CITY OF DOVER

PLANNING TECHNICAL REVIEW COMMITTEE –AGENDA

Meeting Type: Regular Meeting
Meeting Location: Council Conference Room – City Hall, Dover NH
Meeting Date: **Thursday, October 20, 2022**
Meeting Time: **10:30 AM**

1. 10:30 AM – 11:15 AM: Site Review for Summit Land Development, (Owner: 7 West, LLC), Assessor's Map H, Lot 11, zoned Gateway, located at Durham Road, 250' north of Daley Drive. (Proposal is for construction of a 14,160 s.f. 3 story medical office building.) (Three CUP's will also appear before the Planning Board.) *[This item was previously heard on June 2, 2022]* (P22-39)

ALTUS ENGINEERING

Civil
Site Planning
Environmental
Engineering

133 Court Street
Portsmouth, NH
03801-4413

October 5, 2022

Donna Benton, Director of Planning and Community Development
City of Dover Planning Department
288 Central Ave
Dover, New Hampshire 03820

Re: Application for Site Plan Review and Conditional Use Permits
Durham Road, Dover
Tax Map H, Lot 11
Dover Project #P22-38
P4952

Dear Ms. Benton:

On behalf of Summit Land Development, Altus Engineering, Inc. (Altus) is pleased to re-submit the attached Application material for Site Plan Review to construct the proposed medical office building on Durham Road, Tax map H, Lot 11. The applicant met with the Technical Review Committee (TRC) on May 26, 2022 and received comments. The initial application included a new roadway connection at the Back River Road intersection with a future extension to the Dover Elementary and Middle Schools to the northwest. Due to delays associated with the roadway (including traffic analysis, coordination with the schools, intersection design, and permitting) the roadway and intersection improvements have been removed from this application and will be included in Phase 2 of the site development. It is our understanding that a Development Agreement with the owner is being developed to address the future road and site development. The current plan will provide a fifty-foot Right of to the City of Dover for the future roadway. Therefore, many of comments provided in the TRC minutes related to the intersection improvements at Back River Road are not applicable to this application and will be addressed in Phase 2.

Below is a response to TRC minutes:

Permits Required:
CUP for Section 170 A & B has been revised.
CUP for Section 153-14.D has been withdrawn.
CUP for Section 170-27.1 has been revised. Wetland impacts are reduced from 18,750 sf to 950 sf.
NHDES Sewer Discharge, AOT, & Shorelands permits will be required.
USEPE General Construction Permit (NOI/SWPPP) will be required

Waivers Requested:
The Waiver from Section 153-14.A(3)(b) has been withdrawn. All flows are now being reduced.

Planning Comments:
- Owner will pay all impact and investment fees when applicable.
- The narrative has been revised to reflect the revised project scope.
- The proposed medical building use is not listed in the parking calculation table use categories. Per Section 153-14.D.1.B, the allowable parking rate is therefore determined by the Director of Planning and Community Development. The Institute for Transportation Engineers (ITE) Parking Generation Manual indicates a parking need of 4.3 and 5.3 stalls per 1,000 square feet

for medical offices and clinics. The average of the two uses of 4.8 stalls per 1,000 sf GLA is the allowed parking for this project. 205 parking spaces are allowed and no CUP is required.

- The Traffic Assessment has been updated based on the revised project. A more detailed traffic analysis may be conducted for the Phase 2 development, which will include the loop road and connection to the Back River Road / Durham Road intersection.
- The Wetlands CUP has been revised. The new impact area is 950 square feet.
- The Gateway District CUP has been revised. An architectural review of the Gateway regulations is provided by Market Square Architects.
- It is understood that the owner and City are working on a Development Agreement for this project. The owner will deed a fifty (50) foot wide right of way as shown on the plans to the City of Dover for the future roadway as part of this project.
- Plans have been updated to add snow storage area, benches, EV station, project numbers and consecutive page numbers (ie; Sheet 3 of 25)
- The landscape plan has been revised to include shrubs along Durham Road to screen headlights, provide additional screening at the transformer and generator, and indicate 3" min caliper trees.
- The owners signature blocks have been added to the plans (cover sheet and site plan).
- The Wetlands and Conservation Zoning Districts have been added to the zoning table.

Police Comments:

- The owner and City are working on a Development Agreement to address the future roadway and traffic analysis that will be required. It is understood that this project (Phase 1) will deed the Right of Way for the roadway to the City of Dover, but the roadway will not be constructed until Phase 2, after the required coordination (School, Police, Fire, & City), traffic analysis, design, and permitting has been completed.

Engineering Comments:

- Details have been updated with new City standards.
- A Site Distance Plan has been added to the plan set (Sheet C-6) per Section 157-50.C.
- The Traffic Engineer will coordinate with Sebago for the Traffic Study and intersection analysis for the Phase 2 development which will construct the loop road and intersection Back River Road and Durham Road improvements.
- The Wetlands mapping notes have been clarified. BAG Land Consultants (Bruce Gilday) completed the soils survey but had John St. John, Cert Wetland Scientist #221 assist in eth wetland mapping due to medical conditions.
- Notes on sheets GN-1 and GN-2 have been revised according to comments.
- C Sheets
  - Islands radii have been added;
  - Guardrail is no longer included for the roadway. Wood beam guardrail is used for the parking areas;
  - Tipdowns at ramps are labeled; ADA signs are labelled; Dumpster pad is labelled;
  - Sidewalk improvements have been added to Durham Road;
  - Notes added to stabilize slopes (Sht C-3);
  - New access road is removed; drainage and traffic island on Durham Road is not included in this application;
  - PDMH 25 added to drainage table and hydroCAD;
  - PDHM 6 roof leader added, outlet is to Infiltration chambers;
  - Pipe outlets have been labelled on plans;
  - Outlet Structure 21 has been removed;
  - Water Main in Durham Road is added; 12" x8" SS tapping sleeve added;

  - Domestic service revised to 2";
  - Proposed water and sewer services are re-aligned;
  - Slope added to sewer line;
  - Note added to coord w/ city on pole and sign removal.
- D Sheets
  - City of Dover Standard Details have been added to the plans;
  - Guardrail detail is only for parking lot guardrail;
  - Yard Drain labeled on Grading Plan;
  - Stockage fence for dumpster only, transformer and generator to be screened with landscaping;
  - Concrete slab is called out as 5";
  - Retaining walls have been revised to small block (less than 30") and large block (greater than 4 ft) walls and labelled on plans;
  - Welded wire fence is provided a the top of the retaining wall in lieu of a handrail for pedestrian protection. Detail is located on Landscape plans;
  - No parking-fire lane signs are along the west side driveway to the rear of lot;
  - Water details are updated with City standards;
  - There is an existing hydrant near the fire station in front of the site so no new hydrant is proposed. Detail removed;
  - City sewer MH detail has been updated;
  - New sewer service is 6";
- Underground utilities to be updated ion revised landscape Plans and trees will be adjusted so they are not above utilities.
- A revised Drainage Report and analysis is included.

