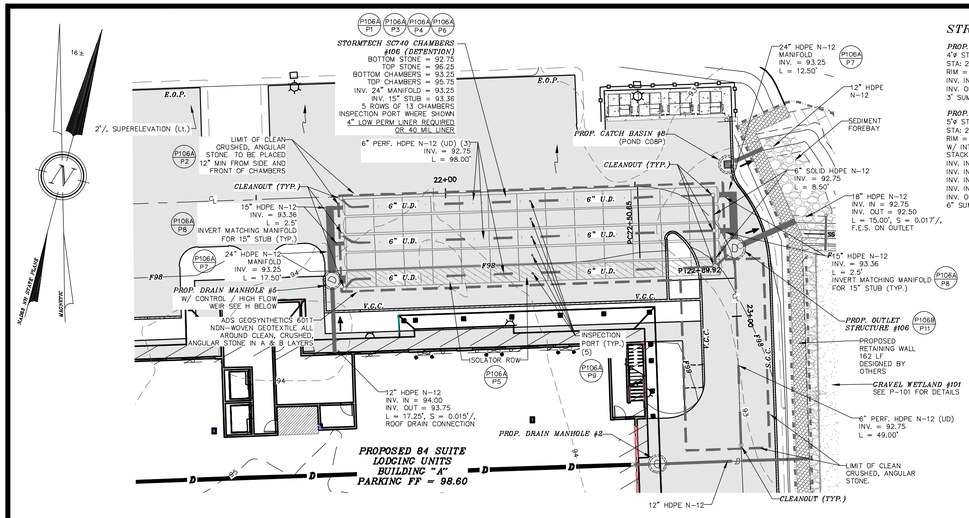
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

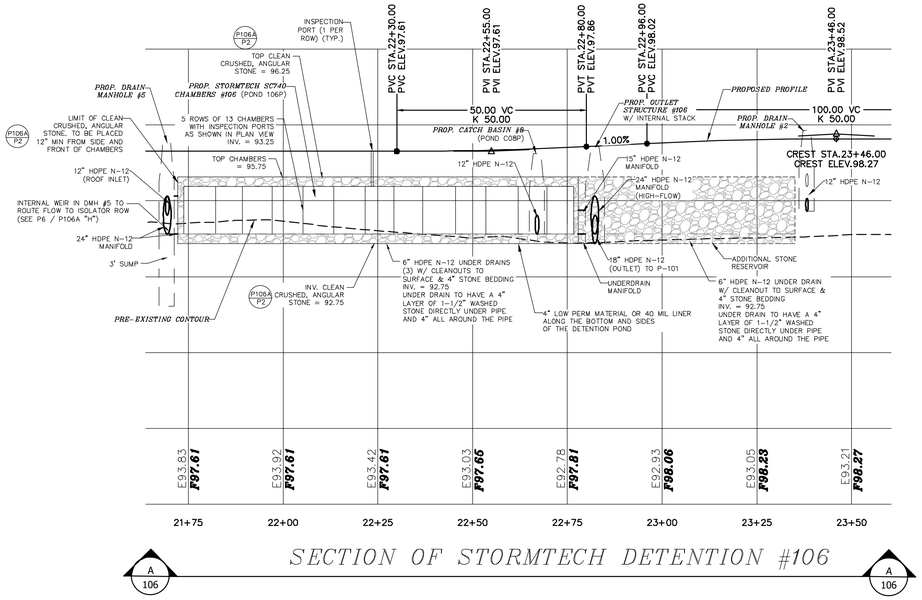
SCALE : 1 IN. EQUALS 20 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 – 034

STATE OF NEW HAMPSHIRE – KENNETH A. BERRY No. 14015 LICENSED PROFESSIONAL ENGINEER

P-102B

NOT FOR CONSTRUCTION


P106A P1
P106A P3
P108A P4
P106A P5
STORMTECH SC-740 CHAMBERS
#106 (DETENTION)
BOTTOM STONE = 92.75
TOP STONE = 96.25
BOTTOM CHAMBERS = 93.25
TOP CHAMBERS = 95.75
INV. 24" MANIFOLD = 93.25
INV. 15" STUB = 93.36
5 ROWS OF 13 CHAMBERS
INSPECTION PORT WHERE SHOWN
4" LOW PERM LINER REQUIRED
OR 40 MIL LINER
E.O.P.
2'/- SUPERELEVATION (Lt.)
LIMIT OF CLEAN CRUSHED, ANGULAR STONE. TO BE PLACED 12" MIN FROM SIDE AND FRONT OF CHAMBERS
P106A P2
6" PERF. HDPE N-12 (UD) (3)
INV. = 92.75
L = 98.00'
22+00
CLEANOUT (TYP.)
15" HDPE N-12
INV. = 93.36
L = 2.5'
INVERT MATCHING MANIFOLD FOR 15" STUB (TYP.)
P106A P6
24" HDPE N-12 MANIFOLD
INV. = 93.25
L = 17.50'
P106A P7
PROP. DRAIN MANHOLE #5
W/ CONTROL // HIGH FLOW WEIR SEE H BELOW
ADS GEOSYNTHETICS 601T NON-WOVEN GEOTEXTILE ALL AROUND CLEAN, CRUSHED, ANGULAR STONE IN A & B LAYERS
6" U.D.
V.G.C.
INSPECTION PORT (TYP.) (5)
P106A P5
ISOLATOR ROW
P106A P9
12" HDPE N-12
INV. IN = 94.00
INV. OUT = 93.75
L = 17.25', S = 0.015'/-
ROOF DRAIN CONNECTION
PROP. DRAIN MANHOLE #3
PROPOSED 84 SUITE LODGING UNITS BUILDING "A" PARKING FF = 98.60
PROP. CATCH BASIN #8
(POND CDSP)
24" HDPE N-12 MANIFOLD
INV. = 93.25
L = 12.50'
P106A P7
12" HDPE N-12
SEDIMENT FOREBAY
18" HDPE N-12
INV. IN = 92.75
INV. OUT = 92.50
L = 15.00', S = 0.017'/-,
F.E.S. ON OUTLET
P106A P8
15" HDPE N-12
INV. = 93.36
L = 2.5'
INVERT MATCHING MANIFOLD FOR 15" STUB (TYP.)
PROP. OUTLET STRUCTURE #106
P106B P11
PROPOSED RETAINING WALL 162 LF DESIGNED BY OTHERS
GRAVEL WETLAND #101
SEE P-101 FOR DETAILS
6" PERF. HDPE N-12 (UD)
INV. = 92.75
L = 49.00'
LIMIT OF CLEAN CRUSHED, ANGULAR STONE.
12" HDPE N-12
CLEANOUT (TYP.)
N/F 239 KNOX MARSH REALTY, LLC
N/F 243 KNOX MARSH REALTY, LLC
N/F 235 KNOX MARSH REALTY, LLC
N/F 231 KNOX MARSH REALTY, LLC
N/F 227 KNOX MARSH REALTY, LLC
N/F 223 KNOX MARSH REALTY, LLC
N/F 219 KNOX MARSH REALTY, LLC
N/F 215 KNOX MARSH REALTY, LLC
N/F



SECTION OF STORMTECH DETENTION #106

A 106 A 106

GRAPHIC SCALE

20 0 10 20 40 80

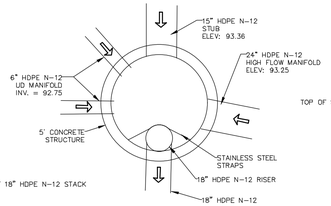
(IN FEET) VERTICAL SCALE: 1" = 4'
1 inch = 20 ft.

LOW PERMEABILITY MATERIAL GRADATION

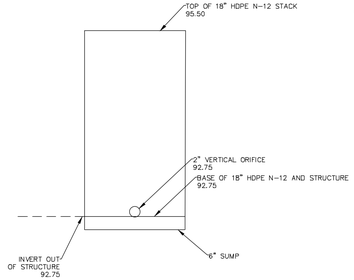
SIEVE SIZE	% PASSING BY WEIGHT
#4	95 – 100
#40	60 – 95
#100	40 – 60
#200	25 – 45

P11

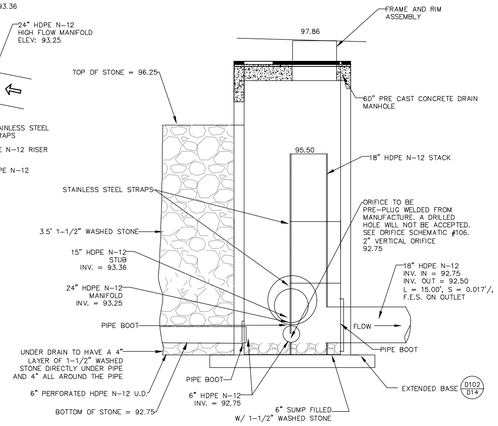
TOP VIEW
NOT TO SCALE (NO FRAME AND RIM IN THIS VIEW)



ORIFICE SCHEMATIC #106
NOT TO SCALE



OUTLET STRUCTURE #106
NOT TO SCALE



PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

STORMTECH SC740 CHAMBER DETENTION POND #106B DETAILS
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 – 034

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14045
LICENSED PROFESSIONAL ENGINEER

P–106B

NOT FOR CONSTRUCTION

Welcome to New Hampshire's Watershed Report Cards built from the 2018, 305(b)/303(d)

Each Watershed Report Card covers a single 12 digit Hydrologic Unit Code (HUC12), on average a 34 square mile area. Each Watershed Report Card has three components;

1. REPORT CARD - A one page card that summarizes the overall use support for Aquatic Life Integrity, Primary Contact (i.e. Swimming), and Secondary Contact (i.e. Boating) Designated Uses on every Assessment Unit ID (AUID) within the HUC12.
2. HUC 12 MAP - A map of the watershed with abbreviated labels for each AUID within the HUC12.
3. ASSESSMENT DETAILS - Anywhere from one to forty pages with the detailed assessment information for each and every AUID in the Report Card and Map.

How are the Surface Water Quality Assessment determinations made?

All readily available data with reliable Quality Assurance/Quality Control is used in the biennial surface water quality assessments. For a full understanding of how the Surface Water Quality Standards (Env-Wq 1700) are translated into surface water quality assessments we urge the reader to review the 2018 Consolidated Assessment and Listing Methodology (CALM) at https://www.des.nh.gov/organization/divisions/water/wmb/swqa/2018/documents/r-wd-19-04.pdf.

Where can I find more advanced mapping resources?

GIS files are available by assessment cycle at ftp://pubftp.nh.gov/DES/wmb/WaterQuality/SWQA/2018/GIS

I'd like to see the more raw water quality data?

The web mapping tool allows you to download the data used in the assessment of the primary contact and aquatic life designated uses by clicking on the "Data Access Waterbody Data (Aquatic Life and Swimming Uses)" link for any assessment unit. (https://www.des.nh.gov/organization/divisions/water/wmb/swqa/assessment-viewers.htm)

How are assessments coded in the report card?

Assessment outcomes are displayed on a color scale as well as an alpha numeric scale that provides additional distinctions for the designated use and parameter level assessments as outlined in the table below.

		Severe Not Supporting, Severe	**Poor** Not Supporting, Marginal	**Likely Bad** Insufficient Information – Potentially Not Supporting	**No Data** No Data	**Likely Good** Insufficient Information – Potentially Full Supporting	**Marginal** Full Support, Marginal	**Good** Full Support, Good
CATEGORY	**Description**							
Category 2	Meets standards						2-M or 2-OBS	2-G
Category 3	Insufficient Information			3-PNS	3-ND	3-PAS		
Category 4	Does not Meet Standards;							
4A	TMDL* Completed	4A-P	4A-M or 4A-T					
4B	Other enforceable measure will correct the issue.	4B-P	4B-M or 4B-T					
4C	Non-pollutant (i.e. exotic weeds)	4C-P	4C-M					
Category 5	TMDL^ Needed	5-P	5-M or 5-T					

* TMDL stands for Total Maximum Daily Load studies (http://des.nh.gov/organization/divisions/water/wmb/tmdl/index.htm)

WATERSHED 305(b) ASSESSMENT SUMMARY REPORT:

HUC 12 010600030903

HUC 12 NAME BELLAMY RIVER

(Locator map on next page only applies to this HUC12)

Assessment Cycle 2018

Good	Full Support Good
Marginal	Full Support Marginal
Likely Good	Insufficient Information – Potentially Full Support
No Data	No Data
Likely Bad	Insufficient Information – Potentially Not Support
Poor	Not Support Marginal
Severe	Not Support Severe



ASSESSMENT UNIT ID	MAP LABEL	ASSESSMENT UNIT NAME	AQUATIC LIFE	SWIMMING	BOATING	FISH CONSUMP.
NHEST600030903-01-01	E*01-01	BELLAMY RIVER NORTH	5-P	2-G	2-G	5-M
NHEST600030903-01-03	E*01-03	BELLAMY RIVER SOUTH CLEMENT POINT	5-P	2-G	2-G	5-M
NHEST600030903-01-04	E*01-04	BELLAMY RIVER SOUTH	5-P	2-G	2-G	5-M
NHIMP600030903-01	I*01	BELLAMY RIVER	3-ND	3-ND	3-ND	4A-M
NHIMP600030903-02	I*02	BELLAMY RIVER - SAWYERS MILL DAM POND	5-M	5-M	3-ND	4A-M
NHIMP600030903-03	I*03	CANNEY BROOK - WILDLIFE POND	3-ND	3-ND	3-ND	4A-M
NHIMP600030903-04	I*04	BELLAMY RIVER IV DAM	3-ND	3-ND	3-ND	4A-M
NHIMP600030903-05	I*05	KNOX MARSH BROOK	3-ND	3-ND	3-ND	4A-M
NHIMP600030903-06	I*06	UNNAMED BROOK - THORNWOOD COMMONS POND	3-ND	3-ND	3-ND	4A-M
NHIMP600030903-07	I*07	UNNAMED BROOK - BELLAMY RIVER WILDLIFE POND	3-ND	3-ND	3-ND	4A-M
NHIMP600030903-08	I*08	UNNAMED BROOK - FARM POND	3-ND	3-ND	3-ND	4A-M
NHIMP600030903-09	I*09	UNNAMED BROOK - WEBSTER BROOK DAM	3-ND	3-ND	3-ND	4A-M
NHIMP600030903-10	I*10	UNNAMED BROOK - FARM POND	3-ND	3-ND	3-ND	4A-M
NHLAK600030903-01	L*01	BARBADOES POND	3-ND	3-ND	3-ND	4A-M
NHLAK600030903-02	L*02	BELLAMY RESERVOIR	5-M	3-ND	3-ND	4A-M
NHLAK600030903-03	L*03	SWAINS LAKE	5-P	3-PNS	3-ND	4A-M
NHLAK600030903-04	L*04	WINKLEY POND	5-P	3-ND	3-ND	4A-M
NHLAK600030903-05	L*05	BRANCH MALLEGO BROOK POND	3-ND	3-ND	3-ND	4A-M
NHLAK600030903-06	L*06	FARM POND	3-ND	3-ND	3-ND	4A-M
NHLAK600030903-07	L*07	UNNAMED POND	3-ND	3-ND	3-ND	4A-M
NHRIV600030903-01	R*01	MADLA BROOK	5-P	3-ND	3-ND	4A-M
NHRIV600030903-02	R*02	MALLEGO BROOK	5-P	3-ND	3-ND	4A-M
NHRIV600030903-03	R*03	CALEF BROOK	3-ND	3-PAS	3-PAS	4A-M
NHRIV600030903-05	R*05	UNNAMED BROOK - TO SWAINS LAKE	3-ND	3-ND	3-ND	4A-M
NHRIV600030903-06	R*06	BELLAMY RIVER - UNNAMED BROOK	5-M	3-ND	3-ND	4A-M
NHRIV600030903-07	R*07	BELLAMY RIVER	5-P	4A-P	4A-P	4A-M
NHRIV600030903-08	R*08	BELLAMY RIVER - KELLY BROOK - KNOX MARSH BROOK	5-P	4A-P	3-PNS	4A-M
NHRIV600030903-09	R*09	BELLAMY RIVER - UNNAMED BROOK	5-M	4A-P	3-ND	4A-M

WATERSHED 305(b) ASSESSMENT SUMMARY REPORT:

HUC 12 010600030903

HUC 12 NAME BELLAMY RIVER

(Locator map on next page only applies to this HUC12)

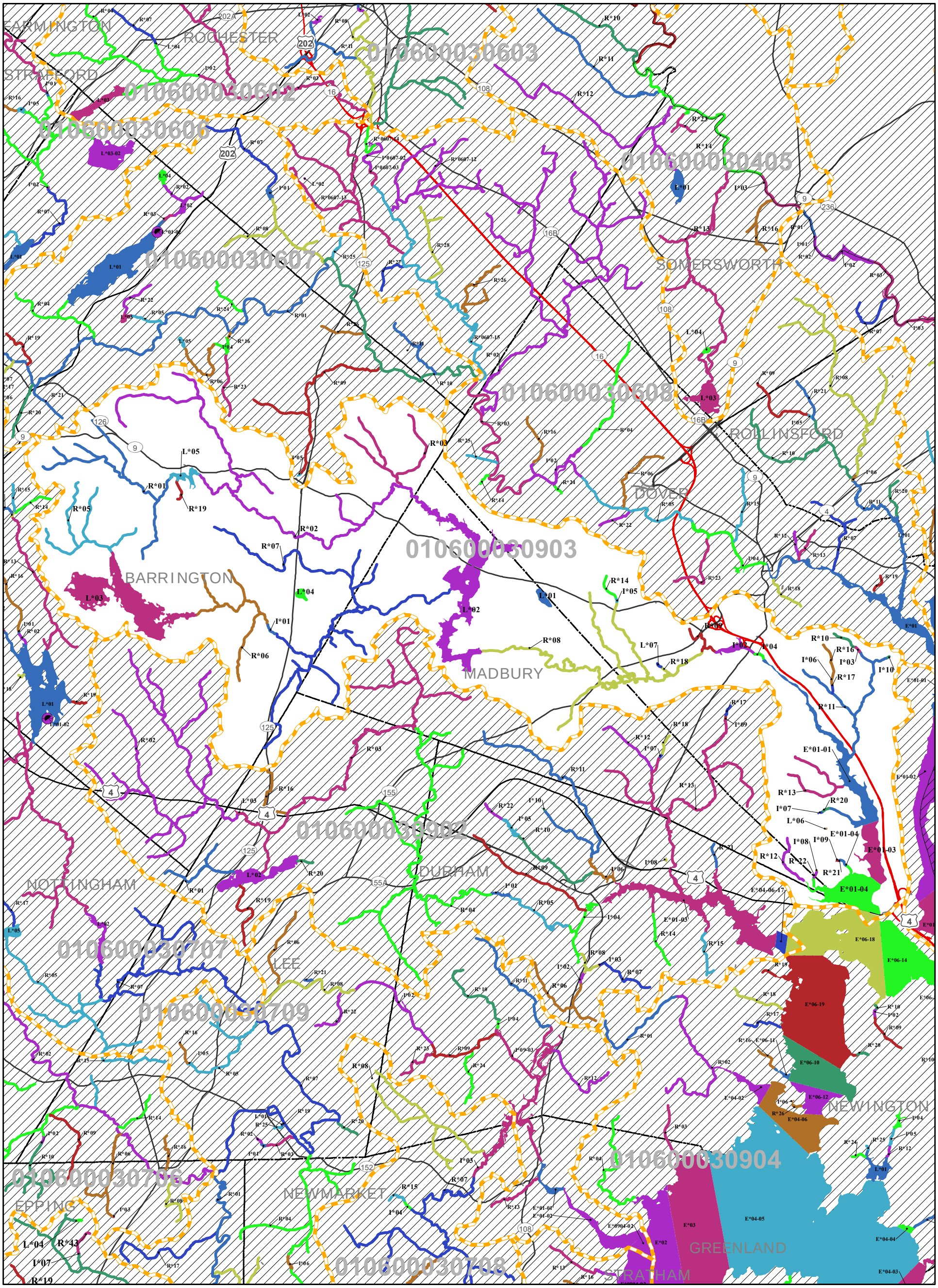
Assessment Cycle 2018

Good		Full Support Good
Marginal		Full Support Marginal
Likely Good		Insufficient Information – Potentially Full Support
No Data		No Data
Likely Bad		Insufficient Information – Potentially Not Support
Poor		Not Support Marginal
Severe		Not Support Severe



ASSESSMENT UNIT ID	MAP LABEL	ASSESSMENT UNIT NAME	AQUATIC LIFE	SWIMMING	BOATING	FISH CONSUMP.
NHRIV600030903-10	R*10	CANNEY BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030903-11	R*11	VARNEY BROOK - CANNEY BROOK	3-ND	4A-P	4A-M	4A-M
NHRIV600030903-12	R*12	UNNAMED BROOK - TO BELLAMY RIVER ROYALLS COVE	3-ND	3-ND	3-ND	4A-M
NHRIV600030903-13	R*13	GARRISON BROOK	3-ND	4A-P	3-ND	4A-M
NHRIV600030903-14	R*14	KNOX MARSH BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030903-16	R*16	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030903-17	R*17	VARNEY BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030903-18	R*18	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030903-19	R*19	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030903-20	R*20	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030903-21	R*21	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030903-22	R*22	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-M

AUIDs For HUC12: 010600030903 - Bellamy River



Assessment Unit IDs are derived from the HUC12 they reside within. The labels have been shortened on this map for presentation purposes.
Example: the Label "L*03" in HUC12 = 010700060201 represents AUID = "NHLAK700060201-03"
In rare cases where an AUID extends beyond the boundary of a single HUC12, additional portions of the end of the HUC 12 number have also been replaced.

S:\WD-Watershed\WQ_Planning\305b_303d\2018\AUIDs\HUC12Maps

Assessment Unit ID NHRIV600030903-08 Size 9.4540 MILES

Assessment Unit Name BELLAMY RIVER - KELLY BROOK - KNOX MARSH Beach N

Primary Town MADBURY Assessment Unit Category*~ 5-P

2018, 305(b)/303(d) - All Reviewed Parameters by Assessment Unit

Designated Use Description	*Desig. Use Category	Parameter Name	Parameter Threatened (Y/N)	Last Sample	Last Exceed	Parameter Category*	TMDL Priority
Aquatic Life Integrity	5-P	ALKALINITY, CARBONATE AS CACO3	N	1990	1990	3-ND	
		AMMONIA (TOTAL)	N	1997	N/A	3-ND	
		ARSENIC	N	1990	N/A	3-ND	
		Aluminum	N	2017	2017	5-M	LOW
		Benthic-Macroinvertebrate Bioassessments (Streams)	N	2000	2000	5-P	LOW
		CADMIUM	N	1990	N/A	3-ND	
		CHLORIDE	N	2018	N/A	3-PAS	
		COPPER	N	2016	2016	3-PNS	
		DISSOLVED OXYGEN SATURATION	N	2018	2007	3-PAS	
		Fishes Bioassessments (Streams)	N			3-PAS	
		Habitat Assessment (Streams)	N	2000	2000	4C-P	
		IRON	N	1997	N/A	3-ND	
		LEAD	N	2000	2000	3-ND	
		NICKEL	N	1990	N/A	3-ND	
		OXYGEN, DISSOLVED	N	2018	2016	2-M	
		PHOSPHORUS (TOTAL)	N	2017	NLV	3-PAS	
		SELENIUM	N	1990	N/A	3-ND	
		TURBIDITY	N	2017	2008	3-PAS	
		ZINC	N	2016	1998	3-PAS	
		pH	N	2018	2017	5-M	LOW
Fish Consumption	4A-M	ARSENIC	N	1990	1990	3-ND	
		COPPER	N	2016	N/A	3-PNS	
		MANGANESE	N	1990	N/A	3-ND	
		Mercury	N			4A-M	
		NICKEL	N	1990	N/A	3-ND	
		SELENIUM	N	1990	N/A	3-ND	
		ZINC	N	2016	N/A	3-PNS	
Potential Drinking Water Supply	2-G	ARSENIC	N	1990	1990	3-ND	
		COPPER	N	2016	N/A	3-PAS	

Severe	Poor	Likely Bad	No Data	Likely Good	Marginal	Good
Not Supporting, Severe	Not Supporting, Marginal	Insufficient Information – Potentially Full Supporting	No Data	Insufficient Information – Potentially Full Supporting	Full Support, Marginal	Full Support, Good

*DES Categories; 2-G = Supports Parameter well above criteria, 2-M = Supports Parameter marginally above criteria, 2-OBS = Exceeds WQ criteria but natural therefore not a WQ exceedence, 3-ND = Insufficient Information/No data, 3-PAS= Insufficient Information/Potentially Attaining Standard, 3-PNS= Insufficient Information/Potentially Not Attaining Standard, (4A=Impaired/TMDL Completed, 4B=Impaired/Other Measure will rectify Impairment, 4C=Impaired/Non-Pollutant, 5=Impaired/TMDL needed) M=Marginal Impairment, P=Severe Impairment, T=Threatened (http://des.nh.gov/organization/divisions/water/wmb/swqa/index.htm)

Assessment Unit ID NHRIV600030903-08 Size 9.4540 MILES

Assessment Unit Name BELLAMY RIVER - KELLY BROOK - KNOX MARSH Beach N

Primary Town MADBURY Assessment Unit Category*~ 5-P

2018, 305(b)/303(d) - All Reviewed Parameters by Assessment Unit

Designated Use Description	*Desig. Use Category	Parameter Name	Parameter Threatened (Y/N)	Last Sample	Last Exceed	Parameter Category*	TMDL Priority
Potential Drinking Water Supply	2-G	ESCHERICHIA COLI	N	2017	2017	3-PNS	
		FECAL COLIFORM	N	1990	1990	3-ND	
		FLUORIDE	N	1997	N/A	3-ND	
		IRON	N	1997	1997	3-ND	
		MANGANESE	N	1990	N/A	3-ND	
		NICKEL	N	1990	N/A	3-ND	
		SELENIUM	N	1990	N/A	3-ND	
		SULFATES	N	2016	N/A	3-PAS	
		ZINC	N	2016	N/A	3-PAS	
Primary Contact Recreation	4A-P	CHLOROPHYLL-A	N	1990	N/A	3-ND	
		Escherichia coli	N	2017	2017	4A-P	
Secondary Contact Recreation	3-PNS	ESCHERICHIA COLI	N	2017	2016	3-PNS	
Wildlife	3-ND						

Severe	Poor	Likely Bad	No Data	Likely Good	Marginal	Good
Not Supporting, Severe	Not Supporting, Marginal	Insufficient Information – Potentially Full Supporting	No Data	Insufficient Information – Potentially Full Supporting	Full Support, Marginal	Full Support, Good

*DES Categories; 2-G = Supports Parameter well above criteria, 2-M = Supports Parameter marginally above criteria, 2-OBS = Exceeds WQ criteria but natural therefore not a WQ exceedence, 3-ND = Insufficient Information/No data, 3-PAS= Insufficient Information/Potentially Attaining Standard, 3-PNS= Insufficient Information/Potentially Not Attaining Standard, (4A=Impaired/TMDL Completed, 4B=Impaired/Other Measure will rectify Impairment, 4C=Impaired/Non-Pollutant, 5=Impaired/TMDL needed) M=Marginal Impairment, P=Severe Impairment, T=Threatened (http://des.nh.gov/organization/divisions/water/wmb/swqa/index.htm)

SWPPP Cut Sheet:

Filtrexx® Inlet Protection

Sediment & Perimeter Control Technology

PURPOSE & DESCRIPTION

Filtrexx® Inlet protection is a three-dimensional tubular sediment control and storm water runoff filtration device typically used for storm drain **inlet protection** of sediment and soluble pollutants (such as phosphorus and petroleum hydrocarbons) on and around construction activities.

APPLICATION

Drain inlets are located in areas that receive runoff from surrounding lands, often exposed and disturbed soils, and are located at a low point, or in a sump. Inlet protection used around drain inlets (or *Drain* Inlet protection) should completely enclose the circumference of the drain and where possible should not be placed on a grade or slope. Inlet protection used around drain inlets should never be the only form of site sediment control and should be accompanied by erosion control/slope stabilization practices, such as Slope protection or rolled erosion control blankets (RECB). Inlet protection should never be placed where they divert runoff flow from the drain inlet, or on top of the inlet, which can cause flooding. Under high runoff and sediment loading conditions placement of 1-2 in (25-50 mm) diameter rock (AASHTO #2) may be placed around the outer circumference of the Inlet protection up to ½ the height of the Inlet protection. This will slow runoff velocity as it contacts the Inlet protection and will reduce sediment build-up and clogging of the Inlet protection.

Curb inlets are generally located on paved surfaces and are designed to rapidly drain storm runoff from roadways to prevent flooding that poses a hazard to vehicular traffic. Inlet protection devices should be placed in a manner which intercepts runoff prior to entering the inlet, but does not block or divert runoff from the inlet. To prevent diversion of runoff, Inlet protection used around curbs (or *Curb* Inlet protection) should be used in low points, or sumps, and minor slopes or grades. Inlet protection should never be placed in or on the curb inlet drain, or placed in a manner than obstructs vehicular traffic. Inlet protection height should be at least 1 in (25 mm) lower than top of curb inlet to allow for overflow into the drain and not over the curb. Maximum sediment removal efficiency occurs when minor ponding exists behind Inlet protection but should never lead to flooding.

Curb sediment containment systems are used to reduce the sediment and pollutant load flowing to a curb inlet. They are generally placed on paved surfaces perpendicular to runoff flow and should be lower than the height of the curb. Curb sediment containment systems should never cause flooding or placed where they are a hazard to vehicular traffic. Inlet protection used for curb sediment containment (or *Curb Sediment Containment* Inlet protection) can be placed on a grade but should never be placed directly upslope from curb inlet where it may inadvertently divert runoff from entering curb inlet.

INSTALLATION

1. Inlet protection used for inlet protection to reduce sediment and soluble pollutants entering storm drains shall meet Filtrexx® FilterSoxx™ Material Specifications and use Certified Filtrexx® FilterMedia™.
2. Contractor is required to be a Filtrexx® Certified™ Installer as determined by Filtrexx® International, LLC (440-926-2607 or visit web site at Filtrexx.com). Certification shall be considered current if appropriate identification is shown during time of bid or at time of application (current list of installers can be found at www.filtrexx.com). Look for the Filtrexx® Certified™ Installer Seal.

3. Filtrexx® Inlet protection shall be placed at locations indicated on plans as directed by the Engineer. Inlet protection should be installed in a pattern that allows complete protection of the inlet area.
4. Installation of curb Inlet protection will ensure a minimal overlap of at least 1 ft (300mm) on either side of the opening being protected. The Inlet protection will be anchored to the soil behind the curb using staples, stakes or other devices capable of holding the Inlet protection in place.
5. Standard Inlet protection for curb inlet protection and curb sediment containment will use 8 in (200mm) diameter Inlet protection, and drain inlets on soil will use 12 in (300mm) or 18 in (450mm) diameter Inlet protection. In severe flow situations, larger Inlet protection may be specified by the Engineer. During curb installation, Inlet protection shall be compacted to be slightly shorter than curb height.
6. If Inlet protection becomes clogged with debris and sediment, they shall be maintained so as to assure proper drainage and water flow into the storm drain. In severe storm events, overflow of the Inlet protection may be acceptable in order to keep the area from flooding.
7. Curb and drain Inlet protection shall be positioned so as to provide a permeable physical barrier to the drain itself, allowing sediment to collect on the outside of the Inlet protection.
8. For drains and inlets that have only curb cuts, without street grates, a spacer is required in order to keep the Inlet protection away from the drain opening. This spacer should be a hog wire screen bent to overlap the grate opening and keep the sock from falling into the opening. Use at least one spacer for every 4 ft (1.2m) of curb drain opening. The wire grid also prevents other floatable waste from passing over the Inlet protection.
9. Stakes shall be installed through the middle of the drain Inlet protection on 5 ft (1.5m) centers, using 2 in (50mm) x 2 in (50mm) x 3 ft (1m) wood stakes.
10. Staking depth for sand and silt loam soils shall be 12 in (300mm), and 8 in (200mm) for clay soils.

INSPECTION AND MAINTENANCE

Routine inspection should be conducted within 24 hrs of a runoff event or as designated by the regulating authority. Inlet protection should be regularly inspected to make sure they maintain their shape and are producing adequate hydraulic flow-through. If ponding becomes excessive, additional Inlet protection may be required or sediment removal may be necessary. Inlet protection shall be inspected until contributing drainage area has been permanently stabilized and construction activity has ceased

1. The Contractor shall maintain the Inlet protection in a functional condition at all times and it shall be routinely inspected.
2. If the Inlet protection has been damaged, it shall be repaired, or replaced if beyond repair.
3. The Contractor shall remove sediment at the base of the upslope side of the Inlet protection when accumulation has reached 1/2 of the effective height of the Inlet protection, or as directed by the Engineer. Alternatively, for drain Inlet protection a new Soxx™ may be placed on top of the original increasing the sediment storage capacity without soil disturbance.
4. Inlet protection shall be maintained until disturbed area above or around the device has been permanently stabilized and construction activity has ceased.
5. Regular maintenance includes lifting the Inlet protection and cleaning around and under them as sediment collects.
6. The FilterMedia™ will be removed from paved areas or dispersed on site soil or behind curb once disturbed area has been permanently stabilized, construction activity has ceased, or as determined by the Engineer.

Table 2.4 Spacing for Curb Sediment Containment Systems.

Grade (%)	Spacing (ft)	Spacing (mm)
0.5	100	30
1.0	50	15
2.0	25	8
3.0	16	5
4.0	13	4
5.0	10	3

Source: Fifield, 2001.

Figure 2.1. Engineering Design Drawing for Curb and Drain Inlet Protection

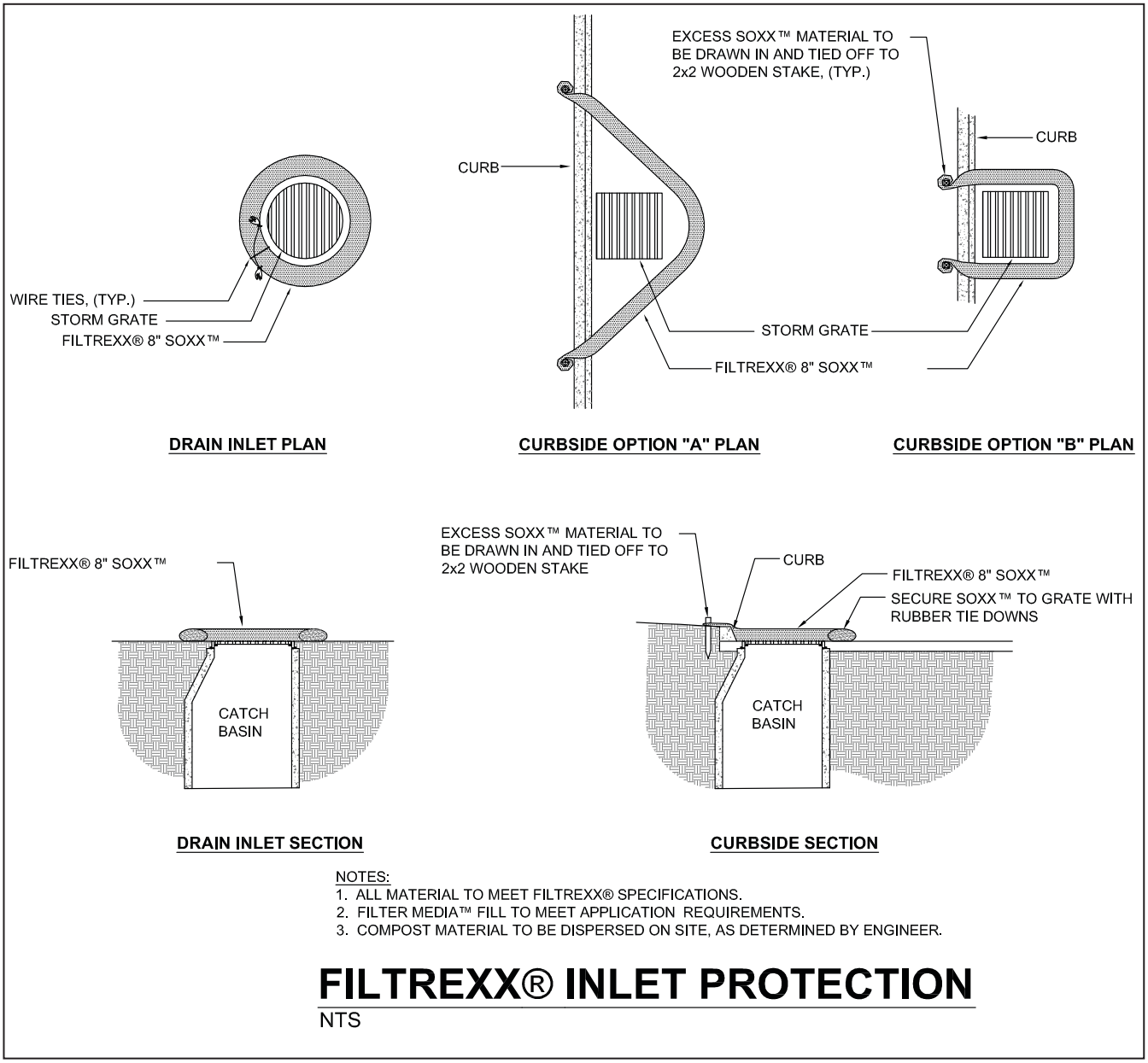
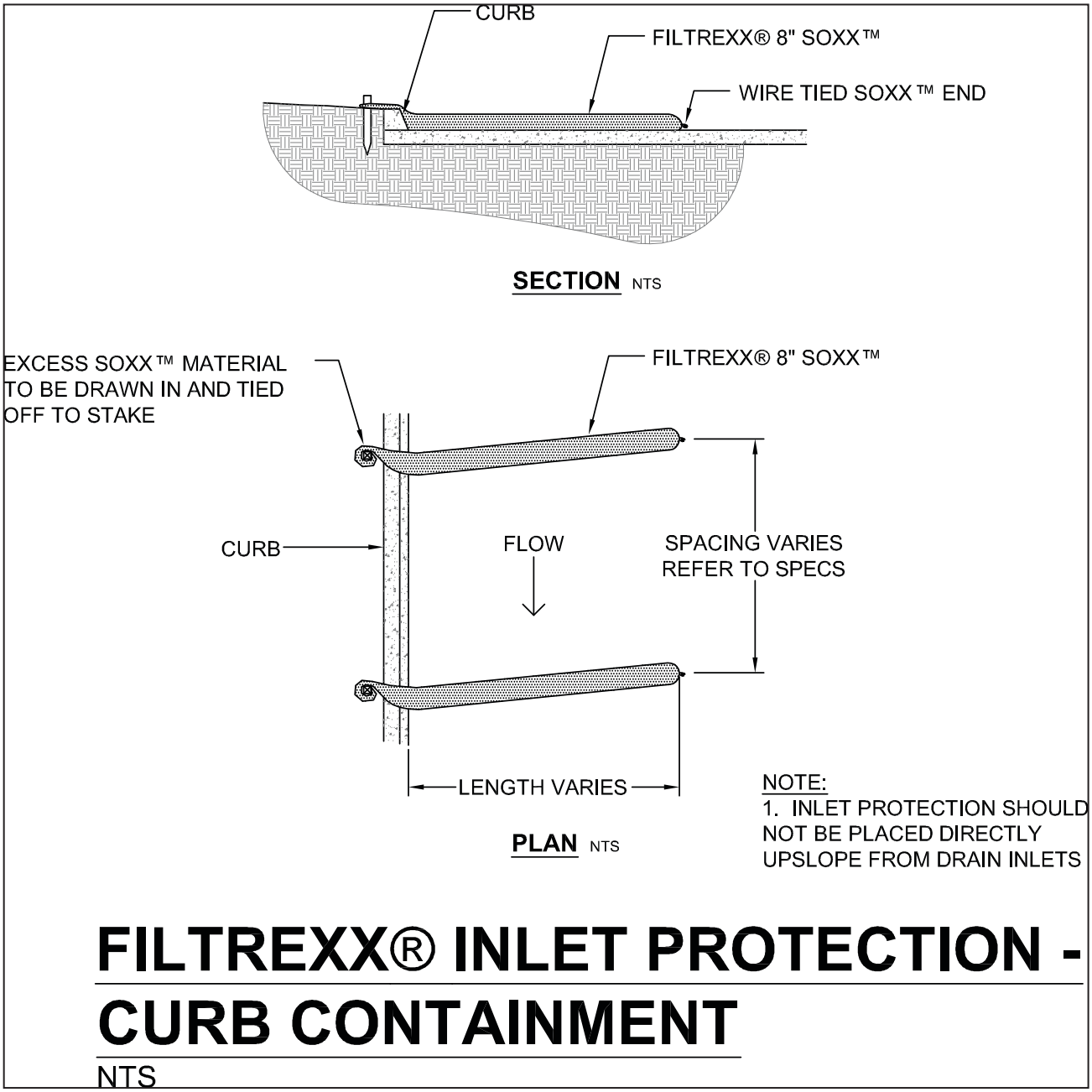


Figure 2.2. Engineering Design Drawing for Curb Sediment Containment Inlet Protection



SWPPP Cut Sheet:

Filtrexx® Sediment Control

Sediment & Perimeter Control Technology

PURPOSE & DESCRIPTION

Filtrexx® Sediment control is a three-dimensional tubular sediment control and storm water runoff filtration device typically used for **perimeter control** of sediment and other soluble pollutants (such as phosphorus and petroleum hydrocarbons), on and around construction activities.

APPLICATION

Filtrexx® Sediment control is to be installed down slope of any disturbed area requiring erosion and sediment control and filtration of soluble pollutants from runoff. Sediment control is effective when installed perpendicular to sheet or low concentrated flow. Acceptable applications include:

- Site perimeters
- Above and below disturbed areas subject to sheet runoff, interrill and rill erosion
- Above and below exposed and erodable slopes
- Around area drains or inlets located in a 'sump'
- On compacted soils where trenching of silt fence is difficult or impossible
- Around sensitive trees where trenching of silt fence is not beneficial for tree survival or may unnecessarily disturb established vegetation.
- On frozen ground where trenching of silt fence is impossible.
- On paved surfaces where trenching of silt fence is impossible.

INSTALLATION

1. Sediment control used for perimeter control of sediment and soluble pollutants in storm runoff shall meet Filtrexx® Soxx™ Material Specifications and use Certified Filtrexx® FilterMedia™.
2. Contractor is required to be Filtrexx® Certified™, or use pre-filled Filtrexx® Sediment control products manufactured by a Filtrexx® Certified Manufacturer™ as determined by Filtrexx® International, LLC (440-926-2607 or visit www.filtrexx.com). Certification shall be considered current if appropriate identification is shown during time of bid or at time of application. Look for the Filtrexx® Certified™ Seal.
3. Sediment control will be placed at locations indicated on plans as directed by the Engineer.
4. Sediment control should be installed parallel to the base of the slope or other disturbed area. In extreme conditions (i.e., 2:1 slopes), a second Sediment control shall be constructed at the top of the slope.
5. Effective Soxx™ height in the field should be as follows: 8" Diameter Sediment control = 6.5" high, 12" Diameter Sediment control = 9.5" high, 18" Diameter SiltSoxx™ = 14.5" high, 24" Diameter Sediment control = 19" high.
6. Stakes shall be installed through the middle of the Sediment control on 10 ft (3m) centers, using 2 in (50mm) by 2 in (50mm) by 3 ft (1m) hard wood stakes. In the event staking is not possible, i.e., when Sediment control is used on pavement, heavy concrete blocks shall be used behind the Sediment control to help stabilize during rainfall/runoff events.
7. Staking depth for sand and silt loam soils shall be 12 in (300mm), and 8 in (200mm) for clay soils.
8. Loose compost may be backfilled along the upslope side of the Sediment control, filling the seam between the soil surface and the device, improving filtration and sediment retention.
9. If the Sediment control is to be left as a permanent filter or part of the natural landscape, it may be seeded at time of installation for

establishment of permanent vegetation. The Engineer will specify seed requirements.

10. Filtrexx® Sediment control is not to be used in perennial, ephemeral, or intermittent streams.

See design drawing schematic for correct Filtrexx® Sediment control installation (Figure 1.1).

INSPECTION AND MAINTENANCE

Routine inspection should be conducted within 24 hrs of a runoff event or as designated by the regulating authority. Sediment control should be regularly inspected to make sure they maintain their shape and are producing adequate hydraulic flow-through. If ponding becomes excessive, additional Sediment control may be required to reduce effective slope length or sediment removal may be necessary. Sediment control shall be inspected until area above has been permanently stabilized and construction activity has ceased

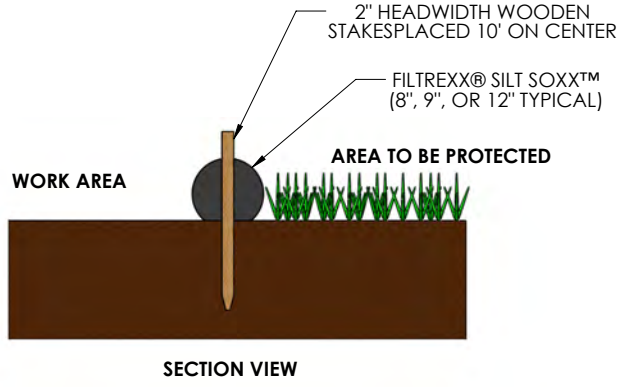
1. The Contractor shall maintain the Sediment control in a functional condition at all times and it shall be routinely inspected.
2. If the Sediment control has been damaged, it shall be repaired, or replaced if beyond repair.
3. The Contractor shall remove sediment at the base of the upslope side of the Sediment control when accumulation has reached 1/2 of the effective height of the Sediment control, or as directed by the Engineer. Alternatively, a new Sediment control can be placed on top of and slightly behind the original one creating more sediment storage capacity without soil disturbance.
4. Sediment control shall be maintained until disturbed area above the device has been permanently stabilized and construction activity has ceased.
5. The FilterMedia™ will be dispersed on site once disturbed area has been permanently stabilized, construction activity has ceased, or as determined by the Engineer.
6. For long-term sediment and pollution control applications, Sediment control can be seeded at the time of installation to create a vegetative filtering system for prolonged and increased filtration of sediment and soluble pollutants (contained vegetative filter strip). The appropriate seed mix shall be determined by the Engineer.

Slope Percent	Maximum Slope Length Above Sediment Control in Feet (meters)*				
	8 in (200 mm) Sediment control	12 in (300 mm) Sediment control	18 in (450 mm) Sediment control	24 in (600mm) Sediment control	32 in (800mm) Sediment control
	6.5 in (160 mm)**	9.5 in (240 mm) **	14.5 in (360 mm) **	19 in (480 mm) **	26 in (650 mm) **
2 (or less)	600 (180)	750 (225)	1000 (300)	1300 (400)	1650 (500)
5	400 (120)	500 (150)	550 (165)	650 (200)	750 (225)
10	200 (60)	250 (75)	300 (90)	400 (120)	500 (150)
15	140 (40)	170 (50)	200 (60)	325 (100)	450 (140)
20	100 (30)	125 (38)	140 (42)	260 (80)	400 (120)
25	80 (24)	100 (30)	110 (33)	200 (60)	275 (85)
30	60 (18)	75 (23)	90 (27)	130 (40)	200 (60)
35	60 (18)	75 (23)	80 (24)	115 (35)	150 (45)
40	60 (18)	75 (23)	80 (24)	100 (30)	125 (38)
45	40 (12)	50 (15)	60 (18)	80 (24)	100 (30)
50	40 (12)	50 (15)	55 (17)	65 (20)	75 (23)

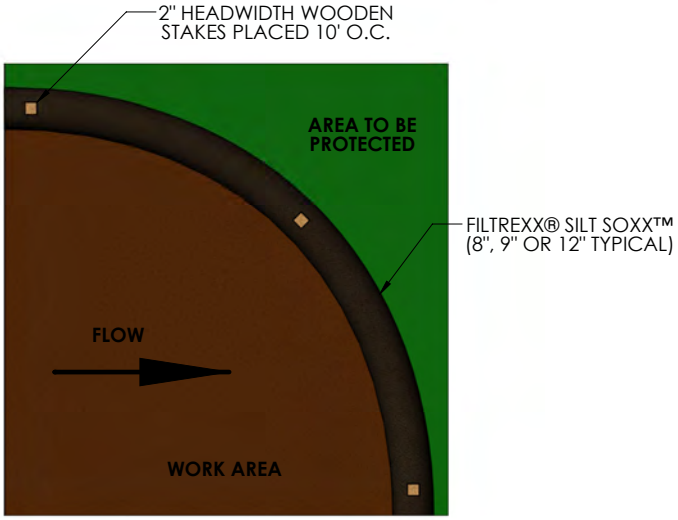
* Based on a failure point of 36 in (0.9 m) super silt fence (wire reinforced) at 1000 ft (303 m) of slope, watershed width equivalent to receiving length of sediment control device, 1 in/ 24 hr (25 mm/24 hr) rain event.

** Effective height of Sediment control after installation and with constant head from runoff as determined by Ohio State University.

FILTREXX® SILT SOXX™

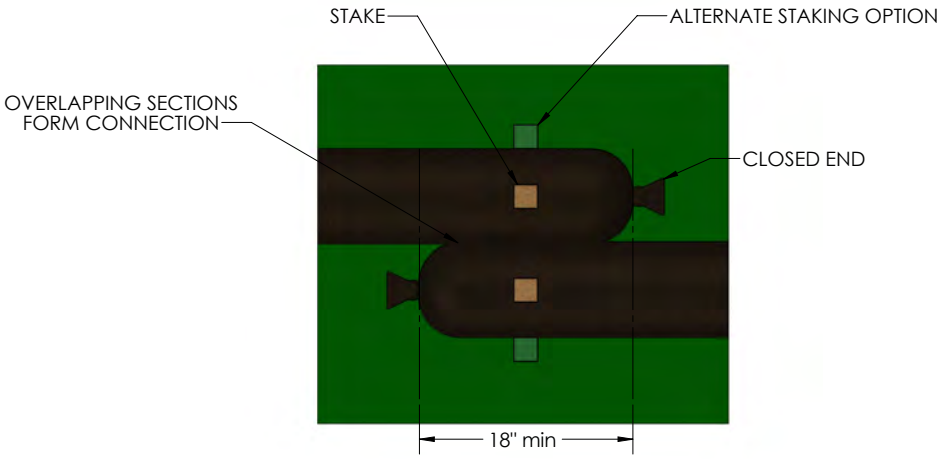


SECTION VIEW

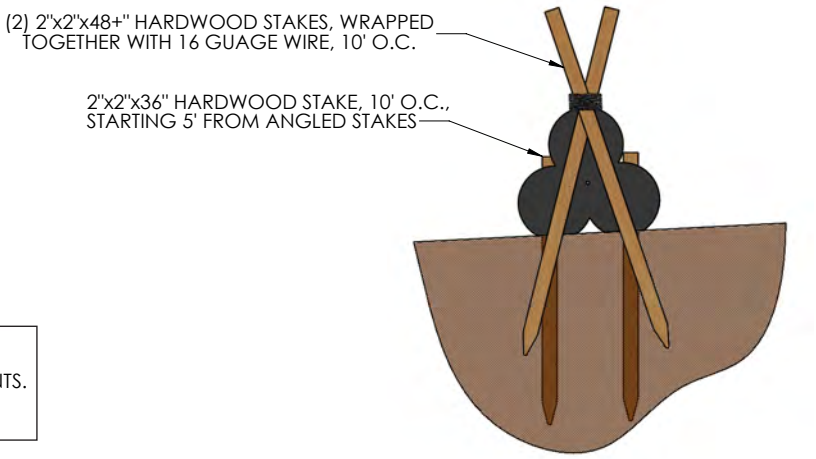


TOP VIEW

COMPOST SOCK CONNECTION/ATTACHMENT DETAIL



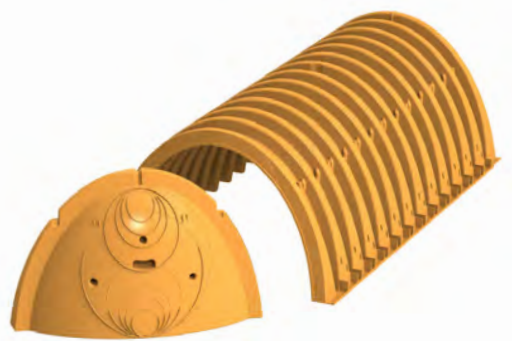
FILTREXX® PYRAMID STAKING DETAIL



NOTES:
1. ALL MATERIAL TO MEET FILTREXX® SPECIFICATIONS.
2. SILT SOXX™ FILL TO MEET APPLICATION REQUIREMENTS.
3. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.

StormTech® SC-740 Chamber

Designed to meet the most stringent industry performance standards for superior structural integrity while providing designers with a cost-effective method to save valuable land and protect water resources. The StormTech system is designed primarily to be used under parking lots, thus maximizing land usage for private (commercial) and public applications. StormTech chambers can also be used in conjunction with Green Infrastructure, thus enhancing the performance and extending the service life of these practices.



Nominal Chamber Specifications
(not to scale)

Size (L x W x H)
85.4" x 51" x 30"
2,170 mm x 1,295 mm x 762 mm

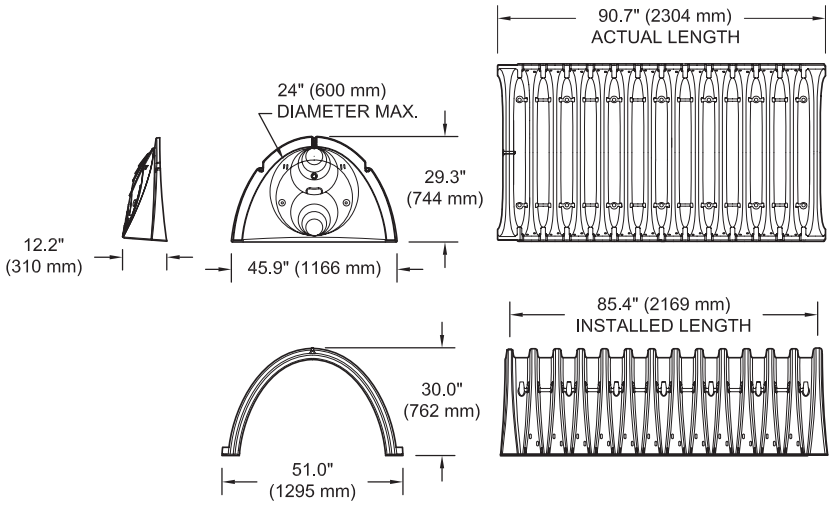
Chamber Storage
45.9 ft³ (1.30 m³)

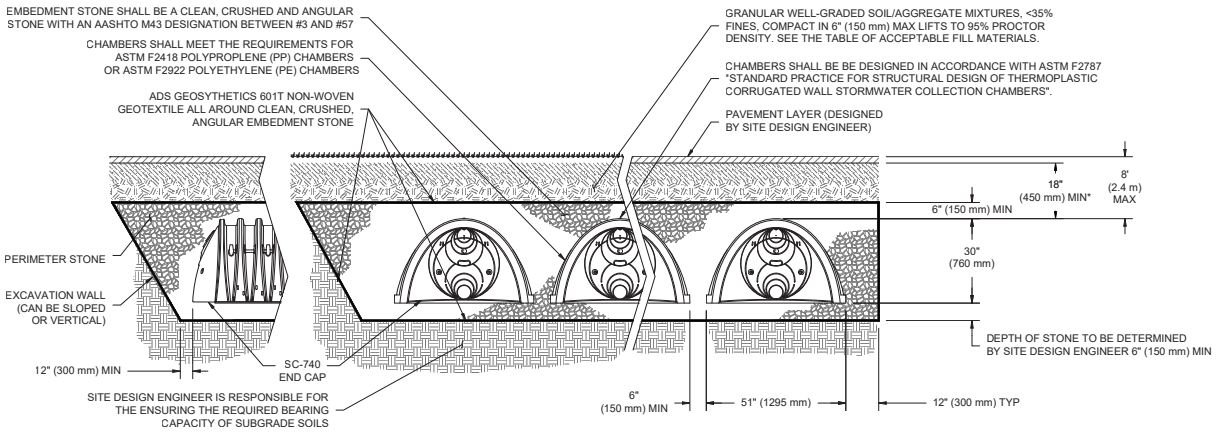
Min. Installed Storage*
74.9 ft³ (2.12 m³)

Weight
74.0 lbs (33.6 kg)

Shipping
30 chambers/pallet
60 end caps/pallet
12 pallets/truck

*Assumes 6" (150 mm) stone above, below and between chambers and 40% stone porosity.





*MINIMUM COVER TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 24" (600 mm).

ADS StormTech™

StormTech SC-740 Specifications

Cumulative Storage Volumes Per Chamber

Assumes 40% Stone Porosity. Calculations are Based Upon a 6” (150 mm) Stone Base Under Chambers.

Depth of Water in System Inches (mm)	Cumulative Chamber Storage ft³ (m³)	Total System Cumulative Storage ft³ (m³)
42 (1067)	45.90 (1.300)	74.90 (2.121)
41 (1041)	45.90 (1.300)	73.77 (2.089)
40 (1016)	45.90 (1.300)	72.64 (2.057)
39 (991)	45.90 (1.300)	71.52 (2.025)
38 (965)	45.90 (1.300)	70.39 (1.993)
37 (940)	45.90 (1.300)	69.26 (1.961)
36 (914)	45.90 (1.300)	68.14 (1.929)
35 (889)	45.85 (1.298)	66.98 (1.897)
34 (864)	45.69 (1.294)	65.75 (1.862)
33 (838)	45.41 (1.286)	64.46 (1.825)
32 (813)	44.81 (1.269)	62.97 (1.783)
31 (787)	44.01 (1.246)	61.36 (1.737)
30 (762)	43.06 (1.219)	59.66 (1.689)
29 (737)	41.98 (1.189)	57.89 (1.639)
28 (711)	40.80 (1.155)	56.05 (1.587)
27 (686)	39.54 (1.120)	54.17 (1.534)
26 (660)	38.18 (1.081)	52.23 (1.479)
25 (635)	36.74 (1.040)	50.23 (1.422)
24 (610)	35.22 (0.977)	48.19 (1.365)
23 (584)	33.64 (0.953)	46.11 (1.306)
22 (559)	31.99 (0.906)	44.00 (1.246)
21 (533)	30.29 (0.858)	1.85 (1.185)
20 (508)	28.54 (0.808)	39.67 (1.123)
19 (483)	26.74 (0.757)	37.47 (1.061)
18 (457)	24.89 (0.705)	35.23 (0.997)
17 (432)	23.00 (0.651)	32.96 (0.939)
16 (406)	21.06 (0.596)	30.68 (0.869)
15 (381)	19.09 (0.541)	28.36 (0.803)
14 (356)	17.08 (0.484)	26.03 (0.737)
13 (330)	15.04 (0.426)	23.68 (0.670)
12 (305)	12.97 (0.367)	21.31 (0.608)
11 (279)	10.87 (0.309)	18.92 (0.535)
10 (254)	8.74 (0.247)	16.51 (0.468)
9 (229)	6.58 (0.186)	14.09 (0.399)
8 (203)	4.41 (0.125)	11.66 (0.330)
7 (178)	2.21 (0.063)	9.21 (0.264)
6 (152)	0 (0)	6.76 (0.191)
5 (127)	0 (0)	5.63 (0.160)
4 (102)	0 (0)	4.51 (0.128)
3 (76)	0 (0)	3.38 (0.096)
2 (51)	0 (0)	2.25 (0.064)
1 (25)	0 (0)	1.13 (0.032)

Stone Cover

Stone Foundation

Note: Add 1.13 ft³ (0.032 m³) of storage for each additional inch (25 mm) of stone foundation.

Storage Volume Per Chamber ft³ (m³)

	Bare Chamber Storage ft³ (m³)	Chamber and Stone Foundation Depth in. (mm)		
		6 (150)	12 (300)	18 (450)
SC-740 Chamber	45.9 (1.3)	74.9 (2.1)	81.7 (2.3)	88.4 (2.5)

Note: Assumes 6” (150 mm) stone above chambers, 6” (150 mm) row spacing and 40% stone porosity.

Amount of Stone Per Chamber

English Tons (yds³)	Stone Foundation Depth		
	6”	12”	16”
SC-740	3.8 (2.8)	4.6 (3.3)	5.5 (3.9)
Metric Kilograms (m³)	**150 mm**	**300 mm**	**450 mm**
SC-740	3,450 (2.1)	4,170 (2.5)	4,490 (3.0)

Note: Assumes 6” (150 mm) of stone above and between chambers.

Volume Excavation Per Chamber yd³ (m³)

	Stone Foundation Depth		
	6 (150)	12 (300)	18 (450)
SC-740	5.5 (4.2)	6.2 (4.7)	6.8 (5.2)

Note: Assumes 6” (150 mm) of row separation and 18” (450 mm) of cover. The volume of excavation will vary as depth of cover increases.

ADS StormTech products, manufactured in accordance with ASTM F2418 or ASTMF2922, comply with all requirements in the Build America, Buy America (BABA) Act.

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ADS StormTech™

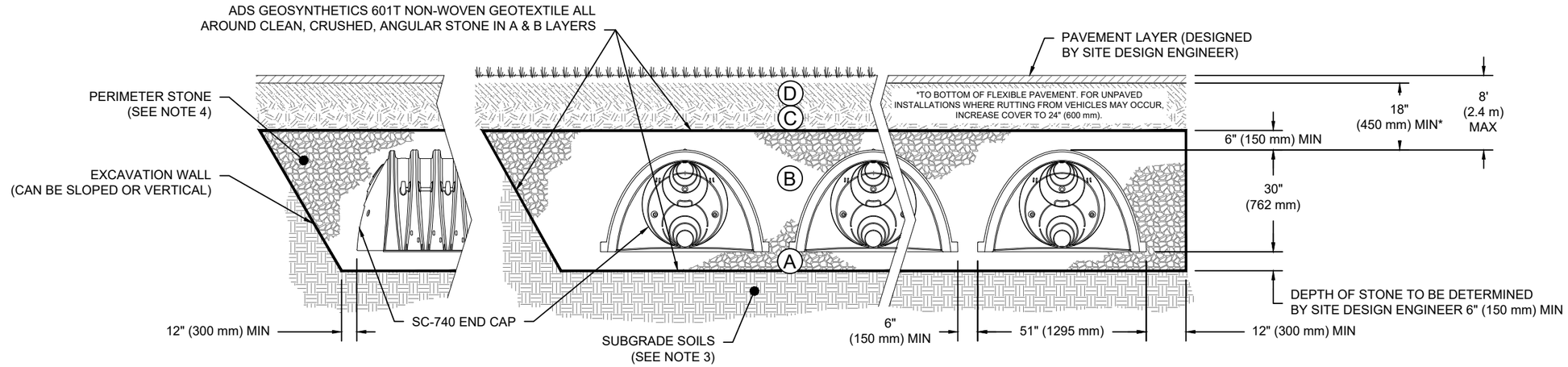
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ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 550 LBS/FT/%. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

SC-740
STANDARD CROSS SECTION
DATE: 9/12/22
DRAWN: KLJ
PROJECT #:
CHECKED: KLJ

DATE	DRWN	CHKD	DESCRIPTION

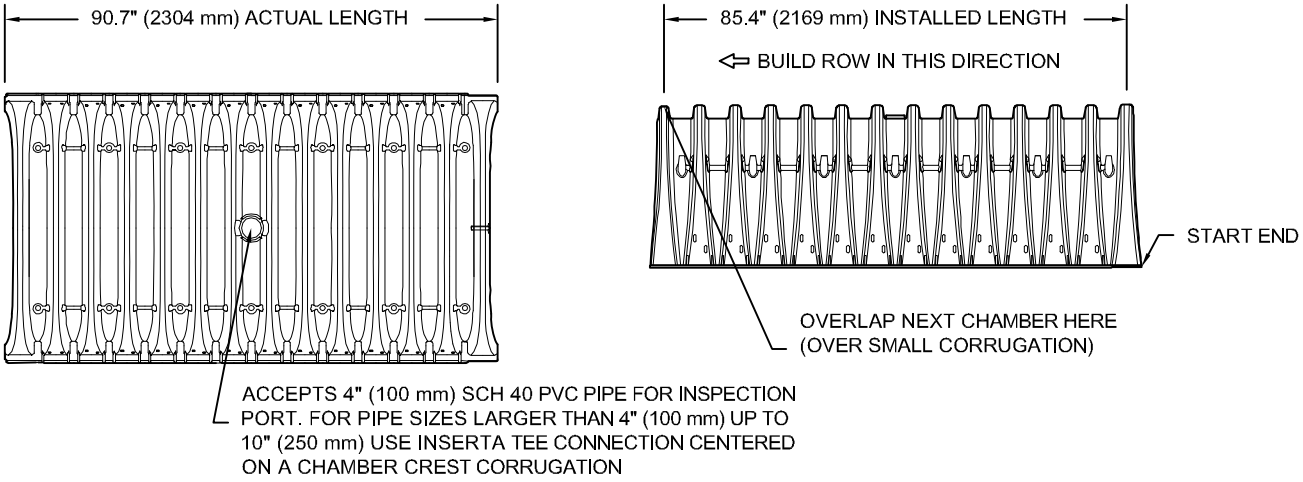
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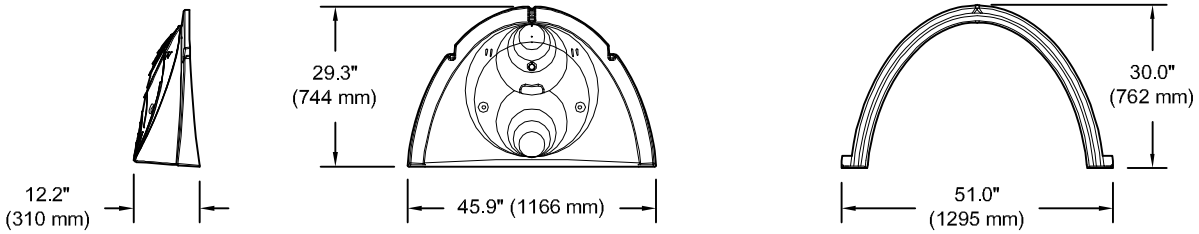
4640 TRUEMAN BLVD
HILLIARD, OH 43026

THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS UNDER THE DIRECTION OF THE SITE DESIGN ENGINEER OR OTHER PROJECT REPRESENTATIVE. THE SITE DESIGN ENGINEER SHALL REVIEW THIS DRAWING PRIOR TO CONSTRUCTION. IT IS THE ULTIMATE RESPONSIBILITY OF THE SITE DESIGN ENGINEER TO ENSURE THAT THE PRODUCT(S) DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.

SC-740 TECHNICAL SPECIFICATION

NTS

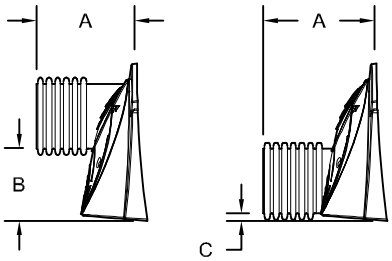




NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	51.0" X 30.0" X 85.4"	(1295 mm X 762 mm X 2169 mm)
CHAMBER STORAGE	45.9 CUBIC FEET	(1.30 m³)
MINIMUM INSTALLED STORAGE*	74.9 CUBIC FEET	(2.12 m³)
WEIGHT	75.0 lbs.	(33.6 kg)

*ASSUMES 6" (152 mm) STONE ABOVE, BELOW, AND BETWEEN CHAMBERS



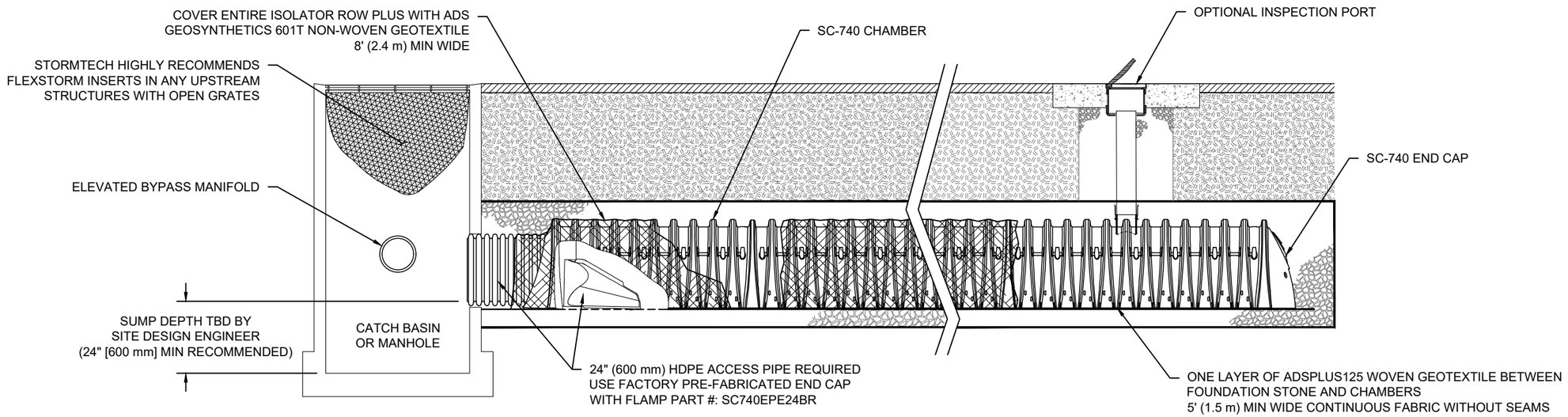
STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"

PART #	STUB	A	B	C
SC740EPE06T / SC740EPE06TPC	6" (150 mm)	10.9" (277 mm)	18.5" (470 mm)	—
SC740EPE06B / SC740EPE06BPC			—	0.5" (13 mm)
SC740EPE08T /SC740EPE08TPC	8" (200 mm)	12.2" (310 mm)	16.5" (419 mm)	—
SC740EPE08B / SC740EPE08BPC			—	0.6" (15 mm)
SC740EPE10T / SC740EPE10TPC	10" (250 mm)	13.4" (340 mm)	14.5" (368 mm)	—
SC740EPE10B / SC740EPE10BPC			—	0.7" (18 mm)
SC740EPE12T / SC740EPE12TPC	12" (300 mm)	14.7" (373 mm)	12.5" (318 mm)	—
SC740EPE12B / SC740EPE12BPC			—	1.2" (30 mm)
SC740EPE15T / SC740EPE15TPC	15" (375 mm)	18.4" (467 mm)	9.0" (229 mm)	—
SC740EPE15B / SC740EPE15BPC			—	1.3" (33 mm)
SC740EPE18T / SC740EPE18TPC	18" (450 mm)	19.7" (500 mm)	5.0" (127 mm)	—
SC740EPE18B / SC740EPE18BPC			—	1.6" (41 mm)
SC740EPE24B*	24" (600 mm)	18.5" (470 mm)	—	0.1" (3 mm)

ALL STUBS, EXCEPT FOR THE SC740EPE24B ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

* FOR THE SC740EPE24B THE 24" (600 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 1.75" (44 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

NOTE: ALL DIMENSIONS ARE NOMINAL



SC-740 ISOLATOR ROW PLUS DETAIL
NTS

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

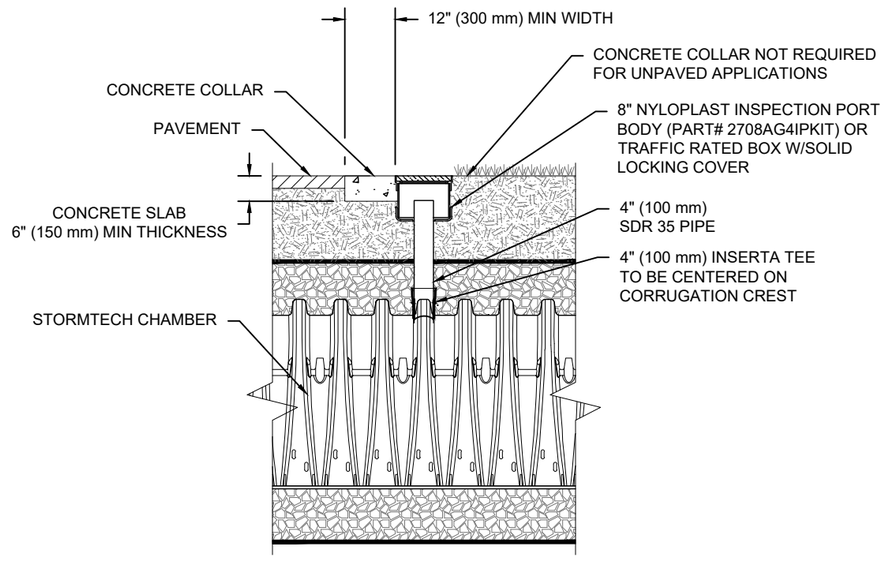
STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.

2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



NOTE:
INSPECTION PORTS MAY BE CONNECTED THROUGH ANY CHAMBER CORRUGATION CREST.

4" PVC INSPECTION PORT DETAIL
(SC SERIES CHAMBER)
NTS

SC-740
ISOLATOR ROW PLUS DETAILS

DATE: 9/12/22 | DRAWN: KLJ | PROJECT #: | CHECKED: KLJ

DATE	DRWN	CHKD	DESCRIPTION

THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS UNDER THE DIRECTION OF THE SITE DESIGN ENGINEER OR OTHER PROJECT REPRESENTATIVE. THE SITE DESIGN ENGINEER SHALL REVIEW THIS DRAWING PRIOR TO CONSTRUCTION. IT IS THE ULTIMATE RESPONSIBILITY OF THE SITE DESIGN ENGINEER TO ENSURE THAT THE PRODUCT(S) DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.

StormTech® Chamber System
888-892-2694 | WWW.STORMTECH.COM
4640 TRUEMAN BLVD
HILLIARD, OH 43026

Isolator® Row Plus
O&M Manual



ADS StormTech™

The Isolator® Row Plus

Introduction

An important component of any Stormwater Pollution Prevention Plan is inspection and maintenance. The StormTech Isolator Row Plus is a technique to inexpensively enhance Total Suspended Solids (TSS) and Total Phosphorus (TP) removal with easy access for inspection and maintenance.

The Isolator Row Plus

The Isolator Row Plus is a row of StormTech chambers, either SC-160, SC-310, SC-310-3, SC-740, DC-780, MC-3500 or MC-7200 models, that is surrounded with filter fabric and connected to a closely located manhole for easy access. The fabric-wrapped chambers provide for sediment settling and filtration as stormwater rises in the Isolator Row Plus and passes through the filter fabric. The open bottom chambers and perforated sidewalls (SC-310, SC- 310-3 and SC-740 models) allow stormwater to flow both vertically and horizontally out of the chambers. Sediments are captured in the Isolator Row Plus protecting the adjacent stone and chambers storage areas from sediment accumulation.

ADS geotextile fabric is placed between the stone and the Isolator Row Plus chambers. The woven geotextile provides a media for stormwater filtration, a durable surface for maintenance, prevents scour of the underlying stone and remains intact during high pressure jetting. A non-woven fabric is placed over the chambers to provide a filter media for flows passing through the chamber's sidewall. The non-woven fabric is not required over the SC-160, DC-780, MC-3500 or MC-7200 models as these chambers do not have perforated side walls.

The Isolator Row Plus is designed to capture the "first flush" runoff and offers the versatility to be sized on a volume basis or a flow-rate basis. An upstream manhole provides access to the Isolator Row Plus and includes a high/low concept such that stormwater flow rates or volumes that exceed the capacity of the Isolator Row Plus bypass through a manifold to the other chambers. This is achieved with an elevated bypass manifold or a high-flow weir. This creates a differential between the Isolator Row Plus row of chambers and the manifold to the rest of the system, thus allowing for settlement time in the Isolator Row Plus. After Stormwater flows through the Isolator Row Plus and into the rest of the chamber system it is either exfiltrated into the soils below or passed at a controlled rate through an outlet manifold and outlet control structure.

The Isolator Row FLAMP™ (patent pending) is a flared end ramp apparatus attached to the inlet pipe on the inside of the chamber end cap. The FLAMP provides a smooth transition from pipe invert to fabric bottom. It is configured to improve chamber function performance by enhancing outflow of solid debris that would otherwise collect at the chamber's end. It also serves to improve the fluid and solid flow into the access pipe during maintenance and cleaning and to guide cleaning and inspection equipment back into the inlet pipe when complete.

The Isolator Row Plus may be part of a treatment train system. The treatment train design and pretreatment device selection by the design engineer is often driven by regulatory requirements. Whether pretreatment is used or not, StormTech recommend using the Isolator Row Plus to minimize maintenance requirements and maintenance costs.

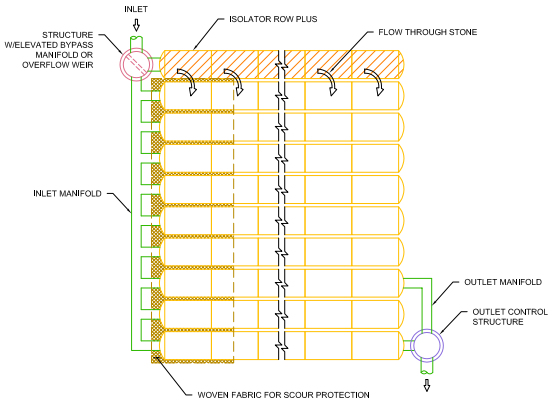
Note: *See the StormTech Design Manual for detailed information on designing inlets for a StormTech system, including the Isolator Row Plus.*



Looking down the Isolator Row PLUS from the manhole opening, ADS PLUS Fabric is shown between the chamber and stone base.



StormTech Isolator Row PLUS with Overflow Spillway (not to scale)



Isolator Row Plus Inspection/Maintenance

Inspection

The frequency of inspection and maintenance varies by location. A routine inspection schedule needs to be established for each individual location based upon site specific variables. The type of land use (i.e. industrial, commercial, residential), anticipated pollutant load, percent imperviousness, climate, etc. all play a critical role in determining the actual frequency of inspection and maintenance practices.

At a minimum, StormTech recommends annual inspections. Initially, the Isolator Row Plus should be inspected every 6 months for the first year of operation. For subsequent years, the inspection should be adjusted based upon previous observation of sediment deposition.

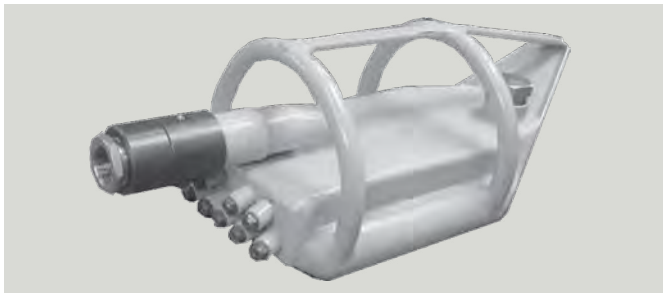
The Isolator Row Plus incorporates a combination of standard manhole(s) and strategically located inspection ports (as needed). The inspection ports allow for easy access to the system from the surface, eliminating the need to perform a confined space entry for inspection purposes.

If upon visual inspection it is found that sediment has accumulated, a stadia rod should be inserted to determine the depth of sediment. When the average depth of sediment exceeds 3 inches throughout the length of the Isolator Row Plus, clean-out should be performed.

Maintenance

The Isolator Row Plus was designed to reduce the cost of periodic maintenance. By "isolating" sediments to just one row, costs are dramatically reduced by eliminating the need to clean out each row of the entire storage bed. If inspection indicates the potential need for maintenance, access is provided via a manhole(s) located on the end(s) of the row for cleanout. If entry into the manhole is required, please follow local and OSHA rules for a confined space entries.

Maintenance is accomplished with the JetVac process. The JetVac process utilizes a high pressure water nozzle to propel itself down the Isolator Row Plus while scouring and suspending sediments. As the nozzle is retrieved, the captured pollutants are flushed back into the manhole for vacuuming. Most sewer and pipe maintenance companies have vacuum/JetVac combination vehicles. Selection of an appropriate JetVac nozzle will improve maintenance efficiency. Fixed nozzles designed for culverts or large diameter pipe cleaning are preferable. Rear facing jets with an effective spread of at least 45" are best. StormTech recommends a maximum nozzle pressure of 2000 psi be utilized during cleaning. JetVac reels can vary in length. For ease of maintenance, ADS recommends Isolator Row Plus lengths up to 200' (61 m). **The JetVac process shall only be performed on StormTech Isolator Row Plus that have ADS Plus Fabric (as specified by StormTech) over their angular base stone.**

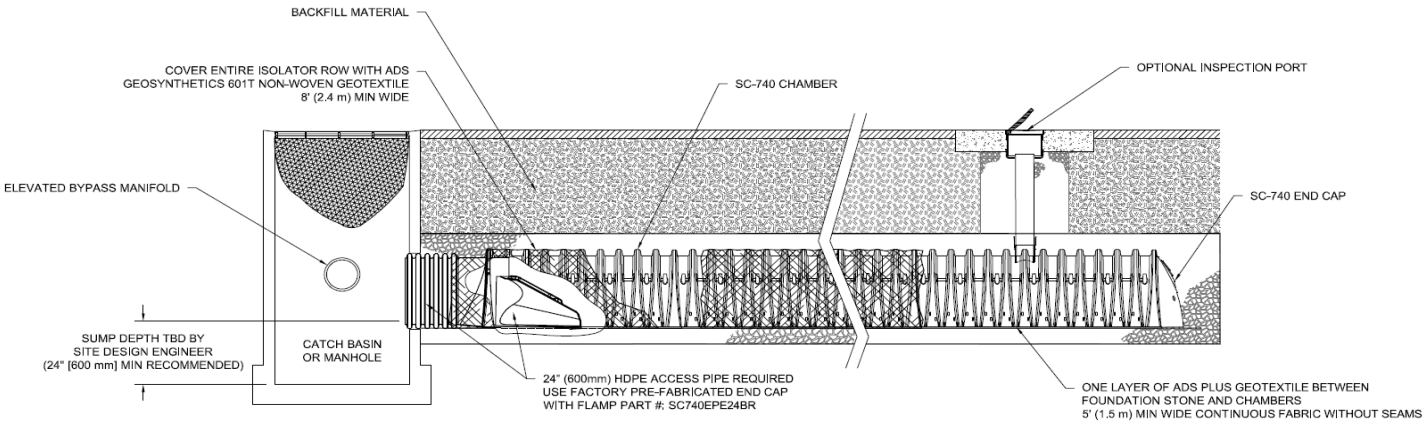






StormTech Isolator Row PLUS (*not to scale*)

Note: *Non-woven fabric is only required over the inlet pipe connection into the end cap for SC-160LP, DC-780, MC-3500 and MC-7200 chamber models and is not required over the entire Isolator Row PLUS.*



Isolator Row Plus Step By Step Maintenance Procedures

Step 1

Inspect Isolator Row Plus for sediment.

A) Inspection ports (if present)
   i. Remove lid from floor box frame
   ii. Remove cap from inspection riser
   iii. Using a flashlight and stadia rod,measure depth of sediment and record results on maintenance log.
   iv. If sediment is at or above 3 inch depth, proceed to Step 2. If not, proceed to Step 3.

B) All Isolator Row Plus
   i. Remove cover from manhole at upstream end of Isolator Row Plus
   ii. Using a flashlight, inspect down Isolator Row Plus through outlet pipe
      1. Mirrors on poles or cameras may be used to avoid a confined space entry
      2. Follow OSHA regulations for confined space entry if entering manhole
   iii. If sediment is at or above the lower row of sidewall holes (approximately 3 inches), proceed to Step 2.
   If not, proceed to Step 3.

Step 2

Clean out Isolator Row Plus using the JetVac process.

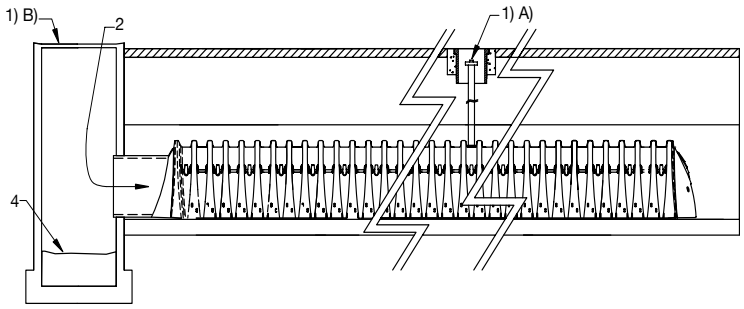
A) A fixed floor cleaning nozzle with rear facing nozzle spread of 45 inches or more is preferable
B) Apply multiple passes of JetVac until backflush water is clean
C) Vacuum manhole sump as required

Step 3

Replace all caps, lids and covers, record observations and actions.

Step 4

Inspect & clean catch basins and manholes upstream of the StormTech system.



Sample Maintenance Log

Date	Stadia Rod Readings		Sedi-ment Depth (1)–(2)	Observations/Actions	Inspector
	Fixed point to chamber bottom (1)	Fixed point to top of sediment (2)			
3/15/11	6.3 ft	none		New installation. Fixed point is CI frame at grade	DJM
9/24/11		6.2	0.1 ft	Some grit felt	SM
6/20/13		5.8	0.5 ft	Mucky feel, debris visible in manhole and in Isolator Row PLUS, maintenance due	NV
7/7/13	6.3 ft		0	System jetted and vacuumed	DJM

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800-821-6710

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ADS StormTech® Installation Guide

SC-310/SC-740/DC-780

StormTech Installation Video

Required Materials and Equipment List

- Acceptable fill materials per Table 1
- ADS Plus and non-woven geotextile fabrics
- StormTech solid end caps and pre-cored end caps
- StormTech chambers
- StormTech manifolds and fittings

Important Notes:

A. This installation guide provides the minimum requirements for proper installation of chambers. Non-adherence to this guide may result in damage to chambers during installation. Replacement of damaged chambers during or after backfilling is costly and very time consuming. It is recommended that all installers are familiar with this guide, and that the contractor inspects the chambers for distortion, damage and joint integrity as work progresses.

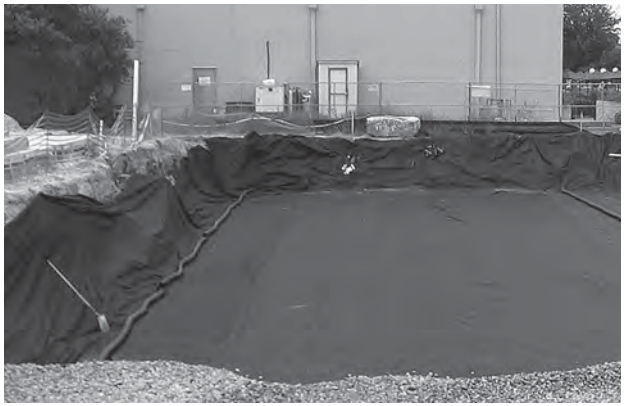
B. Use of a dozer to push embedment stone between the rows of chambers may cause damage to chambers and is not an acceptable backfill method. Any chambers damaged by using the "dump and push" method are not covered under the StormTech standard warranty.

C. Care should be taken in the handling of chambers and end caps. Avoid dropping, prying or excessive force on chambers during removal from pallet and initial placement.

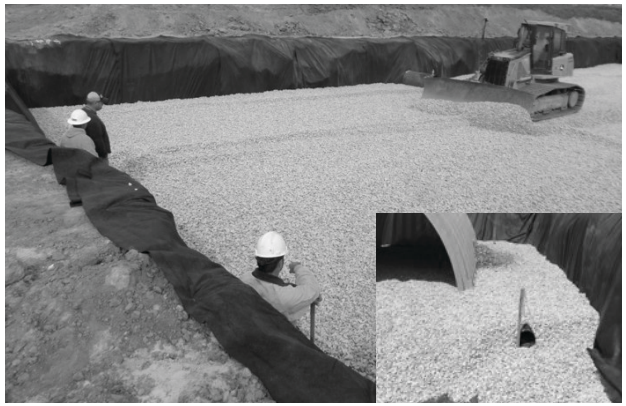
Requirements for System Installation



Excavate bed and prepare subgrade per engineer's plans.



Place non-woven geotextile over prepared soils and up excavation walls. Install underdrains if required.



Place clean, crushed, angular stone foundation 6" (150 mm) min. Compact to achieve a flat surface.

Manifold, Scour Fabric and Chamber Assembly



Install manifolds and lay out ADS Plus fabric at inlet rows (min. 12.5 ft (3.8 m)) at each inlet end cap. Place a continuous piece along entire length of Isolator® Plus Row(s).



Align the first chamber and end cap of each row with inlet pipes. Contractor may choose to postpone stone placement around end chambers and leave ends of rows open for easy inspection of chambers during the backfill process.



Continue installing chambers by overlapping chamber end corrugations. Chamber joints are labeled "Lower Joint – Overlap Here" and "Build this direction – Upper Joint" Be sure that the chamber placement does not exceed the reach of the construction equipment used to place the stone. Maintain minimum 6" (150 mm) spacing between rows.

Attaching the End Caps



Lift the end of the chamber a few inches off the ground. With the curved face of the end cap facing outward, place the end cap into the chamber's end corrugation.

Prefabricated End Caps



24" (600 mm) inlets are the maximum size that can fit into a SC-740/DC-780 end cap and must be prefabricated with a 24" (600 mm) pipe stub. SC-310 chambers with a 12" (300 mm) inlet pipe must use a prefabricated end cap with a 12" (300 mm) pipe stub. When used on an Isolator Row Plus, these end caps will contain a welded FLAMP (flared end ramp) that will lay on top of the ADS Plus fabric (shown above)

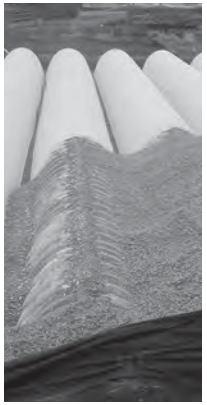
Isolator Row Plus



Place a continuous layer of ADS Plus fabric between the foundation stone and the Isolator Row Plus chambers, making sure the fabric lays flat and extends the entire width of the chamber feet. Drape a strip of ADS non-woven geotextile over the row of chambers (not required over DC-780). This is the same type of non-woven geotextile used as a separation layer around the angular stone of the StormTech system.

Initial Anchoring of Chambers – Embedment Stone





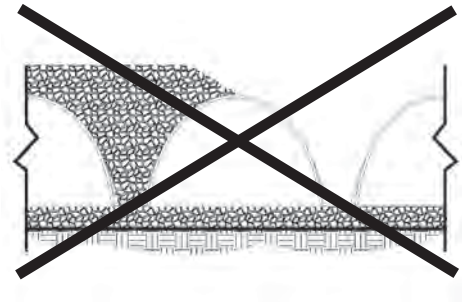
Initial embedment shall be spotted along the centerline of the chamber evenly anchoring the lower portion of the chamber. This is best accomplished with a stone conveyor or excavator reaching along the row.



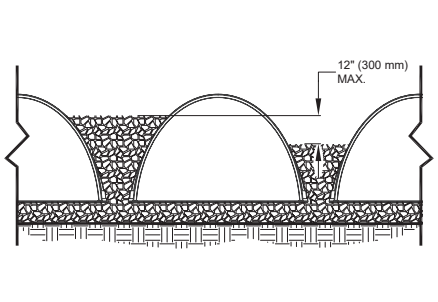


No equipment shall be operated on the bed at this stage of the installation. Excavators must be located off the bed. Dump trucks shall not dump stone directly on to the bed. Dozers or loaders are not allowed on the bed at this time.

Backfill of Chambers – Embedment Stone

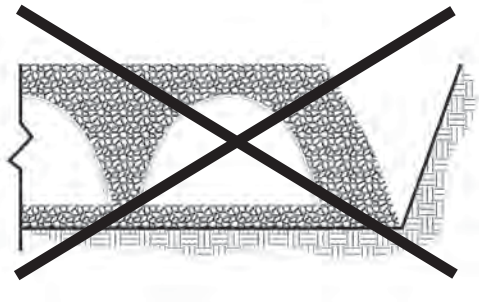


Uneven Backfill

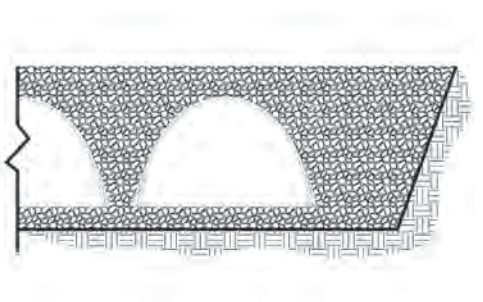


Even Backfill

Backfill chambers evenly. Stone column height should never differ by more than 12” (300 mm) between adjacent chamber rows or between chamber rows and perimeter.



Perimeter Not Backfilled



Perimeter Fully Backfilled

Perimeter stone must be brought up evenly with chamber rows. Perimeter must be fully backfilled, with stone extended horizontally to the excavation wall.

Backfill - Embedment Stone & Cover Stone





Continue evenly backfilling between rows and around perimeter until embedment stone reaches tops of chambers. Perimeter stone must extend horizontally to the excavation wall for both straight or sloped sidewalls. **Only after chambers have been backfilled to top of chamber and with a minimum 6" (150 mm) of cover stone on top of chambers can small dozers be used over the chambers for backfilling remaining cover stone.**

Small dozers and skid loaders may be used to finish grading stone backfill in accordance with ground pressure limits in Table 2. They must push material parallel to rows only. Never push perpendicular to rows. StormTech recommends that the contractor inspect chambers before placing final backfill. Any chambers damaged by construction shall be removed and replaced.

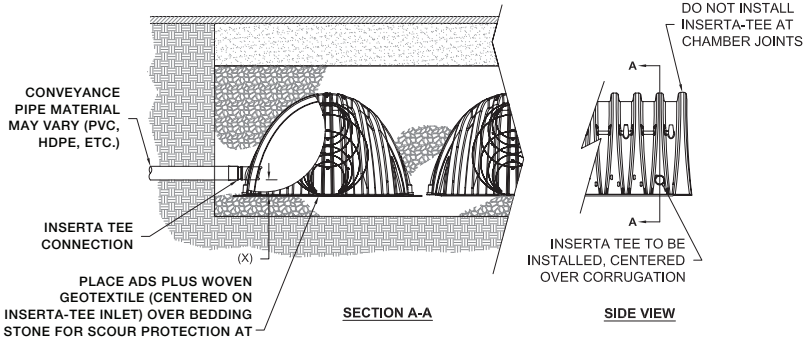
Final Backfill of Chambers – Fill Material





Install non-woven geotextile over stone. Geotextile must overlap 24" (600 mm) min. where edges meet. Compact each lift of backfill as specified in the site design engineer's drawings. Roller travel parallel with rows.

Inserta Tee Detail



CHAMBER	MAX DIAMETER OF INSERTA TEE	HEIGHT FROM BASE OF CHAMBER (X)
SC-310	6" (150 mm)	4" (100 mm)
SC-740	10" (250 mm)	4" (100 mm)
DC-780	10" (250 mm)	4" (100 mm)
INSERTA TEE FITTINGS AVAILABLE FOR SDR 26, SDR 36, SCH 40 IPS GASKETED & SOLVENT WELD, N-12, HP STORM, C-900 OR DUCTILE IRON.		

NOTE:
PART NUMBERS WILL VARY BASED ON INLET PIPE MATERIALS. CONTACT STORMTECH FOR MORE INFORMATION.

StormTech Isolator Row Plus Detail

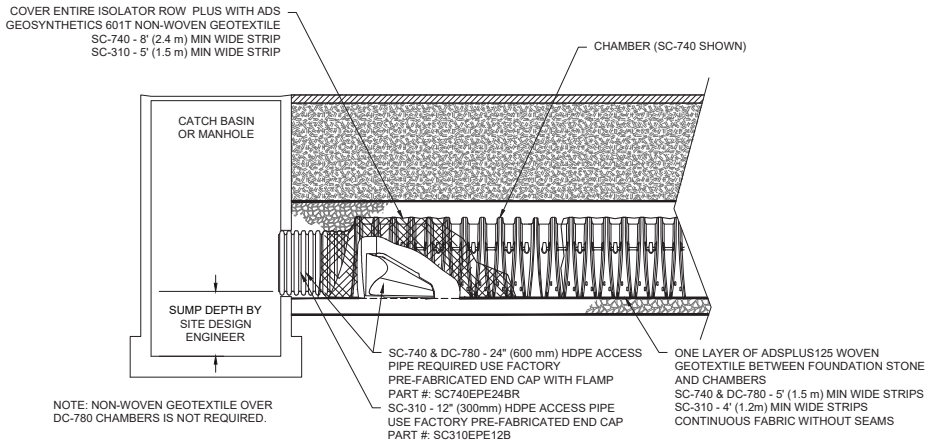


Table 1- Acceptable Fill Materials

Material Location	Description	AASHTO M43 Designation[1]	Compaction/Density Requirement
(D) **Final Fill:** Fill Material for layer 'D' starts from the top of the 'C' layer to the bottom of flexible pavement or unpaved finished grade above. Note that the pavement subbase may be part of the 'D' layer.	Any soil/rock materials, native soils or per engineer's plans. Check plans for pavement subgrade requirements.	N/A	Prepare per site design engineer's plans. Paved installations may have stringent material and preparation requirements.
(C) **Initial Fill:** Fill Material for layer 'C' starts from the top of the embedment stone ('B' layer) to 18" (450 mm) above the top of the chamber. Note that pavement subbase may be part of the 'C' layer.	Granular well-graded soil/aggregate mixtures, <35% fines or processed aggregate. Most pavement subbase materials can be used in lieu of this layer.	AASHTO M45 A-1, A-2-4, A-3 or AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	Begin compaction after min. 12" (300 mm) of material over the chambers is reached. Compact additional layers in 6" (150 mm) max. lifts to a min. 95% Proctor density for well-graded material and 95% relative density for processed aggregate materials. Roller gross vehicle weight not to exceed 12,000 lbs (53 kN). Dynamic force not to exceed 20,000 lbs (89 kN)
(B) **Embedment Stone:** Embedment Stone surrounding chambers from the foundation stone to the 'C' layer above.	Clean, crushed, angular stone	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	No compaction required.
(A) **Foundation Stone:** Foundation Stone below the chambers from the subgrade up to the foot (bottom) of the chamber.	Clean, crushed, angular stone,	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	Place and compact in 6" (150 mm) lifts using two full coverages with a vibratory compactor.[2,3]

Please Note:

1. The listed AASHTO designations are for gradations only. The stone must also be clean, crushed, angular. For example, a specification for #4 stone would state: "clean, crushed, angular no. 4 (AASHTO M43) stone".
2. StormTech compaction requirements are met for 'A' location materials when placed and compacted in 6" (150 mm) (max) lifts using two full coverages with a vibratory compactor.
3. Where infiltration surfaces may be comprised by compaction, for standard installations and standard design load conditions, a flat surface may be achieved by raking or dragging without compaction equipment. For special load designs, contact StormTech for compaction requirements.

Figure 1- Inspection Port Detail

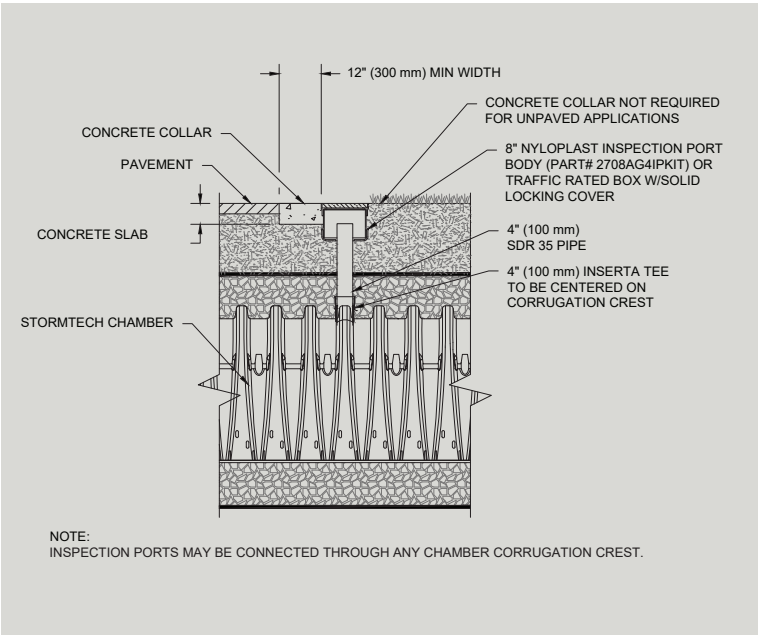
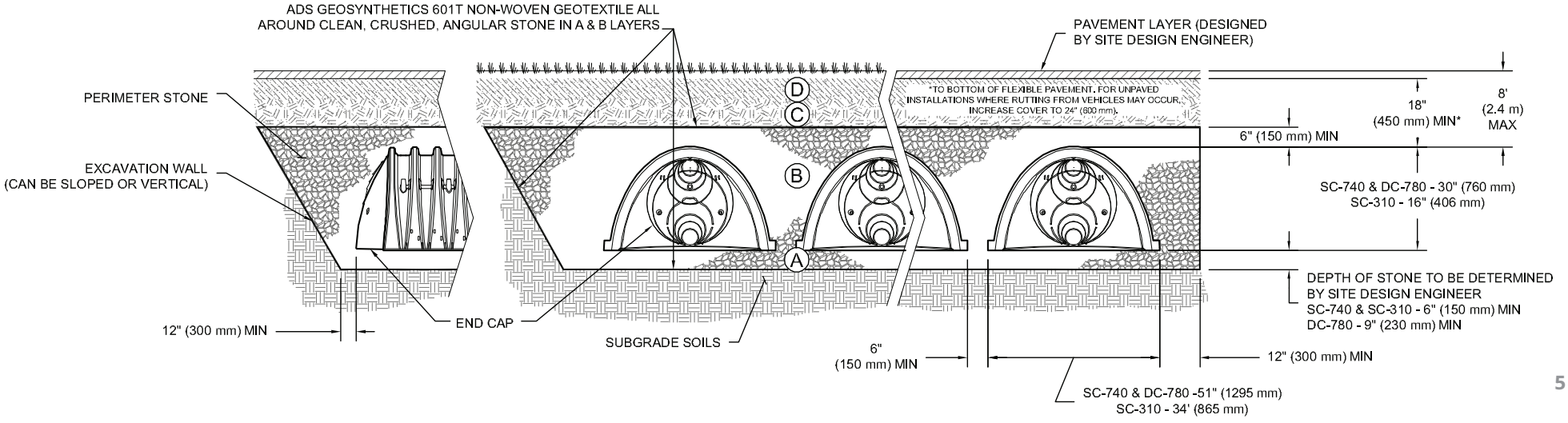


Figure 2 - Fill Material Locations



Notes:

1. 36” (900 mm) of stabilized cover materials over the chambers is recommended during the construction phase if general construction activities, such as full dump truck travel and dumping, are to occur over the bed.
2. During paving operations, dump truck axle loads on 18” (450 mm) of cover may be necessary. Precautions should be taken to avoid rutting of the road base layer, to ensure that compaction requirements have been met, and that a minimum of 18” (450 mm) of cover exists over the chambers. Contact StormTech for additional guidance on allowable axle loads during paving.
3. Ground pressure for track dozers is the vehicle operating weight divided by total ground contact area for both tracks. Excavators will exert higher ground pressures based on loaded bucket weight and boom extension.
4. Mini-excavators (< 8,000lbs/3,628 kg) can be used with at least 12” (300 mm) of stone over the chambers and are limited by the maximum ground pressures in Table 2 based on a full bucket at maximum boom extension.
5. Storage of materials such as construction materials, equipment, spoils, etc. should not be located over the StormTech system. The use of equipment over the StormTech system not covered in Table 2 (ex. soil mixing equipment, cranes, etc) is limited. Please contact StormTech for more information.
6. Allowable track loads based on vehicle travel only. Excavators shall not operate on chamber beds until the total backfill reaches 3 feet (900 mm) over the entire bed.

Table 2 - Maximum Allowable Construction Vehicle Loads[6]

Material Location	Fill Depth over Chambers in. (mm)	Maximum Allowable Wheel Loads		Maximum Allowable Track Loads[6]		Maximum Allowable Roller Loads
		Max Axle Load for Trucks lbs (kN)	Max Wheel Load for Loaders lbs (kN)	Track Width in. (mm)	Max Ground Pressure psf (kPa)	Max Drum Weight or Dynamic Force lbs (kN)
Ⓓ Final Fill Material	36” (900) Compacted	32,000 (142)	16,000 (71)	12” (305) 18” (457) 24” (610) 30” (762) 36” (914)	3880 (186) 2640 (126) 2040 (97) 1690 (81) 1470 (70)	38,000 (169)
Ⓒ Initial Fill Material	24” (600) Compacted	32,000 (142)	16,000 (71)	12” (305) 18” (457) 24” (610) 30” (762) 36” (914)	2690 (128) 1880 (90) 1490 (71) 1280 (61) 1150 (55)	20,000 (89)
	24” (600) Loose/ Dumped	32,000 (142)	16,000 (71)	12” (305) 18” (457) 24” (610) 30” (762) 36” (914)	2390 (114) 1700 (81) 1370 (65) 1190 (57) 1080 (51)	20,000 (89) Roller gross vehicle weight not toexceed 12,000 lbs. (53 kN)
	18” (450)	32,000 (142)	16,000 (71)	12” (305) 18” (457) 24” (610) 30” (762) 36” (914)	2110 (101) 1510 (72) 1250 (59) 1100 (52) 1020 (48)	20,000 (89) Roller gross vehicle weight not to exceed 12,000 lbs. (53 kN)
Ⓑ Embedment Stone	12” (300)	16,000 (71)	NOT ALLOWED	12” (305) 18” (457) 24” (610) 30” (762) 36” (914)	1540 (74) 1190 (57) 1010 (48) 910 (43) 840 (40)	20,000 (89) Roller gross vehicle weight not to exceed 12,000 lbs. (53 kN)
	6” (150)	8,000 (35)	NOT ALLOWED	12” (305) 18” (457) 24” (610) 30” (762) 36” (914)	1070 (51) 900 (43) 800 (38) 760 (36) 720 (34)	NOT ALLOWED

Table 3 - Placement Methods and Descriptions

Material Location	Placement Methods/ Restrictions	Wheel Load Restrictions	Track Load Restrictions	Roller Load Restrictions
		See Table 2 for Maximum Construction Loads		
Ⓓ Final Fill Material	A variety of placement methods may be used. All construction loads must not exceed the maximum limits in Table 2.	36” (900 mm) minimum cover required for dump trucks to dump over chambers.	Dozers to push parallel to rows until 36” (900mm) compaced cover is reached.[4]	Roller travel parallel to rows only until 36” (900 mm) compacted cover is reached.
Ⓒ Initial Fill Material	Excavator positioned off bed recommended. Small excavator allowed over chambers. Small dozer allowed.	Asphalt can be dumped into paver when compacted pavement subbase reaches 18” (450 mm) above top of chambers.	Small LGP track dozers & skid loaders allowed to grade cover stone with at least 6” (150 mm) stone under tracks at all times. Equipment must push parallel to rows at all times.	Use dynamic force of roller only after compacted fill depth reaches 12” (300 mm) over chambers. Roller travel parallel to chamber rows only.
Ⓑ Embedment Stone	No equipment allowed on bare chambers. Use excavator or stone conveyor positioned off bed or on foundation stone to evenly fill around all chambers to at least the top of chambers.	No wheel loads allowed. Material must be placed outside the limits of the chamber bed.	No tracked equipment is allowed on chambers until a min. 6” (150 mm) cover stone is in place.	No rollers allowed.
Ⓐ Foundation Stone	No StormTech restrictions. Contractor responsible for any conditions or requirements by others relative to subgrade bearing capacity, dewatering or protection of subgrade.			

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StormTech® Standard Limited Warranty

STANDARD LIMITED WARRANTY OF STORMTECH LLC ("STORMTECH"): PRODUCTS

(A) This Limited Warranty applies solely to the StormTech chambers and end plates manufactured by StormTech and sold to the original purchaser (the "Purchaser"). The chambers and end plates are collectively referred to as the "Products."

(B) The structural integrity of the Products, when installed strictly in accordance with StormTech's written installation instructions at the time of installation, are warranted to the Purchaser against defective materials and workmanship for one (1) year from the date of purchase. Should a defect appear in the Limited Warranty period, the Purchaser shall provide StormTech with written notice of the alleged defect at StormTech's corporate headquarters within ten (10) days of the discovery of the defect. The notice shall describe the alleged defect in reasonable detail. StormTech agrees to supply replacements for those Products determined by StormTech to be defective and covered by this Limited Warranty. The supply of replacement products is the sole remedy of the Purchaser for breaches of this Limited Warranty. StormTech's liability specifically excludes the cost of removal and/or installation of the Products.

(C) THIS LIMITED WARRANTY IS EXCLUSIVE. THERE ARE NO OTHER WARRANTIES WITH RESPECT TO THE PRODUCTS, INCLUDING NO IMPLIED WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE.

(D) This Limited Warranty only applies to the Products when the Products are installed in a single layer. UNDER NO CIRCUMSTANCES, SHALL THE PRODUCTS BE INSTALLED IN A MULTI-LAYER CONFIGURATION.

(E) No representative of StormTech has the authority to change this Limited Warranty in any manner or to extend this Limited Warranty. This Limited Warranty does not apply to any person other than to the Purchaser.

(F) Under no circumstances shall StormTech be liable to the Purchaser or to any third party for product liability claims; claims arising from the design, shipment, or installation of the Products, or the cost of other goods or services related to the purchase and installation of the Products. For this Limited Warranty to apply, the Products must be installed in accordance with all site conditions required by state and local codes; all other applicable laws; and StormTech's written installation instructions.

(G) THE LIMITED WARRANTY DOES NOT EXTEND TO INCIDENTAL, CONSEQUENTIAL, SPECIAL OR INDIRECT DAMAGES. STORMTECH SHALL NOT BE LIABLE FOR PENALTIES OR LIQUIDATED DAMAGES, INCLUDING LOSS OF PRODUCTION AND PROFITS; LABOR AND MATERIALS; OVERHEAD COSTS; OR OTHER LOSS OR EXPENSE INCURRED BY THE PURCHASER OR ANY THIRD PARTY. SPECIFICALLY EXCLUDED FROM LIMITED WARRANTY COVERAGE ARE DAMAGE TO THE PRODUCTS ARISING FROM ORDINARY WEAR AND TEAR; ALTERATION, ACCIDENT, MISUSE, ABUSE OR NEGLECT; THE PRODUCTS BEING SUBJECTED TO VEHICLE TRAFFIC OR OTHER CONDITIONS WHICH ARE NOT PERMITTED BY STORMTECH'S WRITTEN SPECIFICATIONS OR INSTALLATION INSTRUCTIONS; FAILURE TO MAINTAIN THE MINIMUM GROUND COVERS SET FORTH IN THE INSTALLATION INSTRUCTIONS; THE PLACEMENT OF IMPROPER MATERIALS INTO THE PRODUCTS; FAILURE OF THE PRODUCTS DUE TO IMPROPER SITING OR IMPROPER SIZING; OR ANY OTHER EVENT NOT CAUSED BY STORMTECH. A PRODUCT ALSO IS EXCLUDED FROM LIMITED WARRANTY COVERAGE IF SUCH PRODUCT IS USED IN A PROJECT OR SYSTEM IN WHICH ANY GEOTEXTILE PRODUCTS OTHER THAN THOSE PROVIDED BY ADVANCED DRAINAGE SYSTEMS ARE USED. THIS LIMITED WARRANTY REPRESENTS STORMTECH'S SOLE LIABILITY TO THE PURCHASER FOR CLAIMS RELATED TO THE PRODUCTS, WHETHER THE CLAIM IS BASED UPON CONTRACT, TORT, OR OTHER LEGAL THEORY.

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ADS 0601T/O NONWOVEN GEOTEXTILE SPECIFICATION

Scope

This specification describes ADS 0601T/O nonwoven geotextile.

Filter Fabric Requirements

ADS 0601T/O is an orange nonwoven geotextile composed of polypropylene fibers, which are formed into a stable network such that the fibers retain their relative position. ADS 0601T/O is inert to biological degradation and resists naturally encountered chemicals, alkali and acids. ADS 0601T/O conforms to the physical property values listed below:

Filter Fabric Properties

Property	Test Method	Unit	Typical Value[1] MD	Typical Value[1] CD
Grab Tensile Strength	ASTM D4632	lbs (N)	175 (779)	175 (779)
Grab Tensile Elongation	ASTM D4632	%	75	75
Trapezoid Tear Strength	ASTM D4533	lbs (N)	85 (378)	85 (378)
CBR Puncture Strength	ASTM D6241	lbs (N)	480 (2136)	480 (2136)
Permittivity	ASTM D4491	sec^{-1}	1.5	1.5
Flow Rate	ASTM D4491	$gal/min/ft^2$ ($l/min/m^2$)	105 (4278)	105 (4278)
UV Resistance (at 500 hours)[1]	ASTM D4355	% strength retained	80	80

Physical Properties

Property	Test Method	Unit	Typical Value[2]
Weight	ASTM D5161	oz/yd^2 (g/m^2)	6.5 (220)
Thickness	ASTM D5199	mils (mm)	65 (1.7)
Roll Dimensions (W x L)	-	ft (m)	15 x 300 (4.5 x 91)
Roll Area	-	yd^2 (m^2)	500 (418)
Estimated Roll Weight	-	lb (kg)	220 (100)

1 Modified, Minimum Test Value
2 ASTM D4439 Standard Terminology for Geosynthetics: typical value, n-*for geosynthetics*, the mean value calculated from documented manufacturing quality control test results for a defined population obtained from one test method associated with on specific property.

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Separation

ADS 315W WOVEN GEOTEXTILE SPECIFICATION

Scope

This specification describes ADS 315W woven geotextile.

Filter Fabric Requirements

ADS 315W is manufactured using high-tenacity polypropylene yarns that are woven to form a dimensionally stable network, which allows the yarns to maintain their relative position. ADS 315W resists ultraviolet deterioration, rotting and biological degradation and is inert to commonly encountered soil chemicals. ADS 315W conforms to the physical property values listed below:

Filter Fabric Properties

Property	Test Method	Unit	M.A.R.V. (Minimum Average Roll Value)[2]
Tensile Strength (Grab)	ASTM D4632	lbs (N)	315 (1400)
Elongation	ASTM D4632	%	15
CBR Puncture	ASTM D6241	lbs (N)	900 (4005)
Puncture	ASTM D4833	lbs (N)	150 (667)
Mullen Burst	ASTM D3786	psi (kPa)	600 (4134)
Trapezoidal Tear	ASTM D4533	lbs (N)	120 (533)
UV Resistance (at 500 hours)	ASTM D4355	%	70
Apparent Opening Size (AOS)*	ASTM D4751	U.S. Sieve (mm)	40 (.425)
Permittivity	ASTM D4491	sec^{-1}	.05
Water Flow Rate	ASTM D4491	gpm/ft^2 ($l/min/m^2$)	4 (163)

* Maximum average roll value.

Packaging

Roll Dimensions (W x L) - ft. (m)	12.5 x 360/ 15 x 300 / 17.5 x 258 (3.81 x 109.8/ 4.57 x 91.5 / 5.33 x 78.6)

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Design and Maintenance of Subsurface Gravel Wetlands

February 4, 2015

The University of New Hampshire Stormwater Center conducted a design and maintenance review of subsurface gravel wetland systems for the New Hampshire Department of Transportation. The UNHSC utilized various NHDOT site and construction plans, construction photo documentation, cost and material specification sheets, and the NHDOT subsurface gravel wetland (SGW) design specification dated December 20, 2013. The UNHSC also conducted inspections of subsurface gravel wetland systems that were designed and installed by the NHDOT or its contractors in order to determine maintenance needs. The UNHSC prepared this report as a resource for SGW designers and installers to assist in the design, cost and material specification, and maintenance requirements to ensure a properly functioning SGW system.

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1.0 Introduction

The UNHSC appreciates the opportunity to provide Design and Maintenance Review services for the New Hampshire Department of Transportation. We have completed our review and site visits of NHDOT SGW installations and offer the following summary.

Information Reviewed:

- Various Site Plans prepared by NHDOT and various assisting engineering firms
- Construction Management photos provided by NHDOT
- Costs and material specifications compiled by NHDOT
- NHDOT Subsurface Gravel Wetland Design, dated December 20, 2013

2.0 Background

The subsurface gravel wetland (SGW) stormwater management system has been around for almost 20 years. It approximates the look and function of a natural wetland, effectively removing sediments and other pollutants commonly found in runoff while enhancing the visual appeal of the landscape by adding buffers or greenscape to urban areas. The SGW specification used by NHDOT represents the original specification developed by the University of New Hampshire Stormwater Center (UNHSC) and documented in the UNHSC SGW Design Specifications published in June of 2009. These specifications reflect findings from five years of study of the SGW originally designed and evaluated at UNHSC. The SGW is a horizontal-flow filtration system and should not be confused with stormwater wetlands that function more like ponds. Instead, the SGW includes a dense root mat in a wetland soil that forms a cover over crushed stone. The subsurface crushed stone is the primary flow path for stormwater and is an anaerobic microbe-rich environment for improving water quality. Like other filtration systems, it demonstrates a tremendous capacity to reduce runoff peak flows and improve water quality.

3.0 Implementation

Subsurface gravel wetlands can be used in many regions, with the exception of those that are too arid to support a wetland system. SGW systems have demonstrated exceptional stormwater quality treatment, in particular for nutrients, for a range of land uses including linear transportation environments. It should be noted that as implementation has progressed and coupled with an additional five years of research at the UNHSC, additional findings and design modifications have arisen. The initial design of the UNHSC SGW was to handle runoff from a commuter parking area, best represented by a high density commercial use. In such applications SGW systems are space intensive; however for linear transportation environments some flexibility is expected. Recommendations and comments provided herein reflect additional learning and research findings gathered since the original publication of the UNHSC 2009 SGW specification.

1.) The purpose of the NHDOT underdrain systems is to intercept and provide drainage for seasonal high ground water levels where deemed to be within 0.5' of the wetland soil surface elevation. The rationale is not well defined and requires justification. For systems that are installed within proximity to seasonal high groundwater (SHGW) it is unclear how the benefits of the flushing basins justify overall costs (average cost savings: $1,069 per system). The SGW low flow orifice not only controls the stormwater flow through the system, by this hydraulic control will also ultimately control SHGW elevation in the vicinity of the SGW in the same manner. An SGW may have a portion of the system built below the SHGW. The original SGW at the UNHSC site in Durham, NH is a case in point. A caution is noted in that groundwater flows should not be significant compared to the stormwater flows. Significant groundwater inflows could prevent the formation of the anaerobic zone in the crushed stone.

2.) Overall system sizing for NHDOT systems appears to be based on the UNHSC 2009 SGW drainage design guidance with respect to overall length to width (L:W) ratio. In some locations L:W ratio dominates design orientation. UNHSC researchers recommend that this design criterion not be considered the most critical design element. The critical design element with respect to configuration is to size the system to treat the desired design rainfall depth from the contributing drainage area (1" Water Quality Volume). Linear systems are fine (higher L:W), provided the minimum WQV: Internal Storage Reservoir (ISR) capacity ratio is 4:1 or 25% (WQV:ISR) and the minimum flow path in the crushed stone in each cell is 15 feet.

3.) Most inspected forebays appear to function as wet basins rather than the more desirable dry basin. Dry forebays promote aerobic transformations of nitrogen which is an important first step prior to the anaerobic zone. It is recommended that if forebays cannot be economically installed to operate dry then concrete inlet structures such as off-line deep sump catch basins be used for pre-treatment as opposed to a forebay structure. A deep sump catch basin or other precast inlet structure may also be easier to maintain. A very important function of any SGW forebay is that it be aerobic in order to convert most forms of nitrogen to nitrate or nitrite.

4.) Most forebay outlets lack low flow conveyance which causes them to function as wet basins as opposed to dry basins. It is important that regardless of the configuration of the pretreatment structure that the SGW system forebay contain an outlet with an invert at the same level as the wetland surface to eliminate ponding behind the forebay berm such that obligate wetland plant colonization (cattails) and the potential for anaerobic conditions do not occur. Other options are to design the forebays to convey low flows that draw the fore bay water level down between storm events.

5.) Hydraulic inlets (leaching chambers) appear to be oversized. There are many hydraulic inlet design configurations that may be able to replace existing designs with better function and maintenance capacity and diminished costs. NHDOT SGW systems observed in this study, small and large, seem to use similar hydraulic inlet configurations

with the same number of structures regardless of watershed area size or design treatment volume. UNHSC research indicates the hydraulic inlet configuration can be flexible provided it has a greater hydraulic capacity/efficiency than the primary outlet orifice control. Recent experience in UNHSC designs have used slotted hydraulic inlet pipes as a backup inlet with a primary inlet composed of woven geotextile laid on the subsurface pea stone and covered in 6”-8“ diameter stone around the outfall of the inlet pipe (see figures 1 and 2). This configuration protects the stone filter in the subsurface of the wetland system while also providing a more accessible and maintainable surface hydraulic inlet feature that will inevitably be easier and less costly to construct.

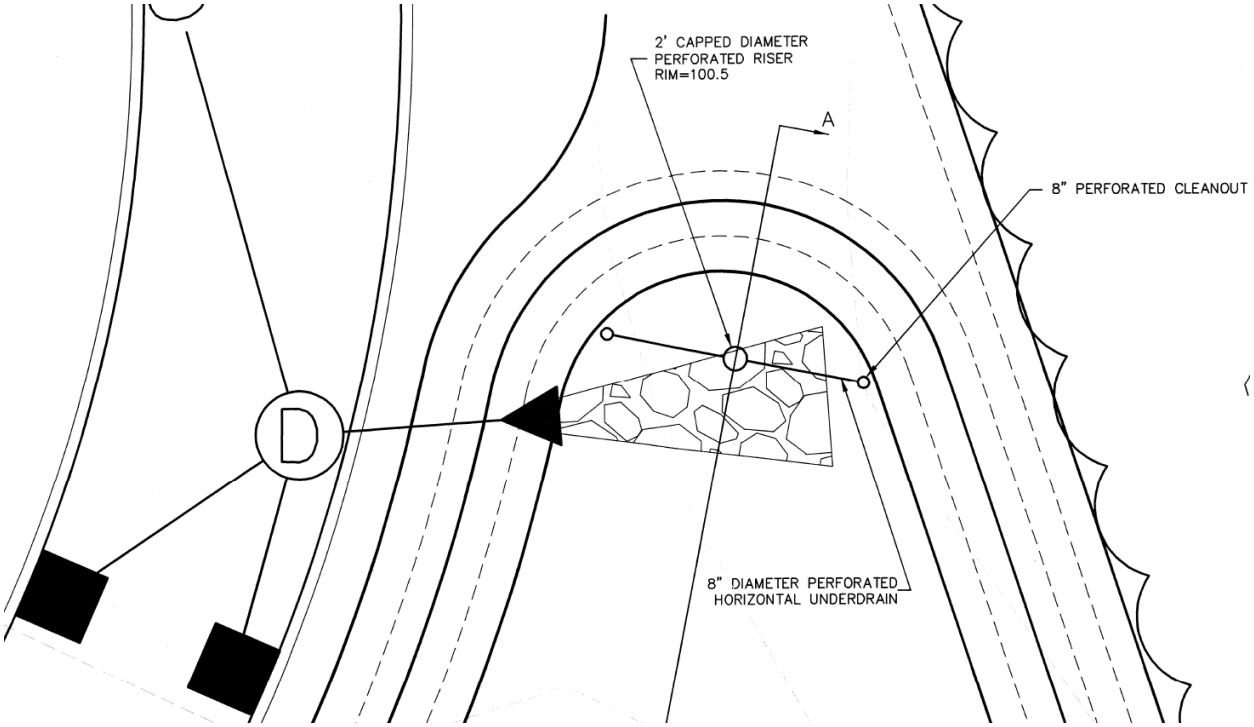


Figure 1: Typical plan view of multi-inlet configuration of a SGW system

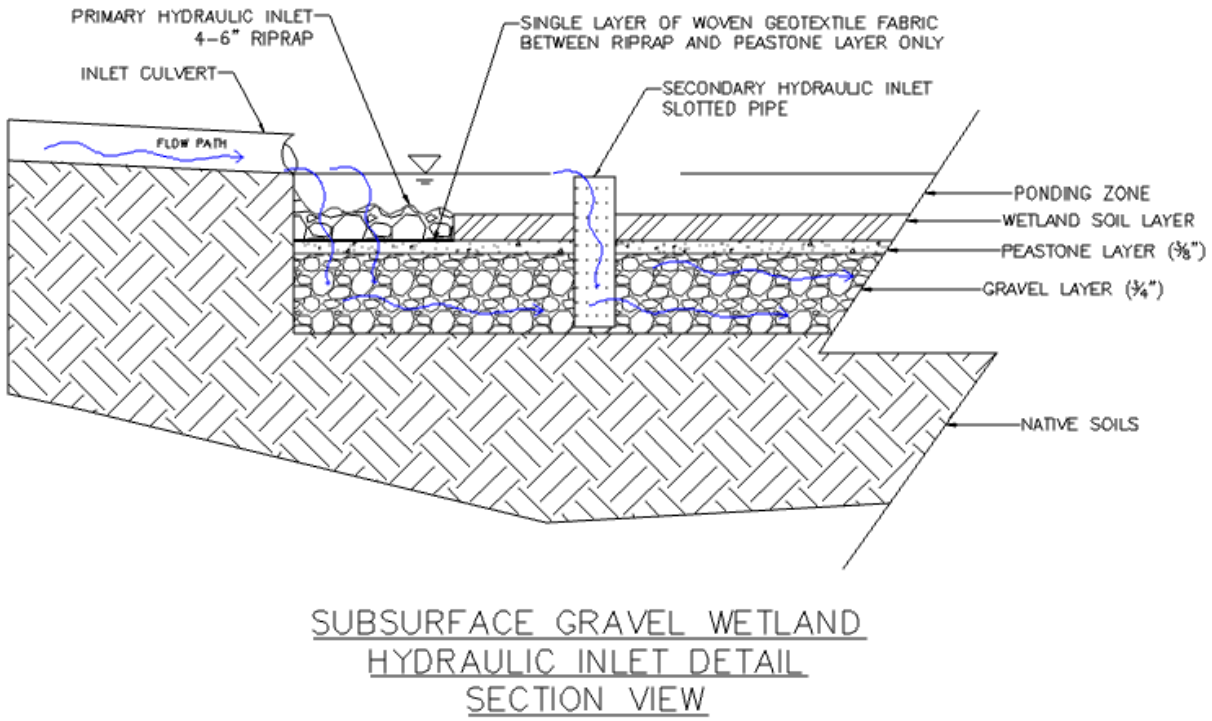


Figure 2: Typical profile view of multi-inlet configuration of a SGW system.