Fire Dept Comments:

- Revised turning templates have been provided for the City of Dover T-1 to access throughout the site.
- An Ambulance turning template has been added to show access to the front entry.
- Building entrance have labeled on the Site Plan.
- EV stalls are shown in the lot behind the building.
- Notes 15 and 16 have been added to the Site Notes, Sheet GN 2 for compliance with RSA 155-A:5 and ADA standards.
- The revised plan has only one curb cut for the proposed development.
- The loop road has been removed from this application.
- The landscape plans provide a top of wall welded wire fence detail for pedestrian safety.

Business Development Comments:

- The Drainage study has been revised. The building footprint is 14,160 sf and the total 3 story GLA is 42,480 sf.
- New employment opportunities will be provided with this development.

Planning Board Comments:

- The wetland buffer impacts have been reduced to only two outfall pipe area of approximately 950 sf with the removal of the roadway for this phase.
- The stormwater management has been revised and all flows are being reduced.
- Additional landscaping will be added around the generator and transformer.
- The current plan is for the welded wire fence for safety on top of the retaining wall.

Included in this submittal, please find eight (8) copies of the following revised materials for the Technical Review Committee.

1. Site Plans (8 full size)
2. Project Description
3. Conditional Use Permit Applications
    a. Wetlands
    b. Gateway standards
4. Traffic Assessment
5. Fire Engine Turning Exhibits
6. Drainage Report (3 full – 5 summaries)

We respectfully request to be placed on the next available TRC meeting agenda.
Please call if you have any questions or require additional information.

Sincerely,

ALTUS ENGINEERING, INC.

Cory Belden, P.E.

Electronic Plans
copy: Chad Kageleiry, Summit Land Development

wde/5057_P5 City ltr 7-21-20-cb

PROJECT DESCRIPTION

7 West Commercial Development
Dover, NH 03820
(Tax Map H, Lot 11)

Overview

The Applicant, Summit Land Development, is proposing to construct a new commercial development on Durham Road in Dover, NH located on Tax Map H, Lot 11. The proposed development is for a medical building which will be three stories and approximately 42,480 square feet (14,160 sq ft per floor). The existing lot is approximately 8.7 acres in size and abuts the Dover Fire Station and Elementary School to the west, the Bellamy River to the North, and the Spaulding Turnpike (Exit 7) ramps to the east. The site will provide adequate on-site parking to meet the needs of the proposed use, as well as associated walkways, utilities, and stormwater management. The proposed site has been designed with a stormwater treatment system that consists of deep sump catch basins, two raingardens, and a sub-surface (Stormtech) chamber system. The project will require both NHDES Alteration of Terrain and Shoreland Permit approvals.

Existing Site Conditions / Surveys

The existing site conditions reflect the current conditions of the site, as depicted on the Existing Conditions Plan, prepared by McEneaney Survey Associates (MSA). The existing site is primarily an undeveloped wooded lot and discharges to the Bellamy River to the east by surface runoff. The Sawyer Mill Dam, located on the Bellamy River, just downstream from the project site, was removed in 2020. However, there has not yet been a Letter of Map Revision (LOMR) to adjust the FEMA Flood elevations in the project area. It is understood that Vanesse Hangen Brustlin, Inc. (VHB), who were the engineers for the dam removal project, are working with the State of NH to complete the LOMR.

BAG Land Services performed a Site Specific Soil Survey documenting the on-site soils and hydrologic soil conditions. Ecosystems Land Planning also flagged the wetlands and Bellamy River reference line, which were surveyed by MSA for accurate locations.

Site Layout and Parking

The attached project plans illustrate the proposed site layout. The project site is located in the Gateway Zoning District, which requires a front buildout and build-to setback. Due to the site conditions, the building is situated approximately 145 feet from the road so that a basement level can be constructed with a walk out on the north side. There is ledge located on the site that will require blasting for removal. The proposed building location minimizes blasting and provides a view of only two stories from street level on Durham Road. Parking is located in both the front and rear of the building with landscaping to shade and screen the parking from the street.

The proposed use is not identified in the City of Dover parking calculations table. Therefore. the allowable parking rate is determined by the Director of Planning and Community Development, per Section 153-14.D.1.B. The Institute for Transportation Engineers (ITE) Parking Generation Manual indicates a parking need of 4.3 and 5.3 stalls per 1,000 square feet for medical offices and clinics. Therefore, it is understood that an average of the two uses of 4.8 stalls per 1,000 sf GLA is the acceptable parking for this project. The allowed number of parking stalls is 205, which are provided, therefore a CUP for parking is not required.

The existing driveway entrance to the site, located in the middle of the site, will be relocated to the west side of the site. This location will maximize the distance from the Back River Road / Durham Road intersection. It also provides a clear 400 foot sight distance in each direction. It is understood that the driveway will be revised to remove the left out movement upon completion of the loop road connection behind the site during the second phase of the development.

Drainage Summary

A complete Drainage Report is provided with this application. The Stormwater Modeling Summary table below compares pre- and post-development peak rates of runoff for all analyzed storm events at the Point of Analysis, located downstream from the proposed project:

Stormwater Modeling Summary
Peak Q (cfs) for Type III 24-Hour Storm Events

	2-Yr Storm (3.62 inch)	10-Yr Storm (5.46inch)	25-Yr Storm (6.91 inch)	50-Yr Storm (8.26 inch)
POA #1				
Pre	5.25	13.36	20.68	27.91
Post	5.16	12.96	20.65	27.71
Net Change	**-0.09**	**-0.40**	**-0.03**	**-0.20**

Note: Includes 15% increase for NH Seacoast communities, per NHDES guidelines.

As shown in the above table, the results from the stormwater modelling indicate a reduction in the peak runoff rates for all analyzed storm events. Therefore, the proposed development will not have an adverse effect on abutting properties and infrastructure as a result of stormwater runoff. The project will treat all proposed impervious areas with two raingardens and a sub-surface infiltration basin. Pre-treatment will be provided with deep sump catch basins. The post-construction peak rates of runoff from the site will managed accordingly for the 2, 10, 25, and 50 year storms. Appropriate steps will be taken to properly mitigate erosion and sedimentation through construction with the use of temporary and permanent Best Management Practices for sediment and erosion control.

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133 Court Street
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Conditional Use Permit: Section 170-27.1 Wetlands Protection District

7 West Commercial Development
Durham Road, Dover, NH
Tax Map H, Lot 11

From: Cory Belden, PE, Altus Engineering, Inc.
Date: October 3, 2022

The applicant requests a conditional use permit from Section 170-27.1 (Wetlands Protection District) of the Dover Zoning regulations. The proposed site is located adjacent to the old Sawyer Mill Pond, along the Bellamy River. In 2020, the Sawyer Mill Dam was removed and the water no longer ponds in the project area. Wetlands delineation and a site specific soils survey were conducted by BAG Land Services to identify the limits of the existing wetlands and flagging was surveyed by McEneaney Survey Associates during the field survey.

The project proposes to construct two pipe outfalls that are located within 50 feet of the wetland and have a total of approximately **950 square feet of wetland buffer impact**. It should be noted, that there will be **no direct wetland impacts** for the project.

The outlets have been located down slope to allow for the future City road from the Back River Road / Durham Road intersection that will traverse through the site and provide a future connection to the Dover Elementary and High Schools, alleviating some of the traffic congestion on Durham Road.

Stormwater treatment has been provided for all of the impervious surfaces for the project site and a Drainage Report prepared. All new impervious areas for the site will be treated through raingardens or infiltration systems prior to discharging to the Bellamy River. NHDES Alteration of Terrain and Shoreland Permits will be required for the proposed site improvements.

Attachments:

1. Conditional Use Permit Plan (CUP-1)
2. Drainage Summary

ALTUS ENGINEERING, INC.

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133 Court Street
Portsmouth, NH
03801-4413

Conditional Use Permit: Section 170-20 Gateway Zoning District

7 West Commercial Development
Durham Road, Dover, NH
Tax Map H, Lot 11

From: Cory Belden, PE, Altus Engineering, Inc.
Date: October 3, 2022 (Revised)

The applicant requests a conditional use permit from the Dover Zoning regulations Sections 170-12A and 170-20B. The Gateway District was established to provide a transition area from the less developed areas of the City to the central Business District. As shown on the Neighborhood Site Plan, the proposed lot is surrounded by R-40, R-12, and RM-SU districts. A CUP from Section 170-12A is requested for the permitted use to construct a medical office building on the site with associated improvements. A CUP is also requested from Section 170-12B for dimensional requirements of 50% minimum lot coverage, maximum front setback, and front lot line buildout.

The following adjustments are proposed to the Gateways District Standards as part of the Conditional Use Permit application:

1. **Sections 170-12A**, **Permitted Use** – The proposed development is to construct a medical office building that will provide medical services to patients in the Dover and surrounding area. This use is not listed as a permitted use in the zoning Use Table for the district and is requested to be amended to allow this use.

2. **Sections 170-12B, Dimensional Regulations**

    a. 20 Foot Maximum Setback - The Gateway District dimensional regulations require a 5 foot minimum to 20 foot maximum build to line and 60% minimum buildout for the site. The proposed building is set back from the property line by approximately 146 feet. The primary reason for the setback is the presence of ledge on site and the steep grades to the north. To account for the grading, a lower "walk-out" basement level is proposed that will allow a thirteen foot lower entrance to the north. This also minimized the amount of ledge removal required for the project. Due to the lower basement level, only two of the three stories will be visible from the Durham Road level which will reduce the scale of the building.

    b. 60% Frontage Buildout - The building is 146 feet in length, which is approximately 38% of the proposed lot frontage. Because the building is offset from the road, the intent of the build-out requirement does not appear to be relevant, as it is primarily intended for the pedestrian use along the frontage roadway.

c. 50% Minimum Lot Coverage- The proposed building footprint is 14,160 square feet and the total GLA is 42,480 sf for the 3-story building. The proposed lot size is approximately 144,300 square feet. The building encompasses approximately 10% of the site. It is not feasible to provide 50% building lot coverage on the proposed site without underground parking and significantly more ledge removal.

3. **Architectural Standards** – A review of the architectural Standards has been prepared by Market Square Architects for compliance with the Gateway Architectural Standards. As requested in 170-2A&B the proposed building is a medical office building and will be located back from the roadway. It is anticipated that the building will have very little pedestrian traffic, however a walkway from the street has been provided as well as 10 bicycle parking stalls.

The applicant respectfully requests the Gateway District regulations be amended as described in this Conditional Use Permit application and as presented on the project site and building plans.

Attachments:

1. Dover, NH Gateway District Architectural Standards – Market Square Architects
2. Gateway District – City of Dover Zoning Summary Sheets

Dover, NH Gateway District Architectural Standards

Required Ground Floor Standards:

1. *No less than 30% of the façade shall be windows.*
   The ground floor of the Durham Road elevation has 30% windows. The other three elevations have 21%-23% of windows on the ground floor.

2. *A pedestrian entrance shall be required at the street side or front façade.*
   A pedestrian main entrance is located on the Durham Road / front elevation.

3. *Residential uses permitted.*
   This building is a commercial office building.

4. *The use of ground floor exterior lighting on the building should offer a feeling of warm security and increase safety to pedestrians without being overwhelming.*
   The exterior lighting will offer a sense of 'warm security' to help increase safety to pedestrians.

Required Building Standards:

1. *Building designs shall be harmonious with neighboring structures in terms of mass, width, height, proportion, spacing and setback.*
   The neighboring buildings around our site include the Dover Middle School, Dover Fire and Rescue and Dover Emergency Room. These buildings range between one- and three-stories and have several different exterior cladding materials including metal panel, concrete, stucco and brick. This proposed building is two-stories in height on the Durham Road side (main entry side) and three-stories in height on the opposite elevation. The proposed materials include three different styles and colors of metal panel, stone veneer and storefront glazing system. The stone veneer is used as a base around the majority of the building up to 4'-0" high. The three different metal panels are used on each of the 4 building elevations above the stone veneer base. These sections of panels differ in height at the roof, creating separate building 'sections' simply by varying the roof parapet. And although there are two building fronts (one facing Durham Rd and one facing Route 16) the rhythm of building materials, styles and colors continues around the entire building perimeter – there is no back to the building.

2. *All exterior walls that front on a public way with adjacent pedestrian traffic/infrastructure must incorporate wood, brick, stone or a suitable contemporary material appropriately detailed within the first 20 vertical feet.*
   See answer to Required Building Standards #1 above.

3. *Large structures shall be broken into smaller masses to provide human scale, variation and depth.*
   The three different metal panel styles and colors create a rhythm that helps to reduce the overall mass of each elevation.