6.) Cleanout structures (leaching chambers) need not be as large since their primary function is for emergency access to the subsurface header pipe that directs flow either to the second wetland chamber or the outlet structure. Cleanout structures can be capped or be installed at the wetland surface grade with a manhole cover to ensure that the cleanouts are accessible, water tight, and does not short circuit system hydraulics.

7.) Some of the outlet control structures have slotted inlets (4" high by 12" wide) to allow for drainage of high flows. These slots need to be protected by covering them with 6-8" stone or some type of trash screen. This will prevent trash, leaves, or other debris from clogging the outlet orifice.

4.0 Costs

For this project NHDOT produced itemized costs associated with the bid prices for the materials and installation of thirteen SGW systems. In meetings with NHDOT personnel several items were determined to be irrelevant to this project and were thus eliminated from the spreadsheet. These items are itemized in the list below:

- 206.1 (Common Structure Excavation) and 206.2 (Rock Structure Excavation) were determined to be unique and not standard items and eliminated

- 209.1 (Granular Backfill) was determined to reflect typical stabilization for bedding material and were eliminated
- 593.331 (Geotextile, Stabilization, Class 3, Non-woven) was determined to be no longer used, and was replaced with Item 585.7 (Stone Fill, Class G) and thus eliminated
- 593.411 (Geotextile, Permeability Control, Class 1, Non-woven), 593.421 (Geotextile, Permeability Control, Class 2, Non-woven), 593.431 (Geotextile, Permeability Control, Class 3, Non-woven) were determined to be erosion control items and were eliminated
- 603.83206 (6" Plastic Pipe, Smooth Interior), 605.906 (6" Pipe Underdrain, Contractors' Option) were determined to be irrelevant to the SGW construction costs and were thus eliminated.

To compare costs, all original capital construction costs were converted to 2014 dollars using consumer price index inflation rates (USDOL, 2014). Average SGW materials and installation costs from the range of assessed projects (see attachment A for the raw costs) was $32,462 per impervious acre treated ($0.75/sf) with a maximum cost of $68,893 per impervious acre treated ($1.47/sf) and a minimum cost of $12,210 per impervious acre treated ($0.28/sf). As a comparison, for the SGW studied at the UNH field facility, costs were calculated at $28,079 per impervious acre treated ($0.64/sf). Cost details are illustrated in Table 1.

Table 1: Comparison of unit costs from all reviewed NHDOT SGW materials cost data and reference information documented by UNHSC. Note all costs are in 2014 dollars

Total Price Statistics	Contributing Impervious Area (A)	Construction Cost per Impervious Area ($/A)	Construction Cost per Impervious Area ($/sf)	UNHSC Costs ($/A)	UNHSC Costs ($/sf)
Minimum	1.90	$ 12,210	$ 0.28	-	-
Average	4.56	$ 32,462	$ 0.75	$28,079	$ 0.64
Maximum	8.40	$ 63,893	$ 1.47	-	-

Results of the cost assessment indicate room for potential savings with respect to design. In light of the detailed recommendations outlined in the Implementation section of this report, cost adjustments and justifications include:

Eliminate items 605.79 and 605.82251-24 (perimeter dewatering controls) for use if SHGW is within 0.5' of SGW surface. There is no data or clear rationale for any threat from SHGW in SGW systems. SHGW levels are often intermittent and would ultimately be controlled by the outlet orifice which is typically 0.5 to 0.67' below SGW surface. Therefore this item is redundant and further justification is necessary to validate the additional expense. Cost savings is estimated at 3.3% or $1,069 per system.

Reduce the number of item numbers 604.921 and 604.922 (alt: 604.193, 604.393, and 604.912) leaching chambers. Hydraulic inlet controls could be reduced if not eliminated in the future as linear routing through the system is adapted in future designs. Other hydraulic inlet controls such as suggested in the Implementation section of this report may be less expensive and offer

greater maintainability. There is no clear rationale for these structures at the end of each wetland cell as their only function is to provide access to the perforated header pipe in the subsurface as a potential clean out. At the end of the wetland cell these can simply be solid risers capped at the wetland surface. At the upstream end of each wetland cell, hydraulic inlets should be reduced to two if not eliminated and replaced with alternative inlet structures. Hydraulic inlet capacity need only exceed that of the outlet orifice. Cost savings is estimated at 10% or $3,201 per system.

Items 647.1 (Humus) and 647.29 (Wetland Humus) incurred high variability with respect to cost and in some systems had some of the largest percent costs (>12%) than any additional line items. There is no specification for the wetland humus in the NHDOT SGW design guidelines dated December 20, 2013 and the wetland soil specification in the UNHSC 2009 guidance is weak without sufficient detail to allow for accurate and cost effective bidding. Subsequent to this report UNHSC has worked to develop a particle size distribution for use in specifying wetland humus in future SGW systems. The proposed PSD for wetland humus is provided in Table 2 and reflects a poorly drained soil with a d50 of 0.15 mm and is a clay or silt loam in the soil textural triangle. We feel that this will allow for more cost effective bidding of appropriate soil types with the potential to even employ appropriate onsite excavated materials into select humus mixes thereby further reducing costs. We believe with these additional specifications it is not unrealistic to assume a future price of $15/CY, which represents the 25% quartile cost of the original line item. Cost savings is estimated at 0.5% or $164 per system.

Table 2: Particle size distribution and testing tolerances for wetland humus for the subsurface gravel wetland system

US Standard Sieve Size in/mm	Percent Passing	Percent Passing Testing Tolerances
0.5/12.5	100	± 10.0
#10/2.00	90 - 75	± 5.0
#100/0.15	40-50	± 5.0
#200/0.75	25-50	± 5.0

Relative cost savings are summarized in table 3.

Table 3: Comparison of unit costs from all reviewed SGW materials cost data with projected cost savings from recommended itemized design modifications. Note all costs are amortized to reflect 2014 dollars.

Total Price Statistics	Contributing Impervious Area (A)	Construction Cost per Impervious Area ($/A)	Construction Cost per Impervious Area ($/sf)	UNHSC Costs ($/A)	UNHSC Costs ($/sf)
Minimum	1.90	$ 7,895	$ 0.18	-	-
Average	4.56	$ 27,320	$ 0.63	$28,079	$0.64
Maximum	8.40	$ 53,780	$ 1.23	-	-

5.0 Maintenance

Inspection and maintenance is a critical component of the long term function and effectiveness of any stormwater control measure. Overall the UNHSC inspections of the facilities proved that the SGW systems were largely functioning properly and were well designed and constructed. The UNHSC has produced operation and maintenance guidelines as well as an inspection checklist which have been provided in attachment A of this report. Inspection is critical to assess as built functionality in addition to identifying unique maintenance tasks that may be less general in nature and more site specific. Overall the inspections conducted and provided as an attachment to this report (attachment B) indicates that routine biannual inspection (annual as a minimum) should be initiated at these facilities as a standard of practice. Post construction inspections are critical just after newly constructed SGW system is placed online. While some long-term maintenance items are due to system aging and processing of polluted runoff, some operation issues are a result of construction and installation practices not fully aligned with design specifications. These items are often quickly identifiable. In our assessment of eight NHDOT SGW systems two main issues were identified associated with installation or construction. First numerous pre-treatment forebays in observed systems held ponding water. This impacts the overall chemical function and processing of dissolved inorganic nitrogen species as these ponded forebay areas often turn into anaerobic areas of obligate wetland plants. Second on one particular system (NHDOT # 14633F BMP 19) three to five inches of standing water was observed within the entire system. The final water elevation was being controlled by an outlet pipe invert that was installed above the overall wetland soil elevation. This has resulted in sparse vegetation and likely was not part of the original design.

Beyond construction and installation issues the primary maintenance need identified through these inspections is simple maintenance of the established wetland vegetation. Numerous facilities are in need of this type of maintenance which involves cutting the existing plants down to the base and removing it from the system to prevent breakdown and rerelease of nitrogen.

Attachment A: Raw Item Costs

P. Salo 12/3/2013

SUBSURFACE GRAVEL WETLANDS (13933C/ DB 920)			
Item	**Quantity**	**Bid Price**	**Total**
Item 203.1 - Common Excavation (CY)	16,603	$4.75	$78,864.25
Item 203.6 - Embankment-in-Place (CY)	245	$8.95	$2,192.75
Item 203. 52 - Impervious Material (CY)	500	$14.00	$7,000.00
Item 585.3- Stone Fill, Class C (CY)	83	$18.00	$1,494.00
Item 585.5 - Stone Fill, Class E (CY)	900	$18.00	$16,200.00
Item 585.7 - Stone Fill, Class G (CY)	120	$24.00	$2,880.00
Item 593.411 - Geotextile, Perm. Control, Cl. 1, Non-woven (SY)	215	$2.10	$451.50
Item 603.83212 - 12" Plastic Pipe (Smooth Interior) (LF)	283	$33.00	$9,339.00
Item 604.91X - Outlet Control Structure (U)	2	$5,800.00	$11,600.00
Item 604.193 - Special Catch Basin (3' Dia) (U)	8	$3,300.00	$26,400.00
Item 604.393 - Specia Drain Manhole 3'x 3' (U)	3	$2,600.00	$7,800.00
Item 605.508 - 8" Perf. Corr. Poly. Pipe Underdrain (LF)	592	$22.00	$13,024.00
Item 605.79 - Underdrain Flushing Basins (EA)	10	$660.00	$6,600.00
Item 605.906 - 6" Pipe Underdrain (Contractor's Option)	506	$16.00	$8,096.00
Item 646.3 - Turf Establishment w/ Mulch & Tackifiers (A)	0.48	$1,650.00	$792.00
Item 647.1 - Humus (CY)	1,900	$15.00	$28,500.00
Item 647.29 - Wetland Humus (CY)	330	$15.00	$4,950.00
Item 670.01 - Sediment Sump Measuring Post (EA)	1	$225.00	$225.00
Total			**$226,408.50**

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SUBSURFACE GRAVEL WETLANDS (13455A/ GW)			
Item	**Quantity**	**Bid Price**	**Total**
Item 203.1 - Common Excavation (CY)	5,776	$9.75	$56,316.00
Item 203.2 - Rock Excavation (CY)	2,241	$29.00	$64,989.00
Item 203.6 - Embankment-in-Place (CY)	317	$6.25	$1,981.25
Item 203. 53 - Low Permeability Fill (CY)	255	$8.80	$2,244.00
Item 520.1 - Concrete Class A (CY)	6	$375.00	$2,250.00
Item 585.3- Stone Fill, Class C (CY)	131	$34.50	$4,519.50
Item 585.5 - Stone Fill, Class E (CY)	370	$31.00	$11,470.00
Item 585.7 - Stone Fill, Class G (CY)	62	$34.25	$2,123.50
Item 593.421 - Geotextile, Perm. Control, Cl. 2, Non-woven (SY)	502	$2.00	$1,004.00
Item 603.80012 - 12" Plastic Pipe (LF)	31	$40.00	$1,240.00
Item 604.91X - Outlet Control Structure (U)	1	$4,850.00	$4,850.00
Item 604.921 - Leaching Chamber, Type 1 (U)	6	$1,700.00	$10,200.00
Item 604.922 - Leaching Chamber, Type 2 (U)	5	$1,850.00	$9,250.00
Item 605.506 - 6" Perf. Corr. Poly. Pipe Underdrain (LF)	204	$19.50	$3,978.00
Item 647.1 - Humus (CY)	244	$14.00	$3,416.00
Item 647.29 - Wetland Humus (CY)	123	$16.00	$1,968.00
Item 670.01 - Sediment Sump Measuring Post (EA)	1	$250.00	$250.00
Total			**$182,049.25**

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SUBSURFACE GRAVEL WETLANDS (10620L/ GW)			
Item	**Quantity**	**Bid Price**	**Total**
Item 203. 52 - Impervious Material (CY)	1,919	$18.05	$34,637.95
Item 585.2 - Stone Fill, Class B (CY)	56	$19.15	$1,072.40
Item 585.3- Stone Fill, Class C (CY)	278	$40.25	$11,189.50
Item 585.5 - Stone Fill, Class E (CY)	46	$45.90	$2,111.40
Item 593.431 - Geotextile, Perm. Control, Cl. 3, Non-woven (SY)	200	$6.00	$1,200.00
Item 603.83212 - 12" Plastic Pipe (Smooth Interior) (LF)	50	$32.15	$1,607.50
Item 604.91X - Outlet Control Structure (U)	1	$2,045.00	$2,045.00
Item 604.921 - Leaching Chamber, Type 1 (U)	4	$3,080.00	$12,320.00
Item 604.922 - Leaching Chamber, Type 2 (U)	4	$2,950.00	$11,800.00
Item 605.512 - 12" Perf. Corr. Poly. Pipe Underdrain (LF)	187	$15.75	$2,945.25
Item 647.29 - Wetland Humus (CY)	93	$35.00	$3,255.00
Total			**$84,184.00**

There was no earthwork specifcally attributable to the gravel wetland. It is essentially constructed on top of the existing ground between the Rte. 16 NB slope work and the Exit 15 on ramp slope work.

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SUBSURFACE GRAVEL WETLANDS (10418G/ GW)			
Item	**Quantity**	**Bid Price**	**Total**
Item 203.1 - Common Excavation (CY)	5,978	$8.00	$47,824.00
Item 203.6 - Embankment-in-Place (CY)	8	$5.00	$40.00
Item 203. 52 - Impervious Material (CY)	1,415	$18.00	$25,470.00
Item 206.1 - Common Structure Excavation (CY)	1,225	$16.00	$19,600.00
Item 585.3- Stone Fill, Class C (CY)	21	$30.00	$630.00
Item 585.5 - Stone Fill, Class E (CY)	1,141	$30.00	$34,230.00
Item 593.331 - Geotextile, Stabilization, Cl. 3, Non-woven (SY)	1,711	$3.00	$5,133.00
Item 603.83206 - 6" Plastic Pipe (Smooth Interior) (LF)	55	$24.00	$1,320.00
Item 604.91X - Outlet Control Structure (U)	1	$2,400.00	$2,400.00
Item 604.921 - Leaching Chamber, Type 1 (U)	4	$3,000.00	$12,000.00
Item 604.922 - Leaching Chamber, Type 2 (U)	2	$3,000.00	$6,000.00
Item 605.906 - 6" Pipe Underdrain (Contractors Option) (LF)	602	$16.00	$9,632.00
Item 605.79 - Underdrain Flushing Basins (EA)	8	$600.00	$4,800.00
Item 647.29 - Wetland Humus (CY)	380	$25.00	$9,500.00
Total			**$178,579.00**

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SUBSURFACE GRAVEL WETLANDS (11238L/ BMP 1590)			
Item	**Quantity**	**Bid Price**	**Total**
Item 203.1 - Common Excavation (CY)	3,933	$4.00	$15,732.00
Item 203.6 - Embankment-in-Place (CY)	184	$2.00	$368.00
Item 203. 52 - Impervious Material (CY)	1,530	$15.00	$22,950.00
Item 206.2- Rock Structure Excavation (CY)	27	$30.00	$810.00
Item 520.1 - Concrete Class A (CY)	5	$500.00	$2,700.00
Item 585.3- Stone Fill, Class C (CY)	90	$30.00	$2,700.00
Item 585.5 - Stone Fill, Class E (CY)	182	$28.00	$5,096.00
Item 585.7 - Stone Fill, Class G (CY)	30	$40.00	$1,200.00
Item 593.411 - Geotextile, Perm. Control, Cl. 1, Non-woven (SY)	192	$2.25	$432.00
Item 603.83212 - 12" Plastic Pipe (Smooth Interior) (LF)	20	$32.00	$640.00
Item 604.91X - Outlet Control Structure (U)	1	$3,000.00	$3,000.00
Item 604.921 - Leaching Chamber, Type 1 (U)	6	$1,250.00	$7,500.00
Item 604.922 - Leaching Chamber, Type 2 (U)	5	$1,250.00	$6,250.00
Item 605.512 - 12" Perf. Corr. Poly. Pipe Underdrain (LF)	125	$25.00	$3,125.00
Item 646.31 - Turf Establishment w/ Mulch & Tackifiers (SY)	1,482	$0.35	$518.70
Item 647.1 - Humus (CY)	78	$20.00	$1,560.00
Item 647.29 - Wetland Humus (CY)	103	$35.00	$3,605.00
Item 670.01 - Sediment Sump Measuring Post (EA)	1	$500.00	$500.00
Total			**$78,686.70**

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SUBSURFACE GRAVEL WETLANDS (11238L/ BMP 922)			
Item	**Quantity**	**Bid Price**	**Total**
Item 203.1 - Common Excavation (CY)	3,822	$4.00	$15,288.00
Item 203.6 - Embankment-in-Place (CY)	467	$2.00	$934.00
Item 206.1 - Common Structure Excavation (CY)	5	$30.00	$150.00
Item 520.1 - Concrete Class A (CY)	4	$500.00	$2,000.00
Item 585.3- Stone Fill, Class C (CY)	22	$30.00	$660.00
Item 585.5 - Stone Fill, Class E (CY)	420	$28.00	$11,760.00
Item 585.7 - Stone Fill, Class G (CY)	69	$40.00	$2,760.00
Item 593.411 - Geotextile, Perm. Control, Cl. 1, Non-woven (SY)	96	$2.25	$216.00
Item 603.83212 - 12" Plastic Pipe (Smooth Interior) (LF)	41	$32.00	$1,312.00
Item 604.91X - Outlet Control Structure (U)	1	$3,000.00	$3,000.00
Item 604.921 - Leaching Chamber, Type 1 (U)	6	$1,250.00	$7,500.00
Item 604.922 - Leaching Chamber, Type 2 (U)	6	$1,250.00	$7,500.00
Item 605.512 - 12" Perf. Corr. Poly. Pipe Underdrain (LF)	306	$25.00	$7,650.00
Item 605.79 - Underdrain Flushing Basins (EA)	2	$500.00	$1,000.00
Item 605.82251 - 24" Agg. Und. Type 2 w/ 6" Perf. Corr. PE Pipe (LF)	565	$25.00	$14,125.00
Item 646.31 - Turf Establishment w/ Mulch & Tackifiers (SY)	3,262	$0.35	$1,141.70
Item 647.1 - Humus (CY)	89	$20.00	$1,780.00
Item 647.29 - Wetland Humus (CY)	304	$35.00	$10,640.00
Item 670.01 - Sediment Sump Measuring Post (EA)	1	$500.00	$500.00
Total			**$89,916.70**

SUBSURFACE GRAVEL WETLANDS (14633F/ BMP 19)			
Item	**Quantity**	**Bid Price**	**Total**
Item 203.1 - Common Excavation (CY)	2,396	$4.00	$9,584.00
Item 203.6 - Embankment-in-Place (CY)	468	$3.15	$1,474.20
Item 203. 52 - Impervious Material (CY)	582	$15.00	$8,730.00
Item 520.1 - Concrete Class A (CY)	10	$180.00	$1,800.00
Item 585.3- Stone Fill, Class C (CY)	108	$26.00	$2,808.00
Item 585.5 - Stone Fill, Class E (CY)	267	$25.00	$6,675.00
Item 585.7 - Stone Fill, Class G (CY)	44	$35.00	$1,540.00
Item 593.431 - Geotextile, Perm. Control, Cl. 3, Non-woven (SY)	281	$3.00	$843.00
Item 603.83212 - 12" Plastic Pipe (Smooth Interior) (LF)	50	$21.00	$1,050.00
Item 604.91X - Outlet Control Structure (U)	1	$4,000.00	$4,000.00
Item 604.921 - Leaching Chamber, Type 1 (U)	6	$980.00	$5,880.00
Item 604.922 - Leaching Chamber, Type 2 (U)	5	$960.00	$4,800.00
Item 605.506 - 6" Perf. Corr. Poly. Pipe Underdrain (LF)	192	$15.00	$2,880.00
Item 605.79 - Underdrain Flushing Basins (EA)	2	$300.00	$600.00
Item 605.82251 - 24" Agg. Und. Type 2 w/ 6" Perf. Corr. PE Pipe (LF)	429	$20.00	$8,580.00
Item 647.1 - Humus (CY)	233	$20.00	$4,660.00
Item 647.29 - Wetland Humus (CY)	292	$12.50	$3,650.00
Item 670.01 - Sediment Sump Measuring Post (EA)	1	$110.00	$110.00
Total			**$69,664.20**

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SUBSURFACE GRAVEL WETLANDS (14633E/ BMP 17)			
Item	**Quantity**	**Bid Price**	**Total**
Item 203.1 - Common Excavation (CY)	7,638	$3.75	$28,642.50
Item 203.2 - Rock Excavation (CY)	1,923	$10.75	$20,672.25
Item 203.6 - Embankment-in-Place (CY)	4,211	$4.90	$20,633.90
Item 203. 52 - Impervious Material (CY)	1,746	$12.00	$20,952.00
Item 520.1 - Concrete Class A (CY)	23	$525.00	$12,075.00
Item 585.3- Stone Fill, Class C (CY)	194	$25.00	$4,850.00
Item 585.5 - Stone Fill, Class E (CY)	317	$30.00	$9,510.00
Item 585.7 - Stone Fill, Class G (CY)	52	$40.00	$2,080.00
Item 593.431 - Geotextile, Perm. Control, Cl. 3, Non-woven (SY)	580	$2.00	$1,160.00
Item 603.83212 - 12" Plastic Pipe (Smooth Interior) (LF)	38	$24.00	$912.00
Item 604.91X - Outlet Control Structure (U)	1	$2,900.00	$2,900.00
Item 604.921 - Leaching Chamber, Type 1 (U)	6	$1,115.00	$6,690.00
Item 604.922 - Leaching Chamber, Type 2 (U)	5	$1,070.00	$5,350.00
Item 605.506 - 6" Perf. Corr. Poly. Pipe Underdrain (LF)	369	$10.50	$3,874.50
Item 605.79 - Underdrain Flushing Basins (EA)	6	$240.00	$1,440.00
Item 605.82251 - 24" Agg. Und. Type 2 w/ 6" Perf. Corr. PE Pipe (LF)	718	$21.00	$15,078.00
Item 647.29 - Wetland Humus (CY)	289	$20.00	$5,780.00
Item 670.01 - Sediment Sump Measuring Post (EA)	1	$500.00	$500.00
Total			**$163,100.15**

SUBSURFACE GRAVEL WETLANDS (14633F/ BMP 16)			
Item	**Quantity**	**Bid Price**	**Total**
Item 203.1 - Common Excavation (CY)	3,498	$4.00	$13,992.00
Item 203.2 - Rock Excavation (CY)	3,532	$9.00	$31,788.00
Item 203.6 - Embankment-in-Place (CY)	25	$3.15	$78.75
Item 203. 52 - Impervious Material (CY)	3,435	$15.00	$51,525.00
Item 206.2- Rock Structure Excavation (CY)	39	$17.00	$663.00
Item 209.1 - Granular Backfill (CY)	7	$28.00	$196.00
Item 520.1 - Concrete Class A (CY)	7	$180.00	$1,260.00
Item 585.2 - Stone Fill, Class B (CY)	202	$20.00	$4,040.00
Item 585.3- Stone Fill, Class C (CY)	106	$26.00	$2,756.00
Item 585.5 - Stone Fill, Class E (CY)	667	$25.00	$16,675.00
Item 585.7 - Stone Fill, Class G (CY)	111	$35.00	$3,885.00
Item 593.411 - Geotextile, Perm. Control, Cl. 1, Non-woven (SY)	222	$3.00	$666.00
Item 593.431 - Geotextile, Perm. Control, Cl. 3, Non-woven (SY)	273	$3.00	$819.00
Item 603.83212 - 12" Plastic Pipe (Smooth Interior) (LF)	72	$21.00	$1,512.00
Item 604.91X - Outlet Control Structure (U)	2	$4,000.00	$8,000.00
Item 604.921 - Leaching Chamber, Type 1 (U)	6	$980.00	$5,880.00
Item 604.922 - Leaching Chamber, Type 2 (U)	5	$960.00	$4,800.00
Item 605.506 - 6" Perf. Corr. Poly. Pipe Underdrain (LF)	360	$15.00	$5,400.00
Item 605.79 - Underdrain Flushing Basins (EA)	6	$300.00	$1,800.00
Item 605.82251 - 24" Agg. Und. Type 2 w/ 6" Perf. Corr. PE Pipe (LF)	1,016	$20.00	$20,320.00
Item 647.1 - Humus (CY)	434	$20.00	$8,680.00
Item 647.29 - Wetland Humus (CY)	314	$12.50	$3,925.00
Item 670.01 - Sediment Sump Measuring Post (EA)	1	$110.00	$110.00
Total			**$188,770.75**

SUBSURFACE GRAVEL WETLANDS (14633E/ BMP 14)			
Item	**Quantity**	**Bid Price**	**Total**
Item 203.1 - Common Excavation (CY)	4,570	$3.75	$17,137.50
Item 203.2 - Rock Excavation (CY)	572	$10.75	$6,149.00
Item 203.6 - Embankment-in-Place (CY)	23	$4.90	$112.70
Item 203. 52 - Impervious Material (CY)	1,049	$12.00	$12,588.00
Item 520.1 - Concrete Class A (CY)	16	$525.00	$8,400.00
Item 585.3- Stone Fill, Class C (CY)	183	$25.00	$4,575.00
Item 585.5 - Stone Fill, Class E (CY)	210	$30.00	$6,300.00
Item 585.7 - Stone Fill, Class G (CY)	35	$40.00	$1,400.00
Item 593.431 - Geotextile, Perm. Control, Cl. 3, Non-woven (SY)	550	$2.00	$1,100.00
Item 603.83212 - 12" Plastic Pipe (Smooth Interior) (LF)	34	$24.00	$816.00
Item 604.91X - Outlet Control Structure (U)	1	$2,900.00	$2,900.00
Item 604.921 - Leaching Chamber, Type 1 (U)	6	$1,115.00	$6,690.00
Item 604.922 - Leaching Chamber, Type 2 (U)	5	$1,070.00	$5,350.00
Item 605.506 - 6" Perf. Corr. Poly. Pipe Underdrain (LF)	296	$10.50	$3,108.00
Item 605.79 - Underdrain Flushing Basins (EA)	2	$240.00	$480.00
Item 605.82251 - 24" Agg. Und. Type 2 w/ 6" Perf. Corr. PE Pipe (LF)	256	$21.00	$5,376.00
Item 647.29 - Wetland Humus (CY)	106	$20.00	$2,120.00
Item 670.01 - Sediment Sump Measuring Post (EA)	1	$500.00	$500.00
Total			**$85,102.20**

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SUBSURFACE GRAVEL WETLANDS (14633F/ BMP 13)			
Item	**Quantity**	**Bid Price**	**Total**
Item 203.1 - Common Excavation (CY)	8,865	$4.00	$35,460.00
Item 203.2 - Rock Excavation (CY)	1,679	$9.00	$15,111.00
Item 203.6 - Embankment-in-Place (CY)	568	$3.15	$1,789.20
Item 203. 52 - Impervious Material (CY)	4,102	$15.00	$61,530.00
Item 206.2- Rock Structure Excavation (CY)	64	$17.00	$1,088.00
Item 209.1 - Granular Backfill (CY)	9	$28.00	$252.00
Item 520.1 - Concrete Class A (CY)	8	$180.00	$1,440.00
Item 585.3- Stone Fill, Class C (CY)	159	$26.00	$4,134.00
Item 585.5 - Stone Fill, Class E (CY)	922	$25.00	$23,050.00
Item 585.7 - Stone Fill, Class G (CY)	165	$35.00	$5,775.00
Item 593.431 - Geotextile, Perm. Control, Cl. 3, Non-woven (SY)	447	$3.00	$1,341.00
Item 603.83212 - 12" Plastic Pipe (Smooth Interior) (LF)	72	$21.00	$1,512.00
Item 604.91X - Outlet Control Structure (U)	2	$4,000.00	$8,000.00
Item 604.921 - Leaching Chamber, Type 1 (U)	6	$980.00	$5,880.00
Item 604.922 - Leaching Chamber, Type 2 (U)	5	$960.00	$4,800.00
Item 605.506 - 6" Perf. Corr. Poly. Pipe Underdrain (LF)	384	$15.00	$5,760.00
Item 605.79 - Underdrain Flushing Basins (EA)	5	$300.00	$1,500.00
Item 605.82251 - 24" Agg. Und. Type 2 w/ 6" Perf. Corr. PE Pipe (LF)	994	$20.00	$19,880.00
Item 647.1 - Humus (CY)	640	$20.00	$12,800.00
Item 647.29 - Wetland Humus (CY)	467	$12.50	$5,837.50
Item 670.01 - Sediment Sump Measuring Post (EA)	1	$110.00	$110.00
Total			**$217,049.70**

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SUBSURFACE GRAVEL WETLANDS (13742B/ GW #2)			
Item	**Quantity**	**Bid Price**	**Total**
Item 203.1 - Common Excavation (CY)	2,172	$5.00	$10,860.00
Item 203.6 - Embankment-in-Place (CY)	51	$5.00	$255.00
Item 203. 52 - Impervious Material (CY)	462	$14.00	$6,468.00
Item 585.3- Stone Fill, Class C (CY)	93	$27.00	$2,511.00
Item 585.5 - Stone Fill, Class E (CY)	82	$34.00	$2,788.00
Item 585.7 - Stone Fill, Class G (CY)	14	$51.00	$714.00
Item 593.421 - Geotextile, Perm. Control, Cl. 2, Non-woven (SY)	314	$2.50	$785.00
Item 603.80012 - 12" Plastic Pipe (LF)	36	$27.00	$972.00
Item 604.91X - Outlet Control Structure (U)	1	$4,000.00	$4,000.00
Item 604.921 - Leaching Chamber Type 1 (U)	6	$1,350.00	$8,100.00
Item 604.912 - Leaching Chamber Type 2 (U)	5	$1,350.00	$6,750.00
Item 605.506 - 6" Perf. Corr. Poly. Pipe Underdrain (LF)	109	$15.50	$1,689.50
Item 646.3 - Turf Establishment w/ Mulch & Tackifiers (A)	0.50	$1,775.00	$887.50
Item 647.29 - Wetland Humus (CY)	256	$19.00	$4,864.00
Item 670.01 - Sediment Sump Measuring Post (EA)	1	$170.00	$170.00
Total			**$51,814.00**

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SUBSURFACE GRAVEL WETLANDS (13742B/ GW #1)			
Item	**Quantity**	**Bid Price**	**Total**
Item 203.1 - Common Excavation (CY)	1,150	$5.00	$5,750.00
Item 203.6 - Embankment-in-Place (CY)	831	$5.00	$4,155.00
Item 203. 52 - Impervious Material (CY)	924	$14.00	$12,936.00
Item 585.3- Stone Fill, Class C (CY)	98	$27.00	$2,646.00
Item 585.5 - Stone Fill, Class E (CY)	178	$34.00	$6,052.00
Item 585.7 - Stone Fill, Class G (CY)	30	$51.00	$1,530.00
Item 593.421 - Geotextile, Perm. Control, Cl. 2, Non-woven (SY)	333	$2.50	$832.50
Item 603.80012 - 12" Plastic Pipe (LF)	28	$27.00	$756.00
Item 604.91X - Outlet Control Structure (U)	1	$4,000.00	$4,000.00
Item 604.921 - Leaching Chamber Type 1 (U)	6	$1,350.00	$8,100.00
Item 604.912 - Leaching Chamber Type 2 (U)	5	$1,350.00	$6,750.00
Item 605.506 - 6" Perf. Corr. Poly. Pipe Underdrain (LF)	188	$15.50	$2,914.00
Item 646.3 - Turf Establishment w/ Mulch & Tackifiers (A)	0.40	$1,775.00	$710.00
Item 647.1 - Humus (CY)	330	$18.00	$5,940.00
Item 647.29 - Wetland Humus (CY)	60	$19.00	$1,140.00
Item 670.01 - Sediment Sump Measuring Post (EA)	1	$170.00	$170.00
Total			**$64,381.50**

Attachment B: Subsurface Gravel Wetland Inspection and Maintenance Guidance

Regular Inspection and Maintenance Guidance for Gravel Wetland Stormwater Management Device

Regular inspection and maintenance is critical to the effective operation of Gravel Wetland systems. It is the responsibility of the owner to maintain the Gravel Wetland in accordance with the minimum design standards. This page provides guidance on maintenance activities that are typically required for these systems, along with the suggested frequency for each activity. Individual systems may have more, or less, frequent maintenance needs, depending on a variety of factors including the occurrence of large storm events, overly wet or dry (I.E., drought), regional hydrologic conditions, and any changes or redevelopment in the upstream land use.

ACTIVITIES

Visual inspections are routine for system maintenance. This includes looking for standing water, accumulated leaves, holes in the soil media, signs of plant distress, and debris and sediment accumulation in the system. Vegetation coverage is integral to the performance of the system and vegetation care is important to system productivity and health. A gravel wetland is a subsurface horizontal filtration system and does not rely upon the surface soils for treatment. As such, surface infiltration rates are expected to be low and not a criterion for cleaning. Rather, stormwater access to subsurface treatment is by way of inlet standpipes. It is important to ensure these inlets are performing properly.

1ST YEAR POST-CONSTRUCTION ACTIVITY	FREQUENCY
1. Check that plants have adequate water, are well established and healthy. **Remedy:** Water plants as necessary, remove or treat diseased vegetation as necessary and re-vegetate poorly established plants as necessary	After every major storm in the first few months, then biannually.
2. Check for erosion in the system and short circuiting (holes) in the surface wetland soils. **Remedy:** Soil piping, erosion, and holes should be filled, lightly compacted, and reseeded.	
POST-CONSTRUCTION ACTIVITY	**FREQUENCY**
3. Check inlets outlets and stand pipes for leaves and debris. **Remedy**: Rake in and around the system to clear it of debris. Also, clear the inlet, outlets and standpipes if obstructed.	Quarterly initially, biannually, frequency adjusted as needed after 3 inspections
4. Check for animal burrows and short circuiting in the system. **Remedy:** Soil erosion from short circuiting or animal boroughs should be repaired when they occur. The holes should be filled and lightly compacted	
5. Check that the depth of accumulated sediment in the sedimentation chamber is less than 12 inches or 10 percent of the pretreatment volume. **Remedy:** The sedimentation chamber, forebay, and treatment cells outlet devices should be cleaned when drawdown times exceed 36 hours. Remove material with rakes where possible rather than heavy construction equipment to avoid compaction of the gravel wetland surface. Heavy equipment could be used if the system is designed with dimensions that allow equipment to be located outside the gravel wetland, while a backhoe shovel reaches inside the gravel wetland to remove sediment. Removed sediments should be dewatered (if necessary) and disposed of in an acceptable manner.	
6. Inspect inlets and outlets to ensure good condition and no evidence of deterioration. Check to see if high-flow bypass is functioning. **Remedy:** Repair or replace any damaged structural parts, inlets and outlets.	Annually
7. Check for robust vegetation coverage throughout the system. **Remedy:** If at least 50 % vegetation coverage is not established after 2 years, reinforcement planting should be performed.	
8. Cut and remove vegetation from the Gravel Wetland System and forebay in order to maintain nitrogen removal performance. **Remedy:** The vegetation should be cut and removed from the system to prevent nitrogen from cycling back into the system.	Once every 3 years

CHECKLIST FOR INSPECTION OF GRAVEL WETLAND

Location: Inspector:

Date: Time: Site Conditions:

Date Since Last Rain Event:

Inspection Items	Satisfactory (S) or Unsatisfactory (U)		Comments/Corrective Action
1st Year Post-Construction Monitoring (After every major storm for the first three months)			
Plants are stable, roots not exposed	**S**	**U**	
Vegetation is established and thriving	**S**	**U**	
No evidence of holes in the wetland soil causing short-circuiting	**S**	**U**	
No evidence of erosion at inlet and outlet structures	**S**	**U**	
Post-Construction Routine Monitoring (at least every 6 months thereafter as per USEPA Good House-Keeping Requirements. Inspection frequency can be reduced to annual following 2 years of monitoring indicating the rate of sediment accumulation is less than cleaning criteria listed below.)			
1. Standing Water			
Gravel wetland surface is free of standing water or other evidence of clogging, such as discolored or accumulated sediments	**S**	**U**	
2. Short Circuiting & Erosion			
No evidence of animal burrows or other holes	**S**	**U**	
No evidence of erosion	**S**	**U**	
3. Drought Conditions (As needed)			
Water plants as needed	**S**	**U**	
Dead or dying plants	**S**	**U**	
4. Sedimentation Chamber or Forebay Inlet Inspection			
No evidence of sediment accumulation, trash, and debris.	**S**	**U**	
Good condition, no need for repair	**S**	**U**	
5. Vegetation Coverage			
50 % coverage established throughout system by first year	**S**	**U**	
Robust coverage by year 2 or later	**S**	**U**	
6. Inlet and Outlet Controls			
Flow is unobstructed in openings (grates, orifices, etc)	**S**	**U**	
Structures are operational with no evidence of deterioration	**S**	**U**	
7. Vegetation removal (once every 3 years)			
Prune dead, diseased, or decaying plants	**S**	**U**	

Corrective Action Needed	Due Date
1.	
2.	
3.	

Attachment C: Results of Subsurface Gravel Wetland Inspections

Regular Inspection and Maintenance Guidance for Gravel Wetland Stormwater Management Device

Regular inspection and maintenance is critical to the effective operation of Gravel Wetland systems. It is the responsibility of the owner to maintain the Gravel Wetland in accordance with the minimum design standards. This page provides guidance on maintenance activities that are typically required for these systems, along with the suggested frequency for each activity. Individual systems may have more, or less, frequent maintenance needs, depending on a variety of factors including the occurrence of large storm events, overly wet or dry (I.E., drought), regional hydrologic conditions, and any changes or redevelopment in the upstream land use.

ACTIVITIES

Visual inspections are routine for system maintenance. This includes looking for standing water, accumulated leaves, holes in the soil media, signs of plant distress, and debris and sediment accumulation in the system. Vegetation coverage is integral to the performance of the system and vegetation care is important to system productivity and health. A gravel wetland is a subsurface horizontal filtration system and does not rely upon the surface soils for treatment. As such, surface infiltration rates are expected to be low and not a criterion for cleaning. Rather, stormwater access to subsurface treatment is by way of inlet standpipes. It is important to ensure these inlets are performing properly.

1ST YEAR POST-CONSTRUCTION ACTIVITY	FREQUENCY
1. Check that plants have adequate water, are well established and healthy. **Remedy:** Water plants as necessary, remove or treat diseased vegetation as necessary and re-vegetate poorly established plants as necessary	After every major storm in the first few months, then biannually.
2. Check for erosion in the system and short circuiting (holes) in the surface wetland soils. **Remedy:** Soil piping, erosion, and holes should be filled, lightly compacted, and reseeded.	
POST-CONSTRUCTION ACTIVITY	**FREQUENCY**
3. Check inlets outlets and stand pipes for leaves and debris. **Remedy**: Rake in and around the system to clear it of debris. Also, clear the inlet, outlets and standpipes if obstructed.	Quarterly initially, biannually, frequency adjusted as needed after 3 inspections
4. Check for animal burrows and short circuiting in the system. **Remedy:** Soil erosion from short circuiting or animal boroughs should be repaired when they occur. The holes should be filled and lightly compacted	
5. Check that the depth of accumulated sediment in the sedimentation chamber is less than 12 inches or 10 percent of the pretreatment volume. **Remedy:** The sedimentation chamber, forebay, and treatment cells outlet devices should be cleaned when drawdown times exceed 36 hours. Remove material with rakes where possible rather than heavy construction equipment to avoid compaction of the gravel wetland surface. Heavy equipment could be used if the system is designed with dimensions that allow equipment to be located outside the gravel wetland, while a backhoe shovel reaches inside the gravel wetland to remove sediment. Removed sediments should be dewatered (if necessary) and disposed of in an acceptable manner.	
6. Inspect inlets and outlets to ensure good condition and no evidence of deterioration. Check to see if high-flow bypass is functioning. **Remedy:** Repair or replace any damaged structural parts, inlets and outlets.	Annually
7. Check for robust vegetation coverage throughout the system. **Remedy:** If at least 50 % vegetation coverage is not established after 2 years, reinforcement planting should be performed.	
8. Cut and remove vegetation from the Gravel Wetland System and forebay in order to maintain nitrogen removal performance. **Remedy:** The vegetation should be cut and removed from the system to prevent nitrogen from cycling back into the system.	Once every 3 years

CHECKLIST FOR INSPECTION OF GRAVEL WETLAND

Location: I93 NB & SB Exit 5 Area DOT#: 14633F BMP 19 Inspector: Tim Puls
Date: 7/18/14 Time: 1:00PM Site Conditions: Poor
Date of Last Rain Event: 7/16/14

Inspection Items	Satisfactory (S) or Unsatisfactory (U)		Comments/Corrective Action
1st Year Post-Construction Monitoring (After every major storm for the first three months)			
Plants are stable, roots not exposed	**S**	U	Constructed 2013-2014
Vegetation is established and thriving	**S**	U	
No evidence of holes in the wetland soil causing short-circuiting	**S**	U	
No evidence of erosion at inlet and outlet structures	**S**	U	
Post-Construction Routine Monitoring (at least every 6 months thereafter as per USEPA Good House-Keeping Requirements. Inspection frequency can be reduced to annual following 2 years of monitoring indicating the rate of sediment accumulation is less than cleaning criteria listed below.)			
1. Standing Water			
Gravel wetland surface is free of standing water or other evidence of clogging, such as discolored or accumulated sediments	S	**U**	Standing water in fore bay & both cells, approx. 3-5”
2. Short Circuiting & Erosion			
No evidence of animal burrows or other holes	**S**	U	
No evidence of erosion	**S**	U	
3. Drought Conditions (As needed)			Too much water. Plants are thin in areas where water has been pooling.
Water plants as needed	S	**U**	
Dead or dying plants	S	**U**	
4. Sedimentation Chamber or Forebay Inlet Inspection			
No evidence of sediment accumulation, trash, and debris.	**S**	U	
Good condition, no need for repair	**S**	U	
5. Vegetation Coverage			
50 % coverage established throughout system by first year	**S**	U	NA
Robust coverage by year 2 or later	S	U	
6. Inlet and Outlet Controls:			
Flow is unobstructed in openings (grates, orifices, etc)	**S**	U	
Structures are operational with no evidence of deterioration	**S**	U	
7. Vegetation removal (once every 3 years)			
Prune dead, diseased, or decaying plants	S	U	NA

Corrective Action Needed	Due Date
1. Outlet pipe invert is above the wetland soil elevation which keeps the system flooded. Could bring the soil up another 6-8”.	ASAP
COMMENT: Area of system is smaller than other BMPs but has the same number of structures.	

Regular Inspection and Maintenance Guidance for Gravel Wetland Stormwater Management Device

Regular inspection and maintenance is critical to the effective operation of Gravel Wetland systems. It is the responsibility of the owner to maintain the Gravel Wetland in accordance with the minimum design standards. This page provides guidance on maintenance activities that are typically required for these systems, along with the suggested frequency for each activity. Individual systems may have more, or less, frequent maintenance needs, depending on a variety of factors including the occurrence of large storm events, overly wet or dry (I.E., drought), regional hydrologic conditions, and any changes or redevelopment in the upstream land use.

ACTIVITIES

Visual inspections are routine for system maintenance. This includes looking for standing water, accumulated leaves, holes in the soil media, signs of plant distress, and debris and sediment accumulation in the system. Vegetation coverage is integral to the performance of the system and vegetation care is important to system productivity and health. A gravel wetland is a subsurface horizontal filtration system and does not rely upon the surface soils for treatment. As such, surface infiltration rates are expected to be low and not a criterion for cleaning. Rather, stormwater access to subsurface treatment is by way of inlet standpipes. It is important to ensure these inlets are performing properly.

1ST YEAR POST-CONSTRUCTION ACTIVITY	FREQUENCY
1. Check that plants have adequate water, are well established and healthy. **Remedy:** Water plants as necessary, remove or treat diseased vegetation as necessary and re-vegetate poorly established plants as necessary	After every major storm in the first few months, then biannually.
2. Check for erosion in the system and short circuiting (holes) in the surface wetland soils. **Remedy:** Soil piping, erosion, and holes should be filled, lightly compacted, and reseeded.	
POST-CONSTRUCTION ACTIVITY	**FREQUENCY**
3. Check inlets outlets and stand pipes for leaves and debris. **Remedy**: Rake in and around the system to clear it of debris. Also, clear the inlet, outlets and standpipes if obstructed.	Quarterly initially, biannually, frequency adjusted as needed after 3 inspections
4. Check for animal burrows and short circuiting in the system. **Remedy:** Soil erosion from short circuiting or animal boroughs should be repaired when they occur. The holes should be filled and lightly compacted	
5. Check that the depth of accumulated sediment in the sedimentation chamber is less than 12 inches or 10 percent of the pretreatment volume. **Remedy:** The sedimentation chamber, forebay, and treatment cells outlet devices should be cleaned when drawdown times exceed 36 hours. Remove material with rakes where possible rather than heavy construction equipment to avoid compaction of the gravel wetland surface. Heavy equipment could be used if the system is designed with dimensions that allow equipment to be located outside the gravel wetland, while a backhoe shovel reaches inside the gravel wetland to remove sediment. Removed sediments should be dewatered (if necessary) and disposed of in an acceptable manner.	
6. Inspect inlets and outlets to ensure good condition and no evidence of deterioration. Check to see if high-flow bypass is functioning. **Remedy:** Repair or replace any damaged structural parts, inlets and outlets.	Annually
7. Check for robust vegetation coverage throughout the system. **Remedy:** If at least 50 % vegetation coverage is not established after 2 years, reinforcement planting should be performed.	
8. Cut and remove vegetation from the Gravel Wetland System and forebay in order to maintain nitrogen removal performance. **Remedy:** The vegetation should be cut and removed from the system to prevent nitrogen from cycling back into the system.	Once every 3 years

CHECKLIST FOR INSPECTION OF GRAVEL WETLAND

Location: I93 NB, East side DOT#: 14633F BMP 18 Inspector: Tim Puls
Date: 7/18/14 Time: 1:45PM Site Conditions: Fair, Draining
Date of Last Rain Event: 7/16/14

Inspection Items	Satisfactory (S) or Unsatisfactory (U)	Comments/Corrective Action
1st Year Post-Construction Monitoring (After every major storm for the first three months)		
Plants are stable, roots not exposed	**S** U	Constructed 2013-2014
Vegetation is established and thriving	**S** U	
No evidence of holes in the wetland soil causing short-circuiting	**S** U	
No evidence of erosion at inlet and outlet structures	**S** U	
Post-Construction Routine Monitoring (at least every 6 months thereafter as per USEPA Good House-Keeping Requirements. Inspection frequency can be reduced to annual following 2 years of monitoring indicating the rate of sediment accumulation is less than cleaning criteria listed below.)		
1. Standing Water		
Gravel wetland surface is free of standing water or other evidence of clogging, such as discolored or accumulated sediments	S **U**	Standing water in fore bay & both cells, approx. 3-5”
2. Short Circuiting & Erosion		
No evidence of animal burrows or other holes	**S** U	
No evidence of erosion	**S** U	
3. Drought Conditions (As needed)		Too much water. Plants are thin in areas where water has been pooling.
Water plants as needed	S **U**	
Dead or dying plants	S **U**	
4. Sedimentation Chamber or Forebay Inlet Inspection		
No evidence of sediment accumulation, trash, and debris.	**S** U	
Good condition, no need for repair	**S** U	
5. Vegetation Coverage		
50 % coverage established throughout system by first year	S **U**	NA
Robust coverage by year 2 or later	S U	
6. Inlet and Outlet Controls:		A piece of trash was blocking outlet orifice. Blockage cleared and system began to drain.
Flow is unobstructed in openings (grates, orifices, etc)	S **U**	
Structures are operational with no evidence of deterioration	**S** U	
7. Vegetation removal (once every 3 years)		
Prune dead, diseased, or decaying plants	S U	NA

Corrective Action Needed	Due Date
1. Outlet control structure has slotted inlets (4” x 12”) that are unprotected. Bring rip rap up over the inlet slots to keep trash out of structure.	ASAP
COMMENT: Area of system is smaller than other BMPs but has the same number of structures.	

Regular Inspection and Maintenance Guidance for Gravel Wetland Stormwater Management Device

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ACTIVITIES

Visual inspections are routine for system maintenance. This includes looking for standing water, accumulated leaves, holes in the soil media, signs of plant distress, and debris and sediment accumulation in the system. Vegetation coverage is integral to the performance of the system and vegetation care is important to system productivity and health. A gravel wetland is a subsurface horizontal filtration system and does not rely upon the surface soils for treatment. As such, surface infiltration rates are expected to be low and not a criterion for cleaning. Rather, stormwater access to subsurface treatment is by way of inlet standpipes. It is important to ensure these inlets are performing properly.

1ST YEAR POST-CONSTRUCTION ACTIVITY	FREQUENCY
1. Check that plants have adequate water, are well established and healthy. **Remedy:** Water plants as necessary, remove or treat diseased vegetation as necessary and re-vegetate poorly established plants as necessary	After every major storm in the first few months, then biannually.
2. Check for erosion in the system and short circuiting (holes) in the surface wetland soils. **Remedy:** Soil piping, erosion, and holes should be filled, lightly compacted, and reseeded.	
POST-CONSTRUCTION ACTIVITY	**FREQUENCY**
3. Check inlets outlets and stand pipes for leaves and debris. **Remedy**: Rake in and around the system to clear it of debris. Also, clear the inlet, outlets and standpipes if obstructed.	Quarterly initially, biannually, frequency adjusted as needed after 3 inspections
4. Check for animal burrows and short circuiting in the system. **Remedy:** Soil erosion from short circuiting or animal boroughs should be repaired when they occur. The holes should be filled and lightly compacted	
5. Check that the depth of accumulated sediment in the sedimentation chamber is less than 12 inches or 10 percent of the pretreatment volume. **Remedy:** The sedimentation chamber, forebay, and treatment cells outlet devices should be cleaned when drawdown times exceed 36 hours. Remove material with rakes where possible rather than heavy construction equipment to avoid compaction of the gravel wetland surface. Heavy equipment could be used if the system is designed with dimensions that allow equipment to be located outside the gravel wetland, while a backhoe shovel reaches inside the gravel wetland to remove sediment. Removed sediments should be dewatered (if necessary) and disposed of in an acceptable manner.	
6. Inspect inlets and outlets to ensure good condition and no evidence of deterioration. Check to see if high-flow bypass is functioning. **Remedy:** Repair or replace any damaged structural parts, inlets and outlets.	Annually
7. Check for robust vegetation coverage throughout the system. **Remedy:** If at least 50 % vegetation coverage is not established after 2 years, reinforcement planting should be performed.	
8. Cut and remove vegetation from the Gravel Wetland System and forebay in order to maintain nitrogen removal performance. **Remedy:** The vegetation should be cut and removed from the system to prevent nitrogen from cycling back into the system.	Once every 3 years

CHECKLIST FOR INSPECTION OF GRAVEL WETLAND

Location: I93 Exit 5 NB Off Ramp Area DOT#: 14633F — Inspector: Tim Puls

Date: 7/18/14 — Time: 12:30AM — Site Conditions: Very Good

Date of Last Rain Event: 7/16/14 — Two systems – BMP 13, BMP 16

Inspection Items	Satisfactory (S) or Unsatisfactory (U)	Comments/Corrective Action
1st Year Post-Construction Monitoring (After every major storm for the first three months)		
Plants are stable, roots not exposed	S U	New systems – BMP 13 approx. 1.5 years old and BMP 16 is approx. 6 months. GC is Severino Construction
Vegetation is established and thriving	S U	
No evidence of holes in the wetland soil causing short-circuiting	S U	
No evidence of erosion at inlet and outlet structures	S U	
Post-Construction Routine Monitoring (at least every 6 months thereafter as per USEPA Good House-Keeping Requirements. Inspection frequency can be reduced to annual following 2 years of monitoring indicating the rate of sediment accumulation is less than cleaning criteria listed below.)		
1. Standing Water		
Gravel wetland surface is free of standing water or other evidence of clogging, such as discolored or accumulated sediments	S U	None
2. Short Circuiting & Erosion		
No evidence of animal burrows or other holes	S U	
No evidence of erosion	S U	
3. Drought Conditions (As needed)		
Water plants as needed	S U	
Dead or dying plants	S U	
4. Sedimentation Chamber or Forebay Inlet Inspection		
No evidence of sediment accumulation, trash, and debris.	S U	
Good condition, no need for repair	S U	
5. Vegetation Coverage		
50 % coverage established throughout system by first year	S U	
Robust coverage by year 2 or later	S U	
6. Inlet and Outlet Controls:		
Flow is unobstructed in openings (grates, orifices, etc)	S U	
Structures are operational with no evidence of deterioration	S U	
7. Vegetation removal (once every 3 years)		
Prune dead, diseased, or decaying plants	S U	

Corrective Action Needed	Due Date
COMMENT: Both BMPs drain to a central 48" line. Could reduce number of hydraulic inlets and cleanout structures.	

Regular Inspection and Maintenance Guidance for Gravel Wetland Stormwater Management Device

Regular inspection and maintenance is critical to the effective operation of Gravel Wetland systems. It is the responsibility of the owner to maintain the Gravel Wetland in accordance with the minimum design standards. This page provides guidance on maintenance activities that are typically required for these systems, along with the suggested frequency for each activity. Individual systems may have more, or less, frequent maintenance needs, depending on a variety of factors including the occurrence of large storm events, overly wet or dry (I.E., drought), regional hydrologic conditions, and any changes or redevelopment in the upstream land use.

ACTIVITIES

Visual inspections are routine for system maintenance. This includes looking for standing water, accumulated leaves, holes in the soil media, signs of plant distress, and debris and sediment accumulation in the system. Vegetation coverage is integral to the performance of the system and vegetation care is important to system productivity and health. A gravel wetland is a subsurface horizontal filtration system and does not rely upon the surface soils for treatment. As such, surface infiltration rates are expected to be low and not a criterion for cleaning. Rather, stormwater access to subsurface treatment is by way of inlet standpipes. It is important to ensure these inlets are performing properly.

1ST YEAR POST-CONSTRUCTION ACTIVITY	FREQUENCY
1. Check that plants have adequate water, are well established and healthy. **Remedy:** Water plants as necessary, remove or treat diseased vegetation as necessary and re-vegetate poorly established plants as necessary	After every major storm in the first few months, then biannually.
2. Check for erosion in the system and short circuiting (holes) in the surface wetland soils. **Remedy:** Soil piping, erosion, and holes should be filled, lightly compacted, and reseeded.	
POST-CONSTRUCTION ACTIVITY	**FREQUENCY**
3. Check inlets outlets and stand pipes for leaves and debris. **Remedy**: Rake in and around the system to clear it of debris. Also, clear the inlet, outlets and standpipes if obstructed.	Quarterly initially, biannually, frequency adjusted as needed after 3 inspections
4. Check for animal burrows and short circuiting in the system. **Remedy:** Soil erosion from short circuiting or animal boroughs should be repaired when they occur. The holes should be filled and lightly compacted	
5. Check that the depth of accumulated sediment in the sedimentation chamber is less than 12 inches or 10 percent of the pretreatment volume. **Remedy:** The sedimentation chamber, forebay, and treatment cells outlet devices should be cleaned when drawdown times exceed 36 hours. Remove material with rakes where possible rather than heavy construction equipment to avoid compaction of the gravel wetland surface. Heavy equipment could be used if the system is designed with dimensions that allow equipment to be located outside the gravel wetland, while a backhoe shovel reaches inside the gravel wetland to remove sediment. Removed sediments should be dewatered (if necessary) and disposed of in an acceptable manner.	
6. Inspect inlets and outlets to ensure good condition and no evidence of deterioration. Check to see if high-flow bypass is functioning. **Remedy:** Repair or replace any damaged structural parts, inlets and outlets.	Annually
7. Check for robust vegetation coverage throughout the system. **Remedy:** If at least 50 % vegetation coverage is not established after 2 years, reinforcement planting should be performed.	
8. Cut and remove vegetation from the Gravel Wetland System and forebay in order to maintain nitrogen removal performance. **Remedy:** The vegetation should be cut and removed from the system to prevent nitrogen from cycling back into the system.	Once every 3 years

CHECKLIST FOR INSPECTION OF GRAVEL WETLAND

Location: I93 Exit 5 NB On Ramp DOT#: 14633E BMP 17 Inspector: Tim Puls
Date: 7/18/14 Time: 1:30PM Site Conditions: Good
Date of Last Rain Event: 7/16/14

Inspection Items	Satisfactory (S) or Unsatisfactory (U)		Comments/Corrective Action
1st Year Post-Construction Monitoring (After every major storm for the first three months)			
Plants are stable, roots not exposed	**S**	**U**	NA System constructed in 2008-2009
Vegetation is established and thriving	**S**	**U**	
No evidence of holes in the wetland soil causing short-circuiting	**S**	**U**	
No evidence of erosion at inlet and outlet structures	**S**	**U**	
Post-Construction Routine Monitoring (at least every 6 months thereafter as per USEPA Good House-Keeping Requirements. Inspection frequency can be reduced to annual following 2 years of monitoring indicating the rate of sediment accumulation is less than cleaning criteria listed below.)			
1. Standing Water			
Gravel wetland surface is free of standing water or other evidence of clogging, such as discolored or accumulated sediments	**S**	**U** (circled)	Fore bay has pooled water. Full of cattails.
2. Short Circuiting & Erosion			
No evidence of animal burrows or other holes	**S** (circled)	**U**	
No evidence of erosion	**S** (circled)	**U**	
3. Drought Conditions (As needed)			
Water plants as needed	**S** (circled)	**U**	
Dead or dying plants	**S** (circled)	**U**	
4. Sedimentation Chamber or Forebay Inlet Inspection			
No evidence of sediment accumulation, trash, and debris.	**S** (circled)	**U**	
Good condition, no need for repair	**S** (circled)	**U**	
5. Vegetation Coverage			
50 % coverage established throughout system by first year	**S** (circled)	**U**	
Robust coverage by year 2 or later	**S** (circled)	**U**	
6. Inlet and Outlet Controls:			
Flow is unobstructed in openings (grates, orifices, etc)	**S** (circled)	**U**	
Structures are operational with no evidence of deterioration	**S** (circled)	**U**	
7. Vegetation removal (once every 3 years)			No maintenance has been done to date.
Prune dead, diseased, or decaying plants	**S**	**U** (circled)	

Corrective Action Needed	Due Date
1. Cut vegetation down to base and remove from system.	ASAP
COMMENT: Area of system is larger than other BMPs but has the same number of structures. 6 hydraulic inlets, 5 leach basins, 1 outlet	

Regular Inspection and Maintenance Guidance for Gravel Wetland Stormwater Management Device

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ACTIVITIES

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1ST YEAR POST-CONSTRUCTION ACTIVITY	FREQUENCY
1. Check that plants have adequate water, are well established and healthy. **Remedy:** Water plants as necessary, remove or treat diseased vegetation as necessary and re-vegetate poorly established plants as necessary	After every major storm in the first few months, then biannually.
2. Check for erosion in the system and short circuiting (holes) in the surface wetland soils. **Remedy:** Soil piping, erosion, and holes should be filled, lightly compacted, and reseeded.	
POST-CONSTRUCTION ACTIVITY	**FREQUENCY**
3. Check inlets outlets and stand pipes for leaves and debris. **Remedy**: Rake in and around the system to clear it of debris. Also, clear the inlet, outlets and standpipes if obstructed.	Quarterly initially, biannually, frequency adjusted as needed after 3 inspections
4. Check for animal burrows and short circuiting in the system. **Remedy:** Soil erosion from short circuiting or animal boroughs should be repaired when they occur. The holes should be filled and lightly compacted	
5. Check that the depth of accumulated sediment in the sedimentation chamber is less than 12 inches or 10 percent of the pretreatment volume. **Remedy:** The sedimentation chamber, forebay, and treatment cells outlet devices should be cleaned when drawdown times exceed 36 hours. Remove material with rakes where possible rather than heavy construction equipment to avoid compaction of the gravel wetland surface. Heavy equipment could be used if the system is designed with dimensions that allow equipment to be located outside the gravel wetland, while a backhoe shovel reaches inside the gravel wetland to remove sediment. Removed sediments should be dewatered (if necessary) and disposed of in an acceptable manner.	
6. Inspect inlets and outlets to ensure good condition and no evidence of deterioration. Check to see if high-flow bypass is functioning. **Remedy:** Repair or replace any damaged structural parts, inlets and outlets.	Annually
7. Check for robust vegetation coverage throughout the system. **Remedy:** If at least 50 % vegetation coverage is not established after 2 years, reinforcement planting should be performed.	
8. Cut and remove vegetation from the Gravel Wetland System and forebay in order to maintain nitrogen removal performance. **Remedy:** The vegetation should be cut and removed from the system to prevent nitrogen from cycling back into the system.	Once every 3 years

CHECKLIST FOR INSPECTION OF GRAVEL WETLAND

Location: I93 Exit 5 SB On Ramp DOT#: 14633E BMP 14 Inspector: Tim Puls

Date: 7/18/14 Time: 1:20PM Site Conditions: Good

Date of Last Rain Event: 7/16/14

Inspection Items	Satisfactory (S) or Unsatisfactory (U)		Comments/Corrective Action
1st Year Post-Construction Monitoring (After every major storm for the first three months)			
Plants are stable, roots not exposed	**S**	**U**	NA System constructed in 2008-2009
Vegetation is established and thriving	**S**	**U**	
No evidence of holes in the wetland soil causing short-circuiting	**S**	**U**	
No evidence of erosion at inlet and outlet structures	**S**	**U**	
Post-Construction Routine Monitoring (at least every 6 months thereafter as per USEPA Good House-Keeping Requirements. Inspection frequency can be reduced to annual following 2 years of monitoring indicating the rate of sediment accumulation is less than cleaning criteria listed below.)			
1. Standing Water			
Gravel wetland surface is free of standing water or other evidence of clogging, such as discolored or accumulated sediments	**S**	**U**	Fore bay is dry
2. Short Circuiting & Erosion			
No evidence of animal burrows or other holes	**S**	**U**	
No evidence of erosion	**S**	**U**	
3. Drought Conditions (As needed)			
Water plants as needed	**S**	**U**	
Dead or dying plants	**S**	**U**	
4. Sedimentation Chamber or Forebay Inlet Inspection			
No evidence of sediment accumulation, trash, and debris.	**S**	**U**	
Good condition, no need for repair	**S**	**U**	
5. Vegetation Coverage			
50 % coverage established throughout system by first year	**S**	**U**	
Robust coverage by year 2 or later	**S**	**U**	
6. Inlet and Outlet Controls:			
Flow is unobstructed in openings (grates, orifices, etc)	**S**	**U**	
Structures are operational with no evidence of deterioration	**S**	**U**	
7. Vegetation removal (once every 3 years)			No maintenance has been done to date.
Prune dead, diseased, or decaying plants	**S**	**U**	

Corrective Action Needed	Due Date
1. Cut vegetation down to base and remove from system.	ASAP
COMMENT: Area of system is smaller than other BMPs but has the same number of structures. 6 hydraulic inlets, 5 leach basins, 1 outlet	

Regular Inspection and Maintenance Guidance for Gravel Wetland Stormwater Management Device

Regular inspection and maintenance is critical to the effective operation of Gravel Wetland systems. It is the responsibility of the owner to maintain the Gravel Wetland in accordance with the minimum design standards. This page provides guidance on maintenance activities that are typically required for these systems, along with the suggested frequency for each activity. Individual systems may have more, or less, frequent maintenance needs, depending on a variety of factors including the occurrence of large storm events, overly wet or dry (I.E., drought), regional hydrologic conditions, and any changes or redevelopment in the upstream land use.

ACTIVITIES

Visual inspections are routine for system maintenance. This includes looking for standing water, accumulated leaves, holes in the soil media, signs of plant distress, and debris and sediment accumulation in the system. Vegetation coverage is integral to the performance of the system and vegetation care is important to system productivity and health. A gravel wetland is a subsurface horizontal filtration system and does not rely upon the surface soils for treatment. As such, surface infiltration rates are expected to be low and not a criterion for cleaning. Rather, stormwater access to subsurface treatment is by way of inlet standpipes. It is important to ensure these inlets are performing properly.

1ST YEAR POST-CONSTRUCTION ACTIVITY	FREQUENCY
1. Check that plants have adequate water, are well established and healthy. **Remedy:** Water plants as necessary, remove or treat diseased vegetation as necessary and re-vegetate poorly established plants as necessary	After every major storm in the first few months, then biannually.
2. Check for erosion in the system and short circuiting (holes) in the surface wetland soils. **Remedy:** Soil piping, erosion, and holes should be filled, lightly compacted, and reseeded.	
POST-CONSTRUCTION ACTIVITY	**FREQUENCY**
3. Check inlets outlets and stand pipes for leaves and debris. **Remedy**: Rake in and around the system to clear it of debris. Also, clear the inlet, outlets and standpipes if obstructed.	Quarterly initially, biannually, frequency adjusted as needed after 3 inspections
4. Check for animal burrows and short circuiting in the system. **Remedy:** Soil erosion from short circuiting or animal boroughs should be repaired when they occur. The holes should be filled and lightly compacted	
5. Check that the depth of accumulated sediment in the sedimentation chamber is less than 12 inches or 10 percent of the pretreatment volume. **Remedy:** The sedimentation chamber, forebay, and treatment cells outlet devices should be cleaned when drawdown times exceed 36 hours. Remove material with rakes where possible rather than heavy construction equipment to avoid compaction of the gravel wetland surface. Heavy equipment could be used if the system is designed with dimensions that allow equipment to be located outside the gravel wetland, while a backhoe shovel reaches inside the gravel wetland to remove sediment. Removed sediments should be dewatered (if necessary) and disposed of in an acceptable manner.	
6. Inspect inlets and outlets to ensure good condition and no evidence of deterioration. Check to see if high-flow bypass is functioning. **Remedy:** Repair or replace any damaged structural parts, inlets and outlets.	Annually
7. Check for robust vegetation coverage throughout the system. **Remedy:** If at least 50 % vegetation coverage is not established after 2 years, reinforcement planting should be performed.	
8. Cut and remove vegetation from the Gravel Wetland System and forebay in order to maintain nitrogen removal performance. **Remedy:** The vegetation should be cut and removed from the system to prevent nitrogen from cycling back into the system.	Once every 3 years

CHECKLIST FOR INSPECTION OF GRAVEL WETLAND

Location: I93 Exit 1 NB Off Ramp DOT#: 13933C | Inspector: Tim Puls

Date: 7/18/14 | Time: 11:00AM | Site Conditions: Very Good

Date of Last Rain Event: 7/16/14

Inspection Items	Satisfactory (S) or Unsatisfactory (U)	Comments/Corrective Action
1st Year Post-Construction Monitoring (After every major storm for the first three months)		
Plants are stable, roots not exposed	S U	NA – This system was constructed in 2007
Vegetation is established and thriving	S U	
No evidence of holes in the wetland soil causing short-circuiting	S U	
No evidence of erosion at inlet and outlet structures	S U	
Post-Construction Routine Monitoring (at least every 6 months thereafter as per USEPA Good House-Keeping Requirements. Inspection frequency can be reduced to annual following 2 years of monitoring indicating the rate of sediment accumulation is less than cleaning criteria listed below.)		
1. Standing Water		
Gravel wetland surface is free of standing water or other evidence of clogging, such as discolored or accumulated sediments	(S) U	None
2. Short Circuiting & Erosion		
No evidence of animal burrows or other holes	(S) U	
No evidence of erosion	(S) U	
3. Drought Conditions (As needed)		
Water plants as needed	(S) U	
Dead or dying plants	(S) U	
4. Sedimentation Chamber or Forebay Inlet Inspection		Some trash has accumulated
No evidence of sediment accumulation, trash, and debris.	(S) U	
Good condition, no need for repair	(S) U	
5. Vegetation Coverage		Plants are in good condition. Treatment cells are densely vegetated.
50 % coverage established throughout system by first year	(S) U	
Robust coverage by year 2 or later	(S) U	
6. Inlet and Outlet Controls:		Concrete outlet structure 8' x 10'
Flow is unobstructed in openings (grates, orifices, etc)	(S) U	
Structures are operational with no evidence of deterioration	(S) U	
7. Vegetation removal (once every 3 years)		No maintenance has been done to date.
Prune dead, diseased, or decaying plants	S (U)	

Corrective Action Needed	Due Date
1. Maintain vegetation = cut down to base of plant and remove vegetation from system	
COMMENT: This is an extremely large system. RRoseen advised them to replace "E Stone" with 3/8" pea stone during construction.	

Regular Inspection and Maintenance Guidance for Gravel Wetland Stormwater Management Device

Regular inspection and maintenance is critical to the effective operation of Gravel Wetland systems. It is the responsibility of the owner to maintain the Gravel Wetland in accordance with the minimum design standards. This page provides guidance on maintenance activities that are typically required for these systems, along with the suggested frequency for each activity. Individual systems may have more, or less, frequent maintenance needs, depending on a variety of factors including the occurrence of large storm events, overly wet or dry (I.E., drought), regional hydrologic conditions, and any changes or redevelopment in the upstream land use.

ACTIVITIES

Visual inspections are routine for system maintenance. This includes looking for standing water, accumulated leaves, holes in the soil media, signs of plant distress, and debris and sediment accumulation in the system. Vegetation coverage is integral to the performance of the system and vegetation care is important to system productivity and health. A gravel wetland is a subsurface horizontal filtration system and does not rely upon the surface soils for treatment. As such, surface infiltration rates are expected to be low and not a criterion for cleaning. Rather, stormwater access to subsurface treatment is by way of inlet standpipes. It is important to ensure these inlets are performing properly.

1ST YEAR POST-CONSTRUCTION ACTIVITY	FREQUENCY
1. Check that plants have adequate water, are well established and healthy. **Remedy:** Water plants as necessary, remove or treat diseased vegetation as necessary and re-vegetate poorly established plants as necessary	After every major storm in the first few months, then biannually.
2. Check for erosion in the system and short circuiting (holes) in the surface wetland soils. **Remedy:** Soil piping, erosion, and holes should be filled, lightly compacted, and reseeded.	
POST-CONSTRUCTION ACTIVITY	**FREQUENCY**
3. Check inlets outlets and stand pipes for leaves and debris. **Remedy**: Rake in and around the system to clear it of debris. Also, clear the inlet, outlets and standpipes if obstructed.	Quarterly initially, biannually, frequency adjusted as needed after 3 inspections
4. Check for animal burrows and short circuiting in the system. **Remedy:** Soil erosion from short circuiting or animal boroughs should be repaired when they occur. The holes should be filled and lightly compacted	
5. Check that the depth of accumulated sediment in the sedimentation chamber is less than 12 inches or 10 percent of the pretreatment volume. **Remedy:** The sedimentation chamber, forebay, and treatment cells outlet devices should be cleaned when drawdown times exceed 36 hours. Remove material with rakes where possible rather than heavy construction equipment to avoid compaction of the gravel wetland surface. Heavy equipment could be used if the system is designed with dimensions that allow equipment to be located outside the gravel wetland, while a backhoe shovel reaches inside the gravel wetland to remove sediment. Removed sediments should be dewatered (if necessary) and disposed of in an acceptable manner.	
6. Inspect inlets and outlets to ensure good condition and no evidence of deterioration. Check to see if high-flow bypass is functioning. **Remedy:** Repair or replace any damaged structural parts, inlets and outlets.	Annually
7. Check for robust vegetation coverage throughout the system. **Remedy:** If at least 50 % vegetation coverage is not established after 2 years, reinforcement planting should be performed.	
8. Cut and remove vegetation from the Gravel Wetland System and forebay in order to maintain nitrogen removal performance. **Remedy:** The vegetation should be cut and removed from the system to prevent nitrogen from cycling back into the system.	Once every 3 years

CHECKLIST FOR INSPECTION OF GRAVEL WETLAND

Location: Rt. 16 NB Exit 5 Inspector: Jamie Houle, Tim Puls

Date: 6/20/14 Time: 10:00AM Site Conditions: Good

Date of Last Rain Event: 6/13/14 (0.75")

Inspection Items	Satisfactory (S) or Unsatisfactory (U)		Comments/Corrective Action
1st Year Post-Construction Monitoring (After every major storm for the first three months)			
Plants are stable, roots not exposed	S	U	NA System constructed in 2010-2011
Vegetation is established and thriving	S	U	
No evidence of holes in the wetland soil causing short-circuiting	S	U	
No evidence of erosion at inlet and outlet structures	S	U	
Post-Construction Routine Monitoring (at least every 6 months thereafter as per USEPA Good House-Keeping Requirements. Inspection frequency can be reduced to annual following 2 years of monitoring indicating the rate of sediment accumulation is less than cleaning criteria listed below.)			
1. Standing Water			
Gravel wetland surface is free of standing water or other evidence of clogging, such as discolored or accumulated sediments	(S)	U	Fore bay has pooled water. Some cattails.
2. Short Circuiting & Erosion			
No evidence of animal burrows or other holes	(S)	U	
No evidence of erosion	(S)	U	
3. Drought Conditions (As needed)			
Water plants as needed	(S)	U	
Dead or dying plants	(S)	U	
4. Sedimentation Chamber or Forebay Inlet Inspection			Wet fore bay w/ evidence of anaerobic conditions, i.e. standing water, cattails, and algae.
No evidence of sediment accumulation, trash, and debris.	S	(U)	
Good condition, no need for repair	S	(U)	
5. Vegetation Coverage			
50 % coverage established throughout system by first year	(S)	U	
Robust coverage by year 2 or later	(S)	U	
6. Inlet and Outlet Controls:			Inlet is obstructed due to high elevation of fore bay control. Need low flow outlet from fore bay.
Flow is unobstructed in openings (grates, orifices, etc)	(S)	U	
Structures are operational with no evidence of deterioration	(S)	U	
7. Vegetation removal (once every 3 years)			
Prune dead, diseased, or decaying plants	(S)	U	

Corrective Action Needed	Due Date
1. Fore bay needs to be drained. 2.2ft of standing water.	ASAP
COMMENT:	

Regular Inspection and Maintenance Guidance for Gravel Wetland Stormwater Management Device

Regular inspection and maintenance is critical to the effective operation of Gravel Wetland systems. It is the responsibility of the owner to maintain the Gravel Wetland in accordance with the minimum design standards. This page provides guidance on maintenance activities that are typically required for these systems, along with the suggested frequency for each activity. Individual systems may have more, or less, frequent maintenance needs, depending on a variety of factors including the occurrence of large storm events, overly wet or dry (I.E., drought), regional hydrologic conditions, and any changes or redevelopment in the upstream land use.

ACTIVITIES

Visual inspections are routine for system maintenance. This includes looking for standing water, accumulated leaves, holes in the soil media, signs of plant distress, and debris and sediment accumulation in the system. Vegetation coverage is integral to the performance of the system and vegetation care is important to system productivity and health. A gravel wetland is a subsurface horizontal filtration system and does not rely upon the surface soils for treatment. As such, surface infiltration rates are expected to be low and not a criterion for cleaning. Rather, stormwater access to subsurface treatment is by way of inlet standpipes. It is important to ensure these inlets are performing properly.

1ST YEAR POST-CONSTRUCTION ACTIVITY	FREQUENCY
1. Check that plants have adequate water, are well established and healthy. **Remedy:** Water plants as necessary, remove or treat diseased vegetation as necessary and re-vegetate poorly established plants as necessary	After every major storm in the first few months, then biannually.
2. Check for erosion in the system and short circuiting (holes) in the surface wetland soils. **Remedy:** Soil piping, erosion, and holes should be filled, lightly compacted, and reseeded.	
POST-CONSTRUCTION ACTIVITY	**FREQUENCY**
3. Check inlets outlets and stand pipes for leaves and debris. **Remedy**: Rake in and around the system to clear it of debris. Also, clear the inlet, outlets and standpipes if obstructed.	Quarterly initially, biannually, frequency adjusted as needed after 3 inspections
4. Check for animal burrows and short circuiting in the system. **Remedy:** Soil erosion from short circuiting or animal boroughs should be repaired when they occur. The holes should be filled and lightly compacted	
5. Check that the depth of accumulated sediment in the sedimentation chamber is less than 12 inches or 10 percent of the pretreatment volume. **Remedy:** The sedimentation chamber, forebay, and treatment cells outlet devices should be cleaned when drawdown times exceed 36 hours. Remove material with rakes where possible rather than heavy construction equipment to avoid compaction of the gravel wetland surface. Heavy equipment could be used if the system is designed with dimensions that allow equipment to be located outside the gravel wetland, while a backhoe shovel reaches inside the gravel wetland to remove sediment. Removed sediments should be dewatered (if necessary) and disposed of in an acceptable manner.	
6. Inspect inlets and outlets to ensure good condition and no evidence of deterioration. Check to see if high-flow bypass is functioning. **Remedy:** Repair or replace any damaged structural parts, inlets and outlets.	Annually
7. Check for robust vegetation coverage throughout the system. **Remedy:** If at least 50 % vegetation coverage is not established after 2 years, reinforcement planting should be performed.	
8. Cut and remove vegetation from the Gravel Wetland System and forebay in order to maintain nitrogen removal performance. **Remedy:** The vegetation should be cut and removed from the system to prevent nitrogen from cycling back into the system.	Once every 3 years

CHECKLIST FOR INSPECTION OF GRAVEL WETLAND

Location: I93 Exit 2 Park & Ride. DOT#: 10418G | Inspector: Tim Puls

Date: 7/18/14 | Time: 10:30AM | Site Conditions: Very Good

Date of Last Rain Event: 7/16/14

Inspection Items	Satisfactory (S) or Unsatisfactory (U)	Comments/Corrective Action
1st Year Post-Construction Monitoring (After every major storm for the first three months)		
Plants are stable, roots not exposed	S U	NA – This system was constructed in 2007
Vegetation is established and thriving	S U	
No evidence of holes in the wetland soil causing short-circuiting	S U	
No evidence of erosion at inlet and outlet structures	S U	
Post-Construction Routine Monitoring (at least every 6 months thereafter as per USEPA Good House-Keeping Requirements. Inspection frequency can be reduced to annual following 2 years of monitoring indicating the rate of sediment accumulation is less than cleaning criteria listed below.)		
1. Standing Water		
Gravel wetland surface is free of standing water or other evidence of clogging, such as discolored or accumulated sediments	(S) U	Plunge pools around the 3 inlet locations
2. Short Circuiting & Erosion		
No evidence of animal burrows or other holes	(S) U	
No evidence of erosion	(S) U	
3. Drought Conditions (As needed)		
Water plants as needed	(S) U	
Dead or dying plants	(S) U	
4. Sedimentation Chamber or Forebay Inlet Inspection		Some trash has accumulated
No evidence of sediment accumulation, trash, and debris.	(S) U	
Good condition, no need for repair	(S) U	
5. Vegetation Coverage		Plants are in good condition. Forebay is >95% cattails. Treatment cells are densely vegetated.
50 % coverage established throughout system by first year	(S) U	
Robust coverage by year 2 or later	(S) U	
6. Inlet and Outlet Controls		
Flow is unobstructed in openings (grates, orifices, etc)	(S) U	
Structures are operational with no evidence of deterioration	(S) U	
7. Vegetation removal (once every 3 years)		No maintenance has been done to date.
Prune dead, diseased, or decaying plants	S (U)	

Corrective Action Needed	Due Date
1. Maintain vegetation = cut down to base of plant and remove vegetation from system	
COMMENT: Perimeter ground water drainage is a 6" PUD in 2'x3' stone trench. Flow is directed to inlets.	

BERRY SURVEYING & ENGINEERING
335 Second Crown Point Road
Barrington, NH 03825
Phone: (603) 332-2863
Fax: (603) 335-4623
www.BerrySurveying.Com

January 31, 2022

Ms. Bethann McCarthy, PE
Alteration of Terrain Bureau
NHDES
PO Box 95
Concord, NH 03302

RE: Alteration of Terrain Permit Application AoT #210802-119
"Residences and Shops at Kelly Brook"
Tax Map H, Lot 37A
Dover, NH

Dear Ms. McCarthy:

The following waivers are hereby requested:

Identification of Waivers Requested:

1. Waiver requested to not satisfy Ground Water Recharge (GRV) requirement as put forth by Env-Wq 1507.04(b).

1) Explanation:

This waiver request is being submitted to allow for the Ground Water Recharge requirements put forth by Env-Wq 1507.04(b) due to soil conditions on site as shown in the Site Specific Soils Map (SSSM).

1) Waiver Justification:

a. Granting the request will not result in an adverse impact on the environment, public health, public safety, or abutting properties that is more significant than the impact that would result from complying with the rule as written.

Granting this request will not result in adverse impact on the environment, public health, public safety, or abutting properties that is more significant than the impact of complying with the rules as written. This is due to site conditions not allowing for compliance. On-Site soils that are being replaced with impervious surfaces are; Winsdor Variant, Buxton, and Scantic. The Windsor Variant has limited recognition across the state, primarily only being in Strafford County, which is why it is not found in the KSat Values for New Hampshire Soils (Ksat NH Manual). While the Windsor Variant

experiences Ksat of 6-20 in/hr in the "B" horizon according the Ksat NH, a silt loam "C" horizon exists with a significantly more restrictive Ksat.

Using the NH State-Wide Numerical Soil Legend (Key to the Soils of New Hampshire) 2011 Catena, the Windsor Variant is located within Section C, Marine or Glaciolacustrine Deposits, Soils Developed in Silt and Clay. From this section Eldridge soil contains similar textures and a restrictive "C" horizon. Using the Ksat NH Manual, Eldridge soil has a "C" horizon Ksat of 0.06-0.6 in/hr. By applying this restrictive "C" horizon to the Windsor Variant, infiltration would be prohibited in the proposed condition and is therefore limited in the existing condtion.

Buxton consists of restrictive "B" and "C" horizons of 0.1-0.6 in/hr and 0.0-0.2 in/hr, respectively. Scantic consists of restrictive "B" and "C" horizons as well, with 0.0-0.2 in/hr and 0.0-0.2 in/hr, respectively. With restrictive "B" and "C" horizons across the subject parcel, compliance with Env-Wq 1507.04(b) is not possible.

b. Granting the request is consistent with the intent and purposes of the rule being waived.

Utilizing the justification put forth in part a, granting this waiver request is consistent with the intent and purposes of the rule being waived. There is no location of site that is able to provide the minimum Ksat requirement of 0.5 in/hr in order to satisfy the GRV requirements of Env-Wq 1507.04(b).

Respectfully Submitted,
BERRY SURVEYING & ENGINEERING

Kevin R. Poulin, EIT
Project Engineer
k.poulin@berrysurveying.com

Kenneth A. Berry, PE, LLS
CPSWQ, CPESC, CESSWI
VP – Technical Operations
k.berry@berrysurveying.com

SOILS & DEWATERING:

WfA	*WINDSOR*	*VARIANT*	*K= 0.17*
WfB	*WINDSOR*	*VARIANT*	*K= 0.17*
WfC	*WINDSOR*	*VARIANT*	*K= 0.17*
BtA	*BUXTON*	*SILT LOAM*	*K= 0.28*
BtB	*BUXTON*	*SILT LOAM*	*K= 0.49*
BtC	*BUXTON*	*SILT LOAM*	*K= 0.49*
ScA-P	*SCANTIC*	*POORLY DRAINED*	*K= 0.49*
ScB-P	*SCANTIC*	*POORLY DRAINED*	*K= 0.43*

SEE SITE SPECIFIC SOILS MAP (SSSM)
SEE WEBSOIL USDA–NRCS
ERODIBILITY FACTOR – K, CPESC MANUAL, ENVIROCERT INTERNATIONAL INC. & ROCKINGHAM COUNTTY SOIL SURVEY, ROCKWEB SOIL ATTRIBUTES.

CONTRACTOR TO BE AWARE OF THE SOIL PROFILES AND ENSURE THAT PROPER EROSION PREVENTION AND SEDIMENT CONTROL MEASURES ARE TAKEN AT ALL TIMES. ANY DEWATERING REQUIREMENTS IN NEW HAMPSHIRE REQUIRE SPECIAL PROVISIONS IN ACCORDANCE WITH THE "CLARIFICATION OF SECTION 9.1.2 (STATE OF NEW HAMPSHIRE CONDITIONS) AND OTHER NH SPECIFIC INFORMATION FOR THE U.S. EPA 2022 NPDES CONSTRUCTION GENERAL PERMIT (CGP)" DATED FEBRUARY 17, 2022 INCLUDED IN THE SWPPP.

COVER MANAGEMENT DURING CONSTRUCTION FOR EXPOSED SOIL WILL INCLUDE HAY / STRAW APPLIED AT A RATE OF 2.0 TONS PER ACRE, TEMPORARY SEEDING OF ANNUAL RYE GRASS, AND PERMANENT SEEDING AT THE EARLIEST OPPORTUNITY. SEE ADDITIONAL REQUIREMENT FOR STABILIZATION ON THE EROSION AND SEDIMENT CONTROL DETAIL SHEETS, E–101 AND E–102.

THE CONSTRUCTION SCHEDULE WILL BE MANAGED SO THAT ALL STORMWATER STRUCTURES WILL BE BUILT AND STABILIZED PRIOR TO RECEIVING SURFACE WATER RUNOFF. CONTRACTOR TO BE RESPONSIBLE FOR ALL DIVERSIONS DURING CONSTRUCTION AND FOR INTERIM SEDIMENT AND EROSION CONTROL MEASURES.

NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37A

3.) LOT AREA: 407,542 Sq. Ft., 9.36 Ac..

4.) S.C.R.D. BOOK 5138, PAGE 73

5.) THE INTENT OF THIS PLAN IS TO SHOW THE PROPOSED EROSION & SEDIMENT CONTROL MEASURES OF THE PROPOSED SITE PLAN.

6.) SEE PHASING PLAN FOR MORE INFORMATION.

7.) SEE EROSION AND SEDIMENT CONTROL NOTES LOCATED ON SHEET 2 OF THE PLAN SET. SEE SPECIFIC DEWATERING DETAILS ON THE DEWATERING PLAN SHEET. SEE EROSION AND SEDIMENT CONTROL DETAILS ON PLAN SHEET E–101 AND E–102 OF THE CONSTRUCTION DETAILS.

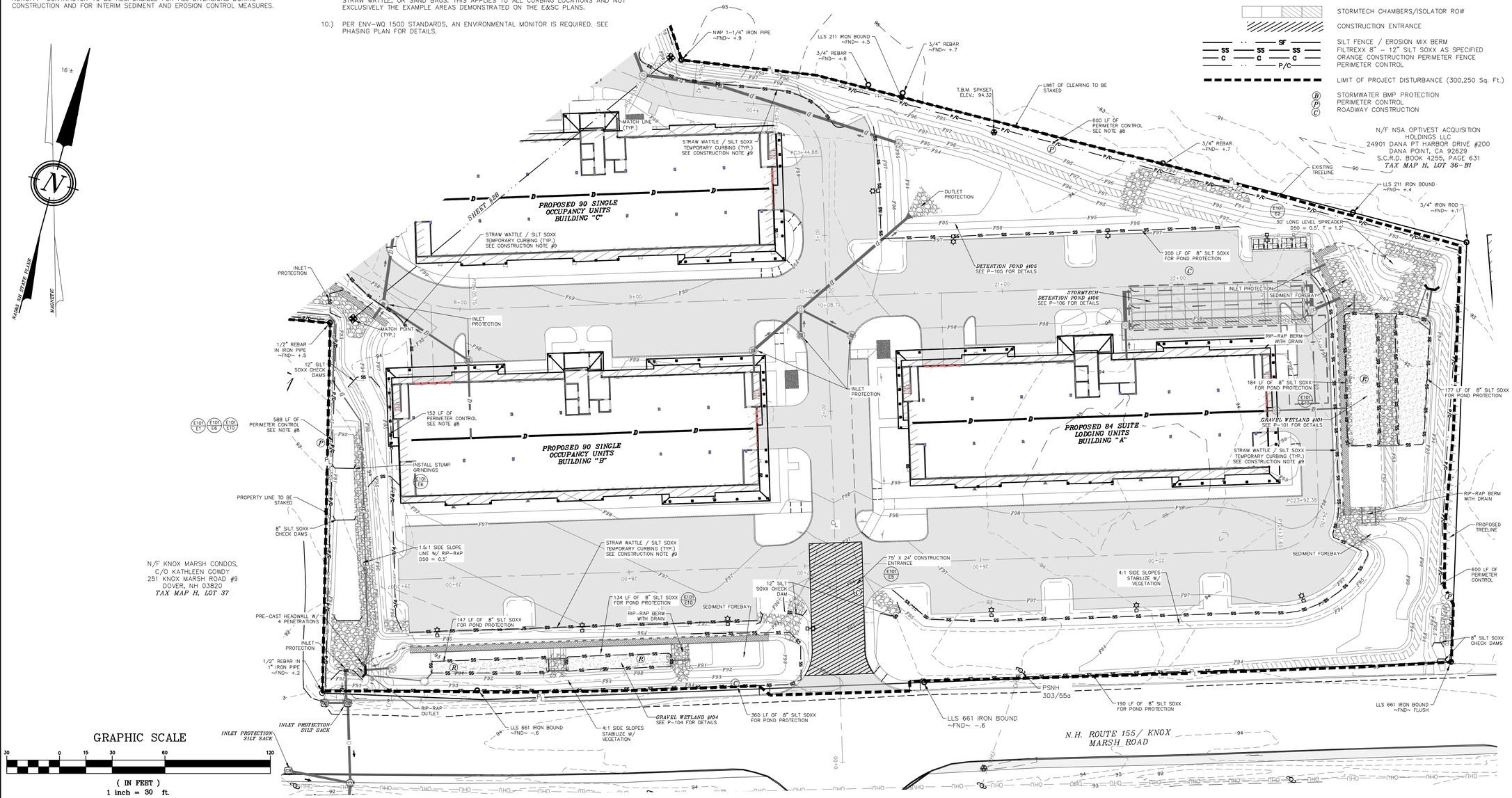
8.) CONTRACTOR CAN USE SILT FENCE, SILT SOXX OR MULCH BERM FOR PERIMETER CONTROL. SPECIFIC PRACTICES MAY BE SPECIFIED, SEE PLAN. SILT FENCE OR SILT SOXX REQUIRED WHEN UPGRADIENT DISTURBED SOIL GRADE IS GREATER THAN 5%. MULCH BERM CAN BE USED WHEN THE UPGRADIENT DISTURBED SOIL GRADE IS 5% OR LESS.

9.) TEMPORARY CURBING WILL BE INSTALLED AFTER ROADWAY CONSTRUCTION BECOMES IMPERVIOUS, EITHER COMPACTED GRAVEL OR BASE PAVEMENT TO ENSURE THAT CATCH BASINS ARE BROUGHT ON LINE AND SURFACE WATER RUNOFF IS ROUTED TO THE INTENDED TREATMENT. TEMPORARY CURBING CAN BE IN THE FORM OF SILT SOXX, STRAW WATTLE, OR SAND BAGS. THIS APPLIES TO ALL CURBING LOCATIONS AND NOT EXCLUSIVELY THE EXAMPLE AREAS DEMONSTRATED ON THE E&SC PLANS.

10.) PER ENV–WQ 1500 STANDARDS, AN ENVIRONMENTAL MONITOR IS REQUIRED. SEE PHASING PLAN FOR DETAILS.

LEGEND:

- IRON BOUND ~FND~
- EXISTING/PROPOSED CATCH BASIN W/ STRUCTURE
- PROPOSED STORMWATER BMP OUTLET STRUCTURE
- PROPOSED DRAIN MANHOLE W/ STRUCUTRE
- TEMPORARY BENCHMARK (T.B.M.)
- E101 / E6 — DETAIL SHEET / DETAIL
- POORLY DRAINED JURISDICTIONAL WETLAND
- 50' WETLAND BUFFER
- CONTOUR MINOR, EXISTING
- CONTOUR MAJOR, EXISTING
- CONTOUR MINOR, PROPOSED
- CONTOUR MAJOR, PROPOSED
- CENTER LINE
- EXISTING DRAINAGE LINE
- PROPOSED DRAINAGE LINE
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- BERM
- RETAINING WALL
- STORMTECH CHAMBERS/ISOLATOR ROW
- CONSTRUCTION ENTRANCE
- SILT FENCE / EROSION MIX BERM
- FILTREXX 8" – 12" SILT SOXX AS SPECIFIED
- ORANGE CONSTRUCTION PERIMETER FENCE
- PERIMETER CONTROL
- LIMIT OF PROJECT DISTURBANCE (300,250 Sq. Ft.)
- (B) STORMWATER BMP PROTECTION
- (P) PERIMETER CONTROL
- (C) ROADWAY CONSTRUCTION



GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

PLANNING FILE #SITE–XXXX–XXXX

REVISION	DATE	DESCRIPTION

EROSION AND SEDIMENT CONTROL PLAN EAST
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

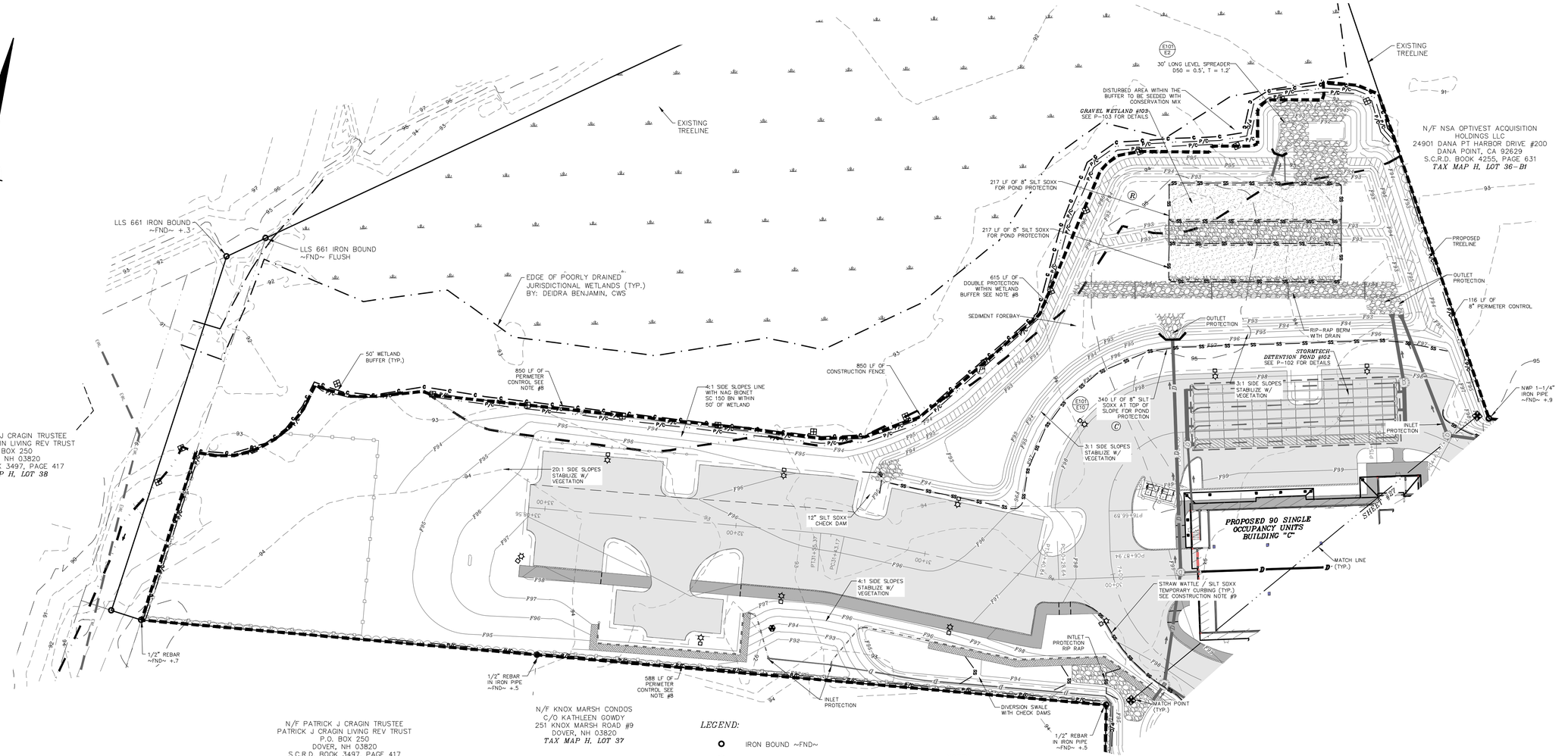
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 30 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 – 034

STATE OF NEW HAMPSHIRE – KENNETH A. BERRY No. 14243 LICENSED PROFESSIONAL ENGINEER

SHEET 27 OF 60

NOT FOR CONSTRUCTION



LEGEND:

- IRON BOUND ~FND~
- EXISTING/PROPOSED CATCH BASIN W/ STRUCTURE
- PROPOSED STORMWATER BMP OUTLET STRUCTURE
- PROPOSED DRAIN MANHOLE W/ STRUCUTRE
- TEMPORARY BENCHMARK (T.B.M.)
- E101 / E6 — DETAIL SHEET / DETAIL
- POORLY DRAINED JURISDICTIONAL WETLAND
- 50' WETLAND BUFFER
- CONTOUR MINOR, EXISTING
- CONTOUR MAJOR, EXISTING
- CONTOUR MINOR, PROPOSED
- CONTOUR MAJOR, PROPOSED
- CENTER LINE
- EXISTING DRAINAGE LINE
- PROPOSED DRAINAGE LINE
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- BERM
- RETAINING WALL
- STORMTECH CHAMBERS/ISOLATOR ROW
- CONSTRUCTION ENTRANCE
- SILT FENCE / EROSION MIX BERM
- FILTREXX 8" – 12" SILT SOXX AS SPECIFIED
- ORANGE CONSTRUCTION PERIMETER FENCE
- PERIMETER CONTROL
- LIMIT OF PROJECT DISTURBANCE (300,250 Sq. Ft.)
- STORMWATER BMP PROTECTION
- PERIMETER CONTROL
- ROADWAY CONSTRUCTION

SOILS & DEWATERING:

WfA	WINDSOR	VARIANT	K= 0.17
WfB	WINDSOR	VARIANT	K= 0.17
WfC	WINDSOR	VARIANT	K= 0.17
BsA	BUXTON	SILT LOAM	K= 0.28
BsB	BUXTON	SILT LOAM	K= 0.49
BsC	BUXTON	SILT LOAM	K= 0.49
ScA–P	SCANTIC	POORLY DRAINED	K= 0.49
ScB–P	SCANTIC	POORLY DRAINED	K= 0.43

SEE SITE SPECIFIC SOILS MAP (SSSM)
SEE WEBSOIL USDA–NRCS
ERODIBILITY FACTOR – K, CPESC MANUAL, ENVIROCERT INTERNATIONAL INC. & ROCKINGHAM COUNTTY SOIL SURVEY, ROCKWEB SOIL ATTRIBUTES.

CONTRACTOR TO BE AWARE OF THE SOIL PROFILES AND ENSURE THAT PROPER EROSION PREVENTION AND SEDIMENT CONTROL MEASURES ARE TAKEN AT ALL TIMES. ANY DEWATERING REQUIREMENTS IN NEW HAMPSHIRE REQUIRE SPECIAL PROVISIONS IN ACCORDANCE WITH THE "CLARIFICATION OF SECTION 9.1.2 (STATE OF NEW HAMPSHIRE CONDITIONS) AND OTHER NH SPECIFIC INFORMATION FOR THE U.S. EPA 2022 NPDES CONSTRUCTION GENERAL PERMIT (CGP)" DATED FEBRUARY 17, 2022 INCLUDED IN THE SWPPP.

COVER MANAGEMENT DURING CONSTRUCTION FOR EXPOSED SOIL WILL INCLUDE HAY / STRAW APPLIED AT A RATE OF 2.0 TONS PER ACRE, TEMPORARY SEEDING OF ANNUAL RYE GRASS, AND PERMANENT SEEDING AT THE EARLIEST OPPORTUNITY. SEE ADDITIONAL REQUIREMENT FOR STABILIZATION ON THE EROSION AND SEDIMENT CONTROL DETAIL SHEETS, E-101 AND E-102.

THE CONSTRUCTION SCHEDULE WILL BE MANAGED SO THAT ALL STORMWATER STRUCTURES WILL BE BUILT AND STABILIZED PRIOR TO RECEIVING SURFACE WATER RUNOFF. CONTRACTOR TO BE RESPONSIBLE FOR ALL DIVERSIONS DURING CONSTRUCTION AND FOR INTERIM SEDIMENT AND EROSION CONTROL MEASURES.

NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37A

3.) LOT AREA: 407,542 Sq. Ft., 9.36 Ac..

4.) S.C.R.D. BOOK 5138, PAGE 73

5.) THE INTENT OF THIS PLAN IS TO SHOW THE PROPOSED EROSION & SEDIMENT CONTROL MEASURES OF THE PROPOSED SITE PLAN.

6.) SEE PHASING PLAN FOR MORE INFORMATION.

7.) SEE EROSION AND SEDIMENT CONTROL NOTES LOCATED ON SHEET 2 OF THE PLAN SET. SEE SPECIFIC DEWATERING DETAILS ON THE DEWATERING PLAN SHEET. SEE EROSION AND SEDIMENT CONTROL DETAILS ON PLAN SHEET E-101 AND E-102 OF THE CONSTRUCTION DETAILS.

8.) CONTRACTOR CAN USE SILT FENCE, SILT SOXX OR MULCH BERM FOR PERIMETER CONTROL. SPECIFIC PRACTICES MAY BE SPECIFIED, SEE PLAN. SILT FENCE OR SILT SOXX REQUIRED WHEN UPGRADIENT DISTURBED SOIL GRADE IS GREATER THAN 5% MULCH BERM CAN BE USED WHEN THE UPGRADIENT DISTURBED SOIL GRADE IS 5% OR LESS.

9.) TEMPORARY CURBING WILL BE INSTALLED AFTER ROADWAY CONSTRUCTION BECOMES IMPERVIOUS, EITHER COMPACTED GRAVEL OR BASE PAVEMENT TO ENSURE THAT CATCH BASINS ARE BROUGHT ON LINE AND SURFACE WATER RUNOFF IS ROUTED TO THE INTENDED TREATMENT. TEMPORARY CURBING CAN BE IN THE FORM OF SILT SOXX, STRAW WATTLE, OR SAND BAGS. THIS APPLIES TO ALL CURBING LOCATIONS AND NOT EXCLUSIVELY THE EXAMPLE AREAS DEMONSTRATED ON THE E&SC PLANS.

10.) PER ENV-WQ 1500 STANDARDS, AN ENVIRONMENTAL MONITOR IS REQUIRED. SEE PHASING PLAN FOR DETAILS.

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

EROSION AND SEDIMENT CONTROL PLAN WEST
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 30 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 – 034

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14244
LICENSED
PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

TEPP LLC TRANSPORTATION ENGINEERING, PLANNING AND POLICY

MEMORANDUM

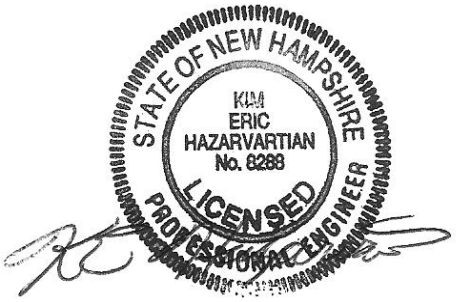
93 Stiles Road, Suite 201, Salem, New Hampshire 03079 USA
800 Turnpike Street, Suite 300, North Andover, Massachusetts 01845 USA
Phone (603) 212-9133 and Fax (603) 226-4108
Email tepp@teppllc.com and Web www.teppllc.com

Ref: 1698

Subject: Traffic Assessment
239 Knox Marsh Road
Dover, New Hampshire

From: Kim Eric Hazarvartian, Ph.D., P.E., PTOE
Principal
keh@teppllc.com

Date: December 11, 2024



INTRODUCTION

TEPP LLC has prepared this traffic-assessment memorandum regarding a proposed development at 239 Knox Marsh Road in the City of Dover, New Hampshire. The previous development program consisted of:

- 52 apartments
- 12 attached dwelling units
- 23,000 square feet (sf) of commercial floor area[1]

The current development program consists of:

- 180 single-room-occupancy affordable dwelling units
- an 84-room hotel

TRIP GENERATION

The Institute of Transportation Engineers (ITE) publishes trip-generation information in the authoritative *Trip Generation Manual*.[2] This information is based on empirical data for a variety of land uses including:

- land use 223, affordable housing, based on residents[3]
- land use 310, hotel, based on rooms[4]

[1] Stephen G. Pernaw & Company, Inc. (SGP), *Traffic Impact Assessment, Proposed Mixed-Use Development, Dover, New Hampshire* (Concord, New Hampshire, April 28, 2021).

[2] ITE, *Trip Generation Manual*, 11th Edition (Washington DC, September 2021).

[3] ITE, Volume 3, pages 337 to 357.

Table 1 shows differences in calculated trip generation for current development program versus previous development program as:

Table 1. Calculated trip generation.

	Vehicle-Trips				
		Current Program			
	Previous Program[a]	Affordable Housing[b]	Hotel[c]	Total	Difference[d]
Weekday Daily	672	329	671	1,000	328
Weekday AM-Street-Peak Hour					
In	27	13	19	32	5
Out	28	28	16	44	16
Total	55	41	35	76	21
Weekday PM-Street-Peak Hour					
In	32	21	17	38	6
Out	36	8	17	25	-11
Total	68	29	34	63	-5
Saturday Daily	426	329	678	1,007	581
Saturday Site-Peak Hour					
In	28	21	34	55	27
Out	27	20	36	46	19
Total	55	41	60	101	46

[a] From SGP, page 10.

[b] Based on ITE, land use 223, affordable housing (income limits), 225 residents (180 rooms with an average of 1.25 residents per room).

[c] Based on ITE, land use 310, hotel, 84 rooms. Used weekday daily to estimate Saturday daily. Used weekday AM-street-peak hour to estimate Saturday site-peak hour.

[d] Current versus previous development program.

- weekday daily, 328 vehicle-trips (total of in and out)
- weekday AM-street-peak hour, 21 vehicle-trips (5 in and 16 out)
- weekday PM-street-peak hour, -5 vehicle-trips (6 in and -11 out)
- Saturday daily, 581 vehicle-trips (total of in and out)
- Saturday site-peak hour, 46 vehicle-trips (27 in and 19 out)

[4] ITE, Volume 3, pages 499 to 526.

# Single Occupancy Units	90	Full Velocity (Manning Equation)	
# Single Occupancy Bedrooms	90	V=(1.486/n)*(R^2/3)*(S^1/2)	
Flow Received from Single Occupancy Units (gpm)		n	0.011
GPM=(107GPD * #BR * 6)/1440min/day		R	0.167
38.63		Pipe Dia (in)	8
Flow Received from Upstream Infiltration (gpm) (Inlet Pipe)		Area (ft^2)	0.349
Inf. Rate = ((300 GPD*8IN*LF)/5280 LF)/1440 min/day		8" SDR 35	
0.009		Inv In (SMH #3)	89.06
Cumulative Infiltration (gpm)		Inv Out (SMH #4)	88.20
0.009		Outlet Pipe Length (ft)	191.00
Total Flow Received (BR Flow + INF) (gpm)		Slope	0.0045
38.63		Full Velocity (ft/s)	2.75
SMH #3		Discharge Rate (gpm)	429.89
Rim Elev	98.86	SMH #3 Inlet Pipe Length (ft)	27.00
Inv In (Residential Building C)	89.16		
Inv Out (Prop. SMH #4)	89.06		
Depth SMH	9.80		

# Single Occupancy Units	90	Full Velocity (Manning Equation)	
# Single Occupancy Bedrooms	90	V=(1.486/n)*(R^2/3)*(S^1/2)	
Flow Received from Single Occupancy Units (gpm)		n	0.011
GPM=(107GPD * #BR * 6)/1440min/day		R	0.167
38.63		Pipe Dia (in)	8
Flow Received from Upstream Infiltration (gpm) (Inlet Pipe)		Area (ft^2)	0.349
Inf. Rate = ((300 GPD*8IN*LF)/5280 LF)/1440 min/day		8" SDR 35	
0.013		Inv In (SMH #5)	88.43
Cumulative Infiltration (gpm)		Inv Out (SMH #4)	88.20
0.013		Outlet Pipe Length (ft)	56.90
Total Flow Received (BR Flow + INF) (gpm)		Slope	0.004
38.64		Full Velocity (ft/s)	2.60
SMH #5		Discharge Rate (gpm)	407.32
Rim Elev	97.20	SMH #5 Inlet Pipe Length (ft)	40.00
Inv In (Residential Building B)	83.53		
Inv Out (Prop. SMH #4)	88.43		
Depth SMH	8.77		

# Single Occupancy Units	90	Full Velocity (Manning Equation)	
# Single Occupancy Bedrooms	90	V=(1.486/n)*(R^2/3)*(S^1/2)	
Flow Received from Single Occupancy Units (gpm)		n	0.011
GPM=(107GPD * #BR * 6)/1440min/day		R	0.167
38.63		Pipe Dia (in)	8
Flow Received from Upstream Infiltration (gpm) (Inlet Pipe)		Area (ft^2)	0.349
Inf. Rate = ((300 GPD*8IN*LF)/5280 LF)/1440 min/day		8" SDR 35	
0.018		Inv In (SMH #4)	88.10
Cumulative Infiltration (gpm)		Inv Out (SMH #6)	87.86
0.039		Outlet Pipe Length (ft)	56.75
Total Flow Received (BR Flow + INF) (gpm)		Slope	0.004
38.66		Full Velocity (ft/s)	2.66
SMH #4		Discharge Rate (gpm)	416.63
Rim Elev	96.76		
Inv In (SMH #3)	88.20		
Inv In (SMH #5)	88.20		
Inv Out (SMH #6)	88.10		
Depth SMH	8.66		

# Single Occupancy Units	180	Full Velocity (Manning Equation)	
# Single Occupancy Bedrooms	180	V=(1.486/n)*(R^2/3)*(S^1/2)	
# Lodging Units	84	n	0.011
# Lodging Employees	6	R	0.167
Flow Received from Single Occupancy Units (gpm)		Pipe Dia (in)	8
GPM=(107GPD * #BR * 6)/1440min/day		Area (ft^2)	0.349
77.25		8" SDR 35	
Flow Received from Logding Units (gpm)		Inv In (SMH #6)	87.76
GPM=(200GPD * #Suites * 6)/1440min/day		Inv Out (SMH #7)	86.91
37.10		Outlet Pipe Length (ft)	212.50
Flow Received from Logding Employees (gpm)		Slope	0.004
GPM=(10GPD * #Employees * 6)/1440min/day		Full Velocity (ft/s)	2.59
0.20		Discharge Rate (gpm)	405.19
Flow Received from Upstream Infiltration (gpm) (Inlet Pipe)		SMH #6 Inlet Pipe Length (ft)	40.67
Inf. Rate = ((300 GPD*8IN*LF)/5280 LF)/1440 min/day			
0.018			
Cumulative Infiltration (gpm)			
0.057			
Total Flow Received (BR Flow + INF) (gpm)			
114.61			
SMH #6			
Rim Elev	97.18		
Inv In (Lodging Building A)	87.86		
Inv In (SMH #4)	87.86		
Inv Out (SMH #7)	87.76		
Depth SMH	9.42		

# Single Occupancy Units	180	Full Velocity (Manning Equation)	
# Single Occupancy Bedrooms	180	V=(1.486/n)*(R^2/3)*(S^1/2)	
# Lodging Units	84	n	0.011
# Lodging Employees	6	R	0.167
Flow Received from Single Occupancy Units (gpm)		Pipe Dia (in)	8
GPM=(107GPD * #BR * 6)/1440min/day		Area (ft^2)	0.349
77.25		8" SDR 35	
Flow Received from Logding Units (gpm)		Inv In (SMH #7)	86.81
GPM=(200GPD * #Suites * 6)/1440min/day		Inv Out (SMH Dover GIS #2864)	86.54
37.10		Outlet Pipe Length (ft)	50.40
Flow Received from Logding Employees (gpm)		Slope	0.005
GPM=(10GPD * #Employees * 6)/1440min/day		Full Velocity (ft/s)	2.99
0.20		Discharge Rate (gpm)	468.92
Flow Received from Upstream Infiltration (gpm) (Inlet Pipe)			
Inf. Rate = ((300 GPD*8IN*LF)/5280 LF)/1440 min/day			
0.067			
Cumulative Infiltration (gpm)			
0.124			
Total Flow Received (BR Flow + INF) (gpm)			
114.67			
SMH #7			
Rim Elev	94.00		
Inv In (SMH #6)	86.91		
Inv Out (SMH Dover GIS #2864)	86.81		
Depth SMH	7.19		

# Single Occupancy Units	180
# Single Occupancy Bedrooms	180
# Lodging Units	84
# Lodging Employees	6
Flow Received from Single Occupancy Units (gpm)	
GPM=(107GPD * #BR * 6)/1440min/day	
77.25	
Flow Received from Logding Units (gpm)	
GPM=(200GPD * #Suites * 6)/1440min/day	
37.10	
Flow Received from Logding Employees (gpm)	
GPM=(10GPD * #Employees * 6)/1440min/day	
0.20	
Flow Received from Upstream Infiltration (gpm) (Inlet Pipe)	
Inf. Rate = ((300 GPD*8IN*LF)/5280 LF)/1440 min/day	
0.016	
Cumulative Infiltration (gpm)	
0.140	
Total Flow Received (BR Flow + INF) (gpm)	
114.69	
Ex. SMH Dover GIS #2864 (Flow From Site Only)	
Rim Elev	94.76
Inv In (SMH #7)	86.54
Inv In (Ex. 12" ACP)	86.54
Inv Out (Ex. 12" ACP)	86.44
Depth SMH	8.32

24-034 Sewer Calculations: The Residences & Lodges at Kelly Brook, 239 Knox Marsh Road, Dover, NH		Assumptions:
Peaking Factor	6	
Flow/Bedroom Single Occupancy Unit (gpd)	103	Metcalf & Eddy/AECOM Table 3-2
Flow/Lodging Unit (gpd)	106	Metcalf & Eddy/AECOM Table 3-3, Average of 2 guest/room, 53 GPD/guest
Flow/Lodging Building Employee (gpd)	8	Assumptions: 6 Employees
Total 8" SDR 35/21 (Ft):	Total Rate (Design Flow)(GPD):	Total Rate (Design Flow)(GPM):
675.22	27,492	114.35
	Total Rate (Infiltration)(GPD):	Total Rate (Infiltration)(GPM):
	202	0.14
	Total Flow Received (GPD):	Total Flow Received (GPM):
	27,694	114.69
It is not anticipated that this pipe will ever flow full		
Berry Surveying & Engineering: November 26, 2024		

PREVIOUS APPROVAL UNDER NHDES SEWER DISCHARGE PERMIT D2022-0705 WAS FOR 25,075 GPD. NEW APPROVAL REQUIRED.

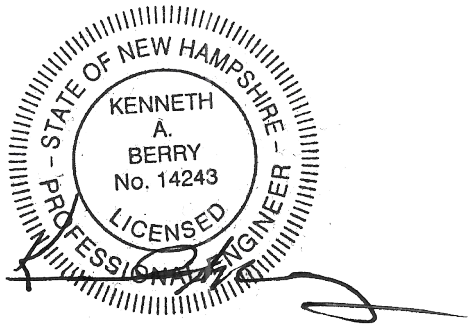


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SHEET 2 ~ PROJECT NOTES
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*DENOTES THAT A PLAN IS TO BE RECORDED AT THE S.C.R.D.

''RESIDENCES & LODGES AT KELLY BROOK''
MIXED–USE TRANSFER OF DEVELOPMENT RIGHTS SITE PLAN
FOR
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

NOTE:

BERRY SURVEYING & ENGINEERING HAS PREPARED AN INSPECTION & MAINTENANCE MANUAL AS PART OF THIS PROJECTS DOCUMENTATION. ALL USERS ARE BOUND TO THIS DOCUMENT AS PART OF THE APPROVAL OF THE PLANNING BOARD. COPIES OF THE YEARLY INSPECTIONS ARE TO BE DELIVERED TO THE CITY OF DOVER COMMUNITY SERVICES DEPARTMENT.

SURVEYOR OF RECORD: KENNETH A. BERRY, PE, LLS
CPSWQ, CPESC, CESSWI
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825
(603) 332–2863

ENGINEER OF RECORD: KENNETH A. BERRY, PE, LLS
CPSWQ, CPESC, CESSWI
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825
(603) 332–2863

WETLAND SCIENTIST: DEIDRA BENJAMIN, CWS #295
100 LEAVITT ROAD
PITTSFIELD, NH 03263

SOIL SCIENTIST: JOHN P. HAYES, III CWS #18, CSS #87
7 LIMESTONE WAY
NORTH HAMPTON, NH 03862
(603) 205–4396

LANDSCAPE ARCHITECT: ERIC R. BUCK #87
TERRAIN PLANNING & DESIGN
311 KAST HILL ROAD
HOPKINTON, NH 03229

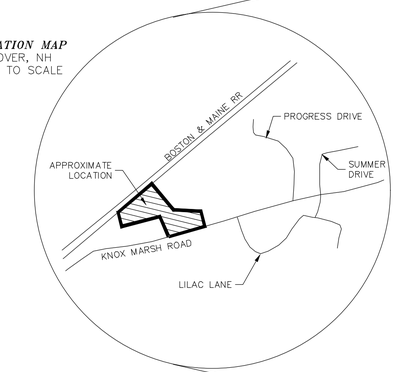
ARCHITECT: NICK ISAAK, AIA
ISAAK DESIGN, PLLC
35 OYSTER RIVER ROAD
DURHAM, NH 03824

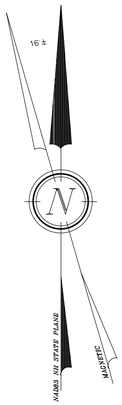
OWNER & APPLICANT:

239 KNOX MARSH REALTY, LLC
P.O. BOX 720
MIDDLETON, MA 01949

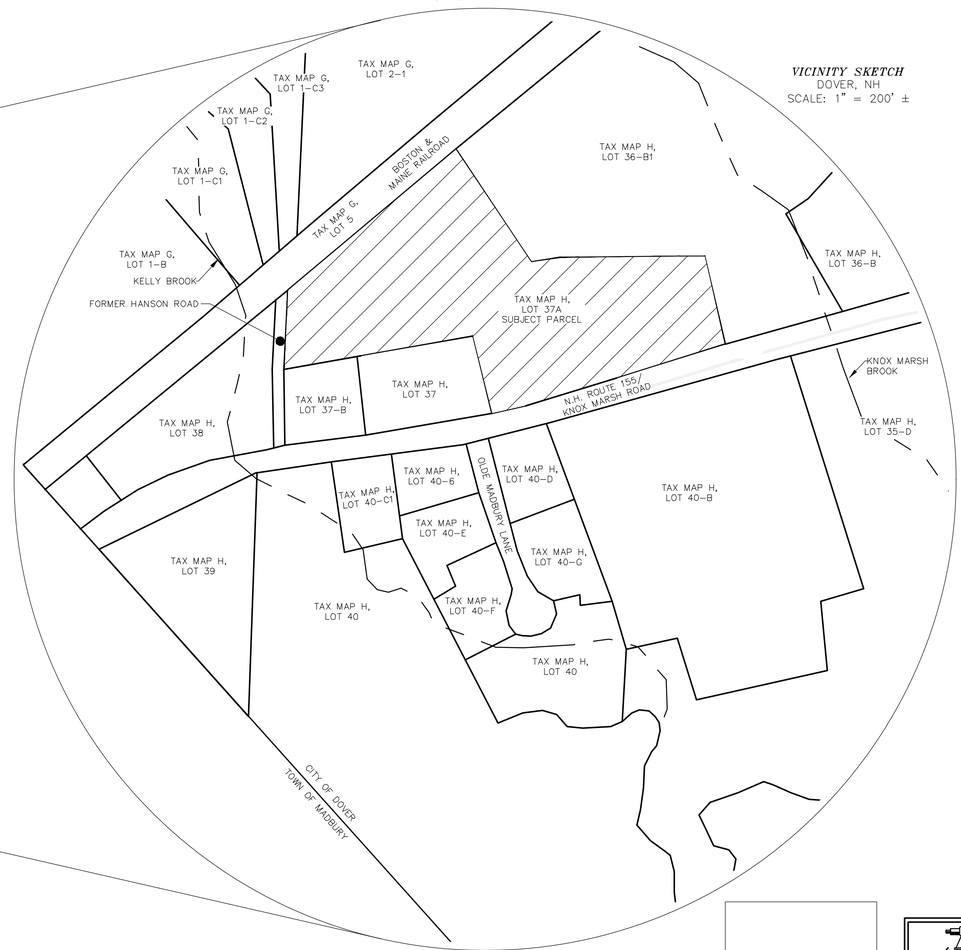
OWNER'S SIGNATURE DATE

LOCATION MAP
DOVER, NH
NOT TO SCALE





VICINITY SKETCH
DOVER, NH
SCALE: 1" = 200' ±



NEW HAMPSHIRE FISH AND GAME NOTES:

1.) ALL OBSERVATIONS OF THREATENED OR ENDANGERED SPECIES SHALL BE REPORTED IMMEDIATELY TO THE NEW HAMPSHIRE FISH AND GAME DEPARTMENT NONGAME AND ENDANGERED WILDLIFE ENVIRONMENTAL REVIEW PROGRAM BY PHONE AT 603–271–2461 AND BY EMAIL AT NHFGREVIEW@WILDLIFE.NH.GOV, EMAIL SUBJECT LINE: NHB22–0387, "RESIDENCES AND SHOPS AT KELLY BROOK", WILDLIFE SPECIES OBSERVATION. PHOTOGRAPHS SHALL BE PROVIDED FOR VERIFICATION AS FEASIBLE

2.) IN THE EVENT A THREATENED OR ENDANGERED SPECIES IS OBSERVED ON THE PROJECT SITE DURING THE TERM OF THE PERMIT, THE SPECIES SHALL NOT BE DISTURBED, HANDLED, OR HARMED IN ANY WAY PRIOR TO CONSULTATION WITH NHFG AND IMPLEMENTATION OF CORRECTIVE ACTIONS RECOMMENDED BY NHFG, IF ANY, TO ASSURE THE PROJECT DOES NOT APPRECIABLY JEOPARDIZE THE CONTINUED EXISTENCE OF THREATENED AND ENDANGERED SPECIES AS DEFINED IN FIS 1002.04. THE NEW HAMPSHIRE FISH AND GAME DEPARTMENT SHALL HAVE ACCESS TO THE PROPERTY DURING THE TERM OF THE PERMIT.