4. *The design of the building shall incorporate views that are directed to the street and garden/courtyard rather than adjacent neighbors.*
   The proposed building site will be surrounded by trees and windows will provide views to the site landscaping.

5. *Buildings shall be placed at or near the street, along the outer edge of their sites, to ensure the unity of those streets and to encourage and facilitate pedestrian activity.*
   Due to the heavy traffic on Durham Road and the nature of the proposed building (doctor's offices) there is anticipated to be very little pedestrian traffic to the site. The building is positioned more in the center of the site to accommodate parking. However, an existing sidewalk exists on Durham Road for anyone who chooses to walk.

6. *Building design shall enhance the pedestrian environment and streetscape.*
   See answer to Required Building Standards #5 above.

7. *Utility elements shall be screened in an aesthetically pleasing manner.*
   Utility elements will be screened wherever they are in view.

8. *Use of architectural details and changes in depth are included on building elevations to increase visual interest and scale.*
   See answer to Required Building Standards #1 above.

9. *Garages shall not face the street.* There are no garages in this project.

10. *Solar / Green Roof Standard:*
    -All buildings must be solar ready
    -Commercial and mixed-use buildings that are 25,000 sq ft or more must also incorporate solar panels and a green roof on at least 30% of the roof area.
    The proposed building roof structure was designed to accommodate future roof-top solar panels. The proposed building does not allow public access to the roof so it does not incorporate a green roof.

<u>Optional Standards:</u>

Use of elements that accentuate and/or provide coverage at the entry such as a canopy, porch, recessed entry, etc. are encouraged.
A covered entry canopy is designed at the main entry of the building on the Durham Road building elevation.

Respectfully submitted by Christina O'Brien, Senior Project Architect.

Market Square Architects PLLC
104 Congress Street, Suite 203, Portsmouth, NH 03801
(603) 501-0202

Gateway District

The information included in this table represents the requirements for development in this district; see Section 170-20 for additional requirements (Adopted 12/9/2009 per O–2009.09.09-15).

STATEMENT OF PURPOSE

A gateway is an area that marks a transition point where you move from one existing condition to another. In terms of land use, Gateways generally indicate transition points from a less developed area (the highway, the rural landscape, etc.) to a more formal, densely developed urban core (multi-story buildings, civic buildings, etc.). In Dover the primary Gateways (Central Avenue north and south of the downtown core, Broadway, and Portland Avenue) are generally dominated by commercial activity, with buildings of a lower height than those located downtown. Some residual residential activity occurs occasionally as stand-alone buildings, but frequently residential activity is located above ground floor commercial uses. A modest distance between the building and the street exists, with a fair amount of landscaping.

DIMENSIONAL REGULATIONS*

Principal Building	
Lot Size	N/A
Lot Coverage	50%
Frontage Build-Out	60% min.
Front Primary BUILD TO LINE	5 ft. min - 20 ft. max
Front Secondary BUILD TO LINE	5 ft. min - 20 ft. max
Side Setback	10 ft. min
Rear Setback	15 ft. min
Outbuilding	
Front Setback	20 ft. min + bldg. setback
Side Setback	10 ft. min
Rear Setback	15 ft. min
Private Frontages	
Common Yard	Permitted
Porch and Fence	Permitted
Terrace/Lightwell	Permitted
Stoop	Permitted
Shopfront/Awning	Permitted
Gallery	Not permitted
Height of Building	
Principal Building	4 story max, 2 story min #
Outbuilding/Accessory	2 story max

**CUP (170-20B) may be used to adjust standards.*

PARKING LOCATION STANDARDS (SEE 153-14)

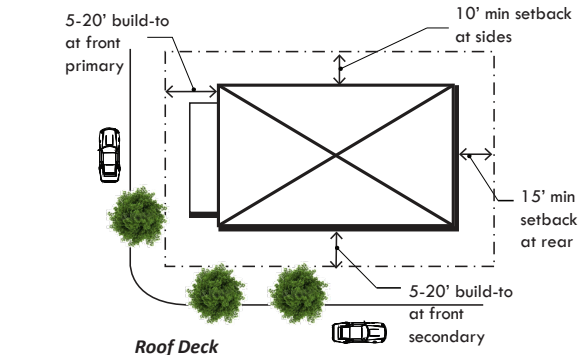
New construction resulting in additional square footage or an increase in residential units must comply with parking standards for the new portion of the building only.

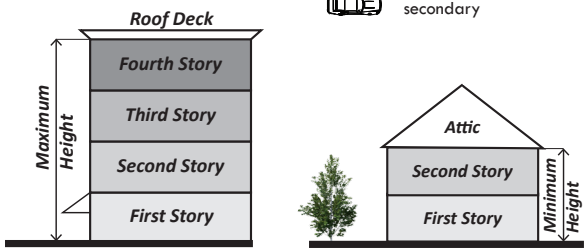
PERMITTED USES*

Use	
Residential	Permitted; density: 4,000 sf. per unit**#
Lodging	Permitted, up to 12 rooms. Must be 150' from residential. 13 or more rooms are permitted with CUP.
Daycare	Adult and child permitted. Institutional not permitted.
Professional Services & Offices	Permitted #
Eating & Drinking Establishments	Permitted #
Retail/Personal Services	Permitted #
Industrial	Permitted on Broadway via CUP
Civic	Permitted
Drive-Thru Services	Not Permitted
Other	Via Conditional Use Permit

**CUP (170-20B) may be used to adjust standards.*

PRINCIPAL BUILDING PLACEMENT





PRINCIPAL BUILDING HEIGHTS

SIGN REGULATIONS

Sign Size & Quantity	
Total signs permitted	2
Total area of all signs	24 sf
Sign Type	
Freestanding	Permitted- 16 ft. max ht.
Projecting	Permitted- 10 ft. min. above sidewalk, 25 ft. max height, 24 sq. ft. max.
Wall/Awning	Permitted
Temporary	Permitted per- 170-32.Q (1)

ARCHITECTURAL STANDARDS*

Preserving and enhancing the architectural tradition, history, and visual appeal of the Central Business District is integral to maintaining the character and identity of our community. Buildings designs and materials should enhance the appearance of Dover, reinforce pedestrian character where appropriate, reflect a consistency found within the sub-district, neighboring buildings, and natural and cultural resources. Building design should also minimize potential aesthetic conflicts between residential and nonresidential uses and between single family and multifamily uses. Architectural Standards are not intended to stifle creativity or variety, but produce designs respectful of place and context. **For more information, please see Section 2 of Dover's CBD Architectural Design Guidelines.**

The following **Architectural Standards** must apply for a residential building with 5 units or more and all mixed use/non-residential uses. Applicants will also be expected to prepare a narrative explaining how the project meets all of the architectural standards.

Required Ground Floor Standards:

- No less than 30% of the façade shall be windows.
- A pedestrian entrance shall be required at the street side or front façade.
- Residential uses permitted.
- The use of ground floor exterior lighting on the building should offer a feeling of warm security and increase safety to pedestrians without being overwhelming.

Required Building Standards:

- Building designs shall be harmonious with neighboring structures in terms of mass, width, height, proportion, spacing, and setback.
- All exterior walls that front on a public way with adjacent pedestrian traffic/infrastructure must incorporate wood, brick, stone or a suitable contemporary material appropriately detailed within the first 20 vertical feet.
- Large structures shall be broken into smaller masses to provide human scale, variation, and depth.
- The design of the building shall incorporate views that are directed to the street and garden/courtyard rather than adjacent neighbors.
- Buildings shall be placed at or near the street, along the outer edge of their sites, to ensure the unity of those streets and to encourage and facilitate pedestrian activity.
- Building design shall enhance the pedestrian environment and streetscape.
- Utility elements shall be screened in an aesthetically pleasing manner.
- Use of architectural details and changes in depth are included on building elevations to increase visual interest and scale.
- Garages shall not face the street.
- Solar/Green Roof Standard:
  - All buildings must be solar ready
  - Commercial and mixed use buildings that are 25,000 sq ft or more must also incorporate solar panels and a green roof on at least 30 percent of the roof area.

Optional Standards:

- Use of elements that accentuate and/or provide coverage at the entry such as canopy, porch, recessed entry, etc. are encouraged.
- Ornamental roof features that exceed the allowed building height are subject to the CUP process.
- Energy efficient design techniques, LEED standards, or an equivalent standard are encouraged.
- Other integrated green infrastructure elements are encouraged.
- Approved public art is encouraged.

**CUP (170-20B) may be used to adjust standards.*

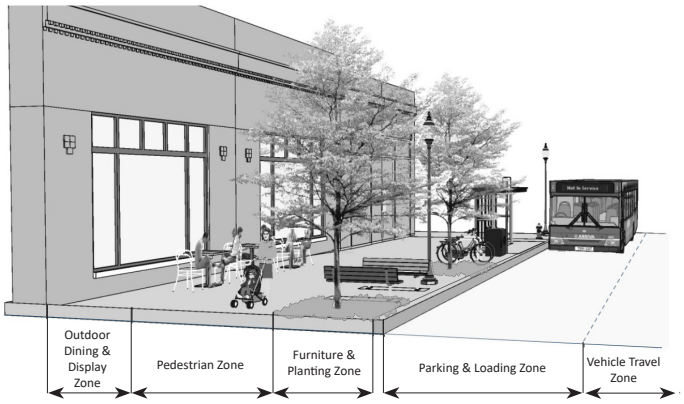
STREETSCAPE STANDARDS

Streetscape standards were crafted to ensure streets in mixed use areas of the CBD have a relationship with adjacent buildings, accommodate pedestrians and bicyclists, and are compatible with the character of Dover's neighborhoods. All street elements must be consistent with Dover Streetscape and Landscape Standards. **For more information on streetscape standards, please see Section 3 of Dover's CBD Architectural Design Guidelines.**

- Sidewalks shall be brick and a minimum of 5 feet wide.
- Street trees shall be planted at an average spacing of 25 to 30 feet on center. Planting method shall allow for maximum root zone space where possible. Existing healthy street trees shall be protected, if possible.
- Unpaved ground area along the frontage shall be planted with appropriate groundcover or shrubs, no bare ground permitted. Low Impact Development techniques such as rain gardens, bioretention areas, tree boxes and other green infrastructure techniques shall be incorporated into these landscaped areas and maintained to ensure 5' wide walkway.
- Projects shall be designed to maintain and enhance, the quality of vehicular, bicycle and pedestrian circulation and safety on affected public streets.
- Street furniture shall be provided as follows:
  - 1 bench for every 75 feet of frontage.
  - At least 1 waste bin at each block corner.
  - 1 bike rack per non-residential project.
- Lighting and mechanical equipment standards per 170-20(E)(3)(d).

**CUP (170-20B) may be used to adjust standards.*

STREETSCAPE ELEMENTS



*** Density: 3,000 sf. per unit if part of a mixed-use building with 35 percent nonresidential uses. 2,000 sf. per unit if rents conform to HUD fair market rent rates for Dover, as published by the New Hampshire Housing Finance Authority.*

Rooming houses and manufactured homes are considered other uses.

 # On Dover Point Road and within 300 feet of the center line of New Rochester Road:

- *Building Height is limited to 2 Stories*
- *Residential is limited to Single Family and Two Family Dwelling units*
- *Professional Service & Office, Eating and Drinking Establishments and Retail/Personal Services are limited to 2,000 sf per unit*

TEPP LLC TRANSPORTATION ENGINEERING, PLANNING, AND POLICY

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

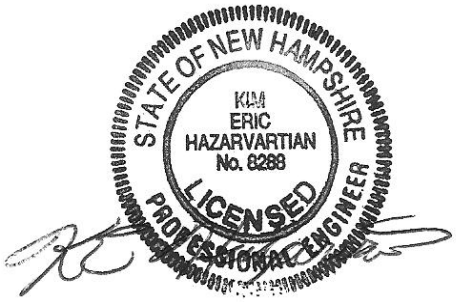
MEMORANDUM

Ref: 1607

Subject: Traffic Assessment
7 West Commercial Development
Durham Road
Dover, New Hampshire

From: Kim Eric Hazarvartian, Ph.D., P.E., PTOE
Principal
Email keh@teppllc.com

Date: October 6, 2022



INTRODUCTION

Summit Land Development, LLC, retained TEPP LLC to prepare a traffic-assessment memorandum (TAM), with draft 1 dated May 5, 2022. The City of Dover, New Hampshire, retained Sebago Technics, Inc. to conduct a peer review of the TAM draft. Sebago Technics, Inc. provided comments in a memorandum dated August 19, 2022.

Subsequently, TEPP LLC understands that Summit Land Development, LLC, will be submitting a multi-phase application.

Phase 1 (the current project):

- will include only deeding the right of way to the City for the loop road behind the site
- will not construct the loop road behind the site
- will not construct the connection of the loop road to the Durham Road/Back River Road intersection
- will not provide modifications to the Durham Road/Back River Road intersection
- will provide one full-movement driveway along the west side of Durham Road

Phase 2 will involve:

- constructing the loop road behind the site
- constructing the connection of the loop road to the Durham Road/Back River Road intersection
- modifications to the Durham Road/Back River Road intersection

- modifying the full-movement driveway along the west side of Durham Road to right-in-and-right-out only if the City so decides
- potential additional traffic analysis

Comments from Sebago Technics, Inc. are presented below. Responses from TEPP LLC largely look forward to Phase 2.