3.) ALL MANUFACTURED EROSION AND SEDIMENT CONTROL PRODUCTS, WITH THE EXCEPTION OF TURF REINFORCEMENT MATS, UTILIZED FOR, BUT NOT LIMITED TO, SLOPE PROTECTION, RUNOFF DIVERSION, SLOPE INTERRUPTION, PERIMETER CONTROL, INLET PROTECTION, CHECK DAMS, AND SEDIMENT TRAPS SHALL NOT CONTAIN PLASTIC, OR MULTI–FILAMENT OR MONOFILAMENT POLYPROPYLENE NETTING OR MESH WITH AN OPENING SIZE OF GREATER THAN 1/8 INCHES.

4.) NORTHERN BLACK RACERS SHALL BE REPORTED IMMEDIATELY TO NHFG WILDLIFE BIOLOGISTS MELISSA WINTERS (603–479–1129) OR BRENDAN CLIFFORD (603–944–0885). IMMEDIATE REPORTING OF OBSERVATIONS IS CRITICAL AS NHFG BIOLOGISTS WILL NEED TO COLLECT DATA ON THE INDIVIDUAL.

5.) TURTLES MAY BE ATTRACTED TO DISTURBED GROUND DURING NESTING SEASON (MAY 15 – JUNE 30). ALL TURTLE SPECIES NESTS ARE PROTECTED BY NH LAWS. IF A NEST IS OBSERVED OR SUSPECTED, OPERATORS SHALL CONTACT MELISSA WINTERS (603–479–1129) OR JOSH MEGYESY (978–578–0802) AT NHFG IMMEDIATELY FOR FURTHER CONSULTATION.

REQUIRED PERMITS:

~ NHDES SEWER DISCHARGE PERMIT	D2022–0705 (TO BE AMENDED)
~ NHDES ALTERATION OF TERRAIN PERMIT	AoT–2183–A (TO BE AMENDED)
~ US EPA NOI & SWPPP	NHR1001UU (SWPPP ADDENDUM REQUIRED)
~ NATURAL HERITAGE BUREAU	NHB22–0387
~ NH DIVISION OF HISTORICAL RESOURCES	DHR #10630
~ NHDOT DRIVEWAY PERMIT	06–125–415 (TO BE AMENDED)

GENERAL PLAN SET NOTES:

1.) 11x17" PLANS ARE TWICE THE PUBLISHED SCALE.

2.) ALL PLANS ARE CONSIDERED TO BE NOT FOR CONSTRUCTION UNLESS THEY CONTAIN THE APPROVAL STAMP OF THE CITY OF DOVER.

WHETHER OR NOT OTHERWISE EXPRESSLY RECITED ON THIS SITE PLAN, THE SITE PLAN APPROVAL GRANTED IS CONDITIONED ON FAITHFUL AND DILIGENT ADHERENCE BY THE OWNER/SUBDIVIDER/DEVELOPER OF ALL TERMS, CONDITIONS, PROVISIONS AND SPECIFICATIONS OF THE CITY OF DOVER LAND SITE PLAN REGULATIONS AS AMENDED OR AS MAY LATER BE AMENDED, IN EFFECT ON THE DATE OF APPROVAL, UNLESS OR EXCEPT INSOFAR AS EXPRESSLY WAIVED, IN ANY PARTICULAR, BELOW. NON – ADHERENCE MAY RESULT IN A REVOCATION OF APPROVAL. ANY VARIATION FROM THE APPROVED PLAN WILL REQUIRE A RESUBMISSION FOR SITE PLAN APPROVAL.

APPROVED DOVER

STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR No. 805 KENNETH A. BERRY SIGNATURE

PLANNING FILE #SITE–XXXX–XXXX

REVISION	DATE	DESCRIPTION

MIXED–USE TRANSFER OF DEVELOPMENT RIGHTS SITE PLAN
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : AS SHOWN
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 – 034

STATE OF NEW HAMPSHIRE – KENNETH A. BERRY No. 14243 LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

ABBREVIATION LEGEND:

E.O.P.	EDGE OF PAVEMENT
V.G.C.	VERTICAL GRANITE CURB
S.G.C.	SLOPED GRANITE CURB
BITUM.	BITUMINOUS
E.S.H.W.T	ESTIMATED SEASONAL HIGH WATER TABLE
TYP	TYPICAL
U.G.E	UNDER GROUND ELECTRIC / UTILITIES
O.H.U.	OVERHEAD ELECTRIC / UTILITIES
CLDI	CONCRETE LINED DUCTILE IRON
DI	DUCTILE IRON
F.P.	FIRE PROTECTION
FDC	FIRE DEPARTMENT CONNECTION
U.D.	UNDER DRAIN
C.O.	CLEAN OUT
TYP.	INVERT
ELEV.	ELEVATION
HDPE	HIGH DENSITY POLYETHYLENE
RCP	REINFORCED CONCRETE PIPE
RECB	ROLLED EROSION CONTROL BLANKET
F.G.	FINISHED GRADE
E.G.	EXISTING GRADE
E.T.W.	EDGE OF TRAVELED WAY
T.B.R.	TO BE REMOVED
PL	PROPERTY LINE
EL	EASEMENT LINE
CL	CENTER LINE
CF	CUBIC FEET
P.C.	POINT OF CURVATURE
P.T.	POINT OF TANGENCY
P.V.C.	POINT OF VERTICAL CURVE
P.V.I.	POINT OF VERTICAL INTERSECTION
P.V.T.	POINT OF VERTICAL TANGENCY
EX.	EXISTING
PROP.	PROPOSED
STA.	STATION
BMP	BEST MANAGEMENT PRACTICE
'/,	FEET / FEET
TP	TEST PIT
FND	FOUND
TBS	TO BE SET

{ } SSL ( ) ~ {SIZE} SINGLE SOLID LINE (COLOR W=WHITE, Y=YELLOW)
{ } DSL ( ) ~ {SIZE} DOUBLE SOLID LINE (COLOR W=WHITE, Y=YELLOW)
{ } SSB ( ) ~ {SIZE} SINGLE SOLID W/ BROKEN LINE (COLOR W=WHITE, Y=YELLOW)
{ } SBL ( ) ~ {SIZE} SINGLE BROKEN LINE (COLOR W=WHITE, Y=YELLOW)
{ } DBL ( ) ~ {SIZE} DOUBLE BROKEN LINE (COLOR W=WHITE, Y=YELLOW)

EXISTING LEGEND:

- IRON BOUND/REBAR ~FND~
- UTILITY POLE
- GUY WIRE
- SIGNAGE
- TEST PIT
- TEMPORARY BENCHMARK (T.B.M.)
- WELL
- BUILDING SETBACK LINE
- POORLY DRAINED JURISDICTIONAL WETLAND LINE
- 50' POORLY DRAINED WETLAND BUFFER
- NRCS SOIL DELINEATION LINE
- SITE SPECIFIC SOIL LINE
- LIMIT OF SOIL SURVEY
- CONTOUR MINOR, EXISTING
- CONTOUR MAJOR, EXISTING
- TREELINE
- GATE VALVE
- FIRE HYDRANT
- CATCH BASIN
- SEWER MANHOLE
- DRAIN MANHOLE
- ABUTTING PROPERTY LINE
- EXISTING WATER LINE
- EXISTING SEWER LINE
- EXISTING DRAIN LINE
- OVERHEAD UTILITIES
- MATCH LINE
- MATCH POINT
- **448A** SOIL SERIES
- *CsB* NRCS SOIL LABEL
- **S.C.R.D.** STRAFFORD COUNTY REGISTRY OF DEEDS
- **TYP** TYPICAL
- **FND** FOUND
- POORLY DRAINED JURISDICTIONAL WETLAND HATCH

PROPOSED LEGEND:

- E101 / E6 — DETAIL SHEET / DETAIL
- CONTOUR MINOR, PROPOSED
- CONTOUR MAJOR, PROPOSED
- ROAD CENTERLINE
- SHOULDER
- DRAIN CULVERT W/ FLARED END SECTION (F.E.S.)
- UNDERDRAIN
- GUARD RAIL
- PAVEMENT SEAM
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- BERM
- RETAINING WALL
- STORMTECH CHAMBERS/ISOLATOR ROW
- LIMIT OF STORMTECH CHAMBER STONE/GENERAL STONE
- DRAIN MANHOLE W/STRUCTURE
- CATCH BASIN W/ STRUCTURE
- STORMWATER BMP OUTLET STRUCTURE
- TRANSFORMER / J.BOX
- UNDERGROUND UTILITY
- GATE VALVE
- FIRE HYDRANT
- THRUST BLOCKS
- FIRE DEPARTMENT CONNECTION
- SEWER MANHOLE W/ STRUCTURE
- PROPOSED WATER MAIN LINE
- PROPOSED WATER SERVICE
- PROPOSED SEWER MAIN
- E175.31 — EXISTING SPOT GRADE
- F175.31 — PROPOSED SPOT GRADE
- FLOW ARROW
- SAW CUT & MILL
- SILT FENCE / EROSION MIX BERM
- FILTREXX 8" - 12" SILT SOXX AS SPECIFIED
- PERIMETER CONTROL (SEE E-101)
- CONSTRUCTION FENCE
- FENCE
- LAMP "A", POLE MOUNTED
- LAMP "B", MOUNTED ON BUILDING
- LAMP "C", MOUNTED ON BUILDING
- LAMP "D", MOUNTED ON BUILDING
- WETLAND BUFFER PLACARD
- SNOW STORAGE
- RECREATION SPACE
- BITUMINOUS CONCRETE
- PREVIOUSLY APPROVED WETLAND BUFFER DISTURBANCE

LANDSCAPING LEGEND:

TREES:

- AR — RED MAPLE
- CC — PAGODA DOGWOOD
- QP — PIN OAK
- ZS — JAPANESE ZELKOVA
- WS — WHITE SPRUCE
- PG — DWARF ALBERTA SPRUCE

BUSHES:

- IC — SOFT TOUCH HOLLY
- AK — AZALEAS
- VD — ARROWWOOD
- MK — MISS KIM LILAC
- SC — ELDERBERRY
- LB — SPICEBUSH
- JC — BLUE POINT JUNIPER
- KL — MOUNTAIN LAUREL
- VA — MAPLE LEAF VIBURNUM
- TC — DWARF GOLDEN JAPANESE YEW
- VC — HIGHBUSH BLUEBERRY

GRASSES:

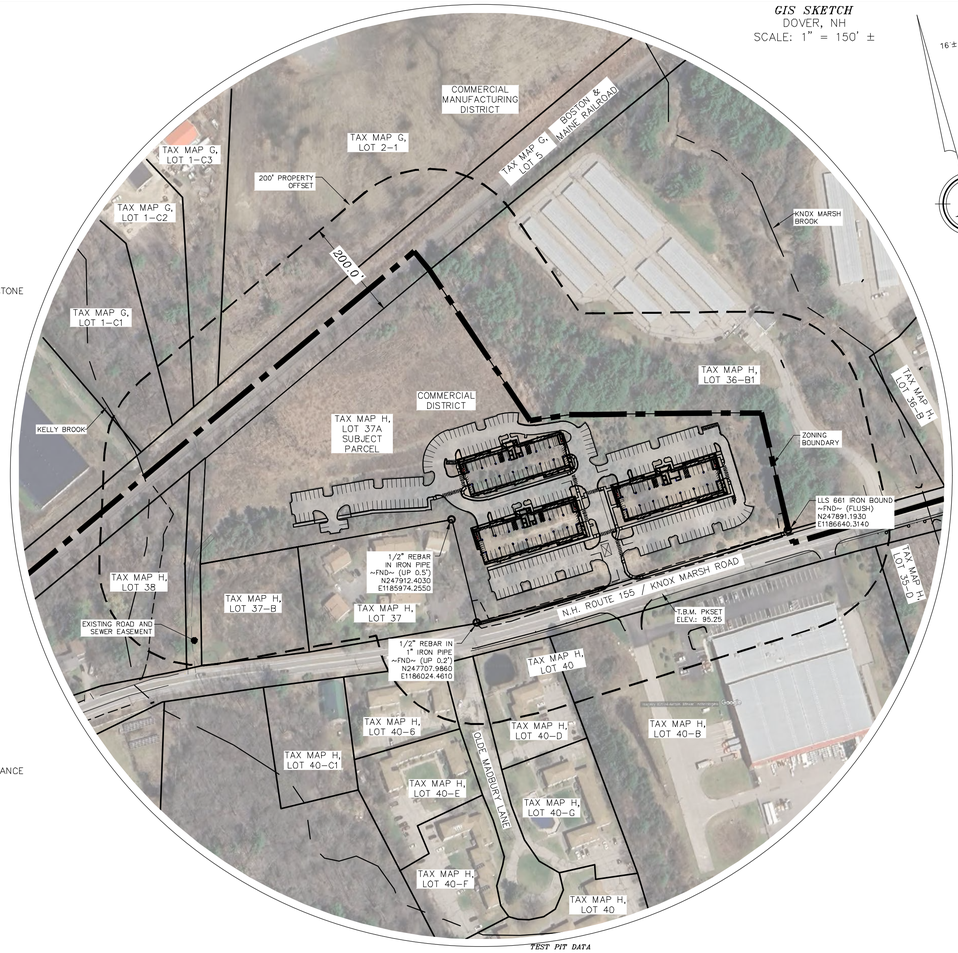
- KF — FEATHER REED GRASS

PLANTS:

- PL— A MIX OF BLACK-EYED SUSAN, NEW ENGLAND ASTER, ANISE HYSSOP & CRANESBILL

GIS SKETCH

DOVER, NH
SCALE: 1" = 150' ±



ABUTTERS WITHIN 200':

N/F NSA-OPTIVEST ACQUISITION HOLDINGS, LLC
24901 DANA PT HARBOR DR #200
DANA POINT, CA 92629
TAX MAP H, LOT 36-B1
S.C.R.D. BOOK 4225, PAGE 631

N/F KNOX MARSH CONDOS
C/O KATHLEEN GOWDY
251 KNOX MARSH RD #9
DOVER, NH 03820
TAX MAP H, LOT 37

N/F SAI REAL ESTATE LLC
12 LEE ROAD
MADBURY, NH 03823
TAX MAP H, LOT 37-2
S.C.R.D. BOOK 4692, PAGE 771

N/F CASSANDRA JEANNE MACLELLAN
251 KNOX MARSH ROAD, UNIT 3
DOVER, NH 03820
TAX MAP H, LOT 37-3
S.C.R.D. BOOK 4933, PAGE 688

N/F RICHARD KEAYS
4 KNOX MARSH ROAD
DOVER, NH 03820
TAX MAP H, LOT 37-4
S.C.R.D. BOOK 1442, PAGE 536

N/F JONATHAN C. MADDEN
P.O. BOX 896
DOVER, NH 03821
TAX MAP H, LOT 37-5
S.C.R.D. BOOK 4723, PAGE 077

ABUTTERS WITHIN 200':

N/F SETH PETERS
23 OLD MILL ROAD
LEE, NH 03861
TAX MAP H, LOT 37-6
S.C.R.D. BOOK, 4547, PAGE 449

N/F GANESH VENKATA RAMA REDDY TADI & ARCHANA VELAGALA
251 KNOX MARSH ROAD, UNIT 8
DOVER, NH 03820
TAX MAP H, LOT 37-8
S.C.R.D. BOOK 4815, PAGE 968

N/F LIZ A. FRASER
95250 GERALD CIRCLE
FENANDINA BEACH, FL 32034
TAX MAP H, LOT 37-10
S.C.R.D. BOOK 3940, PAGE 708

N/F PENN CHARTER REALTY TRUST
LAWRENCE K. CUSHING
251 KNOX MARSH ROAD, UNIT 11
DOVER, NH 03820
TAX MAP H, LOT 37-11
S.C.R.D. BOOK 4357, PAGE 527

N/F GARY P. NOEL
29 S HAMPTON RD
AMESBURY, MA 01913
TAX MAP H, LOT 37-12
S.C.R.D. BOOK 1574, PAGE 770

ABUTTERS WITHIN 200' CONT.:

N/F NATALIE HEBERT REV LIV TST
NATALIE HEBERT, TRUSTEE
462 SIXTH ST
DOVER, NH 03820
TAX MAP H, LOT 37-14
S.C.R.D. BOOK, 4519, PAGE 327

N/F NICOLE L. & THOMAS M. MILLER
19 DOYLE DRIVE
NEWBURYPORT, MA 01950
TAX MAP H, LOT 37-16
S.C.R.D. BOOK 5080, PAGE 057

N/F PATRICK J CRAGIN LIV REV TST
PATRICK J. CRAGIN, TRUSTEE
PO BOX 250
DOVER, NH 03820
TAX MAP H, LOT B
TAX MAP H, LOT 38
S.C.R.D. BOOK, 3497, PAGE 417

N/F BOSTON & MAINE RR
500 WATER STREET J-910
JACKSONVILLE, FL 32202
TAX MAP H, LOT G

N/F OLDE MADBURY LANE INC
PO BOX 250
DOVER, NH 03820
TAX MAP H, LOT 40-D
S.C.R.D. BOOK 3684, PAGE 740

N/F 237 ALBANY STREET INV. LLC
ABEL AND BRUNELLE ASSOC
160 MIDDLESEX TURNPIKE
BEDFORD, MA 01730
TAX MAP H, LOT 40-B
S.C.R.D. BOOK 4112, PAGE 770

TEST PIT DATA

TEST PIT #101
0-8" 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
8-18 10YR 4/6 DARK YELLOWISH BROWN, LOAMY FINE SAND, GRANULAR, FRIABLE
18-26 2.5Y 5/4 LIGHT OLIVE BROWN, FINE SAND, GRANULAR, FRIABLE
26-44 2.5Y 5/3 LIGHT OLIVE BROWN, VERY FINE SAND WITH REDOXIMORPHIC FEATURES PRESENT, GRANULAR, FRIABLE
42-72 5Y 5/3 OLIVE, SILT LOAM WITH REDOXIMORPHIC FEATURES PRESENT, BLOCKY, FIRM
TERMINATED: 72"
E.S.H.W.T.: 26"
RESTRICTIVE LAYER: 42"
REFUSAL: NONE
GROUND WATER OBSERVED: 64"
PERC RATE: 10 MIN./IN.

TEST PIT #101A
0-10" 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
10-18" 10YR 4/6 DARK YELLOWISH BROWN, LOAMY FINE SAND, GRANULAR, FRIABLE
18-26" 2.5Y 5/4 LIGHT OLIVE BROWN, NFINE SAND, GRANULAR, FRIABLE
26-38" 2.5Y 5/3 LIGHT OLIVE BROWN, VERY FINE SAND WITH REDOXIMORPHIC FEATURES PRESENT, GRANULAR, FRIABLE
38-72" 5Y 5/3 OLIVE, SILT LOAM WITH REDOXIMORPHIC FEATURES PRESENT, BLOCKY, FIRM
TERMINATED: 72"
E.S.H.W.T.: 26"
RESTRICTIVE LAYER: 38"
REFUSAL: N/A
GROUND WATER OBSERVED: 50"
PERC RATE: 8 MIN./IN.

TEST PIT #102
0-10" 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
10-18" 10YR 4/6 DARK YELLOWISH BROWN, LOAMY FINE SAND, GRANULAR, FRIABLE
18-24" 2.5Y 5/4 LIGHT OLIVE BROWN, FINE SAND, GRANULAR, FRIABLE
24-46" 2.5Y 5/3 LIGHT OLIVE BROWN, VERY FINE SAND WITH REDOXIMORPHIC FEATURES PRESENT, GRANULAR, FRIABLE
46-72" 5Y 5/3 OLIVE, SILT LOAM WITH REDOXIMORPHIC FEATURES PRESENT, BLOCKY, FIRM
TERMINATED: 72"
E.S.H.W.T.: 24"
RESTRICTIVE LAYER: 46"
REFUSAL: N/A
GROUND WATER OBSERVED: 44"
PERC RATE: 10 MIN./IN.

TEST PIT #103
0-6" 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6-18" 10YR 4/6 DARK YELLOWISH BROWN, LOAMY FINE SAND, GRANULAR, FRIABLE
18-24" 2.5Y 5/4 LIGHT OLIVE BROWN, FINE SAND, GRANULAR, FRIABLE
24-48" 2.5Y 5/3 LIGHT OLIVE BROW, NVERY FINE SAND WITH REDOXIMORPHIC FEATURES PRESENT, GRANULAR, FRIABLE
48-72" 5Y 5/3 OLIVE, SILT LOAM WITH REDOXIMORPHIC FEATURES PRESENT, BLOCKY, FIRM
TERMINATED: 72"
E.S.H.W.T.: 24"
RESTRICTIVE LAYER: 48"
REFUSAL: NONE
GROUND WATER OBSERVED: 65"
PERC RATE: 10 MIN./IN.

TEST PIT DATA

TEST PIT #103A
0-6" 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
6-18" 10YR 4/6 DARK YELLOWISH BROWN, LOAMY FINE SAND, GRANULAR, FRIABLE
18-24" 2.5Y 5/4 LIGHT OLIVE BROWN, FINE SAND, GRANULAR, FRIABLE
24-50" 2.5Y 5/3 LIGHT OLIVE BROW, NVERY FINE SAND WITH REDOXIMORPHIC FEATURES PRESENT, GRANULAR, FRIABLE
50-72" 5Y 5/3 OLIVE, SILT LOAM WITH REDOXIMORPHIC FEATURES PRESENT, BLOCKY, FIRM
TERMINATED: 72"
E.S.H.W.T.: 24"
RESTRICTIVE LAYER: 50"
REFUSAL: N/A
GROUND WATER OBSERVED: 48"
PERC RATE: 10 MIN./IN.

TEST PIT #104
0-12" 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
12-24" 10YR 5/6 YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
24-28" 2.5Y 5/4 LIGHT OLIVE BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
28-60" 2.5Y 5/3 LIGHT OLIVE BROWN, VERY FINE SANDY LOAM WITH REDOXIMORPHIC FEATURES PRESENT, MASSIVE, FRIABLE
60-70" 2.5Y 5/2 GRAYISH BROWN, GRAVELLY FINE SANDY LOAM WITH REDOXIMORPHIC FEATURES PRESENT, MASSIVE, FIRM
TERMINATED: 70"
E.S.H.W.T.: 28"
RESTRICTIVE LAYER: 60"
REFUSAL: LEDGE N/A
GROUND WATER OBSERVED: 55"
PERC RATE: 6 MIN./IN.

TEST PIT #104A
0-10" 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
10-20" 10YR 4/6 DARK YELLOWISH BROWN, LOAMY SAND, GRANULAR, FRIABLE
20-36" 2.5Y 5/4 LIGHT OLIVE BROWN, LOAMY FINE SAND, GRANULAR, FRIABLE
36-42" 5Y 4/3 OLIVE, VERY FINE SANDY LOAM WITH REDOXIMORPHIC FEATURES PRESENT, MASSIVE, FIRM
42-52" 2.5Y 6/3 LIGHT YELLOWISH BROWN, SAND WITH REDOXIMORPHIC FEATURES PRESENT, GRANULAR, FRIABLE
52-70" 5Y 5/3 OLIVE, SILT LOAM WITH REDOXIMORPHIC FEATURES PRESENT, BLOCKY, FIRM
TERMINATED: 70"
E.S.H.W.T.: 36"
RESTRICTIVE LAYER: 36"
REFUSAL: LEDGE N/A
GROUND WATER OBSERVED: N/A
PERC RATE: 6 MIN./IN.

TEST PIT #105
0-14" 10YR 3/2 VERY DARK GRAYISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
14-28" 10YR 5/6 YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
28-32" 2.5Y 5/4 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM, GRANULAR, FRIABLE
32-64" 2.5Y 5/3 LIGHT OLIVE BROWN, GRAVELLY FINE SANDY LOAM WITH REDOXIMORPHIC FEATURES PRESENT, MASSIVE, FRIABLE
TERMINATED: 64"
E.S.H.W.T.:32"
RESTRICTIVE LAYER: N/A
REFUSAL: NONE
GROUND WATER OBSERVED: 40"
PERC RATE: 4 MIN./IN.

TEST PIT #106
0-14" 10YR 3/3 DARK BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
14-24" 10YR 5/6 YELLOWISH BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
24-30" 2.5Y 5/4 LIGHT OLIVE BROWN, FINE SANDY LOAM, GRANULAR, FRIABLE
30-62" 2.5Y 5/3 LIGHT OLIVE BROWN, VERY FINE SANDY LOAM WITH REDOXIMORPHIC FEATURES PRESENT, MASSIVE, FRIABLE
62-72" 2.5Y 5/2 GRAYISH BROWN, GRAVELLY FINE SANDY LOAM WITH REDOXIMORPHIC FEATURES PRESENT, MASSIVE, FIRM
TERMINATED: 72"
E.S.H.W.T.: 36"
RESTRICTIVE LAYER: 60"
REFUSAL: LEDGE N/A
GROUND WATER OBSERVED: 55"
PERC RATE: 4 MIN./IN.

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

NEIGHBORHOOD PLAN
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : AS SHOWN
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

STATE OF NEW HAMPSHIRE — KENNETH A. BERRY No. 14047 — LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

NOTES:

1.) OWNER / APPLICANT: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, NH 01949

MANAGING MEMBER

2.) TAX MAP H, LOT 37A

3.) S.C.R.D. BOOK 5138, PAGE 73

4.) LOT AREA: 407,542 Sq. Ft., 9.36 Ac.

5.) ZONING: (C) COMMERCIAL, SECONDARY GROUNDWATER RECHARGE — 5.) PROVIDED:

MINIMUM FRONTAGE = 125'	642.79'
MINIMUM LOT SIZE = 20,000 Sq. Ft.	407,542 Sq.Ft.
FRONT SETBACK = 30'	36'
REAR SETBACK = 15'	15'
SIDE SETBACK = 12'	12'
WETLANDS BUFFER = 50.0'	50' CUP P21-05 PREVIOUS APPROVAL
MAX. BUILDING HEIGHT: 40'	44'9"-CASE ZONE-2024-0033 WAS APPROVED ON JULY 18, 2024
MAX. LOT COVERAGE: 50%	40.2%
MAX. IMPERVIOUS COVERAGE: 20%	40.2%-PREVIOUS CUP APPROVED FOR 33.8% (P22-46) NEW APPROVAL REQUIRED.

6.) THE INTENT OF THIS PLAN IS TO SHOW A MIXED-USE TRANSFER OF DEVELOPMENT RIGHTS PROJECT IN THE COMMERICAL ZONE LOCATED ON TAX MAP H, LOT 37A. THIS SITE PLAN REFERENCES PREVIOUSLY APPROVED MIXED-USE SITE PLAN "RESIDENCES AND SHOPS AT KELLY BROOK" DOVER SITE-2023-010.

7.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS PROPERTY DOES NOT FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD REF: FEMA, COMMUNITY #330145, MAP #33017C0320E, DATED: SEPTEMBER 30, 2015.

8.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS. TOPOGRAPHY PROVIDED IS DEMARCATED AT 1' INTERVALS, AND IS THE RESULT OF A FIELD SURVEY PERFORMED IN SPRING OF 2020 AND NOVEMBER OF 2024.

9.) THE BOUNDARY LINES SHOWN ON THIS PLAN ARE THE RESULT OF A CLOSED TRAVERSE PERFORMED BY THIS OFFICE IN SPRING OF 2020, WITH AN ERROR OF CLOSURE BETTER THAN 1 PART IN 10,000.

10.) MAIL DELIVERY IS PROPOSED INSIDE THE RESIDENTIAL BUILDINGS NEAR THE ENTRY VESTIBULE AND TO THE OFFICE OF THE LODGING BUILDING.

11.) THIS SITE IS SERVICED BY MUNICIPAL SEWER AND WATER.

12.) WETLANDS WERE DELINEATED BY DEIDRA BENJAMIN, CERTIFIED WETLANDS SCIENTIST, IN ACCORDANCE WITH CHAPTER 170-27.1 OF THE ZONING ORDINANCE, IN THE SPRING OF 2020.

13.) LIST ANY VARIANCES OR SPECIAL EXCEPTIONS GRANTED BY THE ZONING BOARD OF ADJUSTMENT OR CONDITIONAL USE PERMITS GRANTED BY THE PLANNING BOARD FOR THE PROPOSED USE OR STRUCTURE, INCLUDING THE CASE NUMBER AND DATE OF DECISION AND ANY CONDITIONS.
-CASE ZONE-2024-0033 WAS APPROVED ON JULY 18, 2024, WHICH PERMITS THAT 1/3RD REQUIREMENT FOR COMMERCIAL SPACE TO BE LOCATED ENTIRELY WITHIN ONE (1) BUILDING WITH THE PROPOSED 2/3RDS RESIDENTIAL USE BE IN TWO (2) SEPARATE BUILDINGS, AND TO PERMIT THE THREE BUILDINGS WITHIN THE C DISTRICT TO BE GREATER THAN 40' IN HEIGHT. THIS APPROVAL IS CONDITIONAL UPON THE FOLLOWING CRITERIA BEING MET:

1) ALL THREE (3) BUILDINGS, IN COMBINATION, MUST MAINTAIN THE SAME, OR GREATER, PERCENTAGE OF COMMERCIAL USE (2/3RD IN PERPETUITY). OTHERWISE, AN ADDITIONAL VARIANCE(S) WOULD BE REQUIRED;

2) THE COMMERCIAL BUILDINGS (INN) BE UNDER CONSTRUCTION (MEANING BUILDING PERMITS ISSUED, FOUNDATION POURED, WALLS BEING FRAMED, ECT.) PRIOR TO THE BUILDING PERMITS BEING ISSUED FOR THE RESIDENTIAL BUILDINGS; AND

3) ALL RESIDENTIAL UNITS SHALL BE RESTRICTED TO THE APPLICABLE CURRENT HUD FAIR MARKET RENT VALUE IN PERPETUITY.

CONDITIONAL USE PERMIT-P21-05 WAS APPROVED ON JUNE 28, 2022 TO ALLOW FOR 10,699 Sq. Ft. OF WETLAND BUFFER DISTURBANCE

CONDITIONAL USE PERMIT-P22-46 WAS APPROVED ON JUNE 28, 2022 TO ALLOW FOR 33.8% IMPERVIOUS SURFACE WHERE ONLY 20% IS ALLOWED WITHIN THE SECONDARY GROUNDWATER PROTECTION ZONE. NEW CUP APPROVAL IS REQUIRED FOR PROPOSED SITE PLAN

14.) AS-BUILT PLANS OF THE SITE DESIGN SHALL BE SUBMITTED ON PAPER AND IN DIGITAL FORMAT AUTOCAD DWG, AUTOCAD DXF OR ESRI FORMAT TO THE CITY OF DOVER ENGINEER'S OFFICE UPON COMPLETION OF PROJECT. AS-BUILT PLANS SHALL BE PREPARED AND CERTIFIED CORRECT BY A LLS. OR P.E. DIGITAL FILES SHALL BE GEO-REFERENCED TO NEW HAMPSHIRE STATE PLANE COORDINATES NAD83 AND SHALL BE EXPRESSED IN FEET.

15.) THE INSTALLATION OF ELECTRIC POWER, CABLE TELEVISION AND TELEPHONE LINES SHALL BE UNDERGROUND THROUGHOUT THE SITE FOR WHICH DEVELOPMENT IS PROPOSED, WITH THE EXCEPTION OF THE PROPOSED PULL POLES REQUIRED BY EVERSOURCE, WHERE A WAIVER IS REQUESTED..

16.) ALL CONSTRUCTION SHALL CONFORM WITH THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION (NHDOT) "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION 2016" AND WITH THE CITY OF DOVER COMMUNITY SERVICES REGULATIONS AND STANDARD SPECIFICATION FOR CONSTRUCTION. THE MORE STRINGENT SPECIFICATION SHALL APPLY.

17.) ALL EROSION CONTROL NOTES SHALL INCLUDE PROVISIONS FOR CONSTRUCTION SEQUENCING, TEMPORARY EROSION CONTROL MEASURES, AND PERMANENT STANDARDS SUCH AS LOAM SPREAD RATE FOR DISTURBED AREAS, RATES OF LIME, TYPE AND RATES FOR FERTILIZER, AND SEED AND MULCH MIXTURE WITH RATES OF APPLICATION.

18.) THE LIMITS OF CONSTRUCTION DISTURBANCE THAT ARE LOCATED IN OR WITHIN THE 50 FT. OF CONSERVATION AND WETLAND DISTRICTS SHALL BE STAKED, FLAGGED AND CLEARLY IDENTIFIED PRIOR ANY EARTH DISTURBING ACTIVITY OCCURS.

19.) ALL TREATMENT SWALES TO BE CONSTRUCTED SHALL HAVE SOD BOTTOMS.

20.) A LETTER OF CREDIT FOR THE COST OF RE-VEGETATING ALL DISTURBED AREAS ON THE SITE SHALL BE SUBMITTED, AND THE APPROVED CONSTRUCTION SIGN INSTALLED PRIOR TO ANY EARTH DISTURBING ACTIVITY OCCURS. THE PROPOSED PROJECT WILL CONSIST OF TWO PHASES AND WILL DISTURB 300,250 Sq.Ft. 6.89 Ac. (SEE NOTE #43)

21.) A PRE-CONSTRUCTION CONFERENCE WITH THE DEVELOPER, THE DESIGN ENGINEER, THE EARTHWORK CONTRACTOR AND THE CITY ENGINEER SHALL OCCUR PRIOR TO ANY EARTH DISTURBING ACTIVITY.

22.) SITE CONSTRUCTION HOURS SHALL BE LIMITED TO MONDAY-FRIDAY 7 AM-6 PM, SATURDAY 8AM - 5PM, NO SUNDAY HOURS OR FEDERAL HOLIDAY CONSTRUCTION HOURS ALLOWED. HOURS OF CONSTRUCTION MUST BE DOCUMENTED ON A SITE CONSTRUCTION SIGN ALONG WITH THE CONTACT INFORMATION FOR THE GENERAL CONTRACTOR. SAID SIGNAGE MUST BE LOCATED AND APPROVED BY THE CITY ENGINEER OR ASSISTANT CITY MANAGER.

23.) BUILDING ADDRESSES SHALL BE ASSIGNED BY THE BUILDING OFFICIAL AT THE TIME OF ISSUANCE OF A BUILDING PERMIT.

24.) THE PROPOSED USE FOR THE SITE IS 84 SUITE LODGING UNITS IN ONE BUILDING AND 180 SINGLE OCCUPANCY UNIT BETWEEN TWO BUILDINGS (90 EACH). THE PROPOSED BUILDINGS ARE 4 STORIES WITH PODIUM STYLE PARKING ON THE FIRST LEVEL, INCLUDING ALL REQUIRED EV AND ACCESSIBLE PARKING SPACES. LEVELS 2-4 CONTAIN THE RESPECTIVE RESIDENTIAL OR LODGING UNIT, WITH LEVELS 2-4 CANTILEVERED OVER THE PARKING LEVEL.

25.) THE FOLLOWING FEDERAL AND STATE PERMITS HAVE BEEN ISSUED FOR THE SUBJECT PROPERTY: (TO BE UPDATED)

~	NHDES SEWER DISCHARGE PERMIT	D2022-0705 (TO BE AMENDED)
~	NHDES ALTERATION OF TERRAIN PERMIT	As1-2183-A (TO BE AMENDED)
~	US EPA NOI & SWPPP	NHR1001UU (SWPPP ADDENDUM REQUIRED)
~	NATURAL HERITAGE BUREAU	NHB22-0387
~	NH DIVISION OF HISTORICAL RESOURCES	DHR #10630
~	NHDOT DRIVEWAY PERMIT	06-125-415 (TO BE AMENDED)

26.) COMMERCIAL VEHICLE ROUTE DURING CONSTRUCTION SHALL CONFORM TO DOVER CITY CODE OR BE COORDINATED WITH THE COMMUNITY SERVICES DIRECTOR.

27.) ANY RETAINING WALL TALLER THAN FOUR FEET (4') REQUIRES ISSUANCE OF A BUILDING PERMIT FROM INSPECTION SERVICES.

28.) ANY FENCE TALLER THAN SEVEN FEET (7') REQUIRES THE ISSUANCE OF A BUILDING PERMIT FROM INSPECTION SERVICES.

29.) THE OWNER OF RECORD SHALL RECORD AT THE REGISTRY OF DEEDS DOCUMENTATION SUFFICIENT TO PROVIDE NOTICE TO ALL PERSONS/ENTITIES THAT MAY ACQUIRE ANY PROPERTY SUBJECT TO THE REQUIREMENTS AND RESPONSIBILITIES DESCRIBED IN THE APPROVED STORMWATER MANAGEMENT PLAN. THE NOTICE SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS FOR RECORDING CONTAINED IN RSA 477 AND 478. THE NOTICE NEED NOT SET FORTH THE REQUIREMENTS AT LENGTH, SO LONG AS IT IS SUFFICIENT TO PROVIDE NOTICE TO PROSPECTIVE PURCHASERS TO THE REQUIREMENTS FOR MAINTENANCE AND REPORTING.

30.) FIRE DEPARTMENT ACCESS ROADS SHALL BE INSTALLED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF FIRE APPARATUS IN ALL WEATHER CONDITIONS AT ALL TIMES.

31.) EXTERIOR LIGHTING SHALL BE CUT-OFF TYPE FIXTURES PER CHAPTER 153-14-E AND SHALL PROVIDE LIGHTING DIRECTED ON-SITE ONLY.

32.) APPROVED BACKFLOW PREVENTERS SHALL BE PROVIDED FOR DOMESTIC WATER LINES.

33.) SITE IS TO COMPLY WITH NFPA 1 CHAPTER 18.

34.) TIBETAN DRIVE IS PROPOSED TO BE PRIVATE. REFER TO THE DEVELOPMENT AGREEMENT FOR ROAD & DRAINAGE RESPONSIBILITIES. TIBETAN DRIVE WILL ALWAYS BE PRIVATE AND WILL NEVER BE ACCEPTED BY THE CITY OF DOVER.

35.) APPLICANT SHALL COMPLETE LAND USE DEVELOPMENT TRACKING FORM, MOST RECENTLY REVISED VERSION, UTILIZING THE ONLINE POLLUTION TRACKING AND ACCOUNTING PILOT PROJECT (PTAPP) PORTAL. **HTTPS://WWW.UNH.EDU/UNHSC/PTAPP**

NOTES CONTINUED:

36.) THE PROPOSED STRUCTURES SHALL BE SERVED BY A SPRINKLER SYSTEM AS REQUIRED BY CHAPTER 81-30 OF THE CODE OF THE CITY OF DOVER AND THE ADOPTED STATE OF NH BUILDING AND FIRE CODES.

37.) SPRINKLER CONNECTIONS MUST BE FLUSHED IN ACCORDANCE WITH NFPA 24 AND A CONTRACTOR'S MATERIAL AND TEST CERTIFICATE FOR UNDERGROUND PIPING FORM MUST BE COMPLETED AND APPROVED BY INSPECTION SERVICES PRIOR TO CONNECTION OF THE BACKFLOW DEVICE.

38.) FIRE DEPARTMENT CONNECTION(S) SHALL BE LOCATED ON THE STREET SIDE OF THE BUILDING PER NFPA 13. ACCESS TO THE FDC SHALL MAINTAIN A CLEAR AND UNOBSTRUCTED PATH AT ALL TIMES.

39.) THE SITE LAYOUT IS DESIGNED IN COMPLIANCE WITH APPLICABLE ACCESSIBILITY REGULATIONS. THE PROPOSED STRUCTURES WILL ALSO BE DESIGNED IN ACCORDANCE WITH APPLICABLE ACCESSIBILITY REGULATIONS (I.E. IBC, ANSI-117.1) AND NH RSA 155-A:5.

40.) PRIVATE TRASH PICKUP WILL BE DONE THROUGH THE USE OF DUMPSTER(S) ON PADS, WITH SCREENING AND WILL BE COLLECTED THROUGH A PRIVATE WASTE PICK UP COMPANY.

41.) HEATING & COOLING FOR PROPOSED UNITS IS TO BE DONE VIA UNITS LOCATED ON THE ROOFS, SCREENED BY PARAPET.

42.) THE BUILDINGS ARE DESIGNED AS SLAB ON GRADE CONSTRUCTION WITH STANDARD 4' FROST WALLS.

43.) PROJECT DISTURBANCE: TOTAL 300,250 Sq. Ft. (6.89 Ac.) NOTE THAT THE PROJECT IS SUBJECT TO THE EPA NPDES PHASE II. THE NOTICE OF INTENT (NOI) MUST BE FILED ALONG WITH A STORMWATER POLLUTION PREVENTION PLAN (SWPPP). EROSION AND SEDIMENT CONTROL INSPECTIONS TO BE CONDUCTED ONCE PER EVERY SEVEN DAYS AND AT AN INCREASED FREQUENCY INCLUDING WITHIN 24-HOURS OF A 0.25 INCH RAIN EVENT. INSPECTIONS TO BE CONDUCTED BY A "QUALIFIED PERSON" AS DEFINED BY EPA CGP 4.1.1 AND INSPECTION REPORTS SUBMITTED TO THE CITY OF DOVER, NH, ENGINEERING DEPARTMENT WITHIN 24 HOURS IN ACCORDANCE WITH CGP 4.1.7 AND MAINTAINED BY THE OWNER FOR A PERIOD OF THREE YEARS AFTER THE PROJECT IS COMPLETED. SEE ALSO CITY OF DOVER ADDITIONAL INSPECTION REQUIREMENTS BELOW.
SEE PHASING PLAN FOR ADDITIONAL INFORMATION. PER ENV-WQ 1500 STANDARDS, AN ENVIRONMENTAL MONITOR IS REQUIRED.
PHASE 1: ALL INFRASTRUCTURE BESIDES RESIDENTIAL BUILDINGS "B" & "C"
PHASE 2: RESIDENTIAL BUILDINGS "B" & "C"

44.) PRE-EXISTING COVERAGE:
BUILDING IMPERVIOUS AREA: 2,631 Sq. Ft. (0.7%)
PAVED IMPERVIOUS AREA: 2,701 Sq. Ft. (0.7%)
TOTAL PRE-EXISTING IMPERVIOUS COVER IS 5,532 Sq. Ft. (1.4%)

PROPOSED COVERAGE:
BUILDING IMPERVIOUS AREA: 50,356 Sq. Ft. (12.36%)
ROAD & PARKING LOTS: 94,842 Sq. Ft. (23.2%)
IMPERVIOUS AREA (CURB, SHOULDER, WALKS, RETAINING WALLS, CONCRETE PADS & GRAVEL WALKWAY): 18,568 Sq. Ft. (4.56%)
TOTAL PROPOSED IMPERVIOUS COVER IS 163,766 Sq. Ft. (40.2%) (REVISED ENVIRONMENTAL CUP REQUIRED, 33.8% PREVIOUS)

45.) SIXTEEN (16) EV PARKING SPACES ARE PROVIDED.

46.) THE OWNERS AND THEIR SUCCESSORS ARE RESPONSIBLE FOR THE LIFETIME MAINTENANCE OF ALL BUFFERING AND INTERNAL LANDSCAPING.

47.) THE PERIMETER BOUNDARY WILL BE STAKED OUT BY BERRY SURVEYING & ENGINEERING PRIOR TO THE START OF CONSTRUCTION.

48.) THE APPLICANT IS TO PROVIDE SURETY WITHIN THE CONFINES OF NH RSA 674:36.

49.) DURING PERIODS OF HEAVY SNOW AND WHEN TEMPORARY PILES ARE USED ON SITE, SNOW IS TO BE LOADED INTO TRUCKS AND REMOVED FROM THE SITE. SNOW IS TO BE DISPOSED OF ON AN APPROVED SNOW DUMP.

GRADING NOTES:

1.) THIS PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH NHDOT STANDARD SPECIFICATIONS DATED 2016. CURRENT STANDARD PLANS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS INCLUDED IN THE PROPOSAL.

2.) CONTRACTOR SHALL TAKE SPECIAL CARE IN NOT DISTURBING EXISTING MONUMENTS BOUNDS, AND OR BENCHMARKS WITHOUT FIRST MAKING PROVISIONS FOR RELOCATION.

3.) WHERE AN EXISTING UNDERGROUND UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.

4.) AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE. LIMIT OF GRADING SHOULD NOT BE EXPANDED WITHOUT CONSULTING THE DESIGN ENGINEER. SEE ALSO E&SC PLAN.

5.) THE FINISHED FLOOR ELEVATIONS SHOWN REFLECT THE ELEVATION OF THE PARKING GARAGE ENTRANCES AND ELEVATION OF THE VESTIBULE THRESHOLD. SPOT GRADES WITHIN THE LEVEL 1 PARKING AREA VARY FROM THE SHOWN FINISHED FLOOR ELEVATION BASED INTERNAL SLOPES TO THE PROPOSED TRENCH DRAIN WITHIN EACH BUILDING.

6.) ALL INTERNAL BUILDING PARKING LEVEL SLOPES ARE TO BE LESS THAN 2% IN ALL DIRECTIONS, PROVIDING AN ACCESSIBLE ROUTE FROM THE INTERNAL ACCESSIBLE PARKING SPACES.

7.) ALL DISTURBED AREAS NOT DESIGNATED TO BE PAVED SHALL HAVE LOAM PLACED AND SEEDED. THE LOAM SHALL HAVE A MINIMUM DEPTH OF 4 INCHES AND SHALL BE PLACED FLUSH WITH THE TOP OF THE ADJACENT CURB, EDGING, BERM OR PAVEMENT SURFACE.

8.) ALL ELEVATIONS TO BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. THE DESIGN ENGINEER IS TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCY. TEMPORARY BENCHMARKS (T.B.M.) ARE TO BE PROVIDED BY THE DESIGN ENGINEER.

9.) WRITTEN DIMENSION ON THIS PLAN TAKE PRECEDENCE OVER SCALED DIMENSIONS. THE CONTRACTOR SHALL USE CAUTION WHEN SCALING REPRODUCED PLANS. IN THE EVENT OF A CONFLICT BETWEEN THIS PLAN SET AND ANY OTHER DRAWINGS AND/OR SPECIFICATIONS, THE ENGINEER SHALL BE NOTIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR IS TO CONFIRM ALL ELEVATIONS. CONFLICTS ARE TO BE REPORTED TO THE DESIGN ENGINEER PRIOR TO CONSTRUCTION.

10.) THIS DESIGN ASSUMED THAT THE BUILDING ROOFS ARE GUTTERED TO BE RESPECTIVE DISCHARGE POINTS. GUTTERS TO BE DESIGNED BY OTHERS.

11.) DESIGN ENGINEER OF RECORD SHALL PROVIDE SIGNED LETTER TO CITY ENGINEER CERTIFYING THAT THE STORMWATER MANAGEMENT SYSTEM HAS BEEN INSTALLED IN ACCORDANCE WITH APPROVED PLANS. DESIGN ENGINEER OR DESIGN ENGINEERS REPRESENTATIVE IS TO BE PERIODICALLY ON SITE AND INSPECT DURING CONSTRUCTION PROCESS. CONTRACTOR IS TO PROVIDE 24-48 HOURS NOTICES PRIOR TO INSPECTION REQUESTS.

12.) UPON FINAL COMPLETION AND 85% STABILIZATION THE DRAINAGE SYSTEM IS TO BE CLEANED OF ALL DEBRIS TO INCLUDE THE PUMPING OF THE BASINS. SEE SHEET E102, DETAIL E18 FOR DEFINITION OF STABLE. ALSO TO BE DONE ONCE A YEAR DURING THE CONSTRUCTION PROCESS.

13.) ALL DRAINAGE PIPE IS TO BE HDPE N-12. INDIVIDUAL PIPE SIZES ARE SPECIFIED, RECYCLED PIPE IS APPROVED FOR PROJECT SITE. RECYCLED HDPE PIPE "GREEN PIPE" IS ACCEPTABLE FOR THIS PROJECT SITE.

14.) ALL BASINS AND DRAINS ARE PROPOSED WITH NO SUMPS OR HOODS. OUTLET CONTROL STRUCTURES WILL NOT HAVE SUMPS. IF REQUIRED TO BE INSTALLED DURING THE PRE-CASTING PROCESS, THEY ARE TO BE FILLED WITH STONE ON SITE. BASINS ARE TO HAVE LIFTMATE R-1743-LM FRAMES AND GRATES MADE IN NORTH AMERICA. GRATES ARE TO BE INSTALLED BINDER FLUSH PRIOR TO BASE PAVE. UPON PROJECT COMPLETION FRAMES AND GRATES ARE TO BE CUT AND RIM RAISED TO FINAL PAVEMENT SURFACE. THIS IS TO ENSURE STORMWATER ENTERS THE SYSTEM AS DESIGN DURING THE INTERIM CONSTRUCTION PERIOD.

15.) DESIGN ENGINEER OF RECORD SHALL PROVIDE SIGNED LETTER TO CITY ENGINEER CERTIFYING THAT THE STORMWATER MANAGEMENT SYSTEM AND UTILITY INFRASTRUCTURE HAVE BEEN INSTALLED IN ACCORDANCE WITH APPROVED PLANS. DESIGN ENGINEER OR DESIGN ENGINEERS REPRESENTATIVE IS TO BE PERIODICALLY ON SITE AND INSPECT DURING CONSTRUCTION PROCESS. CONTRACTOR IS TO PROVIDE 24-48 HOURS NOTICES PRIOR TO INSPECTION REQUESTS.

16.) THE FINISHED FLOOR ELEVATIONS SHOWN REFLECT THE ELEVATION OF THE PARKING GARAGE ENTRANCES AND ELEVATION OF THE VESTIBULE THRESHOLD. SPOT GRADES WITHIN THE LEVEL 1 PARKING AREA VARY FROM THE SHOWN FINISHED FLOOR ELEVATION BASED INTERNAL SLOPES TO THE PROPOSED TRENCH DRAIN WITHIN EACH BUILDING.

17.) SEE STORMWATER BMP PLANS FOR RETAINING WALL WATERPROOFING CONSIDERATIONS.

EROSION & EROSION CONTROL NOTES:

1.) CONTRACTOR IS TO INSTALL A CONSTRUCTION ENTRANCE PRIOR TO EARTH DISTURBING ACTIVITIES, UTILIZING 3" ANGULAR STONE UNDERLAID WITH ENGINEER FABRIC.

2.) CONTRACTOR IS RESPONSIBLE FOR SWEEPING THE PARKING LOT, SIDEWALKS AND ROADWAY, TO ENSURE THAT NO SEDIMENT IS BEING TRACKED ONTO KNOX MARSH ROAD OR THE SURROUNDING ROADWAYS.

3.) CONTRACTOR IS RESPONSIBLE FOR CLEANING AND MAINTAINING THE INLET PROTECTION ONCE INSTALLED.

4.) FUGITIVE DUST IS TO BE CONTROLLED THROUGHOUT THE CONSTRUCTION PROCESS IN ACCORDANCE WITH ENV-A 1000.

5.) CONTRACTOR IS TO MEET THE REQUIREMENTS SPECIFIED IN RSA 430:51-57 AND AGR 3800, RELATING TO INVASIVE SPECIES.

6.) CONTRACTOR IS RESPONSIBLE FOR PROTECTING THE WATER QUALITY FROM ANY RUN OFF DURING THE CONSTRUCTION PROCESS, IN ACCORDANCE WITH ENV-WQ 1507, IN ORDER TO PREVENT VIOLATIONS OF THE STORM WATER QUALITY STANDARDS.

7.) CONTRACTOR AY USE SILT FENCE, SILT SOXX OR MULCH BERM FOR PERIMETER CONTROL. SPECIFIC PRACTICES MAY BE SPECIFIED, SEE PLAN. THE CONTRACTOR IS NOT THE EXPAND CONSTRUCTION BEYOND THE STAKED OUT LIMITS OF DISTURBANCE.

8.) ALL STORAGE FACILITIES FOR FUEL, CHEMICALS, CHEMICAL OR INDUSTRIAL WASTES, AND BIODEGRADABLE RAW MATERIALS SHALL MEET THE REGULATIONS OF THE NHDES, INCLUDING BUT NOT LIMITED TO THOSE INVOLVING UNDERGROUND STORAGE TANKS, ABOVE GROUND STORAGE TANKS, HAZARDOUS WASTE AND BEST MANAGEMENT PRACTICES FOR GROUND WATER PROTECTION (PART ENV-WQ 401).

9.) ALL DEVELOPMENT MUST COMPLY WITH THE EPA PHASE II STORMWATER RULES AND THE CITY'S MS4 PERMIT, AS AMENDED.

10.) CITY OF DOVER: IN ACCORDANCE WITH SITE PLAN REVIEW REGULATIONS (153-14) THE FOLLOWING STORMWATER MEASURES ARE REQUIRED.

A.) ALL PROPOSED BMPs WILL CONFORM TO THE NH STORMWATER MANUAL VOLUME 3.
B.) EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY SOIL LAND DISTURBANCE AND MUST BE REVIEWED AND APPROVED BY COMMUNITY SERVICE.
C.) TEMPORARY STABILIZATION MEASURES SHOULD BE IN PLACE WITHIN SEVEN CALENDAR DAYS FOR EXPOSED SOILS AREAS THAT ARE WITHIN ONE HUNDRED FEET OF A SURFACE WATER BODY OR A WETLAND AND NO MORE THAN 14 CALENDAR DAYS FOR ALL OTHER AREAS. PERMANENT STABILIZATION SHOULD BE IN PLACE WITHIN THREE CALENDAR DAYS FOLLOWING COMPLETION OF FINAL GRADING OF EXPOSED SOIL AREAS.
D.) ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED IN FUNCTIONING CONDITION UNTIL FINAL STABILIZATION IS ACCOMPLISHED. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED AFTER FINAL SITE STABILIZATION. TRAPPED SEDIMENT AND OTHER DISTURBED SOIL AREAS RESULTING FROM THE REMOVAL OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED WITHIN 30 CALENDAR DAYS UNLESS CONDITIONS DICTATE OTHERWISE.
E.) COMMUNITY SERVICES DEPARTMENT OR THEIR DESIGNATED AGENT SHALL HAVE ACCESS TO THE SITE TO COMPLETE ROUTINE INSPECTIONS AND SHALL BE NOTIFIED 24-HOURS PRIOR TO INSTALLATION OF A STORMWATER BMP IN ORDER TO SCHEDULE AN INSPECTION, DURING NORMAL WORKING HOURS.
F.) THE PLANNING BOARD OR COMMUNITY SERVICES MAY REQUIRE THE DESIGN ENGINEER AND/OR AN INDEPENDENT, THIRD-PARTY INSPECTION AND OVERSIGHT OF THE CONSTRUCTION OF STORMWATER MANAGEMENT FACILITIES AND EROSION AND SEDIMENT CONTROL AT THEIR DISCRETION. THE OWNER / APPLICANT IS RESPONSIBLE FOR ALL FEES ASSOCIATED WITH INSPECTIONS.
G.) ALL SWPPP/SWMP INSPECTIONS MUST BE CONDUCTED BY A QUALIFIED PROFESSIONAL SUCH AS A PROFESSIONAL ENGINEER (PE), A CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC), A CERTIFIED EROSION SEDIMENT AND STORMWATER INSPECTOR (CESSWI), OR A CERTIFIED PROFESSIONAL IN STORMWATER QUALITY (CPSWQ). INSPECTION REPORTS WILL BE SUBMITTED TO THE COMMUNITY SERVICES DEPARTMENT.
H.) THE OWNER IS ULTIMATELY RESPONSIBLE FOR THE INSTALLATION, CONSTRUCTION, INSPECTION, AND DISPOSITION OF ALL STORMWATER MANAGEMENT AND EROSION CONTROL MEASURES REQUIRED BY THE PROVISIONS OF THESE REGULATIONS.
I.) STORMWATER MANAGEMENT PLAN (SWMP) SUBMITTAL REQUIREMENTS AT THE DISCRETION OF THE PLANNING BOARD OR COMMUNITY SERVICES DEPARTMENT, A TECHNICAL REVIEW BY AN INDEPENDENT THIRD PARTY MAY BE REQUIRED OF ANY SWMP PREPARED UNDER THESE REGULATIONS. SUCH A REVIEW SHALL BE PERFORMED BY A QUALIFIED PROFESSIONAL CONSULTANT AND THE EXPENSE OF WHICH SHALL BE THE FULL RESPONSIBILITY OF THE OWNER/APPLICANT.

UTILITY NOTES:

1.) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVE AND BELOW GROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. ANY UTILITY CONFLICTS SHOULD BE REPORTED IMMEDIATELY TO THE DESIGN ENGINEER.

2.) THE CONTRACTOR SHALL CALL AND COORDINATE WITH DIGSAFE 1-888-344-7233 AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.

3.) PROTECTION OF SUBGRADE: THE CONTRACTOR SHALL BE REQUIRED TO MAINTAIN STABLE, DEWATERED SUBGRADES, TRENCHES, AND OTHER AREAS DURING CONSTRUCTION. SUBGRADE DISTURBANCE MAY BE INFLUENCED BY EXCAVATION METHODS, MOISTURE, PRECIPITATION, GROUNDWATER CONTROL, AND CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO PREVENT SUBGRADE DISTURBANCE. SUCH PRECAUTIONS MAY INCLUDE DIVERTING STORMWATER RUNOFF AWAY FROM CONSTRUCTION AREAS, REDUCING TRAFFIC IN SENSITIVE AREAS, AND MAINTAINING AN EGFECTIVE DEWATERING PROGRAM. SOILS EXHIBITING HEAVING OR INSTABILITY SHALL BE OVER EXCAVATED TO MORE COMPETENT BEARING SOIL AND REPLACED WITH FREE DRAINING STRUCTURAL FILL MEETING THE ENGINEERS SPECIFIC RECOMMENDED CRITERIA.

4.) IF THE EARTHWORK IS PERFORMED DURING FREEZING WEATHER (NOT ALLOWED IN CITY R.O.W.), EXPOSED SUBGRADES ARE SUSCEPTIBLE TO FROST. NO FILL OR UTILITIES SHALL BE PLACED ON FROZEN GROUND. THIS WILL LIKELY REQUIRE REMOVAL OF A FROZEN SOIL CRUST AT THE COMMENCEMENT OF EACH DAY'S OPERATION. THE FINAL SUBGRADE ELEVATION WOULD ALSO REQUIRE AN APPROPRIATE DEGREE OF INSULATION AGAINST FREEZING.

5.) PLACEMENT OF BORROW MATERIALS SHALL BE PERFORMED IN A MANNER THAT PREVENTS LONG TERM DIFFERENTIAL SETTLEMENT. EXCESSIVELY WET MATERIALS SHALL BE STOCKPILED AND ALLOWED TO DRAIN BEFORE PLACEMENT. FROZEN MATERIAL SHALL NOT BE USED FOR CONSTRUCTION.

6.) FINAL UTILITY LOCATIONS TO BE COORDINATED BETWEEN THE CONTRACTOR, ALL APPROPRIATE UTILITY COMPANIES AND THE DOVER DPW.

7.) CONTRACTOR TO CONTACT DOVER DPW A MINIMUM OF TWO WEEKS PRIOR TO ANY CONSTRUCTION TO COORDINATE ALL WORK CONCERNING INSTALLATION OF ANY PROPOSED WATER LINE IMPROVEMENTS.

8.) ALL WATER MAIN AND SERVICE INSTALLATIONS SHALL CONFORM TO CITY OF DOVER STANDARDS. ALL HIGHWAY CONSTRUCTION WILL MEET THE CITY OF DOVER STANDARDS.

9.) CONTRACTOR SHALL COORDINATE ALL ELECTRICAL INSTALLATIONS WITH EVERSOURCE AT (800) 662-7764. ALL ELECTRIC CONDUIT INSTALLATION SHALL BE INSPECTED BY EVERSOURCE PRIOR TO BACKFILL. A 48-HOUR MINIMUM NOTICE IS REQUIRED.

10.) CONTRACTOR SHALL COORDINATE ALL TELECOMMUNICATIONS INSTALLATIONS WITH FAIRPOINT COMMUNICATIONS AT (603) 427-5525.

11.) CONTRACTOR SHALL COORDINATE ALL CABLE INSTALLATIONS WITH COMCAST.

12.) SEE DEMOLITION PLAN FOR UTILITIES TO BE RETAINED.

13.) ALL SEWER MAN HOLE RIMS & COVERS ARE TO BE LIFTMATE-R-1743-LM.

14.) ALL WATER SERVICES ARE TO BE WITNESSED WITH A 2"x4" PAINTED BLUE. ALL SEWER SERVICES ARE TO BE WITNESSED WITH A 2"x4" PAINTED YELLOW. IS STUBBED PRIOR TO BUIL

PLAN REFERENCES CONTINUED:

3.) "AS BUILT PLAN FOR KNOX MARSH CONDOMINIUMS, KNOX MARSH ROAD, DOVER, NH"
BY: KIMBALL CHASE COMPANY INC.
DATED: MARCH 21, 1985
S.C.R.D.: PLAN # 27A–23

4.) "AMENDED SITE PLAN FOR KNOX MARSH CONDOMINIUMS, KNOX MARSH ROAD, DOVER, NH"
BY: KIMBALL CHASE COMPANY INC.
DATED:DECEMBER 9, 1985
S.C.R.D.: PLAN # 23–87

5.) PLAN OF LOT, ESTATE OF GLADYS D. McCRONE HEIRS, JANET C. VARNEY, LOIS A. McCRONE, GLADYS M. SMITH, ROBERT W. McCRONE, DOVER, NH"
BY: ROBERT W. McCRONE, LLS
DATED: NOVEMBER 2, 1993
S.C.R.D.: PLAN # 26A–43

6.) "LOT LINE ADJUSTMENT PLAN, ROUTE 155 – KNOX MARSH ROAD, DOVER, N.H., FOR SOUTHWEST PARTNERS REALTY L.L.C."
BY: NORWAY PLAINS ASSOCIATES, INC.
DATED: APRIL 2000
FILE NUMBER 303
S.C.R.D.: PLAN # 59–47

7.) PLAN OF LAND FOR LOIS L. McCRONE, KNOX MARSH ROAD, DOVER, NEW HAMPSHIRE"
BY: ROBERT W. McCRONE, LLS #221
DATED DECEMBER 2, 2002
S.C.R.D.: PLAN # 68–29

8.) RIGHT–OF–WAY AND TRACK MAP, BOSTON AND MAINE R.R.
OPERATED BY THE BOSTON AND MAINE R.R.,
STATION 3390+17 TO STATION 3442+97 V2N.H./63
STATION 3442+97 TO STATION 3495+77 V2N.H./64
DATED JUNE 30, 1914
ON FILE WITH PAN AM AND AT BS&E

9.) BOUNDARY PLAN LAND OF EQUINE PROPERTIES LLC, 239 KNOX MARSH ROAD, DOVER, NH, TAX MAP H, LOT 37A"
BY: BERRY SURVEYING & ENGINEERING
DATED JANUARY 21, 2021
FILE #DB2020–066
S.C.R.D. PLAN #12920

10.) EASEMENT PLAN LAND OF EQUINE PROPERTIES LLC, 239 KNOX MARSH ROAD, DOVER, NH, TAX MAP H, LOT 37A"
BY: BERRY SURVEYING & ENGINEERING
DATED JANUARY 21, 2021
FILE #DB2020–066
NOT RECORDED

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

16°±
MAG 9 1/4 STATE PLANE
MAGNETIC

N/F BOSTON & MAINE RAILROAD,
IRON HORSE PARK
500 WATER STREET, J–910
JACKSONVILLE, FL 32202
TAX MAP C, LOT 5

NWP 1–1/2" IRON PIPE
~FND~ +2
0.12' OFF LINE
NOT HELD
SEE DETAIL "A"

LLS 211 1–1/4"
IRON PIPE
~FND~ +1.1
N: 248406.07
E: 1185930.20
ELEV.: 92.87
SEE DETAIL "A"

OLD UTILITY POLE

N50°00'59"E
578.45'

EXISTING PERIMETER BOUNDARY

N/F NSA OPTIVEST ACQUISITION HOLDINGS LLC
24901 DANA PT HARBOR DRIVE #200
DANA POINT, CA 92629
S.C.R.D. BOOK 4255, PAGE 631
TAX MAP H, LOT 36–B1

S33°43'37"E
357.58'

DETAIL "A"
SCALE 1"=10'
(duplicates LLS 211 1–1/4" IRON PIPE ~FND~ +1.1 N: 248406.07 E: 1185930.20 ELEV.: 92.87; NWP 1–1/2" IRON PIPE ~FND~ +2 0.12' OFF LINE NOT HELD; N50°00'59"E 578.45'; S33°43'37"E 357.58')

N50°00'30"E
22.57'

LLS 661 IRON BOUND
~FND~ FLUSH

LLS 661 IRON BOUND
~FND~ +.3

N03°01'12"E
194.48'

N/F PATRICK J CRAGIN TRUSTEE
PATRICK J CRAGIN LIVING REV TRUST
P.O. BOX 250
DOVER, NH 03820
S.C.R.D. BOOK 3497, PAGE 417
TAX MAP H, LOT 38

N/F 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949
S.C.R.D. BOOK 5138, PAGE 73
TAX MAP H, LOT 37A

NWP 1–1/4" IRON PIPE
~FND~ +.9

N89°30'59"E
49.94'

N81°26'28"E
77.37'

3/4" REBAR
~T.B.S.~

LLS 211 IRON BOUND
~FND~ +.5
HELD
SEE DETAIL "B"

3/4" REBAR
~FND~ +.6
2.01' OFF LINE
NOT HELD
SEE DETAIL "B"

3/4" REBAR
~FND~ +.7
2.4' OFF LINE
NOT HELD
SEE DETAIL "B"

DETAIL "B"
SCALE 1"=10'
(duplicates 3/4" REBAR ~FND~ +.7 2.4' OFF LINE NOT HELD; N89°30'59"E 49.94'; 3/4" REBAR ~FND~ +.6 2.01' OFF LINE NOT HELD; N89°19'26"E 265.05'; LLS 211 IRON BOUND ~FND~ +.5)

3/4" REBAR
~FND~ +.7
0.4' OFF–LINE
NOT HELD
SEE DETAIL "C"

FORMER EXISTING SHED

N89°19'26"E
265.05'

LLS 211 IRON BOUND
~FND~ +.4

N89°49'54"E
66.73'

3/4" IRON ROD
~FND~ +.1

DETAIL "C"
SCALE 1"=10'
(duplicates 3/4" REBAR ~FND~ +.7 0.4' OFF–LINE NOT HELD; N89°19'26"E 265.05'; FORMER EXISTING SHED)

OLD UTILITY POLE

FORMER EXISTING SHED

FORMER EXISTING HOUSE

FORMER DRIVEWAY LOCATION

238.77'
S12°25'13"E

N/F NSA OPTIVEST ACQUISITION HOLDINGS LLC
24901 DANA PT HARBOR DRIVE #200
DANA POINT, CA 92629
S.C.R.D. BOOK 4255, PAGE 631
TAX MAP H, LOT 36–B1

1/2" REBAR
~FND~ +.7

207.44'
S80°01'53"W

1/2" REBAR
IN IRON PIPE
~FND~ +.5

298.49'
S80°01'48"W

1/2" REBAR
IN IRON PIPE
~FND~ +.5

N87°01'49"W
16.54'

HANSON ROAD

DISCONTINUED BY CITY OF DOVER JULY 8, 1998
33' WIDE ACCESS & UTILITY EASEMENT RIGHTS TO SUBJECT PARCEL EXIST

EXISTING BUILDING

EXISTING BUILDING

EXISTING BUILDING

N/F KNOX MARSH CONDOS,
C/O KATHLEEN COWDY
251 KNOX MARSH ROAD #9
DOVER, NH 03820
TAX MAP H, LOT 37

N/F PATRICK J CRAGIN TRUSTEE
PATRICK J CRAGIN LIVING REV TRUST
P.O. BOX 250
DOVER, NH 03820
S.C.R.D. BOOK 3497, PAGE 417
TAX MAP H, LOT 37B

EXISTING MONUMENT

EVERSOURCE
303/62A

PSNH
303/62

PSC NH
303/62

PSNH 303/61

EXISTING BUILDING

EXISTING BUILDING

NET
146/48

1/2" REBAR IN
1" IRON PIPE
~FND~ +.2
DESTROYED
2024
TO BE RESET

N13°57'57"W
210.49'

EASEMENT TO BE GRANTED TO NHDOT PER EXISTING PERMIT

LLS 661 IRON BOUND
~FND~ –.6
APPARENTLY DISTURBED
5.2' OFF–LINE
DESTROYED 2024

3/4" REBAR
~T.B.S.~

LLS 661 IRON BOUND
~FND~ –.6
DESTROYED 2024
TO BE RESET

PSNH
303/55a

LLS 661 IRON BOUND
~FND~ FLUSH
N: 247891.19
E: 1186640.31
ELEV.: 93.11

3/4" IRON ROD
~FND~ +.1

3/4" IRON ROD
~FND~ +.1

91.59'
S77°25'30"W

251.12'
S72°45'55"W

300.08'
S72°46'28"W

FORMER E.O.P.

N.H. ROUTE 155 / KNOX MARSH ROAD

VZ 48

PSNH
303/59

PSNH
303/56

PSNH
303/55

PSNH
303/54

PSNH
303/53

PSNH
146/46

OLDE MADBURY LANE

N/F PATRICK J CRAGIN TRUSTEE
PATRICK J CRAGIN LIVING REV TRUST
P.O. BOX 250
DOVER, NH 03820
S.C.R.D. BOOK 3574, PAGE 653
TAX MAP H, LOT 40–C1

N/F OLDE MADBURY LANE INC
P.O. BOX 250
DOVER, NH 03820
S.C.R.D. BOOK 1790, PAGE 536
TAX MAP H, LOT 40–6

N/F OLDE MADBURY LANE INC
P.O. BOX 250
DOVER, NH 03820
S.C.R.D. BOOK 1790, PAGE 536
TAX MAP H, LOT 40–D

N/F 237 ALBANY STREET INVESTMENTS LLC
& ABEL AND BRUNELLE ASSOCIATES
160 MIDDLESEX TURNPIKE
BEDFORD, MA 01730
S.C.R.D. BOOK 4112, PAGE 770
TAX MAP H, LOT 40–B

NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37A

3.) LOT AREA: 407,542 Sq. Ft., 9.36 Ac.

4.) S.C.R.D. BOOK 5138, PAGE 73

5.) THE INTENT OF THIS PLAN IS TO SHOW THE LOCATION OF BOUNDARIES OF TAX MAP H, LOT 37A AS OF THE DATE OF THE SURVEY, SPRING 2020, IN ACCORDANCE WITH AND IN RELATION TO THE CURRENT AND ORIGINAL LEGAL DESCRIPTIONS, AND IS NOT AN ATTEMPT TO DEFINE UNWRITTEN RIGHTS, DETERMINE THE EXTENT OF OWNERSHIP, OR DEFINE THE LIMITS OF TITLE.

6.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL DATUM BASED ON NAD83 STATE PLANE. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

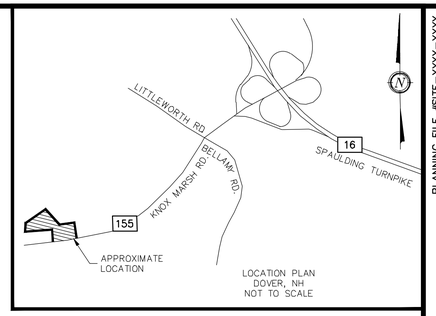
7.) THE BOUNDARY LINES SHOWN ON THIS PLAN ARE THE RESULT OF A CLOSED TRAVERSE PERFORMED BY THIS OFFICE IN SPRING 2020 WITH AN ERROR OF CLOSURE BETTER THAN 1 PART IN 10,000.

8.) THE SITE CONDITIONS SHOWN ARE AS OF THE DATE OF THE FIELD SURVEY: SPRING 2020.

PLAN REFERENCES:

1.) "SUBDIVISION PLAN, N.H. ROUTE 155 – KNOX MARSH ROAD, DOVER, N.H., FOR SOUTHWEST PARTNERS REALTY L.L.C."
BY: NORWAY PLAINS ASSOCIATES, INC.
DATED: NOVEMBER 1996
FILE NUMBER 303
S.C.R.D.: PLAN # 50–65

2.) "STANDARD BOUNDARY SURVEY AND LOT LINE ADJUSTMENT, PLAN OF LAND, LOTS 38 & 37B, TAX ASSESSOR'S MAP H, N.H. ROUTE 155 / KNOX MARSH ROAD, DOVER, N.H., COUNTY OF STRAFFORD"
BY: CIVILWORKS, PAUL J. CONNOLLY, LLS
DATED: SEPTEMBER 15, 1998
S.C.R.D.: PLAN # 54–41 & PLAN # 54–44
SEE REFERENCE PLAN NOTE # 5 REGARDING HANSON ROAD DISCONTINUANCE.



LOCATION PLAN
DOVER, NH
NOT TO SCALE

LEGEND:

- ● 3/4" REBAR W/ID CAP (TO BE SET)
- ○ IRON BOUND/IRON ROD (FND)
- ○ IRON PIPE (FND)
- UTILITY POLE / GUY WIRE
- BOUNDARY LINE
- APPROX. ABUTTING PROPERTY LINE
- RIGHT OF WAY LINE
- T.B.S. TO BE SET
- FND FOUND
- TYP TYPICAL
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS

I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW WAYS ARE SHOWN.

KENNETH A. BERRY L.L.S. 805 DATE

PLANNING FILE #SITE–XXXX–XXXX

REVISION	DATE	DESCRIPTION

BOUNDARY PLAN
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 – 034

STATE OF NEW HAMPSHIRE No. 805 KENNETH A. BERRY LICENSED LAND SURVEYOR
SIGNATURE

NOT FOR CONSTRUCTION

JURISDICTIONAL WETLANDS WERE DELINEATED BY DEIDRA BENJAMIN, CWS, IN SPRING OF 2020 UTILIZING THE FOLLOWING STANDARDS:

1) FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, VERSION 7.0. 2010. L.M. VASILAS, G.W. HURT, AND C.V. NOBLE (EDS.). UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, IN COOPERATION WITH THE NATIONAL TECHNICAL COMMITTEE FOR HYDRIC SOILS.
2) FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND. VERSION 3. APRIL 2004. NEIWPCC WETLANDS WORKGROUP. WILMINGTON, MA 01887.
3) NORTH AMERICAN DIGITAL FLORA: NATIONAL WETLAND PLANT LIST, VERSION 2.1.0 (HTTP://WETLAND_PLANTS.USACE.ARMY.MIL). U.S. ARMY CORPS OF ENGINEERS, ENGINEER RESEARCH AND DEVELOPMENT CENTER, COLD REGIONS RESEARCH AND ENGINEERING LABORATORY, HANOVER, NH, AND BONAP, CHAPEN HILL.
4) STATE OF NEW HAMPSHIRE 2014 WETLAND PLANT LIST. LICHVAR, R.W., M. BUTTERWICH, N.C. MELVIN, AND W.N. KIRCHNER. 2014. THE NATIONAL WETLAND PLANT LIST: 2014 UPDATE OF WETLAND RATINGS. PHYTONEURON 2014–41:1–42.
5) CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL. JANUARY 1987. WETLANDS RESEARCH PROGRAM TECHNICAL REPORT Y–87–1.
6) REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION. JANUARY 2012, VERSION 2. U.S. ARMY CORPS OF ENGINEERS. ENVIRONMENTAL LABORATORY ERDC/EL TR–12–1.
7) CLASSIFICATION OF WETLANDS AND DEEPWATER HABITATS OF THE UNITED STATES. DECEMBER 1979. L. COWARDIN, V. CARTER, F. GOLET, AND E. LAROE. US DEPARTMENT OF THE INTERIOR. FISH AND WILDLIFE SERVICE. FWS/OBS–79/31.

LEGEND:

- IRON BOUND ~FND~
- IRON PIPE ~FND~
- UTILITY POLE / GUY WIRE
- NRCS SOIL DELINEATION LINE
- BUILDING SETBACK LINE
- OHU — OVERHEAD UTILITIES LINE
- EWL — WATER LINE
- CONTOUR LINE, MINOR
- CONTOUR LINE, MAJOR
- WETLAND LINE
- WETLAND BUFFER
- S — SEWER LINE
- D — DRAINAGE LINE

BzB NRCS SOIL LABEL
S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
TYP. TYPICAL
FND FOUND

STATE OF NEW HAMPSHIRE — DEIDRA L BENJAMIN — No. 295 — CERTIFIED WETLAND SCIENTIST

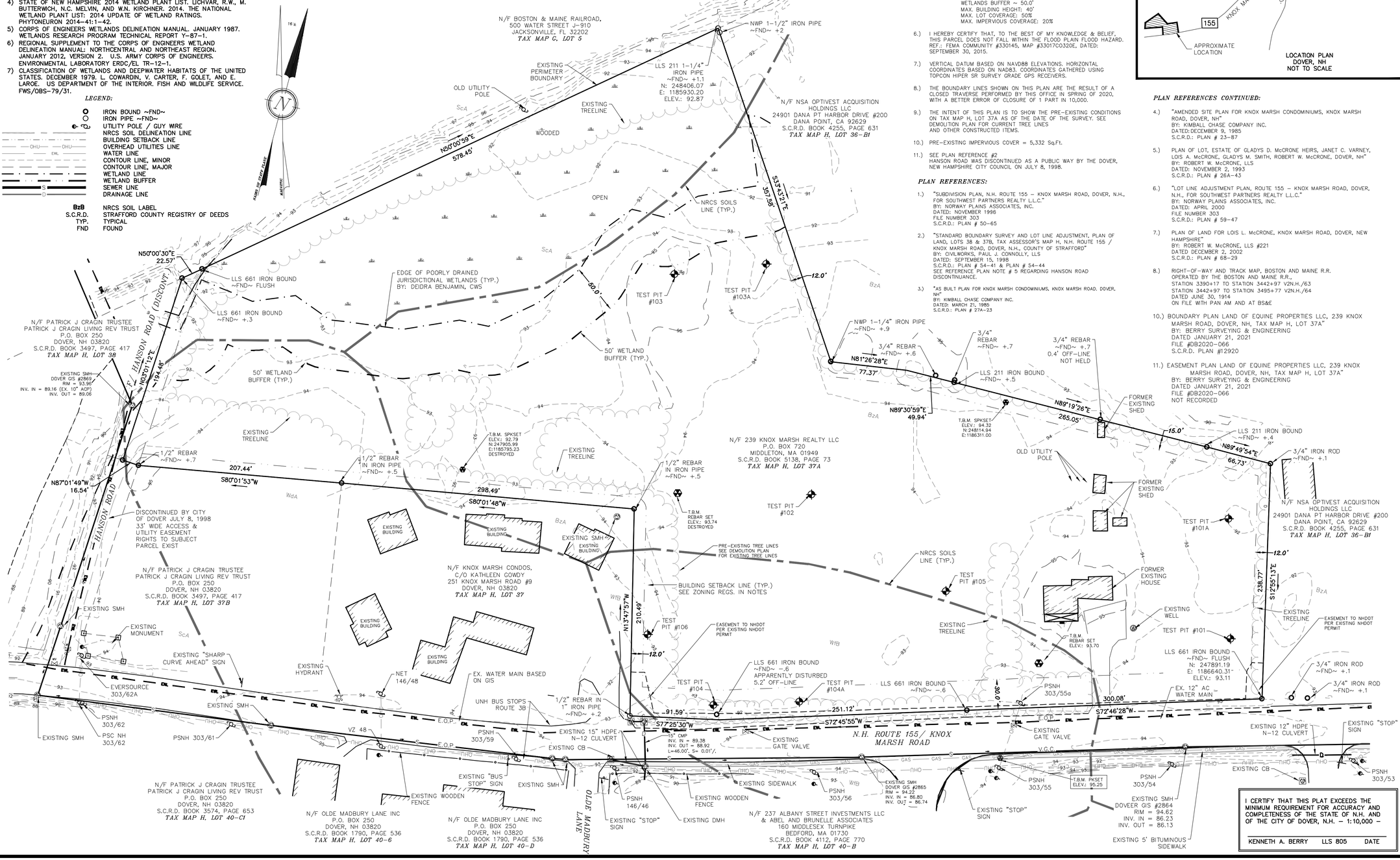
DEIDRA BENJAMIN, CWS #295

SOILS:

BzA – BUXTON SILT LOAM, 0 TO 3 PERCENT SLOPES
WfB – WINDSOR LOAMY SAND, 3 TO 8 PERCENT SLOPES
WdA – WINDSOR LOAMY SAND, 0 TO 3 PERCENT SLOPES
ScA – SCANTIC SILT LOAM, 0 TO 3 PERCENT SLOPES

SEE WEBSOIL USDA–NRCS

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.



NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37A

3.) LOT AREA: 407,542 Sq. Ft., 9.36 Ac.

4.) S.C.R.D. BOOK 5138, PAGE 73

5.) (C) COMMERCIAL SECONDARY GROUNDWATER RECHARGE
MINIMUM FRONTAGE ~ 125'
MINIMUM LOT SIZE ~ 20,000 Sq. Ft.
FRONT SETBACK ~ 30'
REAR SETBACK ~ 15'
SIDE SETBACK ~ 12'
WETLANDS BUFFER ~ 50.0'
MAX. BUILDING HEIGHT: 40'
MAX. LOT COVERAGE: 50%
MAX. IMPERVIOUS COVERAGE: 20%

6.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE & BELIEF, THIS PARCEL DOES NOT FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD. REF.: FEMA COMMUNITY #330145, MAP #33017C0320E, DATED: SEPTEMBER 30, 2015.

7.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

8.) THE BOUNDARY LINES SHOWN ON THIS PLAN ARE THE RESULT OF A CLOSED TRAVERSE PERFORMED BY THIS OFFICE IN SPRING OF 2020, WITH A BETTER ERROR OF CLOSURE OF 1 PART IN 10,000.

9.) THE INTENT OF THIS PLAN IS TO SHOW THE PRE–EXISTING CONDITIONS ON TAX MAP H, LOT 37A AS OF THE DATE OF THE SURVEY. SEE DEMOLITION PLAN FOR CURRENT TREE LINES AND OTHER CONSTRUCTED ITEMS.

10.) PRE–EXISTING IMPERVIOUS COVER = 5,332 Sq.Ft.

11.) SEE PLAN REFERENCE #2
HANSON ROAD WAS DISCONTINUED AS A PUBLIC WAY BY THE DOVER, NEW HAMPSHIRE CITY COUNCIL ON JULY 8, 1998.

PLAN REFERENCES:

1.) "SUBDIVISION PLAN, N.H. ROUTE 155 – KNOX MARSH ROAD, DOVER, N.H., FOR SOUTHWEST PARTNERS REALTY L.L.C."
BY: NORWAY PLAINS ASSOCIATES, INC.
DATED: NOVEMBER 1996
FILE NUMBER 303
S.C.R.D.: PLAN # 50–65

2.) "STANDARD BOUNDARY SURVEY AND LOT LINE ADJUSTMENT, PLAN OF LAND, LOTS 38 & 37B, TAX ASSESSOR'S MAP H, N.H. ROUTE 155 / KNOX MARSH ROAD, DOVER, N.H., COUNTY OF STRAFFORD"
BY: CIVILWORKS, PAUL J. CONNOLLY, LLS
DATED: SEPTEMBER 15, 1998
S.C.R.D.: PLAN # 54–41 & PLAN # 54–44
SEE REFERENCE PLAN NOTE # 5 REGARDING HANSON ROAD DISCONTINUANCE.

3.) "AS BUILT PLAN FOR KNOX MARSH CONDOMINIUMS, KNOX MARSH ROAD, DOVER, NH"
BY: KIMBALL CHASE COMPANY INC.
DATED: MARCH 21, 1985
S.C.R.D.: PLAN # 27A–23

PLAN REFERENCES CONTINUED:

4.) "AMENDED SITE PLAN FOR KNOX MARSH CONDOMINIUMS, KNOX MARSH ROAD, DOVER, NH"
BY: KIMBALL CHASE COMPANY INC.
DATED:DECEMBER 9, 1985
S.C.R.D.: PLAN # 23–87

5.) PLAN OF LOT, ESTATE OF GLADYS D. McCRONE HEIRS, JANET C. VARNEY, LOIS A. McCRONE, GLADYS M. SMITH, ROBERT W. McCRONE, DOVER, NH"
BY: ROBERT W. McCRONE, LLS
DATED: NOVEMBER 2, 1993
S.C.R.D.: PLAN # 26A–43

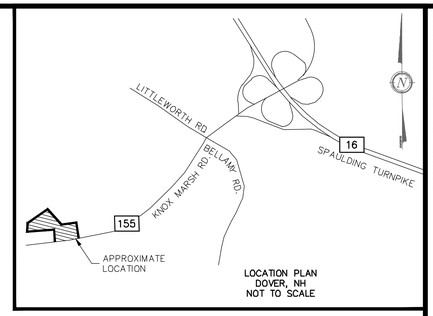
6.) "LOT LINE ADJUSTMENT PLAN, ROUTE 155 – KNOX MARSH ROAD, DOVER, N.H., FOR SOUTHWEST PARTNERS REALTY L.L.C."
BY: NORWAY PLAINS ASSOCIATES, INC.
DATED: APRIL 2000
FILE NUMBER 303
S.C.R.D.: PLAN # 59–47

7.) PLAN OF LAND FOR LOIS L. McCRONE, KNOX MARSH ROAD, DOVER, NEW HAMPSHIRE"
BY: ROBERT W. McCRONE, LLS #221
DATED DECEMBER 2, 2002
S.C.R.D.: PLAN # 68–29

8.) RIGHT–OF–WAY AND TRACK MAP, BOSTON AND MAINE R.R.
OPERATED BY THE BOSTON AND MAINE R.R.,
STATION 3390+17 TO STATION 3442+97 V2N.H./63
STATION 3442+97 TO STATION 3495+77 V2N.H./64
DATED JUNE 30, 1914
ON FILE WITH PAN AM AND AT BS&E

10.) BOUNDARY PLAN LAND OF EQUINE PROPERTIES LLC, 239 KNOX MARSH ROAD, DOVER, NH, TAX MAP H, LOT 37A"
BY: BERRY SURVEYING & ENGINEERING
DATED JANUARY 21, 2021
FILE #DB2020–066
S.C.R.D. PLAN #12920

11.) EASEMENT PLAN LAND OF EQUINE PROPERTIES LLC, 239 KNOX MARSH ROAD, DOVER, NH, TAX MAP H, LOT 37A"
BY: BERRY SURVEYING & ENGINEERING
DATED JANUARY 21, 2021
FILE #DB2020–066
NOT RECORDED



LOCATION PLAN
DOVER, NH
NOT TO SCALE

I CERTIFY THAT THIS PLAT EXCEEDS THE MINIMUM REQUIREMENT FOR ACCURACY AND COMPLETENESS OF THE STATE OF N.H. AND OF THE CITY OF DOVER, N.H. – 1:10,000 –

KENNETH A. BERRY LLS 805 DATE

PLANNING FILE #SITE–XXXX–XXXX

REVISION	DATE	DESCRIPTION

PRE–EXISTING CONDITIONS PLAN
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 – 034

STATE OF NEW HAMPSHIRE — No. 805 — KENNETH A. BERRY — LICENSED LAND SURVEYOR — SIGNATURE

SHEET 4 OF 60

NOT FOR CONSTRUCTION

LEGEND:

- ● 3/4" REBAR W/ID CAP (TO BE SET)
- ○ IRON BOUND/IRON ROD (FND)
- ○ IRON PIPE (FND)
- UTILITY POLE / GUY WIRE
- EXISITNG BOUNDARY LINE
- PROPOSED EASEMENT LINE

T.B.S. TO BE SET
FND FOUND
TYP TYPICAL
S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS

16°±

N

NAD83 NH STATE PLANE

MAGNETIC

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

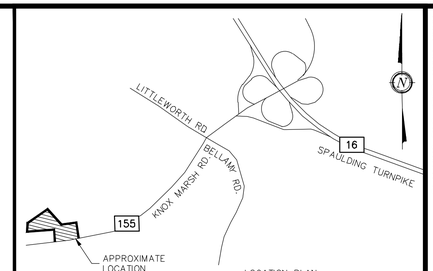
2.) TAX MAP H, LOT 37A

3.) LOT AREA: 407,542 Sq. Ft., 9.36 Ac.

4.) S.C.R.D. BOOK 5138, PAGE 73

5.) THE INTENT OF THIS PLAN IS TO SHOW THE PROPOSED EASEMENT RELATING TO THE PROPOSED SITE PLAN.

6.) SEE BOUNDARY PLAN FOR ALL OTHER STANDARD NOTES, ZONING NOTES AND PLAN REFERENCES.



LOCATION PLAN
DOVER, NH
NOT TO SCALE

EXISTING BUILDING

FORMER EXISTING SHED

N/F NSA OPTIVEST ACQUISITION HOLDINGS LLC
24901 DANA PT HARBOR DRIVE #200
DANA POINT, CA 92629
S.C.R.D. BOOK 4255, PAGE 631
TAX MAP H, LOT 36-B1

N/F KNOX MARSH CONDOS,
C/O KATHLEEN GOWDY
251 KNOX MARSH ROAD #9
DOVER, NH 03820
TAX MAP H, LOT 37

N/F 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949
S.C.R.D. BOOK 5138, PAGE 73
TAX MAP H, LOT 37A

FORMER EXISTING HOUSE

FORMER DRIVEWAY

S13°47'57"E 165.81'

EXISTING BOUNDARY LINE

N12°55'13"W 202.41'

EXISTING BOUNDARY LINE

1/2" REBAR W/ ID CAP ~TBS~ (TYP.)

S76°12'03"W 14.10'

S77°04'47"W 11.37'

S17°18'04"W 9.88'

1/2" REBAR W/ ID CAP ~TBS~ (TYP.)

S13°47'57"E 44.68'

N27°48'47"W 4.24'

1/2" REBAR W/ ID CAP ~TBS~ (TYP.)

S75°23'51"W 85.84'

1/2" REBAR W/ ID CAP ~TBS~ (TYP.)

LLS 661 IRON BOUND ~FND~ -.6 APPARENTLY DISTURBED 5.2' OFF-LINE

PROPOSED SIDEWALK MAINTENANCE AND DRAINAGE ACCESS EASEMENT 3,583 Sq. Ft.

PROPOSED EASEMENT LINE

LLS 661 IRON BOUND ~FND~ -.6 DESTROYED TO BE RESET

S73°17'34"W 515.69'

PSNH 303/55a

1/2" REBAR W/ ID CAP ~TBS~ (TYP.)

S12°28'36"E 28.21'

N12°55'13"W 36.36'

3/4" IRON ROD ~FND~ +.1

3/4" IRON ROD ~FND~ +.1

1/2" REBAR IN 1" IRON PIPE ~FND~ +.2 DESTROYED TO BE RESET

N77°25'30"E 91.59'

N72°45'55"E 251.12'

EXISTING BOUNDARY LINE

FORMER EDGE OF PAVEMENT LOCATION

N72°46'28"E 300.08'

LLS 661 IRON BOUND ~FND~ FLUSH
N: 247891.19
E: 1186640.31
ELEV.: 93.11

N.H. ROUTE 155 / KNOX MARSH ROAD

OLDE MADBURY LANE

PSNH 146/46

F.W. WEBB DRIVEWAY

PSNH 303/56

PSNH 303/55

PSNH 303/54

PSNH 303/53

N/F OLDE MADBURY LANE INC
P.O. BOX 250
DOVER, NH 03820
S.C.R.D. BOOK 1790, PAGE 536
TAX MAP H, LOT 40-D

N/F 237 ALBANY STREET INVESTMENTS LLC
& ABEL AND BRUNELLE ASSOCIATES
160 MIDDLESEX TURNPIKE
BEDFORD, MA 01730
S.C.R.D. BOOK 4112, PAGE 770
TAX MAP H, LOT 40-B

I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW WAYS ARE SHOWN.

KENNETH A. BERRY L.L.S. 805 DATE

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

EASEMENT PLAN
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 30 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR
No. 805
KENNETH A. BERRY
SIGNATURE

NOT FOR CONSTRUCTION

S.S.S.M. SOILS LEGEND

SYMBOL	SOIL TAXONOMIC NAME	HYDROLOGIC SOIL GROUP
WfA	WINDSOR VARIANT	C
WfB	WINDSOR VARIANT	C
WfC	WINDSOR VARIANT	C
BzA	BUXTON MODERATELY DRAINED	C
BzB	BUXTON MODERATELY DRAINED	C
BzC	BUXTON MODERATELY DRAINED	C
ScA/P	SCANTIC POORLY DRAINED	D
ScB/P	SCANTIC POORLY DRAINED	D

SLOPE: A = 0–3% B = 3–8% C = 8–15% D = 15–25% E = 25–50% F = 50%+

DENOMINATOR: /VPD = VERY POORLY DRAINED /PD = POORLY DRAINED /SWPD = SOMEWHAT POORLY DRAINED /MWD = MODERATELY WELL DRAINED

NRCS SOILS LEGEND

SYMBOL	SOIL TAXONOMIC NAME	HYDROLOGIC SOIL GROUP
WdA	WINDSOR LOAMY SAND	A
WfB	WINDSOR LOAMY SAND	A
BzA	BUXTON SILT LOAM	C

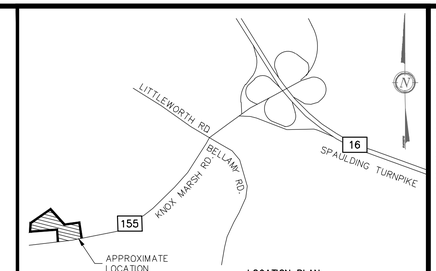
SLOPE: A = 0–3% B = 3–8% C = 8–15% D = 15–25% E = 25–50% F = 50%+

DENOMINATOR: /VPD = VERY POORLY DRAINED /PD = POORLY DRAINED /SWPD = SOMEWHAT POORLY DRAINED /MWD = MODERATELY WELL DRAINED

LEGEND:

- IRON BOUND ~FND~
- IRON PIPE ~FND~
- GRANITE BOUND ~FND~
- UTILITY POLE/GUY WIRE
- BENCHMARK
- MATCH LINE & POINT
- WETLAND LINE
- EXISTING CONTOUR MINOR
- EXISTING CONTOUR MAJOR
- OFF SITE NRCS SOIL LINE
- SITE SPECIFIC SOIL DELINEATION
- LIMIT OF SOIL SURVEY

BzA SOIL LABEL
S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
TYP. TYPICAL
FND FOUND
TBA TO BE ABANDONED



LOCATION PLAN
DOVER, NH
NOT TO SCALE

NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37A

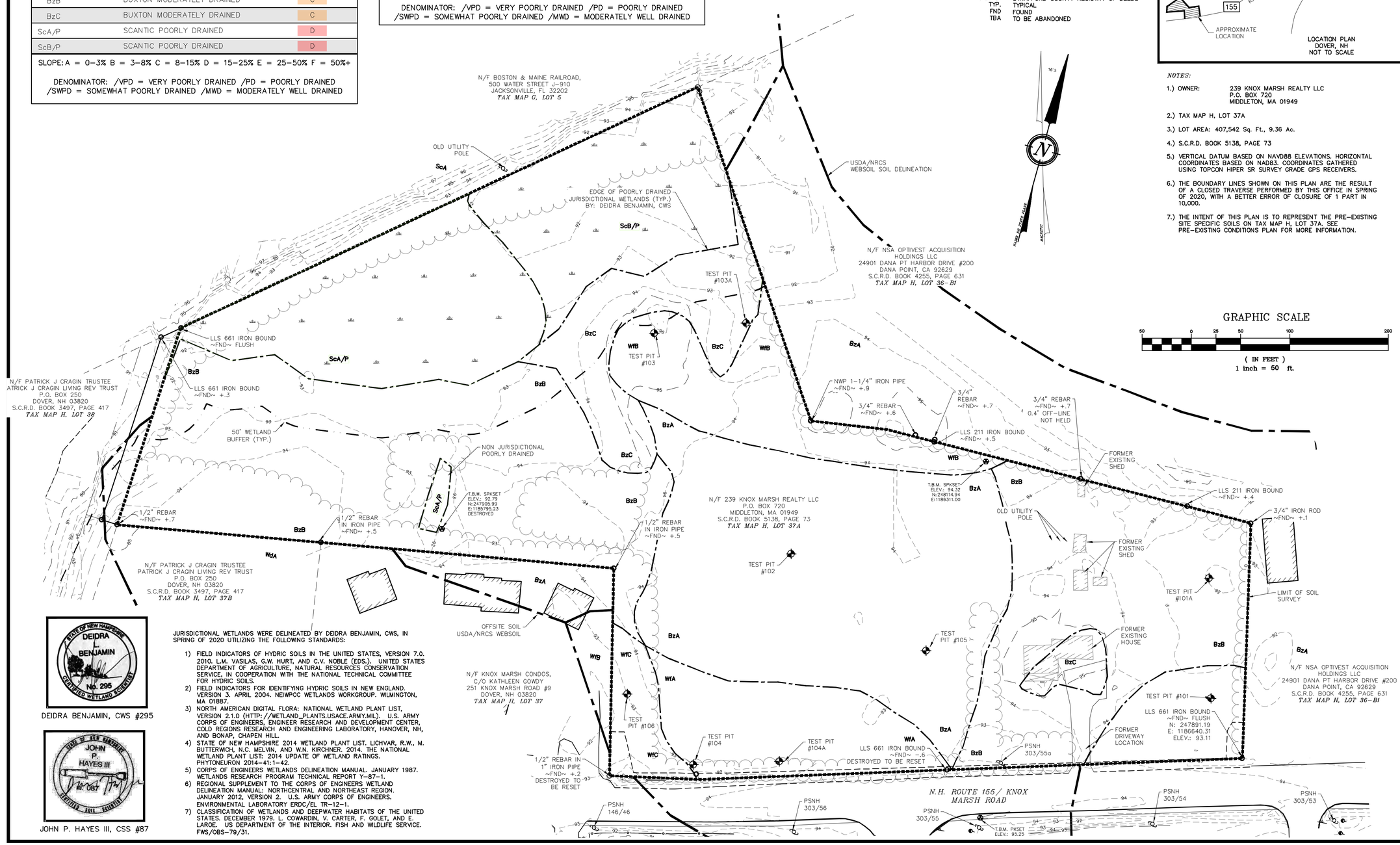
3.) LOT AREA: 407,542 Sq. Ft., 9.36 Ac.

4.) S.C.R.D. BOOK 5138, PAGE 73

5.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

6.) THE BOUNDARY LINES SHOWN ON THIS PLAN ARE THE RESULT OF A CLOSED TRAVERSE PERFORMED BY THIS OFFICE IN SPRING OF 2020, WITH A BETTER ERROR OF CLOSURE OF 1 PART IN 10,000.

7.) THE INTENT OF THIS PLAN IS TO REPRESENT THE PRE-EXISTING SITE SPECIFIC SOILS ON TAX MAP H, LOT 37A. SEE PRE-EXISTING CONDITIONS PLAN FOR MORE INFORMATION.



GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

JURISDICTIONAL WETLANDS WERE DELINEATED BY DEIDRA BENJAMIN, CWS, IN SPRING OF 2020 UTILIZING THE FOLLOWING STANDARDS:

1) FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, VERSION 7.0. 2010. L.M. VASILAS, G.W. HURT, AND C.V. NOBLE (EDS.). UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, IN COOPERATION WITH THE NATIONAL TECHNICAL COMMITTEE FOR HYDRIC SOILS.
2) FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND. VERSION 3. APRIL 2004. NEIWPCC WETLANDS WORKGROUP. WILMINGTON, MA 01887.
3) NORTH AMERICAN DIGITAL FLORA: NATIONAL WETLAND PLANT LIST, VERSION 2.1.0 (HTTP://WETLAND_PLANTS.USACE.ARMY.MIL). U.S. ARMY CORPS OF ENGINEERS, ENGINEER RESEARCH AND DEVELOPMENT CENTER, COLD REGIONS RESEARCH AND ENGINEERING LABORATORY, HANOVER, NH, AND BONAP, CHAPEN HILL.
4) STATE OF NEW HAMPSHIRE 2014 WETLAND PLANT LIST. LICHVAR, R.W., M. BUTTERWICH, N.C. MELVIN, AND W.N. KIRCHNER. 2014. THE NATIONAL WETLAND PLANT LIST: 2014 UPDATE OF WETLAND RATINGS. PHYTONEURON 2014-41:1-42.
5) CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL. JANUARY 1987. WETLANDS RESEARCH PROGRAM TECHNICAL REPORT Y-87-1.
6) REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION. JANUARY 2012, VERSION 2. U.S. ARMY CORPS OF ENGINEERS. ENVIRONMENTAL LABORATORY ERDC/EL TR-12-1.
7) CLASSIFICATION OF WETLANDS AND DEEPWATER HABITATS OF THE UNITED STATES. DECEMBER 1979. L. COWARDIN, V. CARTER, F. GOLET, AND E. LAROE. US DEPARTMENT OF THE INTERIOR. FISH AND WILDLIFE SERVICE. FWS/OBS-79/31.

STATE OF NEW HAMPSHIRE
DEIDRA L BENJAMIN
No. 295
CERTIFIED WETLAND SCIENTIST

DEIDRA BENJAMIN, CWS #295

STATE OF NEW HAMPSHIRE
JOHN P. HAYES III
No. 87
CERTIFIED SOIL SCIENTIST

JOHN P. HAYES III, CSS #87

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

PRE-EXISTING SITE SPECIFIC SOILS MAP
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

STATE OF NEW HAMPSHIRE
No. 805
KENNETH A. BERRY
LICENSED LAND SURVEYOR
SIGNATURE

SHEET 6 OF 60

NOT FOR CONSTRUCTION

NOTES:

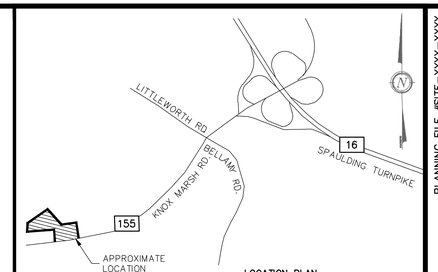
1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37A

3.) LOT AREA: 407,542 Sq. Ft., 9.36 Ac.

4.) S.C.R.D. BOOK 5138, PAGE 73

5.) THE INTENT OF THIS PLAN IS TO SHOW THE PHASES FOR THE PROPOSED DEVELOPMENT.



LOCATION PLAN
DOVER, NH
NOT TO SCALE

DISTURBANCE PER PHASES:

PHASE 1A:

- CONSTRUCTION OF ALL PROJECT INFRASTRUCTURE WITH THE EXCEPTION OF RESIDENTIAL BUILDINGS "B" & "C"

PHASE 1B:

- CONSTRUCTION OF RESIDENTIAL BUILDINGS "B" & "C"

–PER ZBA APPROVAL CASE ZONE–2024–0033,

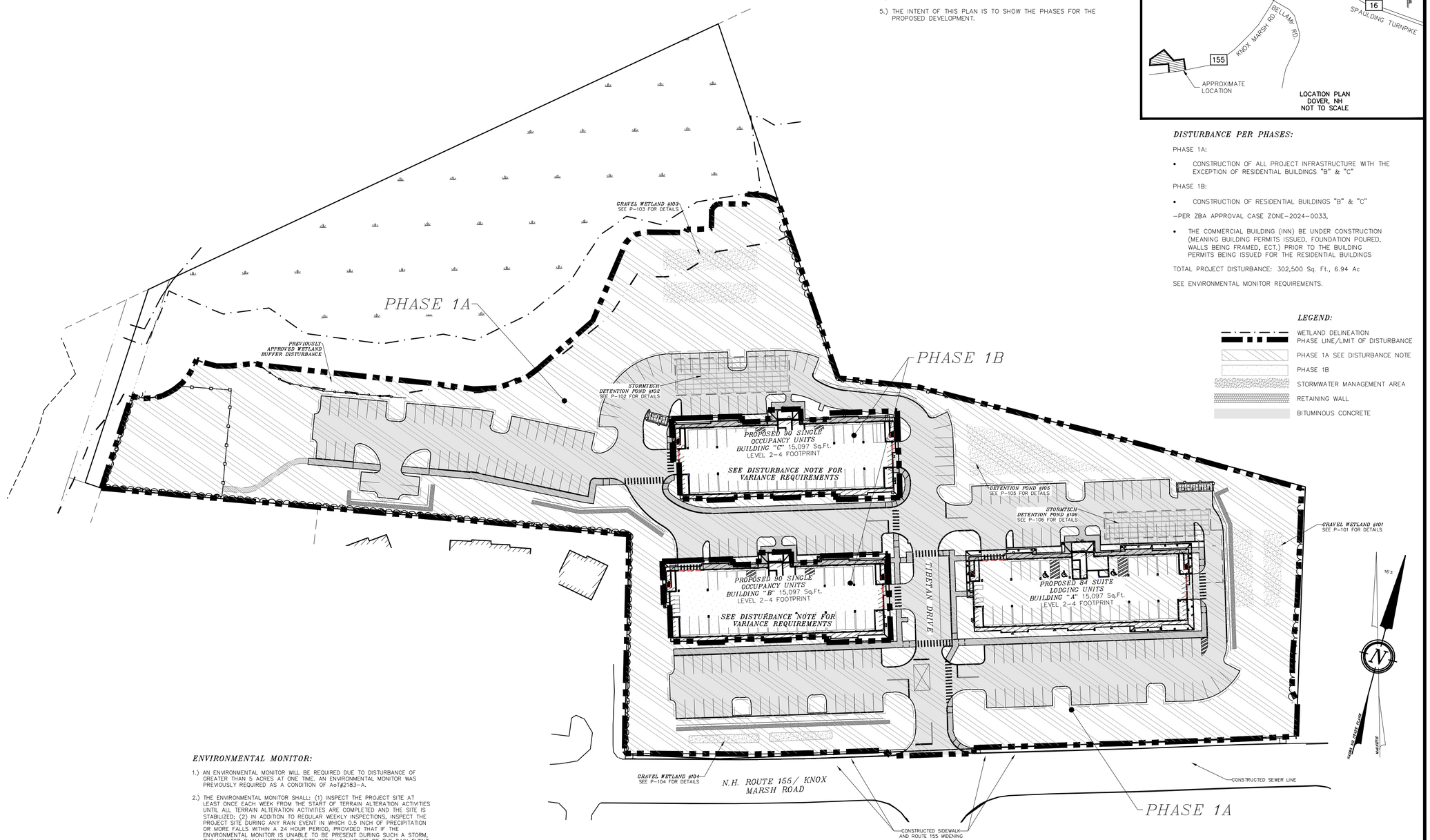
- THE COMMERCIAL BUILDING (INN) BE UNDER CONSTRUCTION (MEANING BUILDING PERMITS ISSUED, FOUNDATION POURED, WALLS BEING FRAMED, ECT.) PRIOR TO THE BUILDING PERMITS BEING ISSUED FOR THE RESIDENTIAL BUILDINGS

TOTAL PROJECT DISTURBANCE: 302,500 Sq. Ft., 6.94 Ac

SEE ENVIRONMENTAL MONITOR REQUIREMENTS.

LEGEND:

- WETLAND DELINEATION
- PHASE LINE/LIMIT OF DISTURBANCE
- PHASE 1A SEE DISTURBANCE NOTE
- PHASE 1B
- STORMWATER MANAGEMENT AREA
- RETAINING WALL
- BITUMINOUS CONCRETE



ENVIRONMENTAL MONITOR:

1.) AN ENVIRONMENTAL MONITOR WILL BE REQUIRED DUE TO DISTURBANCE OF GREATER THAN 5 ACRES AT ONE TIME. AN ENVIRONMENTAL MONITOR WAS PREVIOUSLY REQUIRED AS A CONDITION OF AoT#2183–A.

2.) THE ENVIRONMENTAL MONITOR SHALL: (1) INSPECT THE PROJECT SITE AT LEAST ONCE EACH WEEK FROM THE START OF TERRAIN ALTERATION ACTIVITIES UNTIL ALL TERRAIN ALTERATION ACTIVITIES ARE COMPLETED AND THE SITE IS STABILIZED; (2) IN ADDITION TO REGULAR WEEKLY INSPECTIONS, INSPECT THE PROJECT SITE DURING ANY RAIN EVENT IN WHICH 0.5 INCH OF PRECIPITATION OR MORE FALLS WITHIN A 24 HOUR PERIOD, PROVIDED THAT IF THE ENVIRONMENTAL MONITOR IS UNABLE TO BE PRESENT DURING SUCH A STORM, THE MONITOR SHALL INSPECT THE SITE WITHIN 24 HOURS OF THE RAIN EVENT; (3) SUBMIT A WRITTEN REPORT, STAMPED BY A QUALIFIED ENGINEER OR A CPESC SPECIALIST, TO THE DEPARTMENT WITHIN 24 HOURS OF EACH INSPECTION THAT: A. DESCRIBES THE PROGRESS OF THE PROJECT, INCLUDING WHETHER ALL CONDITIONS OF THE PERMIT ARE BEING MET AND, IF NOT, WHICH REQUIREMENTS ARE NOT BEING MET; B. IF ANY REQUIREMENTS ARE NOT BEING MET, AN EXPLANATION OF THE CORRECTIVE ACTION(S) THAT WILL BE OR ARE BEING TAKEN TO BRING THE PROJECT INTO COMPLIANCE WITH APPLICABLE REQUIREMENTS AND THE DEADLINE BY WHICH SUCH ACTIONS WILL BE COMPLETED; AND C. INCLUDES PHOTOGRAPHS OF THE SITE THAT ARE REPRESENTATIVE OF THE PROJECT; AND (4) RETAIN A COPY OF THE REPORT PREPARED PURSUANT TO (3), ABOVE, ON–SITE FOR REVIEW DURING SITE INSPECTIONS BY FEDERAL, STATE, AND LOCAL OFFICIALS.

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

PLANNING FILE #SITE–XXXX–XXXX

REVISION	DATE	DESCRIPTION

CONSTRUCTION PHASING PLAN
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE :	1 IN. EQUALS 50 FT.
DATE :	NOVEMBER 26, 2024
FILE NO. :	DB 2024 – 034

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

LEGEND:

- UTILITY POLE/GUY WIRE
- TEMPORARY BENCHMARK (T.B.M.)
- CONTOUR MINOR, PRE-EXISTING
- CONTOUR MAJOR, PRE-EXISTING
- CONTOUR MINOR, EXISTING
- CONTOUR MAJOR, EXISTING
- BUILDING SETBACK LINE
- TREELINE
- EXISTING DRAIN CULVERT W/ FLARED END SECTION (F.E.S.)
- EXISTING SEWER MAIN
- EXISTING SEWER MAIN (T.B.R.)
- EXISTING WATER MAIN
- EXISTING WATER MAIN (T.B.R.)
- EXISTING EDGE OF CRUSHED GRAVEL
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- DRAIN MANHOLE
- CATCH BASIN
- STORMWATER BMP OUTLET STRUCTURE
- SEWER MANHOLE
- GATE VALVE
- FIRE HYDRANT
- T.B.R. TO BE REMOVED

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

UTILITY NOTE:

THE UNDERGROUND UTILITIES SHOWN ON THIS PLAN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR NOR THE ENGINEER MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE.

NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37A

3.) LOT AREA: 407,542 Sq. Ft., 9.36 Ac.

4.) S.C.R.D. BOOK 5138, PAGE 73

5.) THE INTENT OF THIS PLAN IS SHOW THE DEMOLITION OF DRAINAGE, CURBING, AND UTILITIES FOR THE PROPOSED SITE PLAN.

6.) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVE AND BELOW GROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. ANY UTILITY CONFLICTS SHOULD BE REPORTED IMMEDIATELY TO THE DESIGN ENGINEER.

7.) THE CONTRACTOR SHALL CALL AND COORDINATE WITH DIGSAFE 1-888-344-7233 AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.

8.) SEE UTILITY PLAN FOR SEWER DESIGN.
IF PIPE SLOPES ARE LESS THAN 0.004'/, (NHDES MINIMUM SLOPE REQUIREMENT 8" LINE) LINE IS TO BE RESET. TO BE FIELD VERIFIED.

9.) GRAVEL WETLANDS #101, #103 & #104 TO REMAIN WITH MINOR MODIFICATIONS TO OUTLET STRUCTURES AND INCLUDES NEW RETAINING WALLS.

N/F BOSTON & MAINE RAILROAD,
500 WATER STREET, J-910
JACKSONVILLE, FL 32202
TAX MAP G, LOT 5

N/F PATRICK J CRAGIN TRUSTEE
PATRICK J CRAGIN LIVING REV TRUST
P.O. BOX 250
DOVER, NH 03820
S.C.R.D. BOOK 3497, PAGE 417
TAX MAP H, LOT 37B

N/F KNOX MARSH CONDOS,
C/O KATHLEEN GOWDY
251 KNOX MARSH ROAD #9
DOVER, NH 03820
TAX MAP H, LOT 37

N/F NSA OPTIVEST ACQUISTION HOLDINGS LLC
24901 DANA PT HARBOR DRIVE #200
DANA POINT, CA 92629
S.C.R.D. BOOK 4255, PAGE 631
TAX MAP H, LOT 36-B1

N.H. ROUTE 155/ KNOX MARSH ROAD

TIBETAN DRIVE

GRAVEL WETLAND #103

GRAVEL WETLAND #104

GRAVEL WETLAND #101

DETENTION POND #105

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

DEMOLITION PLAN
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

SHEET 8 OF 60

NOT FOR CONSTRUCTION

UNIT DENSITY CALCULATION:

COMMERCIAL DISTRICT ZONING TABLE

- DENSITY CALCULATION
  - •• LOT AREA = 407,542 Sq.Ft.
  - •• WETLANDS = 77,264 Sq.Ft.
  - •• UPLANDS = 327,583 Sq.Ft.
  - •• NUMBER OF UNITS = 327,583 Sq.Ft./5,000 Sq.Ft. PER UNIT = 66 UNITS

TOTAL ALLOWED = 66 UNITS
TOTAL PROPOSED = 180 SINGLE OCCUPANCY UNITS (ALL HUD RESTRICTED, PER VARIANCE REQUEST)
SEE TRANSFER OF DEVELOPMENT RIGHTS REQUEST

TRANSFER OF DEVELOPMENT RIGHTS REQUEST:
114 UNITS TO BE OBTAINED VIA TDR (HUD RATE): PENDING
A TOTAL OF 180 UNITS PROPOSED (66 UNITS ALLOWED BY RIGHT) ALL UNITS ARE TO BE RESTRICTED TO HUD FAIR MARKET RENT IN PERPETUITY IN CONFORMANCE WITH THE RECEIVED VARIANCE (ZONE-2024-0033)

ENVIRONMENTAL CONDITIONAL USE PERMITS:
CONSTRUCTION WITHIN THE 50' BUFFER (7,003 Sq. Ft. PROPOSED): PREVIOUSLY APPROVED
TEMPORARY IMPACT WITHIN THE 50' BUFFER (UTILITY CONSTRUCTION)(456 Sq. Ft.): PREVIOUSLY APPROVED
40.2% IMPERVIOUS COVERAGE IN THE SECONDARY GROUNDWATER RECHARGE ZONE: (PREVIOUSLY APPROVED FOR 33.8%) NEW APPROVAL REQUIRED: PENDING

WAIVER REQUESTS:
ROAD GRADE STEEPER THAN 3% WITHIN 75' OF AN INTERSECTION (157-32C): (PREVIOUSLY APPROVED) NEW WAIVER NEEDED FOR INTERSECTION MODIFICATION: PENDING
DRAINAGE PIPE COVER (157-40-B(5)): PENDING
STORMWATER RUNOFF VOLUME (153-14-(3)(B)(4)): PENDING
UTILITY DROP POLES ABOVE GROUND (157-44): PENDING

RECREATION SPACE REQUIREMENTS (DOVER CODE ARTICLE V , 170-15.)
PROPOSED NUMBER OF BEDROOMS: 180
OPEN SPACE REQUIREMENT (100 SF PER BEDROOM): 18,000 SF
½ RECREATION SPACE FOR PASSIVE USE: 9,858 SF (SATISFIED ON SITE)
½ RECREATION SPACE FOR ACTIVE USE: 10,713 SF (SATISFIED ON SITE)

PARKING REQUIREMENTS:

RESIDENTIAL (AT THE DISCRETION OF THE DOVER PLANNER)

- •• RESIDENTIAL (NON-CBD-G) 1.25 SPACES PER UNIT (SINGLE OCCUPANCY):
  - ••• 180 SRO UNITS x 1.25 SPACES = 225 SPACES
  - ••• LODGING = 1 SPACE PER UNIT + 1 PER STAFF + 1PER 500 SF COMMON AREA -> 84 UNITS = +/- 93 SPACES

TOTAL CALCULATION = 318 SPACES
TOTAL PROPOSED = 318 SPACES
ACCESSIBLE SPACES REQUIRED = 8
ACCESSIBLE SPACES PROVIDED = 9 (3 IN EACH BUILDING)
EVSE SPACE REQUIREMENT (5%) = 16 SPACES
EVSE SPACES PROVIDED = 16 SPACES (5 BUILDING "A" LODGING, 6 BUILDING "B", 5 BUILDING "C")
BICYCLE SPACES (5%) = 16 SPACES
BICYCLE SPACES PROVIDED = 21 SPACES
MOTORCYCLE SPACES = 9 SPACES (NOT INCLUDED IN SPACE CALCULATIONS)
85 SPACES AT FRONT OF SITE
233 TO THE SIDE OR REAR (PODIUM STYLE CONSIDERED REAR)

PARKING ALLOCATION REQUIREMENT:
70% REQUIRED TO BE AT THE SIDE OR REAR OF THE STRUCTURE COUNTING PODIUM STYLE AS REAR OF BUILDING, 233 SPACES ARE TO THE REAR OR SIDE = 73.3%

SNOW STORAGE CALCULATION:

- STORAGE CALCULATION (6:1 RATIO USED)
  - •• PLOWABLE AREA = 105,027 Sq.Ft. / 6 = 17,505 Sq.Ft.
  - •• >19,798 Sq.Ft. PROVIDED
  - ••• SNOW SHALL BE REMOVED FROM THE PROPERTY AND DISPOSED OF IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS ONCE IDENTIFIED AREAS ARE FULL.

LOT COVERAGE:

PRE-EXISTING COVERAGE:
BUILDING IMPERVIOUS AREA: 2,831 Sq. Ft. (0.7%)
PAVED IMPERVIOUS AREA: 2,701 Sq. Ft. (0.7%)
TOTAL PRE-EXISTING IMPERVIOUS COVER IS 5,532 Sq. Ft. (1.4%)

PROPOSED COVERAGE:
BUILDING IMPERVIOUS AREA: 50,356 Sq. Ft. (12.36%)
ROAD & PARKING LOTS: 94,842 Sq. Ft. (23.2%)
IMPERVIOUS AREA (CURB, SHOULDER, WALKS, RETAINING WALL, CONCRETE PADS & GRAVEL WALKWAY): 18,568 Sq. Ft. (4.56%)
TOTAL PROPOSED IMPERVIOUS COVER IS 163,766 Sq. Ft. (40.2%)
(REVISED ENVIRONMENTAL CUP REQUIRED, 33.8% PREVIOUS)

LEGEND:

- IRON BOUND ~FND~
- IRON PIPE ~FND~
- GRANITE BOUND ~FND~
- UTILITY POLE / GUY WIRE
- BUILDING SETBACK LINE
- OHU OVERHEAD UTILITIES LINE
- WETLAND LINE
- WETLAND BUFFER
- FORMER ROAD R.O.W.
- ABUTTING PROPERTY LINE
- EXISTING TREELINE
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. TYPICAL
- FND FOUND

PROPOSED LEGEND:

- E101 / E6 DETAIL SHEET / DETAIL
- 6 # OF PARKING SPACES
- TRANSFORMER & PAD
- SIGNAGE
- FIRE HYDRANT
- SHOULDER
- CENTER LINE
- TREELINE
- FENCE
- GUARD RAIL
- LAMP "A", POLE MOUNTED
- LAMP "B", MOUNTED ON BUILDING
- LAMP "C", MOUNTED ON BUILDING
- LAMP "D", MOUNTED ON BUILDING
- WETLAND BUFFER PLACARD
- SNOW STORAGE
- RECREATION SPACE
- STORMWATER MANAGEMENT AREA
- RETAINING WALL
- BITUMINOUS CONCRETE
- PREVIOUSLY APPROVED WETLAND BUFFER DISTURBANCE

NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC, P.O. BOX 720, MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37A

3.) LOT AREA: 407,542 Sq. Ft., 9.36 Ac.

4.) S.C.R.D. BOOK 5138, PAGE 73

5.) ZONING: (C) COMMERCIAL, SECONDARY GROUNDWATER RECHARGE PROVIDED:

MINIMUM FRONTAGE ~ 125'	642.79'
MINIMUM LOT SIZE ~ 20,000 Sq. Ft.	407,542 Sq.Ft.
FRONT SETBACK ~ 30'	30'
REAR SETBACK ~ 15'	15'
SIDE SETBACK ~ 12'	12'
WETLANDS BUFFER ~ 50.0'	50'-CUP P21-05 PREVIOUSLY APPROVED
MAX. BUILDING HEIGHT: 40'	44'6"-CASE ZONE-2024-0033 APPROVED ON JULY 18, 2024
MAX. LOT COVERAGE: 50%	40.2%
MAX. IMPERVIOUS: 20%	~40.2%-PREVIOUS CUP APPROVED FOR 33.8% (P22-46) NEW APPROVAL REQUIRED.

6.) THE INTENT OF THIS PLAN IS TO SHOW THE OVERVIEW SITE PLAN FOR TAX MAP H, LOT 37A.

7.) LIST ANY VARIANCES OR SPECIAL EXCEPTIONS GRANTED BY THE ZONING BOARD OF ADJUSTMENT OR CONDITIONAL USE PERMITS GRANTED BY THE PLANNING BOARD FOR THE PROPOSED USE OR STRUCTURE:
VARIANCE-CASE ZONE-2024-0033 WAS APPROVED ON JULY 18, 2024, WHICH PERMITS THAT 1/3RD REQUIREMENT FOR COMMERCIAL SPACE TO BE LOCATED ENTIRELY WITHIN ONE (1) BUILDING WITH THE PROPOSED 2/3RDS RESIDENTIAL USE BE IN TWO (2) SEPARATE BUILDINGS, AND TO PERMIT THE THREE BUILDINGS WITHIN THE C DISTRICT TO BE GREATER THAN 40' IN HEIGHT. THIS APPROVAL IS CONDITIONAL UPON THE FOLLOWING CRITERIA BEING MET:

1) ALL THREE (3) BUILDINGS, IN COMBINATION, MUST MAINTAIN THE SAME, OR GREATER, PERCENTAGE OF COMMERCIAL USE (2/3RD IN PERPETUITY). OTHERWISE, AN ADDITIONAL VARIANCE(S) WOULD BE REQUIRED;

2) THE COMMERCIAL BUILDINGS (INN) BE UNDER CONSTRUCTION (MEANING BUILDING PERMITS ISSUED, FOUNDATION POURED, WALLS BEING FRAMED, ECT.) PRIOR TO THE BUILDING PERMITS BEING ISSUED FOR THE RESIDENTIAL BUILDINGS; AND

3) ALL RESIDENTIAL UNITS SHALL BE RESTRICTED TO THE APPLICABLE CURRENT HUD FAIR MARKET RENT VALUE IN PERPETUITY.