COMMENT 1

The applicant has completed a trip generation calculation for the development using the 11th Edition of the ITE *Trip Generation Manual* considering LUC 720 - Medical-Dental Office Building utilizing the independent variable based on employees. It is in our professional opinion that the applicant revises the trip generation calculations to also consider the independent variable of gross square footage. The total trip generation of the development can be calculated by averaging the results of the independent variables of the number of employees and gross square footage.

RESPONSE 1

Phase 2 will provide an opportunity to address this comment in the context of full development of the site.

COMMENT 2

Table 1 refers to LUC 220 and 42 dwelling units. The values in the Table correctly reflect the summarized calculations for LUC 720, but the reference should be revised in future submissions for clarity.

RESPONSE 2

This was a typographical error. TEPP LLC notes the comment.

COMMENT 3

A general description of the expected trip distribution is provided in the report. It is requested that a more detailed description be provided, including diagrams indicating the trip distribution/assignment from the site driveways onto the roadway network.

RESPONSE 3

Phase 2 will provide an opportunity to address this comment in the context of full development of the site.

COMMENT 4

Under the "Proposed Development" section, there is a statement that “one unsignalized driveway along the south side of a potential road between the Dover Middle School and Durham Road opposite Back River Road.” The applicant should clarify if this roadway and subsequent new approach opposite Back River Road are proposed regardless of the proposed connection to the Dover Middle School. Furthermore, if constructed, this approach would need to be signalized as part of modifications to the existing Back River Road/Durham Road intersection.

RESPONSE 4

The intention is that the loop road will connect to the Dover Middle School.

COMMENT 5

A capacity and queueing analysis is requested for the intersection of Durham Road at Back River Road to ensure that the addition of a fourth leg to this signal can be adequately accommodated. It should be noted that this traffic signal is also controlled by the signalized intersection of Mill Street / Spaulding Turnpike @ Durham Road and is quite complex and in turn, at times, is over capacity under existing volumes, mainly while school is in session. Given the complexity of this corridor, we have provided a Synchro file containing the existing traffic volumes and signal timings that can be used as the basis for this requested analysis.

RESPONSE 5

Phase 2 will provide an opportunity to address this comment.

COMMENT 6

The requested analysis should include an evaluation for the need for auxiliary turn lanes at the southerly site driveway using guidelines as outlined in the *National Cooperative Highway Research Program (NCHRP) Report 457: Evaluating Intersection Improvements, An Engineering Study Guide*.

RESPONSE 6

Phase 2 involves modifying the full-movement driveway along the west side of Durham Road to right-in-and-right-out only if the City so decides. This would eliminate left turns from Durham Road northbound to the driveway.

COMMENT 7

It is requested a safety analysis be performed for the existing signalized intersection of Back River Road at Durham Road as well as the segment of Route 108 between Back River Road and Daley Drive. Crash data for the three most recent years shall be obtained from the Dover Police Department.

RESPONSE 7

Phase 2 will provide an opportunity to address this comment.

COMMENT 8

Applicant should verify through field measurements that the stated available sight distance of 400' is available from the proposed southerly site driveway.

RESPONSE 8

Field measurements confirm that at least 400 feet of sight distance will be available. See sight-distance plan included in the plan set by Altus Engineering, dated October 5, 2022.

COMMENT 9

Sheet C-2 contains a conceptual plan of improvements to Durham Road at Back River Road intersection. It is requested that further detail be provided regarding the proposed modifications to the existing traffic signal infrastructure and necessary new equipment/structures to accommodate the proposed additional approach.

RESPONSE 9

Phase 2 will provide an opportunity to address this comment.

SITE PLAN REVIEW and CONDITIONAL USE PERMITS
CITY OF DOVER DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT
FILE NO. P22-38

7 WEST COMMERCIAL DEVELOPMENT

PLANNING BOARD APPROVAL

Signature: _____

Date: _____

Owner:

7 WEST, LLC
P.O. BOX 728
DOVER, NH 03821

Owner's signature: _____

Date: _____

Applicant:

Summit Land Development
340 Central Avenue #202
Dover, NH 03820

Civil Engineer:

ALTUS ENGINEERING, INC.
133 Court Street Portsmouth, NH 03801
(603) 433-2335 www.altus-eng.com

Surveyor:

McEneaney Survey Associates
24 Chestnut Street
Dover, NH 03820
PHONE: (603) 742-0911

Wetland/Soil Scientist:

B A G
LAND CONSULTANTS
43 ROCKINGHAM ST.
CONCORD, NH 03301
(603)228-5775

Architect:

MARKET SQUARE ARCHITECTS
104 Congress Street
Suite 203
Portsmouth NH, 03801
PH: 603.501.0202
MarketSquareArchitects.com

Landscape Architect:

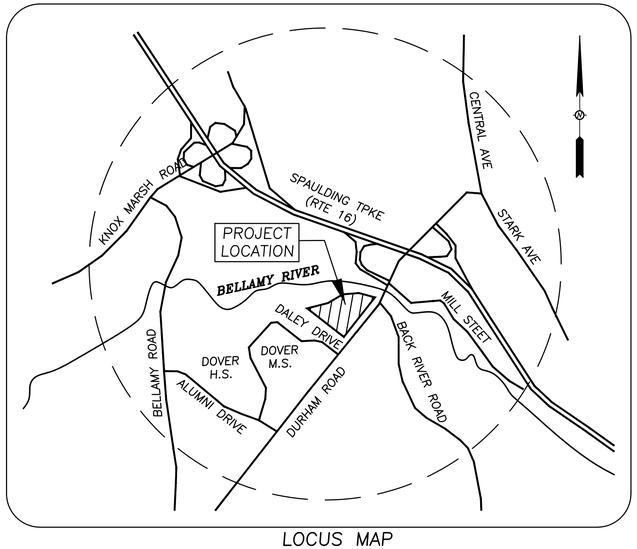
Ironwood Landscape Architecture • Planning
FEWOOD.COM | WEB SITE
603.772.0590 | OFFICE PHONE

Tax Map H, Lot 11

DOVER, NEW HAMPSHIRE

ISSUED FOR PLANNING BOARD APPLICATION

Plan Issue Date:
October 5, 2022



LOCUS MAP
Scale: 1" = 1000'±

Permit Summary

~~NHDES Shoreland Permit – To be submitted~~
NHDES Alteration of Terrain Permit – To be submitted
NHDES Sewer Connection Permit – To be submitted
Building Permits – Building Permits to be obtained from the City of Dover
US–EPA Storm Water Pollution Prevention Plan (SWPPP) – Filed by Contractor

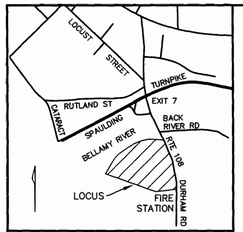
Sheet Index Title	*Sheet No.:*	*Rev.*	*Date*
Existing Conditions Plan (by McEneaney Survey)	1 of 1	1	04/22/22
Site Specific Soils Plan	S–1	1	05/05/22
General Notes	GN–1	2	10/05/22
General Notes	GN–2	1	10/05/22
Neighborhood Site Plan	C–1	0	05/05/22
Site Plan	C–2	2	10/05/22
Grading and Drainage and Erosion and Sediment Control Plan	C–3	1	10/05/22
Utility Plan	C–4	0	05/05/22
Sight Distance Plan	C–5	0	10/05/22
Wetlands Conditional Use Plan	CUP–1	1	10/05/22
Details	D–1	1	10/05/22
Details	D–2	1	10/05/22
Details	D–3	1	10/05/22
Details	D–4	1	10/05/22
Details	D–5	1	10/05/22
Details	D–6	1	10/05/22
Details	D–7	1	10/05/22
Details	D–8	1	10/05/22
Details	D–9	1	10/05/22
SC–740 Stormtech Standard Details	D–10	0	10/05/22
Site Lighting Plan (by Visible Light, Inc.)	1 of 1	0	05/05/22
Landscape Plan (by Ironwood Design Group)	L1.0	1	10/04/22
Landscsape Details	L2.0–2.1	1	10/04/22
Architectural Plans (by Market Square Architects)			
Floor Plans	3 SHTS	0	02/25/22
Building Elevations	2 SHTS	0	02/25/22
Building Rendering	1 SHT	0	02/25/22

TOTAL = 30 SHEETS

Conditional Use Permits:

1. Section 170–27.1 – Wetlands Protection District
2. Section 170–20B – Gateway District Standards

P4952



LOCATION PLAN
(NO SCALE)

LEGEND

- EDGE OF PAVEMENT
- 100 YEAR FLOOD PLANE BOUNDARY
- UTILITY POLE
- IRON PIPE OR PIN
- WATER SHUT OFF VALVE
- HIGHEST OBSERVED TIDE LINE
- APPROX. TREE LINE
- HYDRANT
- WETLANDS
- S.C.R.D. – STRAFFORD COUNTY REGISTRY OF DEEDS
- 48 – CONTOUR LINE
- S – SEWER MANHOLE
- WV VGC – VERTICAL GRANITE CURB
- WATER GATE VALVE
- CB – CATCH BASIN
- SIGN

SITE SPECIFIC SOIL MAP UNIT KEY

SYMBOL SOIL	TAXONOMIC NAME	HSG CLASS	DRAINAGE CLASS
62	CHARLTON	B	WELL DRAINED
86	HOLLIS	C	WELL DRAINED
232	BUXTON	C	MODERATELY WELL-DRAINED
233/P	SCANTIC	D	POORLY DRAINED (P)
200/daade	UDORTHENTS		SMOOTH FILL REFUSE MATERIAL

[d–MODERATELY WELL DRAINED / a–NO NATURAL SOIL WITHIN 60"/ a–NO RESTRICTIVE LAYERS / d– NO KSAT / e– NO HSG]

SLOPE PHASES

SYMBOL	PHASE
A	0–3%
B	3–8%
C	8–15%
D	15–25%
E	25–50%
F	50%+

REFERENCE PLANS:

1.) SUBDIVISION OF LAND FOR THE DOVER SCHOOL DISTRICT, DURHAM ROAD (NH ROUTE 108), DOVER, NEW HAMPSHIRE; SCALE: 1" = 40'; DATED: 3/3/98; BY: DOUCET SURVEY, INC.; RECORDED S.C.R.D. PLAN 51–56.

2.) PLAN OF PROPOSED FEDERAL AID PRIMARY PROJECT FG–BRF–043–1(1), N.H. PROJECT NO. C–3556, DURHAM ROAD, (N.H. ROUTE 108); BY: STATE OF NEW HAMPSHIRE PUBLIC WORKS AND HIGHWAYS; APPROVED 1/18/85.

3.) PROPERTY ACQUIRED BY STATE OF NEW HAMPSHIRE FROM SALVATORE BONANNO IN DOVER, N.H. STRAFFORD COUNTY; SCALE: 1" = 20'; DATED: 28 MAY 1984; RECORDED S.C.R.D. PLAN 17E–68.

4.) PLAN OF LAND IN DOVER, N.H. FOR D2M ASSOCIATES, SHEET 2 OF 2; SCALE: 1" = 40'; DATED: 6/28/83; BY: KIMBALL CHASE COMPANY, INC.; RECORDED S.C.R.D. PLAN 24–46.

5.) PLAN OF PROPERTY OF THE SAWYER MILLS OWNED BY AMERICAN WOOLEN CO.; SCALE: 1" = 100'; DATED: APRIL 1932; BY: JOHN FRANKLIN, CE; RECORDED S.C.R.D. PLAN 1, POCKET 7, FOLDER 2.

6.) PLAN OF LOT ON CENTRAL AVENUE OWNED BY CHA.S H. SAWYER; SCALE: 1" = 40'; DATED: JUNE 30, 1905; BY: WM A. GROVER; RECORDED S.C.R.D. PLAN 20, POCKET 10, FOLDER 1.

NOTES:

1.) OWNER OF RECORD:
7 WEST, LLC
C/O SUMMIT LAND DEVELOPMENT, LLC
340 CENTRAL AVE STE 202
DOVER, NEW HAMPSHIRE 03820
S.C.R.D. VOLUME 4468, PAGE 979

2.) H / 11 – DENOTES TAX MAP AND PARCEL NUMBER.

3.) PARCEL AREA = 378,500± S.F. / 8.69± Ac.

4.) THE INTENT OF THIS PLAN IS TO DEPICT THE PARCELS BOUNDARIES AND EXISTING SITE CONDITIONS AS OF JUNE 1, 2021.