CONDITIONAL USE PERMIT-P21-05 WAS APPROVED ON JUNE 28, 2022 TO ALLOW FOR 10,699 Sq. Ft. OF WETLAND BUFFER DISTURBANCE

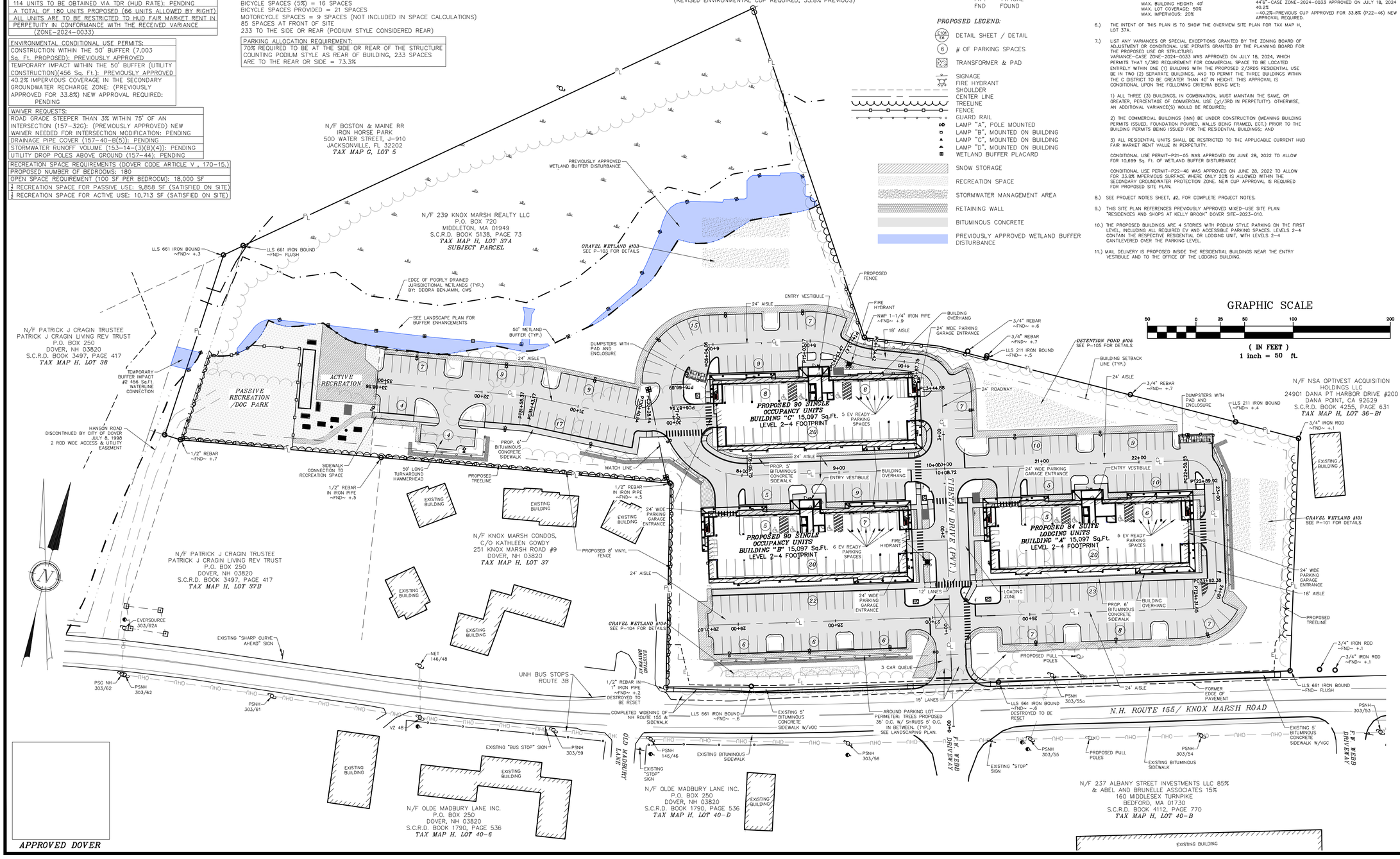
CONDITIONAL USE PERMIT-P22-46 WAS APPROVED ON JUNE 28, 2022 TO ALLOW FOR 33.8% IMPERVIOUS SURFACE WHERE ONLY 20% IS ALLOWED WITHIN THE SECONDARY GROUNDWATER PROTECTION ZONE. NEW CUP APPROVAL IS REQUIRED FOR PROPOSED SITE PLAN.

8.) SEE PROJECT NOTES SHEET, #2, FOR COMPLETE PROJECT NOTES.

9.) THIS SITE PLAN REFERENCES PREVIOUSLY APPROVED MIXED-USE SITE PLAN "RESIDENCES AND SHOPS AT KELLY BROOK" DOVER SITE-2023-010.

10.) THE PROPOSED BUILDINGS ARE 4 STORIES WITH PODIUM STYLE PARKING ON THE FIRST LEVEL, INCLUDING ALL REQUIRED EV AND ACCESSIBLE PARKING SPACES. LEVELS 2-4 CONTAIN THE RESPECTIVE RESIDENTIAL OR LODGING UNIT, WITH LEVELS 2-4 CANTILEVERED OVER THE PARKING LEVEL.

11.) MAIL DELIVERY IS PROPOSED INSIDE THE RESIDENTIAL BUILDINGS NEAR THE ENTRY VESTIBULE AND TO THE OFFICE OF THE LODGING BUILDING.



APPROVED DOVER

NOT FOR CONSTRUCTION

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

OVERVIEW SITE PLAN
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

SHEET 9 OF 60

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

NOTE: SEE GRADING PLANS FOR FULL SPOT GRADES, ACCESSIBLE ROUTES, SIDEWALK TIPDOWNS & RAMPS, AND MEANS OF EGRESS FROM THE BUILDINGS

LEGEND:

- IRON BOUND ~FND~
- IRON PIPE ~FND~
- GRANITE BOUND ~FND~
- UTILITY POLE / GUY WIRE
- BUILDING SETBACK LINE
- OVERHEAD UTILITIES LINE
- WETLAND LINE
- WETLAND BUFFER
- FORMER ROAD R.O.W.
- ABUTTING PROPERTY LINE
- EXISTING TREELINE
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. TYPICAL
- FND FOUND

PROPOSED LEGEND:

- DETAIL SHEET / DETAIL
- # OF PARKING SPACES
- TRANSFORMER & PAD
- SIGNAGE
- FIRE HYDRANT
- SHOULDER
- CENTER LINE
- TREELINE
- FENCE
- GUARD RAIL
- LAMP "A", POLE MOUNTED
- LAMP "B", MOUNTED ON BUILDING
- LAMP "C", MOUNTED ON BUILDING
- LAMP "D", MOUNTED ON BUILDING
- WETLAND BUFFER PLACARD
- SNOW STORAGE
- RECREATION SPACE
- STORMWATER MANAGEMENT AREA
- RETAINING WALL
- BITUMINOUS CONCRETE
- PREVIOUSLY APPROVED WETLAND BUFFER DISTURBANCE

NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37A

3.) LOT AREA: 407,542 Sq. Ft., 9.36 Ac.

4.) S.C.R.D. BOOK 5138, PAGE 73

5.) ZONING: (C) COMMERCIAL, SECONDARY GROUNDWATER RECHARGE

	PROVIDED:
MINIMUM FRONTAGE ~ 125'	642.79'
MINIMUM LOT SIZE ~ 20,000 Sq. Ft.	407,542 Sq.Ft.
FRONT SETBACK ~ 30'	30'
REAR SETBACK ~ 15'	15'
SIDE SETBACK ~ 12'	12'
WETLANDS BUFFER ~ 50.0'	50'-CUP P21-05 PREVIOUSLY APPROVED
MAX. BUILDING HEIGHT: 40'	44'6"-CASE ZONE-2024-0033 APPROVED ON JULY 18, 2024
MAX. LOT COVERAGE: 50%	40.2%
MAX. IMPERVIOUS: 20%	~40.2%-PREVIOUS CUP APPROVED FOR 33.8% (P22-46) NEW APPROVAL REQUIRED.

6.) THE INTENT OF THIS PLAN IS TO SHOW THE OVERVIEW SITE PLAN FOR TAX MAP H, LOT 37A.

7.) LIST ANY VARIANCES OR SPECIAL EXCEPTIONS GRANTED BY THE ZONING BOARD OF ADJUSTMENT OR CONDITIONAL USE PERMITS GRANTED BY THE PLANNING BOARD FOR THE PROPOSED USE OR STRUCTURE:
VARIANCE-CASE ZONE-2024-0033 WAS APPROVED ON JULY 18, 2024, WHICH PERMITS THAT 1/3RD REQUIREMENT FOR COMMERCIAL SPACE TO BE LOCATED ENTIRELY WITHIN ONE (1) BUILDING WITH THE PROPOSED 2/3RDS RESIDENTIAL USE BE IN TWO (2) SEPARATE BUILDINGS, AND TO PERMIT THE THREE BUILDINGS WITHIN THE C DISTRICT TO BE GREATER THAN 40' IN HEIGHT. THIS APPROVAL IS CONDITIONAL UPON THE FOLLOWING CRITERIA BEING MET:

1) ALL THREE (3) BUILDINGS, IN COMBINATION, MUST MAINTAIN THE SAME, OR GREATER, PERCENTAGE OF COMMERCIAL USE (≥1/3RD IN PERPETUITY). OTHERWISE, AN ADDITIONAL VARIANCE(S) WOULD BE REQUIRED;

2) THE COMMERCIAL BUILDINGS (NNN) BE UNDER CONSTRUCTION (MEANING BUILDING PERMITS ISSUED, FOUNDATION POURED, WALLS BEING FRAMED, ECT.) PRIOR TO THE BUILDING PERMITS BEING ISSUED FOR THE RESIDENTIAL BUILDINGS; AND

3) ALL RESIDENTIAL UNITS SHALL BE RESTRICTED TO THE APPLICABLE CURRENT HUD FAIR MARKET RENT VALUE IN PERPETUITY.

CONDITIONAL USE PERMIT-P21-05 WAS APPROVED ON JUNE 28, 2022 TO ALLOW FOR 10,699 Sq. Ft. OF WETLAND BUFFER DISTURBANCE

CONDITIONAL USE PERMIT-P22-46 WAS APPROVED ON JUNE 28, 2022 TO ALLOW FOR 33.8% IMPERVIOUS SURFACE WHERE ONLY 20% IS ALLOWED WITHIN THE SECONDARY GROUNDWATER PROTECTION ZONE. NEW CUP APPROVAL IS REQUIRED FOR PROPOSED SITE PLAN.

8.) SEE PROJECT NOTES SHEET, #2, FOR COMPLETE PROJECT NOTES.

9.) THIS SITE PLAN REFERENCES PREVIOUSLY APPROVED MIXED-USE SITE PLAN "RESIDENCES AND SHOPS AT KELLY BROOK" DOVER SITE-2023-010.

10.) THE PROPOSED BUILDINGS ARE 4 STORIES WITH PODIUM STYLE PARKING ON THE FIRST LEVEL, INCLUDING ALL REQUIRED EV AND ACCESSIBLE PARKING SPACES. LEVELS 2-4 CONTAIN THE RESPECTIVE RESIDENTIAL OR LODGING UNIT, WITH LEVELS 2-4 CANTILEVERED OVER THE PARKING LEVEL.

11.) MAIL DELIVERY IS PROPOSED INSIDE THE RESIDENTIAL BUILDINGS NEAR THE ENTRY VESTIBULE AND TO THE OFFICE OF THE LODGING BUILDING.

GRAVEL WETLAND #103 SEE P-103 FOR DETAILS

STORMTECH DETENTION POND #102 SEE P-102 FOR DETAILS

DETENTION POND #105 SEE P-105 FOR DETAILS

STORMTECH DETENTION POND #106 SEE P-106 FOR DETAILS

GRAVEL WETLAND #101 SEE P-101 FOR DETAILS

GRAVEL WETLAND #104 SEE P-104 FOR DETAILS

BUILDING "B"

BUILDING "C"

BUILDING "A"

TIBETAN DRIVE (PVT.)

N.H. ROUTE 155 / KNOX MARSH ROAD

N/F KNOX MARSH CONDOS, C/O KATHLEEN COWDY, 251 KNOX MARSH ROAD #9, DOVER, NH 03820, TAX MAP H, LOT 37

N/F NSA OPTIVEST ACQUISITION HOLDINGS LLC, 24901 DANA PT HARBOR DRIVE #200, DANA POINT, CA 92629, S.C.R.D. BOOK 4255, PAGE 631, TAX MAP H, LOT 36-B1

8' WHITE VINYL FENCE TO BE INSTALLED ALONG THE BOUNDARY LINE TO LOT 37 513 LF

1/2" REBAR IN IRON PIPE ~FND~ +.5 N247912.4030 E1165974.2550

1/2" REBAR IN 1" IRON PIPE ~FND~ +.2 N247707.9860 E1186024.4610 DESTROYED TO BE RESET

3/4" REBAR ~FND~ +.7

3/4" REBAR ~FND~ +.6

LLS 211 IRON BOUND ~FND~ +.5

NWP 1-1/4" IRON PIPE ~FND~ +.9

3/4" IRON ROD ~FND~ +.1

LLS 661 IRON BOUND ~FND~ FLUSH N247891.1930 E1186640.3140

LLS 661 IRON BOUND ~FND~ -.6 DESTROYED TO BE RESET

MATCH LINE SHEET 11

APPROVED DOVER

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

SITE PLAN EAST
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

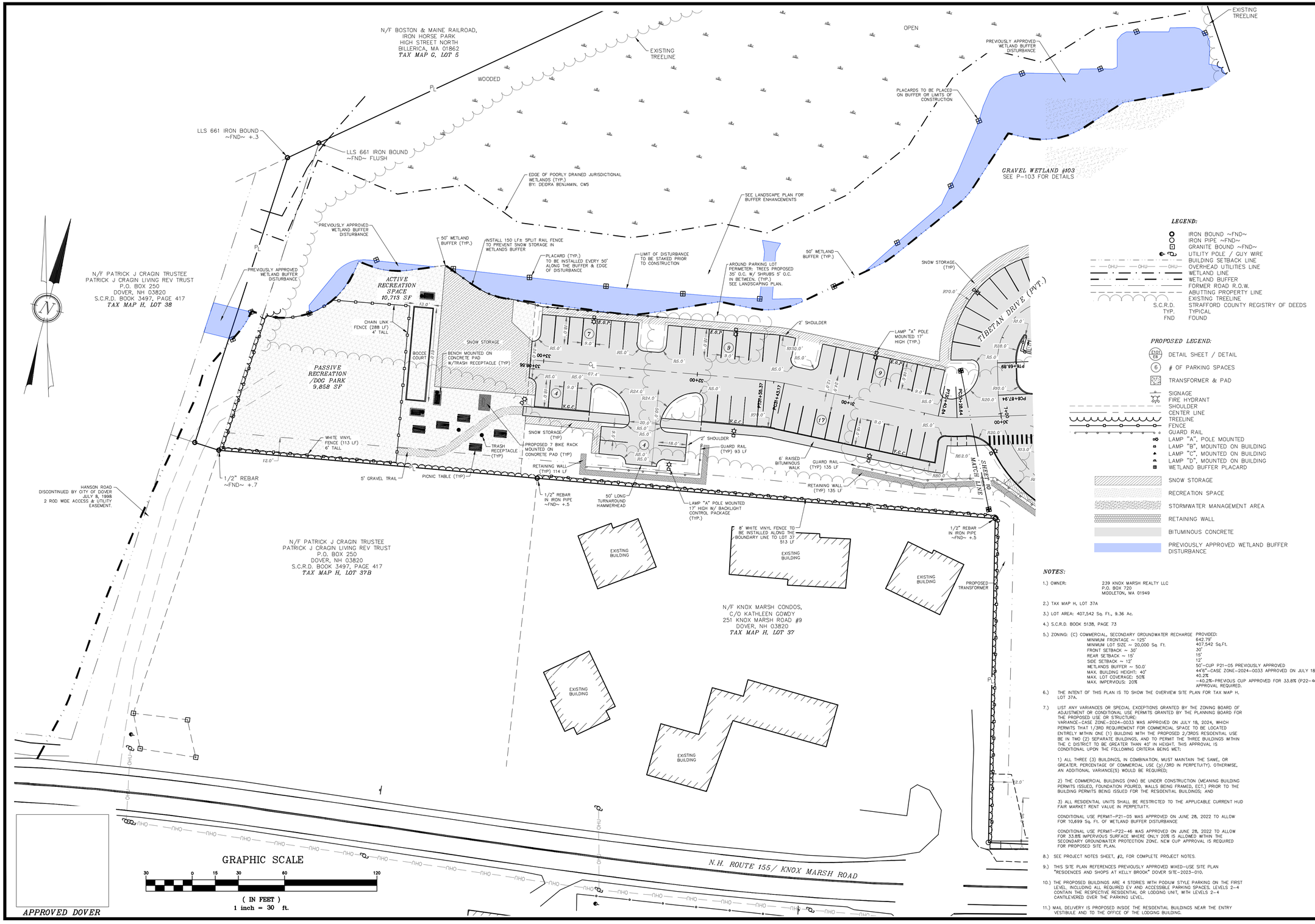
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 30 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

STATE OF NEW HAMPSHIRE — KENNETH A. BERRY No. 14243 LICENSED PROFESSIONAL ENGINEER

SHEET 10 OF 60

NOT FOR CONSTRUCTION



LEGEND:

- IRON BOUND ~FND~
- IRON PIPE ~FND~
- GRANITE BOUND ~FND~
- UTILITY POLE / GUY WIRE
- BUILDING SETBACK LINE
- OVERHEAD UTILITIES LINE
- WETLAND LINE
- WETLAND BUFFER
- FORMER ROAD R.O.W.
- ABUTTING PROPERTY LINE
- EXISTING TREELINE
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. TYPICAL
- FND FOUND

PROPOSED LEGEND:

- E101 / E6 DETAIL SHEET / DETAIL
- 6 # OF PARKING SPACES
- TRANSFORMER & PAD
- SIGNAGE
- FIRE HYDRANT
- SHOULDER
- CENTER LINE
- TREELINE
- FENCE
- GUARD RAIL
- LAMP "A", POLE MOUNTED
- LAMP "B", MOUNTED ON BUILDING
- LAMP "C", MOUNTED ON BUILDING
- LAMP "D", MOUNTED ON BUILDING
- WETLAND BUFFER PLACARD
- SNOW STORAGE
- RECREATION SPACE
- STORMWATER MANAGEMENT AREA
- RETAINING WALL
- BITUMINOUS CONCRETE
- PREVIOUSLY APPROVED WETLAND BUFFER DISTURBANCE

NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37A

3.) LOT AREA: 407,542 Sq. Ft., 9.36 Ac.

4.) S.C.R.D. BOOK 5138, PAGE 73

5.) ZONING: (C) COMMERCIAL, SECONDARY GROUNDWATER RECHARGE

	PROVIDED:
MINIMUM FRONTAGE ~ 125'	642.79'
MINIMUM LOT SIZE ~ 20,000 Sq. Ft.	407,542 Sq.Ft.
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SIDE SETBACK ~ 12'	12'
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MAX. BUILDING HEIGHT: 40'	44'6"-CASE ZONE-2024-0033 APPROVED ON JULY 18, 2024
MAX. LOT COVERAGE: 50%	40.2%
MAX. IMPERVIOUS: 20%	~40.2%-PREVIOUS CUP APPROVED FOR 33.8% (P22-46) NEW APPROVAL REQUIRED.

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8.) SEE PROJECT NOTES SHEET, #2, FOR COMPLETE PROJECT NOTES.

9.) THIS SITE PLAN REFERENCES PREVIOUSLY APPROVED MIXED-USE SITE PLAN "RESIDENCES AND SHOPS AT KELLY BROOK" DOVER SITE-2023-010.

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11.) MAIL DELIVERY IS PROPOSED INSIDE THE RESIDENTIAL BUILDINGS NEAR THE ENTRY VESTIBULE AND TO THE OFFICE OF THE LODGING BUILDING.

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

SITE PLAN WEST
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 30 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

STATE OF NEW HAMPSHIRE – KENNETH A. BERRY No. 14243 LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

LEGEND:

- UTILITY POLE/GUY WIRE
- TEST PIT
- TEMPORARY BENCHMARK (T.B.M.)
- E101 / E6 — DETAIL SHEET / DETAIL
- POORLY DRAINED JURISDICTIONAL WETLAND
- WETLAND BUFFER
- 176 — CONTOUR MINOR, EXISTING
- 175 — CONTOUR MAJOR, EXISTING
- P176 — CONTOUR MINOR, PROPOSED
- P175 — CONTOUR MAJOR, PROPOSED
- BUILDING SETBACK LINE
- TREELINE
- ROAD CENTERLINE
- SHOULDER
- PAVEMENT SEAM
- GUARD RAIL
- DRAIN CULVERT W/ FLARED END SECTION (F.E.S.)
- E175.31 — EXISTING SPOT GRADE
- F175.31 — PROPOSED SPOT GRADE
- FLOW ARROW
- BITUMINOUS CONCRETE
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- BERM
- RETAINING WALL
- STORMTECH CHAMBERS/ISOLATOR ROW
- LIMIT OF STORMTECH CHAMBER STONE/GENERAL STONE
- DRAIN MANHOLE W/STRUCTURE
- CATCH BASIN W/ STRUCTURE
- STORMWATER BMP OUTLET STRUCTURE
- PREVIOUSLY APPROVED WETLAND BUFFER DISTURBANCE

GRADING PLANS TABLE OF CONTENTS:

SHEET #12: OVERVIEW GRADING & DRAINAGE PLAN
SHEET #13: P&P TIBETAN DRIVE 0+00–4+00
SHEET #14: P&P TIBETAN DRIVE 4+00–7+00
SHEET #15: P&P TIBETAN DRIVE 7+00–END
SHEET #16: P&P BUILDING "A" REAR 20+00–24+00
SHEET #17: P&P BUILDINGS "A" & "B" FRONT 24+00–END
SHEET #18: P&P WESTERN PARKING LOT 30+00–END
SHEETS #19–#26: STORMWATER BMPs #101–#106
SHEETS #27–#28: EROSION & SEDIMENT CONTROL PLAN
SHEETS #46–#47: EROSION & SEDIMENT CONTROL DETAILS E–101–E102
SHEETS #48–#51: CONSTRUCTION DETAILS C–101–C104
SHEETS #52–#54: DRAINAGE CONSTRUCTION DETAILS D–101–D103

NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37–A

3.) THE INTENT OF THIS PLAN IS TO PROVIDE AN OVERVIEW OF GRADING AND DRAINAGE DETAILS IN SUPPORT OF THE SITE PLAN. PRE–EXISTING AND PROPOSED CONTOURS ARE PROVIDED AT 1' INTERVALS WITH DRAINAGE FEATURES AT MORE PRECISE INTERVALS.

4.) SEE EROSION & SEDIMENT CONTROL PLANS FOR DETAILS ON PERIMETER CONTROL (MULCH BERM / FENCE / SILT SOXX). BS&E IS TO PROVIDE ADDITIONAL BENCHMARKS PRIOR TO CONSTRUCTION.

5.) ALL BASINS AND DRAINS ARE PROPOSED WITH NO SUMPS OR HOODS. OUTLET CONTROL STRUCTURES WILL NOT HAVE SUMPS. IF REQUIRED TO BE INSTALLED DURING THE PRE–CASTING PROCESS, THEY ARE TO BE FILLED WITH STONE ON SITE. BASINS ARE TO HAVE NHDOT TYPE "A" FRAMES AND GRATES MADE IN NORTH AMERICA. GRATES ARE TO BE INSTALLED BINDER FLUSH PRIOR TO BASE PAVE. UPON PROJECT COMPLETION FRAMES AND GRATES ARE TO BE CUT AND RIM RAISED TO FINAL PAVEMENT SURFACE. THIS IS TO ENSURE STORMWATER ENTERS THE SYSTEM AS DESIGN DURING THE INTERIM CONSTRUCTION PERIOD.

6.) SEE SHEET #2 FOR GRADING AND DRAINAGE NOTES.

7.) THE PROPOSED PROJECT WILL CONSIST OF TWO PHASES PER CITY OF DOVER CONDITIONS OF VARIANCE APPROVAL. SEE PHASING PLAN FOR ADDITIONAL INFORMATION. SEE PHASING PLAN FOR ENVIRONMENTAL MONITOR REQUIREMENTS.
PHASE 1: ALL INFRASTRUCTURE BESIDES RESIDENTIAL BUILDINGS "B" & "C"
PHASE 2: RESIDENTIAL BUILDINGS "B" & "C"

8.) THIS GRADING PLAN REFERENCES ITEMS PREVIOUSLY APPROVED AND CONSTRUCTED FROM DOVER APPROVED PROJECT "RESIDENCES AND SHOPS AT KELLY BROOK", DOVER #SITE–2023–0010 AND ALTERATION OF TERRAIN PERMIT AoT–2183/AoT–2183–A.

9.) THIS DESIGN ASSUMED THAT THE BUILDING ROOFS ARE GUTTERED TO BE RESPECTIVE DISCHARGE POINTS. GUTTERS TO BE DESIGNED BY OTHERS.

10.) ALL INTERNAL BUILDING PARKING LEVEL SLOPES ARE TO BE LESS THAN 2% IN ALL DIRECTIONS, PROVIDING AN ACCESSIBLE ROUTE FROM THE INTERNAL ACCESSIBLE PARKING SPACES.

11.) THE FINISHED FLOOR ELEVATIONS SHOWN REFLECT THE ELEVATION OF THE PARKING GARAGE ENTRANCES AND ELEVATION OF THE VESTIBULE THRESHOLD. SPOT GRADES WITHIN THE LEVEL 1 PARKING AREA VARY FROM THE SHOWN FINISHED FLOOR ELEVATION BASED INTERNAL SLOPES TO THE PROPOSED TRENCH DRAIN WITHIN EACH BUILDING.

N/F BOSTON & MAINE RAILROAD,
300 WATER STREET, J–910
JACKSONVILLE, FL 32202
TAX MAP G, LOT 5

TAX MAP H, LOT 37–A
SUBJECT PARCEL

N/F PATRICK J CRAGIN TRUSTEE
PATRICK J CRAGIN LIVING REV TRUST
P.O. BOX 250
DOVER, NH 03820
S.C.R.D. BOOK 3497, PAGE 417
TAX MAP H, LOT 38

N/F PATRICK J CRAGIN TRUSTEE
PATRICK J CRAGIN LIVING REV TRUST
P.O. BOX 250
DOVER, NH 03820
S.C.R.D. BOOK 3497, PAGE 417
TAX MAP H, LOT 37B

N/F KNOX MARSH CONDOS,
C/O KATHLEEN GOWDY
251 KNOX MARSH ROAD #9
DOVER, NH 03820
TAX MAP H, LOT 37

N/F NSA OPTIVEST ACQUISITION HOLDINGS LLC
24901 DANA PT HARBOR DRIVE #200
DANA POINT, CA 92629
S.C.R.D. BOOK 4255, PAGE 631
TAX MAP H, LOT 36–B1

HANSON ROAD
DISCONTINUED BY CITY OF DOVER JULY 8, 1998
2 ROD WIDE ACCESS & UTILITY EASEMENT

N.H. ROUTE 155 / KNOX MARSH ROAD

PROPOSED 90 SINGLE OCCUPANCY UNITS BUILDING "C"
GARAGE FF = 99.35
SEE SHEET #15 FOR INTERNAL TRENCH DRAIN DESIGN

PROPOSED 90 SINGLE OCCUPANCY UNITS BUILDING "B"
PARKING FF = 99.00
SEE SHEET #15 FOR INTERNAL TRENCH DRAIN DESIGN

PROPOSED 84 SUITE LODGING UNITS BUILDING "A"
PARKING FF = 98.60
SEE SHEET #16 FOR INTERNAL TRENCH DRAIN DESIGN

TIBETAN DRIVE

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

PLANNING FILE #SITE–XXXX–XXXX

REVISION	DATE	DESCRIPTION

OVERVIEW GRADING & DRAINAGE PLAN
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 – 034

STATE OF NEW HAMPSHIRE — KENNETH A. BERRY No. 14243 LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

NAD83 NH STATE PLANE

MAGNETIC

7.91

STRUCTURES TABLE:

D101 D3 — *PROP. DRAIN MANHOLE #4* (POND D04P)
4'ø STRUCTURE W/ LIFTMATE R-1743-LM RIM
STA: 2+58.25 (Lt. 14.75')
RIM = 98.30 (FLUSH)
INV. IN = 94.45 (12" RCP) (CB #5)
INV. IN = 94.45 (12" RCP) (CB #6)
INV. IN = 94.45 (18" RCP) (CB #4)
INV. OUT = 94.35 (18" RCP) (DET #105)

D101 D5 — *PROP. CATCH BASIN #5* (POND C05P)
4'ø STRUCTURE W/ TYPE "A" GRATE
STA: 2+43.65 (Rt. 15.45')
RIM = 98.25 (FLUSH)
INV. OUT = 94.51 (12" RCP) (DMH #4)

D101 D1 — *PROP. CATCH BASIN #6* (POND C06P)
4'ø STRUCTURE W/ TYPE "A" GRATE
STA: 2+43.65 (Rt. 13.40')
RIM = 98.25 (FLUSH)
INV. OUT = 94.60 (12" RCP) (DMH #4)

COORDINATE W/ MEP PLANS FOR ROOF DRAIN DESIGN BUILDING TO HAVE GUTTERS DESIGNED BY OTHERS

PROPOSED 90 SINGLE OCCUPANCY UNITS BUILDING "B" PARKING FF = 99.00 SEE SHEET #15 FOR INTERNAL TRENCH DRAIN DESIGN

COORDINATE W/ MEP PLANS FOR ROOF DRAIN DESIGN BUILDING TO HAVE GUTTERS DESIGNED BY OTHERS

PROPOSED 90 SINGLE OCCUPANCY UNITS BUILDING "C" GARAGE FF = 99.35 SEE SHEET #16 FOR INTERNAL TRENCH DRAIN DESIGN

PROPOSED 84 SUITE LODGING UNITS BUILDING "A" PARKING FF = 98.60 SEE SHEET #16 FOR INTERNAL TRENCH DRAIN DESIGN

COORDINATE W/ MEP PLANS FOR ROOF DRAIN DESIGN BUILDING TO HAVE GUTTERS DESIGNED BY OTHERS

N.H. ROUTE 155 / KNOX MARSH ROAD

TIBETAN DRIVE

GRAVEL WETLAND #104 SEE P-104 FOR DETAILS

GRAVEL WETLAND #101 SEE P-101 FOR DETAILS

PROP. CATCH BASIN #4 (POND C04P)

PROP. DRAIN MANHOLE #4 (POND D04P)

PROP. CATCH BASIN #5 (POND C05P)

PROP. CATCH BASIN #6 (POND C06P)

PROP. OUTLET STRUCTURE #105

DETENTION POND #105 SEE P-105 FOR DETAILS

PROP. SEWER MANHOLE #3

PROP. SEWER MANHOLE #4

PROP. SEWER MANHOLE #5

PROP. SEWER MANHOLE #6

SHEET #14 · SHEET #15 · SHEET #16 · SHEET #17

CL LOW POINT STA: 0+45.00 ELEV: 93.97

CL HIGH POINT STA: 1+90.00 ELEV: 98.89

CL LOW POINT STA: 2+42.75 ELEV: 98.54

CL HIGH POINT STA: 3+02.50 ELEV: 98.91

THE CENTERLINE STARTS AT THE EXISTING SEWER LINE

GRADE ENTRANCE TO ENSURE RUNOFF FLOWS TO RESPECTIVE RIP-RAP ENTRANCE

RIP-RAP LINED ENTRANCE D50 = 0.5' T = 1.2'

4:1 SIDE SLOPES STABILIZE W/ VEGETATION

SEDIMENT FOREBAY

LEVEL 2-4 CANTILEVER

PORCH OVERHANG

LIMIT OF LEVEL 1

EXTERNAL COLUMN (TYP.)

1:12 RAMP (TYP.)

5' AT GRADE BITUMINOUS SIDEWALK

5' RAISED BITUMINOUS SIDEWALK

V.C.C. TIP DOWN

V.G.C. TIP DOWN AT SIDEWALK

PAVEMENT SEAM

EGRESS DOOR

PARKING GARAGE ENTRANCE

TEST PIT #105

12" RCP INV. IN = 94.51 INV. OUT = 94.45 L = 10.75', S = 0.006'/-

18" RCP INV. IN = 94.61 INV. OUT = 94.45 L = 32.00', S = 0.005'/-

12" RCP INV. IN = 94.60 INV. OUT = 94.45 L = 28.50', S = 0.005'/-

18" RCP INV. IN = 94.35 INV. OUT = 93.95 L = 78.00', S = 0.005'/- F.E.S. ON OUTLET

4:1 SIDE SLOPES STABILIZE W/ VEGETATION

SCOUR HOLE

3/4" REBAR ~FND~ +.7

4" BERM ELEV: 97.00

SEE P-105 FOR OUTLET PROTECTION

18" HDPE N-12 INV. IN = 93.75 INV. OUT = 93.22 L = 103.00', S = 0.005'/-

GUARD RAIL (TYP.)

MATCH LINE & POINT (TYP.)

1.5:1 FILL SLOPE LINE W/ RECB NAG BIONET SC150 BN

BOUNDARY LINE TO BE STAKED OUT

3/4" REBAR ~FND~ +.6

LLS 661 IRON BOUND ~FND~ -.6 DESTROYED

LLS 211 IRON BOUND ~FND~ +.5

5' RAISED BITUMINOUS SIDEWALK

SEDIMENT FOREBAY

E.O.P.

E.O.P.

E.E.S.

S.C.C.

PLAN VIEW TIBETAN DRIVE 0+00 TO 4+00

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37-A

3.) THE INTENT OF THIS PLAN IS TO PROVIDE DETAIL OF GRADING AND DRAINAGE DETAILS IN SUPPORT OF THE SITE PLAN. PRE-EXISTING AND PROPOSED CONTOURS ARE PROVIDED AT 1' INTERVALS WITH DRAINAGE FEATURES AT MORE PRECISE INTERVALS.

4.) SEE EROSION & SEDIMENT CONTROL PLANS FOR DETAILS ON PERIMETER CONTROL (MULCH BERM / FENCE / SILT SOXX). BS&E IS TO PROVIDE ADDITIONAL BENCHMARKS PRIOR TO CONSTRUCTION.

5.) ALL BASINS AND DRAINS ARE PROPOSED WITH NO SUMPS OR HOODS. OUTLET CONTROL STRUCTURES WILL NOT HAVE SUMPS. IF REQUIRED TO BE INSTALLED DURING THE PRE-CASTING PROCESS, THEY ARE TO BE FILLED WITH STONE ON SITE. BASINS ARE TO HAVE NHDOT TYPE "A" FRAMES AND GRATES MADE IN NORTH AMERICA. GRATES ARE TO BE INSTALLED BINDER FLUSH PRIOR TO BASE PAVE. UPON PROJECT COMPLETION FRAMES AND GRATES ARE TO BE CUT AND RIM RAISED TO FINAL PAVEMENT SURFACE. THIS IS TO ENSURE STORMWATER ENTERS THE SYSTEM AS DESIGN DURING THE INTERIM CONSTRUCTION PERIOD.

6.) SEE SHEET #2 FOR GRADING AND DRAINAGE NOTES.

7.) THE PROPOSED PROJECT WILL CONSIST OF TWO PHASES PER CITY OF DOVER CONDITIONS OF VARIANCE APPROVAL. SEE PHASING PLAN FOR ADDITIONAL INFORMATION. SEE PHASING PLAN FOR ENVIRONMENTAL MONITOR REQUIREMENTS.
PHASE 1: ALL INFRASTRUCTURE BESIDES RESIDENTIAL BUILDINGS "B" & "C"
PHASE 2: RESIDENTIAL BUILDINGS "B" & "C"

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9.) THIS DESIGN ASSUMED THAT THE BUILDING ROOFS ARE GUTTERED TO BE RESPECTIVE DISCHARGE POINTS. GUTTERS TO BE DESIGNED BY OTHERS.

10.) ALL INTERNAL BUILDING PARKING LEVEL SLOPES ARE TO BE LESS THAN 2% IN ALL DIRECTIONS, PROVIDING AN ACCESSIBLE ROUTE FROM THE INTERNAL ACCESSIBLE PARKING SPACES.

11.) THE FINISHED FLOOR ELEVATIONS SHOWN REFLECT THE ELEVATION OF THE PARKING GARAGE ENTRANCES AND ELEVATION OF THE VESTIBULE THRESHOLD. SPOT GRADES WITHIN THE LEVEL 1 PARKING AREA VARY FROM THE SHOWN FINISHED FLOOR ELEVATION BASED INTERNAL SLOPES TO THE PROPOSED TRENCH DRAIN WITHIN EACH BUILDING.

LEGEND:

- UTILITY POLE/GUY WIRE
- TEST PIT
- TEMPORARY BENCHMARK (T.B.M.)
- E101 / E6 — DETAIL SHEET / DETAIL
- POORLY DRAINED JURISDICTIONAL WETLAND
- WETLAND BUFFER
- 176 — CONTOUR MINOR, EXISTING
- 175 — CONTOUR MAJOR, EXISTING
- F176 — CONTOUR MINOR, PROPOSED
- F175 — CONTOUR MAJOR, PROPOSED
- BUILDING SETBACK LINE
- TREELINE
- ROAD CENTERLINE
- SHOULDER
- PAVEMENT SEAM
- GUARD RAIL
- D — DRAIN CULVERT W/ FLARED END SECTION (F.E.S.)
- E175.31 — EXISTING SPOT GRADE
- F175.31 — PROPOSED SPOT GRADE
- FLOW ARROW
- BITUMINOUS CONCRETE
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- BERM
- RETAINING WALL
- STORMTECH CHAMBERS/ISOLATOR ROW
- LIMIT OF STORMTECH CHAMBER STONE/GENERAL STONE
- DRAIN MANHOLE W/STRUCTURE
- CATCH BASIN W/ STRUCTURE
- STORMWATER BMP OUTLET STRUCTURE

GRAPHIC SCALE

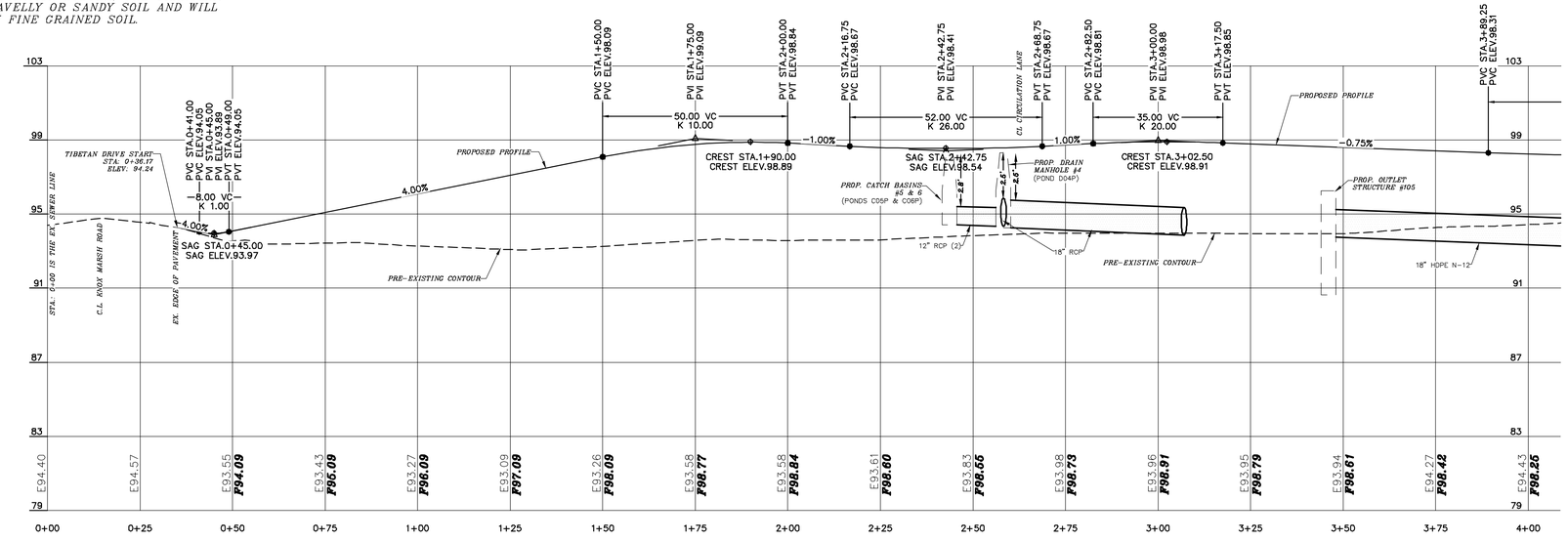
20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

ROAD NOTE:

GRANULAR FILL REQUIRED WITHIN 12" OF SELECT MATERIALS. COMPACT ALL ROAD FILL MATERIALS IN 6" LIFTS. UNDER THE UNIFIED SOIL CLASSIFICATION SYSTEM, THE GRANULAR FILL BE GRAVELLY OR SANDY SOIL AND WILL NOT BE ANY FINE GRAINED SOIL.

PROFILE VIEW TIBETAN DRIVE 0+00 TO 4+00



PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

PLAN AND PROFILE TIBETAN DRIVE 0+00 TO 4+00
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

STATE OF NEW HAMPSHIRE — KENNETH A. BERRY No. 14243 LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

STRUCTURES TABLE:

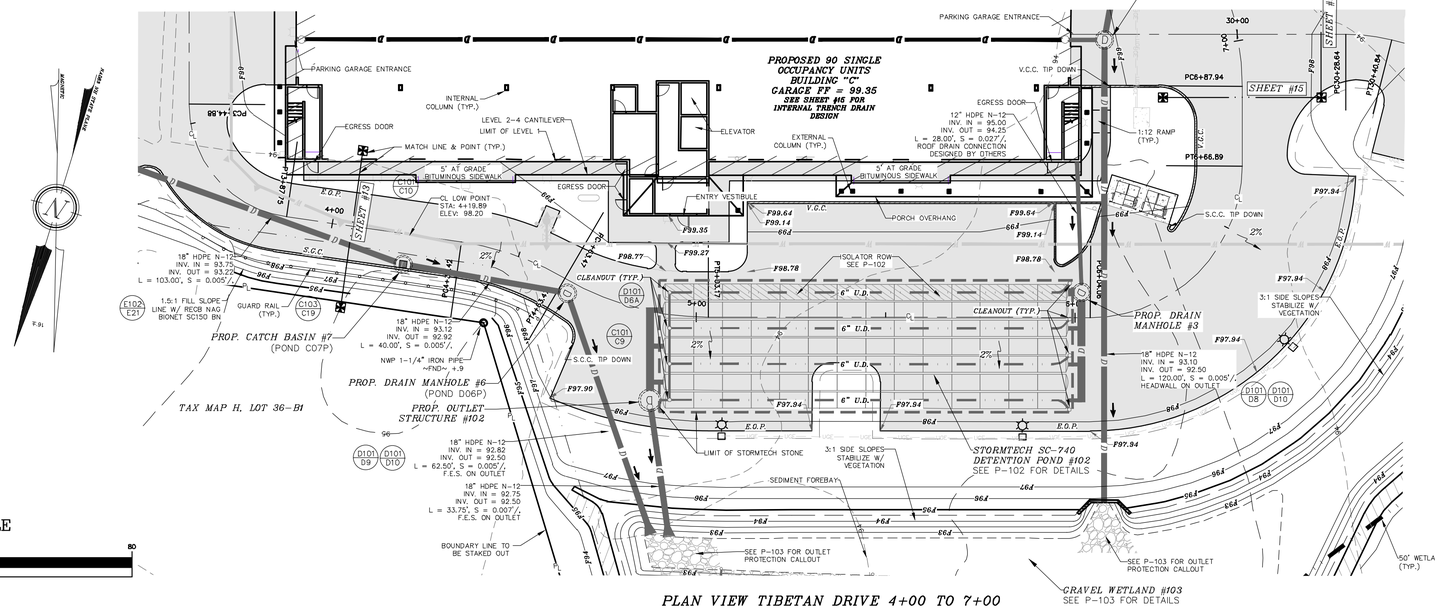
PROP. DRAIN MANHOLE #3
4'ø STRUCTURE W/ LIFTMATE R-1743-LM RIM (D101 D3)
STA: 6+01.75 (LT. 6.65')
RIM = 98.68 (FLUSH)
INV. IN = 94.25 (12" HDPE N-12) (BUILDING C ROOF) (D101 D5)
INV. OUT = 93.25 (24" HDPE N-12) (2) (P-102)
3" SUMP = 90.25

PROP. OUTLET STRUCTURE #102 (POND 102P) (P102 P11)
5'ø STRUCTURE W/ LIFTMATE R-1743-LM RIM
STA: 4+91.35 (RT. 23.10')
RIM = 98.10 (FLUSH)
W/ INTERNAL 18" STACK
STACK TOP = 95.75
INV. IN = 92.75 (2" ORIFICE AT BASE OF STACK)
INV. IN = 92.75 (6" HDPE UNDERDRAIN)
INV. IN = 93.36 (15" HDPE N-12) (MANIFOLD)
INV. IN = 93.25 (24" HDPE N-12) (MANIFOLD)
INV. IN = 92.75 (6" HDPE N-12) (U.D.)
INV. OUT = 92.75 (18" HDPE N-12) (GW #103)
6" SUMP FILLED W/ 1 1/2" STONE

PROP. CATCH BASIN #7 (POND C07P) (D101 D1)
4'ø STRUCTURE W/ TYPE "A" GRATE (D101 D2)
STA: 4+20.00 (RT. 8.35')
RIM = 98.05 (FLUSH)
INV. IN = 93.22 (18" HDPE N-12) (OS #105)
INV. OUT = 93.12 (18" HDPE N-12) (CB #7)

PROP. DRAIN MANHOLE #6 (POND D06P)
4'ø STRUCTURE W/ LIFTMATE R-1743-LM RIM
STA: 4+66.00 (Rt. 3.10')
RIM = 98.68 (FLUSH)
INV. IN = 92.92 (18" HDPE N-12) (CB #7)
INV. OUT = 92.82 (18" HDPE N-12) (P-103)

COORDINATE W/ MEP PLANS FOR ROOF DRAIN DESIGN BUILDING TO HAVE GUTTERS DESIGNED BY OTHERS



PLAN VIEW TIBETAN DRIVE 4+00 TO 7+00

GRAPHIC SCALE

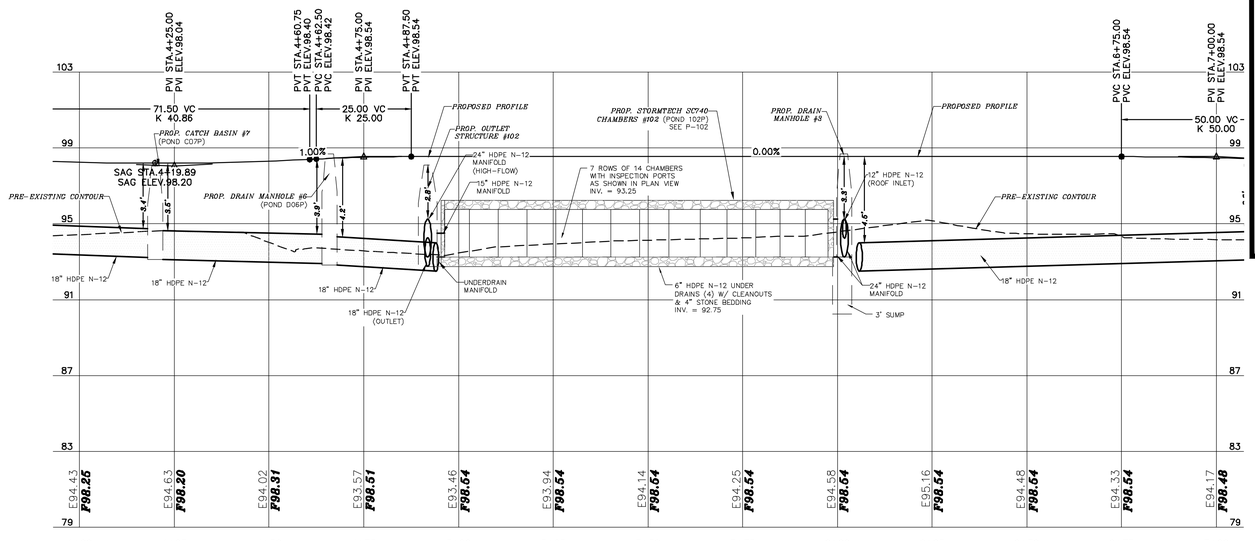
20 0 10 20 40 80

(IN FEET)
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ROAD NOTE:

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PROFILE VIEW TIBETAN DRIVE 4+00 TO 7+00



NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37-A

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4.) SEE EROSION & SEDIMENT CONTROL PLANS FOR DETAILS ON PERIMETER CONTROL (MULCH BERM / FENCE / SILT SOXX). BS&E IS TO PROVIDE ADDITIONAL BENCHMARKS PRIOR TO CONSTRUCTION.

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LEGEND:

- UTILITY POLE/GUY WIRE
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- TEMPORARY BENCHMARK (T.B.M.)
- E101 / E6 — DETAIL SHEET / DETAIL
- POORLY DRAINED JURISDICTIONAL WETLAND
- WETLAND BUFFER
- 176 — CONTOUR MINOR, EXISTING
- 175 — CONTOUR MAJOR, EXISTING
- F176 — CONTOUR MINOR, PROPOSED
- F175 — CONTOUR MAJOR, PROPOSED
- BUILDING SETBACK LINE
- TREELINE
- ROAD CENTERLINE
- SHOULDER
- PAVEMENT SEAM
- GUARD RAIL
- D — DRAIN CULVERT W/ FLARED END SECTION (F.E.S.)
- E175.31 — EXISTING SPOT GRADE
- F175.31 — PROPOSED SPOT GRADE
- FLOW ARROW
- BITUMINOUS CONCRETE
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- BERM
- RETAINING WALL
- STORMTECH CHAMBERS/ISOLATOR ROW
- LIMIT OF STORMTECH CHAMBER STONE/GENERAL STONE
- DRAIN MANHOLE W/STRUCTURE
- CATCH BASIN W/ STRUCTURE
- STORMWATER BMP OUTLET STRUCTURE

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

PLAN AND PROFILE TIBETAN DRIVE 4+00 TO 7+00
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

STATE OF NEW HAMPSHIRE — KENNETH A. BERRY No. 14243 LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

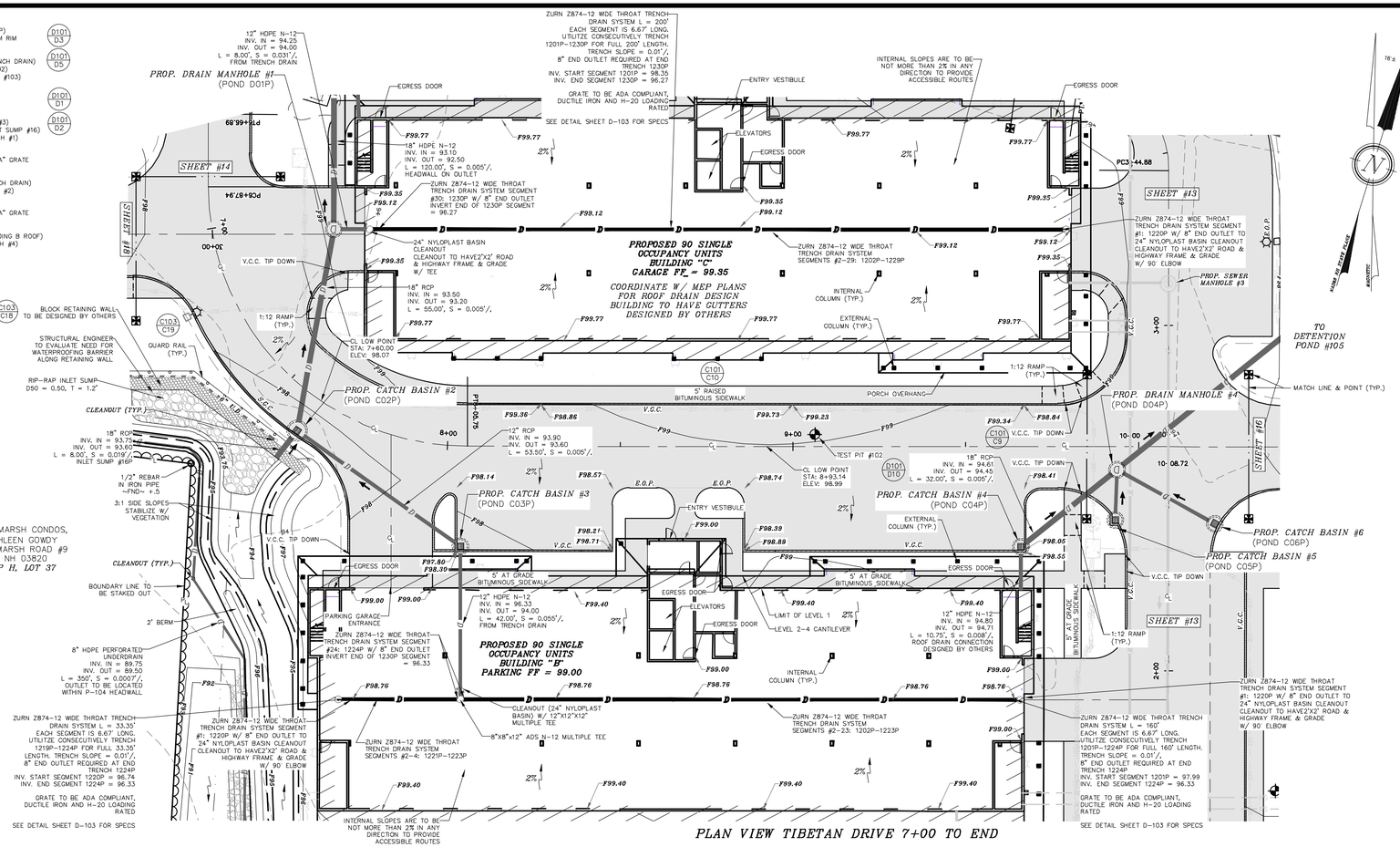
STRUCTURES TABLE:

PROP. DRAIN MANHOLE #1 (POND D01P) — D101 D3
4'ø STRUCTURE W/ UFTMATE R-1743-LM RIM
STA: 7+10.90 (Rt. 2.65')
RIM = 99.15 (FLUSH)
INV. IN = 94.90 (12" HDPE N-12) (TRENCH DRAIN)
INV. IN = 93.20 (18" HDPE N-12) (CB #2)
INV. OUT = 93.10 (18" HDPE N-12) (GW #103)

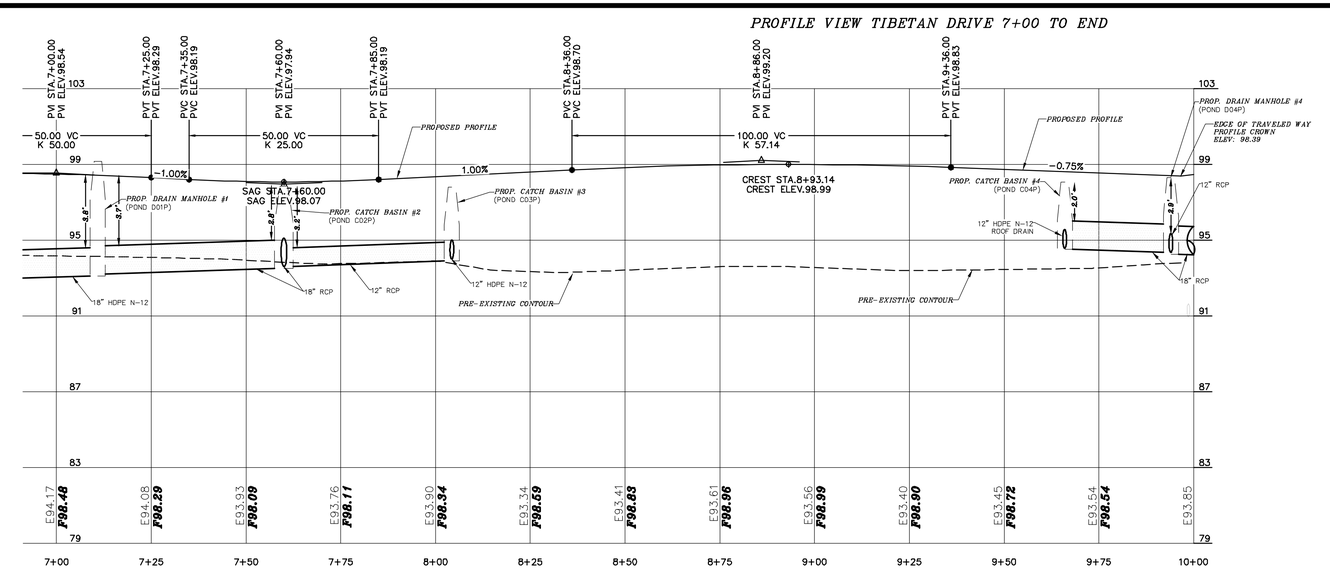
PROP. CATCH BASIN #2 (POND C02P) — D101 D1
5'ø STRUCTURE W/ TYPE "A" GRATE
STA: 7+60.00 (Rt. 11.00')
RIM = 97.85 (FLUSH)
INV. IN = 93.60 (12" HDPE N-12) (CB #3)
INV. IN = 93.60 (18" HDPE N-12) (INLET SUMP #16) — D101 D2
INV. OUT = 93.50 (18" HDPE N-12) (DMH #1)

PROP. CATCH BASIN #3 (POND C03P)
4'ø STRUCTURE W/ FLAT TOP & TYPE "A" GRATE
STA: 8+04.30 (Rt. 29.00')
RIM = 97.80 (FLUSH)
INV. IN = 94.00 (8" HDPE N-12) (TRENCH DRAIN)
INV. OUT = 93.90 (12" HDPE N-12) (CB #2)

PROP. CATCH BASIN #4 (POND C04P)
4'ø STRUCTURE W/ FLAT TOP & TYPE "A" GRATE
STA: 9+66.00 (Rt. 29.00')
RIM = 98.05 (FLUSH)
INV. IN = 94.71 (12" HDPE N-12) (BUILDING B ROOF)
INV. OUT = 94.61 (18" HDPE N-12) (DMH #4)



PLAN VIEW TIBETAN DRIVE 7+00 TO END



NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37-A

3.) THE INTENT OF THIS PLAN IS TO PROVIDE DETAIL OF GRADING AND DRAINAGE DETAILS IN SUPPORT OF THE SITE PLAN. PRE-EXISTING AND PROPOSED CONTOURS ARE PROVIDED AT 1' INTERVALS WITH DRAINAGE FEATURES AT MORE PRECISE INTERVALS.

4.) SEE EROSION & SEDIMENT CONTROL PLANS FOR DETAILS ON PERIMETER CONTROL (MULCH BERM / FENCE / SILT SOXX). BS&E IS TO PROVIDE ADDITIONAL BENCHMARKS PRIOR TO CONSTRUCTION.

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6.) SEE SHEET #2 FOR GRADING AND DRAINAGE NOTES.

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- TEMPORARY BENCHMARK (T.B.M.)
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- WETLAND BUFFER
- 176 — CONTOUR MINOR, EXISTING
- 175 — CONTOUR MAJOR, EXISTING
- F176 — CONTOUR MINOR, PROPOSED
- F175 — CONTOUR MAJOR, PROPOSED
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- E175.31 — EXISTING SPOT GRADE
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- BERM
- RETAINING WALL
- STORMTECH CHAMBERS/ISOLATOR ROW
- LIMIT OF STORMTECH CHAMBER STONE/GENERAL STONE
- DRAIN MANHOLE W/STRUCTURE
- CATCH BASIN W/ STRUCTURE
- STORMWATER BMP OUTLET STRUCTURE

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

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PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

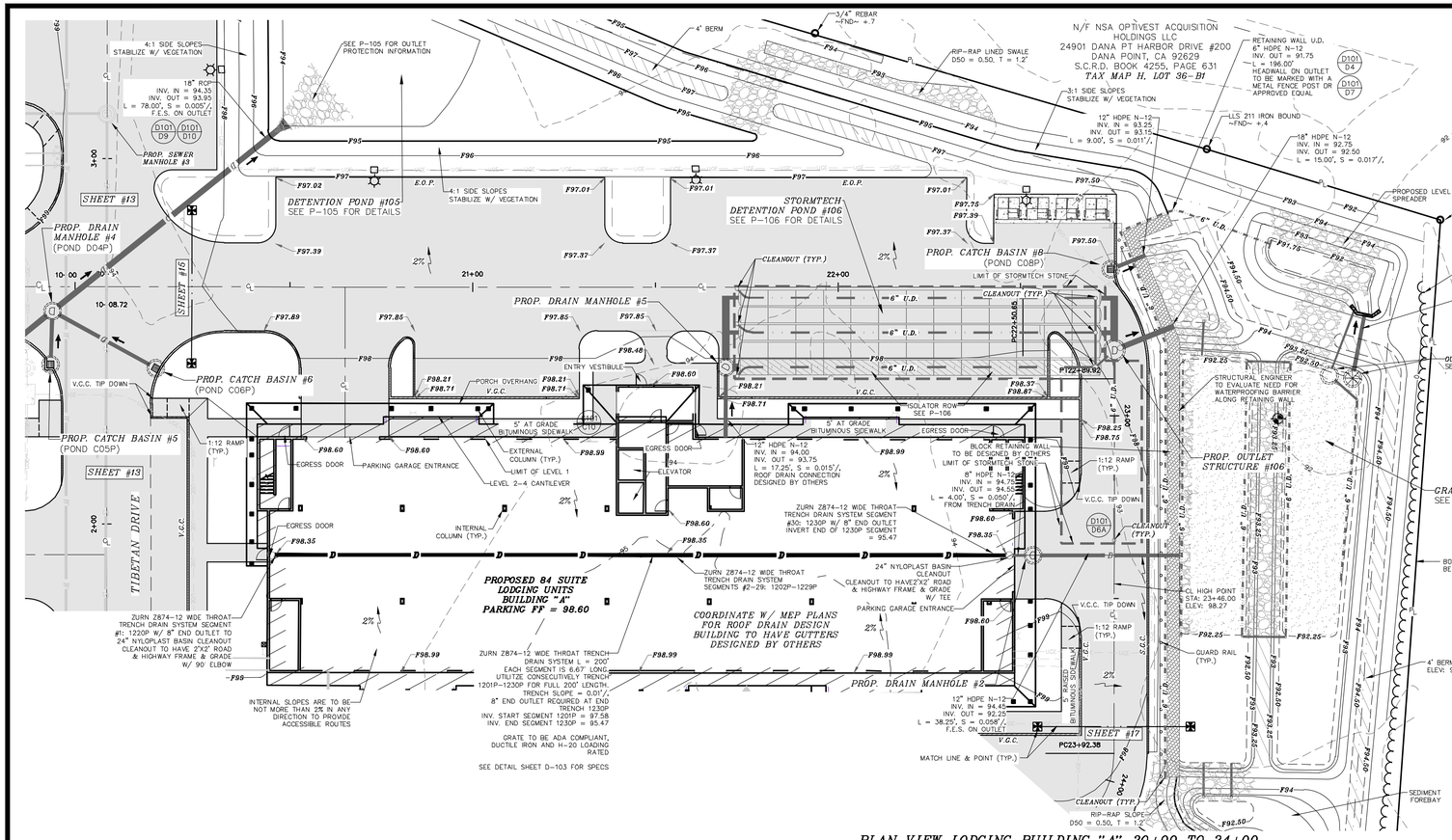
PLAN AND PROFILE TIBETAN DRIVE 7+00 TO END
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37-A

BERRY & SURVEYING ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

STATE OF NEW HAMPSHIRE — KENNETH A. BERRY No. 14243 LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION



STRUCTURES TABLE:

D101 D1 / D101 D2 — *PROP. CATCH BASIN #8* (POND C08P)
4'ø STRUCTURE W/ TYPE "A" GRATE
STA: 22+67.00 (Lt. 12.85')
RIM = 97.50 (FLUSH)
INV. OUT = 93.25 (12" HDPE N-12) (GW #101)

D101 D3 / D101 D5 — *PROP. DRAIN MANHOLE #2*
4'ø STRUCTURE W/ LIFTMATE R-1743-LM COVER AND FRAME
STA: 23+38.15 (Rt. 22.25')
RIM = 98.70 (FLUSH)
INV. IN = 94.55 (8" HDPE N-12) (TRENCH DRAIN)
INV. OUT = 94.45 (12" HDPE N-12) (GW #101)

PROP. DRAIN MANHOLE #5
4'ø STRUCTURE W/ LIFTMATE R-1743-LM RIM
STA: 21+69.305 (Rt. 21.90')
RIM = 98.05 (FLUSH)
INV. IN = 93.75 (12" HDPE N-12) (BUILDING A ROOF)
INV. OUT = 93.25 (24" HDPE N-12) (2) (P-106)
3' SUMP = 90.25

P106 P11 — *PROP. OUTLET STRUCTURE #106*
5'ø STRUCTURE W/ LIFTMATE R-1743-LM RIM
STA: 22+82.30 (Lt. 1.20')
RIM = 97.86 (FLUSH)
W/ INTERNAL 18" STACK
STACK TOP = 95.50
INV. IN = 92.75 (2" ORIFICE AT BASE OF STACK)
INV. IN = 93.36 (15" HDPE N-12) (MANIFOLD)
INV. IN = 93.05 (24" HDPE N-12) (MANIFOLD)
INV. IN = 92.75 (6" HDPE N-12) (2 U.D.)
INV. OUT = 92.75 (18" HDPE N-12) (GW #101)
6" SUMP FILLED W/ 1 1/2" STONE

NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37-A

3.) THE INTENT OF THIS PLAN IS TO PROVIDE DETAIL OF GRADING AND DRAINAGE DETAILS IN SUPPORT OF THE SITE PLAN. PRE-EXISTING AND PROPOSED CONTOURS ARE PROVIDED AT 1' INTERVALS WITH DRAINAGE FEATURES AT MORE PRECISE INTERVALS.

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6.) SEE SHEET #2 FOR GRADING AND DRAINAGE NOTES.

7.) THE PROPOSED PROJECT WILL CONSIST OF TWO PHASES PER CITY OF DOVER CONDITIONS OF VARIANCE APPROVAL. SEE PHASING PLAN FOR ADDITIONAL INFORMATION. SEE PHASING PLAN FOR ENVIRONMENTAL MONITOR REQUIREMENTS.
PHASE 1: ALL INFRASTRUCTURE BESIDES RESIDENTIAL BUILDINGS "B" & "C"
PHASE 2: RESIDENTIAL BUILDINGS "B" & "C"

8.) THIS GRADING PLAN REFERENCES ITEMS PREVIOUSLY APPROVED AND CONSTRUCTED FROM DOVER APPROVED PROJECT "RESIDENCES AND SHOPS AT KELLY BROOK", DOVER #SITE-2023-0010 AND ALTERATION OF TERRAIN PERMIT AoT-2183/AoT-2183-A.

9.) THIS DESIGN ASSUMED THAT THE BUILDING ROOFS ARE GUTTERED TO BE RESPECTIVE DISCHARGE POINTS. GUTTERS TO BE DESIGNED BY OTHERS.

10.) ALL INTERNAL BUILDING PARKING LEVEL SLOPES ARE TO BE LESS THAN 2% IN ALL DIRECTIONS, PROVIDING AN ACCESSIBLE ROUTE FROM THE INTERNAL ACCESSIBLE PARKING SPACES.

11.) THE FINISHED FLOOR ELEVATIONS SHOWN REFLECT THE ELEVATION OF THE PARKING GARAGE ENTRANCES AND ELEVATION OF THE VESTIBULE THRESHOLD. SPOT GRADES WITHIN THE LEVEL 1 PARKING AREA VARY FROM THE SHOWN FINISHED FLOOR ELEVATION BASED INTERNAL SLOPES TO THE PROPOSED TRENCH DRAIN WITHIN EACH BUILDING.

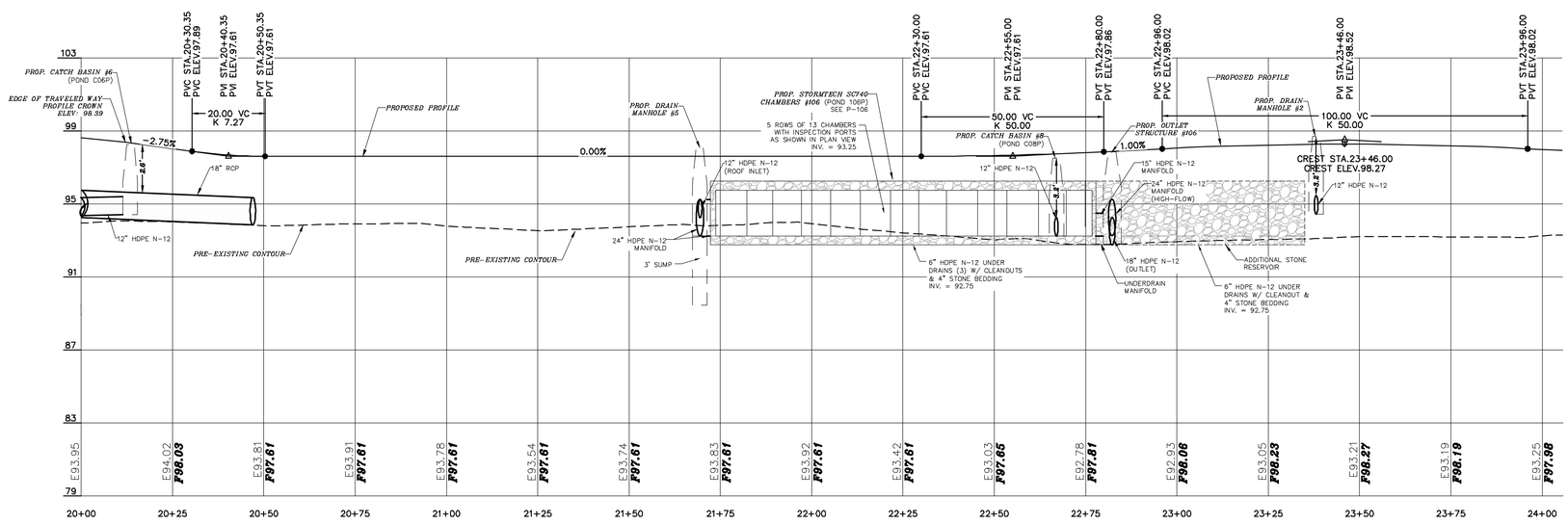
LEGEND:

- UTILITY POLE/GUY WIRE
- TEST PIT
- TEMPORARY BENCHMARK (T.B.M.)
- E101 / E6 — DETAIL SHEET / DETAIL
- POORLY DRAINED JURISDICTIONAL WETLAND
- WETLAND BUFFER
- 176 — CONTOUR MINOR, EXISTING
- 175 — CONTOUR MAJOR, EXISTING
- F96 — CONTOUR MINOR, PROPOSED
- F175 — CONTOUR MAJOR, PROPOSED
- BUILDING SETBACK LINE
- TREELINE
- ROAD CENTERLINE
- SHOULDER
- PAVEMENT SEAM
- GUARD RAIL
- D — DRAIN CULVERT W/ FLARED END SECTION (F.E.S.)
- E175.31 / F175.31 — EXISTING SPOT GRADE / PROPOSED SPOT GRADE / FLOW ARROW
- BITUMINOUS CONCRETE
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- BERM
- RETAINING WALL
- STORMTECH CHAMBERS/ISOLATOR ROW
- LIMIT OF STORMTECH CHAMBER STONE/GENERAL STONE
- DRAIN MANHOLE W/STRUCTURE
- CATCH BASIN W/ STRUCTURE
- STORMWATER BMP OUTLET STRUCTURE

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

PLAN VIEW LODGING BUILDING "A" 20+00 TO 24+00

PROFILE VIEW LODGING BUILDING "A" 20+00 TO 24+00



GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

ROAD NOTE:

GRANULAR FILL REQUIRED WITHIN 12" OF SELECT MATERIALS. COMPACT ALL ROAD FILL MATERIALS IN 6" LIFTS. UNDER THE UNIFIED SOILL CLASSIFICATION SYSTEM, THE GRANULAR FILL BE GRAVELLY OR SANDY SOIL AND WILL NOT BE ANY FINE GRAINED SOIL.

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

PLAN AND PROFILE LODGING BUILDING "A" 20+00 TO 24+00
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37-A

3.) THE INTENT OF THIS PLAN IS TO PROVIDE DETAIL OF GRADING AND DRAINAGE DETAILS IN SUPPORT OF THE SITE PLAN. PRE-EXISTING AND PROPOSED CONTOURS ARE PROVIDED AT 1' INTERVALS WITH DRAINAGE FEATURES AT MORE PRECISE INTERVALS.

4.) SEE EROSION & SEDIMENT CONTROL PLANS FOR DETAILS ON PERIMETER CONTROL (MULCH BERM / FENCE / SILT SOXX). BS&E IS TO PROVIDE ADDITIONAL BENCHMARKS PRIOR TO CONSTRUCTION.

5.) ALL BASINS AND DRAINS ARE PROPOSED WITH NO SUMPS OR HOODS. OUTLET CONTROL STRUCTURES WILL NOT HAVE SUMPS. IF REQUIRED TO BE INSTALLED DURING THE PRE-CASTING PROCESS, THEY ARE TO BE FILLED WITH STONE ON SITE. BASINS ARE TO HAVE NHDOT TYPE "A" FRAMES AND GRATES MADE IN NORTH AMERICA. GRATES ARE TO BE INSTALLED BINDER FLUSH PRIOR TO BASE PAVE. UPON PROJECT COMPLETION FRAMES AND GRATES ARE TO BE CUT AND RIM RAISED TO FINAL PAVEMENT SURFACE. THIS IS TO ENSURE STORMWATER ENTERS THE SYSTEM AS DESIGN DURING THE INTERIM CONSTRUCTION PERIOD.

6.) SEE SHEET #2 FOR GRADING AND DRAINAGE NOTES.

7.) THE PROPOSED PROJECT WILL CONSIST OF TWO PHASES PER CITY OF DOVER CONDITIONS OF VARIANCE APPROVAL. SEE PHASING PLAN FOR ADDITIONAL INFORMATION. SEE PHASING PLAN FOR ENVIRONMENTAL MONITOR REQUIREMENTS.
PHASE 1: ALL INFRASTRUCTURE BESIDES RESIDENTIAL BUILDINGS "B" & "C"
PHASE 2: RESIDENTIAL BUILDINGS "B" & "C"

N.H. ROUTE 155 / KNOX MARSH ROAD

GRAVEL WETLAND #101
SEE P-101 FOR DETAILS

GRAVEL WETLAND #104
SEE P-104 FOR DETAILS

4' BERM
ELEV: 94.50

5' RAISED BITUMINOUS SIDEWALK

PROPOSED PULL POLES

PROP. SEWER MANHOLE #7

T.B.M. PKSET
ELEV.: 95.25

PSNH
303/55o

LLS 661 IRON BOUND
=FND= -.6
DESTROYED

V.G.C. TIP DOWN AT SIDEWALK

PROPOSED 4:1 SIDE SLOPES

SEDIMENT FOREBAY

GRAVEL WETLAND CELL #1

GRAVEL WETLAND CELL #2

OUTLET STRUCTURE #104A & B
SEE P-104 FOR DETAILS

8" HDPE PERFORATED UNDERDRAIN
INV. IN = 89.75
INV. OUT = 89.50
L = 350', S = 0.0007 +/-
OUTLET TO BE LOCATED WITHIN P-104 HEADWALL

CLEANOUT (TYP.)

S.G.C. TIPDOWN

TEST PIT #104A

TEST PIT #104

6" U.D.

V.C.C. TIP DOWN

1:12 RAMP (TYP.)

RIP-RAP LINED ENTRANCE
D50 = 0.5'
T = 1.2'

4:1 SIDE SLOPES STABILIZE W/ VEGETATION

GRADE ENTRANCE TO ENSURE RUNOFF FLOWS TO RESPECTIVE RIP-RAP ENTRANCE

PROP. SEWER MANHOLE #6

PROP. SEWER MANHOLE #4

PROP. SEWER MANHOLE #5

CL HIGH POINT
STA: 27+57.05
ELEV: 97.26

BLOCK RETAINING WALL TO BE DESIGNED BY OTHERS

STRUCTURAL ENGINEER TO EVALUATE NEED FOR WATERPROOFING BARRIER ALONG RETAINING WALL

RETAINING WALL U.D.
6" HDPE N-12
INV. OUT = 90.00
L = 233.00'
HEADWALL ON OUTLET

PAVE 1' OFF CURBING TO PROVIDE PAVED TRAVEL PATH FOR STORMWATER RUNOFF THROUGH LANDSCAPED ISLANDS

GUARD RAIL (TYP.)

MATCH LINE & POINT (TYP.)

SHEET #13

SHEET #16

6' RAISED BITUMINOUS SIDEWALK

PORCH OVERHANG

LEVEL 2-4 CANTILEVER

EXTERNAL COLUMN (TYP.)

LIMIT OF LEVEL 1

PROPOSED 84 SUITE LODGING UNITS BUILDING "A" PARKING FF = 98.60
SEE SHEET #6 FOR INTERNAL TRENCH DRAIN DESIGN

PROPOSED 90 SINGLE OCCUPANCY UNITS BUILDING "B" PARKING FF = 99.00
SEE SHEET #6 FOR INTERNAL TRENCH DRAIN DESIGN

COORDINATE W/ MEP PLANS FOR ROOF DRAIN DESIGN BUILDING TO HAVE GUTTERS DESIGNED BY OTHERS

COORDINATE W/ MEP PLANS FOR ROOF DRAIN DESIGN BUILDING TO HAVE GUTTERS DESIGNED BY OTHERS

PLAN VIEW LODGING BUILDING "A" 24+00 TO END & FRONT RESIDENTIAL BUILDING "B"

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

PROFILE VIEW LODGING BUILDING "A" 24+00 TO END & FRONT RESIDENTIAL BUILDING "B"

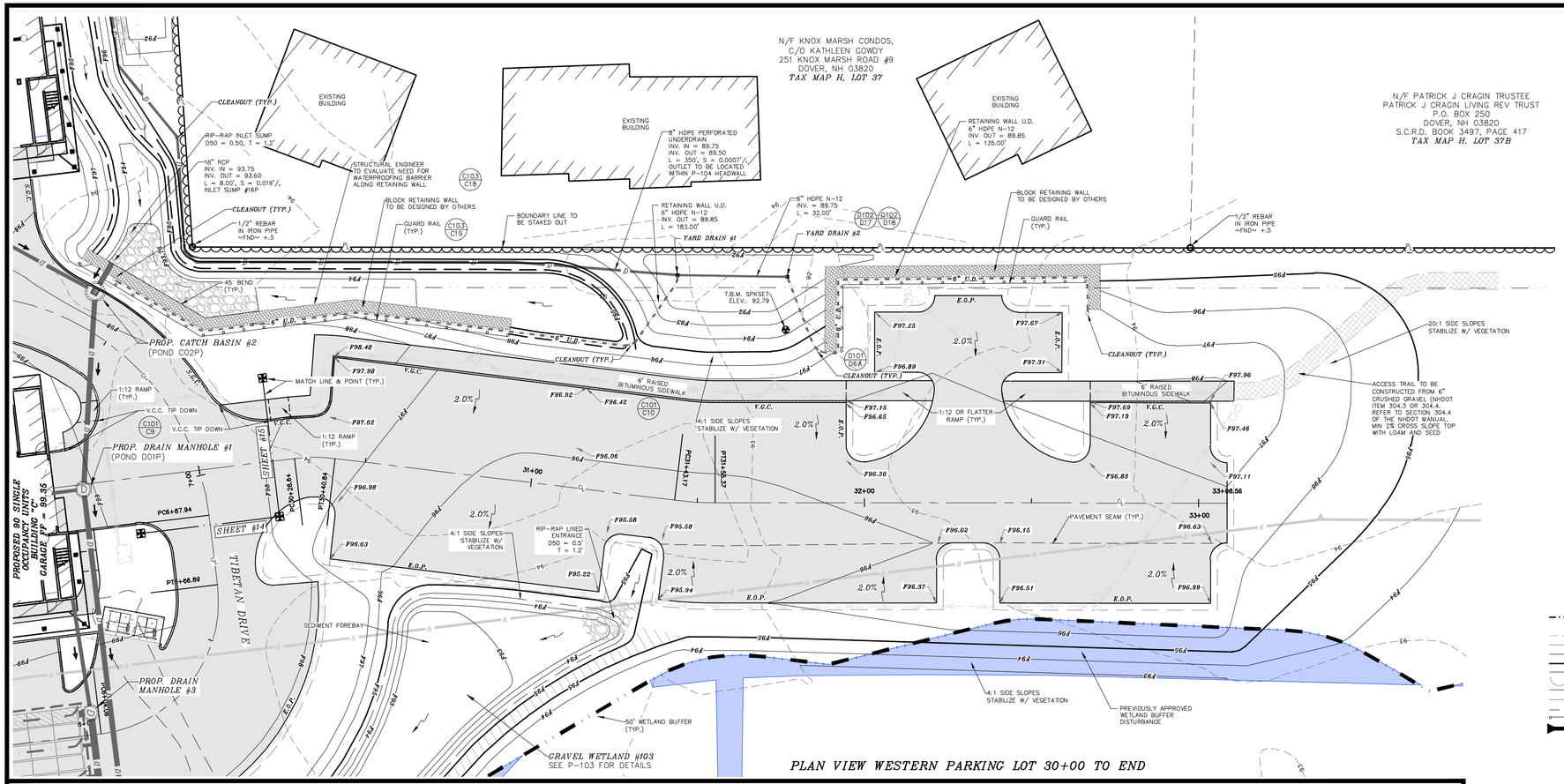
GRAPHIC SCALE
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VERTICAL SCALE: 1" = 4'

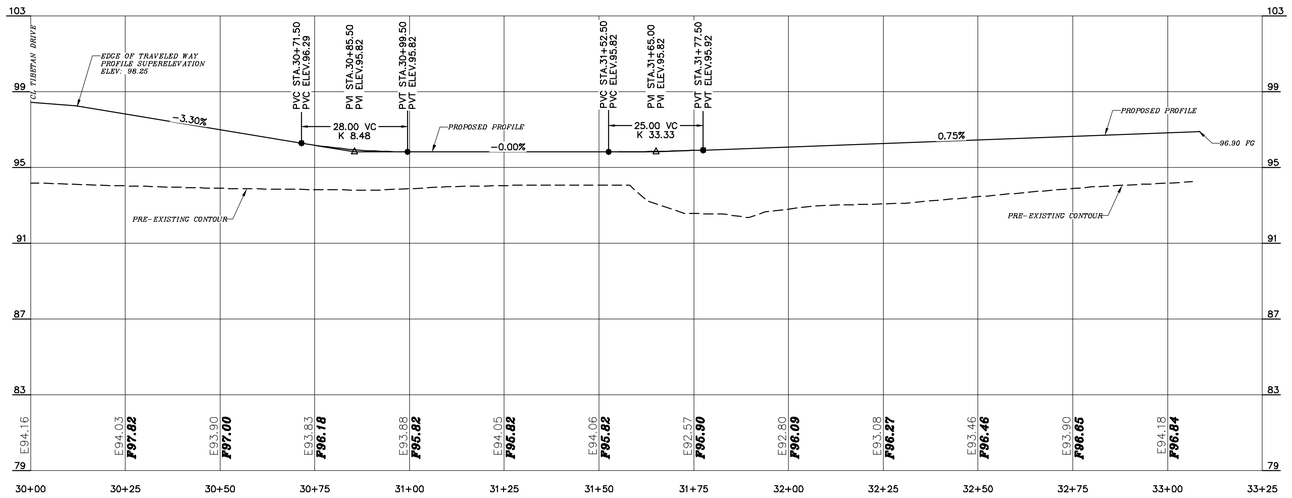
ROAD NOTE:

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PVT STA.23+98.00 PVT ELEV.98.02
PVC STA.24+25.00 PVC ELEV.97.73
PVI STA.24+50.00 PVI ELEV.97.48
PVT STA.24+75.00 PVT ELEV.97.48
50.00 VC K 50.00
PROPOSED PROFILE
-1.00%
0.00%
PVC STA.25+80.00 PVC ELEV.97.48
PVI STA.26+00.00 PVI ELEV.97.48
PVT STA.26+20.00 PVT ELEV.97.13
40.00 VC K 22.86
-1.75%
EDGE OF TRAVELED WAY
2.00%
C.L. TIBETAN DRIVE
-2.00%
96.30 FG
1.75%
PVC STA.27+47.50 PVC ELEV.97.18
PVI STA.27+55.00 PVI ELEV.97.31
PVT STA.27+62.50 PVT ELEV.97.24
15.00 VC K 5.45
CREST STA.27+57.05 CREST ELEV.97.26
-1.00%
95.55 FG
PRE-EXISTING CONTOUR

| | | |





NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37-A

3.) THE INTENT OF THIS PLAN IS TO PROVIDE DETAIL OF GRADING AND DRAINAGE DETAILS IN SUPPORT OF THE SITE PLAN. PRE-EXISTING AND PROPOSED CONTOURS ARE PROVIDED AT 1' INTERVALS WITH DRAINAGE FEATURES AT MORE PRECISE INTERVALS.

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PHASE 2: RESIDENTIAL BUILDINGS "B" & "C"

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LEGEND:

- UTILITY POLE/GUY WIRE
- TEST PIT
- TEMPORARY BENCHMARK (T.B.M.)
- E101 / E6 — DETAIL SHEET / DETAIL
- POORLY DRAINED JURISDICTIONAL WETLAND
- WETLAND BUFFER
- 176 — CONTOUR MINOR, EXISTING
- 175 — CONTOUR MAJOR, EXISTING
- F176 — CONTOUR MINOR, PROPOSED
- F175 — CONTOUR MAJOR, PROPOSED
- BUILDING SETBACK LINE
- TREELINE
- ROAD CENTERLINE
- SHOULDER
- PAVEMENT SEAM
- GUARD RAIL
- D — DRAIN CULVERT W/ FLARED END SECTION (F.E.S.)
- E175.31 — EXISTING SPOT GRADE
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- FLOW ARROW
- BITUMINOUS CONCRETE
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- BERM
- RETAINING WALL
- STORMTECH CHAMBERS/ISOLATOR ROW
- LIMIT OF STORMTECH CHAMBER STONE/GENERAL STONE
- DRAIN MANHOLE W/STRUCTURE
- CATCH BASIN W/ STRUCTURE
- STORMWATER BMP OUTLET STRUCTURE
- PREVIOUSLY APPROVED WETLAND BUFFER DISTURBANCE

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

VERTICAL SCALE: 1" = 4'

ROAD NOTE:

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PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

PLAN AND PROFILE WESTERN PARKING LOT 30+00 TO END
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

MAINTENANCE REQUIREMENTS

ACTIVITY	FREQUENCY
CLOGGING AND SYSTEM PERFORMANCE	
INSPECT INLETS AND OUTLETS TO ENSURE GOOD CONDITION AND NO EVIDENCE OF DETERIORATION. CHECK TO SEE IF HIGH-FLOW BYPASS IS FUNCTIONING. REMEDY: REPAIR OR REPLACE ANY DAMAGED STRUCTUAL PARTS, INLETS AND OUTLETS. CLEAR OR REMOVE DEBRIS OR RESTRICTIONS.	ANNUALLY, MORE FREQUENTLY IN THE FIRST YEAR OF OPERATION
CHECK FOR INTERNAL EROSION, EVIDENCE OF SHORT-CIRCUITING, AND ANIMAL BURROWS. REMEDY: SOIL EROSION FROM SHORT-CIRCUITING OR ANIMAL BOROUGHS SHOULD BE REPAIRED WHEN THEY OCCUR.	
CHECK THAT THE SYSTEM IS FULLY DRAINING WITHIN A 24-48 HOUR PERIOD AFTER RAIN EVENTS. REMEDY: REPAIR OR RESTORE HYDRAULIC INLET OR OUTLET CONFIGURATION.	
VEGETATION	
CHECK FOR ROBUST VEGETATION COVERAGE THROUGHOUT THE SYSTEM AND DEAD OR DYING PLANTS REMEDY: VEGETATION SHOULD COVER > 75% OF THE SYSTEM AND SHOULD BE RESEEDED AND CARED FOR AS NEEDED	ANNUALLY, OR AS NEEDED
CUT AND REMOVE VEGETATION FROM GRAVEL WETLAND SYSTEM AND FOREBAY IN ORDER TO MAINTAIN NITROGEN REMOVAL PERFORMANCE REMEDY: THE VEGETATION SHOULD BE CUT AND REMOVED FROM THE SYSTEM TO PREVENT NITROGEN FROM CYCLING BACK INTO THE SYSTEM	ONCE EVERY 3 YEARS

3/8" WASHED CRUSHED STONE*

SIEVE SIZE	% PASSING BY WEIGHT
1/2"	100
3/8"	95 – 100
# 4	22 – 55
# 8	0 – 10

* EQUIVALENT TO STANDARD WASHED STONE – SECTION 702 OF NHDOT NHDOT STANDARD SPECIFICATIONS

1-1/2" WASHED CRUSHED STONE*

SIEVE SIZE	% PASSING BY WEIGHT
2"	100
1-1/2"	90 – 100
1"	20 – 55
1/2"	0 –15
3/8"	0 –5

* EQUIVALENT TO STANDARD WASHED STONE – SECTION 702 OF NHDOT NHDOT STANDARD SPECIFICATIONS

WETLAND SOIL

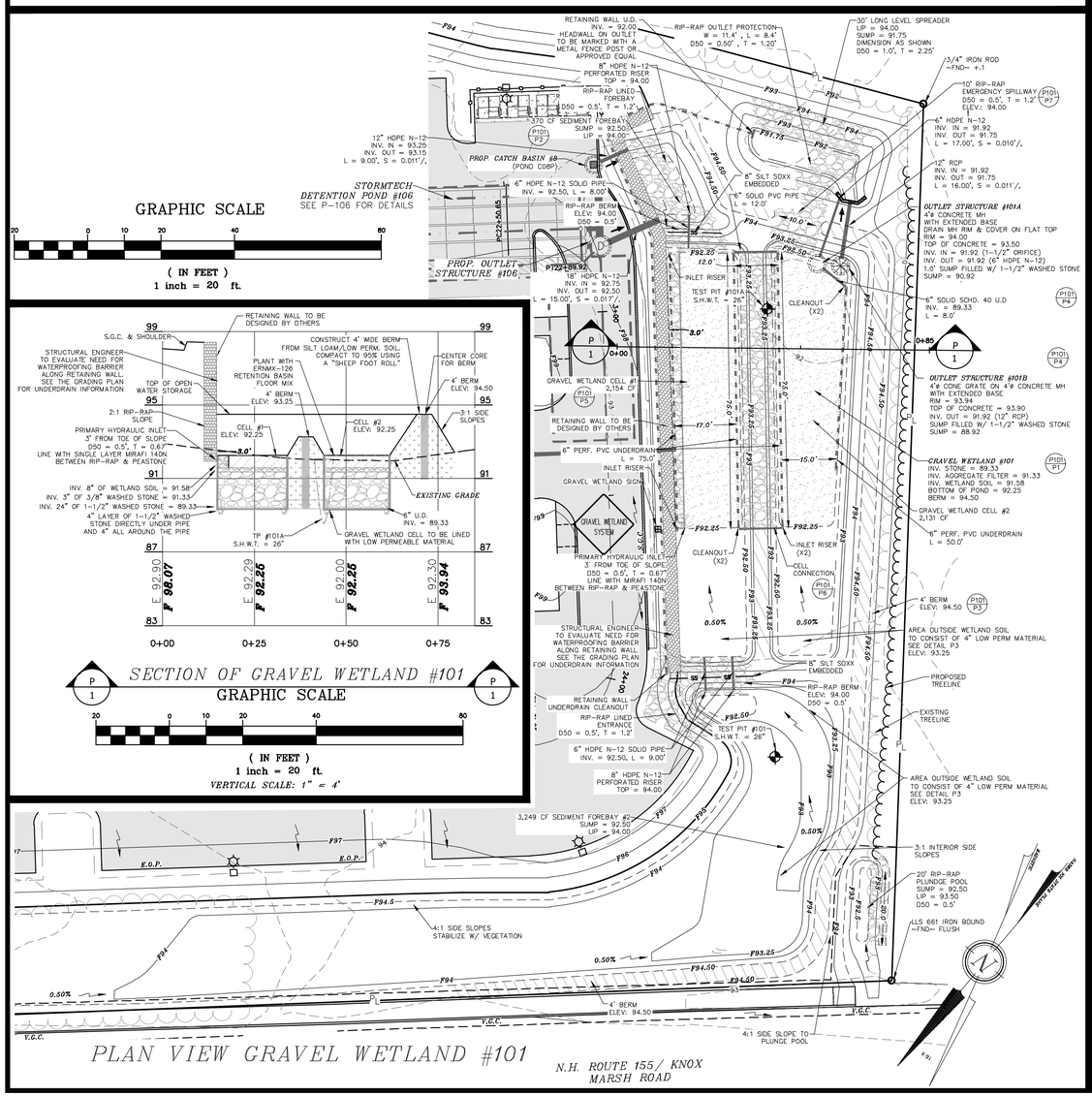
SIEVE SIZE	% PASSING BY WEIGHT
0.5	100
#10"	90 – 75
#100	40 – 50
#200	25 –50
SIEVE SIZE	**% PASSING TOLERANCES**
0.5	±10.0
#10	±5.0
#100	±5.0
#200	±5.0

DESIGN REFERENCES

1 UNH STORMWATER CENTER

CONSTRUCTION NOTE: THE DESIGN ENGINEER IS TO BE ON SITE PRIOR TO AND DURING THE PLACEMENT OF THE RESERVOIR STONE, AND TO WITNESS THE INSTALLATION OF THE UNDER-DRAIN AND INTER-CHAMBER PIPES. PLEASE PROVIDE 24 HOURS NOTICE PRIOR TO REQUESTED INSPECTION. A LETTER CERTIFYING AS TO THE CONSTRUCTION BY THE OWNER AND DESIGN ENGINEER IS REQUIRED AS A CONDITION OF THE ALTERATION OF TERRAIN PERMIT AND THE CITY OF DOVER

P1



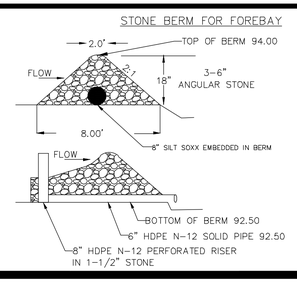
PLAN VIEW GRAVEL WETLAND #101

SECTION OF GRAVEL WETLAND #101

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

P2

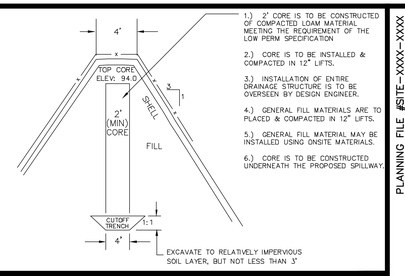
STONE BERM FOR FOREBAY



P3

LOW PERMEABILITY MATERIAL GRADATION

SIEVE SIZE	% PASSING BY WEIGHT
#4	95 – 100
#40	60 – 95
#100	40 – 60
#200	25 – 45



1.) 2" CORE IS TO BE CONSTRUCTED OF COMPACTED LOAM MATERIAL MEETING THE REQUIREMENT OF THE LOW PERM SPECIFICATION

2.) CORE IS TO BE INSTALLED & COMPACTED IN 12" LIFTS.

3.) INSTALLATION OF ENTIRE DRAINAGE STRUCTURE IS TO BE OVERSEEN BY DESIGN ENGINEER.

4.) GENERAL FILL MATERIALS ARE TO PLACED & COMPACTED IN 12" LIFTS.

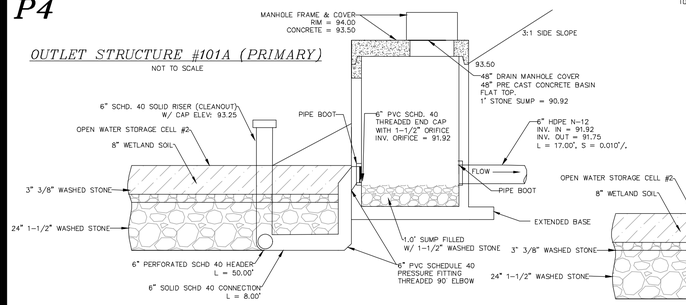
5.) GENERAL FILL MATERIAL MAY BE INSTALLED USING ONSITE MATERIALS.

6.) CORE IS TO BE CONSTRUCTED UNDERNEATH THE PROPOSED SPILLWAY.

P4

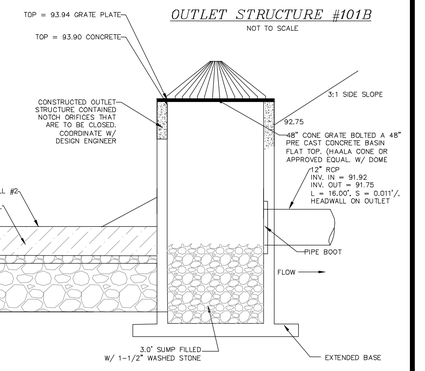
OUTLET STRUCTURE #101A (PRIMARY)

NOT TO SCALE



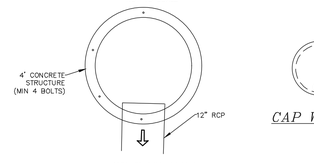
OUTLET STRUCTURE #101B

NOT TO SCALE



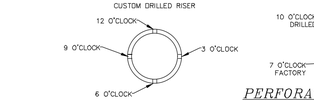
TOP VIEW (101B)

NOT TO SCALE



CAP WITH CONTROL ORIFICE (101A)

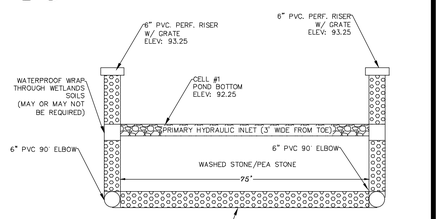
NOT TO SCALE



PERFORATED RISER DETAIL

NOT TO SCALE

P5

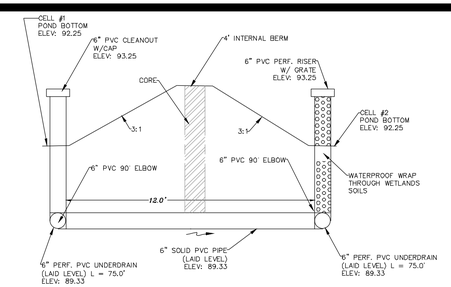


GRAVEL WETLAND INLET SYSTEM

NOT TO SCALE

NOTE: THERE IS NO WETLAND SOIL IN THE GRAVEL WETLAND INLET SYSTEM

P6

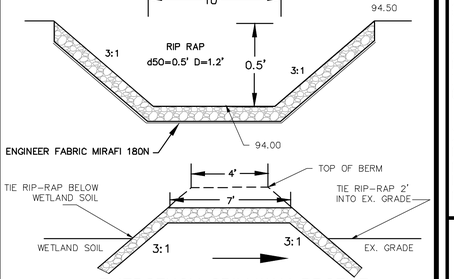


GRAVEL WETLAND CONNECTION SYSTEM

P7

SPILLWAY DETAILS

NOT TO SCALE



EMERGENCY SPILLWAY PROFILE

P8

Retention Basin Floor Mix - Low Maintenance - ERNMX-126

	Botanical Name	Common Name	Price/Lb
20.00 %	*Panicum clandestinum, 'Tioga*	Deertongue, 'Tioga	22.00
20.00 %	*Festuca ovina, Fults*	Alkaligrass, Fults	9.35
18.00 %	*Elymus virginicus, Madison-NY Ecotype*	Virginia Wildrye, Madison-NY Ecotype	9.95
15.00 %	*Agrostis stolonifera, 'Penncross'*	Creeping Bentgrass, 'Penncross'	14.40
13.00 %	*Poa palustris*	Fowl Bluegrass	35.80
10.00 %	*Carex vulpinoidea, PA Ecotype*	Fox Sedge, PA Ecotype	28.80
3.00 %	*Carex scoparia, PA Ecotype*	Blunt Broom Sedge, PA Ecotype	81.60
1.00 %	*Juncus effusus*	Soft Rush	48.00
100.00 %		**Mix Price/Lb Bulk:**	**$15.98**

Seeding Rates 20-40 lbs per acre, or 0.5-1 lb/1,000 sq ft with a cover crop. For a cover crop use one of the following: grain rye (1 Sep to 30 Apr; 30 lbs/acre), Japanese millet (1 May to 31 Aug; 10 lbs/acre), or barnyard grass (1 May to 31 Aug; 10 lbs/acre).

NOTE: TO BE USED FOR STORMWATER BMPS

Grasses & Grass-like Species - Herbaceous Perennial; Stormwater Management

The hardy inexpensive grass and grass-like species are ideal for retention basins that may have high salt inflows and where mowing may be required. Mix formulations are subject to change without notice depending on the availability of existing and new products. While the formula may change, the guiding philosophy and function of the mix will not.

P-101

REVISION	DATE	DESCRIPTION

PLANNING FILE #SITE--XXXX-XXXX

GRAVEL WETLAND #101
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY & SURVEYING ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 – 034

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14263
LICENSED PROFESSIONAL ENGINEER

SHEET 19 OF 60

NOT FOR CONSTRUCTION

P1

MAINTENANCE REQUIREMENTS

ACTIVITY	FREQUENCY
CLOGGING AND SYSTEM PERFORMANCE	
INSPECT INLETS AND OUTLETS TO ENSURE GOOD CONDITION AND NO EVIDENCE OF DETERIORATION. CHECK TO SEE IF HIGH-FLOW BYPASS IS FUNCTIONING. REMEDY: REPAIR OR REPLACE ANY DAMAGED STRUCTUAL PARTS, INLETS AND OUTLETS. CLEAR OR REMOVE DEBRIS OR RESTRICTIONS.	ANNUALLY, MORE FREQUENTLY IN THE FIRST YEAR OF OPERATION
CHECK FOR INTERNAL EROSION, EVIDENCE OF SHORT-CIRCUITING, AND ANIMAL BURROWS. REMEDY: SOIL EROSION FROM SHORT-CIRCUITING OR ANIMAL BOROUGHS SHOULD BE REPAIRED WHEN THEY OCCUR.	
CHECK THAT THE SYSTEM IS FULLY DRAINING WITHIN A 24-48 HOUR PERIOD AFTER RAIN EVENTS. REMEDY: REPAIR OR RESTORE HYDRAULIC INLET OR OUTLET CONFIGUARTION.	
VEGETATION	
CHECK FOR ROBUST VEGETATION COVERAGE THROUGHOUT THE SYSTEM AND DEAD OR DYING PLANTS REMEDY: VEGETATION SHOULD COVER > 75% OF THE SYSTEM AND SHOULD BE RESEEDED AND CARED FOR AS NEEDED	ANNUALLY, OR AS NEEDED
CUT AND REMOVE VEGETATION FROM GRAVEL WETLAND SYSTEM AND FOREBAY IN ORDER TO MAINTAIN NITROGEN REMOVAL PERFORMANCE REMEDY: THE VEGETATION SHOULD BE CUT AND REMOVED FROM THE SYSTEM TO PREVENT NITROGEN FROM CYCLING BACK INTO THE SYSTEM	ONCE EVERY 3 YEARS

3/8" WASHED CRUSHED STONE*

SIEVE SIZE	% PASSING BY WEIGHT
1/2"	100
3/8"	95 – 100
# 4	22 – 55
# 8	0 – 10

* EQUIVALENT TO STANDARD WASHED STONE – SECTION 702 OF NHDOT NHDOT STANDARD SPECIFICATIONS

1-1/2" WASHED CRUSHED STONE*

SIEVE SIZE	% PASSING BY WEIGHT
2"	100
1-1/2"	90 – 100
1"	20 – 55
1/2"	0 -15
3/8"	0 -5

* EQUIVALENT TO STANDARD WASHED STONE – SECTION 702 OF NHDOT NHDOT STANDARD SPECIFICATIONS

WETLAND SOIL

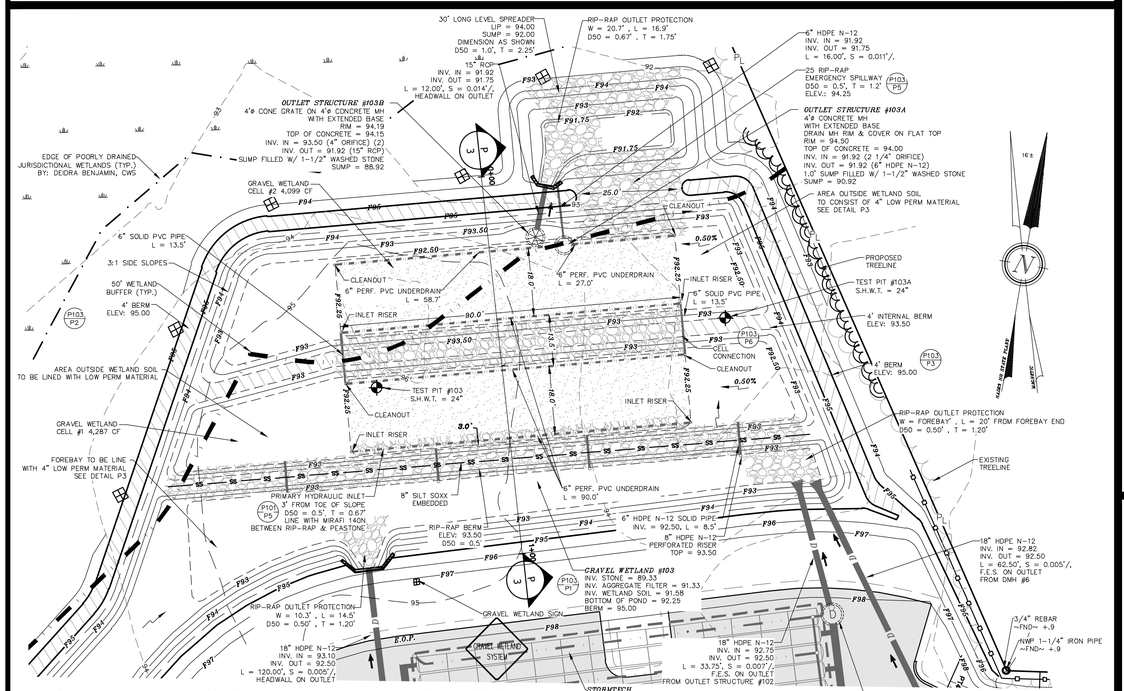
SIEVE SIZE	% PASSING BY WEIGHT
0.5	100
#10	90 – 75
#100	40 – 50
#200	25 -50

SIEVE SIZE	% PASSING TOLERANCES
0.5	±10.0
#10	±5.0
#100	±5.0
#200	±5.0

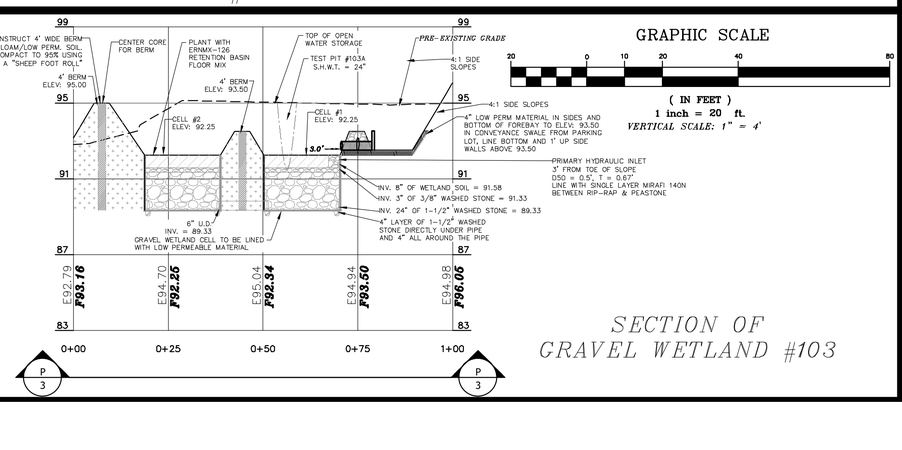
DESIGN REFERENCES

1 UNH STORMWATER CENTER

CONSTRUCTION NOTE: THE DESIGN ENGINEER IS TO BE ON SITE PRIOR TO AND DURING THE PLACEMENT OF THE RESERVOIR STONE, AND TO WITNESS THE INSTALLATION OF THE UNDER-DRAIN AND INTER-CHAMBER PIPES. PLEASE PROVIDE 24 HOURS NOTICE PRIOR TO REQUESTED INSPECTION. A LETTER CERTIFYING AS TO THE CONSTRUCTION BY THE OWNER AND DESIGN ENGINEER IS REQUIRED AS A CONDITION OF THE ALTERATION OF TERRAIN PERMIT AND THE CITY OF DOVER



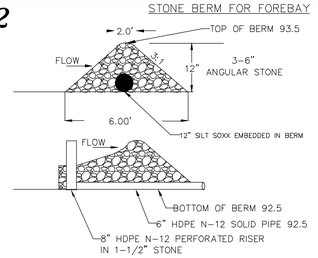
PLAN VIEW GRAVEL WETLAND #103



SECTION OF GRAVEL WETLAND #103

P2

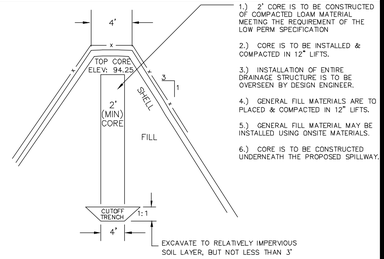
STONE BERM FOR FOREBAY



P3

LOW PERMEABILITY MATERIAL GRADATION

SIEVE SIZE	% PASSING BY WEIGHT
#4	95 – 100
#40	60 – 95
#100	40 – 60
#200	25 – 45



1.) 2" CORE IS TO BE CONSTRUCTED OF COMPACTED LOAM MATERIAL MEETING THE REQUIREMENT OF THE LOW PERM SPECIFICATION

2.) CORE IS TO BE INSTALLED & COMPACTED IN 12" LIFTS.

3.) INSTALLATION OF ENTIRE DRAINAGE STRUCTURE IS TO BE OVERSEEN BY DESIGN ENGINEER.

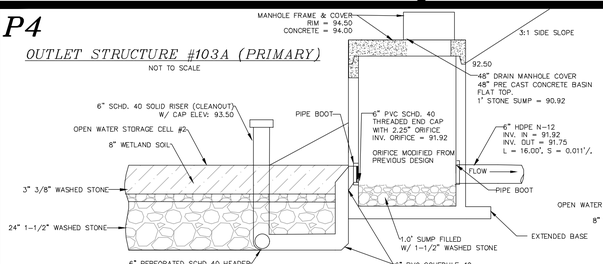
4.) GENERAL FILL MATERIALS ARE TO PLACED & COMPACTED IN 12" LIFTS.

5.) GENERAL FILL MATERIAL MAY BE INSTALLED USING ONSITE MATERIALS.

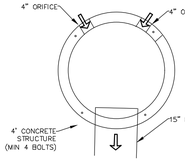
6.) CORE IS TO BE CONSTRUCTED UNDERNEATH THE PROPOSED SPILLWAY.

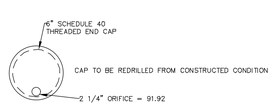
P4

OUTLET STRUCTURE #103A (PRIMARY)
NOT TO SCALE

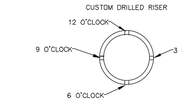


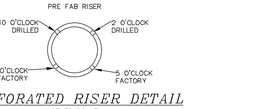
TOP VIEW (103B)
NOT TO SCALE





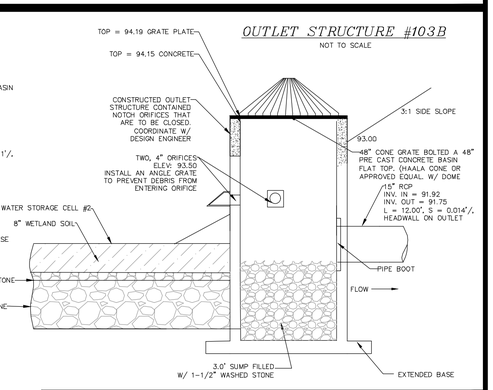
CAP WITH CONTROL ORIFICE
NOT TO SCALE



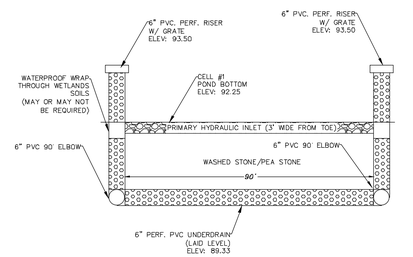


PERFORATED RISER DETAIL
NOT TO SCALE

OUTLET STRUCTURE #103B
NOT TO SCALE



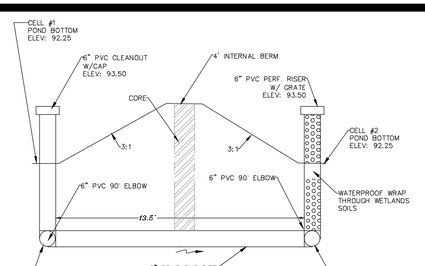
P5



GRAVEL WETLAND INLET SYSTEM
NOT TO SCALE

NOTE: THERE IS NO WETLAND SOIL IN THE GRAVEL WETLAND INLET SYSTEM

P6



GRAVEL WETLAND CONNECTION SYSTEM
NOT TO SCALE

P8

Retention Basin Floor Mix - Low Maintenance - ERNMX-126

	Botanical Name	Common Name	Price/Lb
20.00 %	*Panicum clandestinum, Tioga*	Deertongue, Tioga	22.05
20.00 %	*Festuchella rbesus, Fults*	Alkaligrass, Fults	4.35
18.00 %	*Elymus virginicus, Madison-NY Ecotype*	Virginia Wildrye, Madison-NY Ecotype	5.96
15.00 %	*Agrostis stolonifera, Penncross'*	Creeping Bentgrass, 'Pennacross'	14.40
15.00 %	*Poa palustris*	Fowl Bluegrass	15.80
10.00 %	*Carex lupulacoides, PA Ecotype*	Fox Sedge, PA Ecotype	25.80
3.00 %	*Carex scoparia, PA Ecotype*	Blunt Broom Sedge, PA Ecotype	81.60
1.00 %	*Juncus effusus*	Soft Rush	48.00
100.00 %		Mix Price/Lb Bulk:	$15.90

Seeding Rate: 20-40 lbs per acre, or 0.5-1 lb/1,000 sq ft with a cover crop. For a cover crop use one of the following: grain rye (1 Sep to 30 Apr; 30 lbs/acre), Japanese millet (1 May to 31 Aug; 10 lbs/acre), or barnyard grass (1 May to 31 Aug; 10 lbs/acre).

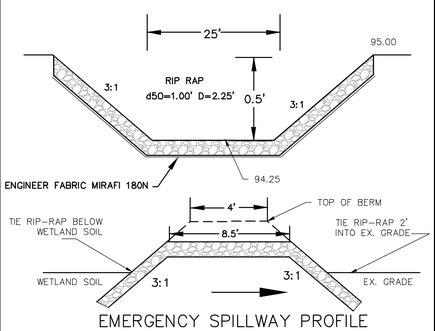
NOTE: TO BE USED FOR STORMWATER BMPS

Grasses & Grass-like Species - Herbaceous Perennial; Stormwater Management

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P7

SPILLWAY DETAILS
NOT TO SCALE



EMERGENCY SPILLWAY PROFILE

P-103

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

GRAVEL WETLAND #103
LAND OF
KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 – 034

STATE OF NEW HAMPSHIRE KENNETH A. BERRY No. 14243 LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

P1

MAINTENANCE REQUIREMENTS

ACTIVITY	FREQUENCY
CLOGGING AND SYSTEM PERFORMANCE	
INSPECT INLETS AND OUTLETS TO ENSURE GOOD CONDITION AND NO EVIDENCE OF DETERIORATION. CHECK TO SEE IF HIGH-FLOW BYPASS IS FUNCTIONING. REMEDY: REPAIR OR REPLACE ANY DAMAGED STRUCTURAL PARTS, INLETS AND OUTLETS. CLEAR OR REMOVE DEBRIS OR RESTRICTIONS.	ANNUALLY, MORE FREQUENTLY IN THE FIRST YEAR OF OPERATION
CHECK FOR INTERNAL EROSION, EVIDENCE OF SHORT-CIRCUITING, AND ANIMAL BURROWS. REMEDY: SOIL EROSION FROM SHORT-CIRCUITING OR ANIMAL BOROUGHS SHOULD BE REPAIRED WHEN THEY OCCUR.	
CHECK THAT THE SYSTEM IS FULLY DRAINING WITHIN A 24-48 HOUR PERIOD AFTER RAIN EVENTS. REMEDY: REPAIR OR RESTORE HYDRAULIC INLET OR OUTLET CONFIGURATION.	
VEGETATION	
CHECK FOR ROBUST VEGETATION COVERAGE THROUGHOUT THE SYSTEM AND DEAD OR DYING PLANTS REMEDY: VEGETATION SHOULD COVER > 75% OF THE SYSTEM AND SHOULD BE RESEEDED AND CARED FOR AS NEEDED	ANNUALLY, OR AS NEEDED
CUT AND REMOVE VEGETATION FROM GRAVEL WETLAND SYSTEM AND FOREBAY IN ORDER TO MAINTAIN NITROGEN REMOVAL PERFORMANCE REMEDY: THE VEGETATION SHOULD BE CUT AND REMOVED FROM THE SYSTEM TO PREVENT NITROGEN FROM CYCLING BACK INTO THE SYSTEM	ONCE EVERY 3 YEARS

3/8" WASHED CRUSHED STONE*

SIEVE SIZE	% PASSING BY WEIGHT
1/2"	100
3/8"	95 – 100
# 4	22 – 55
# 8	0 – 10

* EQUIVALENT TO STANDARD WASHED STONE – SECTION 702 OF NHDOT NHDOT STANDARD SPECIFICATIONS

1-1/2" WASHED CRUSHED STONE*

SIEVE SIZE	% PASSING BY WEIGHT
2"	100
1-1/2"	90 – 100
1"	20 – 55
1/2"	0 -15
3/8"	0 -5

* EQUIVALENT TO STANDARD WASHED STONE – SECTION 702 OF NHDOT NHDOT STANDARD SPECIFICATIONS

WETLAND SOIL

SIEVE SIZE	% PASSING BY WEIGHT
0.5	100
#10	90 – 75
#100	40 – 50
#200	25 -50
SIEVE SIZE	**% PASSING TOLERANCES**
0.5	±10.0
#10	±5.0
#100	±5.0
#200	±5.0

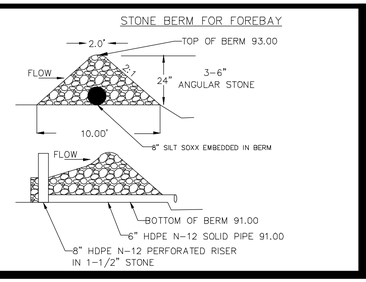
DESIGN REFERENCES

1 UNH STORMWATER CENTER

CONSTRUCTION NOTE: THE DESIGN ENGINEER IS TO BE ON SITE PRIOR TO AND DURING THE PLACEMENT OF THE RESERVOIR STONE, AND TO WITNESS THE INSTALLATION OF THE UNDER-DRAIN AND INTER-CHAMBER PIPES. PLEASE PROVIDE 24 HOURS NOTICE PRIOR TO REQUESTED INSPECTION. A LETTER CERTIFYING AS TO THE CONSTRUCTION BY THE OWNER AND DESIGN ENGINEER IS REQUIRED AS A CONDITION OF THE ALTERATION OF TERRAIN PERMIT AND THE CITY OF DOVER

P2

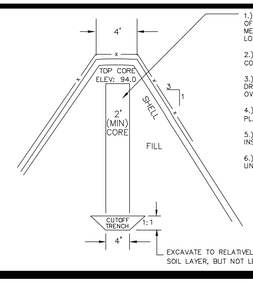
STONE BERM FOR FOREBAY



P3

LOW PERMEABILITY MATERIAL GRADATION

SIEVE SIZE	% PASSING BY WEIGHT
#4	95 – 100
#40	60 – 95
#100	40 – 60
#200	25 – 45



1.) 2" CORE IS TO BE CONSTRUCTED OF COMPACTED LOAM MATERIAL MEETING THE REQUIREMENT OF THE LOW PERM SPECIFICATION

2.) CORE IS TO BE INSTALLED & COMPACTED IN 12" LIFTS.

3.) INSTALLATION OF ENTIRE DRAINAGE STRUCTURE IS TO BE OVERSEEN BY DESIGN ENGINEER.

4.) GENERAL FILL MATERIALS ARE TO PLACED & COMPACTED IN 12" LIFTS.

5.) GENERAL FILL MATERIAL MAY BE INSTALLED USING ONSITE MATERIALS.

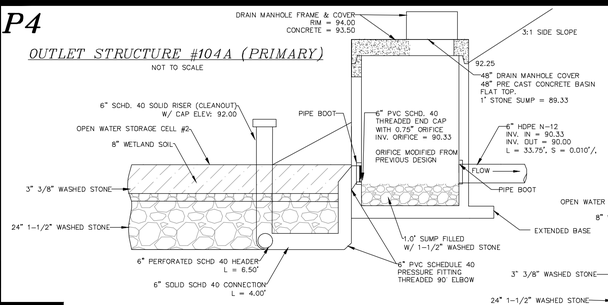
6.) CORE IS TO BE CONSTRUCTED UNDERNEATH THE PROPOSED SPILLWAY.

EXCAVATE TO RELATIVELY IMPERVIOUS SOIL LAYER, BUT NOT LESS THAN 3'

P4

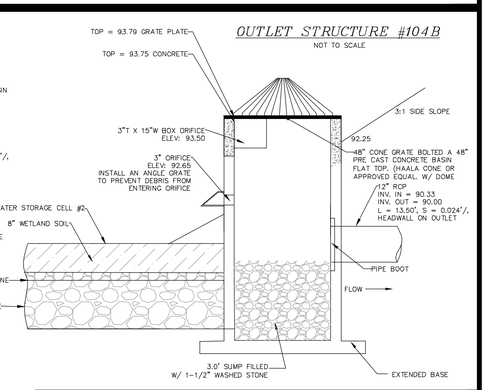
OUTLET STRUCTURE #104A (PRIMARY)

NOT TO SCALE



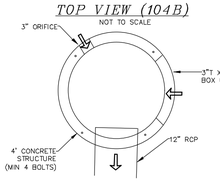
OUTLET STRUCTURE #104B

NOT TO SCALE



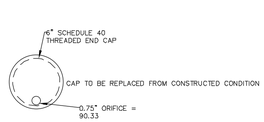
TOP VIEW (104B)

NOT TO SCALE



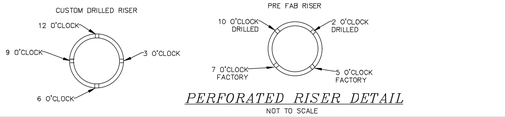
CAP WITH CONTROL ORIFICE

NOT TO SCALE

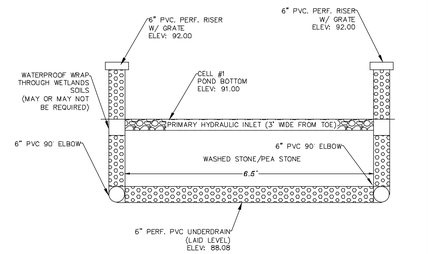


PERFORATED RISER DETAIL

NOT TO SCALE



P5

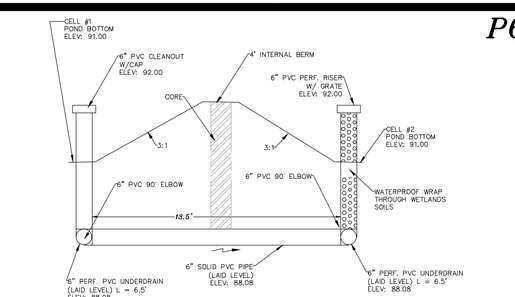


GRAVEL WETLAND INLET SYSTEM

NOT TO SCALE

NOTE: THERE IS NO WETLAND SOIL IN THE GRAVEL WETLAND INLET SYSTEM

P6



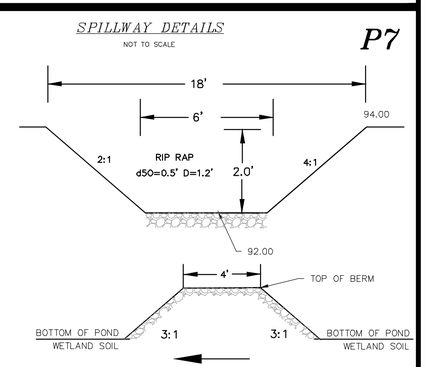
GRAVEL WETLAND CONNECTION SYSTEM

NOT TO SCALE

P7

SPILLWAY DETAILS

NOT TO SCALE



GRAVEL WETLAND CELL SPILLWAY PROFILE

P8

Retention Basin Floor Mix - Low Maintenance - ERNMX-126

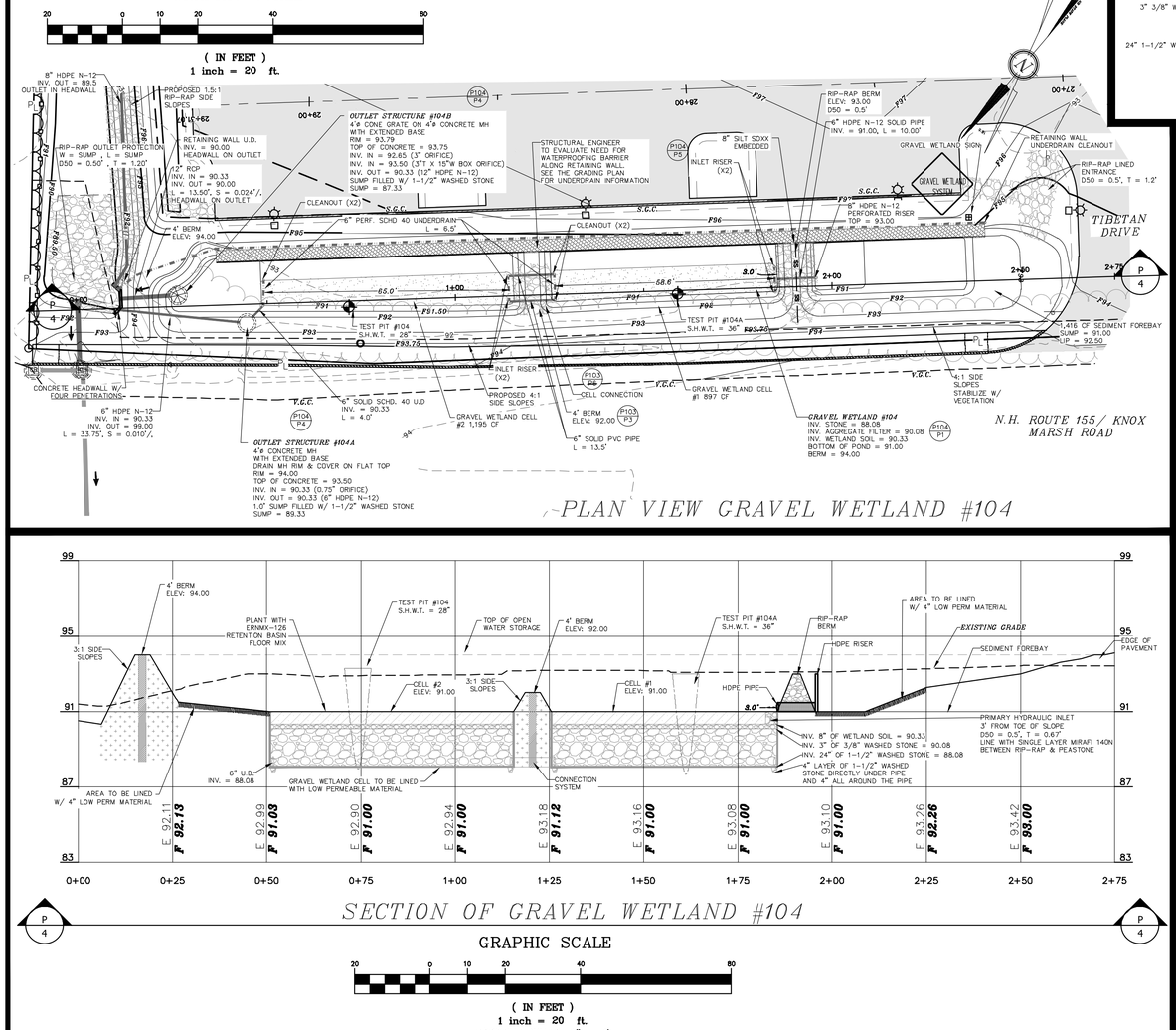
	Botanical Name	Common Name	Price/Lb
20.00 %	*Panicum clandestinum, 'Tioga*	Deertongue, 'Tioga	22.00
20.00 %	*Panicum virgatum, Nutz*	Alkalygrass, Nutz	4.56
18.00 %	*Elymus virginicus, Madison-NY Ecotype*	Virginia Wildrye, Madison-NY Ecotype	9.96
15.00 %	*Agrostis stolonifera, 'Pennacross'*	Creeping Bentgrass, 'Pennacross'	14.40
15.00 %	*Poa palustris*	Fowl Bluegrass	16.80
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1.00 %	*Carex scoparia, PA Ecotype*	Blunt Broom Sedge, PA Ecotype	81.60
1.00 %	*Juncus effusus*	Soft Rush	48.00
100.00 %		Mix Price/Lb Bulk:	$15.98

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PLAN VIEW GRAVEL WETLAND #104

SECTION OF GRAVEL WETLAND #104

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

1 inch = 20 ft.

VERTICAL SCALE: 1" = 4'

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

GRAVEL WETLAND #104
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 – 034

STATE OF NEW HAMPSHIRE KENNETH A. BERRY No. 14243 LICENSED PROFESSIONAL ENGINEER

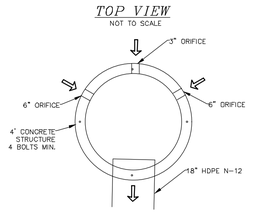
P-104

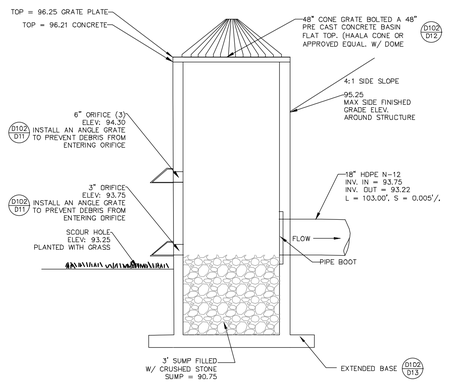
SHEET 21 OF 60

NOT FOR CONSTRUCTION

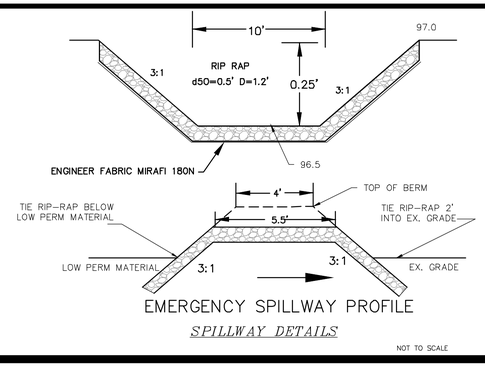
P1

OUTLET STRUCTURE #105
NOT TO SCALE





P2

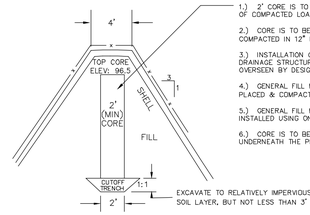


EMERGENCY SPILLWAY PROFILE

SPILLWAY DETAILS

NOT TO SCALE

P3



1.) 2' CORE IS TO BE CONSTRUCTED OF COMPACTED LOAM MATERIAL.

2.) CORE IS TO BE INSTALLED & COMPACTED IN 12" LIFTS.

3.) INSTALLATION OF ENTIRE DRAINAGE STRUCTURE IS TO BE OVERSEEN BY DESIGN ENGINEER.

4.) GENERAL FILL MATERIALS ARE TO PLACED & COMPACTED IN 12" LIFTS.

5.) GENERAL FILL MATERIAL MAY BE INSTALLED USING ONSITE MATERIALS.

6.) CORE IS TO BE CONSTRUCTED UNDERNEATH THE PROPOSED SPILLWAY.

EXCAVATE TO RELATIVELY IMPERVIOUS SOIL LAYER, BUT NOT LESS THAN 3'

LOW PERMEABILITY MATERIAL GRADATION

SIEVE SIZE	% PASSING BY WEIGHT
#4	95 – 100
#40	60 – 95
#100	40 – 60
#200	25 – 45

P4

Retention Basin Floor Mix - Low Maintenance - ERNMX-126

	Botanical Name	Common Name	Price/Lb
20.00 %	*Panicum clandestinum, Tioga*	Deertongue, Tioga	22.68
20.00 %	*Perennials alabaea, Fults*	Alkaligrass, Fults	4.56
18.00 %	*Elymus virginicus, Madison-NY Ecotype*	Virginia Wildrye, Madison-NY Ecotype	9.96
15.00 %	*Agrostis stolonifera, 'Penncross'*	Creeping Bentgrass, 'Penncross'	14.40
15.00 %	*Poa palustris*	Fowl Bluegrass	16.80
10.00 %	*Carex vulpinoidea, PA Ecotype*	Fox Sedge, PA Ecotype	28.80
1.00 %	*Carex scoparia, PA Ecotype*	Blunt Broom Sedge, PA Ecotype	83.60
1.00 %	*Juncus effusus*	Soft Rush	46.00
100.00 %		**Mix Price/Lb Bulk:**	**$15.98**

Seeding Rate: 20-40 lbs per acre, or 0.5-1 lb/1,000 sq ft with a cover crop. For a cover crop use one of the following: grain rye (1 Sep to 30 Apr; 30 lbs/acre), Japanese millet (1 May to 31 Aug; 10 lbs/acre), or barnyard grass (1 May to 31 Aug; 10 lbs/acre).

NOTE: TO BE USED FOR STORMWATER BMPS

Grasses & Grass-like Species - Herbaceous Perennial; Stormwater Management

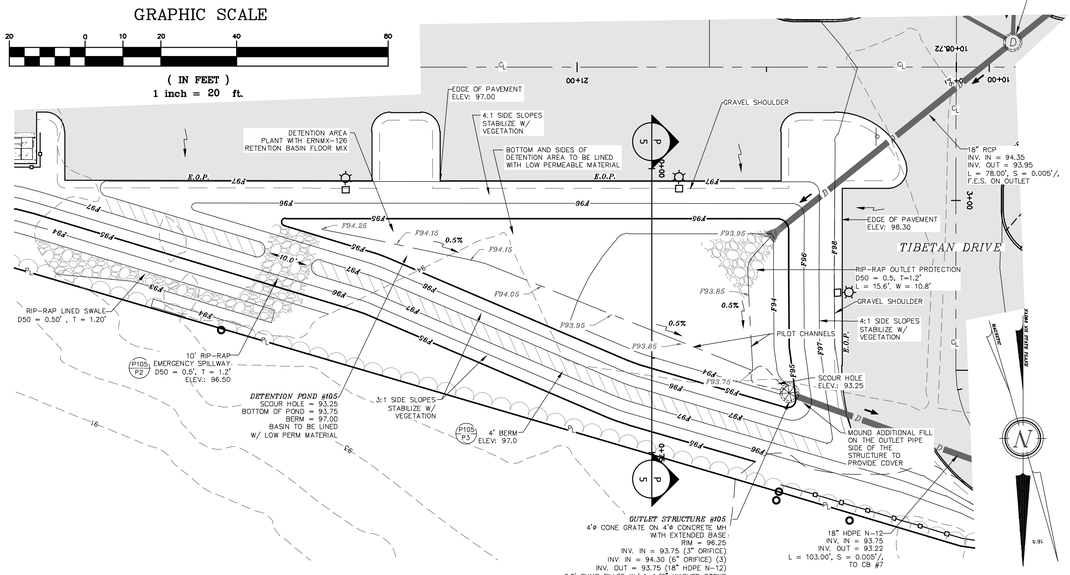
The hardy inexpensive grass and grass-like species are ideal for retention basins that may have high salt inflows and where mowing may be required. Mix formulations are subject to change without notice depending on the availability of existing and new products. While the formula may change, the guiding philosophy and function of the mix will not.

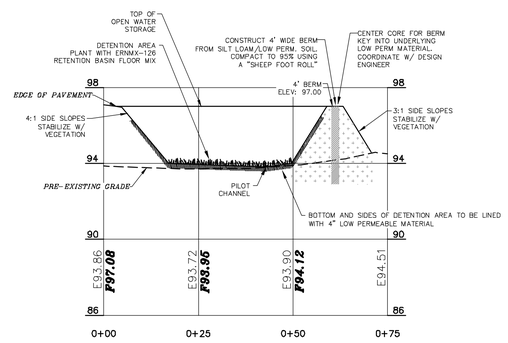
PLAN VIEW DETENTION POND #105

GRAPHIC SCALE

20 0 10 20 40 60

(IN FEET)
1 inch = 20 ft.





SECTION OF DETENTION POND #105

SECTION OF DETENTION POND #102

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

VERTICAL SCALE: 1" = 4'

P-105

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

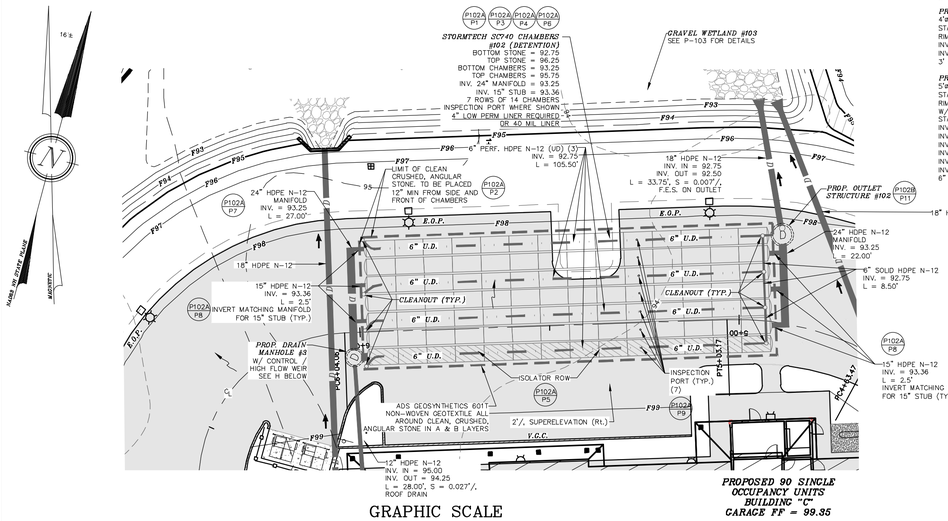
DETENTION POND #105
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 – 034

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

A REPRESENTATIVE FROM BS&E WILL BE ON SITE DURING THE CONSTRUCTION OF THE STORMTECH SYSTEM

PLAN VIEW STORMTECH SC-740 CHAMBERS DETENTION POND #102 SEE SHEET 102B FOR DETAILS

STRUCTURES TABLE:

PROP. DRAIN MANHOLE #3
4'ø STRUCTURE W/ NH STANDARD RIM
STA: 6+01.75 (L.T. 6.65')
RIM = 98.68 (FLUSH)
INV. IN = 94.25 (12" HDPE N-12) (BUILDING C ROOF)
INV. OUT = 93.25 (24" HDPE N-12) (2) (P-102)
3' SUMP = 90.25

PROP. OUTLET STRUCTURE #102 (POND 102P)
5'ø STRUCTURE W/ NH STANDARD RIM
STA: 4+91.35 (Rt. 23.10')
RIM = 98.10 (FLUSH)
W/ INTERNAL 18" STACK
STACK TOP = 95.75
INV. IN = 92.75 (2" ORIFICE AT BASE OF STACK)
INV. IN = 92.75 (6" HDPE UNDERDRAIN)
INV. IN = 93.36 (15" HDPE N-12) (MANIFOLD)
INV. IN = 93.25 (24" HDPE N-12) (MANIFOLD)
INV. IN = 92.75 (6" HDPE N-12) (U.D.)
INV. OUT = 92.75 (18" HDPE N-12) (GW #103)
6" SUMP FILLED W/ 1 1/2" STONE

P1

1. ALL DESIGN SPECIFICATIONS FOR STORMTECH SC-740 CHAMBERS SHALL BE IN ACCORDANCE WITH THE STORMTECH DESIGN MANUAL, ADVANCED DRAINAGE SYSTEM, INC (ADS STORMTECH)
2. THE INSTALLATION OF STORMTECH SC-740 CHAMBERS SHALL BE IN ACCORDANCE WITH THE LATEST STORMTECH INSTALLATION INSTRUCTIONS
3. THE CONTRACTOR IS ADVISED TO REVIEW AND UNDERSTAND THE INSTALLATION INSTRUCTIONS PRIOR TO BEGINNING SYSTEM INSTALLTION. CALL **1-888-892-2694** OR VISIT **WWW.STORMTECH.COM** TO RECIEVE A COPY OF THE LATEST STORMTECH INSTALLATION INSTRUCTIONS
4. CHAMBERS SHALL MEET THE DESIGN REQUIREMENTS AND LOAD FACTORS SPECIFIED IN SECTION 12.12 OF THE LATEST EDITION OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

SC-740 NOTES

P2

ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

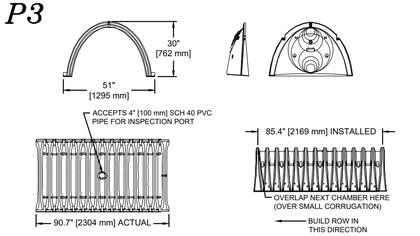
	MATERIAL LOCATION	DESCRIPTION	AASHTO M43 DESIGNATION¹	COMPACTION/DENSITY REQUIREMENT
D	FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISH GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THIS LAYER.	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	FILL MATERIAL FOR LAYER 'C' STARTS FROM THE 12" (300 mm) MINIMUM STONE (B) LAYER TO 18" (457 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THIS LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, < 35% FINES. MOST PAVEMENT SUB-BASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTION AFTER 12" (305 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) LIFTS TO A MIN. 95% STANDARD PROCTOR DENSITY. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs [53 kN]. DYNAMIC FORCE NOT TO EXCEED 20,000 lbs [89 kN]
B	EMBEDMENT STONE SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE OK LAYER(S) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE, NOMINAL SIZE DISTRIBUTION BETWEEN 3/4 - 2 INCH [19 - 51 mm]	3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	FOUNDATION STONE BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE, NOMINAL SIZE DISTRIBUTION BETWEEN 3/4 - 2 INCH [19 - 51 mm]	3, 35, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A 95% STANDARD PROCTOR DENSITY*.

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE.

2. AS AN ALTERNATE TO PROCTOR TESTING AND FIELD DENSITY MEASUREMENTS ON OPEN GRADED STONE, STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9in [229 mm] (MAX) LIFTS USING TWO FULL COVERAGES WITH AN APPROPRIATE COMPACTOR.

STORMTECH ACCEPTABLE FILL MATERIALS

P3



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W x H x INSTALLED LENGTH)	51.0" x 30.0" x 85.4" [1295 mm x 762 mm x 2169 mm]
CHAMBER STORAGE	45.9 CUBIC FEET [1.30 m3]
MINIMUM INSTALLED STORAGE	74.9 CUBIC FEET [2.12 m3]
WEIGHT	75 lbs. [33.6 kg]

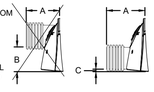
STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"

PART#	STUB	A	B	C
SC740EPE06T	6" [150 mm]	10.90" [277 mm]	18.50" [470 mm]	N/A
SC740EPE06B	6" [150 mm]	10.90" [277 mm]	N/A	0.50" [13 mm]
SC740EPE08T	8" [200 mm]	12.20" [310 mm]	N/A	N/A
SC740EPE08B	8" [200 mm]	12.20" [310 mm]	N/A	0.60" [15 mm]
SC740EPE10T	10" [250 mm]	13.40" [340 mm]	14.50" [368 mm]	N/A
SC740EPE10B	10" [250 mm]	13.40" [340 mm]	N/A	0.70" [18 mm]
SC740EPE12T	12" [300 mm]	14.70" [373 mm]	12.50" [318 mm]	N/A
SC740EPE12B	12" [300 mm]	14.70" [373 mm]	N/A	1.20" [30 mm]
SC740EPE15T	15" [375 mm]	18.40" [467 mm]	9.00" [229 mm]	N/A
SC740EPE15B	15" [375 mm]	18.40" [467 mm]	N/A	1.30" [33 mm]
SC740EPE18T	18" [450 mm]	19.70" [500 mm]	5.00" [127 mm]	N/A
SC740EPE18B	18" [450 mm]	19.70" [500 mm]	N/A	1.60" [41 mm]
*SC740EPE24B	24" [600 mm]	18.50" [470 mm]	N/A	0.10" [3 mm]

NOTE: ALL DIMENSIONS ARE NOMINAL

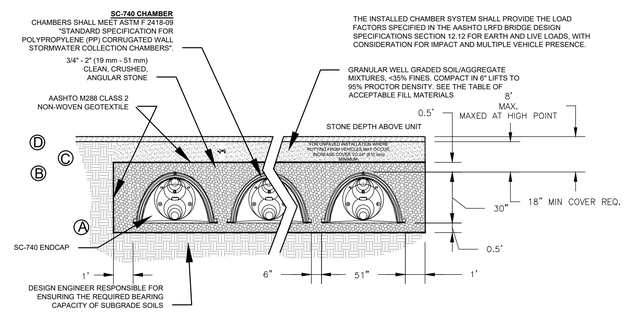
ALL STUBS, EXCEPT FOR THE SC740EPE24B ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

*FOR THE SC740EPE24B THE 24" [600 mm] STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 1.75" [44 mm]. BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.



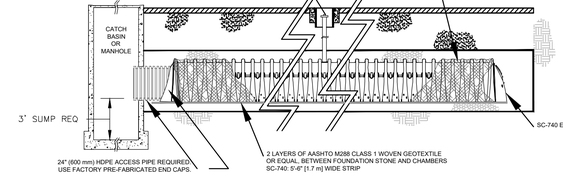
SC-740 TECHNICAL SPEC.

P4



SC-740 STANDARD CROSS SECTION

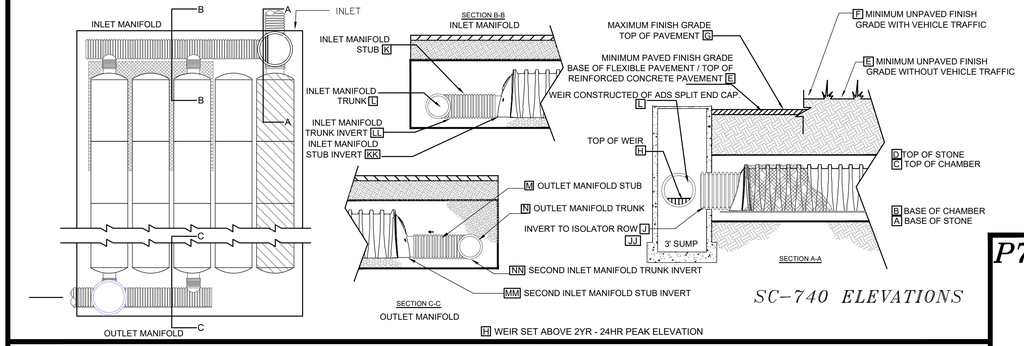
P5



SC-740 ISOLATOR ROW (TM) DETAIL

P6

	A	B	C	D	E	F	G	H	J	JJ	K	KK	L	LL	M	MM	N	NN
BED 1/ONLY	92.75	93.25	95.75	96.25	98.05	N/A	98.72	94.00	93.25	24" HDPE	15" HDPE	93.36	24" HDPE	93.25	15" HDPE	93.36	24" HDPE	93.25



SC-740 ELEVATIONS

CONSTRUCTION NOTE: THE DESIGN ENGINEER IS TO BE ON SITE PRIOR TO AND DURING THE PLACEMENT OF THE RESERVOIR STONE, AND TO WITNESS THE INSTALLATION OF THE UNDER-DRAIN AND CHAMBERS. PLEASE PROVIDE 24 HOURS NOTICE PRIOR TO REQUESTED INSPECTION. A LETTER CERTIFYING AS TO THE CONSTRUCTION BY THE OWNER AND DESIGN ENGINEER IS REQUIRED AS A CONDITION OF THE ALTERATION OF TERRAIN PERMIT AND THE CITY OF DOVER

EXISTING LEGEND:

- IRON BOUND/IRON ROD (FND)
- IRON PIPE (FND)
- STONE BOUND (FND)
- UTILITY POLE / GUY WIRE
- SINGLE POST SIGN
- TEMPORARY BENCHMARK
- TESTHOLE
- PERIMETER BOUNDARY LINE
- BUILDING SETBACK LINE
- OVERHEAD UTILITIES (OHU)
- EXISTING CONTOUR MINOR (116)
- EXISTING CONTOUR MAJOR (115)
- POORLY DRAINED WETLAND LINE
- 50' WETLAND BUFFER LINE
- TREE LINE
- FND FOUND
- TYP TYPICAL
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS

PROPOSED LEGEND:

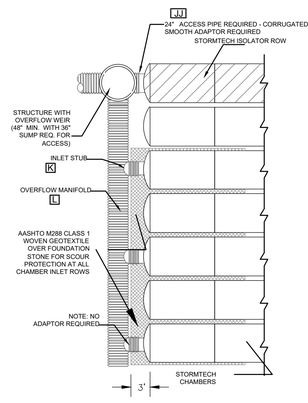
- TEMPORARY BENCHMARK (T.B.M.)
- E101 / E6 DETAIL SHEET / DETAIL
- P176 CONTOUR MINOR, PROPOSED
- P175 CONTOUR MAJOR, PROPOSED
- ROAD CENTERLINE
- SHOULDER
- PAVEMENT SEAM
- DRAIN CULVERT W/ FLARED END SECTION (F.E.S.)
- UNDERDRAIN
- GUARD RAIL
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- RETAINING WALL
- STORMTECH CHAMBERS/ISOLATOR ROW
- DRAIN MANHOLE W/STRUCTURE
- CATCH BASIN W/ STRUCTURE
- STORMWATER BMP OUTLET STRUCTURE

1-1/2" WASHED CRUSHED STONE * (AASHTO NO. 4)

SIEVE SIZE	% PASSING BY WEIGHT
2"	100
1-1/2"	90 – 100
1"	20 – 55
1/2"	0 –15
3/8"	0 –5

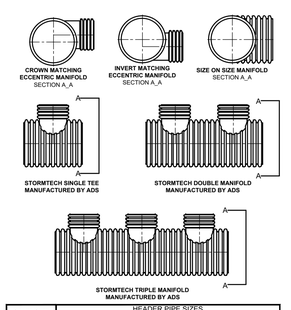
* EQUIVALENT TO STANDARD WASHED STONE – SECTION 702 OF NHDOT NHDOT STANDARD SPECIFICATIONS

P7



SC-740 MANIFOLD DETAIL

P8



STUB SIZE	HEADER PIPE SIZES								
	48"	42"	36"	30"	24"	18"	15"	12"	10"	8"
24"	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	-	-	-	-	-
18"	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	-	-	-	-
15"	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	-	-	-
12"	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	-	-
10"	-	-	-	-	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	-
8"	-	-	-	-	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL
6"	-	-	-	-	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL

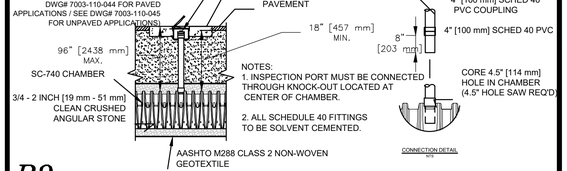
AVAIL - STANDARD HEADERS AVAILABLE

ADS 1-800-821-6710

MANIFOLDS ARE DESIGNED TO BE COUPLED TO STORMTECH PREFABRICATED END CAPS.
WHEN USING STANDARD END CAPS, CORRUGATED PIPE UP TO 18 INCHES CAN BE INSERTED DIRECTLY INTO THE END CAP. FOR 24" INLET PIPES, A CORRUGATED TO SMOOTH PIPE ADAPTER IS REQUIRED.

MANIFOLDS

P9



SC-740 INSPECTION PORT DETAIL

P10

INSPECTION AND MAINTENANCE:

DUE TO THE CRITICAL NATURE OF INSPECTION AND MAINTENANCE STORMTECH SYSTEM AS DETAILED IN THE DESIGN MANUAL, ADVANCED DRAINAGE SYSTEM, INC (ADS STORMTECH) THE FOLLOWING THREE FIRMS ARE RECOMMENDED FOR THIS TASK. IT IS HIGHLY RECOMMENDED THAT THE OPERATOR OF THE PROPERTY HAVE A LONG TERM INSPECTION AND MAINTENANCE CONTACT WITH A FIRM THAT CAN COMPLETE THESE VITAL SERVICES.

AS FOR ISOLATOR ROW MAINTENANCE, CB MAINTENANCE, ETC., REGIONAL ADS REPRESENTATIVES RECOMMEND USING ANY OF THE FOLLOWING CONTACTS:

STORMWATER COMPLIANCE, LLC;
ATTN: NATHAN MARLES, 1-877-271-9055; NMARLES@LIDTECH.COM
163 THADEUS STREET, PORTLAND, ME 04106
INFO@STORMWATERCOMP.COM

TED BERRY COMPANY;
ATTN: DAVE BEAUCHAMP, 207-897-3348; DAVID.BEAUCHAMP@TEDBERRYCOMPANY.COM
521 FEDERAL ROAD, LIVERMORE, ME 04253
INFL@TEDBERRYCOMPANY.COM

BELLEMORE SEPTIC, SEWER, & DRAIN;
ATTN: RAY BELLEMORE, 603-641-6640; RAYMOND@BELLEMORE.COM
PO BOX 10369, BEDFORD, NH 03110

CONTACT AARON CHEEVER, P.E., ADVANCE DRAINAGE SYSTEMS, INC.
AARON.CHEEVER@ADS-PIPE.COM 1-978-302-0650
FOR PRODUCT AND PRICING

P-102A

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

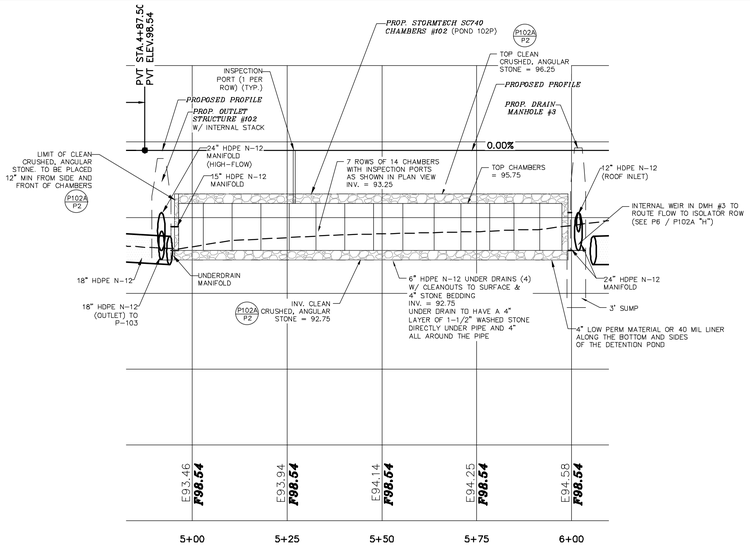
STORMTECH SC740 CHAMBER DETENTION POND #102A
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 – 034

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION



SECTION OF STORMTECH DETENTION #102

A 102 A 102

GRAPHIC SCALE

20 0 10 20 40 80

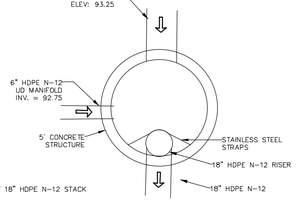
(IN FEET) VERTICAL SCALE: 1" = 4'
1 inch = 20 ft.

LOW PERMEABILITY MATERIAL GRADATION

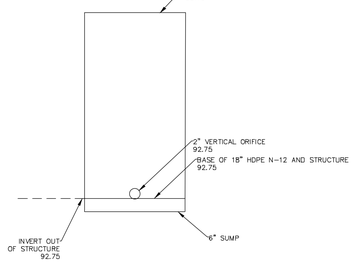
SIEVE SIZE	% PASSING BY WEIGHT
#4	95 - 100
#40	60 - 95
#100	40 - 60
#200	25 - 45

P11

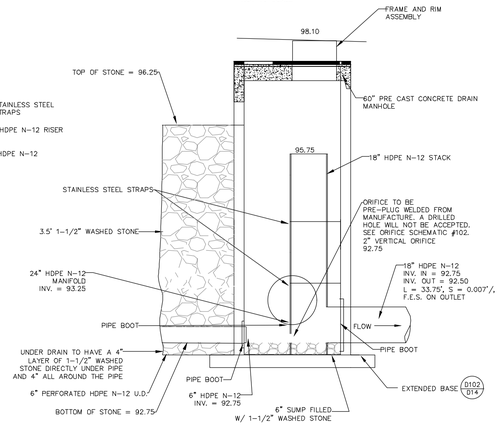
TOP VIEW
NOT TO SCALE (NO FRAME AND RIM IN THIS VIEW)



ORIFICE SCHEMATIC #102
NOT TO SCALE



OUTLET STRUCTURE #102
NOT TO SCALE



PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

STORMTECH SC740 CHAMBER DETENTION POND #102B DETAILS
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

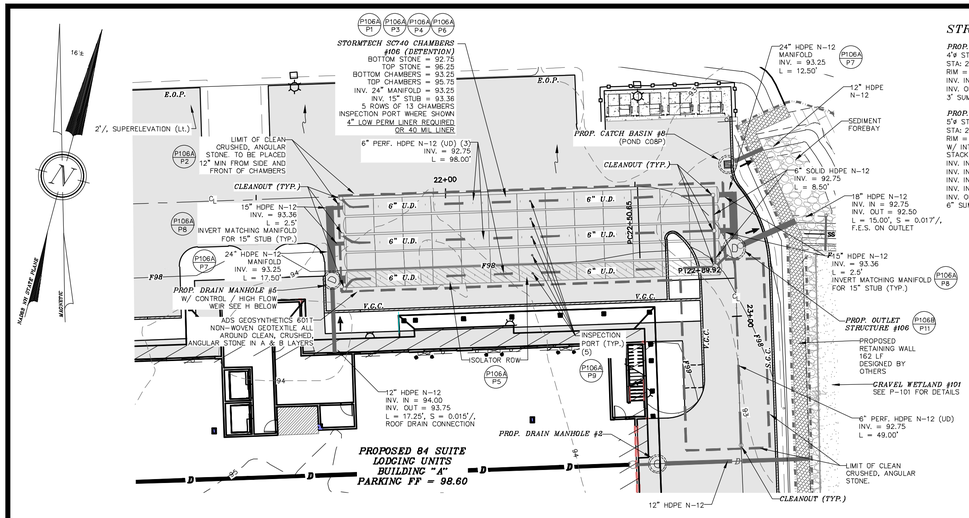
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14263
LICENSED PROFESSIONAL ENGINEER

P-102B

NOT FOR CONSTRUCTION



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

A REPRESENTATIVE FROM BS&E WILL BE ON SITE DURING THE CONSTRUCTION OF THE STORMTECH SYSTEM

PLAN VIEW STORMTECH SC-740 CHAMBERS DETENTION POND #106 SEE SHEET 106B FOR DETAILS

STRUCTURES TABLE:

PROP. DRAIN MANHOLE #5
4'ø STRUCTURE W/ NH STANDARD RIM
STA: 21+69.305 (Rt. 21.90')
RIM = 98.05 (FLUSH)
INV. IN = 93.75 (12" HDPE N-12) (BUILDING A ROOF)
INV. OUT = 93.25 (24" HDPE N-12) (2) (P-106)
3" SUMP = 90.25

PROP. OUTLET STRUCTURE #106 (POND 106P)
5'ø STRUCTURE W/ NH STANDARD RIM
STA: 22+82.30 (Lt. 1.20')
RIM = 97.86 (FLUSH)
W/ INTERNAL 18" STACK
STACK TOP = 95.50
INV. IN = 92.75 (2" ORIFICE AT BASE OF STACK)
INV. IN = 93.36 (15" HDPE N-12) (MANIFOLD)
INV. IN = 93.25 (24" HDPE N-12) (MANIFOLD)
INV. IN = 92.75 (6" HDPE N-12) (2 U.D.)
INV. OUT = 92.75 (18" HDPE N-12) (GW #101)
6" SUMP FILLED W/ 1 1/2" STONE

P1

1. ALL DESIGN SPECIFICATIONS FOR STORMTECH SC-740 CHAMBERS SHALL BE IN ACCORDANCE WITH THE STORMTECH DESIGN MANUAL, ADVANCED DRAINAGE SYSTEM, INC (ADS STORMTECH)
2. THE INSTALLATION OF STORMTECH SC-740 CHAMBERS SHALL BE IN ACCORDANCE WITH THE LATEST STORMTECH INSTALLATION INSTRUCTIONS
3. THE CONTRACTOR IS ADVISED TO REVIEW AND UNDERSTAND THE INSTALLATION INSTRUCTIONS PRIOR TO BEGINNING SYSTEM INSTALLTION. CALL **1-888-892-2694** OR VISIT **WWW.STORMTECH.COM** TO RECIEVE A COPY OF THE LATEST STORMTECH INSTALLATION INSTRUCTIONS
4. CHAMBERS SHALL MEET THE DESIGN REQUIREMENTS AND LOAD FACTORS SPECIFIED IN SECTION 12.12 OF THE LATEST EDITION OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

SC-740 NOTES

P2

ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

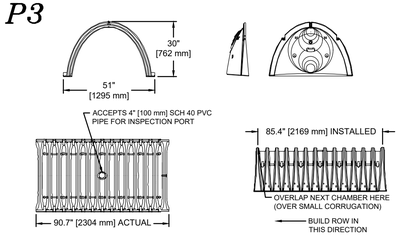
	MATERIAL LOCATION	DESCRIPTION	AASHTO M43 DESIGNATION[1]	COMPACTION/DENSITY REQUIREMENT
D	FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISH GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THIS LAYER.	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	FILL MATERIAL FOR LAYER 'C' STARTS FROM THE 12" (305 mm) OR GREATER STONE LAYER ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THIS LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, < 35% FINES. MOST PAVEMENT SUB-BASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTION AFTER 12" (305 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) LIFTS TO A MIN. 95% STANDARD PROCTOR DENSITY. ROLLER CONFIGURATION MUST NOT TO EXCEED 12,000 lbs [53 kN]. DYNAMIC FORCE NOT TO EXCEED 20,000 lbs [89 kN]
B	EMBEDMENT STONE SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE OR LAYER 'A' TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE, NOMINAL SIZE DISTRIBUTION BETWEEN 3/4 - 2 INCH [19 - 51 mm]	3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	FOUNDATION STONE BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE, NOMINAL SIZE DISTRIBUTION BETWEEN 3/4 - 2 INCH [19 - 51 mm]	3, 35, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A 95% STANDARD PROCTOR DENSITY*.

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE.

2. AS AN ALTERNATE TO PROCTOR TESTING AND FIELD DENSITY MEASUREMENTS ON OPEN GRADED STONE, STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9in [229 mm] (MAX) LIFTS USING TWO FULL COVERAGES WITH AN APPROPRIATE COMPACTOR.

STORMTECH ACCEPTABLE FILL MATERIALS

P3



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W x H x INSTALLED LENGTH)	51.0" x 30.0" x 85.4" [1295 mm x 762 mm x 2169 mm]
CHAMBER STORAGE	45.9 CUBIC FEET [1.30 m3]
MINIMUM INSTALLED STORAGE	74.9 CUBIC FEET [2.12 m3]
WEIGHT	75 lbs. [33.6 kg]

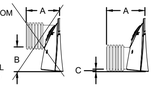
STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"

PART#	STUB	A	B	C
SC740EPE06T	6" [150 mm]	10.90" [277 mm]	18.50" [470 mm]	N/A
SC740EPE06B	6" [150 mm]	10.90" [277 mm]	N/A	0.50" [13 mm]
SC740EPE08T	8" [200 mm]	12.20" [310 mm]	16.50" [419 mm]	N/A
SC740EPE08B	8" [200 mm]	12.20" [310 mm]	N/A	0.60" [15 mm]
SC740EPE10T	10" [250 mm]	13.40" [340 mm]	14.50" [368 mm]	N/A
SC740EPE10B	10" [250 mm]	13.40" [340 mm]	N/A	0.70" [18 mm]
SC740EPE12T	12" [300 mm]	14.70" [373 mm]	12.50" [318 mm]	N/A
SC740EPE12B	12" [300 mm]	14.70" [373 mm]	N/A	1.20" [30 mm]
SC740EPE15T	15" [375 mm]	18.40" [467 mm]	9.00" [229 mm]	N/A
SC740EPE15B	15" [375 mm]	18.40" [467 mm]	N/A	1.30" [33 mm]
SC740EPE18T	18" [450 mm]	19.70" [500 mm]	5.00" [127 mm]	N/A
SC740EPE18B	18" [450 mm]	19.70" [500 mm]	N/A	1.60" [41 mm]
*SC740EPE24B	24" [600 mm]	18.50" [470 mm]	N/A	0.10" [3 mm]

NOTE: ALL DIMENSIONS ARE NOMINAL

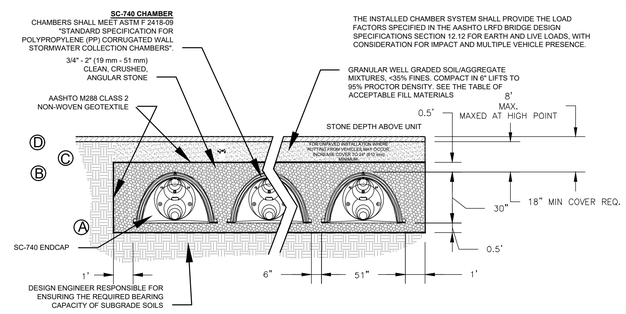
ALL STUBS, EXCEPT FOR THE SC740EPE24B ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

*FOR THE SC740EPE24B THE 24" [600 mm] STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 1.75" [44 mm]. BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.



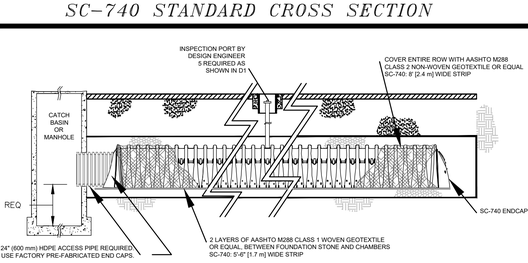
SC-740 TECHNICAL SPEC.

P4



SC-740 STANDARD CROSS SECTION

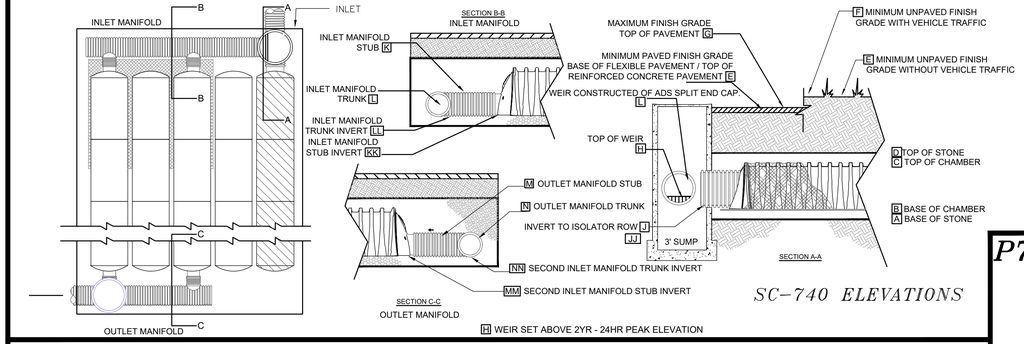
P5



SC-740 ISOLATOR ROW (TM) DETAIL

P6

	A	B	C	D	E	F	G	H	J	JJ	K	KK	L	LL	M	MM	N	NN
BED 1/ONLY	92.75	93.25	95.75	96.25	97.60	N/A	98.09	94.00	93.25	24" HDPE	15" HDPE	93.36	24" HDPE	93.25	15" HDPE	93.36	24" HDPE	93.25



SC-740 ELEVATIONS

CONSTRUCTION NOTE: THE DESIGN ENGINEER IS TO BE ON SITE PRIOR TO AND DURING THE PLACEMENT OF THE RESERVOIR STONE, AND TO WITNESS THE INSTALLATION OF THE UNDER-DRAIN AND CHAMBERS. PLEASE PROVIDE 24 HOURS NOTICE PRIOR TO REQUESTED INSPECTION. A LETTER CERTIFYING AS TO THE CONSTRUCTION BY THE OWNER AND DESIGN ENGINEER IS REQUIRED AS A CONDITION OF THE ALTERATION OF TERRAIN PERMIT AND THE CITY OF DOVER

EXISTING LEGEND:

- IRON BOUND/IRON ROD (FND)
- IRON PIPE (FND)
- STONE BOUND (FND)
- UTILITY POLE / GUY WIRE
- SINGLE POST SIGN
- TEMPORARY BENCHMARK
- TESTHOLE
- PERIMETER BOUNDARY LINE
- BUILDING SETBACK LINE
- OVERHEAD UTILITIES
- EXISTING CONTOUR MINOR
- EXISTING CONTOUR MAJOR
- POORLY DRAINED WETLAND LINE
- 50' WETLAND BUFFER LINE
- TREE LINE
- FND FOUND
- TYP TYPICAL
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS

PROPOSED LEGEND:

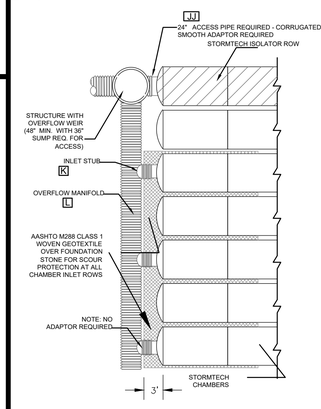
- E101 / E6 — DETAIL SHEET / DETAIL
- P176 — CONTOUR MINOR, PROPOSED
- P175 — CONTOUR MAJOR, PROPOSED
- ROAD CENTERLINE
- SHOULDER
- PAVEMENT SEAM
- DRAIN CULVERT W/ FLARED END SECTION (F.E.S.)
- UNDERDRAIN
- GUARD RAIL
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- RETAINING WALL
- STORMTECH CHAMBERS/ISOLATOR ROW
- DRAIN MANHOLE W/STRUCTURE
- CATCH BASIN W/ STRUCTURE
- STORMWATER BMP OUTLET STRUCTURE
- TEMPORARY BENCHMARK (T.B.M.)

1-1/2" WASHED CRUSHED STONE * (AASHTO NO. 4)

SIEVE SIZE	% PASSING BY WEIGHT
2"	100
1-1/2"	90 – 100
1"	20 – 55
1/2"	0 –15
3/8"	0 –5

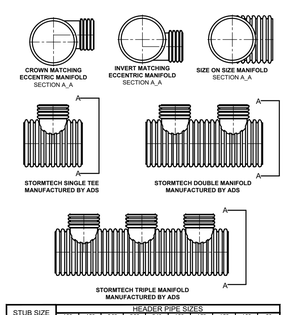
* EQUIVALENT TO STANDARD WASHED STONE – SECTION 702 OF NHDOT NHDOT STANDARD SPECIFICATIONS

P7



SC-740 MANIFOLD DETAIL

P8



STUB SIZE	HEADER PIPE SIZES								
	48"	42"	36"	30"	24"	18"	15"	12"	10"	8"
24"	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	-	-	-	-	-
18"	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	-	-	-	-
15"	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	-	-	-
12"	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	-	-
10"	-	-	-	-	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	-
8"	-	-	-	-	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL
6"	-	-	-	-	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL

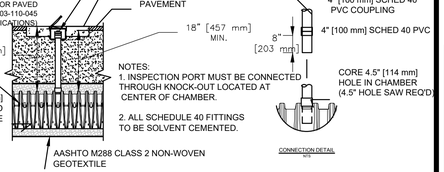
AVAIL - STANDARD HEADERS AVAILABLE

ADS 1-800-821-6710

MANIFOLDS ARE DESIGNED TO BE COUPLED TO STORMTECH PREFABRICATED END CAPS.
WHEN USING STANDARD END CAPS, CORRUGATED PIPE UP TO 18 INCHES CAN BE INSERTED DIRECTLY INTO THE END CAP. FOR 24" INLET PIPES, A CORRUGATED TO SMOOTH PIPE ADAPTER IS REQUIRED.

MANIFOLDS

P9



SC-740 INSPECTION PORT DETAIL

P10

INSPECTION AND MAINTENANCE:

DUE TO THE CRITICAL NATURE OF INSPECTION AND MAINTENANCE STORMTECH SYSTEM AS DETAILED IN THE DESIGN MANUAL, ADVANCED DRAINAGE SYSTEM, INC (ADS STORMTECH) THE FOLLOWING THREE FIRMS ARE RECOMMENDED FOR THIS TASK. IT IS HIGHLY RECOMMENDED THAT THE OPERATOR OF THE PROPERTY HAVE A LONG TERM INSPECTION AND MAINTENANCE CONTACT WITH A FIRM THAT CAN COMPLETE THESE VITAL SERVICES.

AS FOR ISOLATOR ROW MAINTENANCE, CB MAINTENANCE, ETC., REGIONAL ADS REPRESENTATIVES RECOMMEND USING ANY OF THE FOLLOWING CONTACTS:

STORMWATER COMPLIANCE, LLC;
ATTN: NATHAN MARLES, 1-877-271-9055; NMARLES@LIDTECH.COM
163 THADEUS STREET, PORTLAND, ME 04106
INFO@STORMWATERCOMP.COM

TED BERRY COMPANY;
ATTN: DAVE BEAUCHAMP, 207-897-3348; DAVID.BEAUCHAMP@TEDBERRYCOMPANY.COM
521 FEDERAL ROAD, LIVERMORE, ME 04253
INFL@TEDBERRYCOMPANY.COM

BELLEMORE SEPTIC, SEWER, & DRAIN;
ATTN: RAY BELLEMORE, 603-641-6640; RAYMOND@BELLEMORE.COM
PO BOX 10369, BEDFORD, NH 03110

CONTACT AARON CHEEVER, P.E., ADVANCE DRAINAGE SYSTEMS, INC.
AARON.CHEEVER@ADS-PIPE.COM 1-978-302-0650
FOR PRODUCT AND PRICING

P-106A

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

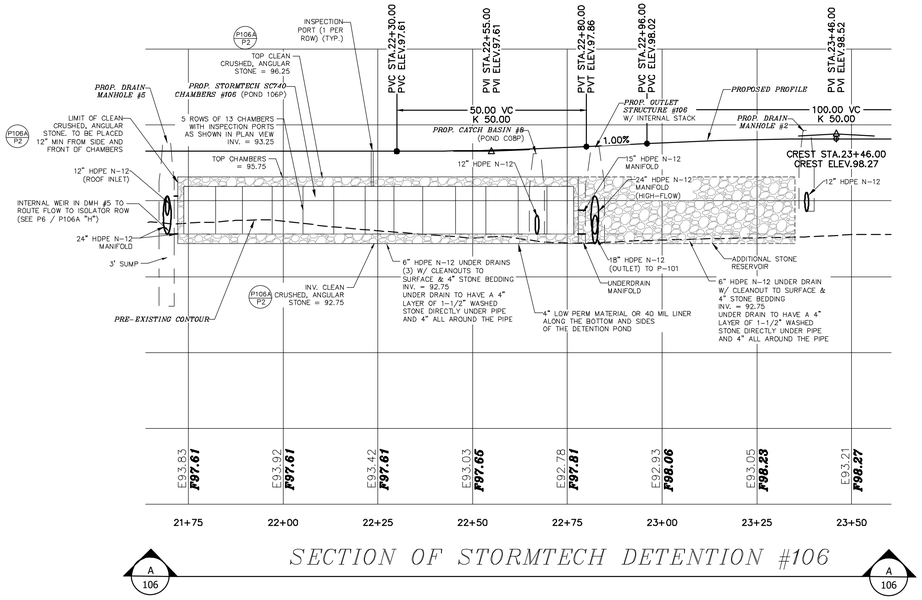
STORMTECH SC740 CHAMBER DETENTION POND #106A
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 – 034

STATE OF NEW HAMPSHIRE — KENNETH A. BERRY No. 14738 — LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION



SECTION OF STORMTECH DETENTION #106

GRAPHIC SCALE

20 0 10 20 40 80

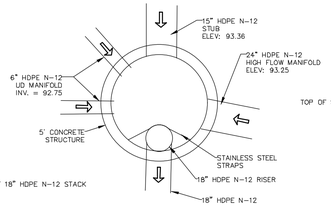
(IN FEET) VERTICAL SCALE: 1" = 4'
1 inch = 20 ft.

LOW PERMEABILITY MATERIAL GRADATION

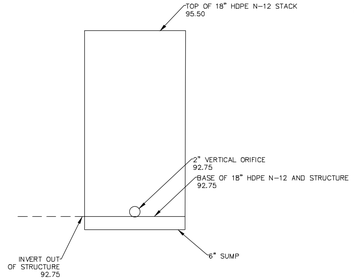
SIEVE SIZE	% PASSING BY WEIGHT
#4	95 - 100
#40	60 - 95
#100	40 - 60
#200	25 - 45

P11

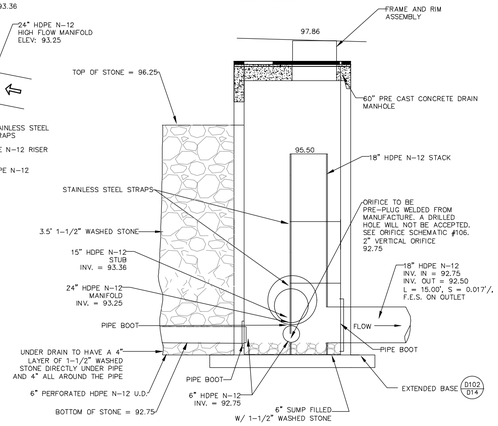
TOP VIEW
NOT TO SCALE (NO FRAME AND RIM IN THIS VIEW)



ORIFICE SCHEMATIC #106
NOT TO SCALE



OUTLET STRUCTURE #106
NOT TO SCALE



PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

STORMTECH SC740 CHAMBER DETENTION POND #106B DETAILS
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY No. 14288 LICENSED PROFESSIONAL ENGINEER

P-106B

NOT FOR CONSTRUCTION

SOILS & DEWATERING:

WfA	*WINDSOR*	*VARIANT*	*K= 0.17*
WfB	*WINDSOR*	*VARIANT*	*K= 0.17*
WfC	*WINDSOR*	*VARIANT*	*K= 0.17*
BtxA	*BUXTON*	*SILT LOAM*	*K= 0.28*
BtxB	*BUXTON*	*SILT LOAM*	*K= 0.49*
BtxC	*BUXTON*	*SILT LOAM*	*K= 0.49*
ScA-P	*SCANTIC*	*POORLY DRAINED*	*K= 0.49*
ScB-P	*SCANTIC*	*POORLY DRAINED*	*K= 0.43*

SEE SITE SPECIFIC SOILS MAP (SSSM)
SEE WEBSOIL USDA–NRCS
ERODIBILITY FACTOR – K, CPESC MANUAL, ENVIROCERT INTERNATIONAL INC. & ROCKINGHAM COUNTTY SOIL SURVEY, ROCKWEB SOIL ATTRIBUTES.

CONTRACTOR TO BE AWARE OF THE SOIL PROFILES AND ENSURE THAT PROPER EROSION PREVENTION AND SEDIMENT CONTROL MEASURES ARE TAKEN AT ALL TIMES. ANY DEWATERING REQUIREMENTS IN NEW HAMPSHIRE REQUIRE SPECIAL PROVISIONS IN ACCORDANCE WITH THE "CLARIFICATION OF SECTION 9.1.2 (STATE OF NEW HAMPSHIRE CONDITIONS) AND OTHER NH SPECIFIC INFORMATION FOR THE U.S. EPA 2022 NPDES CONSTRUCTION GENERAL PERMIT (CGP)" DATED FEBRUARY 17, 2022 INCLUDED IN THE SWPPP.

COVER MANAGEMENT DURING CONSTRUCTION FOR EXPOSED SOIL WILL INCLUDE HAY / STRAW APPLIED AT A RATE OF 2.0 TONS PER ACRE, TEMPORARY SEEDING OF ANNUAL RYE GRASS, AND PERMANENT SEEDING AT THE EARLIEST OPPORTUNITY. SEE ADDITIONAL REQUIREMENT FOR STABILIZATION ON THE EROSION AND SEDIMENT CONTROL DETAIL SHEETS, E–101 AND E–102.

THE CONSTRUCTION SCHEDULE WILL BE MANAGED SO THAT ALL STORMWATER STRUCTURES WILL BE BUILT AND STABILIZED PRIOR TO RECEIVING SURFACE WATER RUNOFF. CONTRACTOR TO BE RESPONSIBLE FOR ALL DIVERSIONS DURING CONSTRUCTION AND FOR INTERIM SEDIMENT AND EROSION CONTROL MEASURES.

NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37A

3.) LOT AREA: 407,542 Sq. Ft., 9.36 Ac..

4.) S.C.R.D. BOOK 5138, PAGE 73

5.) THE INTENT OF THIS PLAN IS TO SHOW THE PROPOSED EROSION & SEDIMENT CONTROL MEASURES OF THE PROPOSED SITE PLAN.

6.) SEE PHASING PLAN FOR MORE INFORMATION.

7.) SEE EROSION AND SEDIMENT CONTROL NOTES LOCATED ON SHEET 2 OF THE PLAN SET. SEE SPECIFIC DEWATERING DETAILS ON THE DEWATERING PLAN SHEET. SEE EROSION AND SEDIMENT CONTROL DETAILS ON PLAN SHEET E–101 AND E–102 OF THE CONSTRUCTION DETAILS.

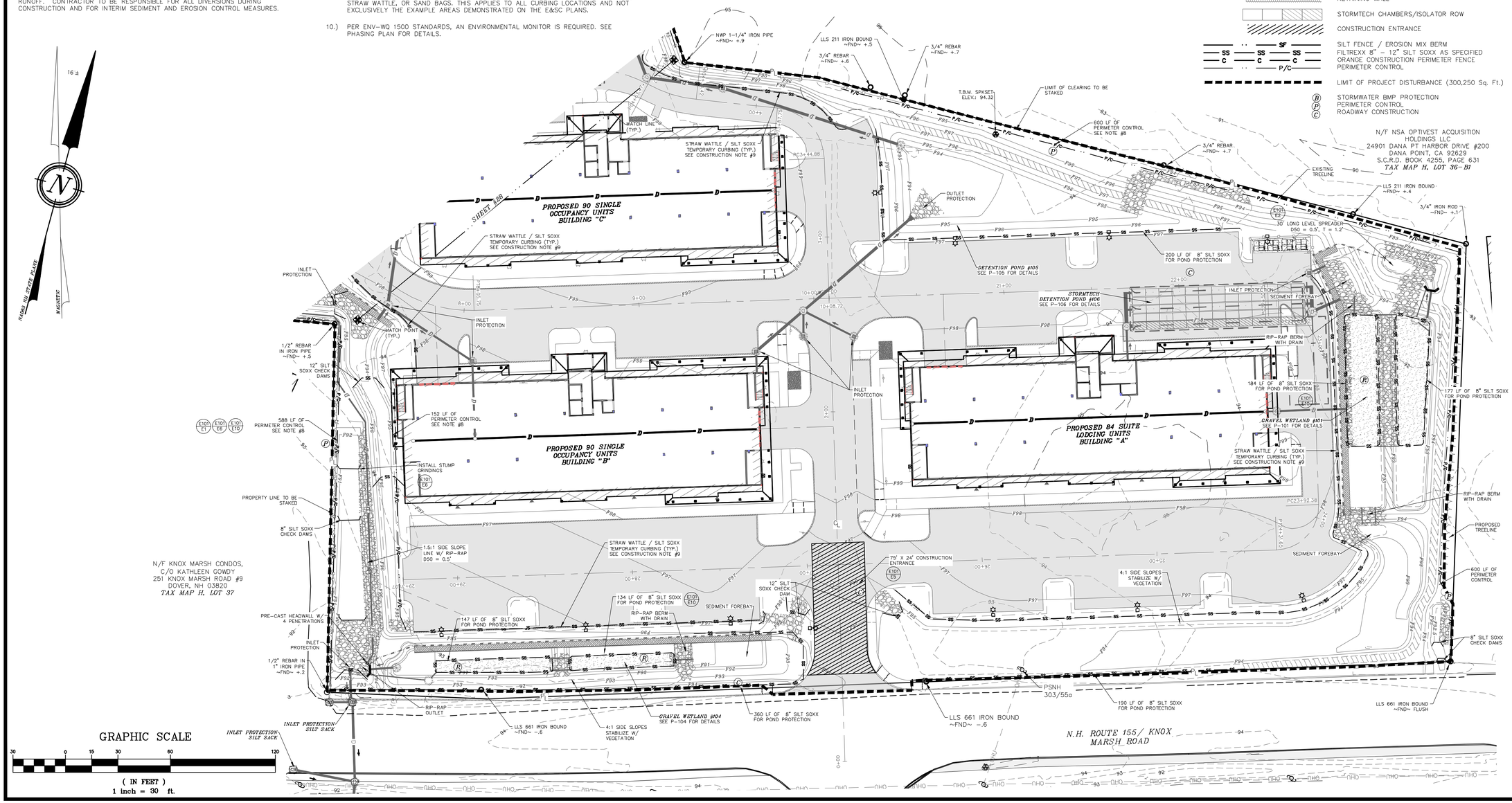
8.) CONTRACTOR CAN USE SILT FENCE, SILT SOXX OR MULCH BERM FOR PERIMETER CONTROL. SPECIFIC PRACTICES MAY BE SPECIFIED, SEE PLAN. SILT FENCE OR SILT SOXX REQUIRED WHEN UPGRADIENT DISTURBED SOIL GRADE IS GREATER THAN 5%. MULCH BERM CAN BE USED WHEN THE UPGRADIENT DISTURBED SOIL GRADE IS 5% OR LESS.

9.) TEMPORARY CURBING WILL BE INSTALLED AFTER ROADWAY CONSTRUCTION BECOMES IMPERVIOUS, EITHER COMPACTED GRAVEL OR BASE PAVEMENT TO ENSURE THAT CATCH BASINS ARE BROUGHT ON LINE AND SURFACE WATER RUNOFF IS ROUTED TO THE INTENDED TREATMENT. TEMPORARY CURBING CAN BE IN THE FORM OF SILT SOXX, STRAW WATTLE, OR SAND BAGS. THIS APPLIES TO ALL CURBING LOCATIONS AND NOT EXCLUSIVELY THE EXAMPLE AREAS DEMONSTRATED ON THE E&SC PLANS.

10.) PER ENV–WQ 1500 STANDARDS, AN ENVIRONMENTAL MONITOR IS REQUIRED. SEE PHASING PLAN FOR DETAILS.

LEGEND:

- IRON BOUND ~FND~
- EXISTING/PROPOSED CATCH BASIN W/ STRUCTURE
- PROPOSED STORMWATER BMP OUTLET STRUCTURE
- PROPOSED DRAIN MANHOLE W/ STRUCUTRE
- TEMPORARY BENCHMARK (T.B.M.)
- E101 / E6 — DETAIL SHEET / DETAIL
- POORLY DRAINED JURISDICTIONAL WETLAND
- 50' WETLAND BUFFER
- CONTOUR MINOR, EXISTING
- CONTOUR MAJOR, EXISTING
- CONTOUR MINOR, PROPOSED
- CONTOUR MAJOR, PROPOSED
- CENTER LINE
- EXISTING DRAINAGE LINE
- PROPOSED DRAINAGE LINE
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- BERM
- RETAINING WALL
- STORMTECH CHAMBERS/ISOLATOR ROW
- CONSTRUCTION ENTRANCE
- SILT FENCE / EROSION MIX BERM
- FILTREXX 8" – 12" SILT SOXX AS SPECIFIED
- ORANGE CONSTRUCTION PERIMETER FENCE
- PERIMETER CONTROL
- LIMIT OF PROJECT DISTURBANCE (300,250 Sq. Ft.)
- (B) STORMWATER BMP PROTECTION
- (P) PERIMETER CONTROL
- (C) ROADWAY CONSTRUCTION



GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

PLANNING FILE #SITE–XXXX–XXXX

REVISION	DATE	DESCRIPTION

EROSION AND SEDIMENT CONTROL PLAN EAST
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

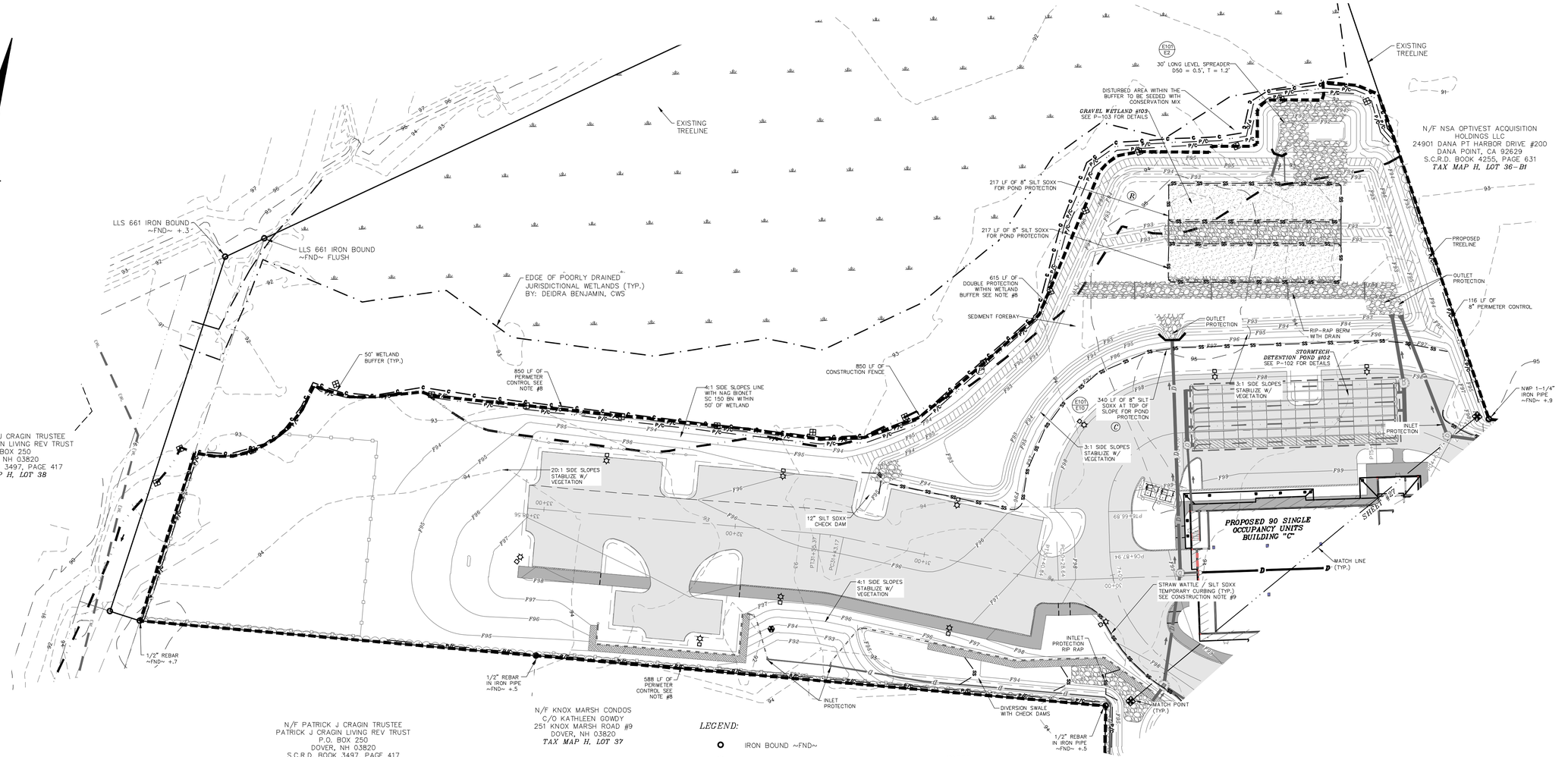
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

SCALE : 1 IN. EQUALS 30 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 – 034

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14736
LICENSED PROFESSIONAL ENGINEER

SHEET 27 OF 60

NOT FOR CONSTRUCTION



SOILS & DEWATERING:

WfA	*WINDSOR*	*VARIANT*	*K= 0.17*
WfB	*WINDSOR*	*VARIANT*	*K= 0.17*
WfC	*WINDSOR*	*VARIANT*	*K= 0.17*
BsA	*BUXTON*	*SILT LOAM*	*K= 0.28*
BsB	*BUXTON*	*SILT LOAM*	*K= 0.49*
BsC	*BUXTON*	*SILT LOAM*	*K= 0.49*
ScA-P	*SCANTIC*	*POORLY DRAINED*	*K= 0.49*
ScB-P	*SCANTIC*	*POORLY DRAINED*	*K= 0.43*

SEE SITE SPECIFIC SOILS MAP (SSSM)
SEE WEBSOIL USDA-NRCS
ERODIBILITY FACTOR - K, CPESC MANUAL, ENVIROCERT INTERNATIONAL INC. & ROCKINGHAM COUNTTY SOIL SURVEY, ROCKWEB SOIL ATTRIBUTES.

CONTRACTOR TO BE AWARE OF THE SOIL PROFILES AND ENSURE THAT PROPER EROSION PREVENTION AND SEDIMENT CONTROL MEASURES ARE TAKEN AT ALL TIMES. ANY DEWATERING REQUIREMENTS IN NEW HAMPSHIRE REQUIRE SPECIAL PROVISIONS IN ACCORDANCE WITH THE "CLARIFICATION OF SECTION 9.1.2 (STATE OF NEW HAMPSHIRE CONDITIONS) AND OTHER NH SPECIFIC INFORMATION FOR THE U.S. EPA 2022 NPDES CONSTRUCTION GENERAL PERMIT (CGP)" DATED FEBRUARY 17, 2022 INCLUDED IN THE SWPPP.

COVER MANAGEMENT DURING CONSTRUCTION FOR EXPOSED SOIL WILL INCLUDE HAY / STRAW APPLIED AT A RATE OF 2.0 TONS PER ACRE, TEMPORARY SEEDING OF ANNUAL RYE GRASS, AND PERMANENT SEEDING AT THE EARLIEST OPPORTUNITY. SEE ADDITIONAL REQUIREMENT FOR STABILIZATION ON THE EROSION AND SEDIMENT CONTROL DETAIL SHEETS, E-101 AND E-102.

THE CONSTRUCTION SCHEDULE WILL BE MANAGED SO THAT ALL STORMWATER STRUCTURES WILL BE BUILT AND STABILIZED PRIOR TO RECEIVING SURFACE WATER RUNOFF. CONTRACTOR TO BE RESPONSIBLE FOR ALL DIVERSIONS DURING CONSTRUCTION AND FOR INTERIM SEDIMENT AND EROSION CONTROL MEASURES.

LEGEND:

- IRON BOUND ~FND~
- EXISTING/PROPOSED CATCH BASIN W/ STRUCTURE
- PROPOSED STORMWATER BMP OUTLET STRUCTURE
- PROPOSED DRAIN MANHOLE W/ STRUCUTRE
- TEMPORARY BENCHMARK (T.B.M.)
- E101 E6 — DETAIL SHEET / DETAIL
- POORLY DRAINED JURISDICTIONAL WETLAND
- 50' WETLAND BUFFER
- CONTOUR MINOR, EXISTING
- CONTOUR MAJOR, EXISTING
- CONTOUR MINOR, PROPOSED
- CONTOUR MAJOR, PROPOSED
- CENTER LINE
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- PROPOSED DRAINAGE LINE
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- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- BERM
- RETAINING WALL
- STORMTECH CHAMBERS/ISOLATOR ROW
- CONSTRUCTION ENTRANCE
- SILT FENCE / EROSION MIX BERM
- FILTREXX 8" - 12" SILT SOXX AS SPECIFIED
- ORANGE CONSTRUCTION PERIMETER FENCE
- PERIMETER CONTROL
- LIMIT OF PROJECT DISTURBANCE (300,250 Sq. Ft.)
- B — STORMWATER BMP PROTECTION
- P — PERIMETER CONTROL
- C — ROADWAY CONSTRUCTION

NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37A

3.) LOT AREA: 407,542 Sq. Ft., 9.36 Ac..

4.) S.C.R.D. BOOK 5138, PAGE 73

5.) THE INTENT OF THIS PLAN IS TO SHOW THE PROPOSED EROSION & SEDIMENT CONTROL MEASURES OF THE PROPOSED SITE PLAN.

6.) SEE PHASING PLAN FOR MORE INFORMATION.

7.) SEE EROSION AND SEDIMENT CONTROL NOTES LOCATED ON SHEET 2 OF THE PLAN SET. SEE SPECIFIC DEWATERING DETAILS ON THE DEWATERING PLAN SHEET. SEE EROSION AND SEDIMENT CONTROL DETAILS ON PLAN SHEET E-101 AND E-102 OF THE CONSTRUCTION DETAILS.

8.) CONTRACTOR CAN USE SILT FENCE, SILT SOXX OR MULCH BERM FOR PERIMETER CONTROL. SPECIFIC PRACTICES MAY BE SPECIFIED, SEE PLAN. SILT FENCE OR SILT SOXX REQUIRED WHEN UPGRADIENT DISTURBED SOIL GRADE IS GREATER THAN 5% MULCH BERM CAN BE USED WHEN THE UPGRADIENT DISTURBED SOIL GRADE IS 5% OR LESS.

9.) TEMPORARY CURBING WILL BE INSTALLED AFTER ROADWAY CONSTRUCTION BECOMES IMPERVIOUS, EITHER COMPACTED GRAVEL OR BASE PAVEMENT TO ENSURE THAT CATCH BASINS ARE BROUGHT ON LINE AND SURFACE WATER RUNOFF IS ROUTED TO THE INTENDED TREATMENT. TEMPORARY CURBING CAN BE IN THE FORM OF SILT SOXX, STRAW WATTLE, OR SAND BAGS. THIS APPLIES TO ALL CURBING LOCATIONS AND NOT EXCLUSIVELY THE EXAMPLE AREAS DEMONSTRATED ON THE E&SC PLANS.

10.) PER ENV-WQ 1500 STANDARDS, AN ENVIRONMENTAL MONITOR IS REQUIRED. SEE PHASING PLAN FOR DETAILS.

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

EROSION AND SEDIMENT CONTROL PLAN WEST
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 30 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14248
LICENSED PROFESSIONAL ENGINEER

SHEET 28 OF 60

NOT FOR CONSTRUCTION

LEGEND:

- UTILITY POLE/GUY WIRE
- TEST PIT
- TEMPORARY BENCHMARK (T.B.M.)
- E101 / E6 — DETAIL SHEET / DETAIL
- POORLY DRAINED JURISDICTIONAL WETLAND
- WETLAND BUFFER
- 176 — CONTOUR MINOR, EXISTING
- 175 — CONTOUR MAJOR, EXISTING
- P176 — CONTOUR MINOR, PROPOSED
- P175 — CONTOUR MAJOR, PROPOSED
- BUILDING SETBACK LINE
- TREELINE
- ROAD CENTERLINE
- SHOULDER
- GUARD RAIL
- DRAIN CULVERT W/ FLARED END SECTION (F.E.S.)
- BITUMINOUS CONCRETE
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- BERM
- RETAINING WALL
- STORMTECH CHAMBERS/ISOLATOR ROW
- LIMIT OF STORMTECH CHAMBER STONE/GENERAL STONE
- DRAIN MANHOLE W/STRUCTURE
- CATCH BASIN W/ STRUCTURE
- STORMWATER BMP OUTLET STRUCTURE
- TRANSFORMER / J.BOX
- UGE — UNDERGROUND UTILITY
- LAMP "A", POLE MOUNTED
- LAMP "B", MOUNTED ON BUILDING
- LAMP "C", MOUNTED ON BUILDING
- LAMP "D", MOUNTED ON BUILDING
- SEWER MANHOLE W/ STRUCTURE
- GATE VALVE
- CURB STOP
- FIRE HYDRANT
- THRUST BLOCKS
- W — PROPOSED WATER MAIN
- WS — PROPOSED WATER SERVICE
- S — PROPOSED SEWER LINE

GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)

1 inch = 80 ft.

UTILITY PLANS TABLE OF CONTENTS:

SHEET #29: OVERVIEW UTILITY PLAN
SHEET #30: UTILITY P&P TIBETAN DRIVE 0+00–4+00
SHEET #31: UTILITY P&P TIBETAN DRIVE 4+00–7+00
SHEET #32: UTILITY P&P TIBETAN DRIVE 7+00–END
SHEET #33: UTILITY P&P BUILDING "A" 20+00–24+00
SHEET #34: SEWER CONNECTION PROFILE
SHEET #35: UTILITY P&P WESTERN PARKING LOT 30+00–END
SHEET #36: WATERLINE EXTENSION P&P HANSON ROAD
SHEETS #55–#56: UTILITY CONSTRUCTION DETAILS U-101–U102

SEE SHEET #8 DEMOLITION PLAN FOR ITEMS TO BE RETAINED

NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37A

3.) LOT AREA: 407,542 Sq. Ft., 9.36 Ac.

4.) S.C.R.D. BOOK 5138, PAGE 73

5.) THE INTENT OF THIS PLAN IS TO SHOW THE PROPOSED OVERVIEW UTILITY DESIGN.

6.) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVE AND BELOW GROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. ANY UTILITY CONFLICTS SHOULD BE REPORTED IMMEDIATELY TO THE DESIGN ENGINEER.

7.) THE CONTRACTOR SHALL CALL AND COORDINATE WITH DIGSAFE 1-888-344-7233 AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.

8.) PROTECTION OF SUBGRADE: THE CONTRACTOR SHALL BE REQUIRED TO MAINTAIN STABLE, DEWATERED SUBGRADES, TRENCHES, AND OTHER AREAS DURING CONSTRUCTION. SUBGRADE DISTURBANCE MAY BE INFLUENCED BY EXCAVATION METHODS, MOISTURE, PRECIPITATION, GROUNDWATER CONTROL, AND CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO PREVENT SUBGRADE DISTURBANCE. SUCH PRECAUTIONS MAY INCLUDE DIVERTING STORMWATER RUNOGF AWAY FROM CONSTRUCTION AREAS, REDUCING TRAGFIC IN SENSITIVE AREAS, AND MAINTAINING AN EGFECTIVE DEWATERING PROGRAM. SOILS EXHIBITING HEAVING OR INSTABILITY SHALL BE OVER EXCAVATED TO MORE COMPETENT BEARING SOIL AND REPLACED WITH FREE DRAINING STRUCTURAL FILL MEETING THE ENGINEERS SPECIFIC RECOMMENDED CRITERIA.

9.) IF THE EARTHWORK IS PERFORMED DURING FREEZING WEATHER (NOT ALLOWED IN CITY R.O.W.), EXPOSED SUBGRADES ARE SUSCEPTIBLE TO FROST. NO FILL OR UTILITIES SHALL BE PLACED ON FROZEN GROUND. THIS WILL LIKELY REQUIRE REMOVAL OF A FROZEN SOIL CRUST AT THE COMMENCEMENT OF EACH DAY'S OPERATION. THE FINAL SUBGRADE ELEVATION WOULD ALSO REQUIRE AN APPROPRIATE DEGREE OF INSULATION AGAINST FREEZING.

10.) PLACEMENT OF BORROW MATERIALS SHALL BE PERFORMED IN A MANNER THAT PREVENTS LONG TERM DIGFERENTIAL SETTLEMENT. EXCESSIVELY WET MATERIALS SHALL BE STOCKPILED AND ALLOWED TO DRAIN BEFORE PLACEMENT. FROZEN MATERIAL SHALL NOT BE USED FOR CONSTRUCTION. VOIDS BETWEEN STONES AND CLUMPS OF MATERIAL SHALL BE FILLED WITH FINE MATERIALS.

11.) FINAL UTILITY LOCATIONS TO BE COORDINATED BETWEEN THE CONTRACTOR, ALL APPROPRIATE UTILITY COMPANIES AND THE DOVER DPW.

12.) CONTRACTOR TO CONTACT DOVER DPW A MINIMUM OF TWO WEEKS PRIOR TO ANY CONSTRUCTION TO COORDINATE ALL WORK CONCERNING INSTALLATION OF ANY PROPOSED WATER LINE IMPROVEMENTS.

NOTES CONTINUED:

13.) ALL WATER MAIN AND SERVICE INSTALLATIONS SHALL CONFORM TO CITY OF DOVER STANDARDS. ALL HIGHWAY CONSTRUCTION WILL MEET THE CITY OF DOVER STANDARDS.

14.) CONTRACTOR SHALL COORDINATE ALL ELECTRICAL INSTALLATIONS WITH EVERSOURCE AT (800) 662-7764. ALL ELECTRIC CONDUIT INSTALLATION SHALL BE INSPECTED BY EVERSOURCE PRIOR TO BACKFILL. A 48-HOUR MINIMUM NOTICE IS REQUIRED.

15.) CONTRACTOR SHALL COORDINATE ALL TELECOMMUNICATIONS INSTALLATIONS WITH FAIRPOINT COMMUNICATIONS AT (603) 427-5525.

16.) CONTRACTOR SHALL COORDINATE ALL CABLE INSTALLATIONS WITH COMCAST.

17.) CONTRACTOR SHALL COORDINATE ALL GAS INSTALLATIONS WITH UNITIL.

18.) ALL SEWER MAN HOLE RIMS & COVERS ARE TO BE NH STANDARD.

19.) ALL WATER SERVICES ARE TO BE WITNESSED WITH A 2"X4" PAINTED BLUE. ALL SEWER SERVICES ARE TO BE WITNESSED WITH A 2"X4" PAINTED YELLOW, IS STUBBED PRIOR TO BUILDING CONSTRUCTION.

20.) CURB BOXES SHOULD BE PLACED IN THE LAWN AREA, OR IF PLACED IN PAVEMENT, A ROAD BOX IS REQUIRED.

21.) SEE EXISTING CONDTIONS PLAN FOR DATUM. VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL DATUS BASED ON NAD83 STATE PLANE COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS.

22.) MINIMUM SLOPE FOR ALL SEWER SERVICE CONNECTIONS IS TO BE NO LESS THAN 0.01'/'.

23.) ALL SEWER INSTALLATIONS SHALL CONFORM TO THE REQUIREMENTS OF NHDES & DOVER DPW SEWER DIVISION STANDARDS. ALL PVC SEWER PIPE IS TO CONFORM WITH ENV-WQ 704.05 (e)-(g) FOR SDR 35 GRAVITY SEWER PIPE, CONFORM WITH ENV-WQ 704.08 FOR SDR 21 / 11 / 9 FORCE MAIN PRESSURE PIPE, AND CONFORM WITH ASTM D3034. PVC JOINT SEALS SHALL CONFORM WITH ASTM D3121. THE FORCE MAIN SHALL BE TESTED IN ACCORDANCE WITH ENV-WQ 704.09.

24.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

25.) CONTRACTOR TO TRANSFER TEMPORARY BENCHMARK TO A SUITABLE BENCHMARK TO CONTROL CONSTRUCTION. ANY ELEVATION DISCREPANCIES ARE TO BE REPORTED TO THE THE DESIGN ENGINEER IMMEDIATELY.

26.) ALL SEWER AND WATER CROSSINGS ARE TO MAINTAIN A 1.5' OF SEPARATION. OTHERWISE, 2" RIGID INSULATION WILL BE REQUIRED.

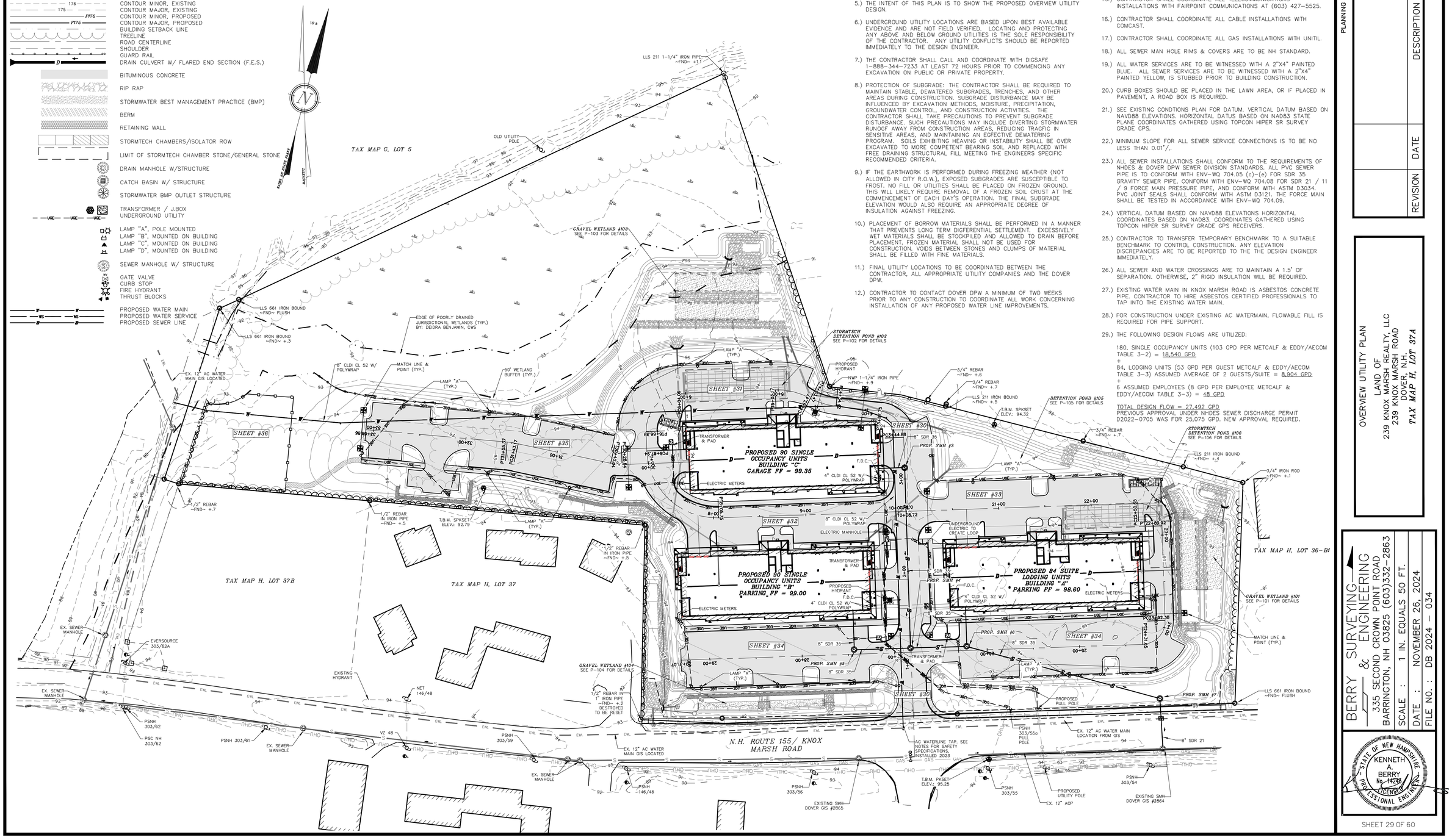
27.) EXISTING WATER MAIN IN KNOX MARSH ROAD IS ASBESTOS CONCRETE PIPE. CONTRACTOR TO HIRE ASBESTOS CERTIFIED PROFESSIONALS TO TAP INTO THE EXISTING WATER MAIN.

28.) FOR CONSTRUCTION UNDER EXISTING AC WATERMAIN, FLOWABLE FILL IS REQUIRED FOR PIPE SUPPORT.

29.) THE FOLLOWING DESIGN FLOWS ARE UTILIZED:

180, SINGLE OCCUPANCY UNITS (103 GPD PER METCALF & EDDY/AECOM TABLE 3-2) = 18,540 GPD
+
84, LODGING UNITS (53 GPD PER GUEST METCALF & EDDY/AECOM TABLE 3-3) ASSUMED AVERAGE OF 2 GUESTS/SUITE = 8,904 GPD
+
6 ASSUMED EMPLOYEES (8 GPD PER EMPLOYEE METCALF & EDDY/AECOM TABLE 3-3) = 48 GPD

TOTAL DESIGN FLOW = 27,492 GPD
PREVIOUS APPROVAL UNDER NHDES SEWER DISCHARGE PERMIT D2022-0705 WAS FOR 25,075 GPD. NEW APPROVAL REQUIRED.



PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

OVERVIEW UTILITY PLAN
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 – 034

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY No. 14768 LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37A

3.) LOT AREA: 407,542 Sq. Ft., 9.36 Ac.

4.) S.C.R.D. BOOK 5138, PAGE 73

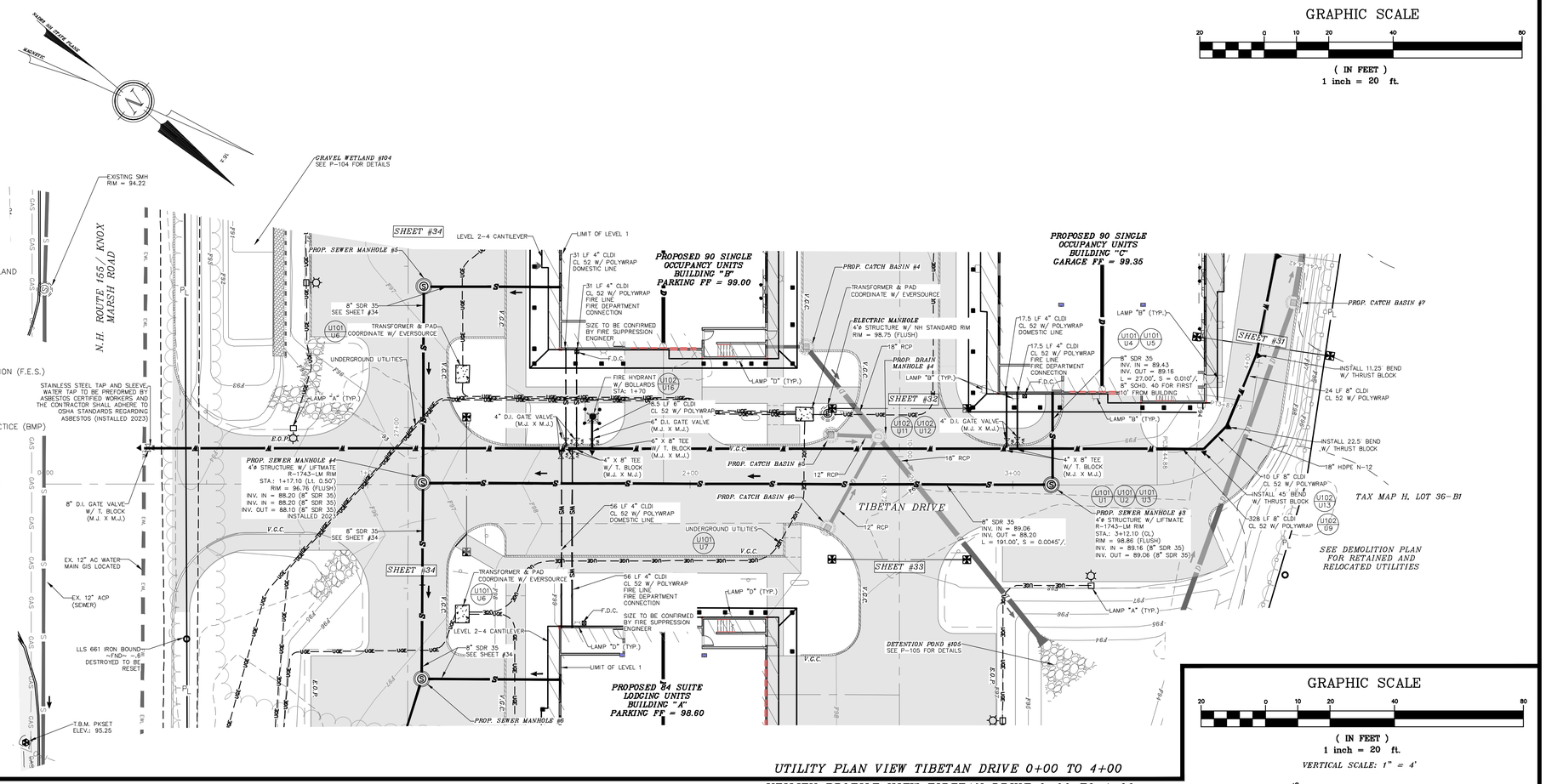
5.) THE INTENT OF THIS PLAN IS TO SHOW THE UTILITY DETAIL FOR THE PROPOSED DEVELOPMENT.

6.) SEE OVERVIEW UTILITY PLAN FOR ALL OTHER STANDARD UTILITY NOTES

7.) SEE DEMOLITION PLAN FOR UTILITIES TO BE RETAINED. A PORTION OF THE UTILITIES WERE INSTALLED IN 2024.

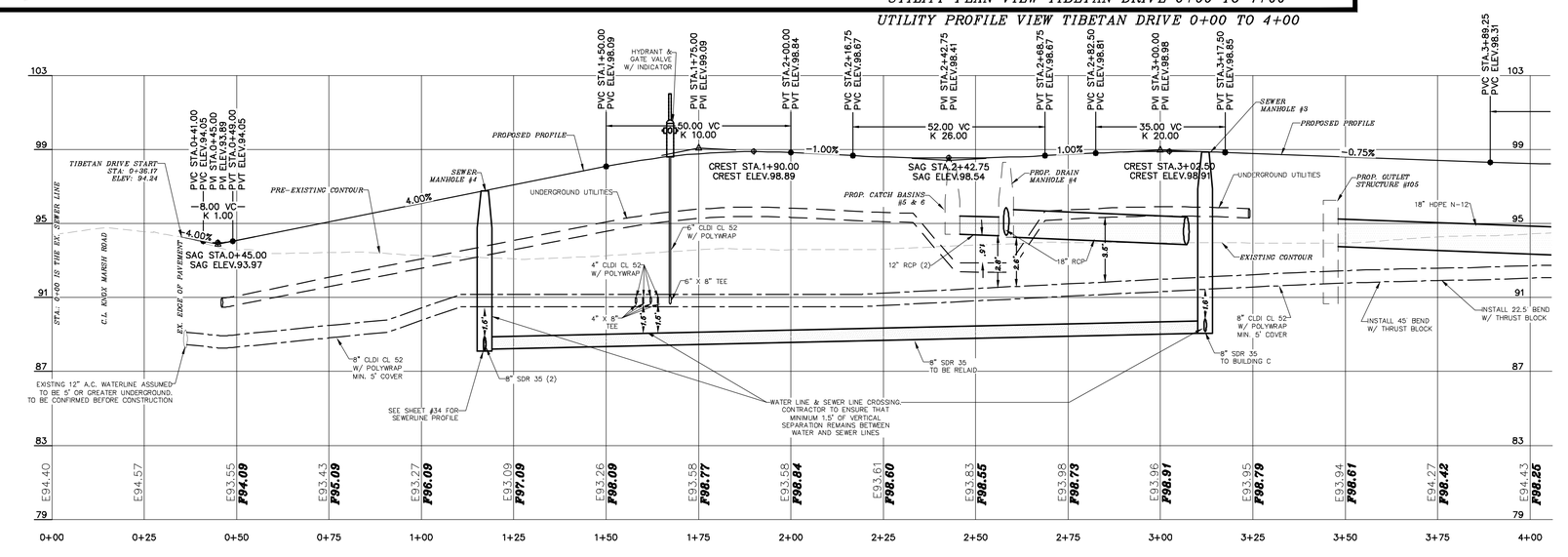
LEGEND:

- UTILITY POLE/GUY WIRE
- TEST PIT
- TEMPORARY BENCHMARK (T.B.M.)
- E101 / E6 — DETAIL SHEET / DETAIL
- POORLY DRAINED JURISDICTIONAL WETLAND
- WETLAND BUFFER
- 176 — CONTOUR MINOR, EXISTING
- 175 — CONTOUR MAJOR, EXISTING
- P176 — CONTOUR MINOR, PROPOSED
- P175 — CONTOUR MAJOR, PROPOSED
- BUILDING SETBACK LINE
- TREELINE
- ROAD CENTERLINE
- SHOULDER
- GUARD RAIL
- DRAIN CULVERT W/ FLARED END SECTION (F.E.S.)
- BITUMINOUS CONCRETE
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- BERM
- RETAINING WALL
- STORMTECH CHAMBERS/ISOLATOR ROW
- LIMIT OF STORMTECH CHAMBER STONE
- DRAIN MANHOLE W/STRUCTURE
- CATCH BASIN W/ STRUCTURE
- STORMWATER BMP OUTLET STRUCTURE
- TRANSFORMER / J.BOX
- UGE — UGE — UGE — UNDERGROUND UTILITY
- LAMP "A", POLE MOUNTED
- LAMP "B", MOUNTED ON BUILDING
- LAMP "C", MOUNTED ON BUILDING
- LAMP "D", MOUNTED ON BUILDING
- SEWER MANHOLE W/ STRUCTURE
- GATE VALVE
- CURB STOP
- FIRE HYDRANT
- THRUST BLOCKS
- W — W — PROPOSED WATER MAIN
- WS — WS — PROPOSED WATER SERVICE
- S — S — PROPOSED SEWER LINE



UTILITY PLAN VIEW TIBETAN DRIVE 0+00 TO 4+00

UTILITY PROFILE VIEW TIBETAN DRIVE 0+00 TO 4+00



PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

UTILITY PLAN AND PROFILE TIBETAN DRIVE 0+00 TO 4+00
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

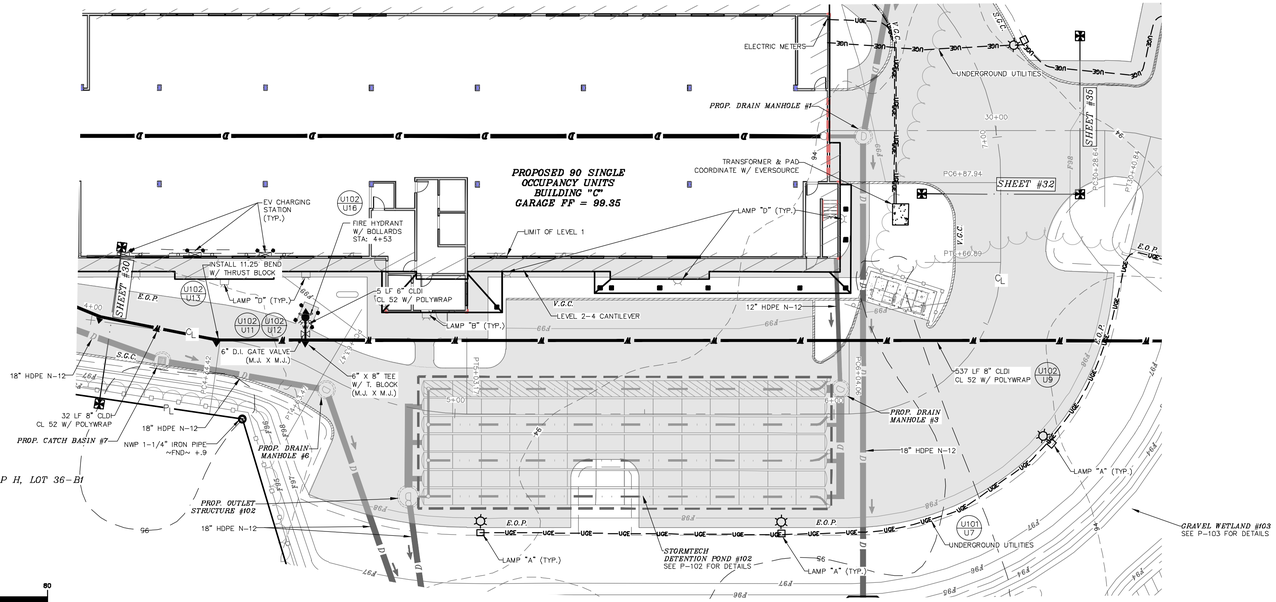
SCALE : 1 IN. EQUALS 20 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14248
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

SEE DEMOLITION PLAN FOR RETAINED AND RELOCATED UTILITIES

SEE OVERVIEW UTILITY PLAN FOR BENCHMARKS



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

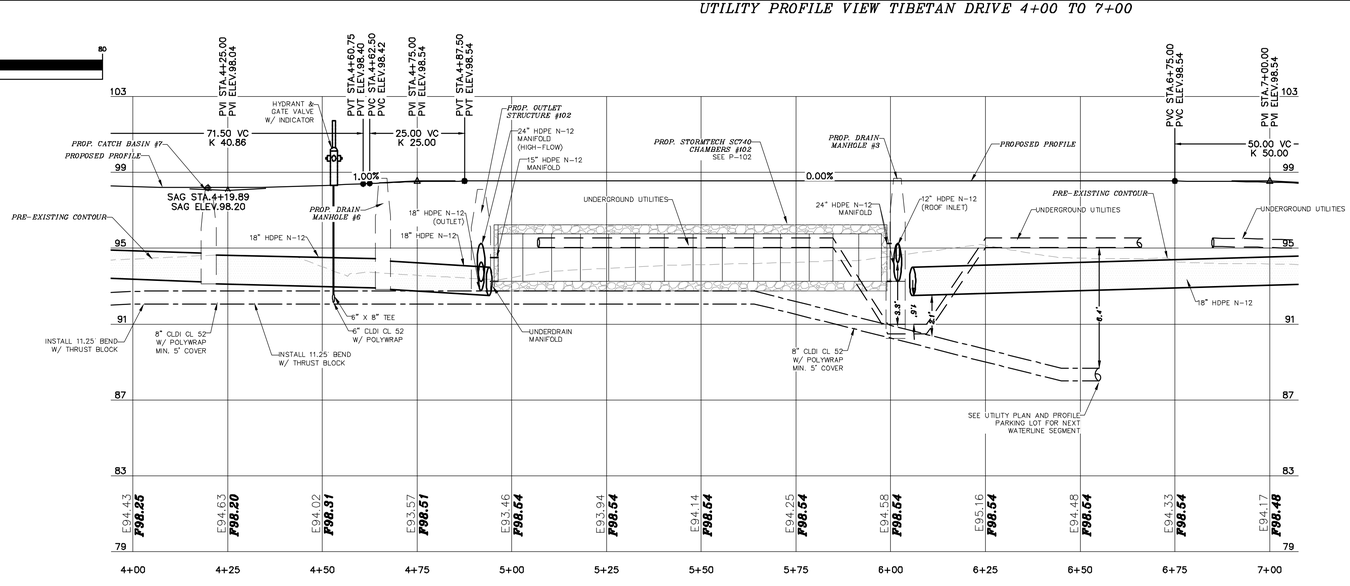
UTILITY PLAN VIEW TIBETAN DRIVE 4+00 TO 7+00

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

UTILITY PROFILE VIEW TIBETAN DRIVE 4+00 TO 7+00





NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37A

3.) LOT AREA: 407,542 Sq. Ft., 9.36 Ac.

4.) S.C.R.D. BOOK 5138, PAGE 73

5.) THE INTENT OF THIS PLAN IS TO SHOW THE UTILITY DETAIL FOR THE PROPOSED DEVELOPMENT.

6.) SEE OVERVIEW UTILITY PLAN FOR ALL OTHER STANDARD UTILITY NOTES.

7.) SEE DEMOLITION PLAN FOR UTILITIES TO BE RETAINED. A PORTION OF THE UTILITIES WERE INSTALLED IN 2024.

LEGEND:

- UTILITY POLE/GUY WIRE
- TEST PIT
- TEMPORARY BENCHMARK (T.B.M.)
- E101 / E6 — DETAIL SHEET / DETAIL
- POORLY DRAINED JURISDICTIONAL WETLAND
- WETLAND BUFFER
- 176 — CONTOUR MINOR, EXISTING
- 175 — CONTOUR MAJOR, EXISTING
- 176 — CONTOUR MINOR, PROPOSED
- 175 — CONTOUR MAJOR, PROPOSED
- BUILDING SETBACK LINE
- TREELINE
- ROAD CENTERLINE
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- GUARD RAIL
- DRAIN CULVERT W/ FLARED END SECTION (F.E.S.)
- BITUMINOUS CONCRETE
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- BERM
- RETAINING WALL
- STORMTECH CHAMBERS/ISOLATOR ROW
- LIMIT OF STORMTECH CHAMBER STONE/GENERAL STONE
- DRAIN MANHOLE W/STRUCTURE
- CATCH BASIN W/ STRUCTURE
- STORMWATER BMP OUTLET STRUCTURE
- TRANSFORMER / J.BOX
  UNDERGROUND UTILITY
- LAMP "A", POLE MOUNTED
  LAMP "B", MOUNTED ON BUILDING
  LAMP "C", MOUNTED ON BUILDING
  LAMP "D", MOUNTED ON BUILDING
- SEWER MANHOLE W/ STRUCTURE
- GATE VALVE
  CURB STOP
  FIRE HYDRANT
  THRUST BLOCKS
- W — PROPOSED WATER MAIN
- WS — PROPOSED WATER SERVICE
- S — PROPOSED SEWER LINE

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

UTILITY PLAN AND PROFILE TIBETAN DRIVE 4+00 TO END
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 – 034

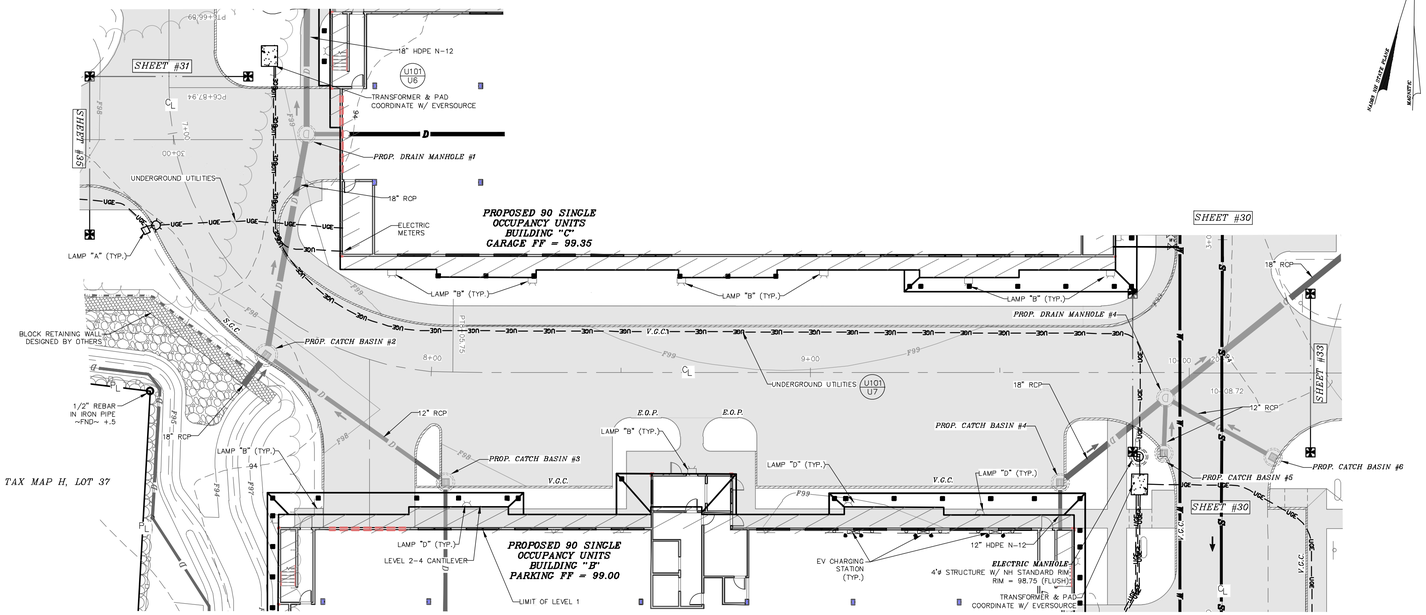
STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14748
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

GRAPHIC SCALE

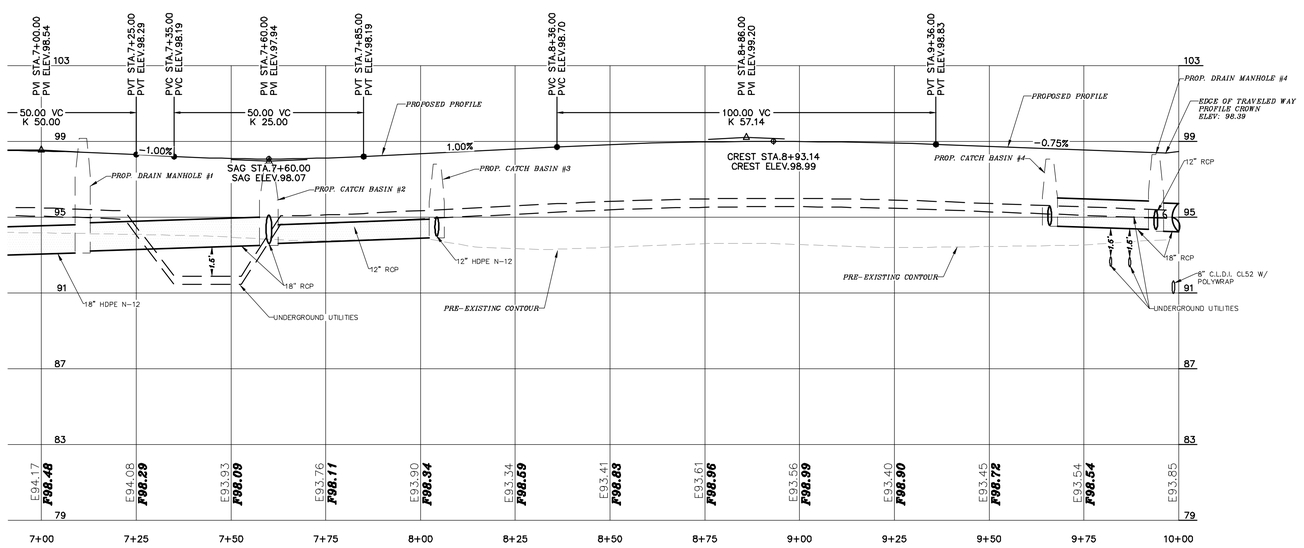
20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.



UTILITY PLAN VIEW TIBETAN DRIVE 7+00 TO END

UTILITY PROFILE VIEW TIBETAN DRIVE 7+00 TO END



NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37A

3.) LOT AREA: 407,542 Sq. Ft., 9.36 Ac.

4.) S.C.R.D. BOOK 5138, PAGE 73

5.) THE INTENT OF THIS PLAN IS TO SHOW THE UTILITY DETAIL FOR THE PROPOSED DEVELOPMENT.

6.) SEE OVERVIEW UTILITY PLAN FOR ALL OTHER STANDARD UTILITY NOTES.

7.) SEE DEMOLITION PLAN FOR UTILITIES TO BE RETAINED. A PORTION OF THE UTILITIES WERE INSTALLED IN 2024.

LEGEND:

- UTILITY POLE/GUY WIRE
- TEST PIT
- TEMPORARY BENCHMARK (T.B.M.)
- E101 / E6 — DETAIL SHEET / DETAIL
- POORLY DRAINED JURISDICTIONAL WETLAND
- WETLAND BUFFER
- 176 — CONTOUR MINOR, EXISTING
- 175 — CONTOUR MAJOR, EXISTING
- CONTOUR MINOR, PROPOSED
- PT75 — CONTOUR MAJOR, PROPOSED
- BUILDING SETBACK LINE
- TREELINE
- ROAD CENTERLINE
- SHOULDER
- GUARD RAIL
- D — DRAIN CULVERT W/ FLARED END SECTION (F.E.S.)
- BITUMINOUS CONCRETE
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- BERM
- RETAINING WALL
- STORMTECH CHAMBERS/ISOLATOR ROW
- LIMIT OF STORMTECH CHAMBER STONE/GENERAL STONE
- DRAIN MANHOLE W/STRUCTURE
- CATCH BASIN W/ STRUCTURE
- STORMWATER BMP OUTLET STRUCTURE
- TRANSFORMER / J.BOX
- UGE — UGE — UGE — UNDERGROUND UTILITY
- LAMP "A", POLE MOUNTED
- LAMP "B", MOUNTED ON BUILDING
- LAMP "C", MOUNTED ON BUILDING
- LAMP "D", MOUNTED ON BUILDING
- SEWER MANHOLE W/ STRUCTURE
- GATE VALVE
- CURB STOP
- FIRE HYDRANT
- THRUST BLOCKS
- W — W — PROPOSED WATER MAIN
- WS — WS — PROPOSED WATER SERVICE
- S — S — PROPOSED SEWER LINE

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

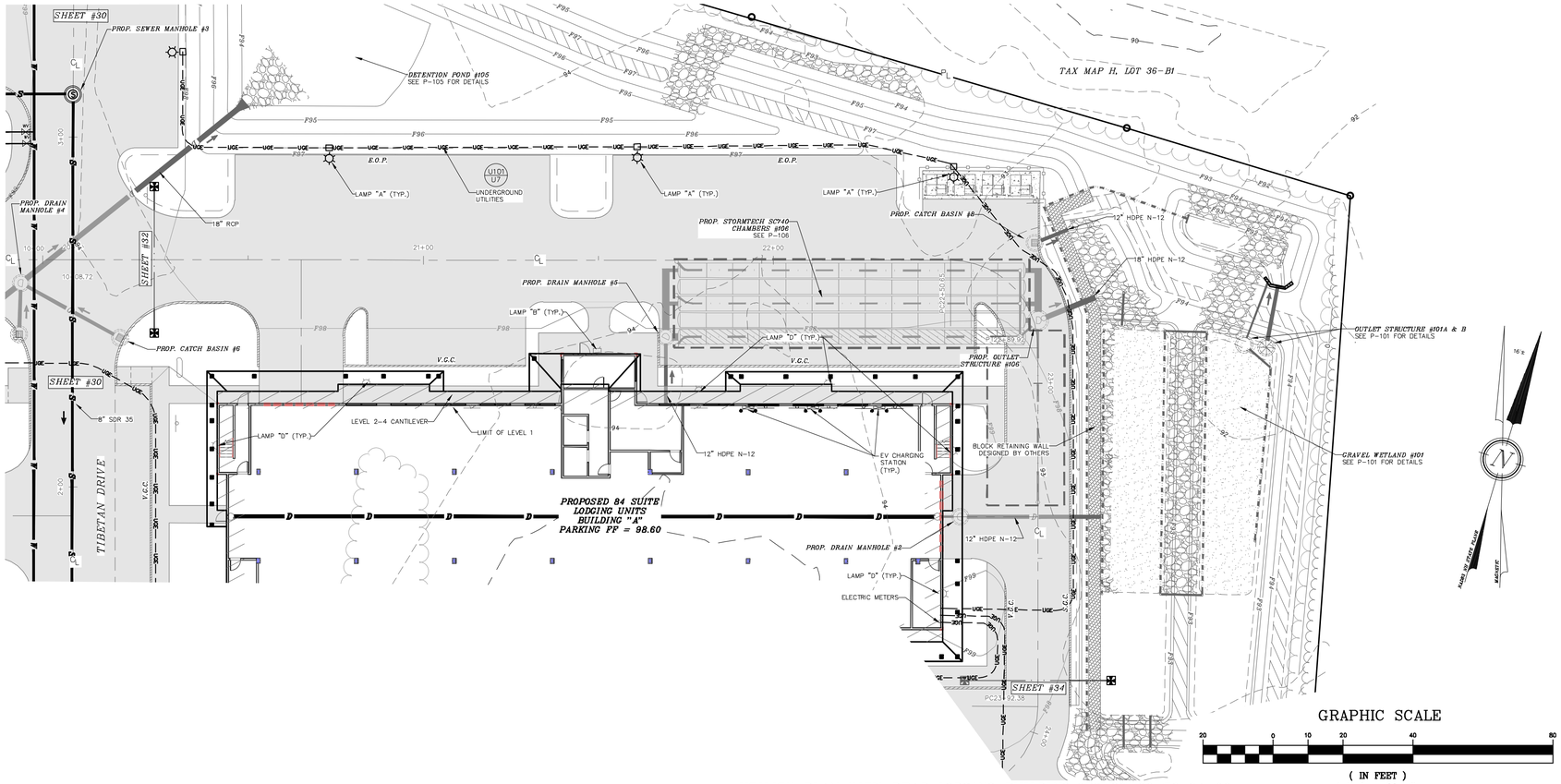
UTILITY PLAN AND PROFILE TIBETAN DRIVE 7+00 TO END
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

STATE OF NEW HAMPSHIRE — KENNETH A. BERRY No. 14748 LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

UTILITY PLAN VIEW REAR LODGING BUILDING "A" 20+00 TO 24+00

NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37A

3.) LOT AREA: 407,542 Sq. Ft., 9.36 Ac.

4.) S.C.R.D. BOOK 5138, PAGE 73

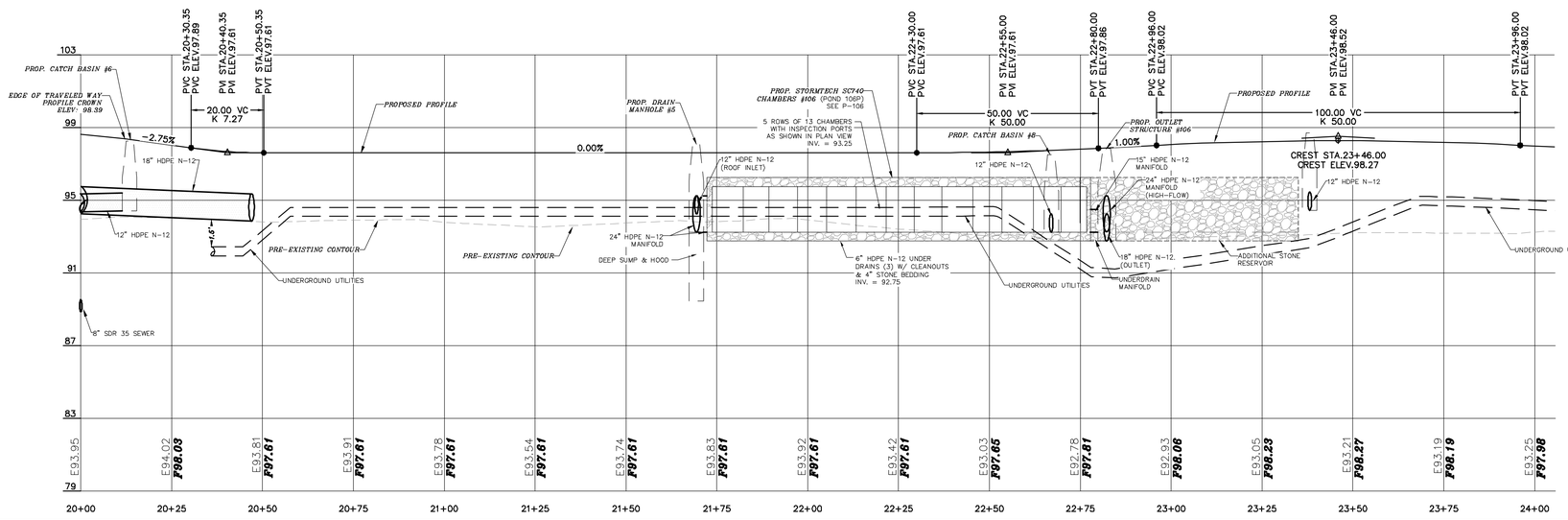
5.) THE INTENT OF THIS PLAN IS TO SHOW THE UTILITY DETAIL FOR THE PROPOSED DEVELOPMENT.

6.) SEE OVERVIEW UTILITY PLAN FOR ALL OTHER STANDARD UTILITY NOTES.

7.) SEE DEMOLITION PLAN FOR UTILITIES TO BE RETAINED. A PORTION OF THE UTILITIES WERE INSTALLED IN 2024.

LEGEND:

- UTILITY POLE/GUY WIRE
- TEST PIT
- TEMPORARY BENCHMARK (T.B.M.)
- E101 / E6 — DETAIL SHEET / DETAIL
- POORLY DRAINED JURISDICTIONAL WETLAND
- WETLAND BUFFER
- 176 — CONTOUR MINOR, EXISTING
- 175 — CONTOUR MAJOR, EXISTING
- F176 — CONTOUR MINOR, PROPOSED
- F175 — CONTOUR MAJOR, PROPOSED
- BUILDING SETBACK LINE
- TREELINE
- ROAD CENTERLINE
- SHOULDER
- GUARD RAIL
- D — DRAIN CULVERT W/ FLARED END SECTION (F.E.S.)
- BITUMINOUS CONCRETE
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- BERM
- RETAINING WALL
- STORMTECH CHAMBERS/ISOLATOR ROW
- LIMIT OF STORMTECH CHAMBER STONE/GENERAL STONE
- DRAIN MANHOLE W/STRUCTURE
- CATCH BASIN W/ STRUCTURE
- STORMWATER BMP OUTLET STRUCTURE
- TRANSFORMER / J.BOX
  UGE — UGE — UGE — UNDERGROUND UTILITY
- LAMP "A", POLE MOUNTED
- LAMP "B", MOUNTED ON BUILDING
- LAMP "C", MOUNTED ON BUILDING
- LAMP "D", MOUNTED ON BUILDING
- SEWER MANHOLE W/ STRUCTURE
- GATE VALVE
- CURB STOP
- FIRE HYDRANT
- THRUST BLOCKS
- W — W — PROPOSED WATER MAIN
- WS — WS — PROPOSED WATER SERVICE
- S — S — PROPOSED SEWER LINE



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

VERTICAL SCALE: 1" = 4'

UTILITY PROFILE VIEW REAR LODGING BUILDING "A" 20+00 TO 24+00

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

UTILITY PLAN AND PROFILE LODGING BUILDING "A" 20+00 TO 24+00
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14248
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37A

3.) LOT AREA: 407,542 Sq. Ft., 9.36 Ac.

4.) S.C.R.D. BOOK 5138, PAGE 73

5.) THE INTENT OF THIS PLAN IS TO SHOW THE UTILITY DETAIL FOR THE PROPOSED DEVELOPMENT.

6.) SEE OVERVIEW UTILITY PLAN FOR ALL OTHER STANDARD UTILITY NOTES.

7.) SEE DEMOLITION PLAN FOR UTILITIES TO BE RETAINED. A PORTION OF THE UTILITIES WERE INSTALLED IN 2024.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

PLAN VIEW EX. SMH #2864 TO PROP. SMH #5

PROFILE VIEW EX. SMH #2864 TO PROP. SMH #5

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

VERTICAL SCALE: 1" = 4'

LEGEND:

- UTILITY POLE/GUY WIRE
- TEST PIT
- TEMPORARY BENCHMARK (T.B.M.)
- E101 / E6 — DETAIL SHEET / DETAIL
- POORLY DRAINED JURISDICTIONAL WETLAND
- WETLAND BUFFER
- CONTOUR MINOR, EXISTING
- CONTOUR MAJOR, EXISTING
- CONTOUR MINOR, PROPOSED
- CONTOUR MAJOR, PROPOSED
- BUILDING SETBACK LINE
- TREELINE
- ROAD CENTERLINE
- SHOULDER
- GUARD RAIL
- DRAIN CULVERT W/ FLARED END SECTION (F.E.S.)
- BITUMINOUS CONCRETE
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- BERM
- RETAINING WALL
- STORMTECH CHAMBERS/ISOLATOR ROW
- LIMIT OF STORMTECH CHAMBER STONE/GENERAL STONE
- DRAIN MANHOLE W/STRUCTURE
- CATCH BASIN W/ STRUCTURE
- STORMWATER BMP OUTLET STRUCTURE
- TRANSFORMER / J.BOX
- UGE — UGE — UNDERGROUND UTILITY
- LAMP "A", POLE MOUNTED
- LAMP "B", MOUNTED ON BUILDING
- LAMP "C", MOUNTED ON BUILDING
- LAMP "D", MOUNTED ON BUILDING
- SEWER MANHOLE W/ STRUCTURE
- GATE VALVE
- CURB STOP
- FIRE HYDRANT
- THRUST BLOCKS
- W — W — PROPOSED WATER MAIN
- WS — WS — PROPOSED WATER SERVICE
- S — S — PROPOSED SEWER LINE

REVISION	DATE	DESCRIPTION

PLANNING FILE #SITE-XXXX-XXXX

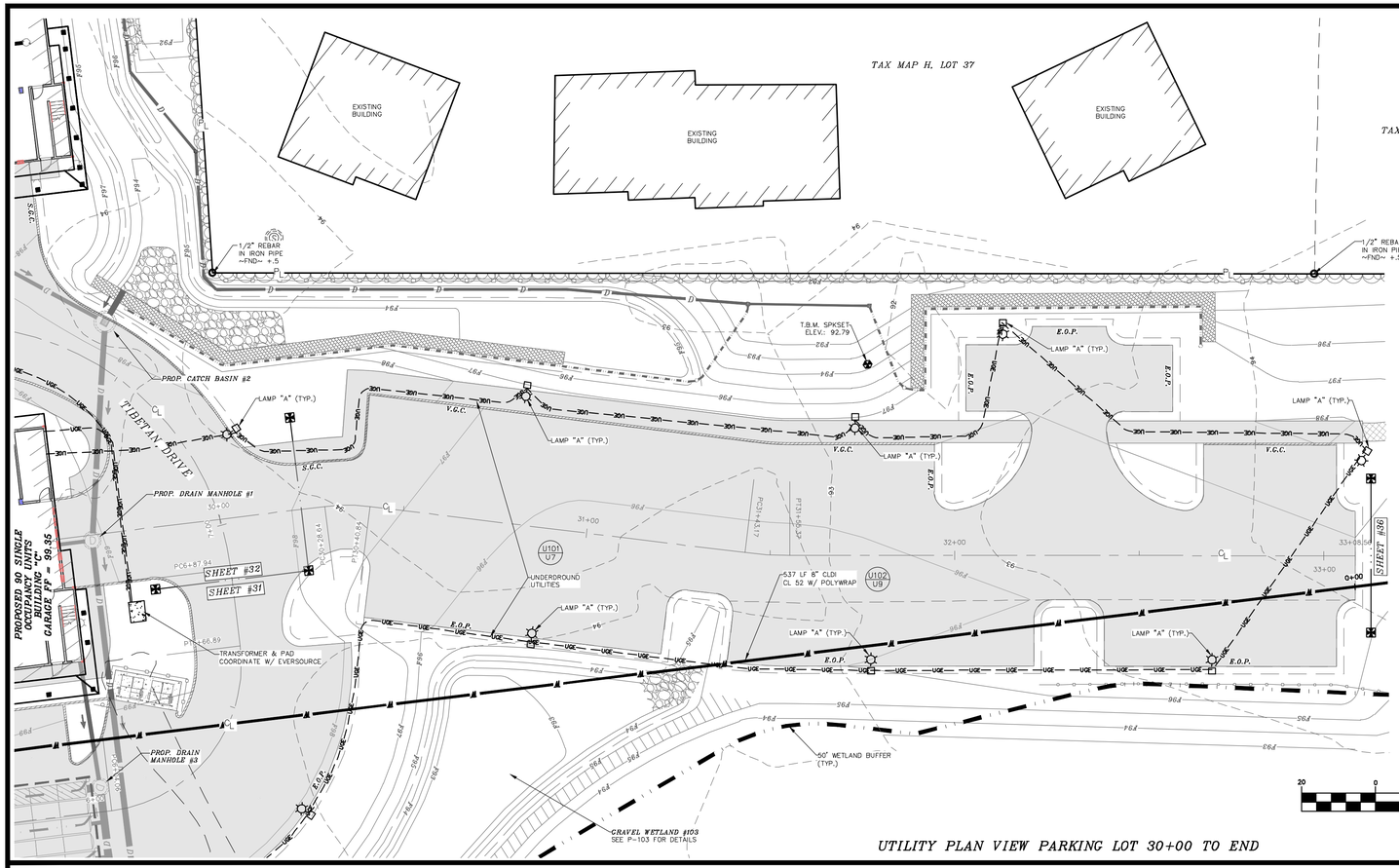
MIXED USE BUILDING UTILITY & SEWER PROFILE
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 – 034

STATE OF NEW HAMPSHIRE — KENNETH A. BERRY No. 14288 LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

UTILITY PLAN VIEW PARKING LOT 30+00 TO END

NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37A

3.) LOT AREA: 407,542 Sq. Ft., 9.36 Ac.

4.) S.C.R.D. BOOK 5138, PAGE 73

5.) THE INTENT OF THIS PLAN IS TO SHOW THE UTILITY DETAIL FOR THE PROPOSED DEVELOPMENT.

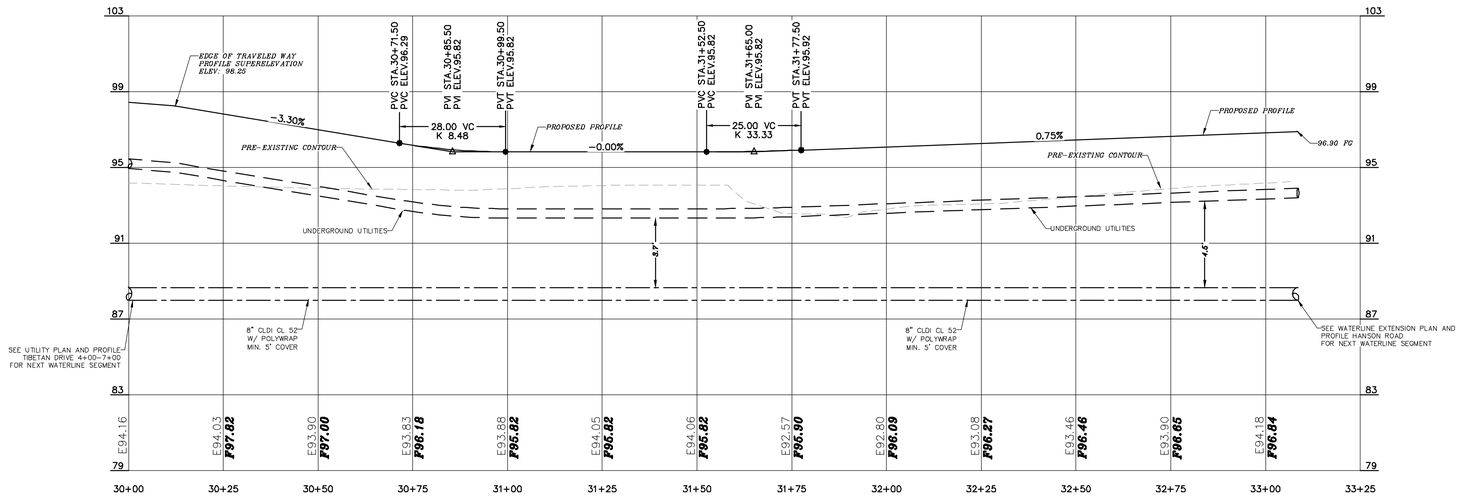
6.) SEE OVERVIEW UTILITY PLAN FOR ALL OTHER STANDARD UTILITY NOTES.

7.) SEE DEMOLITION PLAN FOR UTILITIES TO BE RETAINED. A PORTION OF THE UTILITIES WERE INSTALLED IN 2024.

LEGEND:

- UTILITY POLE/GUY WIRE
- TEST PIT
- TEMPORARY BENCHMARK (T.B.M.)
- E101 / E6 — DETAIL SHEET / DETAIL
- POORLY DRAINED JURISDICTIONAL WETLAND
- WETLAND BUFFER
- 176 — CONTOUR MINOR, EXISTING
- 175 — CONTOUR MAJOR, EXISTING
- F176 — CONTOUR MINOR, PROPOSED
- F175 — CONTOUR MAJOR, PROPOSED
- BUILDING SETBACK LINE
- TREELINE
- ROAD CENTERLINE
- SHOULDER
- GUARD RAIL
- D — DRAIN CULVERT W/ FLARED END SECTION (F.E.S.)
- BITUMINOUS CONCRETE
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- BERM
- RETAINING WALL
- STORMTECH CHAMBERS/ISOLATOR ROW
- LIMIT OF STORMTECH CHAMBER STONE/GENERAL STONE
- DRAIN MANHOLE W/STRUCTURE
- CATCH BASIN W/ STRUCTURE
- STORMWATER BMP OUTLET STRUCTURE
- TRANSFORMER / J.BOX
- UGE — UNDERGROUND UTILITY
- LAMP "A", POLE MOUNTED
- LAMP "B", MOUNTED ON BUILDING
- LAMP "C", MOUNTED ON BUILDING
- LAMP "D", MOUNTED ON BUILDING
- SEWER MANHOLE W/ STRUCTURE
- GATE VALVE
- CURB STOP
- FIRE HYDRANT
- THRUST BLOCKS
- W — PROPOSED WATER MAIN
- WS — PROPOSED WATER SERVICE
- S — PROPOSED SEWER LINE

UTILITY PROFILE VIEW PARKING LOT 30+00 TO END



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

UTILITY PLAN AND PROFILE WESTERN PARKING LOT 30+00-END
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14748
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

LEGEND:

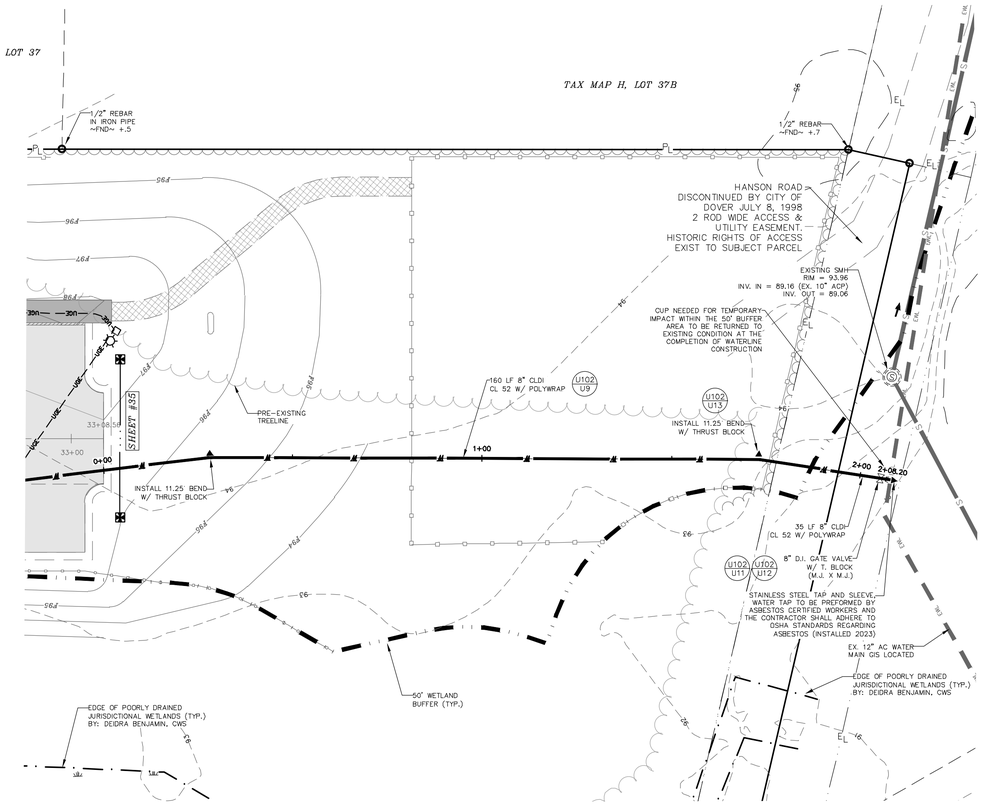
- UTILITY POLE/GUY WIRE
- TEST PIT
- TEMPORARY BENCHMARK (T.B.M.)
- E101 / E6 — DETAIL SHEET / DETAIL
- POORLY DRAINED JURISDICTIONAL WETLAND
- WETLAND BUFFER
- 176 — CONTOUR MINOR, EXISTING
- 175 — CONTOUR MAJOR, EXISTING
- CONTOUR MINOR, PROPOSED
- PI75 — CONTOUR MAJOR, PROPOSED
- BUILDING SETBACK LINE
- TREELINE
- ROAD CENTERLINE
- SHOULDER
- GUARD RAIL
- D — DRAIN CULVERT W/ FLARED END SECTION (F.E.S.)
- BITUMINOUS CONCRETE
- RIP RAP
- STORMWATER BEST MANAGEMENT PRACTICE (BMP)
- BERM
- RETAINING WALL
- STORMTECH CHAMBERS/ISOLATOR ROW
- LIMIT OF STORMTECH CHAMBER STONE/GENERAL STONE
- DRAIN MANHOLE W/STRUCTURE
- CATCH BASIN W/ STRUCTURE
- STORMWATER BMP OUTLET STRUCTURE
- UGE — TRANSFORMER / J.BOX UNDERGROUND UTILITY
- LAMP "A", POLE MOUNTED
- LAMP "B", MOUNTED ON BUILDING
- LAMP "C", MOUNTED ON BUILDING
- LAMP "D", MOUNTED ON BUILDING
- SEWER MANHOLE W/ STRUCTURE
- GATE VALVE
- CURB STOP
- FIRE HYDRANT
- THRUST BLOCKS
- W — PROPOSED WATER MAIN
- WS — PROPOSED WATER SERVICE
- S — PROPOSED SEWER LINE

GRAPHIC SCALE

20 0 10 20 40 80

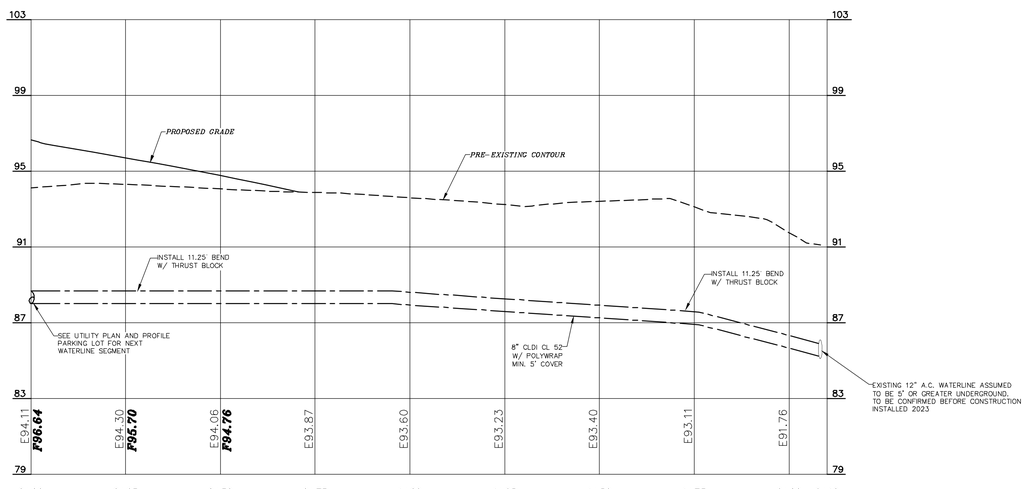
(IN FEET)
1 inch = 20 ft.





PLAN VIEW WATER LINE EXTENSION TO HANSON ROAD

PROFILE VIEW WATER LINE EXTENSION TO HANSON ROAD



NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37A

3.) LOT AREA: 407,542 Sq. Ft., 9.36 Ac.

4.) S.C.R.D. BOOK 5138, PAGE 73

5.) THE INTENT OF THIS PLAN IS TO SHOW THE UTILITY DETAIL FOR THE PROPOSED DEVELOPMENT.

6.) SEE OVERVIEW UTILITY PLAN FOR ALL OTHER STANDARD UTILITY NOTES.

7.) SEE DEMOLITION PLAN FOR UTILITIES TO BE RETAINED. A PORTION OF THE UTILITIES WERE INSTALLED IN 2024.

PLANNING FILE #SITE--XXXX-XXXX

REVISION	DATE	DESCRIPTION

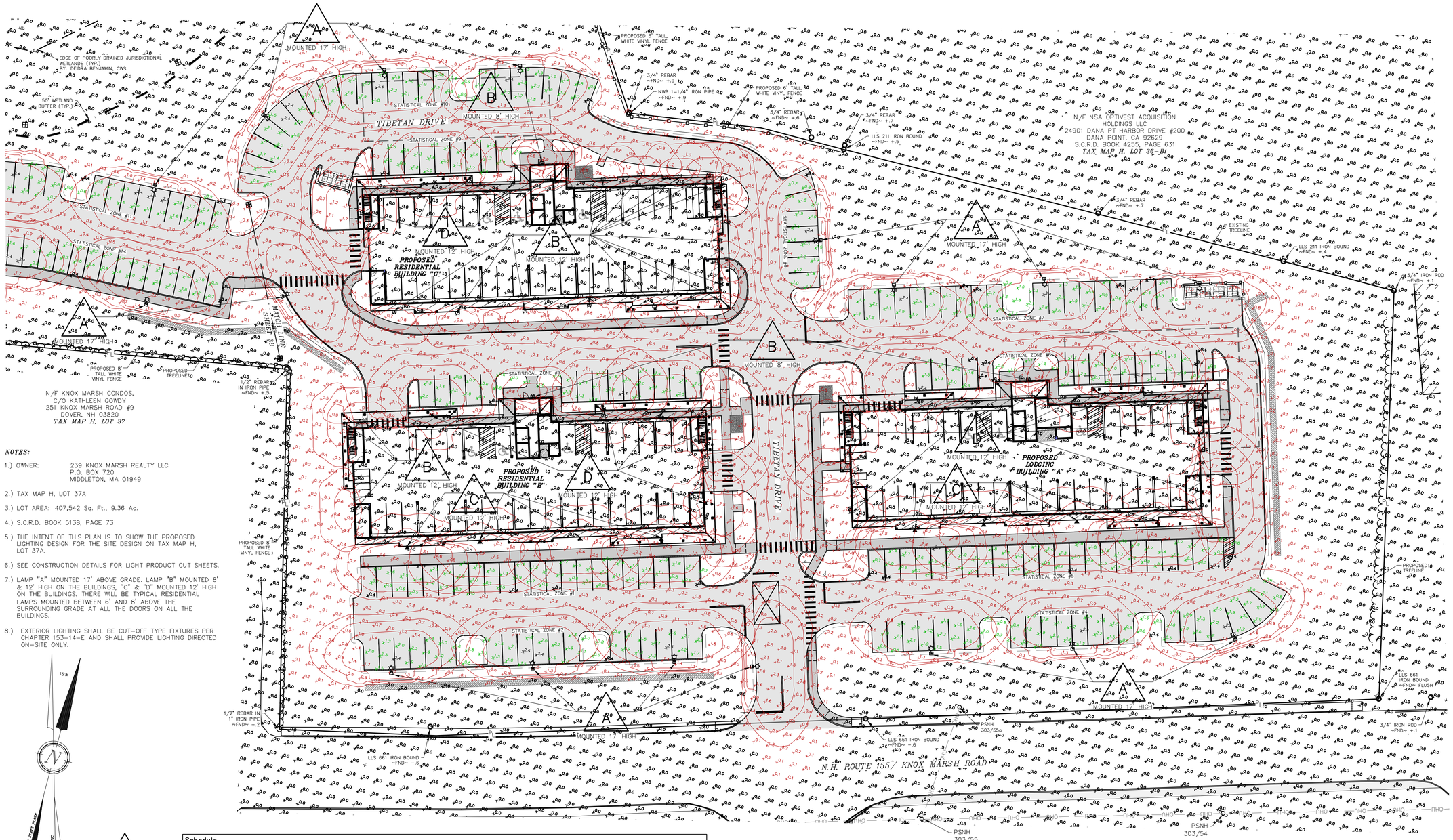
WATERLINE EXTENSION PLAN & PROFILE HANSON ROAD
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 – 034

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14286
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION



NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37A

3.) LOT AREA: 407,542 Sq. Ft., 9.36 Ac.

4.) S.C.R.D. BOOK 5138, PAGE 73

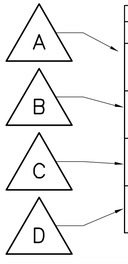
5.) THE INTENT OF THIS PLAN IS TO SHOW THE PROPOSED LIGHTING DESIGN FOR THE SITE DESIGN ON TAX MAP H, LOT 37A.

6.) SEE CONSTRUCTION DETAILS FOR LIGHT PRODUCT CUT SHEETS.

7.) LAMP "A" MOUNTED 17' ABOVE GRADE, LAMP "B" MOUNTED 8' & 12' HIGH ON THE BUILDINGS, "C" & "D" MOUNTED 12' HIGH ON THE BUILDINGS. THERE WILL BE TYPICAL RESIDENTIAL LAMPS MOUNTED BETWEEN 6' AND 8' ABOVE THE SURROUNDING GRADE AT ALL THE DOORS ON ALL THE BUILDINGS.

8.) EXTERIOR LIGHTING SHALL BE CUT-OFF TYPE FIXTURES PER CHAPTER 153-14-E AND SHALL PROVIDE LIGHTING DIRECTED ON-SITE ONLY.





Schedule										
Symbol	Label	Image	QTY	Manufacturer	Catalog	Description	Number Lamps	Lamp Output	LLF	Input Power
	A		22	Lithonia Lighting	DSX0 LED P1 30K BLC MVOLT G1	DSX0 LED P1 30K BLC ALL HAVE BACKLIGHT CONTROL	1	3585	1	38
	B		19	Lithonia Lighting	WDGE2 LED P0 30K 70CRI T3M	WDGE2 LED WITH P0 - PERFORMANCE PACKAGE, 3000K, 70CRI, TYPE 3 MEDIUM OPTIC	1	763	1	6.8946
	C		8	Lithonia Lighting	WDGE2 LED P4 30K 70CRI T3M	WDGE2 LED WITH P4 - PERFORMANCE PACKAGE, 3000K, 70CRI, TYPE 3 MEDIUM OPTIC	1	4471	1	46.6589
	D		15	Lithonia Lighting	WDGE2 LED P3 30K 80CRI T4M	WDGE2 LED WITH P3 - PERFORMANCE PACKAGE, 3000K, 80CRI, TYPE 4 MEDIUM OPTIC	1	2997	1	32.1375

Statistics							
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Stat Zone #1	X	1.1 fc	2.4 fc	0.4 fc	6.0:1	2.8:1
Stat Zone #2	X	1.5 fc	2.4 fc	0.4 fc	6.0:1	3.8:1
Stat Zone #3	X	1.4 fc	2.4 fc	0.4 fc	6.0:1	3.5:1
Stat Zone #4	X	1.4 fc	2.4 fc	0.4 fc	6.0:1	3.5:1
Stat Zone #5	X	1.1 fc	2.4 fc	0.4 fc	6.0:1	2.8:1
Stat Zone #6	X	1.3 fc	2.4 fc	0.4 fc	6.0:1	3.3:1
Stat Zone #7	X	1.3 fc	2.4 fc	0.4 fc	6.0:1	3.3:1
Stat Zone #8	X	1.5 fc	2.4 fc	0.4 fc	6.0:1	3.8:1
Stat Zone #9	X	1.4 fc	2.4 fc	0.4 fc	6.0:1	3.5:1
Stat Zone #10	X	1.5 fc	2.4 fc	0.4 fc	6.0:1	3.8:1
Stat Zone #11	X	1.3 fc	2.4 fc	0.4 fc	6.0:1	3.3:1
Stat Zone #12	X	1.3 fc	2.4 fc	0.4 fc	6.0:1	3.3:1
Stat Zone #13	X	1.4 fc	2.4 fc	0.4 fc	6.0:1	3.5:1
Stat Zone #14	X	1.3 fc	2.4 fc	0.4 fc	6.0:1	3.3:1

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

LIGHTING PLAN EAST
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 30 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14740
LICENSED PROFESSIONAL ENGINEER

SHEET 37 OF 60

NOT FOR CONSTRUCTION

NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37A

3.) LOT AREA: 407,542 Sq. Ft., 9.36 Ac.

4.) S.C.R.D. BOOK 5138, PAGE 73

5.) THE INTENT OF THIS PLAN IS TO SHOW THE PROPOSED LIGHTING DESIGN FOR THE SITE DESIGN ON TAX MAP H, LOT 37A.

6.) SEE CONSTRUCTION DETAILS FOR LIGHT PRODUCT CUT SHEETS.

7.) LAMP "A" MOUNTED 17' ABOVE GRADE, LAMP "B" MOUNTED 8' & 12' HIGH ON THE BUILDINGS, "C" & "D" MOUNTED 12' HIGH ON THE BUILDINGS. THERE WILL BE TYPICAL RESIDENTIAL LAMPS MOUNTED BETWEEN 6' AND 8' ABOVE THE SURROUNDING GRADE AT ALL THE DOORS ON ALL THE BUILDINGS.

8.) EXTERIOR LIGHTING SHALL BE CUT-OFF TYPE FIXTURES PER CHAPTER 153-14-E AND SHALL PROVIDE LIGHTING DIRECTED ON-SITE ONLY.



N/F BOSTON & MAINE RR
IRON HORSE PARK
500 WATER STREET, J-910
JACKSONVILLE, FL 32202
TAX MAP C, LOT 5

N/F PATRICK J CRAGIN TRUSTEE
PATRICK J CRAGIN LIVING REV TRUST
P.O. BOX 250
DOVER, NH 03820
S.C.R.D. BOOK 3497, PAGE 417
TAX MAP H, LOT 38

HANSON ROAD
DISCONTINUED BY CITY OF DOVER JULY 8, 1998
2 ROD WIDE ACCESS & UTILITY EASEMENT.

N/F PATRICK J CRAGIN TRUSTEE
PATRICK J CRAGIN LIVING REV TRUST
P.O. BOX 250
DOVER, NH 03820
S.C.R.D. BOOK 3497, PAGE 417
TAX MAP H, LOT 37B

N/F KNOX MARSH CONDOS
C/O KATHLEEN COWDY
251 KNOX MARSH ROAD #9
DOVER, NH 03820
TAX MAP H, LOT 37

N.H. ROUTE 155 / KNOX MARSH ROAD

TIBETAN DRIVE

PROPOSED RESIDENTIAL BUILDING "C"

PROPOSED RESIDENTIAL BUILDING "B"

ACTIVE & PASSIVE RECREATION /DOG PARK

EDGE OF POORLY DRAINED JURISDICTIONAL WETLANDS (TYP.) BY: DEIDRA BENJAMIN, CWS

50' WETLAND BUFFER (TYP.)

STATISTICAL ZONE #11

STATISTICAL ZONE #14

MOUNTED 17' HIGH

PROPOSED 8' TALL WHITE VINYL FENCE

EXISTING TREELINE

PROPOSED TREELINE

EXISTING BUILDING

LLS 661 IRON BOUND ~FND~ FLUSH

LLS 661 IRON BOUND ~FND~ +.3

1/2" REBAR W/ IRON PIPE ~FND~ +.5

1/2" REBAR IN IRON PIPE ~FND~ +.5

1/2" REBAR IN 1" IRON PIPE ~FND~ +.2

LLS 661 IRON BOUND ~FND~ -.6

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

LIGHTING PLAN WEST
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

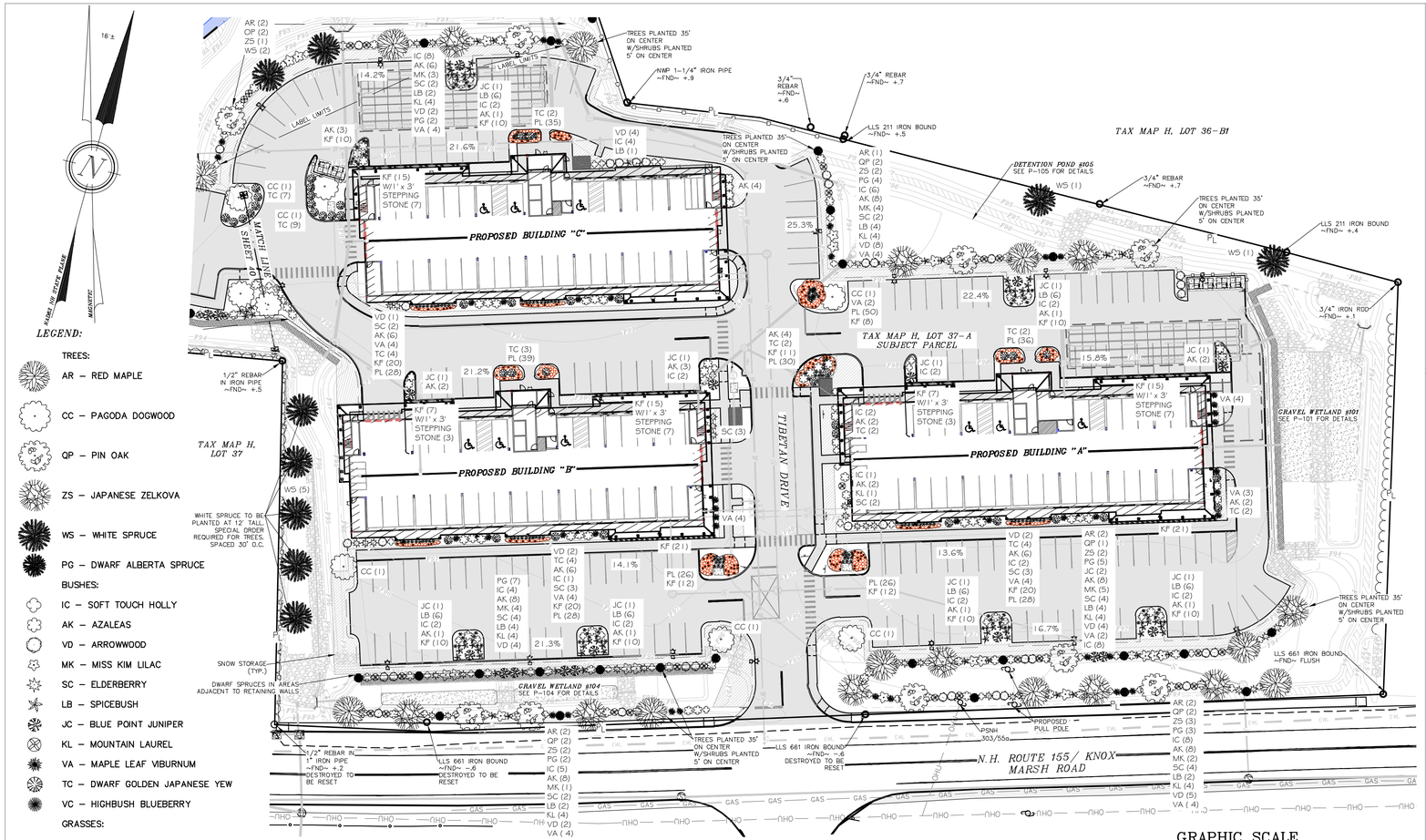
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE :	1 IN. EQUALS 30 FT.
DATE :	NOVEMBER 26, 2024
FILE NO. :	DB 2024 - 034

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

SHEET 38 OF 60

NOT FOR CONSTRUCTION



GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

LEGEND:

TREES:

- AR – RED MAPLE
- CC – PAGODA DOGWOOD
- QP – PIN OAK
- ZS – JAPANESE ZELKOVA
- WS – WHITE SPRUCE
- PG – DWARF ALBERTA SPRUCE

BUSHES:

- IC – SOFT TOUCH HOLLY
- AK – AZALEAS
- VD – ARROWWOOD
- MK – MISS KIM LILAC
- SC – ELDERBERRY
- LB – SPICEBUSH
- JC – BLUE POINT JUNIPER
- KL – MOUNTAIN LAUREL
- VA – MAPLE LEAF VIBURNUM
- TC – DWARF GOLDEN JAPANESE YEW
- VC – HIGHBUSH BLUEBERRY

GRASSES:

- KF – FEATHER REED GRASS

PLANTS:

- PL– A MIX OF BLACK–EYED SUSAN, NEW ENGLAND ASTER, ANISE HYSSOP & CRANESBILL

SEE NEIGHBORHOOD PLAN (SHEET #1) FOR SITE & GRADING SYMBOLS.

NOTES:

1. CALL DIG SAFE PRIOR TO BEGINNING WORK. (1–888–344–7233). THE LANDSCAPE CONTRACTOR IS ADVISED OF THE PRESENCE OF UNDERGROUND UTILITIES AND SHALL VERIFY THE EXISTENCE AND LOCATION OF THE SAME BEFORE COMMENCING AND DIGGING OPERATIONS. THE LANDSCAPE CONTRACTOR SHALL REPLACE OR REPAIR UTILITIES, PAVING, WALKS, CURBING, ETC DAMAGED IN PERFORMANCE OF THIS JOB AT NO ADDITIONAL COST TO THE OWNER OR GENERAL CONTRACTOR.
2. CONTRACTOR SHALL THOROUGHLY FAMILIARIZE THEMSELVES WITH ALL SITE CONDITIONS PRIOR TO CONSTRUCTION BIDDING.
3. THE CONTRACTOR SHALL SUPPLY ALL PLANT MATERIALS IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTINGS SHOWN ON THE DRAWINGS. VARIATIONS IN QUANTITIES ARE TO BE APPROVED BY THE DESIGN ENGINEER.
4. PROVIDED SMOOTH TRANSITION WHERE NEW WORK MEETS EXISTING CONDITIONS.
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6. ALL PLANT MATERIALS SHALL BE FREE FROM INSECTS AND DISEASE.
7. ALL PLANTINGS SHALL BE DONE IN ACCORDANCE WITH ACCEPTABLE HORTICULTURAL PRACTICES. THIS IS TO INCLUDE PROPER PLANTING MIX, PLANT BED AND TREE PIT PREPARATION, PRUNING STAKING OR GUYING, WRAPPING, SPRAYING, FERTILIZATION, PLANTING AND ADEQUATE MAINTENANCE UNTIL ACCEPTANCE FROM OWNER.
8. ALL GRASS, OTHER VEGETATION AND DEBRIS SHALL BE REMOVED FROM ALL PLANTING AREAS PRIOR TO PLANTING.
9. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF EXISTING AND NEWLY PLANTED TREES AND SHRUBS DURING THE CONSTRUCTION PROCESS. WHERE REQUIRED, THE CONTRACTOR SHALL INSTALL TEMPORARY FENCING (SNOW OR EQUAL) AROUND EXISTING TREES AND SHRUBS THAT COULD BE IMPACTED BY THE CONSTRUCTION PROCESS. STORAGE OF CONSTRUCTION EQUIPMENT, CONSTRUCTION MATERIALS, SNOW STORAGE AND OR VEHICLE PARKING SHALL NOT BE PERMITTED WITHIN THE DRIP LINE OF TREES OR TWENTY FEET WHICH EVER IS GREATER.
10. NEW PLANTINGS SHALL BE INSTALLED PER PROJECT DRAWINGS AND SPECIFICATION THAT INCLUDE FERTILIZATION AND MULCHING AS REQUIRED.
11. ALL SHRUB BEDS AND TREE PITS SHALL BE MULCHED WITH 3" CLEAN SHREDDED BLACK MULCH
12. WHERE INDICATED ON PLAN, PLANTING SOIL MIXTURE FOR GROUND COVER AND PERENNIAL BED AREAS SHALL CONSIST OF FOUR PARTS TOPSOIL, TWO PARTS SPHAGNUM PEAT MOSS, AND ONE PART HORTICULTURAL PERLITE BY VOLUME. PEAT MOSS MAY BE SUBSTITUTED WITH WELL–ROTTED OR DEHYDRATED MANURE OR COMPOST. ROTOTILL BEDS TO A DEPTH OF 8 INCHES.
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15. THE GENERAL CONTRACTOR AND OR THE LANDSCAPE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL THREE GUYING MATERIAL ONCE PLANT MATERIAL HAS BEEN ESTABLISHED. (MINIMUM OF ONE GROWING SEASON). ALL TEMPORARY EROSION CONTROL MEASURE SHALL BE REMOVED ONCE STABILIZATION OF DISTURBANCE HAS BEEN ACCEPTED BY OWNER.
16. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR A MINIMUM OF TWO MOWINGS FOR ALL TURF AREAS OR UNTIL ACCEPTANCE BY THE OWNER. A MINIMUM UNIFORM 75% CATCH OF TURF IS REQUIRED FOR ACCEPTANCE.
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18. SHRUBS OR TREES WHICH DIE SHALL BE REPLACED WITHIN ONE GROWING SEASON WITH NEW SHRUBS OR TREES TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE LANDSCAPING REQUIREMENTS.
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20. TREES ARE TO BE 6' TALL AT PLANTING.
21. ALL PLANT STOCK SHALL CONFORM TO ANSI Z260.1 – NURSERY STOCK, LATEST EDITIONS (AMERICAN ASSOCIATION OF NURSERYMEN, INC.)
22. 4" AGED PINEBARK MULCH AND A WEED BARRIER (TY–PAR FABRIC OR APPROVED EQUAL) SHALL BE APPLIED TO ALL SHRUB AND GROUND COVER BEDS. INSTALL WEED BARRIER AS PER MANUFACTURERS RECOMMENDATIONS.
23. PLANT–PIT BACK–FILL SHALL BE MIXED AT A RATE OF 7 PARTS OF TOPSOIL TO 2 PARTS OF DEHYDRATED COW MANURE. SLOW RELEASE FERTILIZER SHALL BE APPLIED AS PER MANUFACTURERS RECOMMENDATIONS. USE EXISTING ON–SITE TOPSOIL AS PART OF BACK FILL WHEN AVAILABLE.
24. ALL LANDSCAPED AREAS NOT PLANTED WITH TREES, SHRUBS OR GROUNDCOVER SHALL BE RESTORED WITH SEED OR SOD AS INDICATED ON PLANS.
25. TOPSOIL WILL BE TESTED FOR FERTILIZATION REQUIREMENTS, AND SLOW RELEASE ENVIRONMENTALLY FRIENDLY FERTILIZER WILL BE APPLIED AT THE RECOMMENDED RATES.
26. ALL DISTURBED WETLAND BUFFER AREAS, EXCEPT FOR AREAS THAT ARE PART OF THE DRAINAGE SYSTEM, ARE TO BE RESEEDED WITH A CONSERVATION SEED MIX AND ONLY MOWED TWICE PER YEAR.
27. ALL PLANT SUBSTITUTIONS MUST BE APPROVED BY THE ENGINEER.
28. PLANTS SHALL BE SUBJECT TO INSPECTION AND APPROVAL AT THE PLACE OF GROWTH, UPON DELIVERY OR AT THE JOB SITE WHILE WORK IS ONGOING TO CONFORMITY TO SPECIFIED QUALITY, SIZE AND VARIETY.
29. PLANTS FURNISHED IN CONTAINERS SHALL HAVE THE ROOTS WELL ESTABLISHED IN THE SOIL MASS AND SHALL HAVE AT LEAST ONE (1) GROWING SEASON. ROOT–BOUND PLANTS OR INADEQUATELY SIZED CONTAINERS TO SUPPORT THE PLANT MAY BE DEEMED UNACCEPTABLE.
30. ALL PLANTS SHALL BE GUARANTEED BY THE CONTRACTOR FOR NO LESS THAN ONE FULL YEAR FROM THE TIME OF INSTALLATION. DURING THIS TIME, THE OWNER SHALL MAINTAIN ALL PLANT MATERIALS IN THE ABOVE MANNER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSPECT THE PLANTS TO ENSURE PROPER CARE. IF THE CONTRACTOR IS DISSATISFIED WITH THE CARE GIVEN, HE SHALL IMMEDIATELY, AND IN SUFFICIENT TIME TO PERMIT THE CONDITION TO BE RECTIFIED, NOTIFY THE OWNER IN WRITING OR OTHERWISE FORFEIT HIS CLAIM.
31. BY THE END OF THE GUARANTEE PERIOD, THE CONTRACTOR SHALL HAVE REPLACED ANY PLANT MATERIAL THAT IS MISSING, NOT TRUE TO SIZE AS SPECIFIED, THAT HAS DIED, THAT HAS LOST NATURAL SHAPE DUE TO DEAD BRANCHES, EXCESS PRUNING OR INADEQUATE OR IMPROPER CARE, OR IS, IN THE OPINION OF THE OWNER, IN UNHEALTHY OR UNSIGHTLY CONDITION.
32. THE CONTRACTOR IS TO USE TEMPORARY MEASURES FOR WATERING PLANTS DURING THE ESTABLISHMENT PERIOD. INCLUDING CONNECTING TEMPORARY HOSES TO THE STRUCTURE WATER SUPPLY LINE AND UTILIZING SPRINKLERS UNTIL 85% GROWTH OCCURS.

PLANTING NOTES

1. CONTRACTOR SHALL OBTAIN APPROVAL FROM L.A. PRIOR TO PURCHASING &/OR INSTALLING SUBSTITUTE PLANT MATERIAL PRIOR TO PURCHASE OF ANY SUBSTITUTE MATERIALS.
2. CONSTRUCTION ACCESS WILL BE AS DIRECTED BY L.A. CONTRACTOR IS RESPONSIBLE FOR RESTORATION OF ACCESS ROUTE AND ALL AREAS DISTURBED BY PLANTING OPERATIONS UPON COMPLETION OF CONSTRUCTION OPERATIONS, AT NO ADDITIONAL COST TO THE OWNER.
3. LAYOUT OF ALL PLANTING BEDS AND LOCATION OF PLANTS TO BE APPROVED BY L.A. ON SITE PRIOR TO CONSTRUCTION AND INSTALLATION.
4. CONTRACTOR TO REMOVE ALL DEBRIS GENERATED BY PLANT INSTALLATION. DEBRIS TO BE DISPOSED OF IN A LEGAL MANNER.
5. ALL PLANT MATERIAL SHALL BE GUARANTEED TO BE IN GOOD, HEALTHY & FLOURISHING CONDITION FOR ONE YEAR FROM THE DATE OF FINAL INSTALLATION APPROVAL BY L.A. CONTRACTOR SHALL REPLACE, WITHOUT COST TO OWNER, AND AS SOON AS WEATHER CONDITIONS PERMIT, ALL DEAD AND NON–FLOURISHING PLANTS AS DETERMINED BY THE L.A. REPLACEMENT PLANTS SHALL BE BE GUARANTEED IDENTICALLY TO ORIGINAL PLANTS, TIME PERIOD COMMENCING FROM DATE OF REPLACEMENT PLANTING APPROVAL BY L.A.
6. ALL BEDS TO BE MULCHED WITH 3" DEPTH SHREDDED BARK MULCH UNLESS NOTED OTHERWISE.
7. CONTRACTOR TO PROVIDE NECESSARY TEMPORARY IRRIGATION IF NEEDED BASED ON TIME OF YEAR THE PROJECT IS IMPLEMENTED.
8. ALL PLANT MATERIAL TO COMPLY WITH THE CITY OF DOVER'S SITE REVIEW REGULATIONS, 149–14(G), SUCH THAT THERE SHALL BE DECIDUOUS SHADE TREES PLANTED 40 FEET O.C. ALONG THE PERIMETER OF THE PARKING LOTS AND SHRUBS PLANTED 5 FEET O.C. WITHIN THE PERIMETER BUFFER. SEE PLANT LIST FOR SPECIES AND SIZE OF PLANTS.

TEMPORARY WATERING NOTES

1. CONTRACTOR IS RESPONSIBLE FOR MAKING SURE ALL PLANT MATERIAL HAS ADEQUATE WATER DURING THE ESTABLISHMENT PERIOD.
2. THE USE OF GATOR BAGS, SOAKER HOSE, HAND WATERING AND OTHER TECHNIQUES SHOULD BE USED TO ASSURE PROPER HYDRATION OF THE PLANTINGS IS MAINTAINED.
3. TEMPORARY IRRIGATION SYSTEMS CAN BE SET UP TO ASSIST IN WATERING ACTIVITIES.

PLANTING SCHEDULE
239 KNOX MARSH ROAD, DOVER NH

Botanical Name/ Common Name	Size	Qty	Label
Trees			
Acer rubrum / Red Maple	4" cal.	13	AR
Cornus Controversa / Pagoda Dogwood	4" cal.	8	CC
Zelkova serrata / Japanese Zelkova	4" cal.	13	ZS
Quercus palustris / Pin Oak	4" cal.	18	QP
Picea Glauca / White Spruce	4" cal.	16	WS
Picea Glauca / White Spruce	12' TALL	5	WS
Picea Glauca 'Conica' /Dwarf Alberta Spruce	3 gal.	42	PG
Shrubs			
Viburnum Dentatum / Arrowwood Viburnum	24"	41	VD
Taxus cuspidata 'Nana Aurescents"/ Dwarf Golden Japanese Yew	24"	47	TC
Viburnum aceriflolium / Maple Leaf Viburnum	24"	49	VA
Sambucus Canadensis/ American Elderberry	24"	40	SC
Vaccinium Corymbosum / Highbush Blueberry	24"	53	VC
Lindera Benzoin/ Northern Spicebush	24"	74	LB
Syringa Pubescens Subsp. Patula 'Miss Kim'/ Miss Kim Lilac	24"	42	MK
Kalmia latifolia/ Mountain Laurel	24"	36	KL
Juniperus chinensis 'Blue Point'/ Blue Point Juniper	24"	17	JC
Azalea 'Karen'/ Karen Azalea	24"	109	AK
Ilex crenata 'Soft Touch'/ Soft Touch Holly	24"	83	IC
Plants			
Black-Eyed Susan, New England Aster, Anise Hyssop & Cranesbill	3" pot	326	PL
Grasses			
Calamagrostis acutifolia 'Karl Foerster' / Feather Reed Grass	#2	306	KF

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planning & design llc

General Plant Maintenance Guide

General Plant Bed Maintenance:

- All plant maintenance should be performed by a qualified horticulturalist or licensed arborist. Cleaning the dead material out of the planting bed in the fall helps keep litter from building up around the plants and in some cases killing the plants. Watering the first year during dry periods will help get the plants established. Mulching every year is not necessary. Raking the old mulch and turning it over is all that is needed. When necessary only install one inch of mulch and do not place the mulch closer than 3" to the trunks or stems of woody plants.

Trees

- The first year watering during dry periods will be necessary.
- 3" inches of mulch maybe used. The mulch should be kept 3 inches from the trunk.
- Fertilizing is not necessary for the first year. Fertilizing in subsequent years only when and if the foliage is looking weak.
- Fertilization should occur prior to Mat 31st or after trees have dropped their leaves for the year.
- Prune dead wood once a year.
- Depending on the amount of compaction the bed area receives, deep root aeration may be needed over time

Woody Shrubs

- The first year watering during dry periods will be necessary.
- 3" inches of mulch maybe used. The mulch should be kept 3 inches from the stems.
- Fertilizing is not necessary for the first year. Fertilizing in subsequent years only when and if the foliage is looking weak.
- Fertilization should occur prior to Mat 31st or after shrubs have dropped their leaves or gone dormant for the year.
- Prune dead wood once a year.

Grasses

- Grasses only need to be clipped back at the end of the growing season and all the clippings removed from the area.
- Do not over mulch. Too much mulch will prohibit the grass from developing into a strong clump.

Perennials

- All perennials need to be pruned back after the first or second hard frost. A two-step method; first dead head all the flower heads and let drop to the ground for re-seeding. Second cut the stems back to 3" above the ground and remove the stem and leaf litter and place in compost. Do not over mulch. Too much mulch will prohibit the growth and development
- Fertilizing perennials once in the spring with a low phosphate fertilizer will help the plants to get started in the spring.

terrain
planning & design llc
311 kast hill road
hopkinton, nh 03229
603. 491. 2322
terrainplanning.com

239 KNOX MARSH ROAD

Site Location:
239 KNOX MARSH ROAD
Dover, NH
Tax Map: H, Lot 37-A

Prepared For:
Berry Surveying & Engineering
335 Second Crown Point Rd
Barrington, NH 03825

LANDSCAPE PLAN

DATE: NOVEMBER 26, 2024

SCALE: 1" = 40'

PROJECT #: 24-034

Drawn By: JDB

Checked By: ERB

REVISIONS: DATE:
Issued for Client Review

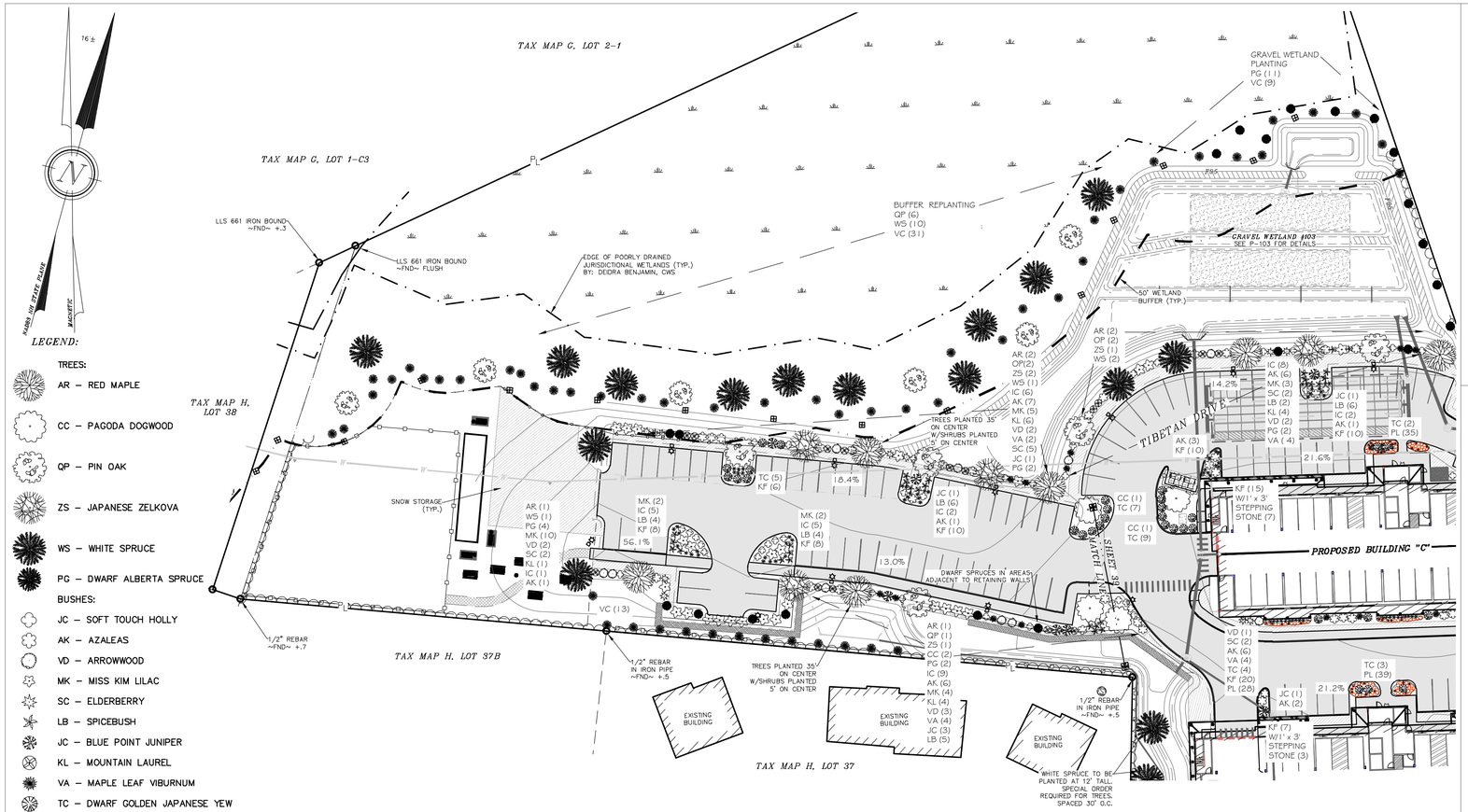
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SHEET 39 OF 60

ERIC R BUCK 078 CERTIFIED LANDSCAPE ARCHITECT STATE OF NEW HAMPSHIRE

NOT FOR CONSTRUCTION



GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

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26. ALL DISTURBED WETLAND BUFFER AREAS, EXCEPT FOR AREAS THAT ARE PART OF THE DRAINAGE SYSTEM, ARE TO BE RESEEDED WITH A CONSERVATION SEED MIX AND ONLY MOWED TWICE PER YEAR.
27. ALL PLANT SUBSTITUTIONS MUST BE APPROVED BY THE ENGINEER.
28. PLANTS SHALL BE SUBJECT TO INSPECTION AND APPROVAL AT THE PLACE OF GROWTH, UPON DELIVERY OR AT THE JOB SITE WHILE WORK IS ONGOING TO CONFORMITY TO SPECIFIED QUALITY, SIZE AND VARIETY.
29. PLANTS FURNISHED IN CONTAINERS SHALL HAVE THE ROOTS WELL ESTABLISHED IN THE SOIL MASS AND SHALL HAVE AT LEAST ONE (1) GROWNG SEASON. ROOT–BOUND PLANTS OR INADEQUATELY SIZED CONTAINERS TO SUPPORT THE PLANT MAY BE DEEMED UNACCEPTABLE.
30. ALL PLANTS SHALL BE GUARANTEED BY THE CONTRACTOR FOR NO LESS THAN ONE FULL YEAR FROM THE TIME OF INSTALLATION. DURING THIS TIME, THE OWNER SHALL MAINTAIN ALL PLANT MATERIALS IN THE ABOVE MANNER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSPECT THE PLANTS TO ENSURE PROPER CARE. IF THE CONTRACTOR IS DISSATISFIED WITH THE CARE GIVEN, HE SHALL IMMEDIATELY, AND IN SUFFICIENT TIME TO PERMIT THE CONDITION TO BE RECTIFIED, NOTIFY THE OWNER IN WRITING OR OTHERWISE FORFEIT HIS CLAIM.
31. BY THE END OF THE GUARANTEE PERIOD, THE CONTRACTOR SHALL HAVE REPLACED ANY PLANT MATERIAL THAT IS MISSING, NOT TRUE TO SIZE AS SPECIFIED, THAT HAS DIED, THAT HAS LOST NATURAL SHAPE DUE TO DEAD BRANCHES, EXCESS PRUNING OR INADEQUATE OR IMPROPER CARE, OR IS, IN THE OPINION OF THE OWNER, IN UNHEALTHY OR UNSIGHTLY CONDITION.
32. THE CONTRACTOR IS TO USE TEMPORARY MEASURES FOR WATERING PLANTS DURING THE ESTABLISHMENT PERIOD. INCLUDING CONNECTING TEMPORARY HOSES TO THE STRUCTURE WATER SUPPLY LINE AND UTILIZING SPRINKLERS UNTIL 85% GROWTH OCCURS.

PLANTING NOTES

1. CONTRACTOR SHALL OBTAIN APPROVAL FROM L.A. PRIOR TO PURCHASING &/OR INSTALLING SUBSTITUTE PLANT MATERIAL PRIOR TO PURCHASE OF ANY SUBSTITUTE MATERIALS.
2. CONSTRUCTION ACCESS WILL BE AS DIRECTED BY L.A. CONTRACTOR IS RESPONSIBLE FOR RESTORATION OF ACCESS ROUTE AND ALL AREAS DISTURBED BY PLANTING OPERATIONS UPON COMPLETION OF CONSTRUCTION OPERATIONS, AT NO ADDITIONAL COST TO THE OWNER.
3. LAYOUT OF ALL PLANTING BEDS AND LOCATION OF PLANTS TO BE APPROVED BY L.A. ON SITE PRIOR TO CONSTRUCTION AND INSTALLATION.
4. CONTRACTOR TO REMOVE ALL DEBRIS GENERATED BY PLANT INSTALLATION. DEBRIS TO BE DISPOSED OF IN A LEGAL MANNER.
5. ALL PLANT MATERIAL SHALL BE GUARANTEED TO BE IN GOOD, HEALTHY & FLOURISHING CONDITION FOR ONE YEAR FROM THE DATE OF FINAL INSTALLATION APPROVAL BY L.A. CONTRACTOR SHALL REPLACE, WITHOUT COST TO OWNER, AND AS SOON AS WEATHER CONDITIONS PERMIT, ALL DEAD AND NON–FLOURISHING PLANTS AS DETERMINED BY THE L.A. REPLACEMENT PLANTS SHALL BE BE GUARANTEED IDENTICALLY TO ORIGINAL PLANTS, TIME PERIOD COMMENCING FROM DATE OF REPLACEMENT PLANTING APPROVAL BY L.A.
6. ALL BEDS TO BE MULCHED WITH 3" DEPTH SHREDDED BARK MULCH UNLESS NOTED OTHERWISE.
7. CONTRACTOR TO PROVIDE NECESSARY TEMPORARY IRRIGATION IF NEEDED BASED ON TIME OF YEAR THE PROJECT IS IMPLEMENTED.
8. ALL PLANT MATERIAL TO COMPLY WITH THE CITY OF DOVER'S SITE REVIEW REGULATIONS, 149–14(G), SUCH THAT THERE SHALL BE DECIDUOUS SHADE TREES PLANTED 40 FEET O.C. ALONG THE PERIMTERE OF THE PARKING LOTS AND SHRUBS PLANTED 5 FEET O.C. WITHIN THE PERIMETER BUFFER. SEE PLANT LIST FOR SPECIES AND SIZE OF PLANTS.

TEMPORARY WATERING NOTES

1. CONTRACTOR IS RESPONSIBLE FOR MAKING SURE ALL PLANT MATERIAL HAS ADEQUATE WATER DURING THE ESTABLISHMENT PERIOD.
2. THE USE OF GATOR BAGS, SOAKER HOSE, HAND WATERING AND OTHER TECHNIQUES SHOULD BE USED TO ASSURE PROPER HYDRATION OF THE PLANTINGS IS MAINTAINED.
3. TEMPORARY IRRIGATION SYSTEMS CAN BE SET UP TO ASSIST IN WATERING ACTIVITIES.

PLANTING SCHEDULE
239 KNOX MARSH ROAD, DOVER NH
Botanical Name/ Common Name

	Size	Qty	Label
Trees			
Acer rubrum / Red Maple	4" cal.	13	AR
Cornus Controversa / Pagoda Dogwood	4" cal.	8	CC
Zelkova serrata / Japanese Zelkova	4" cal.	13	ZS
Quercus palustris / Pin Oak	4" cal.	18	QP
Picea Glauca / White Spruce	4" cal.	16	WS
Picea Glauca / White Spruce	12' TALL	5	WS
Picea Glauca 'Conica' /Dwarf Alberta Spruce	3 gal.	42	PG
Shrubs			
Viburnum Dentatum / Arrowwood Viburnum	24"	41	VD
Taxus cuspidata 'Nana Aurescents" / Dwarf Golden Japanese Yew	24"	47	TC
Viburnum aceriifolium / Maple Leaf Viburnum	24"	49	VA
Sambucus Canadensis/ American Elderberry	24"	40	SC
Vaccinium Corymbosum / Highbush Blueberry	24"	53	VC
Lindera Benzoin/ Northern Spicebush	24"	74	LB
Syringa Pubescens Subsp. Patula 'Miss Kim'/ Miss Kim Lilac	24"	42	MK
Kalmia latifolia/ Mountain Laurel	24"	36	KL
Juniperus chinensis 'Blue Point'/ Blue Point Juniper	24"	17	JC
Azalea 'Karen'/ Karen Azalea	24"	109	AK
Ilex crenata 'Soft Touch'/ Soft Touch Holly	24"	83	IC
Plants			
Black-Eyed Susan, New England Aster, Anise Hyssop & Cranesbill	3" pot	326	PL
Grasses			
Calamagrostis acutifolia 'Karl Foerster' / Feather Reed Grass	#2	306	KF

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General Plant Maintenance Guide

General Plant Bed Maintenance:

- All plant maintenance should be performed by a qualified horticulturalist or licensed arborist. Cleaning the dead material out of the planting bed in the fall helps keep litter from building up around the plants and in some cases killing the plants. Watering the first year during dry periods will help get the plants established. Mulching every year is not necessary. Raking the old mulch and turning it over is all that is needed. When necessary only install one inch of mulch and do not place the mulch closer than 3" to the trunks or stems of woody plants.

Trees

- The first year watering during dry periods will be necessary.
- 3" inches of mulch maybe used. The mulch should be kept 3 inches from the trunk.
- Fertilizing is not necessary for the first year. Fertilizing in subsequent years only when and if the foliage is looking weak.
- Fertilization should occur prior to Mat 31st or after trees have dropped their leaves for the year.
- Prune dead wood once a year.
- Depending on the amount of compaction the bed area receives, deep root aeration may be needed over time

Woody Shrubs

- The first year watering during dry periods will be necessary.
- 3" inches of mulch maybe used. The mulch should be kept 3 inches from the stems.
- Fertilizing is not necessary for the first year. Fertilizing in subsequent years only when and if the foliage is looking weak.
- Fertilization should occur prior to Mat 31st or after shrubs have dropped their leaves or gone dormant for the year.
- Prune dead wood once a year.

Grasses

- Grasses only need to be clipped back at the end of the growing season and all the clippings removed from the area.
- Do not over mulch. Too much mulch will prohibit the grass from developing into a strong clump.

Perennials

- All perennials need to be pruned back after the first or second hard frost. A two-step method; first dead head all the flower heads and let drop to the ground for re-seeding. Second cut the stems back to 3" above the ground and remove the stem and leaf litter and place in compost. Do not over mulch. Too much mulch will prohibit the growth and development
- Fertilizing perennials once in the spring with a low phosphate fertilizer will help the plants to get started in the spring.

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311 kast hill road
hopkinton, nh 03229
603. 491. 2322
terrainplanning.com

239 KNOX MARSH ROAD

Site Location:
239 KNOX MARSH ROAD
Dover, NH
Tax Map: H, Lot 37-A

Prepared For:
Berry Surveying & Engineering
335 Second Crown Point Rd
Barrington, NH 03825

LANDSCAPE PLAN

DATE: NOVEMBER 26, 2024

SCALE: 1" = 40'

PROJECT #: 24-034

Drawn By: JDB

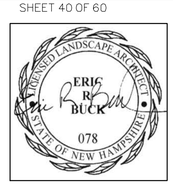
Checked By: ERB

REVISIONS: DATE:
Issued for Client Review

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L - 02

SHEET 40 OF 60



NOT FOR CONSTRUCTION

NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37A

3.) LOT AREA: 407,542 Sq. Ft., 9.36 Ac.

4.) S.C.R.D. BOOK 5138, PAGE 73

5.) THIS IS PROPOSED TO BE A RESIDENTIAL AND COMMERCIAL DRIVEWAY.

6.) EXISTING CONDITIONS INFORMATION IS BASED ON A SURVEY PERFORMED BY BERRY SURVEYING & ENGINEERING AND IS ENCLOSED IN THIS PACKAGE.

7.) THIS PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH NHDOT STANDARD SPECIFICATIONS DATED 2016. CURRENT STANDARD PLANS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS INCLUDED IN THE PROPOSAL.

8.) CONTRACTOR SHALL TAKE SPECIAL CARE IN NOT DISTURBING EXISTING MONUMENTS BOUNDS, AND OR BENCHMARKS WITHOUT FIRST MAKING PROVISIONS FOR RELOCATION.

NOTES CONT.:

9.) THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO LOCATE EXACTLY AND TO PRESERVE ANY AND ALL UNDERGROUND UTILITIES CALL "DIG-SAFE" 1-888-DIGSAFE (344-7233) AT LEAST 72 HOURS BEFORE COMMENCING CONSTRUCTION.

10.) WHERE AN EXISTING UNDERGROUND UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.

11.) THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES.

12.) AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.

13.) THE TERM "PROPOSED" (PROP.) MEANS WORK TO BE CONSTRUCTED USING NEW MATERIALS, OR, WHERE APPLICABLE, RE-USING EXISTING MATERIALS IDENTIFIED AS "REMOVE & RESET" (R & R)

NOTES CONT.:

14.) ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE RETAINED UNLESS NOTED OTHERWISE.

15.) ALL DISTURBED AREAS NOT DESIGNATED TO BE PAVED SHALL HAVE LOAM PLACED AND SEEDED. THE LOAM SHALL HAVE A MINIMUM DEPTH OF 4 INCHES AND SHALL BE PLACED FLUSH WITH THE TOP OF THE ADJACENT CURB, EDGING, BERM OR PAVEMENT SURFACE.

16.) THE SPEED LIMIT ON KNOX MARSH ROAD IS CURRENTLY 50MPH. IT IS REQUESTED BY THE CITY OF DOVER THAT THE SPEED LIMIT IN THE SECTION OF NH ROUTE 155 BE REDUCED TO 40 MPH.

17.) WORK WITHIN NHDOT R.O.W. WILL REQUIRE PROFESSIONAL FLAGGING SERVICES.

18.) DESIGN ENGINEER TO PROVIDE INSPECTION & OVERSIGHT OF ALL WORK WITHIN R.O.W.

CLEAR ZONE CALCULATION:

POSTED SPEED: 50 MPH / 85TH PERCENTILE 50 MPH (ACCURATE COUNTS)

WESTBOUND DESIGN ADT (2019): 6,273 (ACCURATE COUNTS)

FROM AASHTO ROADSIDE DESIGN GUIDE (2011) TABLE 3.1 PAGE 3-3

CLEAR ZONE REQUIRED TO BE 24-28 FEET (1V:6H OR FLATTER)
-24 FEET HAS BEEN SELECTED

TURN LANE CLEAR ZONE ASSUMED DECELERATION SPEED: 35 MPH

CLEAR ZONE REQUIRED TO BE 16-18 FEET (1V:4H OR FLATTER)
-16 FEET HAS BEEN SELECTED

SIGHT DISTANCE REQUIREMENT:

POSTED SPEED: 50 MPH / 85TH 50 MPH (ACCURATE COUNTS)

WESTBOUND: DOWNGRADE <3%, 423.8 FEET REQUIRED (425 FEET PROVIDED)
EASTBOUND: UPGRADE <3%, 423.8 FEET REQUIRED (425 FEET PROVIDED)

FROM AASHTO GEOMETRIC DESIGN OF HIGHWAYS AND STREETS (2011) EXHIBIT 3.1

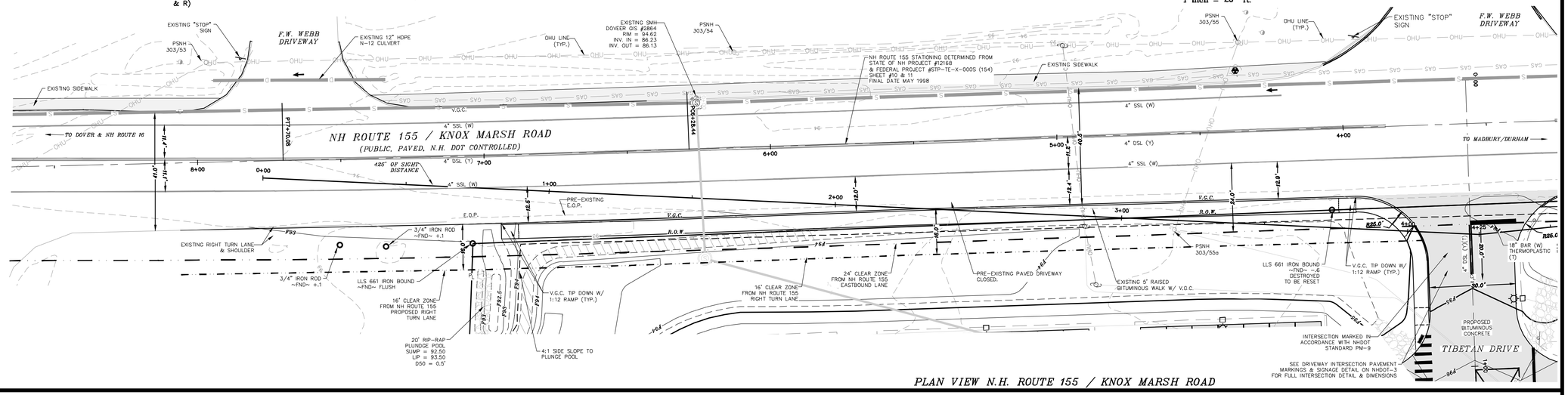
400' REQUIRED BY NHDOT



GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

LEGEND:

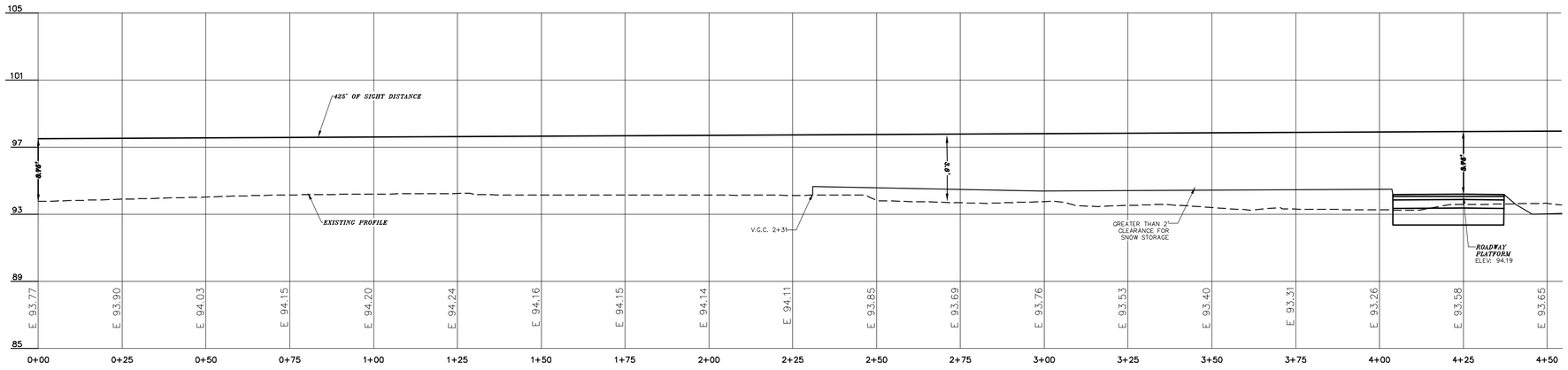
- PERIMETER BOUNDARY
- OHU — OHU — OVERHEAD UTILITIES LINE
- 236 — CONTOUR LINE, MINOR
- 235 — CONTOUR LINE, MAJOR
- D — EXISTING DRAIN LINE
- SAWCUT & MILL LINE
- SHOULDER
- CENTER LINE
- CLEAR ZONE LINE
- IRON BOUND ~FND~
- NHHD BOUND ~FND~
- UTILITY POLE
- SINGLE SIGN POST
- CATCH BASIN/DRAIN MANHOLE/SEWER MANHOLE W/ STRUCTURE
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. TYPICAL
- FND FOUND
- PL PROPERTY LINE
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- SSL (W) SINGLE SOLID LINE (WHITE)
- DSL (Y) DOUBLE SOLID LINE (YELLOW)



PLAN VIEW N.H. ROUTE 155 / KNOX MARSH ROAD

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'

PROFILE VIEW SIGHT LINE



NHDOT-1

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

SIGHT DISTANCE PLAN TIBETAN DRIVE (30') WESTBOUND
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY No. 14249
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37A

3.) LOT AREA: 407,542 Sq. Ft., 9.36 Ac.

4.) S.C.R.D. BOOK 5138, PAGE 73

5.) THIS IS PROPOSED TO BE A RESIDENTIAL AND COMMERCIAL DRIVEWAY.

6.) EXISTING CONDITIONS INFORMATION IS BASED ON A SURVEY PERFORMED BY BERRY SURVEYING & ENGINEERING AND IS ENCLOSED IN THIS PACKAGE.

7.) THIS PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH NHDOT STANDARD SPECIFICATIONS DATED 2016. CURRENT STANDARD PLANS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS INCLUDED IN THE PROPOSAL.

CLEAR ZONE CALCULATION:

POSTED SPEED: 50 MPH / 85TH PERCENTILE 50 MPH
(ACCURATE COUNTS)

WESTBOUND DESIGN ADT (2019): 6,273 (ACCURATE COUNTS)

FROM AASHTO ROADSIDE DESIGN GUIDE (2011) TABLE 3.1 PAGE 3-3

CLEAR ZONE REQUIRED TO BE 24-28 FEET (1V:6H OR FLATTER)
-24 FEET HAS BEEN SELECTED

SIGHT DISTANCE REQUIREMENT:

POSTED SPEED: 50 MPH / 85TH 50 MPH (ACCURATE COUNTS)

WESTBOUND: DOWNGRADE <3%, 423.8 FEET REQUIRED (425 FEET PROVIDED)
EASTBOUND: UPGRADE <3%, 423.8 FEET REQUIRED (425 FEET PROVIDED)

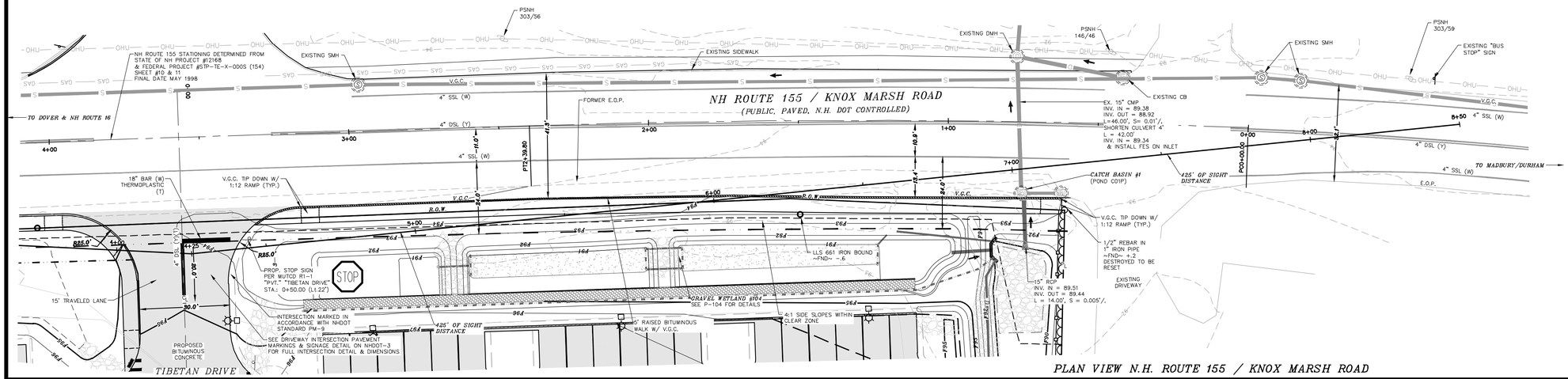
FROM AASHTO GEOMETRIC DESIGN OF HIGHWAYS AND STREETS (2011) EXHIBIT 3.1

400' REQUIRED BY NHDOT

LEGEND:

- PERIMETER BOUNDARY
- OHU — OHU — OVERHEAD UTILITIES LINE
- 236 CONTOUR LINE, MINOR
- 235 CONTOUR LINE, MAJOR
- D EXISTING DRAIN LINE
- SAWCUT & MILL LINE
- SHOULDER
- CENTER LINE
- CLEAR ZONE LINE
- IRON BOUND ~FND~
- NHHD BOUND ~FND~
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- SINGLE SIGN POST
- CATCH BASIN/DRAIN MANHOLE/SEWER MANHOLE W/ STRUCTURE
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
- TYP. TYPICAL
- FND FOUND
- PL PROPERTY LINE
- R.O.W. RIGHT OF WAY
- E.O.P. EDGE OF PAVEMENT
- SSL (W) SINGLE SOLID LINE (WHITE)
- DSL (Y) DOUBLE SOLID LINE (YELLOW)

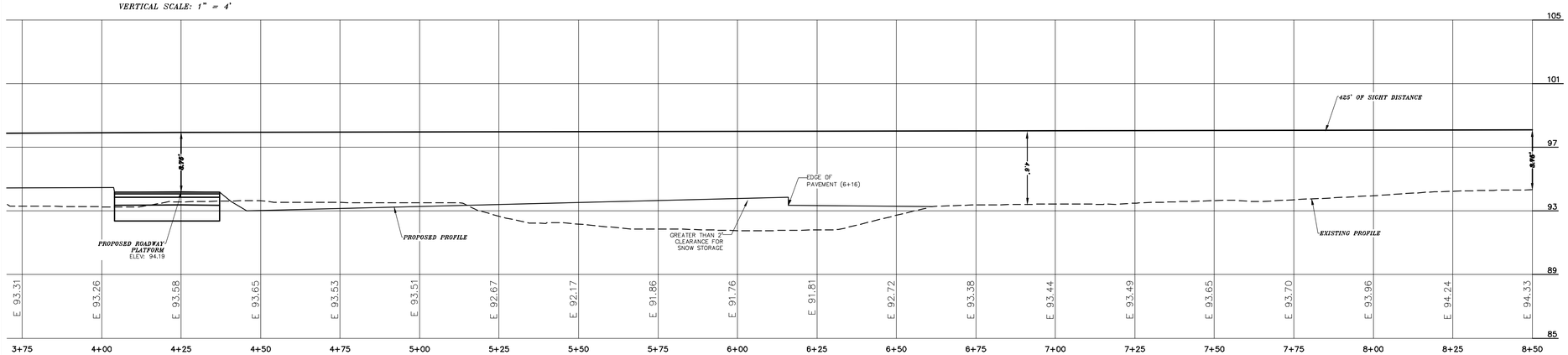
GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.



PLAN VIEW N.H. ROUTE 155 / KNOX MARSH ROAD

PROFILE VIEW SIGHT LINE

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.
VERTICAL SCALE: 1" = 4'



NHDOT-2

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

SIGHT DISTANCE PLAN TIBETAN DRIVE (30') EASTBOUND
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

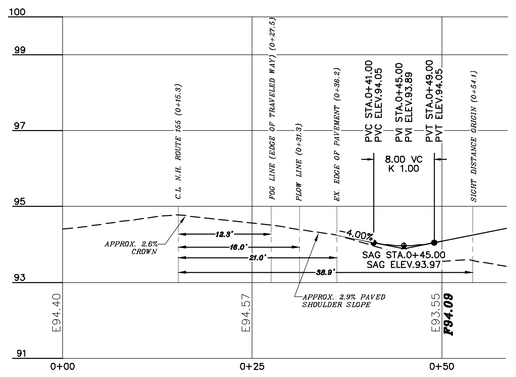
DETAIL–1

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.
VERTICAL SCALE: 1" = 2'

PROFILE VIEW TIBETAN DRIVE (30')



DETAIL–2

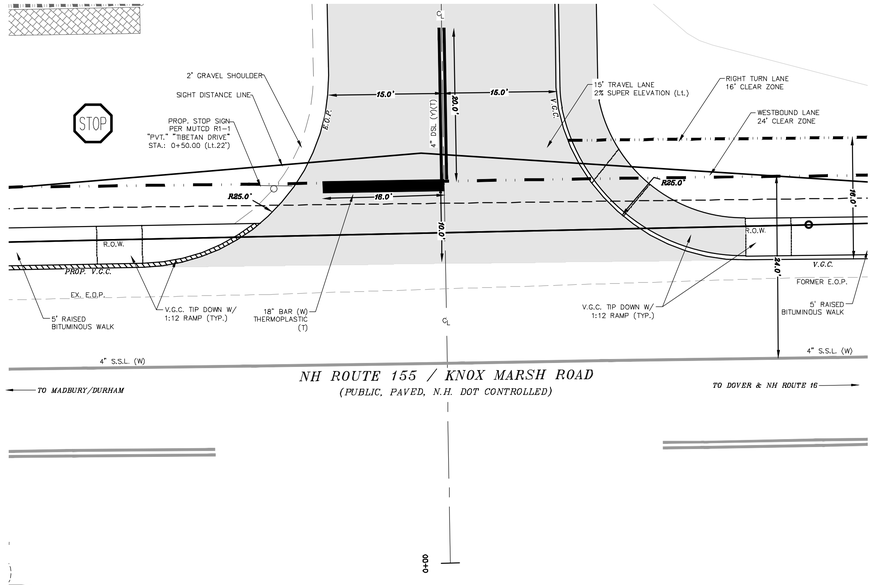
GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

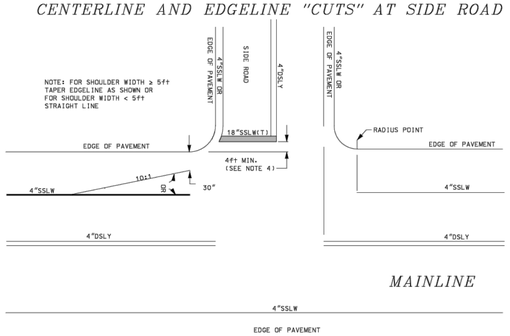
TIBETAN DRIVE (30') INTERSECTION PAVEMENT MARKINGS & SIGNAGE DETAILS

TIBETAN DRIVE (PVT.)



DETAIL–3

CENTERLINE AND EDGELINE "CUTS" AT SIDE ROAD



PM–9 GENERAL NOTES

1.) EDGELINE DETAILS ARE SHOWN FOR MAINLINE ROADWAYS WITHOUT TURN LANE. THE PRESENCE OF TURN LANES MAY REQUIRE DIFFERENT EDGELINE TREATMENTS,

2.) EDGELINES ON THE SIDE ROADS, WHEN CALLED FOR, SHALL FOLLOW THE ABOVE MAINLINE TYPICALS. EDGELINES SHALL NOT BE CONTINUOUS AROUND THE MAINLINE/SIDE ROAD RADIUS. EDGELINES SHALL END AT STOP BARS.

3.) CENTERLINE AND EDGELINE SHALL BE CONTINUOUS PAST RESIDENTIAL DRIVEWAYS. CENTERLINE AND EDGELINE SHALL BREAK FOR COMMERCIAL DRIVES W/TRAFFIC CONTROLS, MINOR SIDE ROADS, OR PRIVATE INTERSECTIONS.

4.) LOCATION OF THE STOP LINE MAY VARY DUE TO INTERSECTION SIGHT DISTANCE AND VEHICLE TURNING RADIUS AND MAY NOT ALWAYS COINCIDE WITH THE LOCATION OF THE STOP SIGN.

5.) IF THERE IS NO EDGELINE, END STOP BAR 12" FROM EDGE OF PAVEMENT.

6.) STOP BARS, WORDS, LANE LINES, SYMBOLS AND ARROWS SHALL BE THERMOPLASTIC (T).

NHDOT–3

PLANNING FILE #SITE–XXXX–XXXX

REVISION	DATE	DESCRIPTION

ROADWAY ACCESS DETAIL SHEET
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

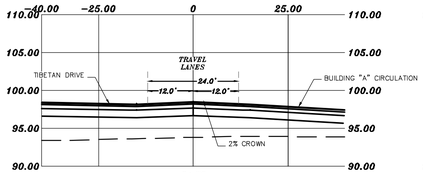
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DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 – 034

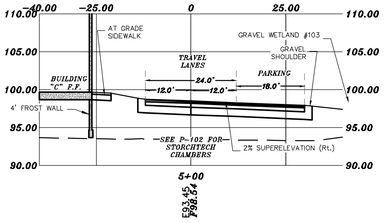
STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14249
LICENSED PROFESSIONAL ENGINEER

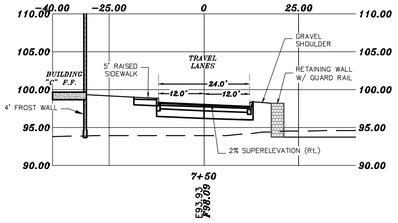
NOT FOR CONSTRUCTION

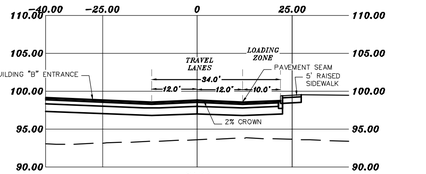
NOTE: *CURBING IS V.G.C. ALONG SIDEWALKS AND S.G.C. IN NON-SIDEWALK AREAS*

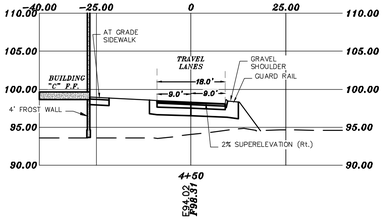
TIBETAN DRIVE 0+00-END

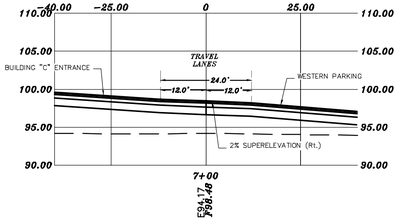


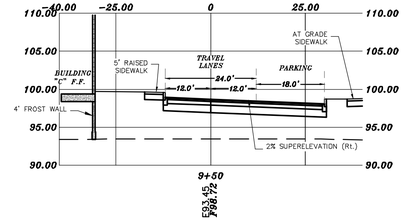


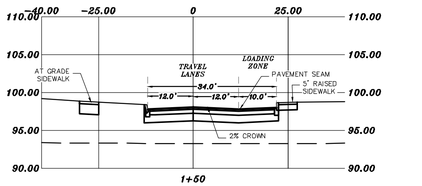


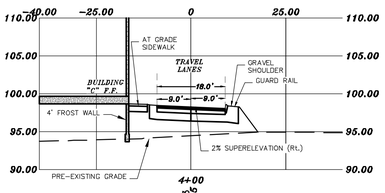


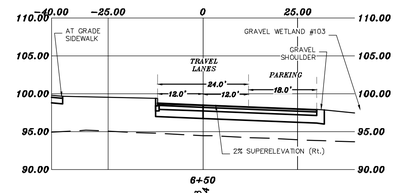


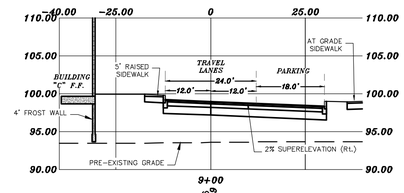


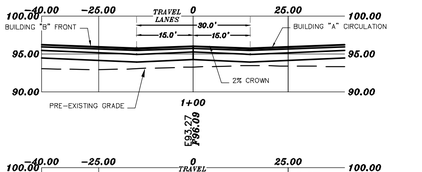


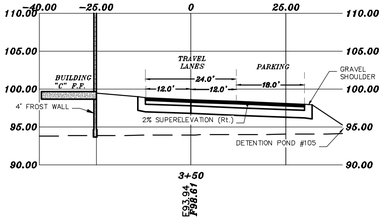


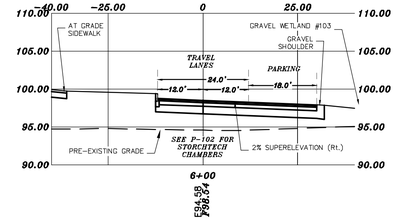


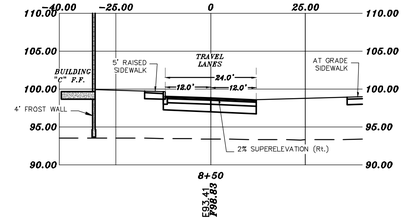


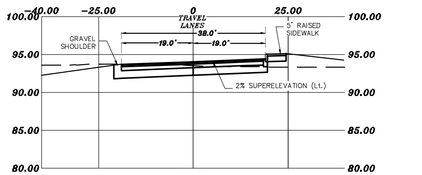


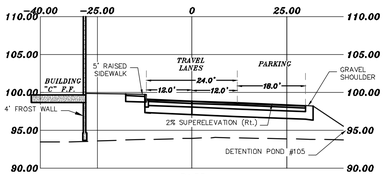


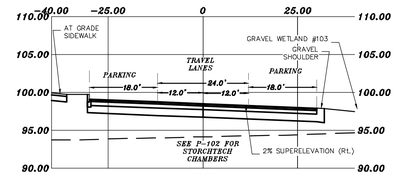


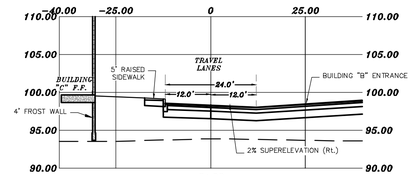












GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
Vertical Scale 10

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

CROSS SECTIONS TIBETAN DRIVE 0+00-END
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

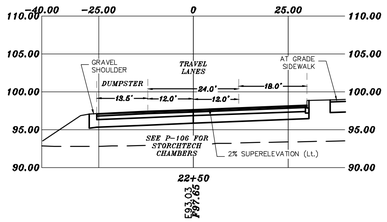
SCALE : 1 IN. EQUALS 20 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

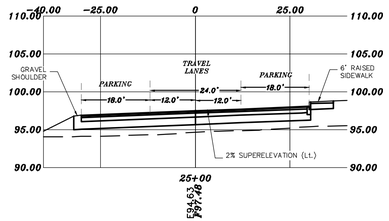
STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

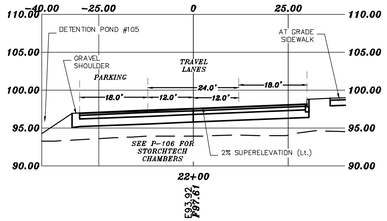
NOT FOR CONSTRUCTION

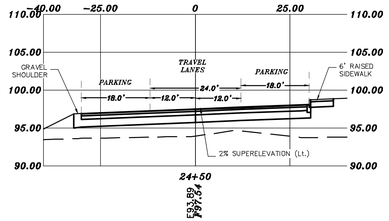
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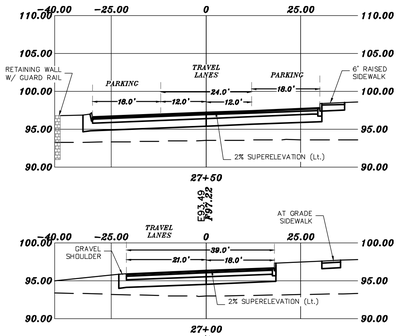
BUILDING "A" CIRCULATION AND BUILDING "B" FRONT 20+00-END





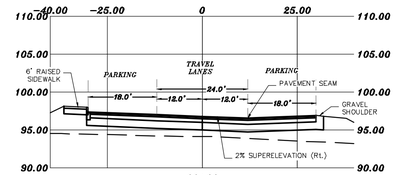


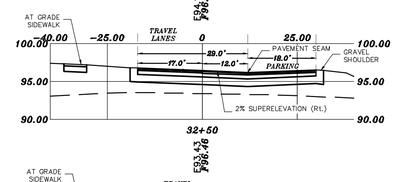


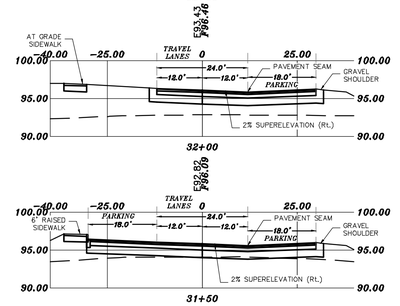


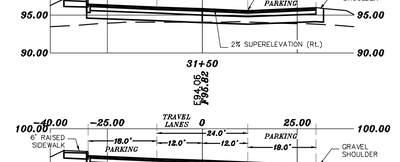
NOTE: *CURBING IS V.G.C. ALONG SIDEWALKS AND S.G.C. IN NON-SIDEWALK AREAS*

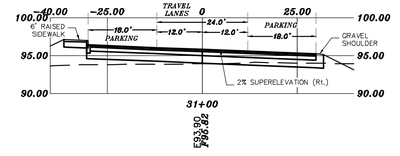
WESTERN PARKING LOT 30+00-END

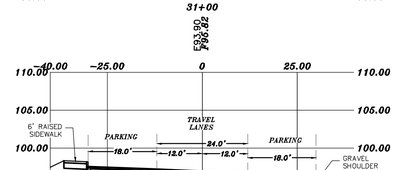












GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.
Vertical Scale 10

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

CROSS SECTIONS 20+00-END & 30+00-END
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

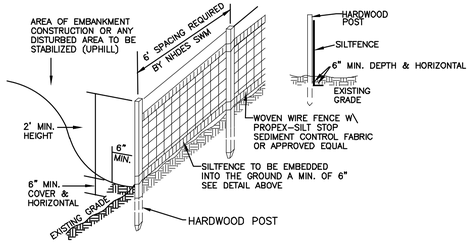
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY No. 14249 LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

E1



SILT FENCE CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES AND FILTER CLOTH SHALL BE FASTENED TO WOVEN WIRE EVERY 24" AT TOP MID AND BOTTOM SECTIONS AND BE EMBEDDED INTO GROUND A MINIMUM OF 8" THE FENCE POSTS SHALL BE A MINIMUM 48" LONG, SPACED A MAXIMUM 6' APART, AND DRIVEN A MINIMUM OF 16" INTO THE GROUND.
2. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THE ENDS OF THE FABRIC SHALL BE OVERLAPPED BY SIX INCHES, FOLDED AND STAPLED TO PREVENT SEDIMENT FROM BY-PASSING.
3. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND SEDIMENT REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE AND PROPERLY DISPOSED OF. SEE MAINTENANCE NOTE BELOW. REMOVAL OF SEDIMENT REQUIRED AT A DEPTH OF 6-INCHES.
4. PLACE THE ENDS OF THE SILT FENCE UP CONTOUR TO PROVIDE FOR SEDIMENT STORAGE.
5. SILT FENCES SHALL BE REMOVED WHEN NO LONGER NEEDED AND THE SEDIMENT COLLECTED SHALL BE DISPOSED AS DIRECTED BY THE ENGINEER.
6. THE AREA DISTURBED BY THE REMOVAL SHALL BE SMOOTHED AND RE-VEGETATED.
7. TO BE CONSTRUCTED IAW NH SWM #3 4-2 SEDIMENT CONTROL PRACTICES, SILT FENCE, PAGE 90.

SILT FENCE MAINTENANCE

1. SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS THAT ARE REQUIRED SHALL BE MADE IMMEDIATELY.
2. IF THE FABRIC ON A SILT FENCE SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, THE FABRIC SHALL BE REPLACED PROMPTLY.
3. SEDIMENT DEPOSITS SHOULD BE REMOVED WHEN THEY REACH SIX-INCHES IN DEPTH.
4. SEDIMENT DEPOSITS THAT ARE REMOVED OR LEFT IN PLACE AFTER THE FABRIC HAS BEEN REMOVED SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.

SILT FENCE DETAIL
NOT TO SCALE

E2

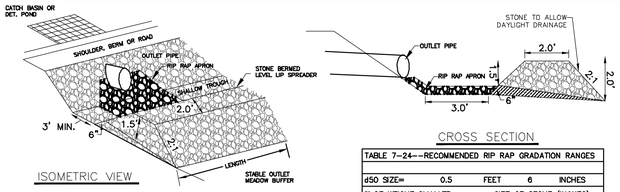
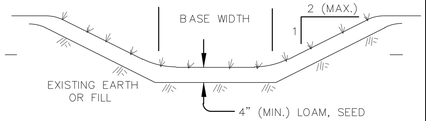


TABLE 7-24--RECOMMENDED RIP RAP GRADATION RANGES			
d50 SIZE=	0.5	FEET	6 INCHES
% OF WEIGHT SMALLER THAN THE GIVEN d50 SIZE	SIZE OF STONE (INCHES) FROM		TO
100%	9		12
85%	8		11
50%	6		9
15%	2		3

1. CONSTRUCT THE LEVEL SPREADER LIP ON A 0% GRADE TO INSURE UNIFORM SPREADING OF RUNOFF.
2. LEVEL SPREADER SHALL BE CONSTRUCTED ON UNDISTURBED SOIL AND NOT ON FILL.
3. THE ENTIRE LEVEL LIP AREA SHALL BE PROTECTED BY PLACING EXCELSIOR ENFORCER MATTING BENEATH THE STONE. EACH STRIP SHALL OVERLAP BY AT LEAST SIX INCHES.
4. THE FLOW FROM THE LEVEL SPREADER SHALL OUTLET ONTO STABILIZED AREAS. WATER SHOULD NOT RE-CONCENTRATE IMMEDIATELY BELOW THE SPREADER.
5. MAINTENANCE: THE LEVEL SPREADER SHOULD BE CHECKED PERIODICALLY AND AFTER EVERY MAJOR STORM TO DETERMINE IF THE LIP HAS BEEN DAMAGED AND THE DESIGN CONDITIONS HAVE NOT CHANGED. ANY DETRIMENTAL SEDIMENT ACCUMULATION SHOULD BE REMOVED. IF STONE REMOVAL HAS TAKEN PLACE ON THE LIP, THEN THE DAMAGE SHOULD BE REPAIRED.
6. REFERENCE IS MADE TO NHDES SWM VOL. 2, 4-6, STONE BERM LEVEL SPREADERS, PAGE 162

STONE BERM LEVEL SPREADER
NOT TO SCALE

E3



GRASS CONVEYANCE SWALE
NOT TO SCALE

INSPECT ANNUALLY FOR EROSION, SEDIMENT ACCUMULATIONS, VEGETATION LOSS, & INVASIVE SPECIES. REPAIR AS NECESSARY.

MOW GRASS ANNUALLY TO A DEPTH OF 4".

INSTALL STABILIZATION MATTING DURING CONSTRUCATION

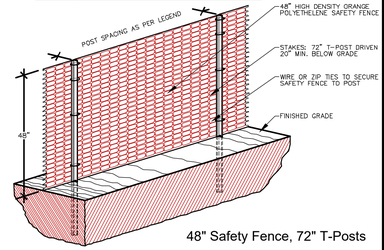
TO BE CONSTRUCTED IAW NH SWM #2 CHAPTER 4, #5 TREATMENT SWALES, PAGE 123.

E4

CONSTRUCTION SAFETY FENCE
NOT TO SCALE

LEGEND

SAF12	48" ORANGE FENCE, 12 FEET O.C.
SAF11	48" ORANGE FENCE, 11 FEET O.C..
SAF10	48" ORANGE FENCE, 10 FEET O.C.
SAF9	48" ORANGE FENCE, 9 FEET O.C.
SAF8	48" ORANGE FENCE, 8 FEET O.C..
SAF7	48" ORANGE FENCE, 7 FEET O.C.
SAF6	48" ORANGE FENCE, 6 FEET O.C.



48" Safety Fence, 72" T-Posts

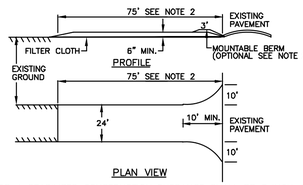
1. ALL SENSITIVE AREAS SHALL BE PROTECTED AS PER PLAN.
2. ALL TREES IN THE CONSTRUCTION AREA NOT SPECIFICALLY DESIGNATED FOR REMOVAL SHALL BE PRESERVED AND PROTECTED WITH HIGH VISIBILITY FENCE AS PER PLAN.
3. WHEN PRACTICABLE, INSTALL HIGH VISIBILITY 3 FEET OUTSIDE OF THE DRIP LINE OF THE TREE.
4. SAFETY FENCE SHOULD BE FASTENED SECURELY TO THE T-POSTS.
5. THE FENCING MUST REMAIN IN PLACE DURING ALL PHASES OF CONSTRUCTION; ANY CHANGE OF THE PROTECTIVE FENCING MUST BE APPROVED.

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

E5

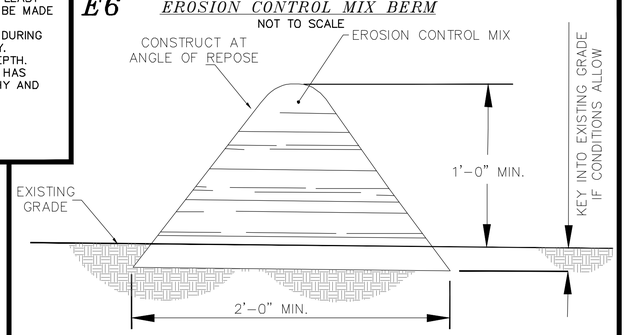
STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE



1. STONE FOR A STABILIZED CONSTRUCTION ENTRANCE SHALL BE 3 INCH ANGULAR STONE, RECLAIMED STONE, OR RECYCLED CONCRETE EQUIVALENT.
2. THE LENGTH OF THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 75 FEET, EXCEPT THAT THE MINIMUM LENGTH MAY BE REDUCED TO 50 FEET IF A 3-INCH TO 6-INCH BERM IS INSTALLED AT THE ENTRANCE OF THE PROJECT SITE.
3. THE THICKNESS OF THE STONE FOR THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 6 INCHES.
4. THE WIDTH OF THE ENTRANCE SHALL NOT BE LESS THAN THE FULL WIDTH OF THE ENTRANCE WHERE INGRESS OR EGRESS OCCURS OR 10 FEET, WHICH EVER IS GREATER.
5. GEOTEXTILE FILTER CLOTH SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING
6. ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION ENTRANCE SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A BERM WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
7. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, WASHED, OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED PROMPTLY.
8. TO BE CONSTRUCTED IAW NH SWM #3 4-2 SEDIMENT CONTROL PRACTICES, TEMPORARY CONSTRUCTION EXIT, PAGE 124.

E6

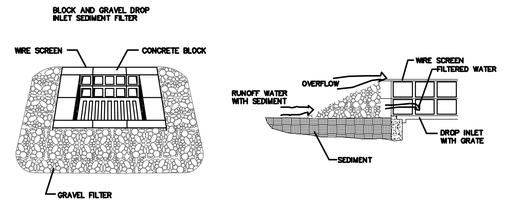
EROSION CONTROL MIX BERM
NOT TO SCALE



EROSION CONTROL MIX BERMS SHALL BE USED ONLY AS FOLLOWS:

1. BERMS SHALL BE USED IN AREAS WHERE EROSION WILL OCCUR ONLY IN THE FORM OF SHEET EROSION AND THERE IS NO CONCENTRATION OF WATER IN A CHANNEL OR DRAINAGE WAY ABOVE THE BERM.
2. THE BERMS SHALL BE INSTALLED FOLLOWING THE CONTOUR OF THE LAND AS CLOSLY AS POSSIBLE.
3. THE BERMS SHALL BE INSTALLED ON SLOPES LESS THAN 5%.
4. SUBJECT TO (E), BELOW, THE MIX SHALL HAVE AN ORGANIC PORTION BETWEEN 80 AND 100%, DRY WEIGHT BASIS, AND BE FIBROUS AND ELONGATED SUCH AS FROM SHREDDED BARK, STUMP GRINDINGS, COMPOSED BARK, OR EQUIVALENT MANUFACTURED PRODUCTS.
5. WOOD AND BARK CHIPS, GROUND CONSTRUCTION DEBRIS, OR REPROCESSED WOOD PRODUCTS SHALL NOT BE USED AS ORGANIC MATERIAL.
6. THE MIX SHALL NOT CONTAIN SILTS, CLAY, OR FINE SANDS.
7. THE MIX SHALL HAVE A PARTICLE SIZE BY WEIGHT OF 70 TO 85% PASSING A 6-INCH SCREEN AND A MAXIMUM OF 85% PASSING THE 0.75-INCH SCREEN.
8. THE MIX PH SHALL BE BETWEEN 5.0 AND 8.0.
9. THE BERM SHALL BE AT LEAST 12 INCHES HIGH AND AT LEAST 2 FEET WIDE.
10. TO BE CONSTRUCTED IAW NH SWM #3 4-2 SEDIMENT CONTROL PRACTICES, EROSION CONTROL MIX BERMS, PAGE 106.

E7



MAINTENANCE

ALL STRUCTURES SHOULD BE INSPECTED AFTER EVERY RAIN STORM AND REPAIRS MADE AS NECESSARY. SEDIMENT SHOULD BE REMOVED FROM TRAPPING DEVICES AFTER THE SEDIMENT HAS REACHED A MAXIMUM OF ONE HALF THE DEPTH OF THE TRAP. THE SEDIMENT SHOULD BE DISPOSED OF IN A SUITABLE AREA AND PROTECTED FROM EROSION BY EITHER STRUCTURE OR VEGETATIVE MEANS. THE TEMPORARY TRAPS SHOULD BE REMOVED AND THE AREA REPAIRED AS SOON AS THE CONTRIBUTING DRAINAGE AREA TO THE INLET HAS BEEN COMPLETELY STABILIZED.

BLOCK & GRAVEL DROP INLET SEDIMENT FILTER
NOT TO SCALE

1) TO BE USED ONLY IN ALL AREAS WHERE THERE WILL BE NO TRAFFIC.

2) TO BE CONSTRUCTED IAW NH SWM #3 4-2 SEDIMENT CONTROL PRACTICES, TEMPORARY STORM DRAIN INLET PROTECTION, PAGE 118.

E8

TEMPORARY EROSION CONTROL MEASURES

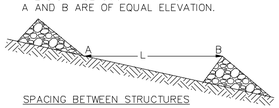
1. THE SMALLEST PRACTICAL AREA OF LAND SHALL BE EXPOSED AT ANY ONE TIME.
2. EROSION, SEDIMENT AND DETENTION MEASURES SHALL BE INSTALLED AS SHOWN ON THE PLANS AND AT LOCATIONS AS REQUIRED, DIRECTED BY THE ENGINEER.
3. ALL DISTURBED AREAS SHALL BE RETURNED TO ORIGINAL GRADES AND ELEVATIONS. DISTURBED AREAS SHALL BE LOAMED WITH A MINIMUM OF 4" OF LOAM AND SEEDED WITH NOT LESS THAN ONE POUND OF SEED PER 50 SQUARE YARDS OF AREA. (SEE SEED SPECIFICATIONS THIS SHEET)
4. ALL DISTURBED AREAS WILL BE RESTABILIZED WITHIN 45 DAYS. AT ANY ONE TIME, NO MORE THAN 5 ACRES, (217,800 Sq. Ft.) WILL BE DISTURBED.
5. SILT FENCES AND PERIMETER BARRIERS SHALL BE INSPECTED PERIODICALLY AND AFTER EVERY RAIN DURING THE LIFE OF THE PROJECT. ALL DAMAGED AREAS SHALL BE REPAIRED, SEDIMENT DEPOSITS SHALL PERIODICALLY BE REMOVED AND DISPOSED OF.
6. AFTER ALL DISTURBED AREAS HAVE BEEN STABILIZED, THE TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE REMOVED AND THE AREA DISTURBED BY THE REMOVAL SMOOTHED AND RE-VEGETATED.
7. PER THE EPA CGP REQUIREMENTS THERE WILL BE REPORTS OF THE EROSION CONTROL INSPECTIONS IAW SWPPP PREPARED BY BS&E. ALL EROSION CONTROLS SHALL BE INSPECTED WEEKLY AND WITHIN 24 HOURS AFTER 0.25" OR GREATER RAIN EVENT.
8. DITCHES, SWALES, AND BASINS SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
9. DO NOT TRAFFIC EXPOSED SOIL SURFACES WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION SYSTEM.
10. ROADWAYS, DRIVEWAYS AND CUT AND FILL SLOPES MUST BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINAL GRADE.
11. STABILIZATION MEANS:
    - 11.1. A MINIMUM OF 85% OF VEGETATIVE COVER HAS BEEN ESTABLISHED.
    - 11.2. A MINIMUM OF 3 INCHES OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP RAP HAS BEEN INSTALLED, OR
    - 11.3. EROSION CONTROL BLANKETS HAVE BEEN INSTALLED.
12. THIS PROJECT IS TO BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.
13. THE NHDES STORMWATER MANUAL, IN THREE VOLUMES, DATED DECEMBER 2008, IS A PART OF THIS PLAN SET AND THE MORE RESTRICTIVE WILL GOVERN. (NH SWM)

EROSION & SEDIMENT CONTROL DETAILS
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

E9

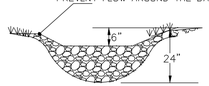
STONE CHECK DAM
NOT TO SCALE

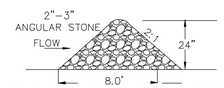
THE DISTANCE SUCH THAT POINTS A AND B ARE OF EQUAL ELEVATION.



SPACING BETWEEN STRUCTURES

NOTE: KEY STONE INTO CHANNEL BANKS AND EXTEND IT BEYOND THE ABUTMENTS A MINIUM OF 18" TO PREVENT FLOW AROUND THE DAM.

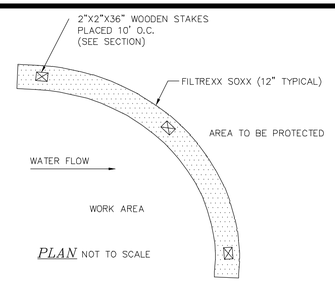




STONE GRADE STABILIZATION STRUCTURE

1.) CHECK DAMS SHOULD BE INSTALLED BEFORE RUNOFF IS DIRECTED TO THE SWALE OR DRAINAGE DITCH.
2.) THE MAXIMUM CONTRIBUTING DRAINAGE AREA TO THE DAM SHOULD BE LESS THEN ONE ACRE.
3.) THE MAXIMUM HEIGHT OF THE DAM SHOULD BE TWO FEET.
4.) THE CENTER OF THE DAM SHOULD BE AT LEAST SIX INCHES LOWER THAN THE OUTER EDGES.
5.) THE MAXIMUM SPACING IS AS SHOWN ON THE PROJECT SITE PLANS.
6.) CHECK DAMS WILL NOT BE USED IN A FLOWING STREAM.
7.) TEMPORARY CHECK DAMS WILL BE REMOVED ONCE THE SWALE OR DITCH IS DETERMINED STABLE.
8.) TO BE CONSTRUCTED IAW NH SWM #3 4-2 SEDIMENT CONTROL PRACTICES, TEMPORARY CHECK DAMS, PAGE 114.

E10

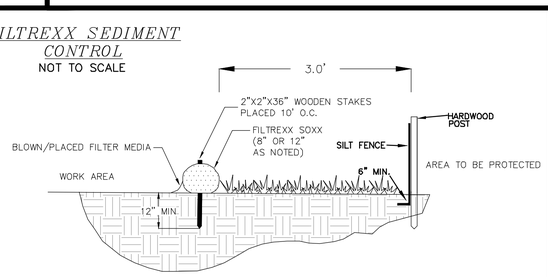


PLAN NOT TO SCALE

NOTES

1. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
2. FILTER MEDIA FILL TO MEET APPLICATION REQUIRMENTS.
3. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.
4. SILTSOXX MAY BE USED IN PLACE OF SILT FENCE OR OTHER SEDIMENT BARRIERS.
5. SILTSOXX COMPOST/SOIL/ROCK/SEED FILL MATERIAL SHALL BE ADJUSTED AS NECESSARY TO MEET THE REQUIRMENTS OF THE SPECIFIC APPLICATION.
6. FILTREXX SOXX IS A REGISTERED TRADEMARK OF FILTREXXIN TERNATIONAL, LLC.
7. SILT FENCE IS NOT A SUBSTITUTION FOR SILT SOXX AND ANY EQUAL SUBSTITUTION TO BE APPROVED.
8. TO BE CONSTRUCTED IAW FILTREXX, SECTION 1:EROSION & SEDIMENT CONTROL (PAGE 323) - CONSTRUCTION ACTIVITIES, SWPPP CUT SHEET: FILTREXX SEDIMENT CONTROL

FILTREXX SEDIMENT CONTROL
NOT TO SCALE

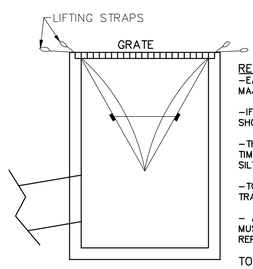


Filtrexx International, LLC
35481 Grafton Eastern Rd | Grafton, Oh 44044
440-926-2607 | fax: 440-926-4021
WWW.FILTREXX.COM
OR APPROVED EQUAL

NOTE: FOR AREAS REQUIRING DOUBLE PERIMETER CONTROL WITHIN 50' OF JURISDICTIONAL WETLANDS AND NOT FOR ALL SILT SOXX APPLICATIONS. THIS DUPLICATION MAY BE SPECIFIED AS 12" SILT SOXX OR ORANGE CONSTRUCTION FENCE AS NOTED.

SECTION NOT TO SCALE

E11



RECOMMENDED MAINTENANCE SCHEDULE

-EACH SILTSACK SHOULD BE INSPECTED AFTER EVERY MAJOR RAIN EVENT, AND MUST BE MAINTAINED.

-IF THERE HAVE BEEN NO MAJOR EVENTS, SILTSACK SHOULD BE INSPECTED EVERY 2-3 WEEKS.

-THE RESTRAINT CORD SHOULD BE VISIBLE AT ALL TIMES. IF CORD IS COVERED WITH SEDIMENT, THE SILTSACK SHOULD BE EMPTIED.

-TO BE USED IN ALL AREAS WHERE THERE WILL BE TRAFFIC.

- ARE SUBJECT TO DAMAGE BY SNOW PLOWS, AND MUST BE INSPECTED AFTER ANY SNOW EVENT AND REPLACED AS REQUIRED.

TO BE CONSTRUCTED IAW NH SWM #3 4-2 SEDIMENT CONTROL PRACTICES, TEMPORARY STORM DRAIN INLET PROTECTION, PAGE 118.

SILTSACK DETAIL
NOT TO SCALE

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

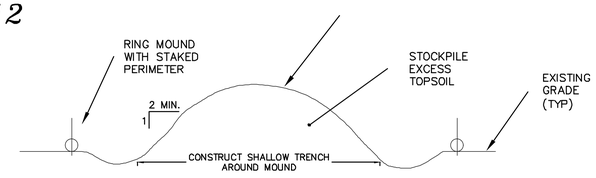
SCALE : AS NOTED
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

E-101

NOT FOR CONSTRUCTION

E12



TO BE CONSTRUCTED IAW NH SWM #3 4-1 EROSION CONTROL PRACTICES, SOIL STOCKPILE PRACTICES, PAGE 46.

TOPSOIL STOCKPILE MOUND

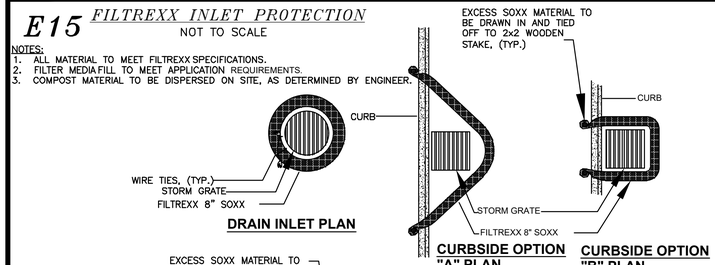
NOT TO SCALE

E15

FILTREXX INLET PROTECTION

NOT TO SCALE

NOTES:
1. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
2. FILTER MEDIA FILL TO MEET APPLICATION REQUIREMENTS.
3. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.



New England Conservation/Wildlife Mix

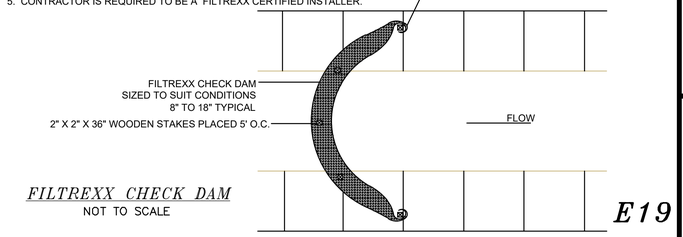
CONSERVATION MIX TO BE PROVIDED BY NEW ENGLAND WETLAND PLANTS, INC. OR APPROVED EQUAL

Botanical Name	Common Name	Indicator
Elymus virginicus	Virginia Wild Rye	FACW-
Schizachyrium scoparium	Little Bluestem	FACU
Andropogon gerardii	Big Bluestem	FAC
Festuca rubra	Red Fescue	FACU
Sorghastrum nutans	Indian Grass	UPL
Panicum virgatum	Switch Grass	FAC
Chamaecrista fasciculata	Partridge Pea	FACU
Dermodium canadense	Showy Tick Trefoil	FAC
Asclepias tuberosa	Butterfly Milkweed	NI
Bidens frondosa	Beggar Ticks	FACW
Eupatorium purpureum (Eutrochium maculatum)	Purple Joe Pye Weed	FAC
Rudbeckia hirta	Black Eyed Susan	FACU-
Aster pilosus (Symphyotrichum pilosum)	Heath (or Hairy) Aster	UPL
Solidago juncea	Early Goldenrod	

PRICE PER LB. $39.50 MIN. QUANITY 2 LBS. TOTAL: $79.00 APPLY: 25 LBS/ACRE :1750 sq ft/lb

NOTE: CONSERVATION MIX TO BE USED ON ALL 2:1 SLOPES LINED WITH RECB.

NOTES:
1. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
2. CHECK DAM SHOULD BE USED IN AREAS THAT DRAIN 1 ACRE OR LESS.
3. SEDIMENT SHOULD BE REMOVED FROM BEHIND CHECK DAM ONCE THE ACCUMULATED HEIGHT HAS REACHED ½ THE HEIGHT OF THE CHECK DAM.
4. CHECK DAM CAN BE DIRECT SEEDED AT THE TIME OF INSTALLATION.
5. CONTRACTOR IS REQUIRED TO BE A FILTREXX CERTIFIED INSTALLER.

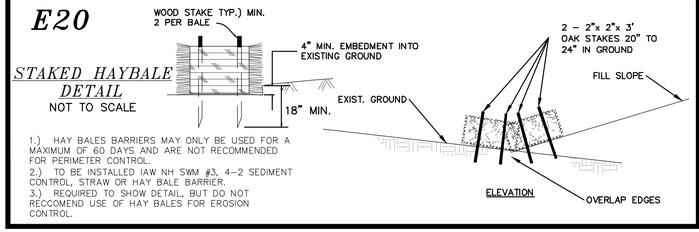


FILTREXX CHECK DAM

NOT TO SCALE

E19

E20



STAKED HAYBALE DETAIL

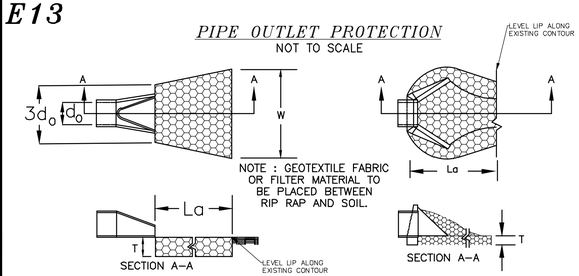
NOT TO SCALE

1.) HAY BALES BARRIERS MAY ONLY BE USED FOR A MAXIMUM OF 60 DAYS AND ARE NOT RECOMMENDED FOR PERIMETER CONTROL.
2.) TO BE INSTALLED IAW NH SWM #3, 4–2 SEDIMENT CONTROL, STRAW OR HAY BALE BARRIER.
3.) REQUIRED TO SHOW DETAIL, BUT DO NOT RECCOMEND USE OF HAY BALES FOR EROSION CONTROL.

E13

PIPE OUTLET PROTECTION

NOT TO SCALE



PIPE OUTLET PROTECTION CONSTRUCTION SPECIFICATIONS

SPECIFIED GRADATION.

2. THE ROCK OR GRAVEL USED FOR FILTER OF RIP RAP SHALL CONFORM TO NHDOT SECTION 583.
3. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE ROCK RIP RAP DAMAGED AREAS IN THE FABRIC SHALL BE REPAIRED BY PLACING A PIECE OF FABRIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACEMENT OF THE FABRIC. ALL OVERLAPS REQUIRED FOR REPAIRS OR JOINING TWO PIECES OF FABRIC SHALL BE A MINIMUM OF 12 INCHES.
4. STONE FOR THE RIP RAP MAY BE PLACED BY EQUIPMENT AND SHALL BE CONSTRUCTED TO THE FULL LAYER THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO PREVENT SEGREGATION OF THE STONE SIZES.
5. TO BE CONSTRUCTED IAW NH SWM #2 4–6 CONVEYANCE PRACTICES, 6. OUTLET PROTECTION, PAGE 172.

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TABLE 7–24––RECOMMENDED RIP RAP GRADATION RANGES			
d50 SIZE=	0.5	FEET 6	INCHES
% OF WEIGHT SMALLER THAN THE GIVEN d50 SIZE		SIZE OF STONE (INCHES) FROM	TO
100%		9	12
85%		8	11
50%		6	9
15%		2	3

NOTE: Temporary seed mix for stabilization of turf shall be winter rye or oats at a rate of 2.6 lbs. per 1000 s.f. and shall be applied prior to OCT. 15, if permanent seeding not yet complete.

NOTE: THIS PROJECT IS TO BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.

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SEEDING GUIDE

USE	SEEDING MIXTURE 1/	DROUGHTY	WELL DRAINED	MODERATELY WELL DRAINED	POORLY DRAINED
STEEP CUTS AND FILLS, BORROW AND DISPOSAL AREAS	A	FAIR	GOOD	GOOD	FAIR
	B	POOR	GOOD	FAIR	FAIR
	C	POOR	GOOD	EXCELLENT	GOOD
	D	FAIR	FAIR	GOOD	EXCELLENT
	E	FAIR	EXCELLENT	EXCELLENT	POOR
WATERWAYS, EMERGENCY SPILLWAYS, AND OTHER CHANNELS WITH FLOWING WATER.	A	GOOD	GOOD	GOOD	FAIR
	B	GOOD	EXCELLENT	EXCELLENT	FAIR
	D	GOOD	EXCELLENT	EXCELLENT	FAIR
LIGHTLY USED PARKING LOTS, ODD AREAS, UNUSED LANDS, AND LOW INTENSITY USE RECREATION SITES.	A	GOOD	GOOD	GOOD	FAIR
	B	GOOD	GOOD	FAIR	POOR
	C	GOOD	EXCELLENT	EXCELLENT	FAIR
	D	FAIR	GOOD	GOOD	EXCELLENT
PLAY AREAS AND ATHLETIC FIELDS. (TOPSOIL IS ESSENTIAL FOR GOOD TURF.)	F	FAIR	EXCELLENT	EXCELLENT	2/
	G	FAIR	EXCELLENT	EXCELLENT	2/

RECOMMENDED

GRAVEL PIT, SEE NH–PM–24 IN APPENDIX FOR RECOMMENDATION REGARDING RECLAMATION OF SAND AND GRAVEL PITS.

1/ REFER TO SEEDING MIXTURES AND RATES IN TABLE 7–36.
2/ POORLY DRAINED SOILS ARE NOT DESIRABLE FOR USE AS PLAYING AREA AND ATHLETIC FIELDS.

SEEDING RATES

MIXTURE	POUNDS PER ACRE	POUNDS PER 1,000 Sq. Ft.
A. TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
RED TOP	2	0.05
TOTAL	42	0.95
B. TALL FESCUE	15	0.35
CREEPING RED FESCUE	10	0.25
CROWN VETCH	15	0.35
OR		
FLAT PEA	30	0.75
TOTAL	40 OR 55	0.95 OR 1.35
C. TALL FESCUE	24	0.55
CREEPING RED FESCUE	24	0.55
BIRDS FOOT TREFOIL	REMOVED	REMOVED
TOTAL	48	1.10
D. TALL FESCUE	20	0.45
FLAT PEA	30	0.75
TOTAL	50	1.20
E. CREEPING RED FESCUE 1/	50	1.15
KENTUCKY BLUEGRASS 1/	50	1.15
TOTAL	100	2.30
F. TALL FESCUE 1	150	3.60

*

Retention Basin Floor Mix - Low Maintenance - ERNMX-126

	Botanical Name	Common Name	Price/Lb
20.00 %	*Panicum clandestinum, Tioga*	Deertongue, Tioga	22.68
20.00 %	*Poccinellia distans, Fults*	Alkaligrass, Fults	4.56
18.00 %	*Elymus virginicus, Madison-NY Ecotype*	Virginia Wildrye, Madison-NY Ecotype	9.96
15.00 %	*Agrostis stolonifera, 'Pennacross'*	Creeping Bentgrass, 'Penacross'	14.40
15.00 %	*Poa palustris*	Fowl Bluegrass	15.80
10.00 %	*Carex vulpinoidea, PA Ecotype*	Fox Sedges, PA Ecotype	28.80
1.00 %	*Carex scoparia, PA Ecotype*	Blunt Broom Sedge, PA Ecotype	81.60
1.00 %	*Juncus effusus*	Soft Rush	48.00
100.00 %		Mix Price/Lb Bulk:	$15.98

Seeding Rate: 20-40 lbs per acre, or 0.5-1 lb/1,000 sq ft with a cover crop. For a cover crop use one of the folloring: grain rye (1 Sep to 30 Apr; 30 lbs/acre), Japanese millet (1 May to 31 Aug; 10 lbs/acre), or barnyard grass (1 May to 31 Aug; 10 lbs/acre).

NOTE: TO BE USED FOR STORMWATER BMPS

Grasses & Grass-like Species - Herbaceous Perennial; Stormwater Management

The hardy inexpensive grass and grass-like species are ideal for retention basins that may have high salt inflows and where mowing may be required. Mix formulations are subject to change without notice depending on the availability of existing and new products. While the formula may change, the guiding philosophy and function of the mix will not.

1. GRADING AND SHAPING
   A. SLOPES SHALL NOT BE STEEPER THAN 2:1;3:1 SLOPES OR FLATTER ARE PREFERRED.
   WHERE MOWING WILL BE DONE, 3:1 SLOPES OR FLATTER ARE RECOMMENDED.
2. SEEDBED PREPARATION
   A. SURFACE AND SEEPAGE WATER SHOULD BE DRAINED OR DIVERTED FROM THE SITE TO PREVENT DROWNING OR WINTER KILLING OF THE PLANTS.
   B. STONES LARGER THAN 4 INCHES AND TRASH SHOULD BE REMOVED BECAUSE THEY INTERFERE WITH SEEDING AND FUTURE MAINTENANCE OF THE AREA. WHERE FEASIBLE, THE SOIL SHOULD BE TILLED TO A DEPTH OF ABOUT 4 INCHES TO PREPARE A SEED BED AND MIX FERTILIZER AND LIME INTO THE SOIL. THE SEEDBED SHOULD BE LEFT IN REASONABLY FIRM AND SMOOTH CONDITION. THE LAST TILLAGE OPERATION SHOULD BE PERFORMED ACROSS THE SLOPE WHEREVER PRACTICAL.
3. ESTABLISHING A STAND
   A. LIME AND FERTILIZER SHOULD BE APPLIED PRIOR TO OR AT THE TIME OF SEEDING
   AND INCORPORATED INTO THE SOIL KINDS AND AMOUNTS OF LIME AND FERTILIZER SHOULD BE BASED ON AN EVALUATION OF SOIL TESTS.
   WHEN A SOIL TEST IS NOT AVAILABLE,
   THE FOLLOWING MINIMUM AMOUNTS SHOULD BE APPLIED:
   AGRICULTURAL LIMESTONE, 2 TONS PER ACRE OR 100LBS. PER 1,000 SQ.FT.
   NITROGEN(N), 50LBS. PER ACRE OR 1.1LBS. PER 1,000 SQ.FT.
   PHOSPHATE(P2O5), 100LBS. PER ACRE OR 2.2LBS. PER 1,000 SQ.FT.
   POTASH(K2O), 100LBS. PER ACRE OR 2.2LBS. PER 1,000 SQ.FT.
   (NOTE: THIS IS THE EQUIVALENT OF 500LBS. PER ACRE OF 10–20–20 FERTILIZER
   OR 1,000LBS. PER ACRE OF 5–10–10.)
   B. SEED SHOULD BE SPREAD UNIFORMLY BY THE METHOD MOST APPROPRIATE FOR THE SITE. METHODS INCLUDE BROADCASTING, DRILLING AND HYDROSEEDING. WHERE BROADCASTING IS USED, COVER SEED WITH .25 INCH OF SOIL OR LESS, BY CULTIPACKING OR RAKING.
   C. REFER TO TABLE(G–E1 THIS SHEET) FOR APPROPRIATE SEED MIXTURES AND TABLE(H–E1 THIS SHEET) FOR RATES OF SEEDING. ALL LEGUMES (CROWNVETCH, BIRDSFOOT TREFOIL, AND FLATPEA) MUST BE INOCULATED WITH THEIR SPECIFIC INOCULANT.
   D. WHEN SEEDED AREAS ARE MULCHED, PLANTINGS MAY BE MADE FROM EARLY SPRING TO EARLY OCTOBER. WHEN SEEDED AREAS ARE NOT MULCHED, PLANTINGS SHOULD BE MADE FROM EARLY SPRING TO MAY 20 OR FROM AUGUST 10 TO SEPTEMBER 1.
4. MULCH
   A. HAY, STRAW, OR OTHER MULCH, WHEN NEEDED, SHOULD BE APPLIED IMMEDIATELY AFTER SEEDING.
   B. MULCH WILL BE HELD IN PLACE USING APPROPRIATE TECHNIQUES FROM THE BEST MANAGEMENT PRACTICE FOR MULCHING. HAY OR STRAW MULCH SHALL BE PLACED AT A RATE OF 90LBS PER 1000 S.F.
5. MAINTENANCE TO ESTABLISH A STAND
   A. PLANTED AREA SHOULD BE PROTECTED FROM DAMAGE BY FIRE, GRAZING, TRAFFIC, AND DENSE WEED GROWTH.
   B. FERTILIZATION NEEDS SHOULD BE DETERMINED BY ONSITE INSPECTIONS. SUPPLEMENTAL FERTILIZER IS USUALLY THE KEY TO FULLY COMPLETE THE ESTABLISHMENT OF THE STAND BECAUSE MOST PERENNIAL STAKE 2 TO 3 YEARS TO BECOME ESTABLISHED.
   C. IN WATERWAYS, CHANNELS, OR SWALES WHERE UNIFORM FLOW CONDITIONS ARE ANTICIPATED, OCCASIONAL MOWING MAY BE NECESSARY TO CONTROL GROWTH OF WOODY VEGETATION.
6. TO BE CONSTRUCTED IAW NH SWM #3 4–1 EROSION CONTROL PRACTICES, PERMANENT VEGETATION, PAGE 60.
7. SEE STORMWATER BMP DETAIL SHEETS FOR SPECIFIC PLANTING INSTRUCTIONS AND SEEDING.

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CONSTRUCTION SEQUENCE:

1.) CUT AND REMOVE TREES IN CONSTRUCTION AREA ONLY AS REQUIRED, RELOCATE ANY PROJECT T.B.M.

2.) CONSTRUCT AND/OR INSTALL TEMPORARY AND PERMANENT SEDIMENT EROSION AND DETENTION CONTROL FACILITIES AS SPECIFIED. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY SOIL LAND DISTURBANCE AND MUST BE REVIEWED AND APPROVED BY THE COMMUNITY SERVICES DEPARTMENT.

3.) EROSION, SEDIMENT AND DETENTION CONTROL FACILITY SHALL BE INSTALLED & STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM. TEMPORARY DIVERSIONS MAY BE REQUIRED. POST CONSTRUCTION STORM WATER MANAGEMENT PRACTICES MUST BE INITIATED AND STABILIZED EARLY IN THE PROCESS. RUNOFF MUST BE DIRECTED TO TEMPORARY PRACTICES UNTIL STORMWATER BMPs ARE STABILIZED.

4.) CLEAR, CUT AND DISPOSE OF DEBRIS IN APPROVED FACILITY

5.) CONSTRUCT TEMPORARY CULVERTS AS REQUIRED, OR DIRECTED

6.) CONSTRUCT ROADWAYS FOR ACCESS TO DESIRED CONSTRUCTION AREAS. ALL ROADS SHALL BE STABILIZED IMMEDIATELY. SEE BEST MANAGEMENT PRACTICES FOR BLASTING ON SHEET C–102.

7.) INSTALL PIPE AND CONSTRUCTION ASSOCIATED APPURTENANCES AS REQUIRED OR DIRECTED. INSTALL STORMWATER BMPS. ALL DISTURBED AREAS SHALL STABILIZED IMMEDIATELY AFTER GRADING.

8.) START BUILDING CONSTRUCTION.

9.) BEGIN PERMANENT AND TEMPORARY SEEDING AND MULCHING. ALL CUT AND FILL SLOPES AND DISTURBED AREAS SHALL BE SEEDED OR MULCHED AS REQUIRED, OR DIRECTED. NO AREA IS ALLOWED TO BE DISTURBED FOR A LENGTH OF TIME THAT EXCEEDS 45 DAYS BEFORE BEING STABILIZED, DAILY, OR AS REQUIRED. ALL ROADWAYS AND PARKING AREAS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADES. ALL CUT AND FILL SLOPES SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADES. LIMIT THE LENGTH OF EXPOSURE OF UNSTABILIZED SOIL TO 45 DAYS OR LESS.

10.) CONSTRUCT TEMPORARY BERMS, DRAINS DITCHES, SILT FENCES, SEDIMENT TRAPS, ETC. MULCH AND SEED AS REQUIRED.

11.) INSPECT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES DURING CONSTRUCTION. ALL SWPPP INSPECTIONS MUST BE CONDUCTED BY A QUALIFIED PROFESSIONAL SUCH AS A PROFESSIONAL ENGINEER (PE), A CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC), A CERTIFIED EROSION SEDIMENT AND STORM WATER INSPECTOR (CESSW), OR A CERTIFIED PROFESSIONAL IN STORM WATER QUALITY (CPSWQ) INSPECTION REPORTS SHALL BE SUBMITTED TO THE COMMUNITY SERVICES DEPARTMENT. EROSION AND SEDIMENT CONTROL PRACTICES ARE TO BE INSPECTED WEEKLY AND AFTER 0.5" OF RAINFALL.

12.) COMPLETE PERMANENT SEEDING AND LANDSCAPING.

13.) REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER SEEDING AREAS HAVE ESTABLISHED THEMSELVES AND SITE IMPROVEMENTS ARE COMPLETE.

14.) SMOOTH AND REVEGETATE ALL DISTURBED AREAS.

15.) FINISH PAVING ALL ROADWAYS.

E18

DEFINITION OF STABLE:

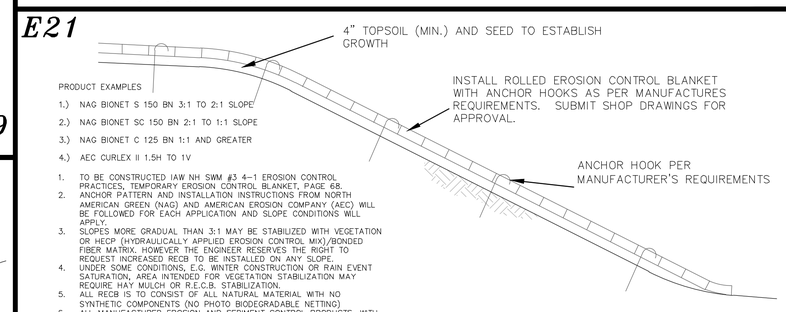
PER ENV–WQ 1500 ALTERATION OF TERRAIN

1. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED.
2. A MINIMUM OF 85 PERCENT VEGETATED GROWTH HAS BEEN ESTABLISHED..
3. A MINIMUM OF 3 INCHES OF NON–EROSIVE MATERIAL SUCH AS STONE OR RIP–RAP HAS BEEN INSTALLED.
4. OR, EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.

ADDITION STABILIZATION NOTES:

5. HAY MULCH OR OTHER APPROVED METHODS SHALL BE USED TO CONTROL EROSION OF NEWLY GRADED AREAS. ALL CUT AND FILL SLOPES SHALL BE SEEDED AND MULCHED WITHIN 72 HOURS AFTER THEIR CONSTRUCTION.
6. DISTURBED SOIL AREAS SHALL BE EITHER TEMPORARILY OR PERMANENTLY STABILIZED. IN AREAS WHERE FINAL GRADING HAS NOT OCCURRED, TEMPORARY STABILIZATION MEASURES SHOULD BE IN PLACE WITHIN SEVEN (7) CALENDAR DAYS FOR EXPOSED SOIL AREAS THAT ARE WITHIN ONE HUNDRED (100) FEET OF A SURFACE WATER BODY OR A WETLAND AND NO MORE THAN 14 CALENDAR DAYS FOR ALL OTHER AREAS. PERMANENT STABILIZATION SHOULD BE IN PLACE WITHIN THREE (3) CALENDAR DAYS FOLLOWING COMPLETION OF FINAL GRADING OF EXPOSED SOIL AREAS.

E21



PRODUCT EXAMPLES

1.) NAG BIONET S 150 BN 3:1 TO 2:1 SLOPE
2.) NAG BIONET SC 150 BN 2:1 TO 1:1 SLOPE
3.) NAG BIONET C 125 BN 1:1 AND GREATER
4.) AEC CURLEX II 1.5H TO 1V

1. TO BE CONSTRUCTED IAW NH SWM #3 4–1 EROSION CONTROL PRACTICES, TEMPORARY EROSION CONTROL BLANKET, PAGE 68.
2. ANCHOR PATTERN AND INSTALLATION INSTRUCTIONS FROM NORTH AMERICAN GREEN (NAG) AND AMERICAN EROSION COMPANY (AEC) WILL BE FOLLOWED FOR EACH APPLICATION AND SLOPE CONDITIONS WILL APPLY.
3. SLOPES MORE GRADUAL THAN 3:1 MAY BE STABILIZED WITH VEGETATION OR HECP (HYDRAULICALLY APPLIED EROSION CONTROL MIX)/BONDED FIBER MATRIX. HOWEVER THE ENGINEER RESERVES THE RIGHT TO REQUEST INCREASED RECB TO BE INSTALLED ON ANY SLOPE.
4. UNDER SOME CONDITIONS, E.G. WINTER CONSTRUCTION OR RAIN EVENT SATURATION, AREA INTENDED FOR VEGETATION STABILIZATION MAY REQUIRE HAY MULCH OR R.E.C.B. STABILIZATION.
5. ALL RECB IS TO CONSIST OF ALL NATURAL MATERIAL WITH NO SYNTHETIC COMPONENTS (NO PHOTO BIODEGRADABLE NETTING)
6. ALL MANUFACTURED EROSION AND SEDIMENT CONTROL PRODUCTS, WITH THE EXCEPTION OF TURF REINFORCEMENT MATS, UTILIZED FOR, BUT NOT LIMITED TO, SLOPE PROTECTION, RUNOFF DIVERSION, SLOPE INTERRUPTION, PERIMETER CONTROL, INLET PROTECTION, CHECK DAMS, AND SEDIMENT TRAPS SHALL NOT CONTAIN PLASTIC, OR MULTIFILAMENT OR MONOFILAMENT POLYPROPYLENE NETTING OR MESH WITH AN OPENING SIZE OF GREATER THAN 1/8 INCHES.

ROLLED EROSION CONTROL BLANKET (RECB) SLOPE STABILIZATION DETAIL

NOT TO SCALE

E22

1. ALL DISTURBED AREAS THAT DO NOT HAVE AT LEAST 85% VEGETATIVE COVERAGE PRIOR TO OCTOBER 15TH SHALL BE STABILIZED BY APPLYING MULCH AT A RATE OF 3–4 TONS PER ACRE. ALL SIDE SLOPES, STEEPER THAN 4:1, THAT ARE NOT DIRECTED TO SWALES OR DETENTION BASINS, SHALL BE LINED WITH BIODEGRADABLE/PHOTODEGRADABLE "JUTE MATTING" (EXCELSIOR'S CURLEX II OR EQUAL). ALL OTHER SLOPES SHALL BE MULCHED AND TACKED AT A RATE OF 3–4 TONS PER ACRE. THE APPLICATION OF MULCH AND/OR JUTE MATTING SHALL NOT OCCUR OVER EXISTING SNOW COVER. IF THE SITE IS ACTIVE AFTER OCTOBER 15TH, ANY SNOW THAT ACCUMULATES ON DISTURBED AREAS SHALL BE REMOVED. PRIOR TO SPRING THAW ALL AREAS WILL BE STABILIZED, AS DIRECTED ABOVE.

2. ALL SWALES THAT DO NOT HAVE FULLY ESTABLISHED VEGETATION SHALL BE EITHER LINED WITH TEMPORARY JUTE MATTING OR TEMPORARY STONE CHECK DAMS (APPROPRIATELY SPACED). STONE CHECK DAMS WILL BE MAINTAINED THROUGHOUT THE WINTER MONTHS. IF THE SWALES ARE TO BE MATTED WITH PERMANENT LINERS OR RIPRAP WITH ENGINEERING FABRIC, THIS SHALL BE COMPLETED PRIOR TO WINTER SHUTDOWN OR AS SOON AS THEY ARE PROPERLY GRADED AND SHAPED.

3. PRIOR TO OCT. 15TH ALL ROADWAY AND PARKING AREAS SHALL BE BROUGHT UP TO AND THROUGH THE BANK RUN GRAVEL APPLICATION. IF THESE AREAS' ELEVATIONS ARE PROPOSED TO REMAIN BELOW THE PROPOSED SUBGRADE ELEVATION, THE SUBGRADE MATERIAL SHALL BE ROUGHLY CROWNED AND A 3" LAYER OF CRUSHED GRAVEL SHALL BE PLACED AND COMPACTED. THIS WILL ALLOW THE SUBGRADE TO SHED RUNOFF AND WILL REDUCE ROADWAY EROSION. THIS CRUSHED GRAVEL DOES NOT HAVE TO CONFORM TO NH DOT 304.3, BUT SHALL HAVE BETWEEN 15–25% PASSING THE #200 SIEVE AND THE LARGEST STONE SIZE SHALL BE 2". IF THE SITE IS ACTIVE AFTER OCTOBER 15TH, ANY ACCUMULATED SNOW SHALL BE REMOVED FROM ALL ROADWAY AND PARKING AREAS.

4. AFTER OCTOBER 15TH, THE END OF NEW HAMPSHIRE'S AVERAGE GROWING SEASON, NO ADDITIONAL LOAM SHALL BE SPREAD ON SIDE SLOPES AND SWALES. THE STOCKPILES THAT WILL BE LEFT UNDISTURBED UNTIL SPRING SHALL BE SEEDED BY THIS DATE. AFTER OCTOBER 15TH, ANY NEW OR DISTURBED PILES SHALL BE MULCHED AT A RATE OF 3–4 TONS PER ACRE. ALL STOCKPILES THAT WILL REMAIN THROUGHOUT THE WINTER SHALL BE SURROUNDED WITH SILT FENCING.

5. ENV–WQ 1505.06 COLD WEATHER SITE STABILIZATION (B)(1) LIMITS ARE OF EXPOSURE TO ONE ACRE OF UNSTABILIZED SOIL WITHOUT OBTAINING A WAIVER AND WINTER CONSTRUCTION PLAN.

WINTER STABILIZATION NOTES

PLANNING FILE #SITE–XXXX–XXXX

REVISION	DATE	DESCRIPTION

EROSION & SEDIMENT CONTROL DETAILS
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332–2863

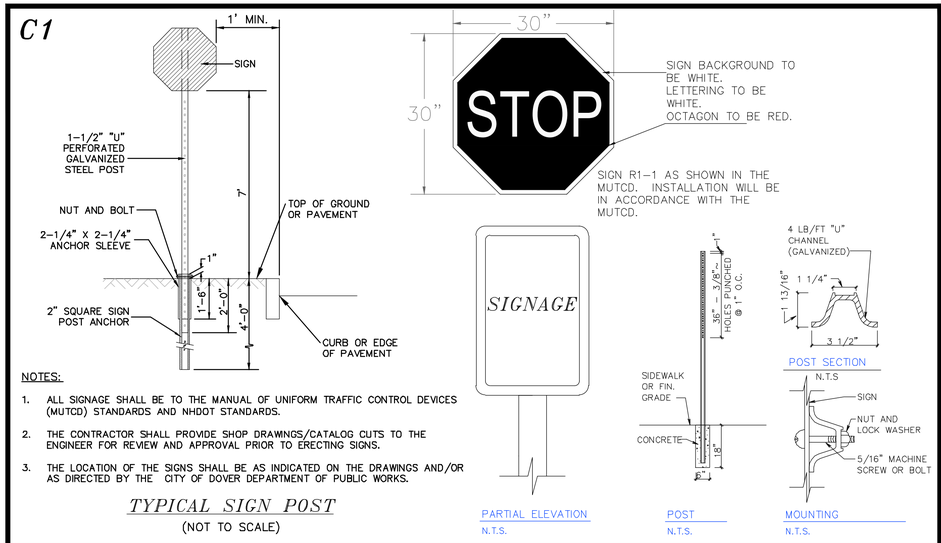
SCALE : AS NOTED
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 – 034

STATE OF NEW HAMPSHIRE
KENNETH A BERRY
No. 14243
LICENSED
PROFESSIONAL ENGINEER

E–102

NOT FOR CONSTRUCTION

C1



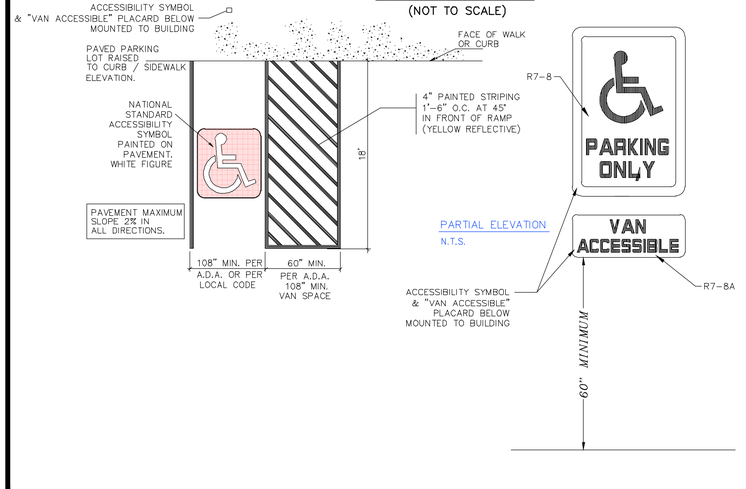
NOTES:

1. ALL SIGNAGE SHALL BE TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) STANDARDS AND NHDOT STANDARDS.
2. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS/CATALOG CUTS TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ERECTING SIGNS.
3. THE LOCATION OF THE SIGNS SHALL BE AS INDICATED ON THE DRAWINGS AND/OR AS DIRECTED BY THE CITY OF DOVER DEPARTMENT OF PUBLIC WORKS.

TYPICAL SIGN POST
(NOT TO SCALE)

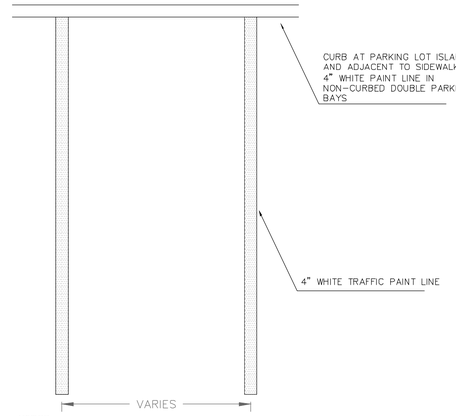
C2

ACCESSIBLE PARKING STALL SIGNAGE
(NOT TO SCALE)



C3

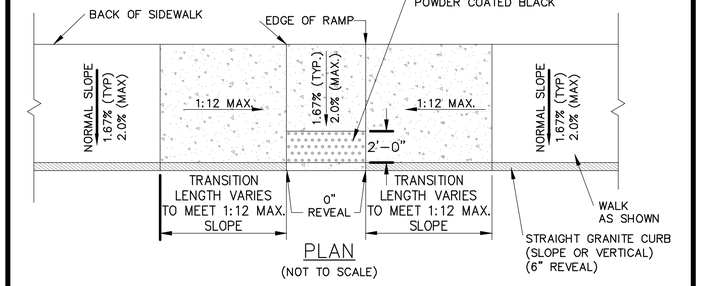
PARKING SPACE DETAIL
NOT TO SCALE



NOTES:

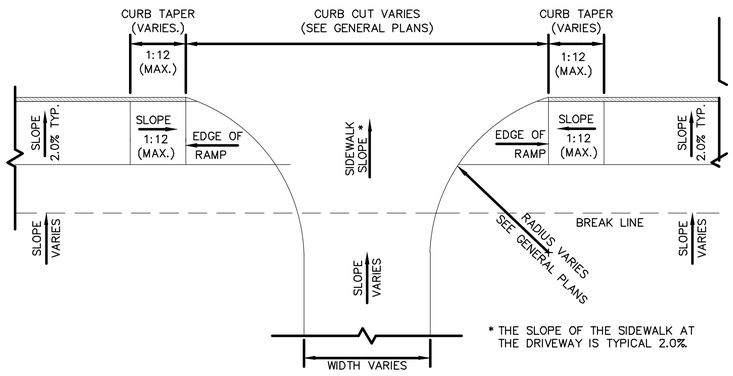
1.) PROVIDE TWO COATS OF PAINT ON ALL PARKING LINES.
2.) SEE PROPOSED SITE PLANS FOR LOCATION OF PARKING SPACES.
3.) PAINTED SPACES ONLY WHERE MARKED ON SITE PLAN

C4



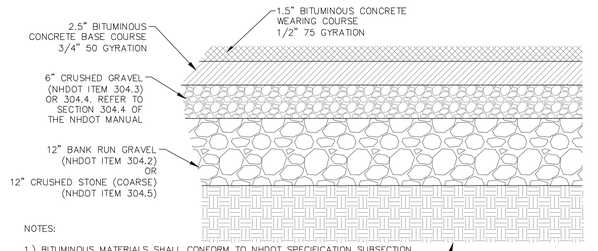
TYPICAL DETAIL FOR WHEELCHAIR RAMP

C5



PLAN VIEW (INTERSECTION & SIDEWALK)
NOT TO SCALE

C6



NOTES:

1.) BITUMINOUS MATERIALS SHALL CONFORM TO NHDOT SPECIFICATION SUBSECTION 401.3.6.

2.) PAVEMENT BASE COURSE AGGEGATE SHALL CONFORM TO NHDOT SPECIFICATION SECTION 304, ITEM 304.3 AND COMPACTED TO A MINIMUM OF 95% OF MODIFIED PROCTOR MAXIMUM DRY DENSITY.

3.) PAVEMENT SUBBASE COURSE AGGREGATE AND AGGREGATE FOR SUBGRADE REPAIR AREAS SHALL BE SUITABLE FOR USE AS STRUCTURAL FILL AND BE PROOFROLLED AND COMPABED TO 95% OF MODIFIED PROCTOR MAXIMUM DRY DENSITY.

BITUMINOUS CONCRETE PAVEMENT SECTION
NOT TO SCALE

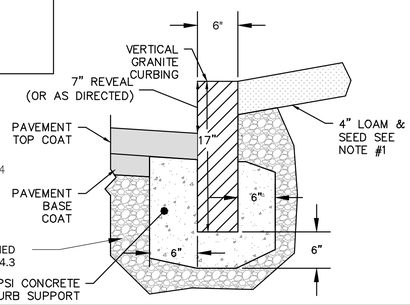
C7

RADIUS	MAX LENGTH
< 21'	USE CURVED CURB
12'	3'
22' – 28'	4'
29' – 35'	5'
36' – 42'	6'
43' – 49'	7'
50' – 56'	8'
57' – 60'	9'
OVER 60'	10'

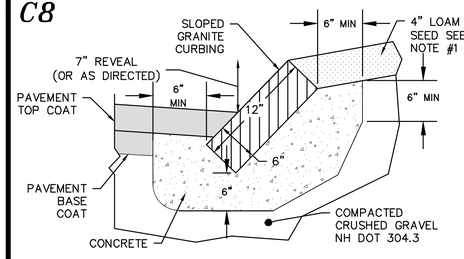
NOTES:

1. LOAM AND SEED SHOULD BE IN COMPLIANCE WITH NH DOT 641, 642, 643, 644 AND 645.

VERTICAL GRANITE CURB DETAIL
NOT TO SCALE

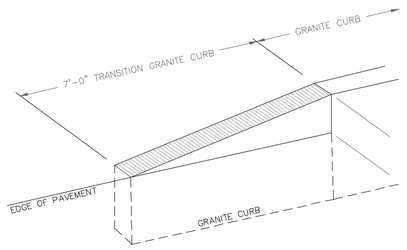


C8



SLOPE GRANITE CURB DETAIL
NOT TO SCALE

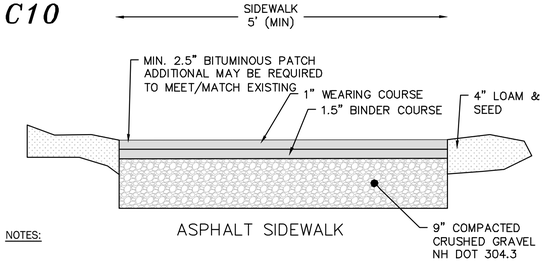
C9



CURB TRANSITION DETAIL
NOT TO SCALE

TO BE USED FOR TRANSITION FROM GRANITE CURB TO EDGE OF PAVEMENT

C10



NOTES:

1. MATERIALS SHALL BE IN ACCORDANCE WITH THE CITY OF DOVER STANDARDS SPECIFICATIONS.
2. SIDEWALK AND DRIVEWAY WIDTHS SHALL BE EQUAL TO EXISTING WIDTHS OR AS APPROVED AND SHALL SLOPE TO MATCH EXISTING ELEVATIONS.
3. BASE FOR THE SIDEWALKS AND DRIVEWAYS SHALL BE 9-INCHES OF CRUSHED GRAVEL.

ASPHALT SIDEWALK

BITUMINOUS SIDEWALK RAISED
NOT TO SCALE

C-101

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

CONSTRUCTION DETAILS
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

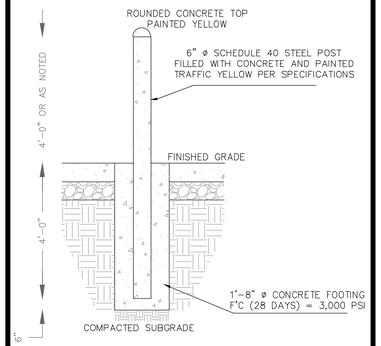
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : AS NOTED
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 – 034

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY No. 14243 LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

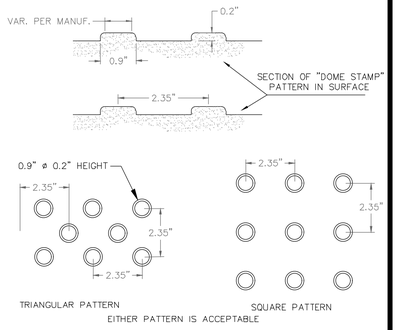
C10



BOLLARD DETAIL

NOT TO SCALE

C11



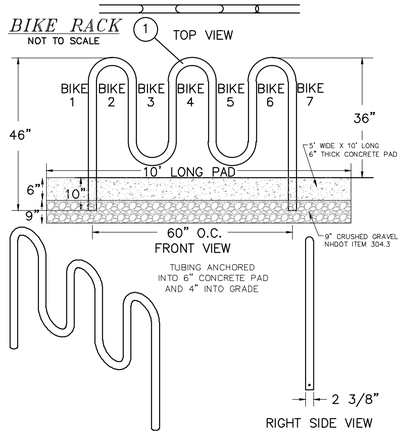
DETECTABLE WARNING SURFACE

NOT TO SCALE

C12

MATERIALS LIST

(1) TUBING - ø 2 3/8" x .154" Wall Steel Tubing



C13

Scarborough™ Bench, 24" Backed, with Horizontal Strap Seat

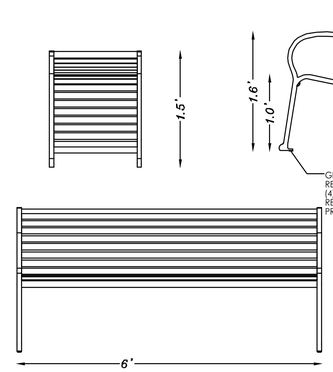
Scarborough™ Bench, 24" Backed, with Horizontal Strap Seat
Product Drawing

www.landscapeforms.com

Date: 5/19/2010
Ph: 800.521.2546

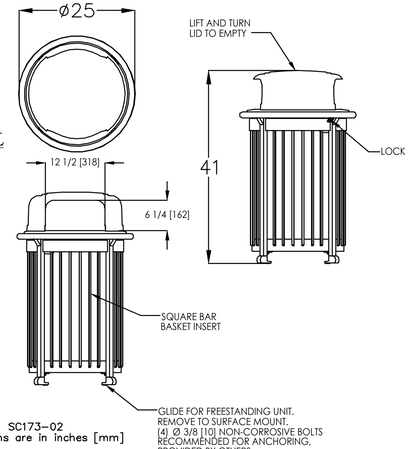
BENCH DETAIL

(NOT TO SCALE)



BIN DETAIL

(NOT TO SCALE)



landscapeforms

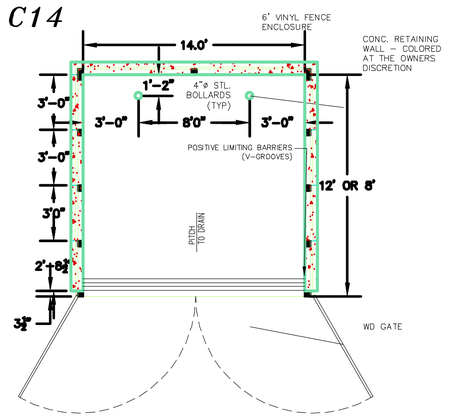
Drawing: SC173-02
Dimensions are in inches [mm]

landscapeforms

Drawing: SC173-02
Dimensions are in inches [mm]

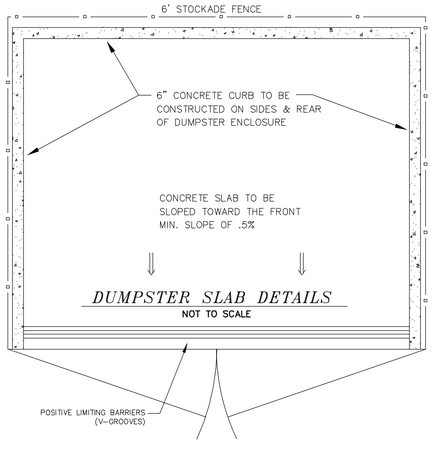
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C14



DUMPSTER ENCLOSURE & CONCRETE PAD PLAN

NOT TO SCALE



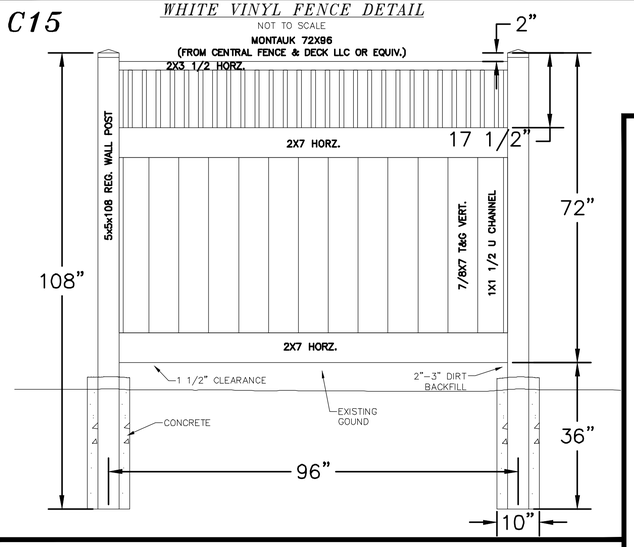
DUMPSTER SLAB DETAILS

NOT TO SCALE

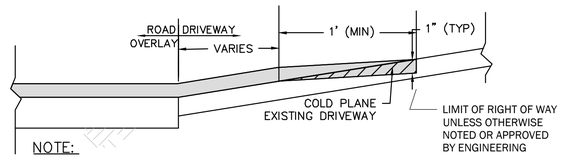
C15

WHITE VINYL FENCE DETAIL

NOT TO SCALE



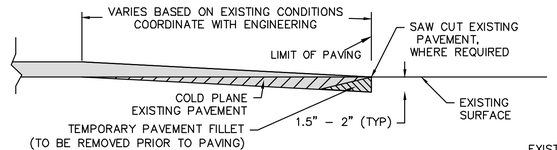
C16



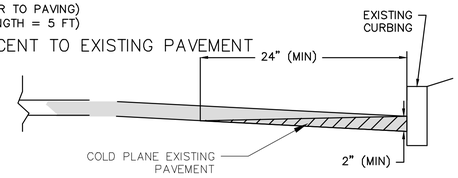
NOTE:

CONTRACTOR MAY SAWCUT DRIVEWAY TRANSITION AT HIS OPTION.
PAVEMENT SHALL BE REMOVED AND REPLACED TO MATCH EXISTING.

ADJACENT TO EXISTING DRIVEWAY



ADJACENT TO EXISTING PAVEMENT



ADJACENT TO EXISTING CURB

NOTES:

1. THE LENGTH OF THE TAPER MAY BE ADJUSTED AS ORDERED TO PROVIDE FOR VARYING FIELD CONDITIONS OR CHANGES IN SINGLE COURSE DEPTH.

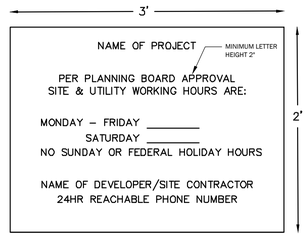
PAVEMENT OVERLAY

NOT TO SCALE

C17

REQUIRED PROJECT INFORMATION SIGN

NOT TO SCALE



NOTES:

1. SIGN SHALL HAVE BLACK LETTERS ON A WHITE BACKGROUND
2. SIGN SHALL BE WEATHER RESISTANT AND SECURED TO THE GROUND
3. TO BE PLACED AT THE INTERSECTION OF KNOX MARSH ROAD/TIBETAN DRIVE.

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

CONSTRUCTION DETAILS
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : AS NOTED
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 12431
LICENSED PROFESSIONAL ENGINEER

C-102

NOT FOR CONSTRUCTION

C18

See Redi-Rock.com for Detailed Section Drawings of Each Condition Shown in the Design Charts

NOTE: RETAINING WALL TO BE DESIGNED BY A LICENSED PROFESSIONAL GEOTECHNICAL/STRUCTURAL ENGINEER.

NOTES:

1.) USE THE 41" BOTTOM BLOCK TO INSTALL THE FIRST COURSE. NOTE EMBEDMENT REQUIREMENT. COURSE DEPTH IS 1.5'

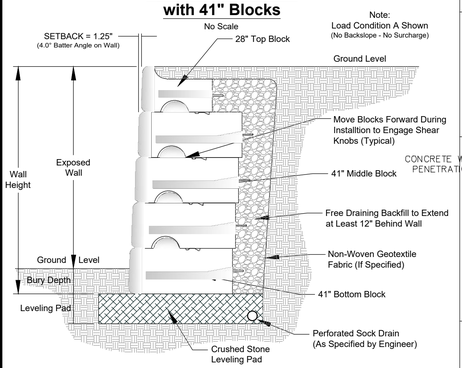
3.) USE 41" MIDDLE BLOCK FOR MIDDLE ROWS, APPROXIMATELY 7 COURSES DEPENDING ON WALL HEIGHT.

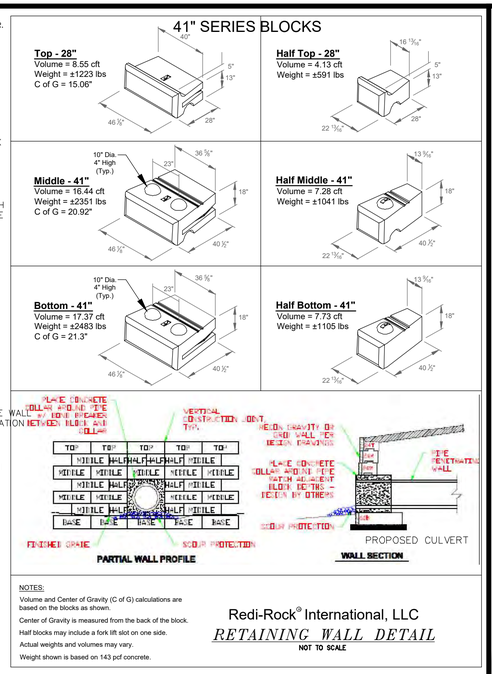
4.) USE 41" TOP BLOCK ALONG TOP OF WALL. NOTE WALL DROPS ARE TO BE FULL BLOCK DEPTHS.

5.) USE 41" HALF BLOCKS FOR RADIAL TURNS AND END SECTIONS.

6.) THE WALL MANUFACTURER TYPICALLY PROVIDES WALL PROFILE AND BLOCK COUNT TO THE CONTRACTOR AS REQUIRED FOR CONSTRUCTION. THIS IS TO BE REVIEWED BY BOTH DPW AND DESIGN ENGINEER FOR CORRELATION WITH PROJECT SITE PLANS AND IS TO BE DESIGNED AND STAMPED BY A STRUCTURAL ENGINEER (OTHERS).

Typical Gravity Wall with 41" Blocks





NOTES:

Volume and Center of Gravity (C of G) calculations are based on the blocks as shown.

Center of Gravity is measured from the back of the block.

Half blocks may include a fork lift slot on one side.

Actual weights and volumes may vary.

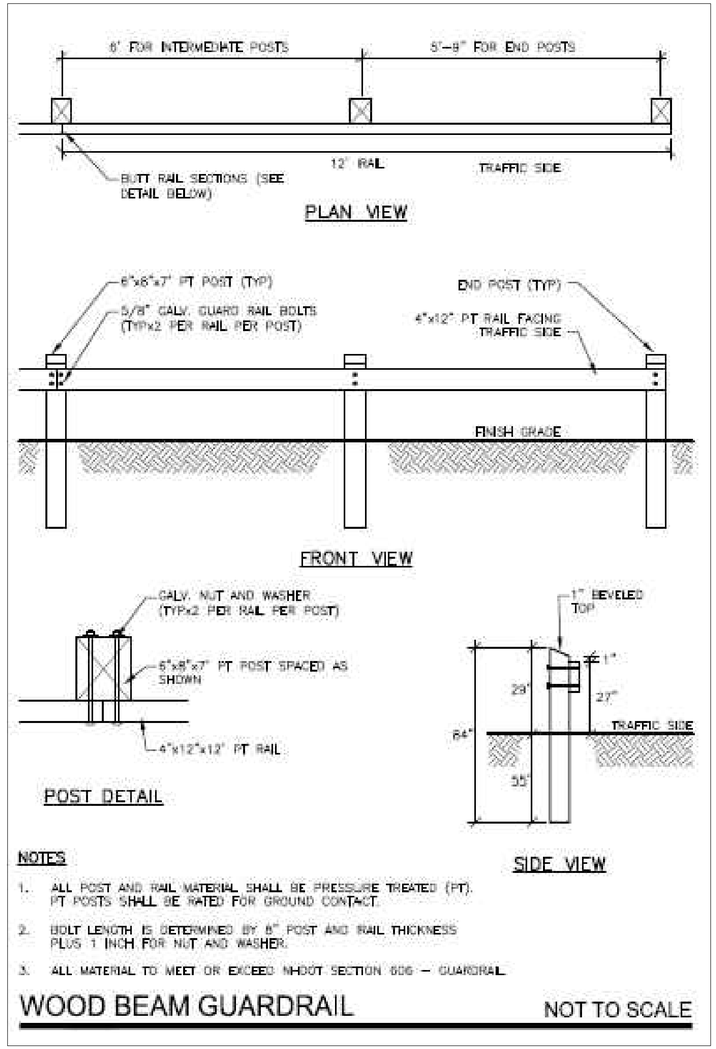
Weight shown is based on 143 pcf concrete.

Redi-Rock® International, LLC

RETAINING WALL DETAIL

NOT TO SCALE

C19



NOTES

1. ALL POST AND RAIL MATERIAL SHALL BE PRESSURE TREATED (PT). PT POSTS SHALL BE RATED FOR GROUND CONTACT.
2. BOLT LENGTH IS DETERMINED BY 8" POST AND RAIL THICKNESS PLUS 1 INCH FOR NUT AND WASHER.
3. ALL MATERIAL TO MEET OR EXCEED NHDOT SECTION 606 – GUARDRAIL

WOOD BEAM GUARDRAIL — NOT TO SCALE

GUARD RAIL

(NOT TO SCALE)

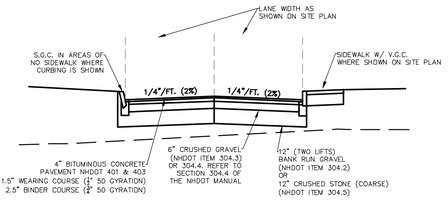
C20

CROSS SECTION NOTES

1. ALL ROADWAY FILL TO BRING ROAD TO SUBGRADE SHALL BE INSTALLED IN LIFTS NO GREATER THAN 12".

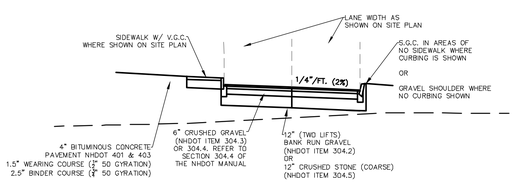
2. ALL FILL SHALL BE COMPACTED TO 95% MINIMUM. COMPACTION TESTS TO BE CONDUCTED AT THE START OF THE PROJECT AND NO FURTHER THAN 100 FEET APART.

COMPACTED SUBGRADE – CONTRACTOR SHALL SCARIFY SUBGRADE TO A DEPTH OF 30 INCHES BELOW F-GRADE. ALL STONES GREATER THAN 6" IN DIAMETER SHALL BE REMOVED FROM THE SCARIFIED LAYER. ANY IMPORTED FILL SHALL BE FREE OF ORGANICS AND FROST AND SHALL HAVE NO ROCKS LARGER THAN 6" IN DIAMETER. FILL MATERIAL SHALL BE APPROVED BY THE TOWNS AGENT AND/OR THE TOWNS ENGINEER.



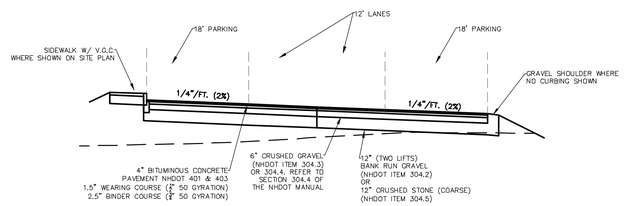
TYPICAL CROWNED ROADWAY SECTION

NOT TO SCALE



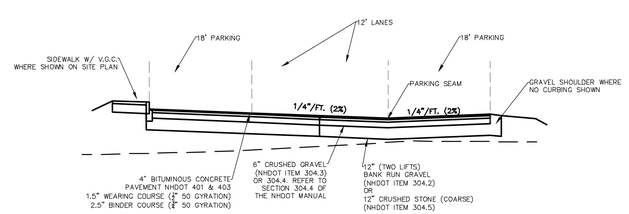
TYPICAL SUPERELEVATED ROADWAY SECTION

NOT TO SCALE



TYPICAL SUPERELEVATED PARKING LOT SECTION

NOT TO SCALE



TYPICAL SUPERELEVATED PARKING LOT SECTION W/ SEAM

NOT TO SCALE

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

CONSTRUCTION DETAILS
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : AS NOTED
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 – 034

STATE OF NEW HAMPSHIRE — KENNETH A. BERRY No. 14243 — LICENSED PROFESSIONAL ENGINEER

C-103

NOT FOR CONSTRUCTION

C21



D-Series Size 0
LED Area Luminaire

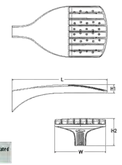
d-series

Catalog Number
Notes
Type

Hit the Tab key or mouse over the page to see all interactive elements.

Introduction
The modern styling of the D-Series features a highly refined aesthetic that blends seamlessly with its environment. The D-Series offers the benefits of the latest in LED technology into a high performance, high efficacy, long-life luminaire.
The photometric performance results in sites with excellent uniformity, greater pole spacing and lower power density. D-Series outstanding photometry aids in reducing the number of poles required in area lighting applications, with typical energy savings of 70% and expected service life of over 100,000 hours.

Specifications
EPA: 0.44 ft² (0.04 m²)
Length: 26.18" (66.5 cm)
Width: 14.06" (35.7 cm)
Height H1: 2.26" (5.7 cm)
Height H2: 7.46" (18.9 cm)
Weight: 23 lbs (10.4 kg)



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Items marked by a shaded background qualify for the Design Select program and ship in 15 days or less. To learn more about Design Select, visit www.acuitybrands.com/designselect.
*See ordering tree for details

Design Select options indicated by this color background.

Ordering Information
EXAMPLE: DSX0 LED P6 40K 70CRI T3M MVOLT SPA NLTAIR2 PIRHN DDBXD

DSX0 LED

Series	LEDs	Color temperature	Color rendering index	Distribution	Voltage	Mounting
DSX0 LED	Forward optics: P1, P2, P3, P4, P5, P6, P7 — Rotated optics: P10, P11, P12, P13	30K 3000K; 40K 4000K; 50K 5000K	70CRI	AFR Automatic front; TS Type I short; T2M Type II medium; T3M Type III medium; T3S Type III low glare; T4M Type IV medium; T4S Type IV low glare; TFTM Forward throw medium; T5W Type V medium; T5S Type V low glare; T5VW Type V wide; BLC4 Type IV backlight control; LCCO Left corner cutoff; RCCO Right corner cutoff	MVOLT (120V-277V); VOLT (347V-480V); XVOLT (277V-480V)	Shipped included: PBBW Surface mounting bracket; SPA Square pole mounting (#5 drilling, 3.5" min. DSX0HS); RPA5 Round pole mounting (#5 drilling, 3" min. DSX0HS); RPA5 Round pole mounting (#5 drilling, 3" min. HAG base); SPA5N Square narrow pole mounting (#5 drilling, 3" min. SQS pole); WBA Wall bracket; MA Mast arm adapter (mast arm not included) (must order 2 3/8" OD horizontal tenon)

Control options	Other options	Finish (required)
Shipped installed: NLTAIR2 PIRHN nLight AIR generation 2 enabled with bi-level motion and ambient sensor, 8–15' mounting height, ambient sensor enabled at 25 FC; PIR High/low, motion/ambient sensor, 8–15' mounting height, ambient sensor enabled at 25 FC; PER NEMA twist-lock receptacle only (controls ordered separately); PERS Five-pin receptacle only (controls ordered separately)	PE157 Seven-pointer photocell, dusk to dawn operation; FAO Field adjustable output; BL30 Bi-level switched dimming, 30%; BL50 Bi-level switched dimming, 50%; DMG 0-10V dimming wires pulled outside fixture (for use with an external control, ordered separately); Shipped installed: HS Houseside shield (black finish standard); LCO Left corner optics; RCO Right corner optics; BAA Buy American Act and/or Build America Buy America Qualified; SF Single fuse (120, 277, 347V); DF Double fuse (208, 240, 480V); Shipped separately: BSSW External Glare Shield (one side, field installed, matches housing finish); BSDB Bird Spikes (field installed)	DDBXD Dark bronze; DBLXD Black; DNAXD Natural aluminum; DWHXD White; DDBTXD Textured dark bronze; DBLBXD Textured black; DNATXD Textured natural aluminum; DWHGXD Textured white

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DSX0 LED
Rev. 11.15.24
Page 1 of 9

LAMP "A" MOUNTED 17'

C22



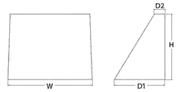
WDGE2 LED
Architectural Wall Sconce
Precision Refractive Optic

Catalog Number
Notes
Type

Hit the Tab key or mouse over the page to see all interactive elements.

Introduction
The WDGE LED family is designed to meet specifier's every wall-mounted lighting need in a widely accepted shape that blends with any architecture. The clean rectilinear design comes in four sizes with lumen packages ranging from 1,200 to 25,000 lumens, providing a true site-wide solution. Embedded with nLight® AIR wireless controls, the WDGE family provides additional energy savings and code compliance.
WDGE2 with industry leading precision refractive optics provides great uniform distribution and optical control. When combined with multiple integrated emergency battery backup options, including an 18W cold temperature option, the WDGE2 becomes the ideal wall-mounted lighting solution for pedestrian scale applications in any environment.

Specifications
Depth (D1): 7"
Depth (D2): 1.5"
Height: 9"
Width: 11.5"
Weight (without options): 13.5 lbs



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*See ordering tree for details

WDGE LED Family Overview

Luminaire	Optics	Replaces 400W MH	Color Rnd. -30°C	Neutral	Approximate Lumens (4000K, 80CRI)						
					P0	P1	P2	P3	P4	P5	P6
WDGE1 LED	Visual Comfort	4W		--	750	1,200	2,000	--	--	--	--
WDGE2 LED	Visual Comfort	10W	10W	Standalone / nLight	--	1,200	2,000	3,000	4,500	6,000	--
WDGE2 LED	Precision Refractive	10W	10W	Standalone / nLight	700	1,200	2,000	3,200	4,200	--	--
WDGE3 LED	Precision Refractive	15W	10W	Standalone / nLight	--	2,500	4,500	10,000	12,000	--	--
WDGE4 LED	Precision Refractive			Standalone / nLight	--	12,000	16,000	18,000	20,000	22,000	25,000

Ordering Information
EXAMPLE: WDGE2 LED P3 40K 80CRI T3M MVOLT SRM DDBXD

Series	Package	Color temperature	CRI	Distribution	Voltage	Mounting
WDGE2 LED	P0[10] P1[1] P2[1] P3[1] P4[1]	27K 2700K; 30K 3000K; 40K 4000K; 50K 5000K; AMB[2] Amber	70CRI; 80CRI; LWF Limited Wavelength	T1S Type I Short; T2M Type II Medium; T3M Type III Medium; PIRR Type IV Medium; TFTM Forward Throw Medium	MVOLT; 347[3]; 480[3]	Shipped included: BSW Surface mounting bracket; XCW Indirect Canopy/Ceiling Washer bracket (dry/damp locations only)[4]

Shipped separately: AWS 3/8inch Architectural wall spacer[5]; PBBW Surface-mounted back box (top, left, right conduit entry). Use when trace-in-a-junction box available[6]

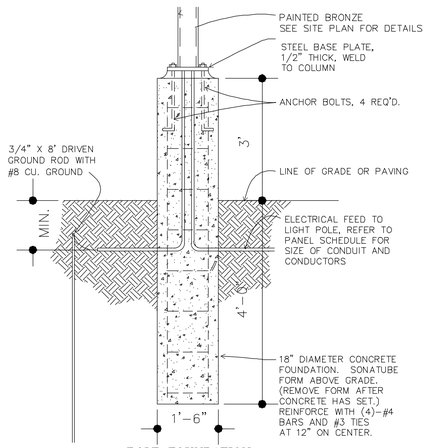
Options	Finish
E10WH Emergency battery backup, Certified in CA Title 20 MAIDRS (10W, 0°C min); E20WC Emergency battery backup, Certified in CA Title 20 MAIDRS (10W, -20°C min); PE Photocell, Button Type[8]; DMG 0-10V dimming wires pulled outside fixture (for use with an external control, ordered separately)[9]; BCE Bottom conduit entry for back box (PBBW). Total of 4 entry points.; CCE Coastal Construction[9]	Standalone Sensors/Controls: PIR Bi-level (100/35%) motion sensor for 8-15' mounting heights. Intended for use on switched circuits with external dusk to dawn switching.; PIRH Bi-level (100/35%) motion sensor for 15-30' mounting heights. Intended for use on switched circuits with external dusk to dawn switching.; PIR1FC3V Bi-level (100/35%) motion sensor for 8-15' mounting heights with photocell pre-programmed for dusk to dawn operation.; PIRHFC3V Bi-level (100/35%) motion sensor for 15-30' mounting heights with photocell pre-programmed for dusk to dawn operation.; Networked Sensors/Controls: NLIGHT PIR Embedded wireless controls by nLight with Passive Infrared Occ sensor and on/off photocell for 8-15' mounting heights.; NLIGHT PIRH Embedded wireless controls by nLight with Passive Infrared Occ sensor and on/off photocell for 15-30' mounting heights.; NLIGHTEM2 PIR Embedded wireless controls by nLight with ULI924 listed emergency operation, Passive Infrared Occ sensor and on/off photocell for 8-15' mounting heights.; NLIGHTEM2 PIRH Embedded wireless controls by nLight with ULI924 listed emergency operation, Passive Infrared Occ sensor and on/off photocell for 15-30' mounting heights.	DDBXD Dark bronze; DBLXD Black; DNAXD Natural aluminum; DWHXD White; DSSXD Sandstone; DDBTXD Textured dark bronze; DBLBXD Textured black; DNATXD Textured natural aluminum; DWHGXD Textured white; DSSXD Textured sandstone

See page 4 for out of box functionality

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WDGE2 LED
Rev. 07/08/24

LAMP "B" MOUNTED 8' & 12'

C25



LIGHT BASE DETAIL
NOT TO SCALE

C23



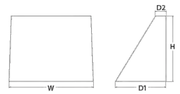
WDGE2 LED
Architectural Wall Sconce
Precision Refractive Optic

Catalog Number
Notes
Type

Hit the Tab key or mouse over the page to see all interactive elements.

Introduction
The WDGE LED family is designed to meet specifier's every wall-mounted lighting need in a widely accepted shape that blends with any architecture. The clean rectilinear design comes in four sizes with lumen packages ranging from 1,200 to 25,000 lumens, providing a true site-wide solution. Embedded with nLight® AIR wireless controls, the WDGE family provides additional energy savings and code compliance.
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Depth (D2): 1.5"
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Width: 11.5"
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design select
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*See ordering tree for details

WDGE LED Family Overview

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WDGE2 LED	Visual Comfort	10W	10W	Standalone / nLight	--	1,200	2,000	3,000	4,500	6,000	--
WDGE2 LED	Precision Refractive	10W	10W	Standalone / nLight	700	1,200	2,000	3,200	4,200	--	--
WDGE3 LED	Precision Refractive	15W	10W	Standalone / nLight	--	2,500	4,500	10,000	12,000	--	--
WDGE4 LED	Precision Refractive			Standalone / nLight	--	12,000	16,000	18,000	20,000	22,000	25,000

Ordering Information
EXAMPLE: WDGE2 LED P3 40K 80CRI T3M MVOLT SRM DDBXD

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Options	Finish
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See page 4 for out of box functionality

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WDGE2 LED
Rev. 07/08/24

LAMP "C" MOUNTED 12'

C24



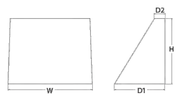
WDGE2 LED
Architectural Wall Sconce
Precision Refractive Optic

Catalog Number
Notes
Type

Hit the Tab key or mouse over the page to see all interactive elements.

Introduction
The WDGE LED family is designed to meet specifier's every wall-mounted lighting need in a widely accepted shape that blends with any architecture. The clean rectilinear design comes in four sizes with lumen packages ranging from 1,200 to 25,000 lumens, providing a true site-wide solution. Embedded with nLight® AIR wireless controls, the WDGE family provides additional energy savings and code compliance.
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Specifications
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Depth (D2): 1.5"
Height: 9"
Width: 11.5"
Weight (without options): 13.5 lbs



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WDGE LED Family Overview

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WDGE2 LED	Precision Refractive	10W	10W	Standalone / nLight	700	1,200	2,000	3,200	4,200	--	--
WDGE3 LED	Precision Refractive	15W	10W	Standalone / nLight	--	2,500	4,500	10,000	12,000	--	--
WDGE4 LED	Precision Refractive			Standalone / nLight	--	12,000	16,000	18,000	20,000	22,000	25,000

Ordering Information
EXAMPLE: WDGE2 LED P3 40K 80CRI T3M MVOLT SRM DDBXD

Series	Package	Color temperature	CRI	Distribution	Voltage	Mounting
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Shipped separately: AWS 3/8inch Architectural wall spacer[5]; PBBW Surface-mounted back box (top, left, right conduit entry). Use when trace-in-a-junction box available[6]

Options	Finish
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See page 4 for out of box functionality

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WDGE2 LED
Rev. 07/08/24

LAMP "D" MOUNTED 12'

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

CONSTRUCTION DETAILS
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : AS NOTED
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

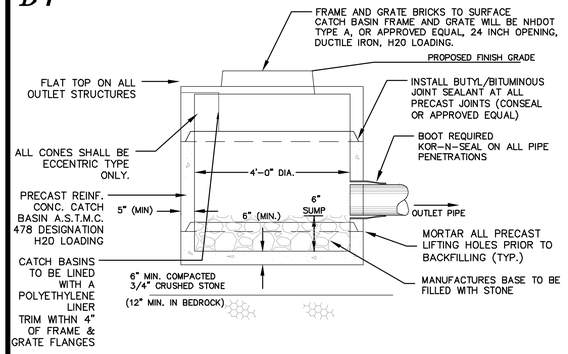
STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

C-104

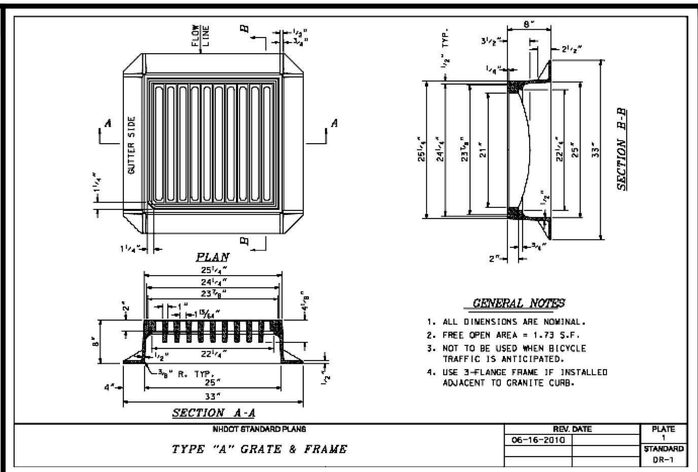
SHEET 51 OF 60

NOT FOR CONSTRUCTION

D1

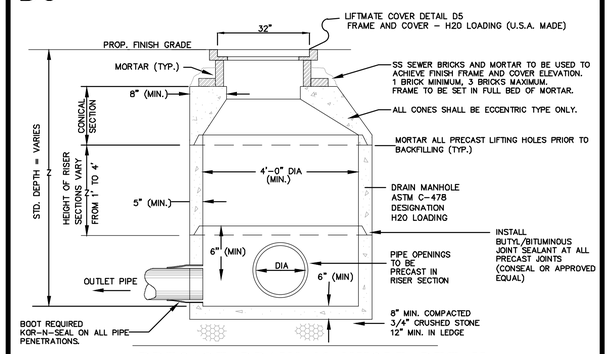


CATCH BASIN DETAIL
NOT TO SCALE



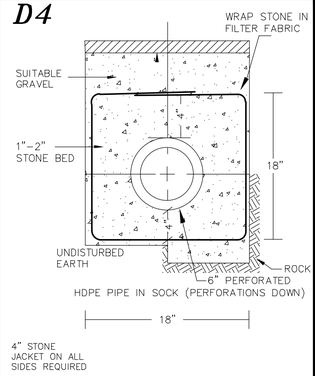
D2 *CATCH BASIN GRATE*
NOT TO SCALE

D3



PRECAST DRAIN MANHOLE DETAIL
NOT TO SCALE

D4



UNDERDRAIN TRENCH DETAIL
NOT TO SCALE

D5

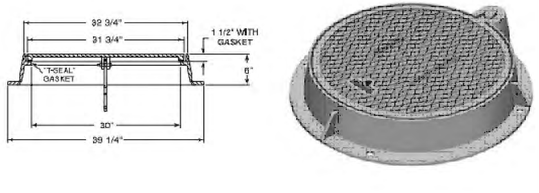
R-1743-LM
LiftMate Frame, Solid Gasketed Lid

Heavy Duty

Furnished with four 1" anchor holes on 36-7/8" diameter bolt circle.

Hinge plug available for self-seal application.

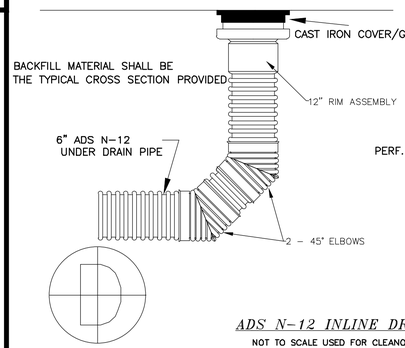
See p. 13 for LiftMate information.



DRAIN MANHOLE FRAME AND GRATE WILL BE LIFTMATE R-1743-LM, OR APPROVED EQUAL, 32 INCH OPENING, CAST IRON, H20 LOADING.

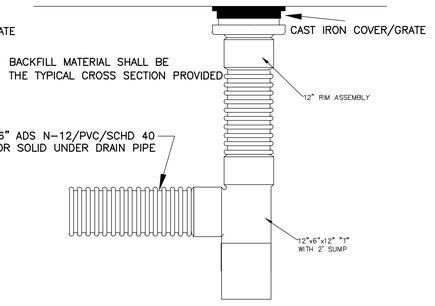
DRAIN MANHOLE COVER DETAIL
NOT TO SCALE

D6A



ADS N-12 INLINE DRAIN
NOT TO SCALE USED FOR CLEANOUTS

D6B



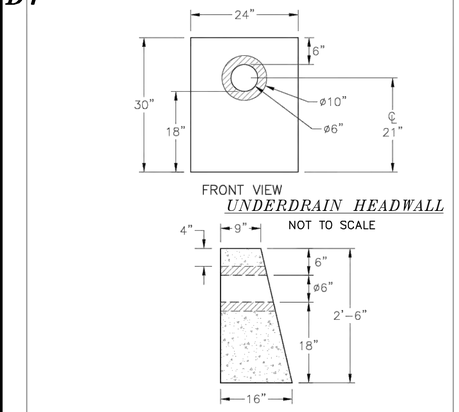
ADS N-12, PVC, SCHD. 40 INLINE DRAIN
NOT TO SCALE USED FOR GRAVEL WETLAND CLEANOUTS

12" CAST IRON COVER
NOT TO SCALE

CASTINGS ARE RATED FOR H20 WHEEL LOAD TRAFFIC

PAINT: CASTINGS ARE FURNISHED WITH A BLACK PAINT

D7



UNDERDRAIN HEADWALL
NOT TO SCALE

NOTES
1. CONCRETE: FC = 4,000 PSI @ 28 DAYS MIN
2. REINFORCING STEEL: ASTM-A615 GRADE #60

ITEM NO.	WEIGHT
HWSNHDOT-6UD	775 #

SHEA CONCRETE PRODUCTS — New England's Premier Precaster — 800-696-7432 (SHEA) — www.sheaconcrete.com
773 Salem Street-Wilmington, MA · 153 Cranberry Hwy-Rochester, MA · 87 Haverhill Road-Amesbury, MA · 150 Old Turnpike Rd-Nottingham, NH · Mail to: PO Box 820-Wilmington, MA 01887

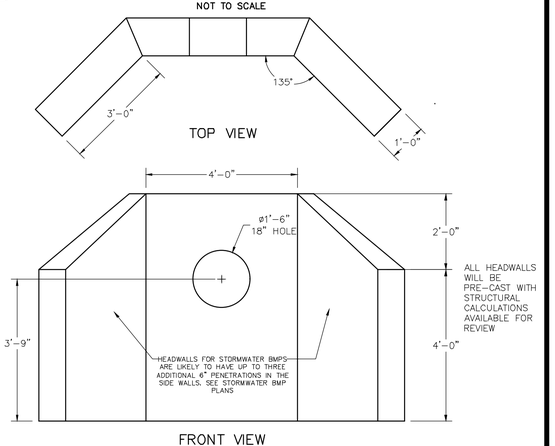
N.H. DOT
6" UNDERDRAIN HEADWALL

Page: — Drafter: MAB — Revision:0 — Date: 10.03.15 — DWG: 6IN PIPE UD W/DEP

Specifications subject to change without notice

D8

HEADWALL (CONCRETE)
NOT TO SCALE

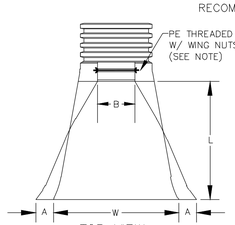


NOTES:
1. CONCRETE: 5,000 PSI MINIMUM AFTER 28 DAYS.

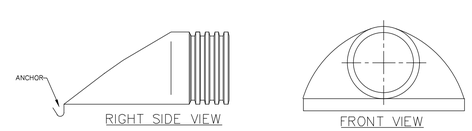
D9

PART No.	PIPE SIZE	A	B(MAX)	H	L	W
1510-NP	15" 375 mm	6.5" 165 mm	10" 254 mm	6.5" 165 mm	25" 635 mm	29" 735 mm
1810-NP	18" 450 mm	7.5" 190 mm	15" 380 mm	6.5" 165 mm	32" 812 mm	35" 890 mm
2410-NP	24" 600 mm	7.5" 190 mm	18" 450 mm	6.5" 165 mm	36" 900 mm	45" 1140 mm
3010-NP	30" 750 mm	10.5" 266 mm	N/A	7.0" 178 mm	53" 1345 mm	68" 1725 mm
3610-NP	36" 900 mm	10.5" 266 mm	N/A	7.0" 178 mm	53" 1345 mm	68" 1725 mm

NOTE: PE THREADED ROD W/ WING NUTS PROVIDED FOR END SECTIONS 15"-24". 30" & 36" END SECTIONS TO BE WELDED PER MANUFACTURER'S RECOMMENDATIONS.

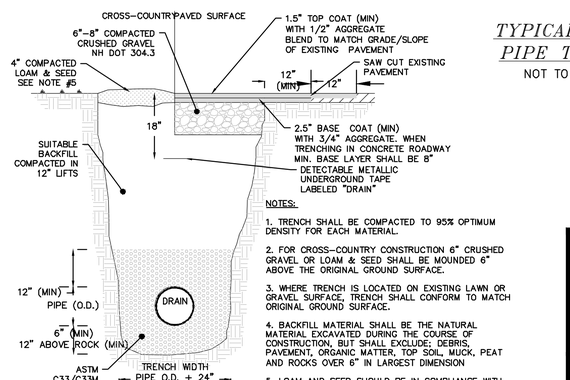


ADS N-12 FLARED END SECTIONS
NOT TO SCALE (ALL DIMENSIONS ARE NOMINAL)



FLARED END SECTIONS WILL BE ANCHORED

D10



TYPICAL DRAIN PIPE TRENCH
NOT TO SCALE

NOTES:
1. TRENCH SHALL BE COMPACTED TO 95% OPTIMUM DENSITY FOR EACH MATERIAL.
2. FOR CROSS-COUNTRY CONSTRUCTION 6" CRUSHED GRAVEL OR LOAM & SEED SHALL BE MOUNDED 6" ABOVE THE ORIGINAL GROUND SURFACE.
3. WHERE TRENCH IS LOCATED ON EXISTING LAWN OR GRAVEL SURFACE, TRENCH SHALL CONFORM TO MATCH ORIGINAL GROUND SURFACE.
4. BACKFILL MATERIAL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE; DEBRIS, PAVEMENT, ORGANIC MATTER, TOP SOIL, MUCK, PEAT AND ROCKS OVER 6" IN LARGEST DIMENSION
5. LOAM AND SEED SHOULD BE IN COMPLIANCE WITH NH DOT 641, 642, 643, 644 AND 645.

REFERENCE IS MADE TO A LONG TERM MAINTENANCE MANUAL PREPARED BY BERRY SURVEYING & ENGINEERING, WHICH IS ON FILE AT THE CITY OF ROCHESTER PLANNING DEPARTMENT, AND CAN BE FOUND AT THE OFFICE OF BERRY SURVEYING & ENGINEERING. (603) 332-2863

D-101

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

DRAINAGE DETAILS
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : AS NOTED
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

STATE OF NEW HAMPSHIRE — KENNETH A. BERRY No. 14243 — LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

D11

CONE GRATE
NOT TO SCALE

NOTE:
MUST BE HAALA INDUSTRIES INC.
OR EQUAL.

Cone Grates Top Mount



CG12TM
Part No. CG12TM

Save Trees

Top Mount Cone Grates are designed to mount on the top of round manhole inlet or outlet structures to keep debris from entering the storm water system. Top mount cone grates are easy to install and allow for at grade manhole installations but can be used in a variety of applications. Grates 96" and larger are made as a two piece, bolt together design.

- Plate and bar hybrid design is both clean and cost effective
- Made from 1/2" plate with 3/4" or 1" round bars depending on grate size
- Anti vortex plate can be added upon request
- Hinged and lockable access doors can be added upon request
- Galvanized steel construction. Can be made from aluminum or stainless steel.

D12

ANGLE GRATE
NOT TO SCALE

NOTE:
MUST BE HAALA INDUSTRIES INC.
OR EQUAL

Angle Grates For Manholes



AG0808-58
Part No. AG0808-58

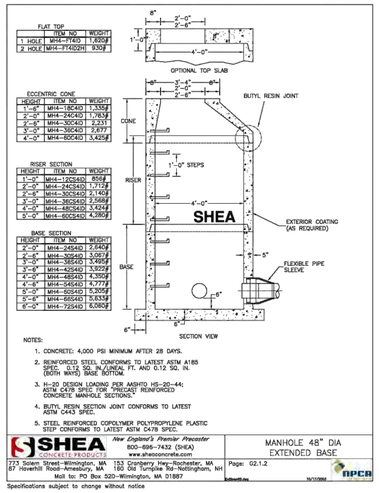
Save Trees

Angle Grates are designed to cover inlet orifices and prevent small to medium debris from passing through. The top angled design helps to minimize the amount of debris that settles on top after the water receeds. All grates are made from plate for a clean and smooth contact surface.

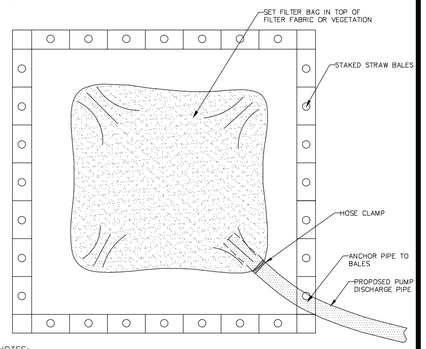
- Plate design for a clean appearance
- Standard 2" openings (other sizes can be made)
- Angled top/front plate to maximize debris deflection
- Mounting flanges on 3 sides allows grate to be mounted at floor level inverts
- Galvanized steel construction. Can be made from aluminum or stainless steel.

D13

48" MANHOLE ROUND EXTENDED BASE
NOT TO SCALE



D14



NOTES:

1.) ENSURE DISCHARGE POINT IS STABILIZED WITH VEGETATION OR PROPER EROSION AND SEDIMENT CONTROL PRACTICES.

2.) USE DIFFUSER NOZZLE OR LOW DISCHARGE RATE TO PREVENT SCOURING.

3.) TO BE PLACED AT AN UPLAND LOCATION THAT WILL ALLOW WATER TO DRAIN INTO THE GROUND.

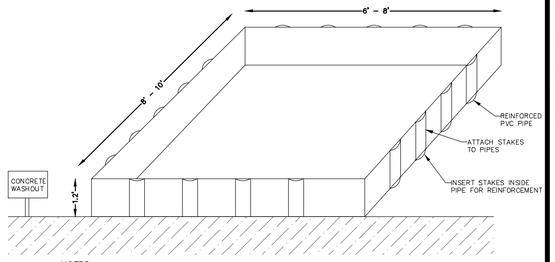
4.) SIZE OF DE-WATERING AREA TO BE 10' X 10', ADJUST SIZE DEPENDING ON VOLUME AND USE.

5.) ADDITIONAL BALES MAY BE USED TO INCREASE RETENTION AND FILTERING.

6.) SEE 2022 CGP FOR DEWATERING REPORTING REQUIREMENTS.

DE-WATERING BASIN
NOT TO SCALE

D15



NOTES:

1.) CONCRETE WASHOUT SHALL BE INSTALLED PRIOR TO ANY CONCRETE POURS.

2.) SIGNS SHALL BE INSTILLED TO CLEARLY INDICATE WHERE THE LOCATION OF THE WASHOUT AREA IS.

3.) CONTRACTOR IS IRRESPONSIBLE TO MAINTAIN AND REPLACE WASHOUT AREA AS NEEDED.

4.) RESIDUE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF PROPERLY.

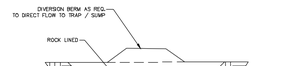
5.) DO NOT WASH CONCRETE TRUCKS OUT INTO DRAINAGE AREAS, SWALES, STREETS OR UNDISTURBED AREAS.

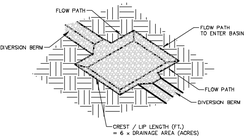
6.) WASHOUT AREA SHALL BE PLACED AWAY FROM DRAINAGE FEATURES AND OUTSIDE AND WETLAND BUFFERS.

CONCRETE WASHOUT
NOT TO SCALE

D16

1. TRAP TO BE INSTALLED AS CLOSE TO THE DISTURBED AREA OR SOURCE OF SEDIMENT AS POSSIBLE.
2. THE MAXIMUM CONTRIBUTING DRAINAGE AREA TO THE TRAP SHALL BE LESS THAN 5 ACRES.
3. THE MINIMUM VOLUME OF THE TRAP SHALL BE 3,600 CUBIC FEET OF STORAGE FOR EACH ACRE OF DRAINAGE AREA.
4. THE SIDE SLOPES OF THE TRAP SHALL BE 3:1 OR FLATTER AND SHALL BE STABILIZED IMMEDIATELY AFTER THEIR CONSTRUCTION.
5. THE OUTLET OF THE TRAP SHALL BE A MINIMUM OF ONE FOOT BELOW THE CREST OF THE TRAP AND SHALL DISCHARGE TO A STABILIZED AREA.
6. THE TRAP SHALL BE CLEANED WHEN 50 PERCENT OF THE ORIGINAL VOLUME IS FILLED.
7. THE MATERIALS REMOVED FROM THE TRAP SHALL BE PROPERLY DISPOSED OF AND STABILIZED.



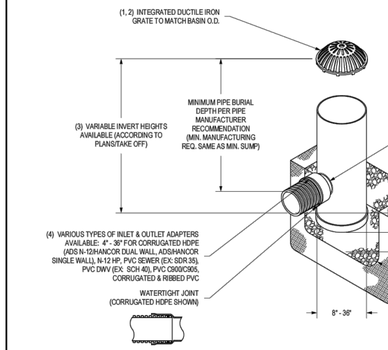


SIEVE DESIGNATION	SIZE OF STONE (INCHES)
100%	12
84-100%	6
68-83%	3
42-55%	1
8-12%	NO. 4

STONE LINED SEDIMENT TRAP
NOT TO SCALE

D17

NYLOPLAST DRAIN BASIN WITH DOME GRATE



1 - 8"-30" DOME GRATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2 - 8" & 10" DOME GRATES FIT ONTO THE DRAIN BASINS WITH THE USE OF A PVC BODY TOP. SEE DRAWING NO. 7001-110-040.
3 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 64" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-065.
4 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP, & PVC SEWER (4" - 30").
5 - ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.
6 - 8" - 30" DOME GRATES HAVE NO LOAD RATING.

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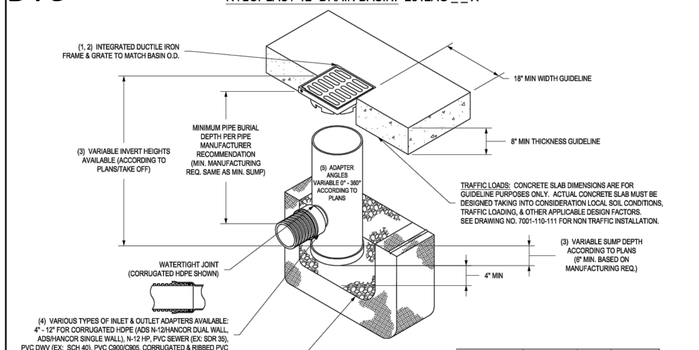
DRAWN BY	EBC	MATERIAL	
DATE	03-25-10		
REVISED BY	NMH	PROJECT NO./NAME	
DATE	06-12-18		
DWG SIZE	A	SCALE 1:40 SHEET 1 OF 1	

Nyloplast — 3125 VERONA AVE BUFORD, GA 30518 PHN (770) 932-2443 FAX (770) 932-2490 www.nyloplast-us.com
TITLE: DRAIN BASIN WITH DOME GRATE QUICK SPEC INSTALLATION DETAIL
DWG NO. 7001-110-397 REV E

NYLOPLAST DOME GRATE
NOT TO SCALE

D18

NYLOPLAST 12" DRAIN BASIN: 2812AG _ _ X



GRATE OPTIONS	LOAD RATING	PART #	DRAWING #
PEDESTRIAN	MEETS H-10	1296OGP	7001-110-202
STANDARD	MEETS H-20	1296OGS	7001-110-203
SOLID COVER	MEETS H-20	1296OGC	7001-110-204
PEDESTRIAN BRONZE	N/A	1296OGPB	7001-110-206
DOME	N/A	1296OGD	7001-110-208
DROP IN GRATE	LIGHT DUTY	1201DI	7001-110-02*

1 - GRATES/SOLID COVER SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05, WITH THE EXCEPTION OF THE BRONZE GRATE.
2 - FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
3 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 64" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-065
4 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP, & PVC SEWER.
5 - ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.

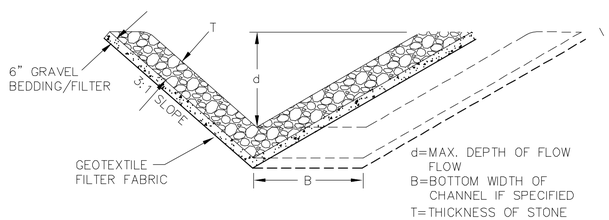
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DRAWN BY	EBC	MATERIAL	
DATE	03-29-06		
REVISED BY	NMH	PROJECT NO./NAME	
DATE	03-11-16		
DWG SIZE	A	SCALE 1:20 SHEET 1 OF 1	

Nyloplast — 3130 VERONA AVE BUFORD, GA 30518 PHN (770) 932-2443 FAX (770) 932-2490 www.nyloplast-us.com
TITLE: 12 IN DRAIN BASIN QUICK SPEC INSTALLATION DETAIL
DWG NO. 7001-110-189 REV E

12" NYLOPLAST DRAIN BASIN
NOT TO SCALE

D19



TYPICAL SECTION FOR A RIPRAP LINED CHANNEL
NOT TO SCALE

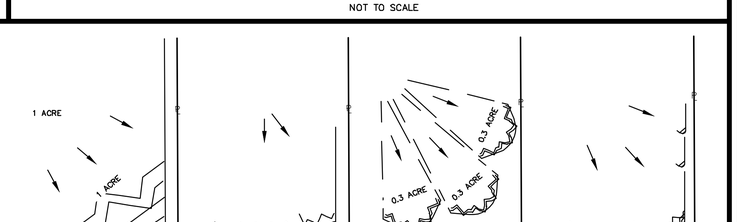
D20

DESIGN CONSIDERATIONS:

1. THE MAXIMUM LENGTH OF SLOPE ABOVE PERIMETER CONTROL IS 100 FEET.
2. SILT FENCE OR SILT SOXX REQUIRED WHEN UPGRADIENT DISTURBED SOIL IS GREATER THAN 5% (50% SLOPE MAX). MULCH BERM CAN BE USED WHEN THE UPGRADIENT DISTURBED SOIL IS 5% OR LESS.
3. THE MAXIMUM CONTRIBUTING DRAINAGE AREA OF ONE-QUARTER ACRE PER 100-FEET OF PRACTICE LENGTH.
4. PERIMETER CONTROL IS TO BE INSTALLED PRIOR TO EARTH MOVING ACTIVITIES, INCLUDING GRUBBING AND CLEARING.

NOTES

1. DO NOT LAYOUT PERIMETER CONTROL ALONG SLOPING PROPERTY PERIMETER WITHOUT INSTALLING "J HOOKS" AT HIGH CONCENTRATION AREAS. RUNOFF WILL CONCENTRATE AND CAUSE FAILURES ALONG THE PERIMETER.
2. "J HOOKS" CAN BE USED TO HELP LIMIT THE CONCENTRATION OF RUNOFF AND PROVIDE MORE STABILITY TO THE PERIMETER.
3. SILT FENCE AND EROSION CONTROL MULCH BERM MAY BE USED INTERCHANGEABLY. IN SPECIFIED AREA, SILT FENCE MAY NOT BE SUBSTITUTED FOR FILTREXX SILT SOXX OR APPROVED ALTERNATIVE.
4. SEE HAMPSHIRE STORM WATER MANUAL: VOLUME 3, PAGE 99 FOR FURTHER DETAILS AND SPECIFICATIONS



PERIMETER CONTROL
NOT TO SCALE

D-102

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

DRAINAGE DETAILS
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : AS NOTED
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

D21

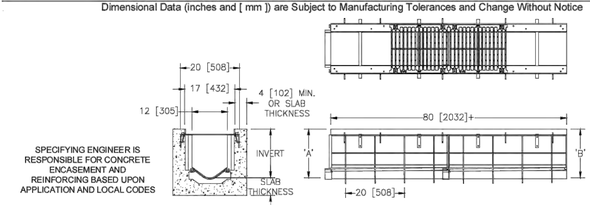
Z874-12

12 [305] WIDE THROAT TRENCH DRAIN SYSTEM

SPECIFICATION SHEET

TAG _____

Dimensional Data (inches and [mm]) are Subject to Manufacturing Tolerances and Change Without Notice



\+ Actual High Density Polyethylene channel length is 82 [2083] to allow for overlap, with frame attached the length is 84-1/2 [2146] with the exception of P.N. 1201P and 1230P.

ENGINEERING SPECIFICATION: Zurn Z874-12
Channels shall be 80 [2032] long, 17 [432] wide reveal and have a 12 [305] wide throat. Modular channel sections shall be made of 0% water absorbent High Density Polyethylene (HDPE). Shall have a positive mechanical connection between channel sections that will not separate during the installation and shall mechanically lock into the concrete surround every 10 [254]. Channels shall weigh less than 6.6 lbs. [3 kg] per linear foot, have smooth 3.5 [89] radiused self cleaning bottom with a Manning's coefficient of .009 and 1.00% or neutral 0% built-in slope. Channels are available with inverts ranging from 9.25 [235] to 34.21 [869]. Channel shall have all grates locked down. Channels come with clips attached to the frame to accommodate vertical re-bar for positioning and anchoring purposes. Shall be provided with the standard DGC grate, Zurn 16-1/4 [413] wide Ductile Iron Slotted Grate, which locks down to the frame with 4 individual bolt anchors per grate. Ductile Iron conforms to ASTM specification A536-84, Grade 80-55-06. Ductile Iron grate is rated class C per the DIN EN1433 top load classifications. Supplied in 20 [608] nominal lengths with 13/16 [21] wide slots, and 1-3/4 [44] bearing depth. Grate has an open area of 118 sq. in. per ft. [249779] sq. mm per meter]. The 1/4 [6] thick Carbon Steel Frame Assembly conforms to ASTM specification A36 with 10 - 4 [102] long concrete anchors per 80 [2032]. The frame is supplied with a powder coated finish. All welds must be performed by a certified welder per ASTM standard AWS D1.1. Frames shall be produced in the USA.

Trench #	'A' Shallow Inv.	'B' Deep Inv.	Flow (gpm)	(lps)	(cfs)
1201P	9.250 [235]	10.082 [256]	1475	93	3.306
1202P	10.082 [256]	10.914 [277]	1758	111	3.941
1203P	10.914 [277]	11.746 [298]	2046	129	4.589
1204P	11.746 [298]	12.578 [319]	2341	148	5.248
1205P	12.578 [319]	13.410 [341]	2639	166	5.915
1205NP	13.410 [341]	13.410 [341]	-	-	-
1206P	13.410 [341]	14.242 [362]	2939	185	6.589
1207P	14.242 [362]	15.074 [383]	3243	205	7.268
1208P	15.074 [383]	15.906 [404]	3548	224	7.953
1209P	15.906 [404]	16.738 [425]	3855	243	8.641
1210P	16.738 [425]	17.570 [446]	4164	263	9.333
1211P	17.570 [446]	18.402 [467]	4474	282	10.028
1212P	18.402 [467]	19.234 [489]	4785	302	10.726
1213P	19.234 [489]	20.066 [510]	5098	322	11.426
1214P	20.066 [510]	20.898 [531]	5411	341	12.128
1215P	20.898 [531]	21.730 [552]	5725	361	12.832
1215NP	21.730 [552]	21.730 [552]	-	-	-
1216P	21.730 [552]	22.562 [573]	6040	381	13.538
1217P	22.562 [573]	23.394 [594]	6355	401	14.244
1218P	23.394 [594]	24.226 [615]	6671	421	14.953
1219P	24.226 [615]	25.058 [636]	6988	441	15.662
1220P	25.058 [636]	25.890 [658]	7304	461	16.372
1221P	25.890 [658]	26.722 [679]	7622	481	17.084
1222P	26.722 [679]	27.554 [700]	7940	501	17.796
1223P	27.554 [700]	28.386 [721]	8258	521	18.509
1224P	28.386 [721]	29.218 [742]	8576	541	19.223
1225P	29.218 [742]	30.05 [763]	8895	561	19.937
1225NP	30.05 [763]	30.05 [763]	-	-	-
1226P	30.05 [763]	30.882 [784]	9214	581	20.652
1227P	30.882 [784]	31.714 [806]	9533	601	21.367
1228P	31.714 [806]	32.546 [827]	9852	622	22.083
1229P	32.546 [827]	33.378 [848]	10172	642	22.800
1230P	33.378 [848]	34.210 [869]	10492	662	23.517

(Neutral channels available for all section numbers)

PREFIX

____ Z 80 [2032] High Density Polyethylene Channel, Heavy-Duty Frame with Anchor Studs*

SUFFIX OPTIONS (Check/specify appropriate options)

Adapters

___ -E1 Closed End Cap
___ -E4 4 [102] No-Hub End Outlet
___ -E6 6 [152] No-Hub End Outlet
___ -E8 8 [203] No-Hub End Outlet
___ -E10 10 [254] No-Hub End Outlet
___ -U4 4 [102] No-Hub Bottom Outlet
___ -U6 6 [152] No-Hub Bottom Outlet
___ -U8 8 [203] No-Hub Bottom Outlet
___ -U12 12 [305] No-Hub Bottom Outlet

Grade Options (Load Classifications are per DIN EN1433)

___ -DCC Ductile Iron Solid Cover - Class C
___ -DGC Ductile Iron Slotted Grate - Class C*
___ -DGF Ductile Iron Slotted Grate - Class F
___ -GDC Galvanized Ductile Iron Grate - Class C
___ -GDF Galvanized Ductile Iron Grate - Class F
___ -GG Fiberglass Grate
___ -HPD Heel-Proof Longitudonal Ductile Iron Grate - Class C

Miscellaneous Options

___ -RC Rebar Clips (Set of 2)
___ -VP Vandal-Proof Lockdown

MADE in the U.S.A. (Load Classifications are per DIN EN1433)

___ -ADA-USA Meets Americans with Disabilities Act Requirements - Class C
___ -DGC-USA Ductile Iron Slotted Grate - Class C
___ -DGF-USA Ductile Iron Slotted Grate-Class F
___ -GADA-USA Galvanized Ductile ADA Slotted Grate - Class C
___ -GDC-USA Galvanized Ductile Slotted Grate - Class C
___ -GDF-USA Galvanized Ductile Slotted Grate - Class F

MADE in the U.S.A. Miscellaneous Options

___ -CBF Black Acid Resistant Coated Frame
___ -DB Bottom Dome Strainer
___ -SF Type 304 Stainless Steel Top Frame

*REGULARLY FURNISHED UNLESS OTHERWISE SPECIFIED

REV. Q DATE: 05/05/11 C.N. NO. 121231

DWG. NO. 64183 PRODUCT NO. Z874-12

ZURN INDUSTRIES, LLC ◆ SPECIFICATION DRAINAGE OPERATION ◆ 1801 Pittsburgh Ave. ◆ Erie, PA 16514
Phone: 814\455-0921 ◆ Fax: 814\454-7929 ◆ World Wide Web: www.zurn.com
In Canada: ZURN INDUSTRIES LIMITED ◆ 3544 Nashua Drive ◆ Mississauga, Ontario L4V1L2 ◆ Phone: 905\405-8272 Fax: 905\405-1292

ZURN TRENCH DRAIN DETAIL

NOT TO SCALE

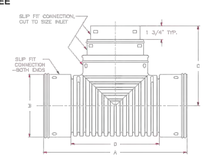
NOTES:

1.) CONCRETE ENCASEMENT TO BE 1' AROUND THE SIDES AND BOTTOM OF TRENCH DRAIN.

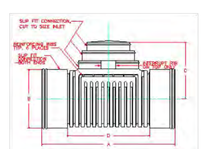
D24

MULTIPLE TEE

PART #	PIPE SIZE	A	B	C	D
0644AA	6 in (150 mm)	11.5 in (292 mm)	7.4 in (187 mm)	9.5 in (241 mm)	5.8 in (148 mm)
0844AA	8 in (200 mm)	18.8 in (476 mm)	9.9 in (251 mm)	10.5 in (6 mm)	13.0 in (330 mm)
1044AA	10 in (250 mm)	21.0 in (533 mm)	12.3 in (311 mm)	11.8 in (299 mm)	15.0 in (381 mm)
1244AA	12 in (300 mm)	27.4 in (695 mm)	15.3 in (387 mm)	14.3 in (362 mm)	20.5 in (521 mm)



PART #	PIPE SIZE	A	B	C	D
1247AA	12 in (300 mm)	26.1 in (664 mm)	14.7 in (373 mm)	15.0 in (381 mm)	20.3 in (514 mm)
1547AA	15 in (375 mm)	29.6 in (753 mm)	18.0 in (457 mm)	18.4 in (467 mm)	22.3 in (565 mm)
1847AA	18 in (450 mm)	35.4 in (899 mm)	21.6 in (549 mm)	20.5 in (521 mm)	24.8 in (629 mm)



NOTE: ALL DIMENSIONS ARE NOMINAL

© 2021 Advanced Drainage Systems, Inc.

DRAWING #:	1035	
DRAWN BY:	CRM	09.11.06
APPROVED BY:	JCB	06.26.07
REVISIONS:	TJR	09/02/11

D22

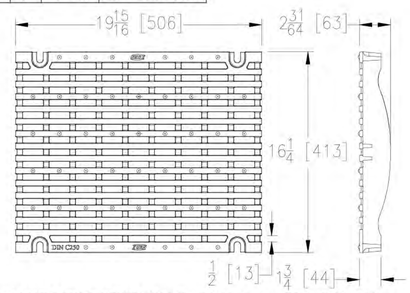
P874-12-ADA-USA

12[305] Wide Throat Domestic Grate

Dimensional Data (inches and [mm]) are Subject to Manufacturing Tolerances and Change Without Notice

Back to Index

Please Check ✓	Item No.	Part Number	Item I.D.
	1	94528	P874-12-ADA-USA



ADA-USA GRATE ENGINEERING SPECIFICATION: The Zurn P874-12-ADA-USA ADA Compliant, Ductile Iron Grate, is 16-1/4" [413mm] wide by 19-15/16"[506mm] long, weighing 26.5lbs per linear foot [39.4 kg/m]. The grate has an open area of 66 square inches per linear foot [1398 cm²/m], DIN Rating of C, ANSI Rating of Heavy-Duty, ADA compliant, H-20 Load Rated. Ductile Iron Conforms to ASTM Specification A536, Grade 80-55-06.

ADA-USA- ADA Compliant	
Material:	Ductile Iron
DIN Rating:	Class C
Weight:	26.5 lbs/ft. [39.4 kg/m]
Open Area:	66 sq. in²/ft.[1398cm²/m]
ANSI Rating:	Heavy-Duty
Application:	Roadway, ADA
Slot Width/Hole Size:	1/2" [13 cm]
ADA:	Yes
H-20:	Yes
FAA:	No

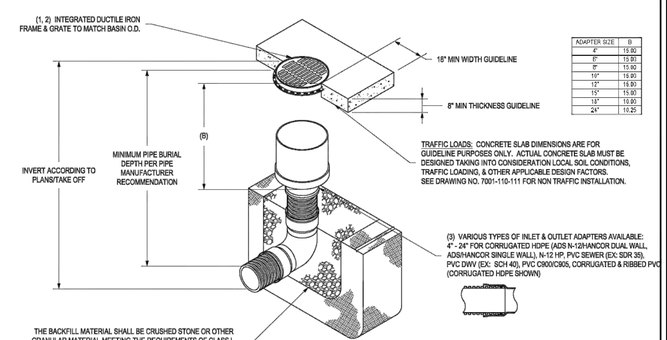
MADE IN THE USA

Zurn Industries, LLC | Specification Drainage Operation
1801 Pittsburgh Avenue, Erie, PA U.S.A. 16502 - Ph. 855-663-9876, Fax 814-454-7929
In Canada | Zurn Industries Limited
3544 Nashua Drive, Mississauga, Ontario L4V 1L2 - Ph. 905-405-8272, Fax 905-405-1292
www.zurn.com

Rev.	H
Date:	05/07/15
C.N. No.	132632
Form No.	FT797

D25

NYLOPLAST 24 " INLINE DRAIN: 2724AG _ _ X



ADAPTER SIZE	B
4"	15.90
6"	15.90
8"	15.90
10"	15.90
12"	15.90
15"	15.90
18"	15.90
24"	16.25

GRATE OPTIONS	LOAD RATING	PART #	DRAWING #
PEDESTRIAN	MEETS H-10	2456CGP	7601-110-216
STANDARD	MEETS H-20	2456CGS	7601-110-212
SOLID COVER	MEETS H-20	0456CGC	7601-110-218
DOME	N/A	2456CGD	7601-110-219
DROP IN GRATE	LIGHT DUTY	2421D	7601-110-215

1 - GRATES/SOLID COVER SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2 - FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-40-06.
3 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12\HANCOR DUAL WALL), N-12 HP, & PVC SEWER.
4 - DIMENSIONS ARE FOR REFERENCE ONLY. ACTUAL DIMENSIONS MAY VARY.
5 - DIMENSIONS ARE IN INCHES
6 - SEE DRAWING NO. 7001-110-275 FOR ADS N-12 & HANCOR DUAL WALL BELL INFORMATION & DRAWING NO. 7001-110-384 FOR N-12 HP BELL INFORMATION.

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DRAWN BY	EBC	MATERIAL	
DATE	04-03-06		
REVISED BY	NMH	PROJECT NO./NAME	
DATE	03-15-16		
DWG SIZE	A	SCALE 1:40	SHEET 1 OF 1

ADS Nyloplast — 3130 VERONA AVE BUFORD, GA 30518 PHN (770) 932-2443 FAX (770) 932-2466 www.nyloplast-us.com

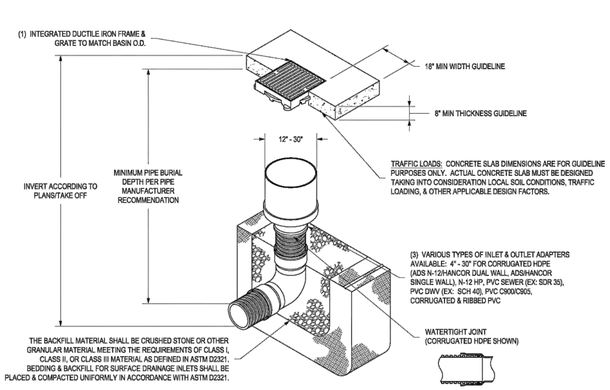
TITLE: 24 IN INLINE DRAIN QUICK SPEC INSTALLATION DETAIL

DWG NO. 7003-110-028 REV E

D26

8

NYLOPLAST INLINE DRAIN WITH 2 FT X 2 FT ROAD & HIGHWAY FRAME & GRATE



1 - 12" - 30" FRAMES & GRATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12\HANCOR DUAL WALL), N-12 HP, & PVC SEWER (8" - 24").
3 - ROAD & HIGHWAY GRATE SHALL MEET H-20 LOAD RATING.

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DRAWN BY	EBC	MATERIAL	
DATE	3-29-07		
REVISED BY	NMH	PROJECT NO./NAME	
DATE	03-16-16		
DWG SIZE	A	SCALE 1:40	SHEET 1 OF 1

ADS Nyloplast — 3130 VERONA AVE BUFORD, GA 30518 PHN (770) 932-2443 FAX (770) 932-2466 www.nyloplast-us.com

TITLE: INLINE DRAIN WITH 2 FT X 2 FT ROAD & HIGHWAY FRAME & GRATE QUICK SPEC INSTALLATION DETAIL

DWG NO. 7003-110-036 REV D

REFERENCE IS MADE TO A LONG TERM MAINTENANCE MANUAL PREPARED BY BERRY SURVEYING & ENGINEERING, WHICH IS ON FILE AT THE CITY OF DOVER PLANNING DEPARTMENT, AND CAN BE FOUND AT THE OFFICE OF BERRY SURVEYING & ENGINEERING. (603) 332-2863

D-103

D23

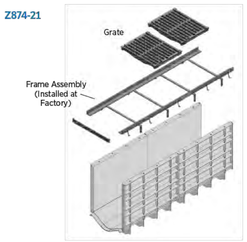
Z874 Perma-Trench®

HDPE Drain Systems (12", 18", 21.25" Throat)

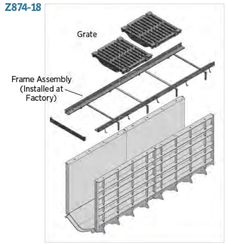
Z874-12



Z874-21



Z874-18



*4-corner bolt lockdown on all systems.



Closed End Cap (E1)



End Outlet
Z874-12 (4", 6", 8" NH)
Z874-18 (4", 6", 8", 12" NH)
Z874-21 (4", 6", 8", 12", 18" NH)



Bottom Outlet
Z874-12 (4", 6", 8" NH)
Z874-18 (4", 6", 8", 12" NH)
Z874-21 (4", 6", 8", 12", 18" NH)

Z874-12, Z874-18, Z874-21 Applications

- Airports
- Airplane Hangars
- Chemical Plants
- Highways
- Industrial Parks
- Industrial Plants
- Parking Lots
- Port Facilities

Features and Benefits

- 8' pre-engineered modular sections
- 1.00% built-in slope – handles greater flows, uniform slope
- Radiused bottom – Better flow rate, less solids build-up
- Constructed with HDPE to provide a durable and lightweight solution
- 4-corner grate lock down for dynamic loading situations
- Rebar clips provided with system for elevation set
- Frame available in coated steel, stainless steel, or galvanized steel

REVISION	DATE	DESCRIPTION

PLANNING FILE #SITE—XXXX—XXXX

DRAINAGE DETAILS
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : AS NOTED
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 – 034

STATE OF NEW HAMPSHIRE — KENNETH A. BERRY No. 10243 — LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

U1

NOTES ON MANHOLE AND SEWER CONSTRUCTION:

1) IT IS THE INTENTION THAT THE MANHOLE, INCLUDING ALL COMPONENT PARTS, HAVE ADEQUATE SPACE, STRENGTH AND LEAKPROOF QUALITIES CONSIDERED NECESSARY FOR THE INTENDED SERVICE. SPACE REQUIREMENTS AND CONFIGURATIONS, SHALL BE AS SHOWN ON THE DRAWING. MANHOLES SHALL BE AN ASSEMBLY OF PRECAST SECTIONS, WITH STEEL REINFORCEMENT AND ADEQUATE JOINTING. THE COMPLETE STRUCTURE SHALL BE OF SUCH MATERIAL AND QUALITY AS TO WITHSTAND HS-20-44 LOADING, INCLUDING THE COVER. ALL SMH CONSTRUCTION AND MATERIALS WILL BE IAW ENV.-WQ 704.13 ADOPTED OCTOBER 15, 2014

2) BARRELS AND CONE SECTIONS SHALL BE PRECAST REINFORCED CONCRETE. (IAW ENV.-WQ 704.12 (d))

3) SEWER MANHOLE DIAMETER SHALL BE AS INDICATED ON THE PLANS.

4) PRECAST CONCRETE BARREL SECTIONS, CONES AND BASES SHALL CONFORM TO ASTM C478.

5) GRAVITY SEWER PIPE TESTING WILL BE IN ACCORDANCE WITH ENV.-WQ 704.06 AND MAN HOLE TESTING IAW ENV.-WQ 704.17 DATED OCTOBER 15, 2014.

6) INVERTS AND SHELVES: MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT, CONSTRUCTED TO CONFORM TO THE SIZE OF THE PIPE AND FLOW. INVERT BRICKS SHALL BE LAID ON EDGE AND THE BASE SECTION SHALL BE FULL. AT CHANGES IN DIRECTIONS, THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST RADIUS POSSIBLE TANGENT TO THE CENTER LINE OF THE SEWER PIPES. CARE SHALL BE TAKEN TO ENSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE HIGHEST PIPE CROWN AND SLOPE TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL. UNDERLAYMENT OF INVERT AND SHELF SHALL CONSIST OF BRICK MASONRY. (IAW ENV.-WQ 704.13 (a) (9)), MORTAR SHALL CONFORM WITH REQUIREMENTS OF IAW ENV.-WQ 704.13 (c).

   FRAMES AND COVERS: MANHOLES FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN AND PROVIDE A 30-INCH CLEAR OPENING. 3-INCH (MINIMUM HEIGHT) LETTERS WITH THE WORD "SEWER" SHALL BE PLAINLY CAST INTO THE CENTER OF EACH MANHOLE COVER. (IAW ENV.-WQ 704.13 (a) (4-6)) SEWER MAN HOLE COVERS ARE TO BE LIFTMATE R-1743-LM.

7) PER ENV-WQ 704.12(M), MANHOLES MUST BE CAPABLE OF SUPPORTING HS-20 LOADS.

8) HORIZONTAL JOINTS BETWEEN SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE OF A TYPE APPROVED BY THE DOVER DPW, WHICH TYPE SHALL IN GENERAL, DEPEND FOR WATERTIGHTNESS UPON A DOUBLE ROW OF AN OVERLAPPING TYPE ELASTOMERIC OR MASTIC-LIKE GASKET. APPROVED ELASTOMERIC SEALANTS ARE: RAM-NEK, KENT SEAL NO. 2, EZ, OR EQUAL.

9) IN CROSS COUNTRY AREAS OUTSIDE OF THE PAVED ROADWAY SURFACE, THE MANHOLE FRAME ELEVATION SHALL BE A MINIMUM OF 6" ABOVE FINISHED GRADE. GRADE TO PROVIDE POSITIVE DRAINAGE AWAY FROM THE MANHOLE. SEE TYPICAL TRENCH DETAIL U5.

11.) ALL FRAMES AND GRATES ARE TO BE U.S.A. MADE. MANHOLE STEPS ARE REQUIRED IN THIS MUNICIPALITY AND MUST CONFORM TO THE REQUIREMENTS OF ENV-WQ 704.14. STEPS ARE TO BE PLASTIC.

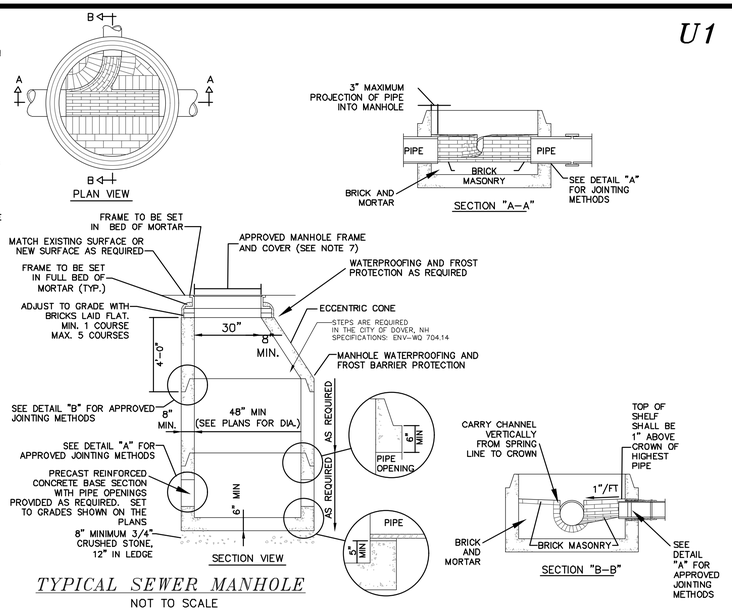
12.) THE CONTRACTOR TO WORK WITH CITY OF DOVER REVIEW ENGINEER AND SEWER DEPARTMENT ON THE MEANS AND METHODS USED TO INSTALL ALL SEWER STRUCTURES.

13.) ANY WORK INVOLVING THE CUTTING INTO THE EXISTING A.C. PIPE SHALL MEET THE REQUIREMENTS OF ENV-A 1800.

14.) THE "CITY OF DOVER, NEW HAMPSHIRE, DEPARTMENT OF COMMUNITY SERVICES, CONSTRUCTION GUIDELINES, PERMITS, RULES, AND REGULATIONS" (DATED MARCH 13, 2018) ARE A PART OF THE CONSTRUCTION DETAILS AND TO BE FOLLOWED.

15.) MANHOLES SHALL BE TESTED FOR LEAKAGE USING A VACUUM TEST IN ACCORDANCE WITH THE ASTM C1244 STANDARD AND ENV-WQ 704.17.

16.) SEWER MANHOLES WILL REQUIRE AT A MINIMUM 1' RISER SECTION AND ADDITIONAL BRICK AND MORTAR TO BRING THE RIM TO GRADE, DUE TO DIFFERENCES IN PREVIOUS DESIGN FINISHED GRADES.



TYPICAL SEWER MANHOLE
NOT TO SCALE

U2

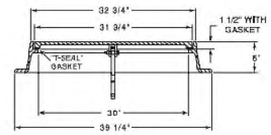
R-1743-LM
LiftMate Frame, Solid Gasketed Lid

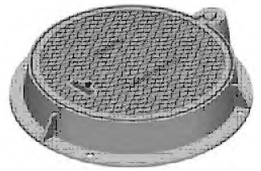
Heavy Duty

Furnished with four 1" anchor holes on 36-7/8" diameter bolt circle.

Hinge plug available for self-seal application.

See p. 13 for LiftMate information.

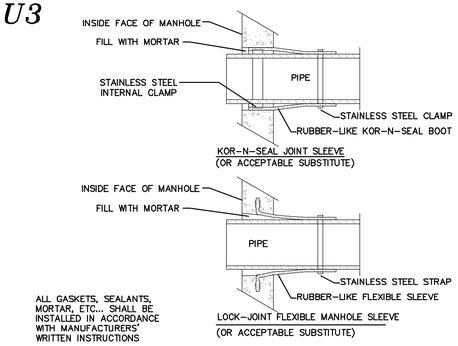




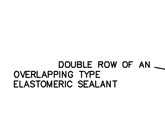
SEWER MANHOLE FRAME AND GRATE WILL BE LIFTMATE R-1743-LM, OR APPROVED EQUAL, 32 INCH OPENING, CAST IRON, H20 LOADING.

SEWER MANHOLE COVER DETAIL
NOT TO SCALE

U3



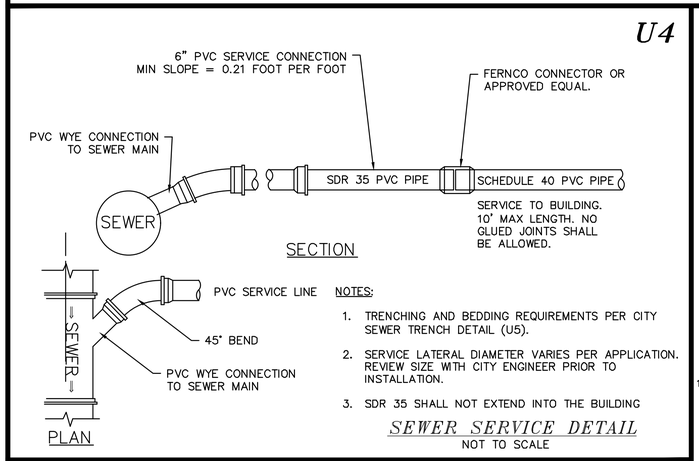
DETAIL "A" - PIPE TO MANHOLE JOINTS
NOT TO SCALE



NOTE:
ALL GASKETS AND SEALANTS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' WRITTEN INSTRUCTIONS.

DETAIL "B" HORIZONTAL JOINTS
NOT TO SCALE

U4

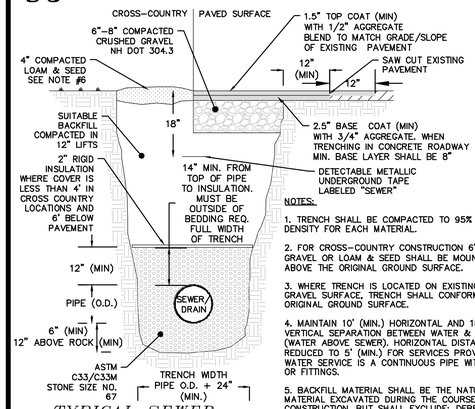


NOTES:

1. TRENCHING AND BEDDING REQUIREMENTS PER CITY SEWER TRENCH DETAIL (U5).
2. SERVICE LATERAL DIAMETER VARIES PER APPLICATION. REVIEW SIZE WITH CITY ENGINEER PRIOR TO INSTALLATION.
3. SDR 35 SHALL NOT EXTEND INTO THE BUILDING

SEWER SERVICE DETAIL
NOT TO SCALE

U5

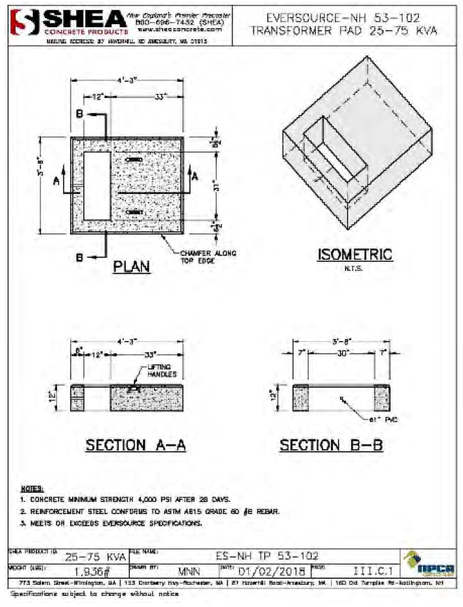


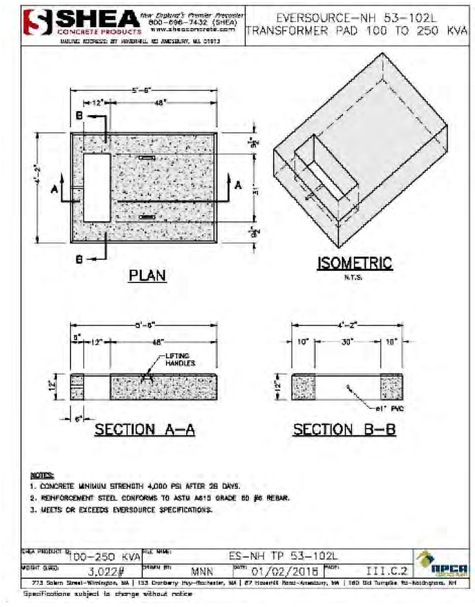
NOTES:

1. TRENCH SHALL BE COMPACTED TO 95% OPTIMUM DENSITY FOR EACH MATERIAL.
2. FOR CROSS-COUNTRY CONSTRUCTION 6" CRUSHED GRAVEL OR LOAM & SEED SHALL BE MOUNDED 6" ABOVE THE ORIGINAL GROUND SURFACE.
3. WHERE TRENCH IS LOCATED ON EXISTING LAWN OR GRAVEL SURFACE, TRENCH SHALL CONFORM TO MATCH ORIGINAL GROUND SURFACE.
4. MAINTAIN 10' (MIN.) HORIZONTAL AND 18" (MIN) VERTICAL SEPARATION BETWEEN WATER & SEWER MAINS (WATER ABOVE SEWER). HORIZONTAL DISTANCE MAY BE REDUCED TO 5' (MIN.) FOR SERVICES PROVIDED THE WATER SERVICE IS A CONTINUOUS PIPE WITHOUT JOINTS OR FITTINGS.
5. BACKFILL MATERIAL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE; DEBRIS, PAVEMENT, ORGANIC MATTER, TOP SOIL, MUCK, PEAT AND ROCKS OVER 6" IN LARGEST DIMENSION
6. LOAM AND SEED SHOULD BE IN COMPLIANCE WITH NH DOT 641, 642, 643, 644 AND 645.
7. SEWER TRENCH INSULATION SHALL NOT BE PLACED WITHIN LIMITS OF BEDDING/BLANKET REQUIREMENT.

TYPICAL SEWER PIPE TRENCH
NOT TO SCALE

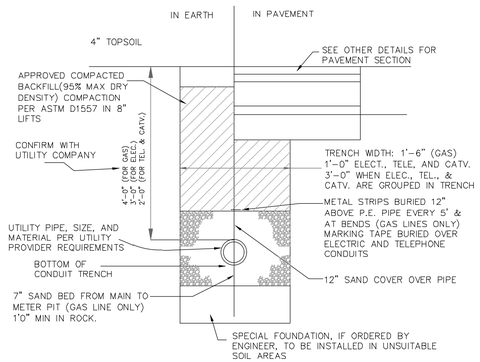
U6





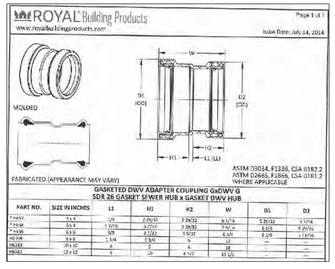
TRANSFORMER AND PAD DETAIL
NOT TO SCALE

U7



ELECTRICAL, TELEPHONE, AND GAS TRENCH
NOT TO SCALE

U8



COUPLING DETAIL
NOT TO SCALE

U-101

PLANNING FILE #SITE--XXXX-XXXX

REVISION	DATE	DESCRIPTION

UTILITY DETAILS
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : AS NOTED
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

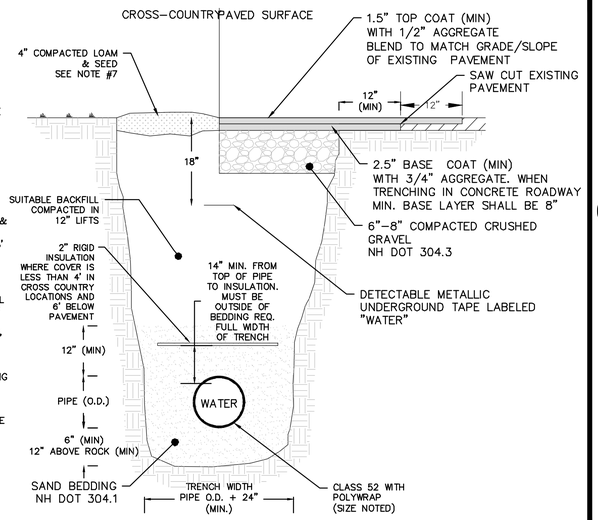
STATE OF NEW HAMPSHIRE
KENNETH A. BERRY No. 14243
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

U9

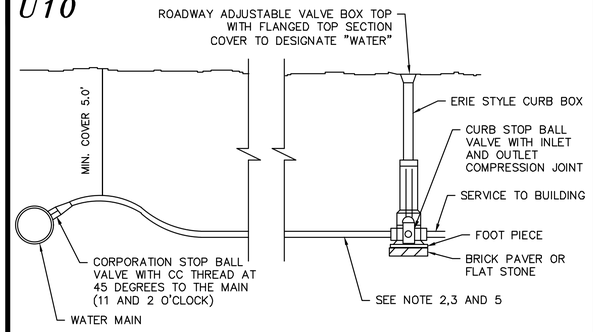
NOTES:

1. TRENCH SHALL BE COMPACTED TO 95% OPTIMUM DENSITY FOR EACH MATERIAL.
2. FOR CROSS-COUNTRY CONSTRUCTION 6" CRUSHED GRAVEL OR LOAM & SEED SHALL BE MOUNDED 6" ABOVE THE ORIGINAL GROUND SURFACE.
3. WHERE TRENCH IS LOCATED ON EXISTING LAWN OR GRAVEL SURFACE, TRENCH SHALL CONFORM TO MATCH ORIGINAL GROUND SURFACE.
4. MAINTAIN 10' (MIN.) HORIZONTAL AND 18" (MIN) VERTICAL SEPARATION BETWEEN WATER & SEWER MAINS (WATER ABOVE SEWER). HORIZONTAL DISTANCE MAY BE REDUCED TO 5' (MIN.) FOR SERVICES PROVIDED THE WATER SERVICE IS A CONTINUOUS PIPE WITHOUT JOINTS OR FITTINGS.
5. BACKFILL MATERIAL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE; DEBRIS, PAVEMENT, ORGANIC MATTER, TOP SOIL, MUCK, PEAT, AND ROCKS OVER 6" IN LARGEST DIMENSION
6. PROVIDE MINIMUM 5' OF COVER. ENGINEERING APPROVAL REQUIRED FOR LESS THAN 5' OF COVER.
7. LOAM AND SEED SHOULD BE IN COMPLIANCE WITH NH DOT 641, 642, 643, 644 AND 645.



WATER PIPE TRENCH
NOT TO SCALE

U10

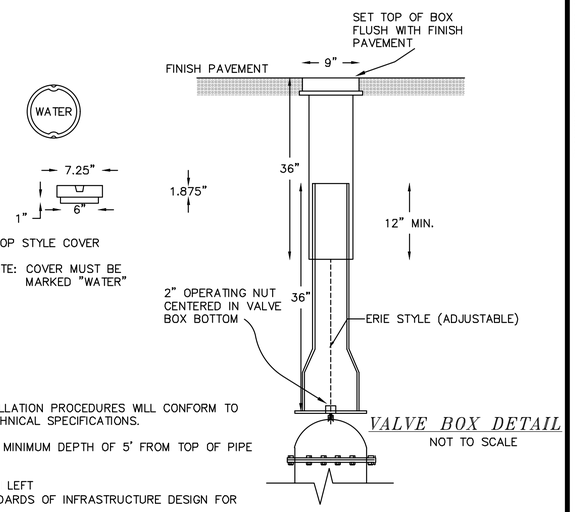


NOTES:

1. ALL WATER LINES 4" OR GREATER SHALL BE DUCTILE IRON WITH AN 8 MIL POLYETHYLENE WRAP, INCLUDING TEE AND OTHER CONNECTIONS.
2. WATER SERVICE LINES SHALL BE COPPER TUBING (TYPE K) BETWEEN MAIN AND CURB STOP.
3. SERVICE BETWEEN CURB STOP AND BUILDING MAY BE (BLUE OR BLACK) CTS SDR 9 PLASTIC POLYETHYLENE RATED FOR 250 psi.
4. CAM-LOCK REQUIRED FOR CTS OR IPS, MJ ADAPTER REQUIRED FOR HDPE
5. ¾"- COPPER, CTS
   1"- COPPER, CTS
   2"- CTS, HDPE, IPS

WATER SERVICE CONNECTION
NOT TO SCALE

U11

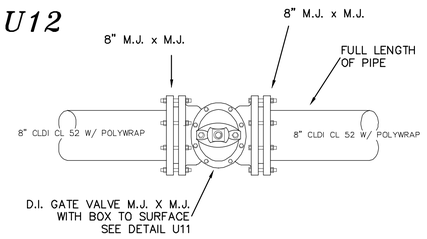


NOTES:

1.) ALL MATERIALS AND INSTALLATION PROCEDURES WILL CONFORM TO LOCAL WATER WORKS TECHNICAL SPECIFICATIONS.
2.) ALL PIPE SHOULD HAVE A MINIMUM DEPTH OF 5' FROM TOP OF PIPE TO FINISH GRADE.
3.) ALL VALVES ARE TO OPEN LEFT
4.) SEE CITY OF DOVER STANDARDS OF INFRASTRUCTURE DESIGN FOR POTABLE WATER DETAILS

VALVE BOX DETAIL
NOT TO SCALE

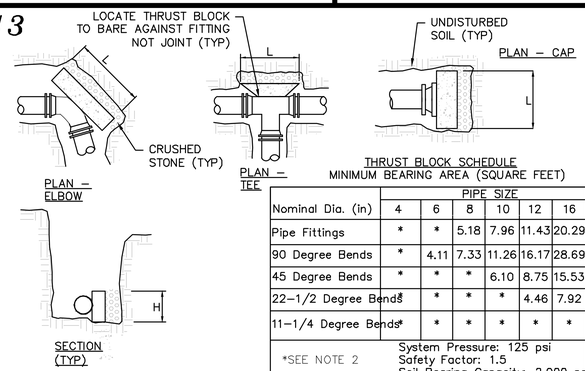
U12



SHUTOFF VALVE DETAIL
NOT TO SCALE

1.) ALL VALVES ARE TO OPEN LEFT
2.) SEE CITY OF DOVER STANDARDS OF INFRASTRUCTURE DESIGN FOR POTABLE WATER DETAILS

U13



THRUST BLOCK SCHEDULE
MINIMUM BEARING AREA (SQUARE FEET)

	PIPE SIZE					
Nominal Dia. (in)	4	6	8	10	12	16
Pipe Fittings	*	*	5.18	7.96	11.43	20.29
90 Degree Bends	*	4.11	7.33	11.26	16.17	28.69
45 Degree Bends	*	*	*	6.10	8.75	15.53
22-1/2 Degree Bends	*	*	*	*	4.46	7.92
11-1/4 Degree Bends	*	*	*	*	*	*

*SEE NOTE 2

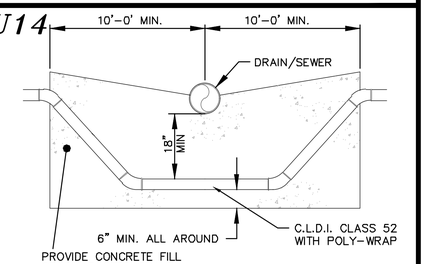
System Pressure: 125 psi
Safety Factor: 1.5
Soil Bearing Capacity: 2,000 psf

NOTES:

1. ALL THRUST BLOCKS SHALL BE PRE-CAST CONCRETE UNLESS APPROVED BY THE CITY ENGINEER.
2. 2'X2'X2' MINIMUM THRUST BLOCK REQUIRED, ANY BEARING AREA OVER 4SF REQUIRES THRUST BLOCKS, RESTRAINED JOINTS AND CALCULATIONS ASSOCIATED WITH THE JOINT.
3. THE MINIMUM BEARING AREAS SHOWN IN THE THRUST BLOCK SCHEDULE ARE BASED ON A SYSTEM PRESSURE OF 125 PSI. IF THE SYSTEM PRESSURE IS ABOVE 125 PSI, INCREASE THE NOTED AREAS PROPORTIONALLY TO THE ACTUAL SYSTEM PRESSURE.
4. FOR MINIMUM BEARING AREAS OVER 4 SF, THE LENGTH (L) OF THE BLOCK IS APPROXIMATELY TWICE AS LONG AS THE HEIGHT (H).
5. PLACE CRUSHED STONE BEHIND THRUST BLOCK AGAINST UNDISTURBED SOIL.
6. PLACE THRUST BLOCK ALONG MAXIMUM LENGTH OF THE FITTING TO MAXIMIZE BEARING AREA.
7. CONCRETE COMPRESSIVE STRENGTH: 2,000 PSI MINIMUM.
8. USE OF THRUST BLOCKS DOES NOT ELIMINATE THE REQUIREMENT OF OTHER RESTRAINTS OR VICE VERSA.

THRUST BLOCKS
NOT TO SCALE

U14

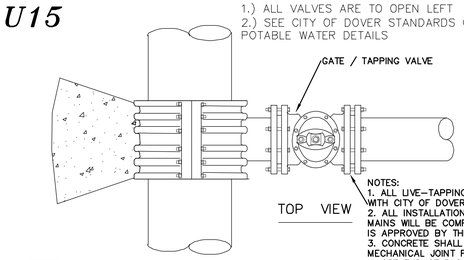


1.) SEE CITY OF DOVER STANDARDS OF INFRASTRUCTURE DESIGN FOR POTABLE WATER DETAILS

WATER MAIN INSTALLATION - BELOW DRAIN & SEWER
NOT TO SCALE

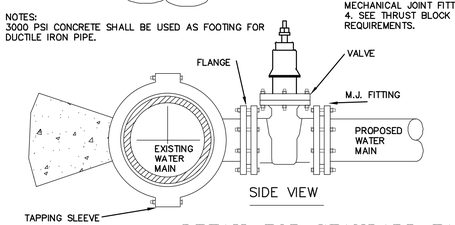
U15

1.) ALL VALVES ARE TO OPEN LEFT
2.) SEE CITY OF DOVER STANDARDS OF INFRASTRUCTURE DESIGN FOR POTABLE WATER DETAILS



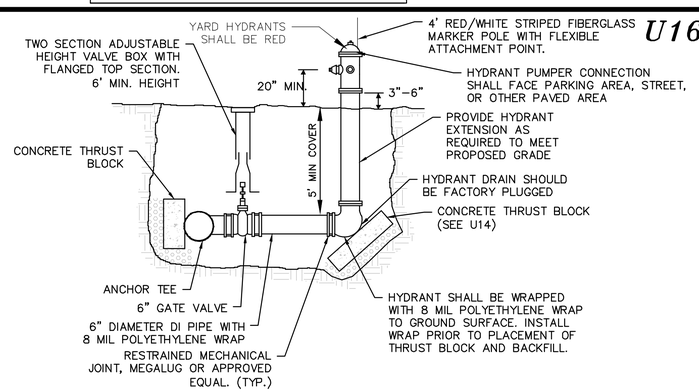
NOTES:
1. ALL LIVE-TAPPING WILL BE COMPLETED IN ACCORDANCE WITH CITY OF DOVER WATER DEPARTMENT REGULATIONS.
2. ALL INSTALLATION AND TAPPING OF EXISTING WATER MAINS WILL BE COMPLETED BY AN INDIVIDUAL OR FIRM THAT IS APPROVED BY THE CITY OF DOVER ENGINEERING
3. CONCRETE SHALL NOT CONTACT BOLTS OR END OF MECHANICAL JOINT FITTINGS.
4. SEE THRUST BLOCK TABLES FOR AREA OF CONCRETE REQUIREMENTS.

NOTES:
3000 PSI CONCRETE SHALL BE USED AS FOOTING FOR DUCTILE IRON PIPE.



DETAIL FOR STANDARD TAPPING SLEEVE AND VALVE ASSEMBLY
NOT TO SCALE

U16

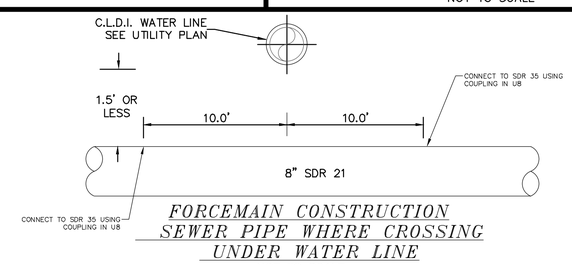


NOTES:

1. FIRE HYDRANTS SHALL BE FACTORY SEALED EDDY STYLE 2641.
2. HYDRANT SHALL BE PAINTED RED WITH EPOXY PAINT AS RECOMMENDED BY THE HYDRANT MANUFACTURER.
3. HYDRANT SHALL OPEN LEFT.

FIRE HYDRANT
NOT TO SCALE

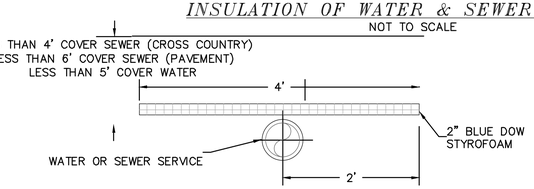
U17



FORCEMAIN CONSTRUCTION SEWER PIPE WHERE CROSSING UNDER WATER LINE
NOT TO SCALE

U18

INSULATION OF WATER & SEWER SERVICES
NOT TO SCALE



U-102

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

UTILITY DETAILS
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

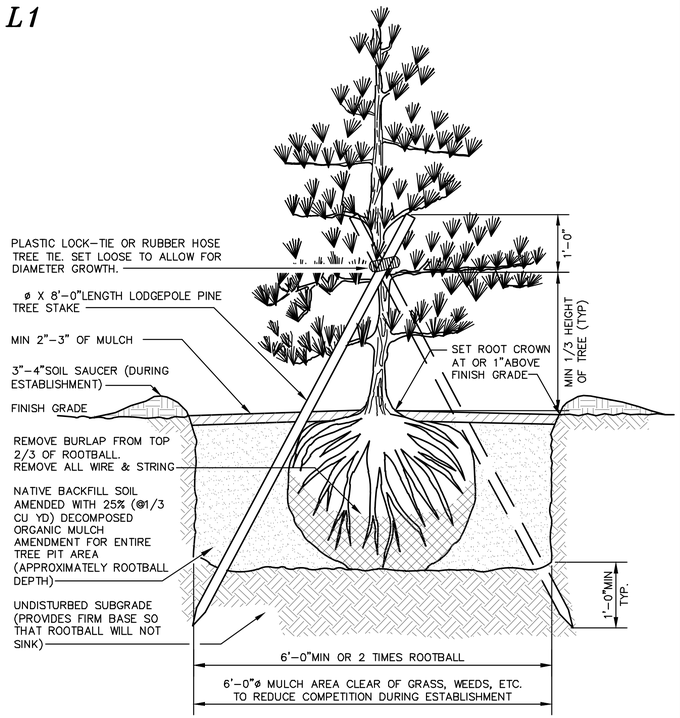
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : AS NOTED
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY No. 14242 LICENSED PROFESSIONAL ENGINEER

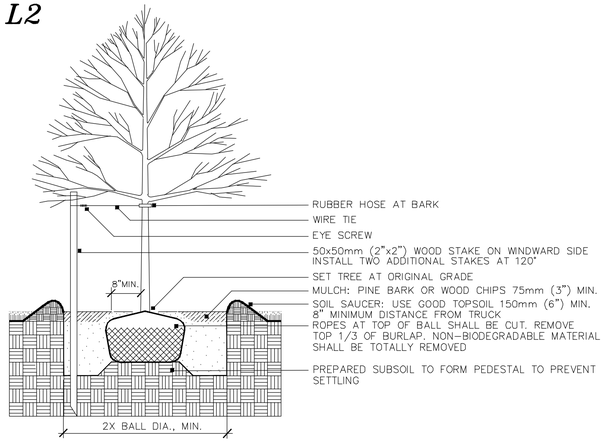
NOT FOR CONSTRUCTION

L1



CONIFEROUS TREE PLANTING

L2



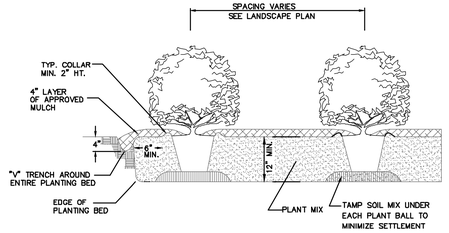
DECIDUOUS TREE PLANTING

NOTE: STAKING TO BE USED IN PARKING ISLANDS AND OTHER CONFINED AREAS AS NECESSARY TO AVOID CONFLICTS WITH PEDESTRIANS

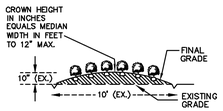
L3

NOTES:

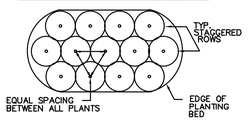
1. SCARIFY ROOT MASS OF CONTAINERIZED PLANT MATERIAL.
2. INSTALL CONTAINERIZED PLANTS AT FINSHED GRADE
3. TAMP PLANTING MIX FIRMLY AS PIT IS FILLED AROUND EACH PLANT BALL.
4. OMIT COLLAR AROUND EACH SHRUB WHEN IRRIGATION SYSTEM IS PRESENT.
5. SOAK EACH PLANT BALL AND PIT IMMEDIATELY AFTER INSTALLATION.



TYPICAL PLANTING BED DETAIL



TYPICAL BED CROWNING

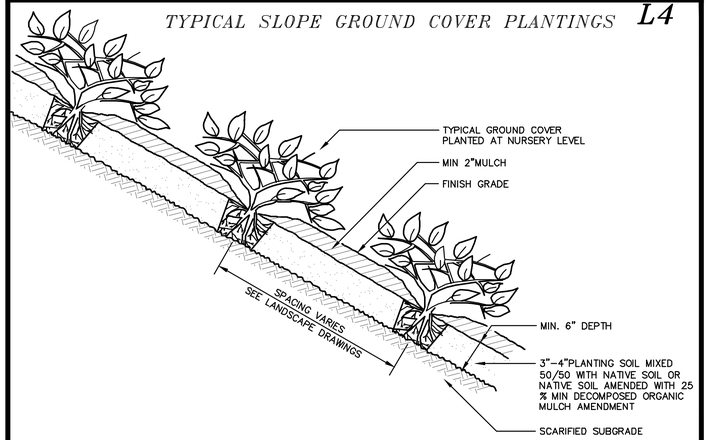


TYPICAL PLANTING BED PLAN

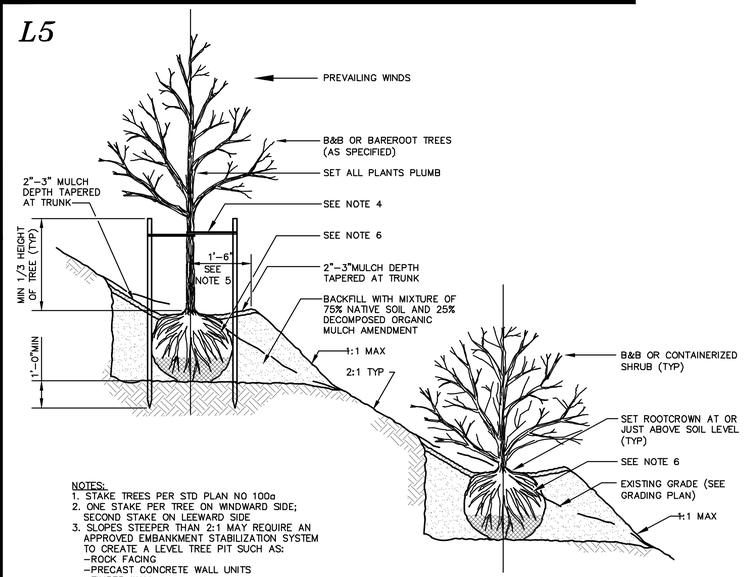
SHRUB & HEDGE PLANTING

L4

TYPICAL SLOPE GROUND COVER PLANTINGS



L5



NOTES:
1. STAKE TREES PER STD PLAN NO 100a
2. ONE STAKE PER TREE ON WINDWARD SIDE; SECOND STAKE ON LEEWARD SIDE
3. SLOPES STEEPER THAN 2:1 MAY REQUIRE AN APPROVED EMBANKMENT STABILIZATION SYSTEM TO CREATE A LEVEL TREE PIT SUCH AS:
   - –ROCK FACING
   - –PRECAST CONCRETE WALL UNITS
   - –TIMBER WALL
   - –MANUFACTURED SLOPE RETENTION UNITS
4. CHAINLOCK TREE TIE. LOOP EACH TIE AROUND TREE LOOSELY TO PROVIDE 1" SLACK FOR DIAMETER GROWTH.
5. SHAPE SOIL TO PROVIDE 3' DIAMETER OR ROOTBALL DIAMETER, WHICHEVER IS GREATER, WATERING RING.
6. REMOVE ALL WIRE AND STRING. REMOVE TOP 2/3 OF BURLAP.

TREE PLANTING ON SLOPES

L6

NOTES:

1.) CALL DIG SAFE PRIOR TO BEGINNING WORK. (1-888-344-7233). THE LANDSCAPE CONTRACTOR IS ADVISED OF THE PRESENCE OF UNDERGROUND UTILITIES AND SHALL VERIFY THE EXISTENCE AND LOCATION OF THE SAME BEFORE COMMENCING AND DIGGING OPERATIONS. THE LANDSCAPE CONTRACTOR SHALL REPLACE OR REPAIR UTILITIES, PAVING, WALKS, CURBING, ETC DAMAGED IN PERFORMANCE OF THIS JOB AT NO ADDITIONAL COST TO THE OWNER OR GENERAL CONTRACTOR.

2.) CONTRACTOR SHALL THOROUGHLY FAMILIARIZE THEMSELVES WITH ALL SITE CONDITIONS PRIOR TO CONSTRUCTION BIDDING.

3.) PROVIDED SMOOTH TRANSITION WHERE NEW WORK MEETS EXISTING CONDITIONS.

4.) ALL PLANT MATERIAL INSTALLED SHALL MEET THE SPECIFICATIONS OF "AMERICAN STANDARD FOR NURSERY STOCK" BY THE AMERICAN ASSOCIATION OF NURSERYMEN.

5.) ALL PLANT MATERIALS SHALL BE FREE FROM INSECTS AND DISEASE.

6.) ALL PLANTINGS SHALL BE DONE IN ACCORDANCE WITH ACCEPTABLE HORTICULTURAL PRACTICES. THIS IS TO INCLUDE PROPER PLANTING MIX, PLANT BED AND TREE PIT PREPARATION, PRUNING STAKING OR GUYING, WRAPPING, SPRAYING, FERTILIZATION, PLANTING AND ADEQUATE MAINTENANCE UNTIL ACCEPTANCE FROM OWNER.

7.) ALL GRASS, OTHER VEGETATION AND DEBRIS SHALL BE REMOVED FROM ALL PLANTING AREAS PRIOR TO PLANTING.

8.) THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF EXISTING AND NEWLY PLANTED TREES AND SHRUBS DURING THE CONSTRUCTION PROCESS. WHERE REQUIRED, THE CONTRACTOR SHALL INSTALL TEMPORARY FENCING (SNOW OR EQUAL) AROUND EXISTING TREES AND SHRUBS THAT COULD BE IMPACTED BY THE CONSTRUCTION PROCESS. STORAGE OF CONSTRUCTION EQUIPMENT, CONSTRUCTION MATERIALS, SNOW STORAGE AND OR VEHICLE PARKING SHALL NOT BE PERMITTED WITHIN THE DRIP LINE OF TREES OR TWENTY FEET WHICH EVER IS GREATER.

9.) NEW PLANTINGS SHALL BE INSTALLED PER PROJECT DRAWINGS AND SPECIFICATION THAT INCLUDE FERTILIZATION AND MULCHING AS REQUIRED.

10.) ALL SHRUB BEDS AND TREE PITS SHALL BE MULCHED WITH 3" CLEAN SHREDDED BLACK MULCH.

11.) WHERE INDICATED ON PLAN, PLANTING SOIL MIXTURE FOR GROUND COVER AND PERENNIAL BED AREAS SHALL CONSIST OF FOUR PARTS TOPSOIL, TWO PARTS SPHAGNUM PEAT MOSS, AND ONE PART HORTICULTURAL PERLITE BY VOLUME. PEAT MOSS MAY BE SUBSTITUTED WITH WELL-ROTTED OR DEHYDRATED MANURE OR COMPOST. ROTOTILL BEDS TO A DEPTH OF 8 INCHES.

12.) MAINTENANCE OF NEW PLANTINGS AND LAWNS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR AND OR LANDSCAPE SUBCONTRACTOR UNTIL ACCEPTANCE BY THE OWNER. RESPONSIBILITIES SHALL INCLUDE WATERING WEEDING AND MOWING AS NECESSARY. ALL PLANT MATERIAL SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE, REPLACEMENT MATERIAL SHALL BE GUARANTEED FOR AND ADDITIONAL YEAR FROM TIME OF INSTALLATION.

13.) THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL TEMPORARY EROSION CONTROL MEASURES DURING THE CONSTRUCTION PHASE AND UNTIL ALL AREAS HAVE BEEN STABILIZED AND ACCEPTED BY THE OWNER. THE GENERAL CONTRACTOR SHALL PROVIDE WEEKLY INSPECTIONS OF EROSION MEASURE AND IMMEDIATELY AFTER STORM EVENTS AND REPAIR AS NECESSARY.

14.) THE GENERAL CONTRACTOR AND OR THE LANDSCAPE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL THREE GUYING MATERIAL ONCE PLANT MATERIAL HAS BEEN ESTABLISHED. (MINIMUM OF ONE GROWING SEASON). ALL TEMPORARY EROSION CONTROL MEASURE SHALL BE REMOVED ONCE STABILIZATION OF DISTURBANCE HAS BEEN ACCEPTED BY OWNER.

15.) THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR A MINIMUM OF TWO MOWINGS FOR ALL TURF AREAS OR UNTIL ACCEPTANCE BY THE OWNER. A MINIMUM UNIFORM 75% CATCH OF TURF IS REQUIRED FOR ACCEPTANCE.

16.) ALL PLANTINGS SHALL BE WATERED REGULARLY DURING THEIR FIRST YEAR AND MAINTAINED PERMANENTLY IN GOOD GROWING CONDITION AS AN EFFECTIVE VISUAL SCREEN.

17.) SHRUBS OR TREES WHICH DIE SHALL BE REPLACED WITHIN ONE GROWING SEASON WITH NEW SHRUBS OR TREES TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE LANDSCAPING REQUIREMENTS.

18.) ALL REQUIRED LANDSCAPING SHALL BE INSTALLED BEFORE OCCUPANCY, OR WITHIN SIX MONTHS IF OCCUPANCY OCCURS DURING WINTER CONDITIONS.

19.) TREES ARE TO BE 3.5" CALIPER 6" OFF THE ROOT BALL.

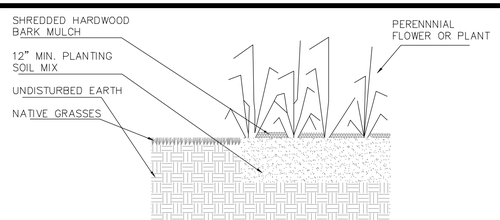
20.) ALL PLANT STOCK SHALL CONFORM TO ANSI Z260.1 – NURSERY STOCK, LATEST EDITIONS (AMERICAN ASSOCIATION OF NURSERYMEN, INC.)

21.) 4" AGED PINEBARK MULCH AND A WEED BARRIER (TY-PAR FABRIC OR APPROVED EQUAL) SHALL BE APPLIED TO ALL SHRUB AND GROUND COVER BEDS. INSTALL WEED BARRIER AS PER MANUFACTURERS RECOMMENDATIONS.

22.) PLANT-PIT BACK-FILL SHALL BE MIXED AT A RATE OF 7 PARTS OF TOPSOIL TO 2 PARTS OF DEHYDRATED COW MANURE. SLOW RELEASE FERTILIZER SHALL BE APPLIED AS PER MANUFACTURERS RECOMMENDATIONS. USE EXISTING ON-SITE TOPSOIL AS PART OF BACK FILL WHEN AVAILABLE.

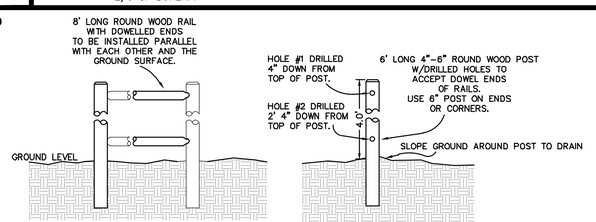
23.) ALL LANDSCAPED AREAS NOT PLANTED WITH TREES, SHRUBS OR GROUNDCOVER SHALL BE RESTORED WITH SEED OR SOD AS INDICATED ON PLANS.

L7



PERENNIAL PLANTING DETAIL

L8



TYPICAL POST & RAIL FENCE DETAIL

NOT TO SCALE

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

LANDSCAPING DETAILS
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

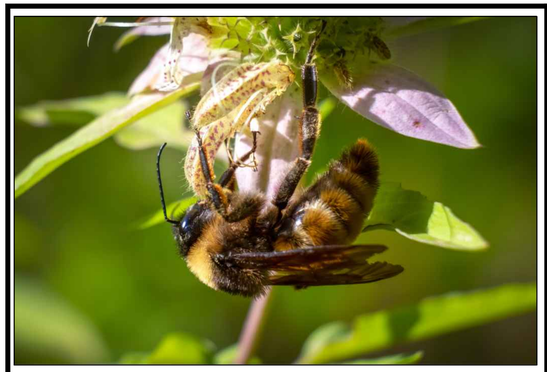
BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : AS NOTED
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 – 034

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY No. 14044
LICENSED PROFESSIONAL ENGINEER

L-101

NOT FOR CONSTRUCTION



AMERICAN BUMBLE BEE

IDENTIFICATION/DESCRIPTION:

BOMBUS PENSYLVANICUS IS A LARGE BUMBLE BEE WITH THE QUEEN MEASURING 1 IN, THE WORKER FROM 0.5 IN, AND THE MALE FROM 0.75 IN IN LENGTH. THE QUEEN IS MOSTLY BLACK, INCLUDING THE LEGS, SPURS AND TEGULAE (BASE OF WING). TERGITE 1, OR THE MOST ANTERIOR BACK PORTION OF THE QUEEN IS OFTEN YELLOW ESPECIALLY IN THE MIDDLE. WORKER BEES' MIDDLE TERGITES ARE YELLOW, THE TAIL BLACK, AND FACE LONG. THEIR CHEEKS ARE SLIGHTLY LONGER THAN BROAD, AND THE CLYPEUS (NOSE) HAS LARGE PUNCTURES EXCEPT ON THE MID LINE. THE HAIR ON THE TOP OF THE HEAD IS BLACK, SHORT AND EVEN. MALES HAVE A YELLOW ABDOMEN WITH A BLACK HEAD AND BLACK STRIPING IN THE LOWER THORAX.



SILVER HAIRED BAT

IDENTIFICATION/DESCRIPTION:

THE SILVER-HAIRED BAT IS A MEDIUM-SIZED BAT WITH VERY DARK FUR TIPPED WITH SILVER OR WHITE. THE WINGS AND TAIL MEMBRANE ARE BLACK. EARS ARE SHORT AND ROUND WITH A SHORT, BLUNT-TIPPED TRAGUS. THE DORSAL SURFACE OF THE TAIL MEMBRANE IS PARTIALLY FURRED AND THE CALCAR LACKS A KEEL



NORTHERN BLACK RACER

IDENTIFICATION/DESCRIPTION:

A SLENDER BLACK SNAKE MEASURING 36-60 INCHES. BLACK RACERS ARE GLOSSY BLACK ON THE TOP AND BOTTOM WITH A WHITE THROAT AND CHIN. YOUNG RACERS ARE PATTERNED WITH BROWN OR REDDISH PATCHES ON A LIGHTER BASE OF GRAY.



SMOOTH GREEN SNAKE

IDENTIFICATION/DESCRIPTION:

A THIN, SLENDER BRIGHT-GREEN SNAKE MEASURING 10-20 INCHES. THE UNDERSIDE IS WHITE OR A PALE YELLOW.



LITTLE BROWN BAT

IDENTIFICATION/DESCRIPTION:

THE LITTLE BROWN BAT IS A SMALL MAMMAL WITH A BODY LENGTH OF 2 1/2 – 4" AND WEIGHING APPROXIMATELY 1/8 TO 1/2 AN OUNCE. THE WINGSPAN OF LITTLE BROWN BATS RANGE FROM 9 – 11". BATS ARE THE ONLY MAMMALS THAT ENGAGE IN TRULY ACTIVE FLIGHT, AS THEIR NAME SUGGESTS THEY ARE GLOSSY BROWN ABOVE WITH A LIGHTER GRAY COLOR BELOW. THESE BATS CAN LIVE 20 TO 30 YEARS.



NORTHERN LONG-EARED BAT

IDENTIFICATION/DESCRIPTION:

THE NORTHERN LONG-EARED BAT IS A MEDIUM-SIZED BAT WITH A BODY LENGTH OF 3 TO 3.7 INCHES BUT A WINGSPAN OF 9 TO 10 INCHES. THEIR FUR COLOR CAN BE MEDIUM TO DARK BROWN ON THE BACK AND TAWNY TO PALE-BROWN ON THE UNDERSIDE. AS ITS NAME SUGGESTS, THIS BAT IS DISTINGUISHED BY ITS LONG EARS, PARTICULARLY AS COMPARED TO OTHER BATS IN ITS GENUS, MYOTIS

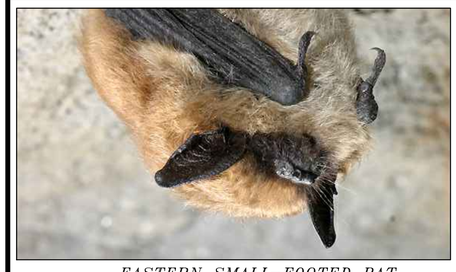


NEW-ENGLAND COTTON TAIL

IDENTIFICATION/DESCRIPTION:

ALSO CALLED THE BRUSH RABBIT, WOODS RABBIT, OR CONEY, THE NEW ENGLAND COTTONTAIL IS 15 TO 17 INCHES LONG AND WEIGHS AROUND 2 POUNDS -20 PERCENT SMALLER THAN THE EASTERN COTTONTAIL.

THE NEW ENGLAND COTTONTAIL HAS A GRAYISH BROWN PELT FLECKED WITH BLACK, AND A WHITE TAIL. THE NEW ENGLAND COTTONTAIL LOOKS MUCH LIKE THE EASTERN COTTONTAIL. HOWEVER, MOST NEW ENGLAND COTTONTAILS HAVE A SMALL BLACK SPOT ON THE FOREHEAD, WHEREAS ABOUT HALF OF ALL EASTERN COTTONTAILS HAVE A WHITE SPOT IN THE SAME PLACE. THE NEW ENGLAND COTTONTAIL'S EARS ARE SLIGHTLY SHORTER THAN THOSE OF THE EASTERN COTTONTAIL AND HAVE A LINE OF BLACK FUR ALONG THE OUTER EDGE.



EASTERN SMALL-FOOTED BAT

IDENTIFICATION/DESCRIPTION:

THE EASTERN SMALL-FOOTED BAT HAS BROWNISH FUR, OFTEN WITH A GOLDEN SHEEN, THAT CONTRASTS WITH ITS BLACKISH FACE AND EARS, AND BLACKISH-BROWN WINGS AND TAIL MEMBRANE. IT CAN BE DISTINGUISHED FROM OTHER MYOTIS SPECIES BY ITS BLACK MASK AND SMALL SIZE. THE BODY IS LITTLE MORE THAN 3½ INCHES LONG, INCLUDING A 1½-INCH TAIL. ITS SMALL FEET, WHICH PROVIDE THE COMMON NAME, ARE LESS THAN A HALF-INCH AND ITS WINGSPAN RANGES FROM 8¼ TO 9¾INCHES. THIS SPECIES FLIES SLOWLY AND ERRATICALLY, USUALLY ABOUT ONE TO THREE YARDS ABOVE THE GROUND.

PLEASE REPORT OBSERVATIONS OF RARE TURTLES

The NH Fish & Game Department is requesting observations of the following turtle species

Turtles may be attracted to disturbed ground during nesting season (May 15th – June 30th)

Turtles are most active from April 15th - October 15th



Blanding's turtle
(State Endangered)

Large, dark/black domed shell with lighter speckles.

Distinct yellow throat/chin.

Aquatic but often moves on land.



Spotted turtle
(State Threatened)

Small, mostly aquatic with black or dark brown with yellow spots.

Fairly flat shell compared to Blanding's turtle.

Spots vary in color and number.

Fis 1401.03 (a) No person shall take or possess a spotted turtle (*Clemmys guttata*)...Blanding's turtle (*Emydoidea blandingii*)...or any egg or part thereof.

Report sightings immediately to NHFG Wildlife Division at 603-271-2461 (M-F 8-4) or to NHFG Wildlife Biologist Melissa Winters 603-479-1129 (cell) anytime.

Please report promptly, noting specific location and date – Photographs strongly encouraged

Wood Turtle

(New Hampshire Species of Special Concern)

Turtles may be attracted to disturbed ground during nesting season (**May 15th – June 30th**)

Turtles are most active from **April 15th - October 15th**



Identifying traits

- Neck and forelimbs are orange.
- Characterized by its highly sculpted shell with each large scute taking on an irregular pyramidal shape.
- Adults can be 5-8 inches long.

Habitat Use

- wooded areas near streams
- uplands surrounding streams





NOTE: It is illegal to remove a wood turtle from the wild.

Observations shall be reported to NH Fish & Game at NHFGReview@wildlife.nh.gov or at 603-271-2461
Photo documentation, location and date/time of observation is helpful.

State laws pertaining to this species RSA 207:1, FIS 804.02, Fis 1401.03 (a)

W-101

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

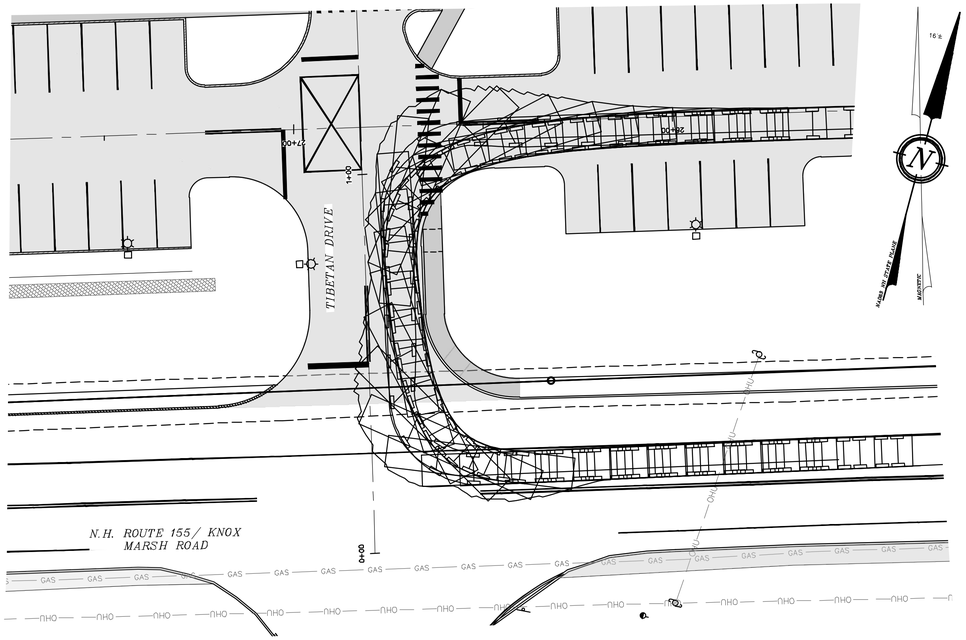
WILDLIFE IDENTIFICATION PLAN
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : AS NOTED
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 – 034

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

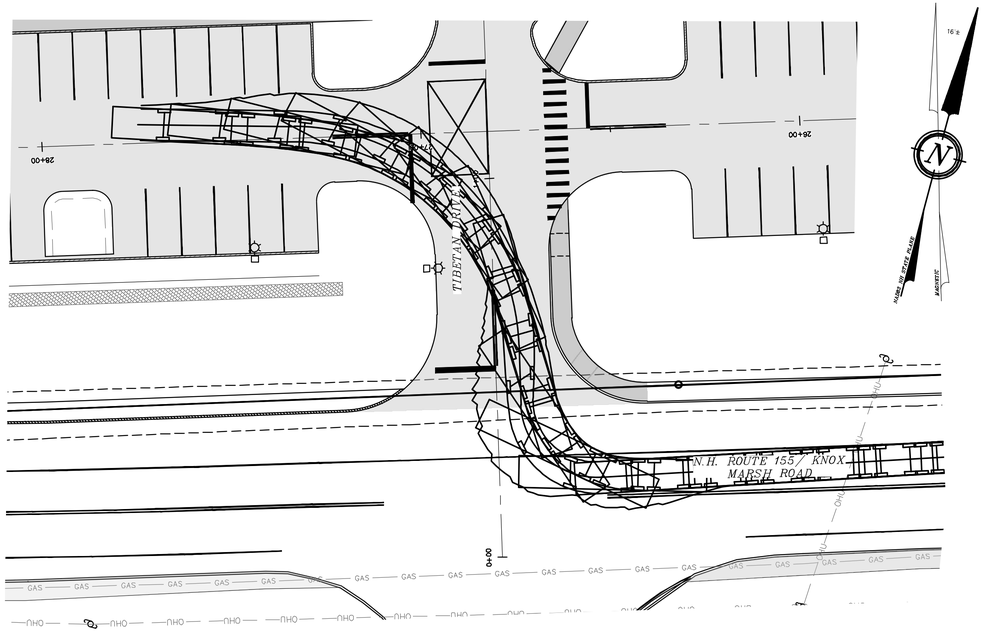


GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

TRUCK TURNING ENTRANCE RIGHT FROM EAST

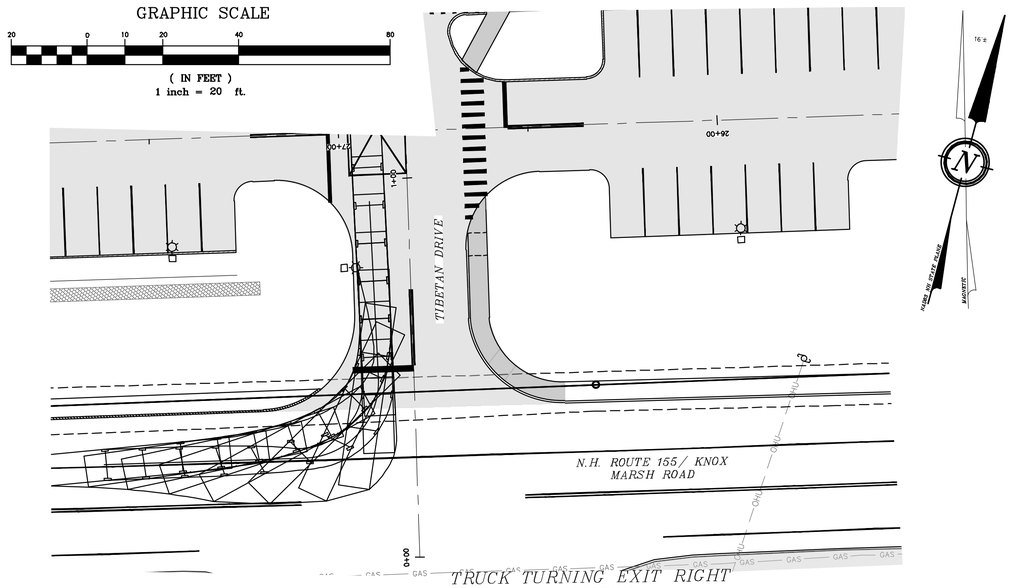


GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

TRUCK TURNING ENTRANCE LEFT FROM EAST

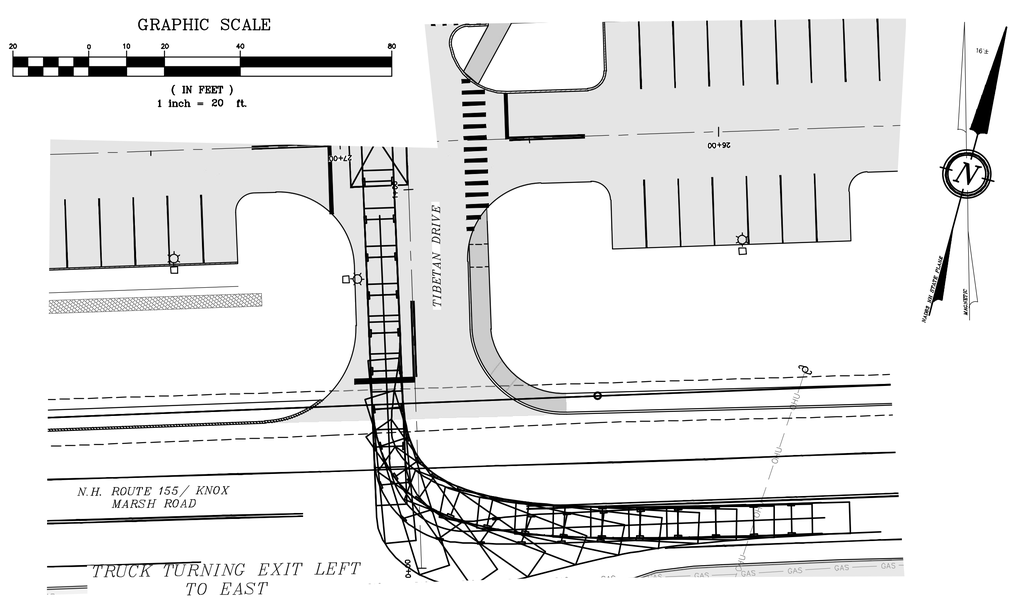


GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

TRUCK TURNING EXIT RIGHT TO WEST



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

TRUCK TURNING EXIT LEFT TO EAST

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

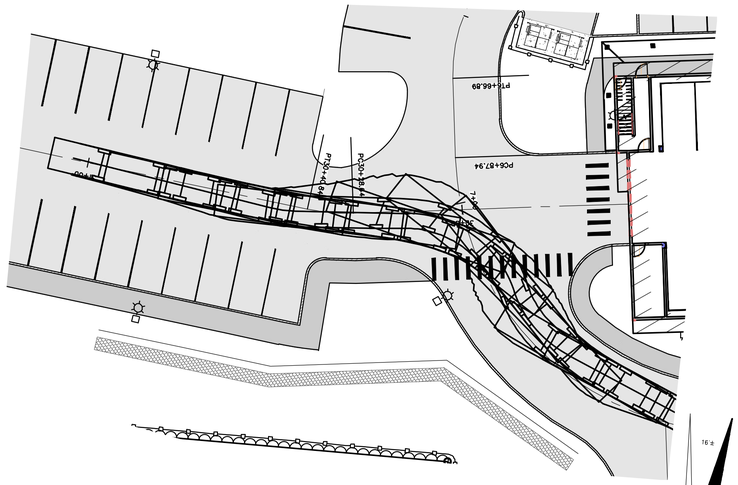
TRUCK TURNING ENTRANCE DOVER, NH FIRE T1 TEMPLATE
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY & SURVEYING ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 – 034

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY No. 14243 LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

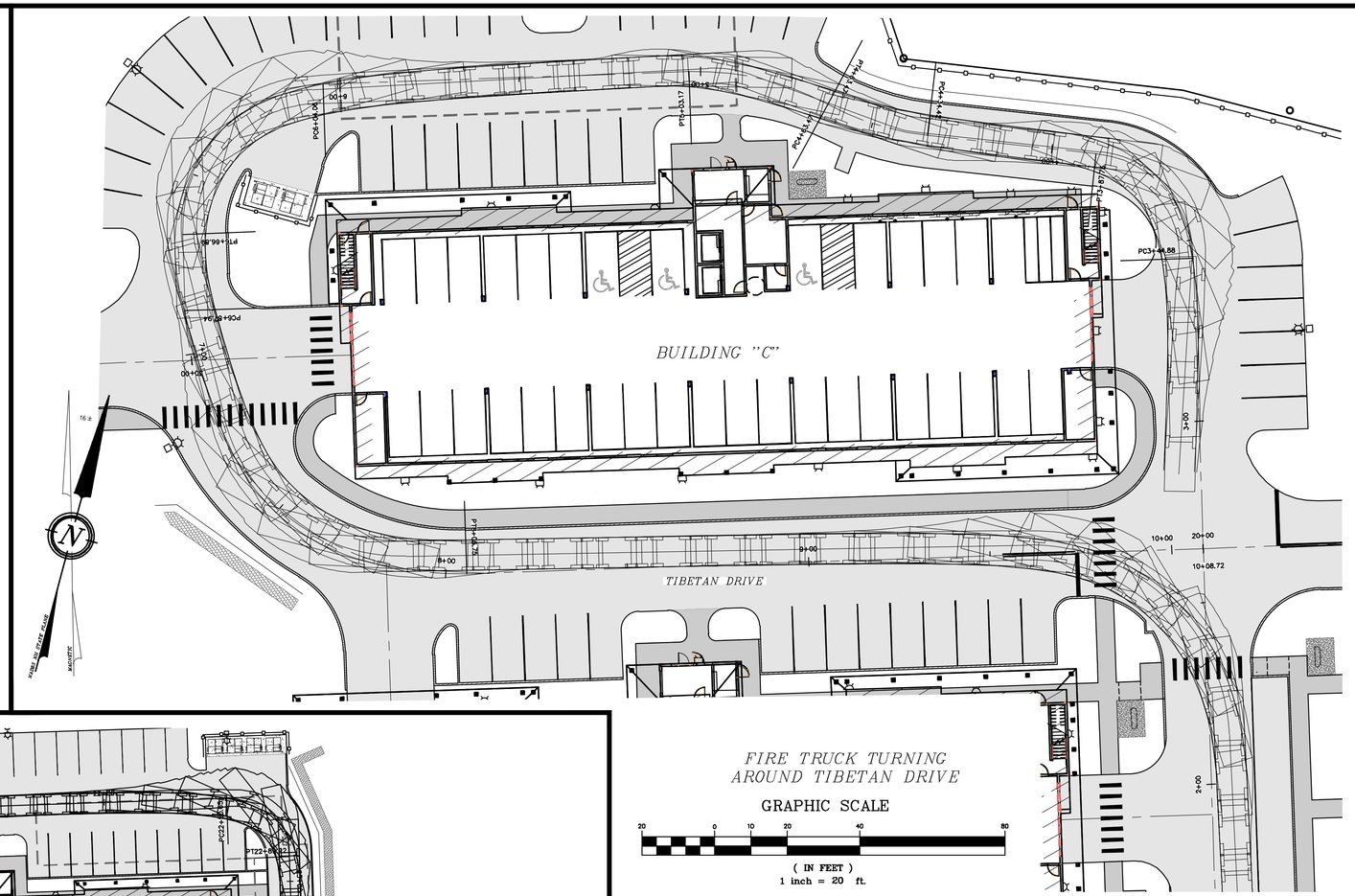


GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

REAR PARKING TRUCK TURNING

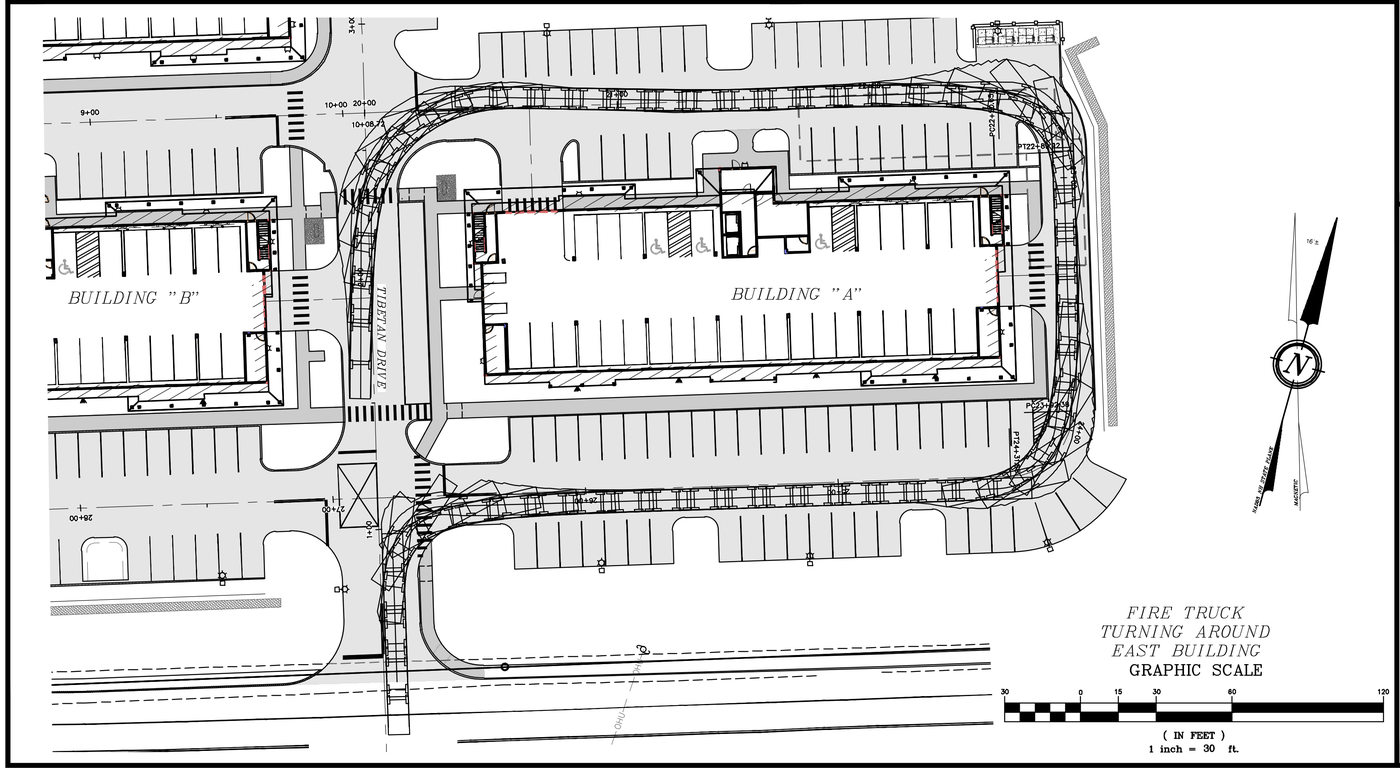


FIRE TRUCK TURNING AROUND TIBETAN DRIVE

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

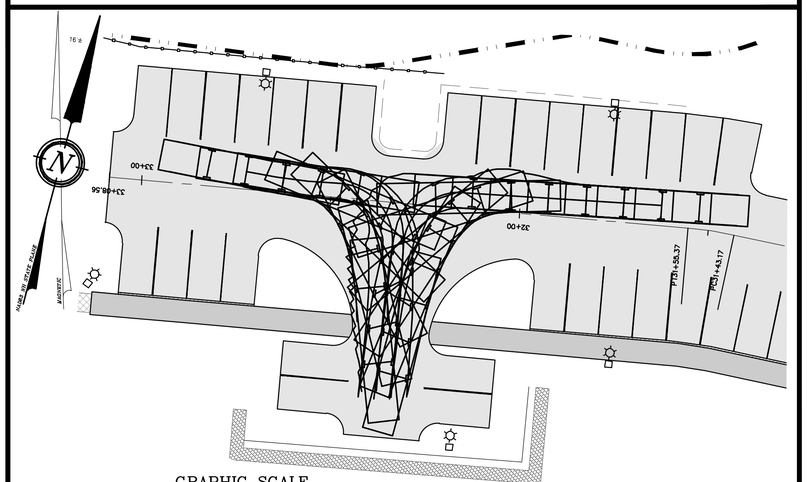


FIRE TRUCK TURNING AROUND EAST BUILDING

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

TRUCK TURNING TURN AROUND PARKING LOT

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

TRUCK TURNING SITE CITY OF DOVER, NH FIRE T1 TEMPLATE
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : AS SHOWN
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

STATE OF NEW HAMPSHIRE
KENNETH A. BERRY
No. 14243
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

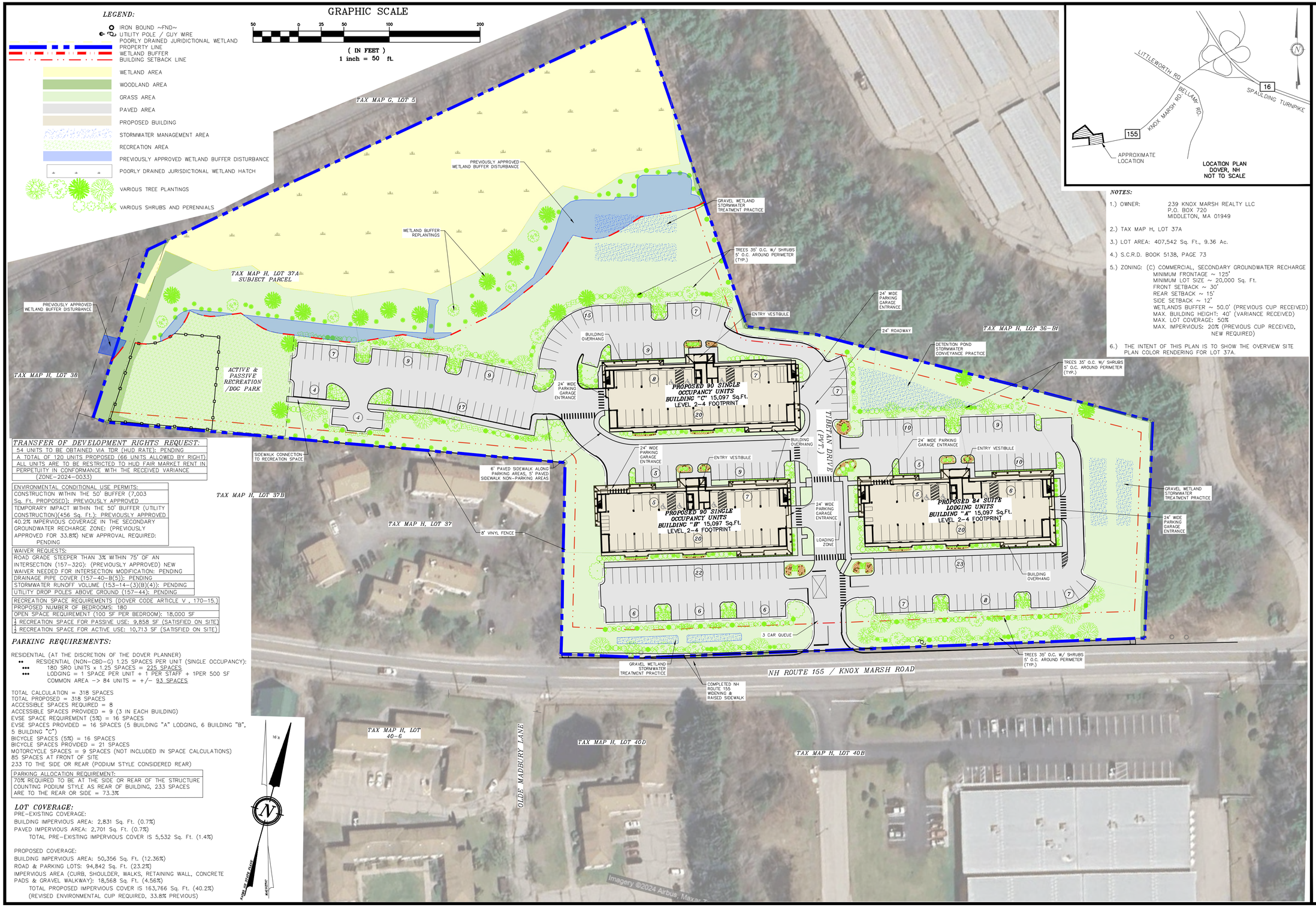
LEGEND:

- IRON BOUND ~FND~
- UTILITY POLE / GUY WIRE
- POORLY DRAINED JURIDICTIONAL WETLAND
- PROPERTY LINE
- WETLAND BUFFER
- BUILDING SETBACK LINE
- WETLAND AREA
- WOODLAND AREA
- GRASS AREA
- PAVED AREA
- PROPOSED BUILDING
- STORMWATER MANAGEMENT AREA
- RECREATION AREA
- PREVIOUSLY APPROVED WETLAND BUFFER DISTURBANCE
- POORLY DRAINED JURISDICTIONAL WETLAND HATCH
- VARIOUS TREE PLANTINGS
- VARIOUS SHRUBS AND PERENNIALS

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.



LOCATION PLAN
DOVER, NH
NOT TO SCALE

NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37A

3.) LOT AREA: 407,542 Sq. Ft., 9.36 Ac.

4.) S.C.R.D. BOOK 5138, PAGE 73

5.) ZONING: (C) COMMERCIAL, SECONDARY GROUNDWATER RECHARGE
MINIMUM FRONTAGE ~ 125'
MINIMUM LOT SIZE ~ 20,000 Sq. Ft.
FRONT SETBACK ~ 30'
REAR SETBACK ~ 15'
SIDE SETBACK ~ 12'
WETLANDS BUFFER ~ 50.0' (PREVIOUS CUP RECEIVED)
MAX. BUILDING HEIGHT: 40' (VARIANCE RECEIVED)
MAX. LOT COVERAGE: 50%
MAX. IMPERVIOUS: 20% (PREVIOUS CUP RECEIVED, NEW REQUIRED)

6.) THE INTENT OF THIS PLAN IS TO SHOW THE OVERVIEW SITE PLAN COLOR RENDERING FOR LOT 37A.

TRANSFER OF DEVELOPMENT RIGHTS REQUEST:

54 UNITS TO BE OBTAINED VIA TDR (HUD RATE): PENDING
A TOTAL OF 120 UNITS PROPOSED (66 UNITS ALLOWED BY RIGHT)
ALL UNITS ARE TO BE RESTRICTED TO HUD FAIR MARKET RENT IN PERPETUITY IN CONFORMANCE WITH THE RECEIVED VARIANCE (ZONE-2024-0033)

ENVIRONMENTAL CONDITIONAL USE PERMITS:
CONSTRUCTION WITHIN THE 50' BUFFER (7,003 Sq. Ft. PROPOSED): PREVIOUSLY APPROVED
TEMPORARY IMPACT WITHIN THE 50' BUFFER (UTILITY CONSTRUCTION)(456 Sq. Ft.): PREVIOUSLY APPROVED
40.2% IMPERVIOUS COVERAGE IN THE SECONDARY GROUNDWATER RECHARGE ZONE: (PREVIOUSLY APPROVED FOR 33.8%) NEW APPROVAL REQUIRED: PENDING

WAIVER REQUESTS:
ROAD GRADE STEEPER THAN 3% WITHIN 75' OF AN INTERSECTION (157-32G): (PREVIOUSLY APPROVED) NEW WAIVER NEEDED FOR INTERSECTION MODIFICATION: PENDING
DRAINAGE PIPE COVER (157-40-B(5)): PENDING
STORMWATER RUNOFF VOLUME (153-14-(3)(B)(4)): PENDING
UTILITY DROP POLES ABOVE GROUND (157-44): PENDING

RECREATION SPACE REQUIREMENTS (DOVER CODE ARTICLE V , 170-15.)
PROPOSED NUMBER OF BEDROOMS: 180
OPEN SPACE REQUIREMENT (100 SF PER BEDROOM): 18,000 SF
½ RECREATION SPACE FOR PASSIVE USE: 9,858 SF (SATISFIED ON SITE)
½ RECREATION SPACE FOR ACTIVE USE: 10,713 SF (SATISFIED ON SITE)

PARKING REQUIREMENTS:

RESIDENTIAL (AT THE DISCRETION OF THE DOVER PLANNER)
•• RESIDENTIAL (NON-CBD-G) 1.25 SPACES PER UNIT (SINGLE OCCUPANCY):
••• 180 SRO UNITS x 1.25 SPACES = 225 SPACES
••• LODGING = 1 SPACE PER UNIT + 1 PER STAFF + 1PER 500 SF COMMON AREA -> 84 UNITS = +/- 93 SPACES

TOTAL CALCULATION = 318 SPACES
TOTAL PROPOSED = 318 SPACES
ACCESSIBLE SPACES REQUIRED = 8
ACCESSIBLE SPACES PROVIDED = 9 (3 IN EACH BUILDING)
EVSE SPACE REQUIREMENT (5%) = 16 SPACES
EVSE SPACES PROVIDED = 16 SPACES (5 BUILDING "A" LODGING, 6 BUILDING "B", 5 BUILDING "C")
BICYCLE SPACES (5%) = 16 SPACES
BICYCLE SPACES PROVIDED = 21 SPACES
MOTORCYCLE SPACES = 9 SPACES (NOT INCLUDED IN SPACE CALCULATIONS)
85 SPACES AT FRONT OF SITE
233 TO THE SIDE OR REAR (PODIUM STYLE CONSIDERED REAR)

PARKING ALLOCATION REQUIREMENT:
70% REQUIRED TO BE AT THE SIDE OR REAR OF THE STRUCTURE COUNTING PODIUM STYLE AS REAR OF BUILDING, 233 SPACES ARE TO THE REAR OR SIDE = 73.3%

LOT COVERAGE:

PRE-EXISTING COVERAGE:
BUILDING IMPERVIOUS AREA: 2,831 Sq. Ft. (0.7%)
PAVED IMPERVIOUS AREA: 2,701 Sq. Ft. (0.7%)
TOTAL PRE-EXISTING IMPERVIOUS COVER IS 5,532 Sq. Ft. (1.4%)

PROPOSED COVERAGE:
BUILDING IMPERVIOUS AREA: 50,356 Sq. Ft. (12.36%)
ROAD & PARKING LOTS: 94,842 Sq. Ft. (23.2%)
IMPERVIOUS AREA (CURB, SHOULDER, WALKS, RETAINING WALL, CONCRETE PADS & GRAVEL WALKWAY): 18,568 Sq. Ft. (4.56%)
TOTAL PROPOSED IMPERVIOUS COVER IS 163,766 Sq. Ft. (40.2%)
(REVISED ENVIRONMENTAL CUP REQUIRED, 33.8% PREVIOUS)

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

OVERVIEW MIXED-USE TDR SITE PLAN COLOR RENDERING
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 50 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

NOT FOR CONSTRUCTION

PREVIOUSLY APPROVED WETLAND BUFFER IMPACT

EDGE OF POORLY DRAINAGE JURISDICTIONAL WETLANDS

WETLAND BUFFER REPLANTINGS

GRAVEL WETLAND STORMWATER TREATMENT PRACTICE

TREES 35' O.C. W/ SHRUBS 5' O.C. AROUND PERIMETER (TYP.)

24' AISLE

BUILDING SETBACK LINE (TYP.)

24' WIDE PARKING GARAGE ENTRANCE

DETENTION POND STORMWATER CONVEYANCE PRACTICE

ENTRY VESTIBULE

TREES 35' O.C. W/ SHRUBS 5' O.C. AROUND PERIMETER (TYP.)

9'X18' PARKING SPACE (TYP.)

24' WIDE PARKING GARAGE ENTRANCE

VARIOUS SHRUBS AND PERENNIALS (TYP.)

PROPOSED 90 SINGLE OCCUPANCY UNITS
BUILDING "C" 15,097 Sq.Ft.
LEVEL 2-4 FOOTPRINT
LEVEL 1 PARKING

24' ROADWAY

TAX MAP H, LOT 36-B1

TAX MAP H, LOT 37A
SUBJECT PARCEL

TREES 35' O.C. W/ SHRUBS 5' O.C. AROUND PERIMETER (TYP.)

GRAVEL WETLAND STORMWATER TREATMENT PRACTICE

LANDSCAPED AREA (TYP.)

24' AISLE

SIDEWALK CONNECTION TO RECREATION SPACE

VARIOUS SHRUBS AND PERENNIALS (TYP.)

STORMWATER AREA (TYP.)

6' PAVED SIDEWALK ALONG PARKING AREAS, 5' PAVED SIDEWALK NON-PARKING AREAS

24' WIDE PARKING GARAGE ENTRANCE

ENTRY VESTIBULE

24' WIDE PARKING GARAGE ENTRANCE

24' AISLE

ENTRY VESTIBULE

8' VINYL FENCE

LOADING ZONE

24' WIDE PARKING GARAGE ENTRANCE

PROPOSED 84 SUITE LODGING UNITS
BUILDING "A" 15,097 Sq.Ft.
LEVEL 2-4 FOOTPRINT
LEVEL 1 PARKING

5' SIDEWALK UNDER UPPER LEVEL CANTILEVER OVERHANG (REAR BUILDING TYP.)

VARIOUS SHRUBS AND PERENNIALS (TYP.)

EDGE OF LEVEL 1 PARKING STRUCTURE (TYP.)

VARIOUS SHRUBS AND PERENNIALS (TYP.)

TIBETAN DRIVE (PVT.)

24' WIDE PARKING GARAGE ENTRANCE

18' AISLE

TAX MAP H, LOT 37

LEVEL 2-4 CANTILEVER OVERHANG (TYP.)

PORCH OVERHANG (TYP.)

6' SIDEWALK (FRONT BUILDING TYP.)

24' AISLE

TREES 35' O.C. W/ SHRUBS 5' O.C. AROUND PERIMETER (TYP.)

24' AISLE

3 CAR QUEUE

GRAVEL WETLAND STORMWATER TREATMENT PRACTICE

TREES 35' O.C. W/ SHRUBS 5' O.C. AROUND PERIMETER (TYP.)

NH ROUTE 155 / KNOX MARSH ROAD

COMPLETED NH ROUTE 155 WIDENING & RAISED SIDEWALK

TREES 35' O.C. W/ SHRUBS 5' O.C. AROUND PERIMETER (TYP.)

TAX MAP H, LOT 40B

LEGEND:

- IRON BOUND ~FND~
- UTILITY POLE / GUY WIRE
- POORLY DRAINED JURIDICTIONAL WETLAND
- PROPERTY LINE
- WETLAND BUFFER
- BUILDING SETBACK LINE
- WETLAND AREA
- WOODLAND AREA
- GRASS AREA
- PAVED AREA
- PROPOSED BUILDING
- STORMWATER MANAGEMENT AREA
- RECREATION AREA
- PREVIOUSLY APPROVED WETLAND BUFFER DISTURBANCE
- POORLY DRAINED JURISDICTIONAL WETLAND HATCH
- VARIOUS TREE PLANTINGS
- VARIOUS SHRUBS AND PERENNIALS

NOTES:

1.) OWNER: 239 KNOX MARSH REALTY LLC
P.O. BOX 720
MIDDLETON, MA 01949

2.) TAX MAP H, LOT 37A

3.) LOT AREA: 407,542 Sq. Ft., 9.36 Ac.

4.) S.C.R.D. BOOK 5138, PAGE 73

5.) ZONING: (C) COMMERCIAL, SECONDARY GROUNDWATER RECHARGE
MINIMUM FRONTAGE ~ 125'
MINIMUM LOT SIZE ~ 20,000 Sq. Ft.
FRONT SETBACK ~ 30'
REAR SETBACK ~ 15'
SIDE SETBACK ~ 12'
WETLANDS BUFFER ~ 50.0' (PREVIOUS CUP RECEIVED)
MAX. BUILDING HEIGHT: 40' (VARIANCE RECEIVED)
MAX. LOT COVERAGE: 50%
MAX. IMPERVIOUS: 20% (PREVIOUS CUP RECEIVED, NEW REQUIRED)

6.) THE INTENT OF THIS PLAN IS TO SHOW THE DETAIL SITE PLAN COLOR RENDERING FOR LOT 37A.

7.) SEE OVERVIEW SHEET FOR OTHER NOTES AND CALCULATIONS.

PLANNING FILE #SITE-XXXX-XXXX

REVISION	DATE	DESCRIPTION

MIXED-USE TDR SITE PLAN COLOR RENDERING
LAND OF
239 KNOX MARSH REALTY, LLC
239 KNOX MARSH ROAD
DOVER, N.H.
TAX MAP H, LOT 37A

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825 (603)332-2863

SCALE : 1 IN. EQUALS 30 FT.
DATE : NOVEMBER 26, 2024
FILE NO. : DB 2024 - 034

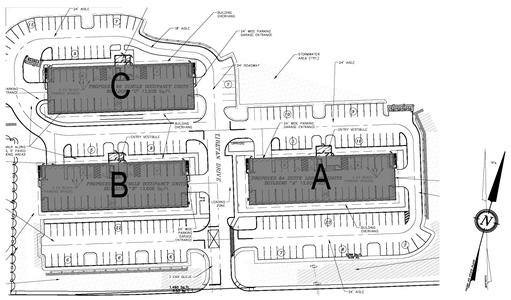
NOT FOR CONSTRUCTION

EXTERIOR FINISH LEGEND

6" VINYL SIDING - GRAY	6" VINYL SIDING - LIGHT BLUE	6" VINYL SIDING - BROWN	6" VINYL SIDING - BROWN
6" VINYL SIDING - LIGHT GRAY	6" VINYL SIDING - TAN	6" VINYL SIDING - CREAM	TRIM - WHITE



2 BUILDING A - WEST
1/8" = 1'-0"





1 BUILDING A - EAST
1/8" = 1'-0"

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No.	Description	Date

239 KNOX MARSH RD.
DOVER, NH

BUILDING A - ELEVATIONS

Project number	2430
Date	12/09/24
Drawn by	Author
Checked by	Checker

A201

Scale As indicated

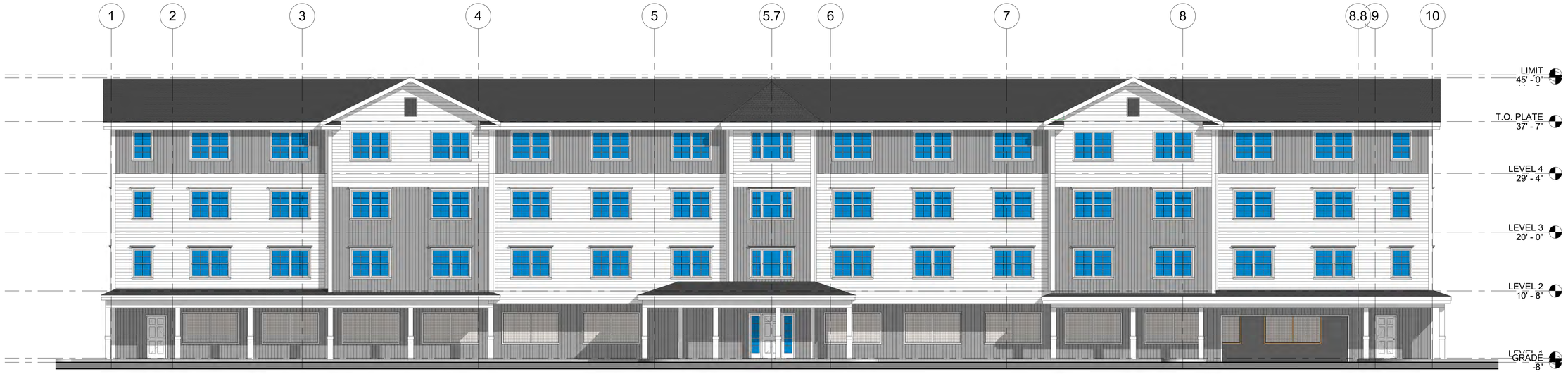
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EXTERIOR FINISH LEGEND

6" VINYL SIDING - GRAY	6" VINYL SIDING - LIGHT BLUE	6" VINYL SIDING - BROWN	6" VINYL SIDING - BROWN
6" VINYL SIDING - LIGHT GRAY	6" VINYL SIDING - TAN	6" VINYL SIDING - CREAM	TRIM - WHITE



2 BUILDING A - SOUTH
1/8" = 1'-0"



1 BUILDING A - NORTH
1/8" = 1'-0"

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BUILDING A - ELEVATIONS

Project number	2430
Date	12/09/24
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A202

Scale	1/8" = 1'-0"

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EXTERIOR FINISH LEGEND

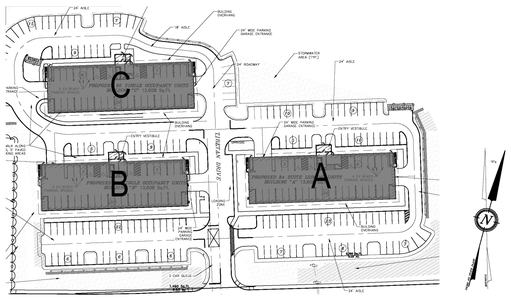
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6" VINYL SIDING - LIGHT GRAY	6" VINYL SIDING - TAN	6" VINYL SIDING - CREAM	TRIM - WHITE



2 BUILDING B - WEST
1/8" = 1'-0"



1 BUILDING B - EAST
1/8" = 1'-0"



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BUILDING B - ELEVATIONS

Project number	2430
Date	12/09/24
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A211

Scale As indicated

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EXTERIOR FINISH LEGEND

6" VINYL SIDING - GRAY	6" VINYL SIDING - LIGHT BLUE	6" VINYL SIDING - BROWN	6" VINYL SIDING - BROWN
6" VINYL SIDING - LIGHT GRAY	6" VINYL SIDING - TAN	6" VINYL SIDING - CREAM	TRIM - WHITE



2 BUILDING B - SOUTH
1/8" = 1'-0"



1 BUILDING B - NORTH
1/8" = 1'-0"

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No.	Description	Date

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DOVER, NH

BUILDING B - ELEVATIONS

Project number	2430
Date	12/09/24
Drawn by	Author
Checked by	Checker

A212

Scale	1/8" = 1'-0"

12/7/2024 3:29:34 PM

EXTERIOR FINISH LEGEND

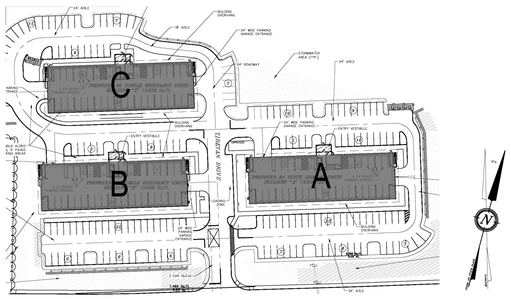
6" VINYL SIDING - GRAY	6" VINYL SIDING - LIGHT BLUE	6" VINYL SIDING - BROWN	6" VINYL SIDING - BROWN
6" VINYL SIDING - LIGHT GRAY	6" VINYL SIDING - TAN	6" VINYL SIDING - CREAM	TRIM - WHITE



2 BUILDING C - WEST
1/8" = 1'-0"



1 BUILDING C - EAST
1/8" = 1'-0"



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No.	Description	Date

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BUILDING C - ELEVATIONS

Project number	2430
Date	12/09/24
Drawn by	CS
Checked by	NI

A221

Scale As indicated

12/7/2024 3:29:38 PM

EXTERIOR FINISH LEGEND

6" VINYL SIDING - GRAY	6" VINYL SIDING - LIGHT BLUE	6" VINYL SIDING - BROWN	6" VINYL SIDING - BROWN
6" VINYL SIDING - LIGHT GRAY	6" VINYL SIDING - TAN	6" VINYL SIDING - CREAM	TRIM - WHITE



2 BUILDING C - SOUTH
1/8" = 1'-0"



1 BUILDING C - NORTH
1/8" = 1'-0"

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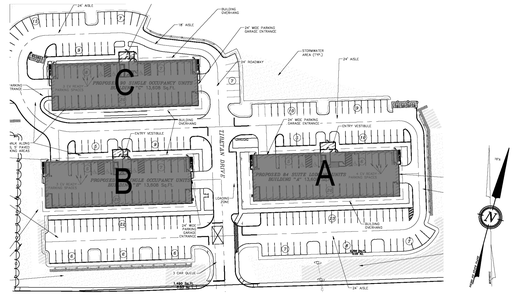
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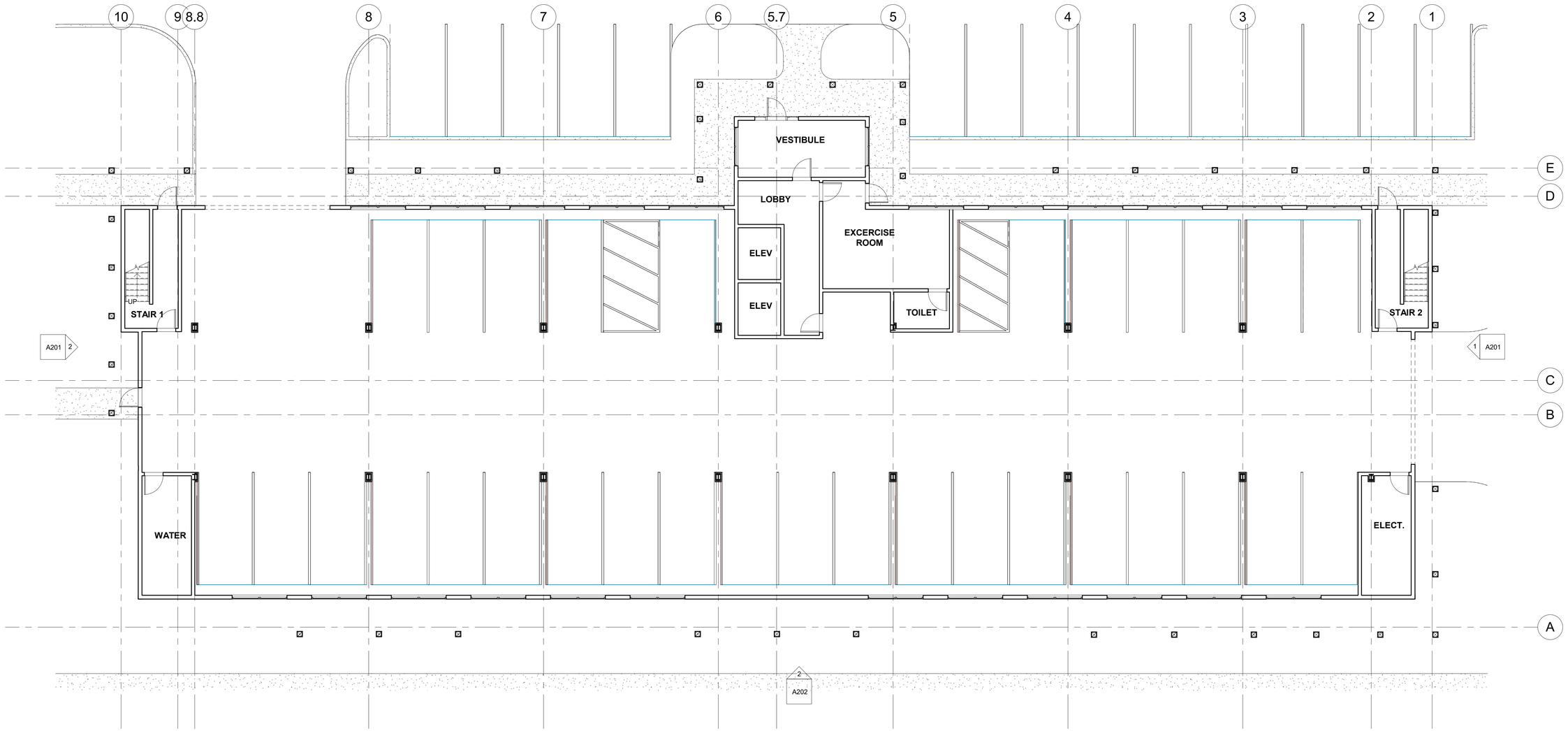
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Date	12/09/24
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Checked by	Checker

A222

Scale 1/8" = 1'-0"

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1 BUILDING A - LEVEL 1
1/8" = 1'-0"

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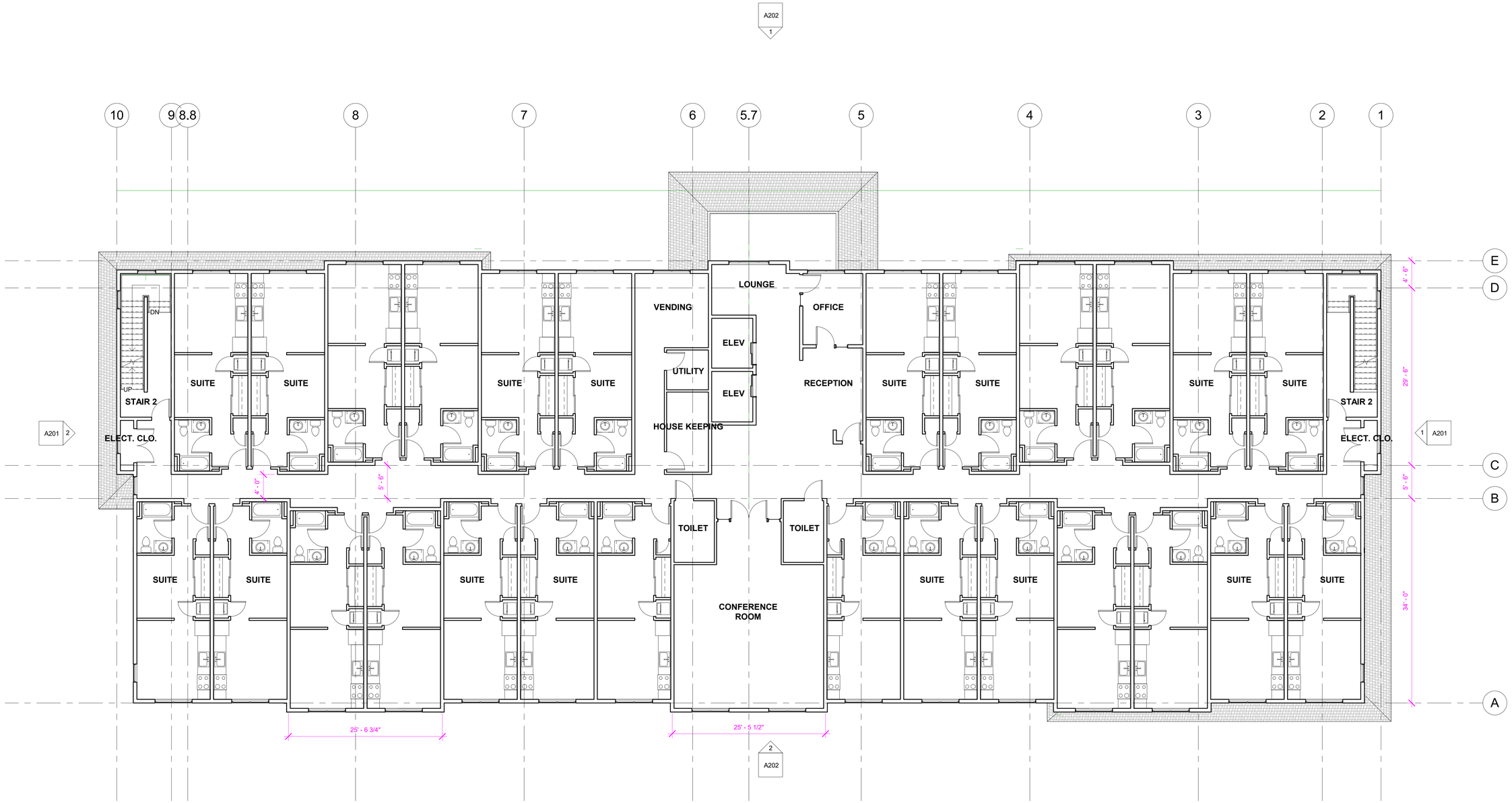
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BUILDING A - LEVEL 1

Project number	2430
Date	12/09/24
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Checked by	NI
	A101
Scale	As indicated

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1 BUILDING A - LEVEL 2
1/8" = 1'-0"

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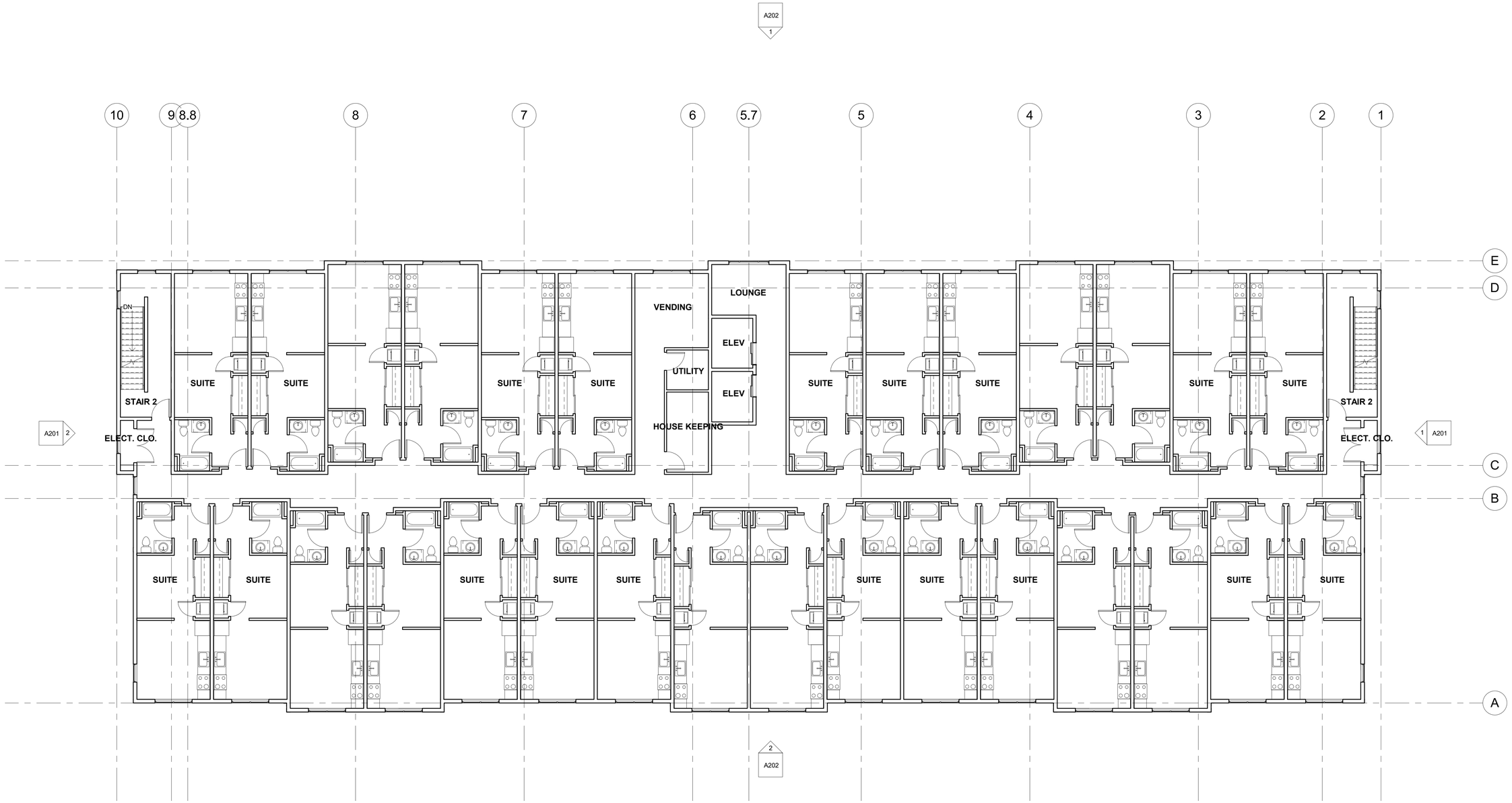
BUILDING A - LEVEL 2

Project number	2430
Date	12/09/24
Drawn by	Author
Checked by	Checker

A102

Scale 1/8" = 1'-0"

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1 BUILDING A - LEVEL 3
1/8" = 1'-0"

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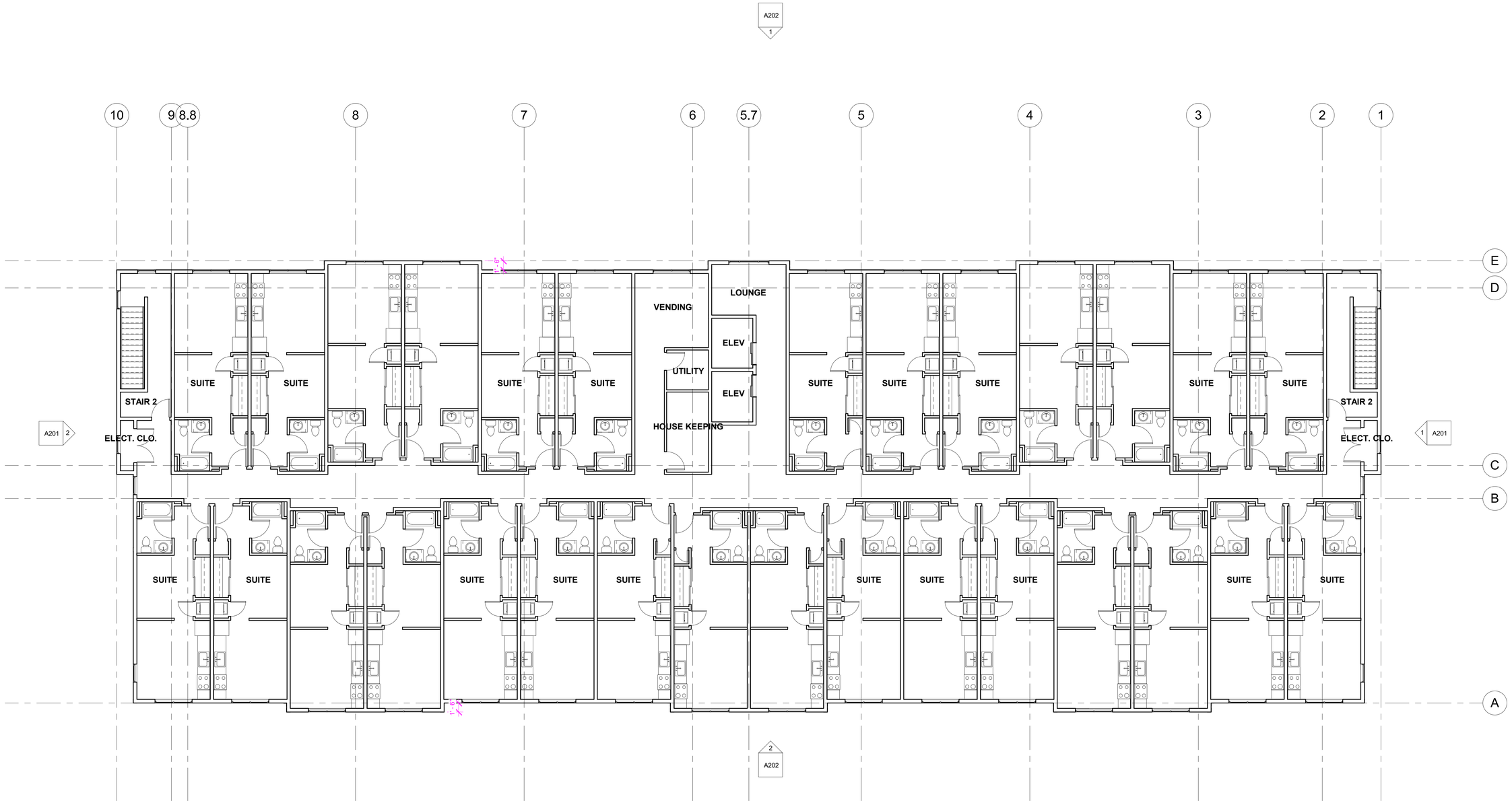
BUILDING A - LEVEL 3

Project number	2430
Date	12/09/24
Drawn by	Author
Checked by	Checker

A103

Scale 1/8" = 1'-0"

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1 BUILDING A - LEVEL 4
1/8" = 1'-0"

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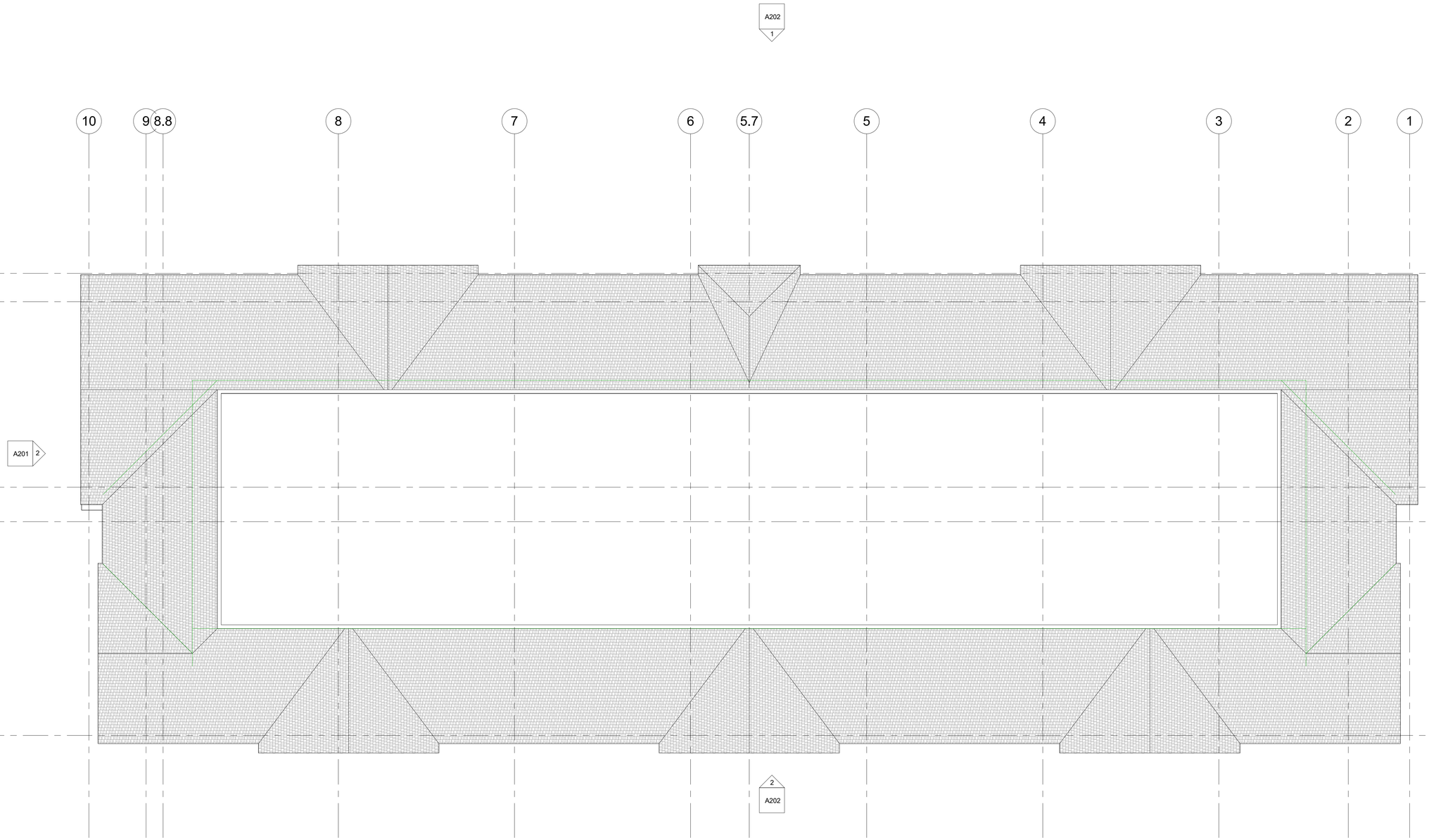
BUILDING A - LEVEL 4

Project number	2430
Date	12/09/24
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Checked by	Checker

A104

Scale 1/8" = 1'-0"

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1 Roof Plan
1/8" = 1'-0"

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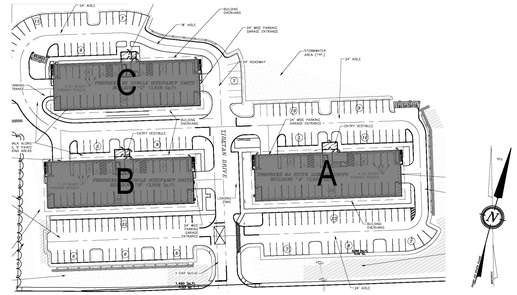
ROOF PLAN

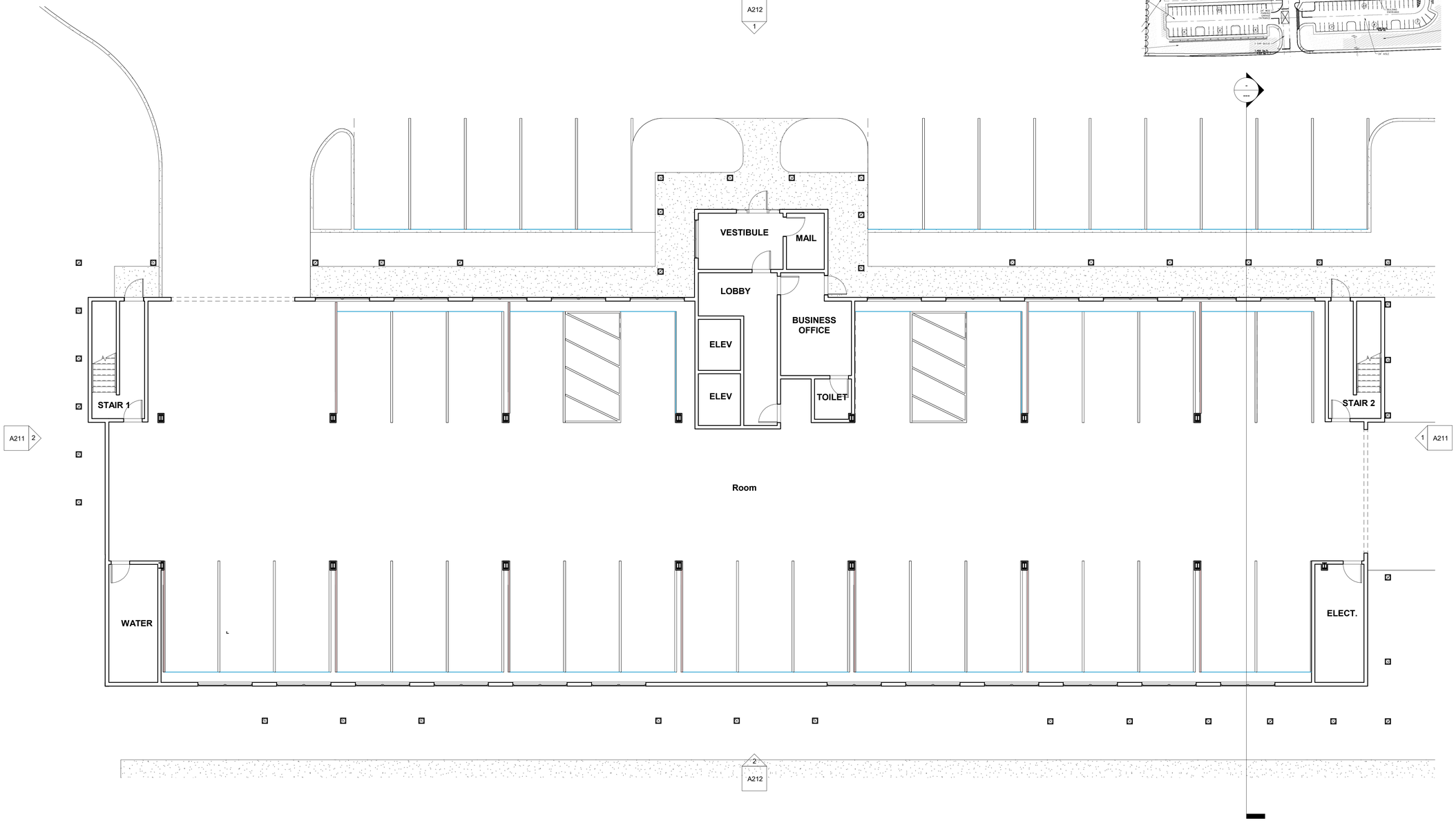
Project number	2430
Date	12/09/24
Drawn by	Author
Checked by	Checker

A105

Scale 1/8" = 1'-0"

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1 BUILDING B - LEVEL 1
1/8" = 1'-0"

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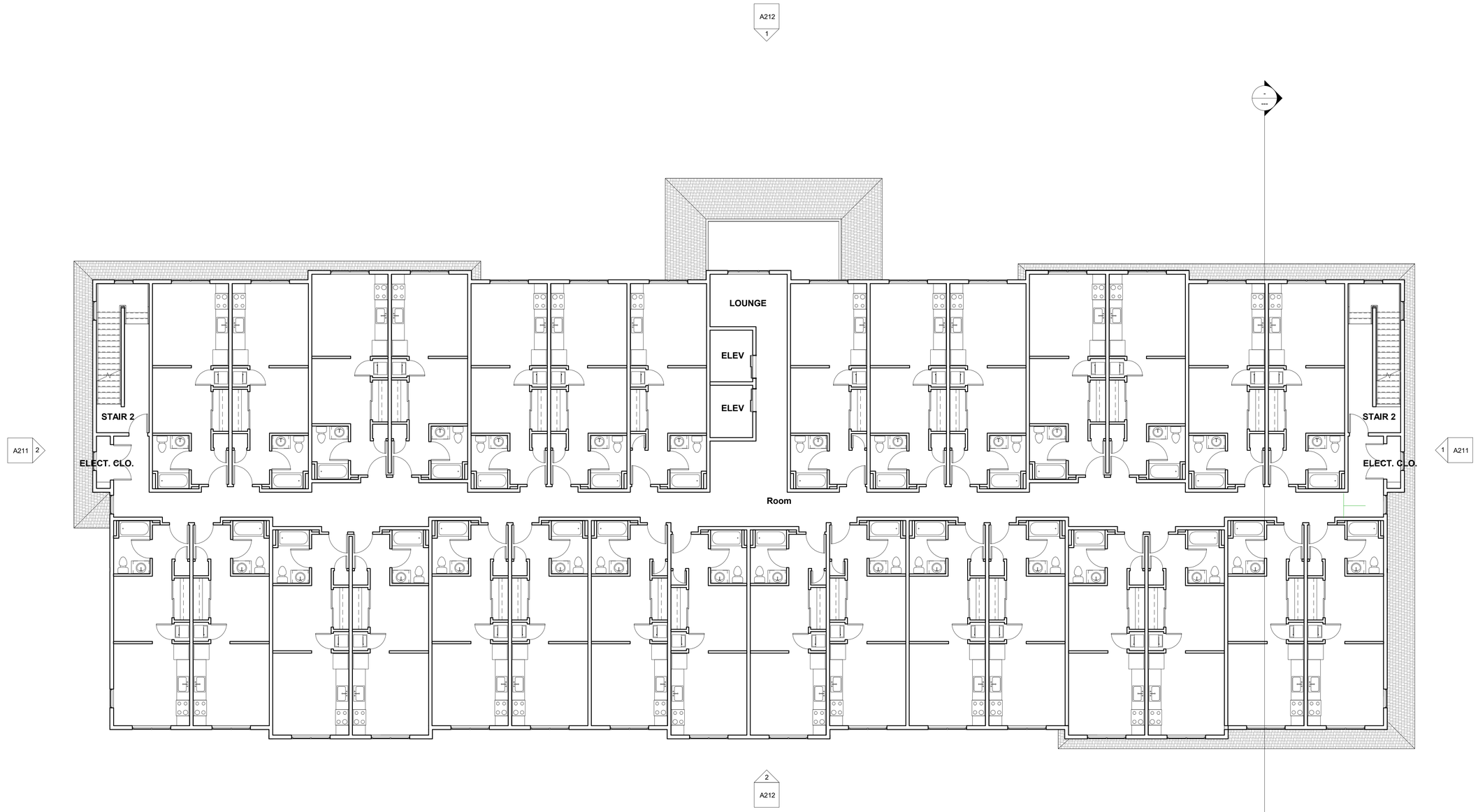
No.	Description	Date

239 KNOX MARSH RD.
DOVER, NH

BUILDING B - LEVEL 1

Project number	2430
Date	12/09/24
Drawn by	Author
Checked by	Checker
	A111
Scale	As indicated

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1 BUILDING B - LEVEL 2
1/8" = 1'-0"

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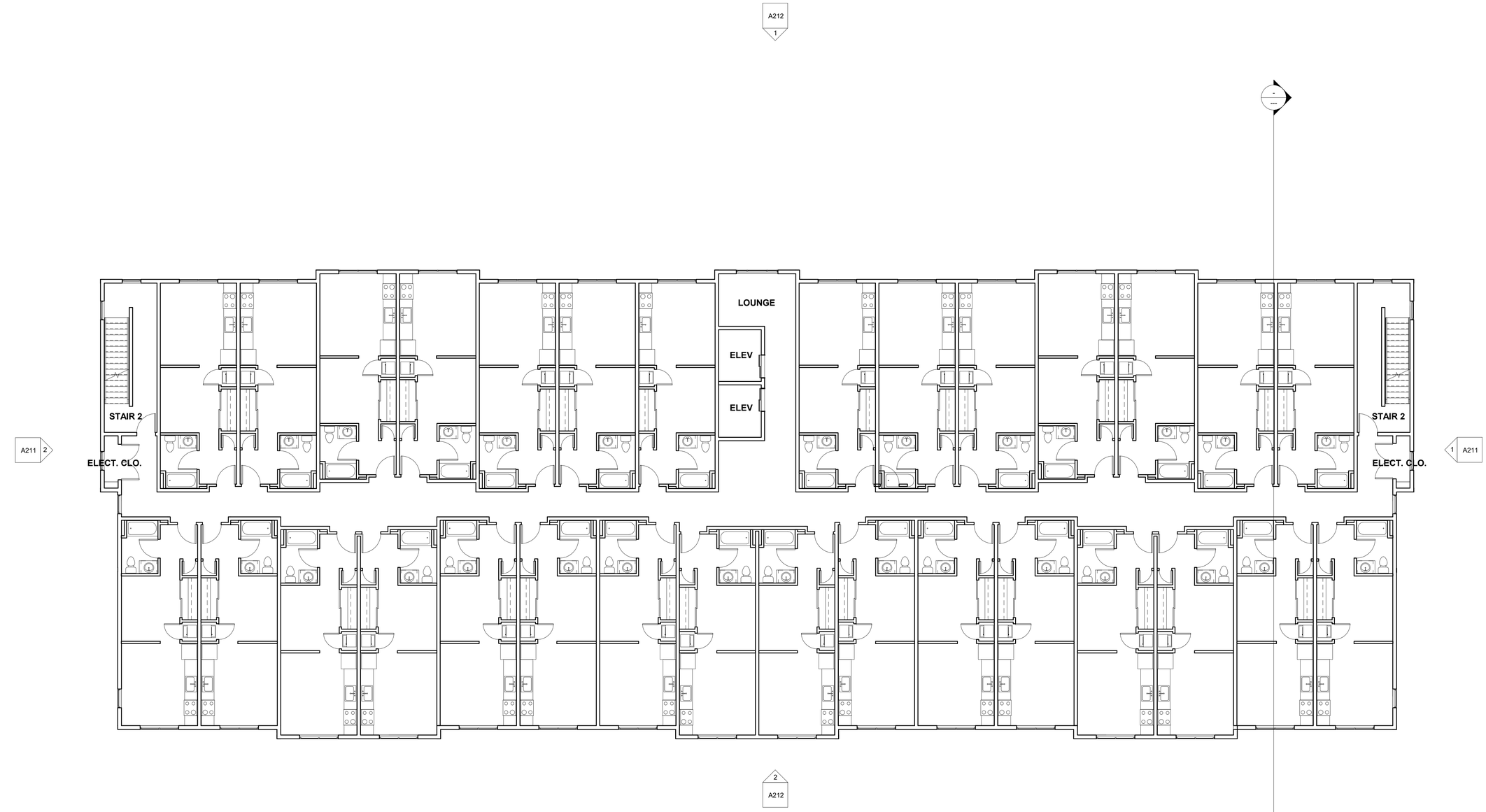
BUILDING B - LEVEL 2

Project number	2430
Date	12/09/24
Drawn by	Author
Checked by	Checker

A112

Scale 1/8" = 1'-0"

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1 BUILDING B - LEVEL 3
1/8" = 1'-0"

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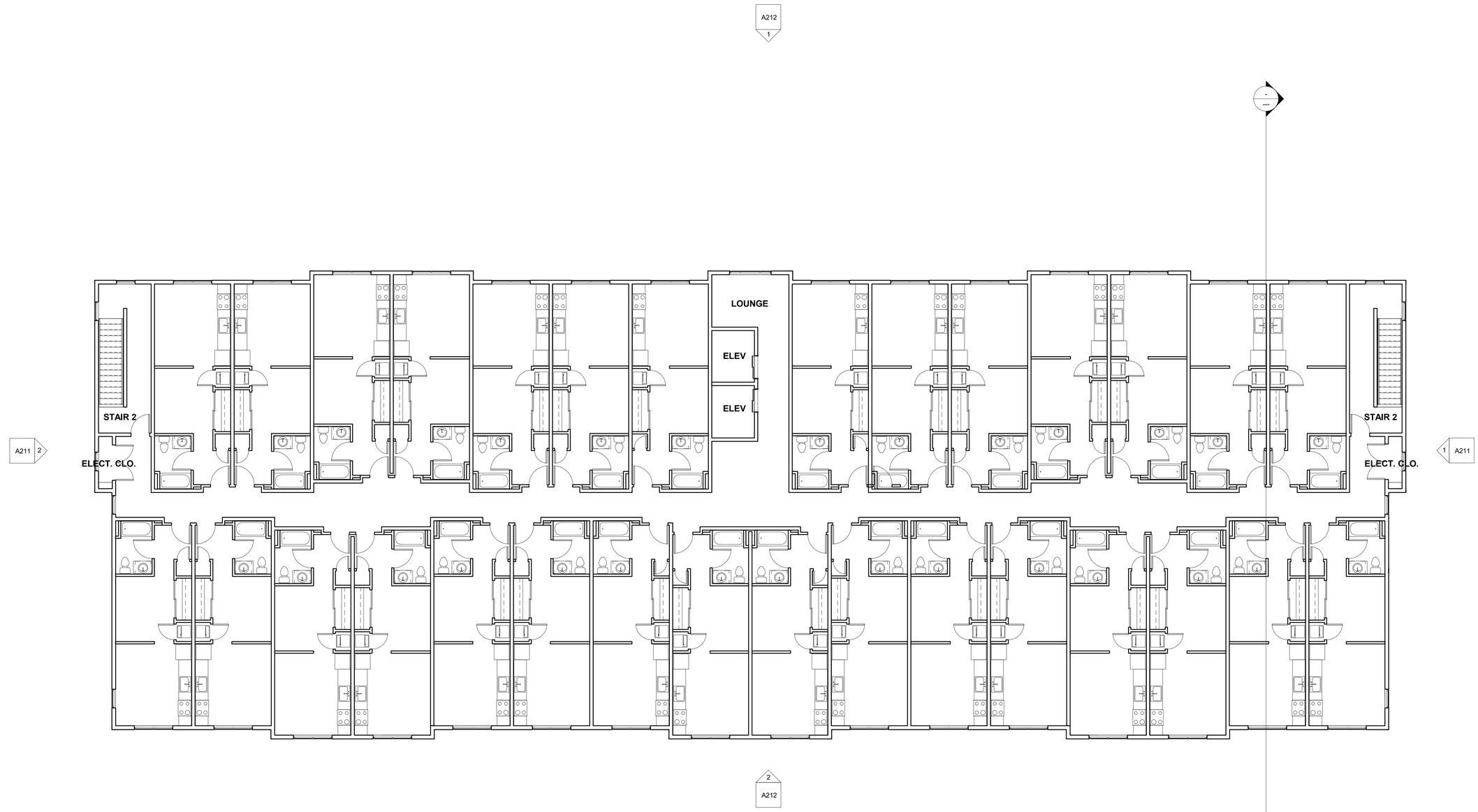
BUILDING B - LEVEL 3

Project number	2430
Date	12/09/24
Drawn by	Author
Checked by	Checker

A113

Scale 1/8" = 1'-0"

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1 BUILDING B - LEVEL 4
1/8" = 1'-0"

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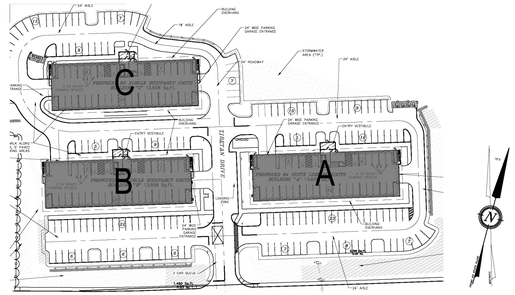
BUILDING B - LEVEL 4

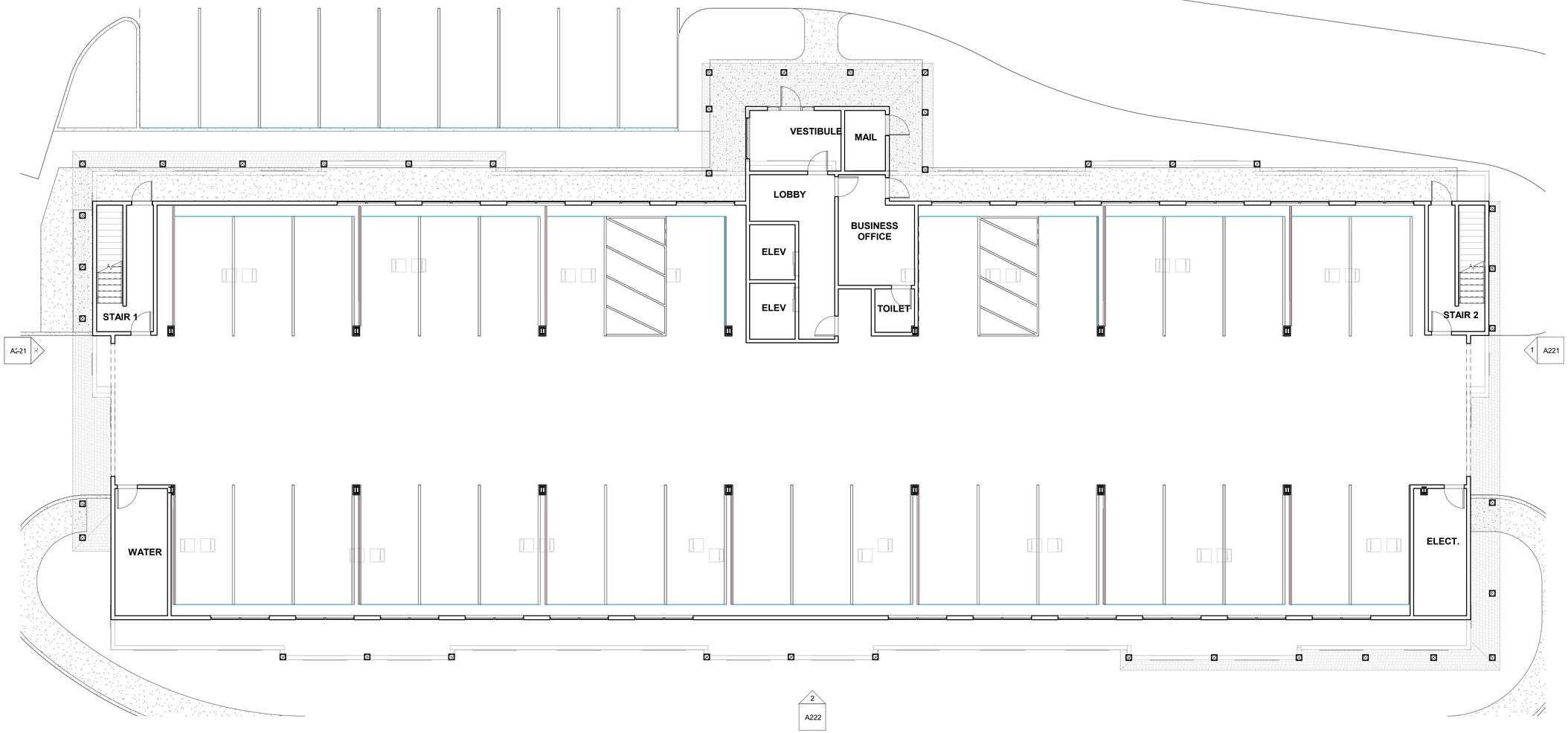
Project number	2430
Date	12/09/24
Drawn by	Author
Checked by	Checker

A114

Scale 1/8" = 1'-0"

12/7/2024 3:29:05 PM





1 BUILDING C - LEVEL 1
1/8" = 1'-0"

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BUILDING C - LEVEL 1

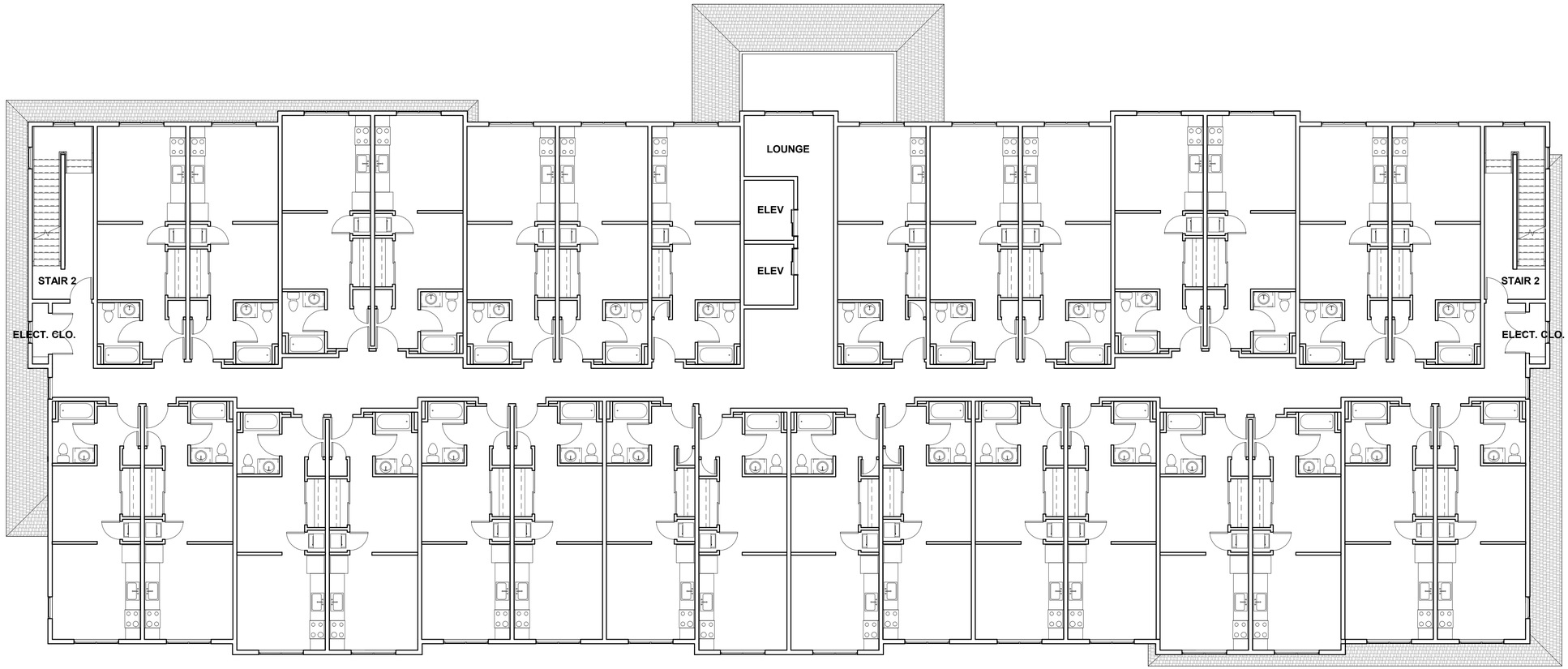
Project number	2430
Date	12/09/24
Drawn by	Author
Checked by	Checker

A121

Scale As indicated

12/7/2024 3:29:07 PM

A222
1



2
A222

1 BUILDING C - LEVEL 2
1/8" = 1'-0"

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BUILDING C - LEVEL 2

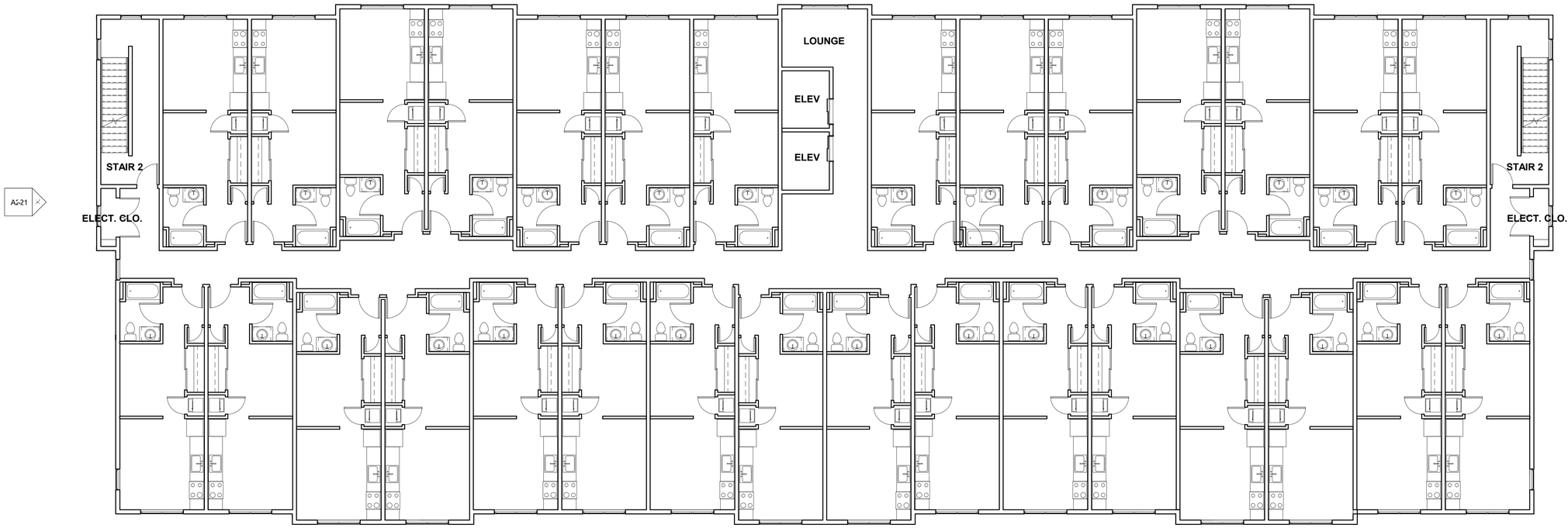
Project number	2430
Date	12/09/24
Drawn by	Author
Checked by	Checker

A122

Scale 1/8" = 1'-0"

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A222
1



2
A222

1 BUILDING C - LEVEL 3
1/8" = 1'-0"

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BUILDING C - LEVEL 3

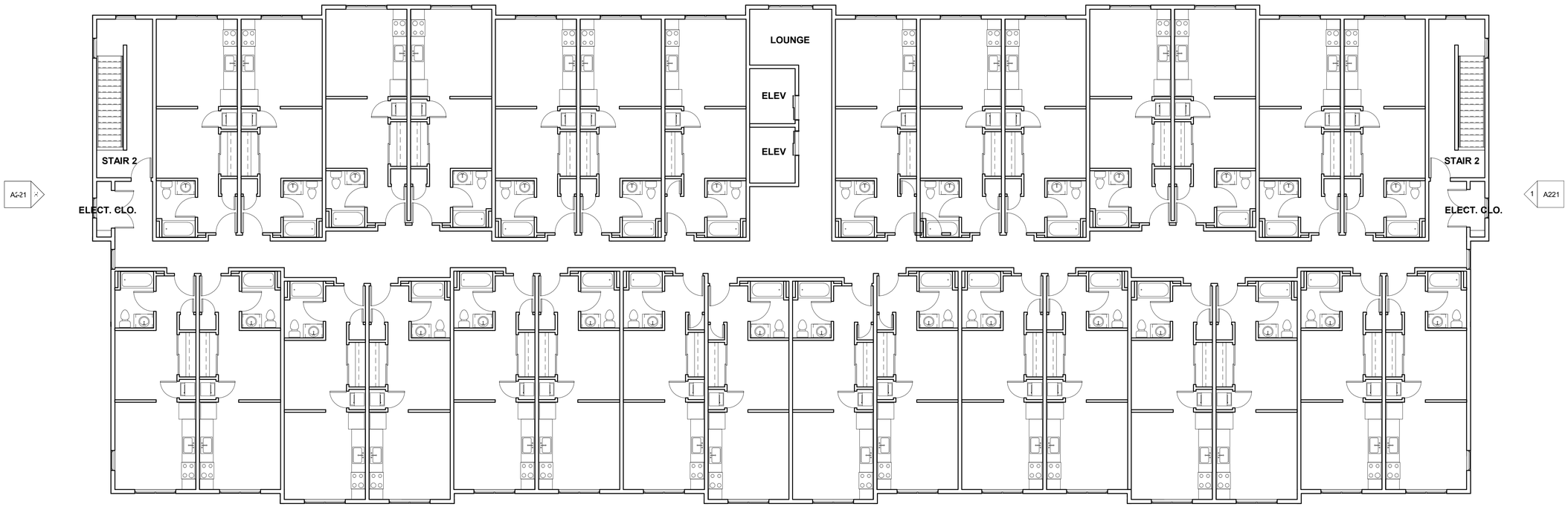
Project number	2430
Date	12/09/24
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A123

Scale 1/8" = 1'-0"

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A222
1



2
A222

1 BUILDING C - LEVEL 4
1/8" = 1'-0"

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BUILDING C - LEVEL 4

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