5.) ZONING DISTRICT: G (GATEWAY)
DIMENSIONAL REQUIREMENTS:

MINIMUM LOT SIZE	= N/A
LOT COVERAGE	= 50 PERCENT
FRONTAGE BUILD–OUT	= 60% MINIMUM
BUILDING SETBACK REQUIREMENTS:	
FRONT BUILD TO	= 5–25 FEET
SIDE SETBACK	= 10 FEET
REAR SETBACK	= 15 FEET
BUILDING HEIGHT	= 2–4 STORY

6.) A PORTION OF THE SUBJECT PARCEL IS LOCATED WITHIN THE SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1 PERCENT ANNUAL CHANCE FLOOD, ZONE AE (BASE FLOOD ELEVATION 54.0); AS SHOWN ON FLOOD INSURANCE RATE MAP 33017C0320E; EFFECTIVE DATE 9/30/2015.

7.) BASIS OF BEARING IS NH STATE PLANE (NAD83) BASED ON GPS OBSERVATION DATED .
VERTICAL DATUM IS NAVD88 BASED ON GPS OBSERVATION DATED .

8.) JURISDICTIONAL WETLANDS AND REFERENCE LINE IDENTIFIED AND FLAGGED BY JOHN ST. JOHN, N.H.C.W.S. 221 OF ECOSYSTEMS LAND PLANNING ON APRIL 21, 2021 AND FIELD LOCATED BY THIS OFFICE.

9.) NOTES: SITE SPECIFIC SOIL SURVEY WAS COMPLETED BY BRUCE A. GILDAY OF BAG LAND CONSULTANTS, NH CERTIFIED SOIL SCIENTIST #088, AND SHOWN ACCORDING TO THE "SITE SPECIFIC SOIL SURVEY TECHNICAL REPORT" DATED JULY 26, 2021. THE SOIL MAPPING WAS PREPARED IN ACCORDANCE WITH "SITE SPECIFIC SOIL MAPPING STANDARDS SITE SPECIFIC SOIL MAPPING STANDARDS FOR NEW HAMPSHIRE AND VERMONT" VERSION. 7.0, MARCH 2021. WETLANDS WERE DELINEATED BY JOHN ST. JOHN OF ECOSYSTEMS LAND PLANNING, NH CERTIFIED WETLAND SCIENTIST #221, ON APRIL 20, 2021.

10.) PORTIONS OF THE PARCELS ARE SUBJECT TO THE RULES OF THE SHORELAND WATER QUALITY PROTECTION ACT (NH RSA 483–B), THOSE AREAS WITHIN TWO HUNDRED AND FIFTY (250) FEET OF THE BELLAMY RIVER REFERENCE LINE.

50.0' SHORELAND BUFFER
EDGE OF BELLAMY RIVER AS SHOWN ON REFERENCE PLAN 1 (PRIOR TO DAM REMOVAL)
REFERENCE LINE SEE NOTE 8
150.0' WOODLAND BUFFER (150' FROM REFERENCE LINE)
BELLAMY RIVER
CHANNEL OF BELLAMY RIVER
NH STATE PLANE NAD 83 – GPS OBS.
EXTENT OF SHORELAND PROTECTION AREA (250' FROM REFERENCE LINE)
LIMIT OF SPECIAL FLOOD HAZARD AREA (SFHA) ELEVATION 54 (NAVD88)
N01°41'30"W 407.18'
S89°09'29"E 551.38'
SURVEY TIE LINE
S31°48'55"E 165.33'
N33°00'35"W 200.05'
SIDE SETBACK 10 FT (TYP.)
FRONT BUILD TO MAXIMUM 20FT SETBACK
FRONT BUILD TO MINIMUM 5 FT SETBACK
433.62'
S58°45'09"W
5' WIDE ASPHALT SIDEWALK
DURHAM ROAD
{PUBLIC; VARIABLE WIDTH R.O.W.}
N.H. ROUTE 108
S32°57'48"W 85.30'
S41°13'52"W 155.10'
SMH RIM = 78.40
SMH RIM = 72.99
SMH RIM = 72.92 INV. IN (SW) = 65.76 INV. OUT (NE) = 65.74
SMH RIM = 63.08 INV. IN (SW) = 52.72 INV. IN (NW) = 53.43 INV. OUT (NE) = 52.62
SMH RIM = 62.37 FILLED WITH DIRT ELEV. DIRT = 56.5
ISLAND
TRANSFORMER
SEWER LINE CROSSING
OLD ASPHALT
BACK RIVER ROAD
BELLAMY RIVER

PARCEL AREA
378,500 S.F.±
8.69 Ac.±

H / 11–01
CITY OF DOVER
288 CENTRAL AVENUE
DOVER, NH 03820
1990 / 513

H / 11B
CITY OF DOVER
288 CENTRAL AVENUE
DOVER, NH 03820
770 / 13

I / 9A
MICHELLE WOOD
JAMES L. WOOD
28 DURHAM ROAD
DOVER, NH 03820
4178 / 899

I / 8
SMITH FAMILY LIVING TRUST
10 PONDVIEW DRIVE
DOVER, NH 03820
4923 / 175

I / 8A
LESLIE DONAIS
JOHN DONAIS
16 DURHAM ROAD
DOVER, NH 03820
2825 / 1

I / 7
10 DURHAM GROUP, LLC
10 DURHAM ROAD
DOVER, NH 03820
4643 / 739

NO #
N/F STATE OF NEW HAMPSHIRE
JOHN O. MORTON BUILDING
P.O. BOX 483
CONCORD, 03302
1138 / 107

H / 11A
CITY OF DOVER
288 CENTRAL AVENUE
DOVER, NH 03820
1768 / 292

NO.	DATE	DESCRIPTION	BY	CHK
1	4/22/22	REVISE TO SHOW INTERSECTION DETAIL	KJF	KMM
REVISIONS				

21–2188	EXIST.COND.	
PROJECT NO	TYPE	FIELDBOOK & PAGES

"I HEREBY CERTIFY THAT THIS PLAN IS BASED ON AN ACTUAL GROUND SURVEY PERFORMED WITH A TOTAL STATION, BY ME OR THOSE UNDER MY DIRECT SUPERVISION AND THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, SAID SURVEY MEETS OR EXCEEDS THE MINIMUM PRECISION REQUIREMENTS FOR SURVEY CLASSIFICATION "U" AS SET FORTH IN TABLE 500.1 OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES OF THE BOARD OF LICENSURE FOR LAND SURVEYORS."

EXISTING CONDITIONS PLAN
PREPARED FOR
7 WEST, LLC
TAX MAP H, LOT No. 11
DURHAM ROAD (N.H. ROUTE 108)
CITY of DOVER
COUNTY of STRAFFORD
STATE of NEW HAMPSHIRE

DRAWN BY: KJF | FILE: MSA\2188\DWG\21–2188–3
SCALE: 1" = 40' | DATE: AUGUST 9, 2021

40 20 0 20 40 80 120 160

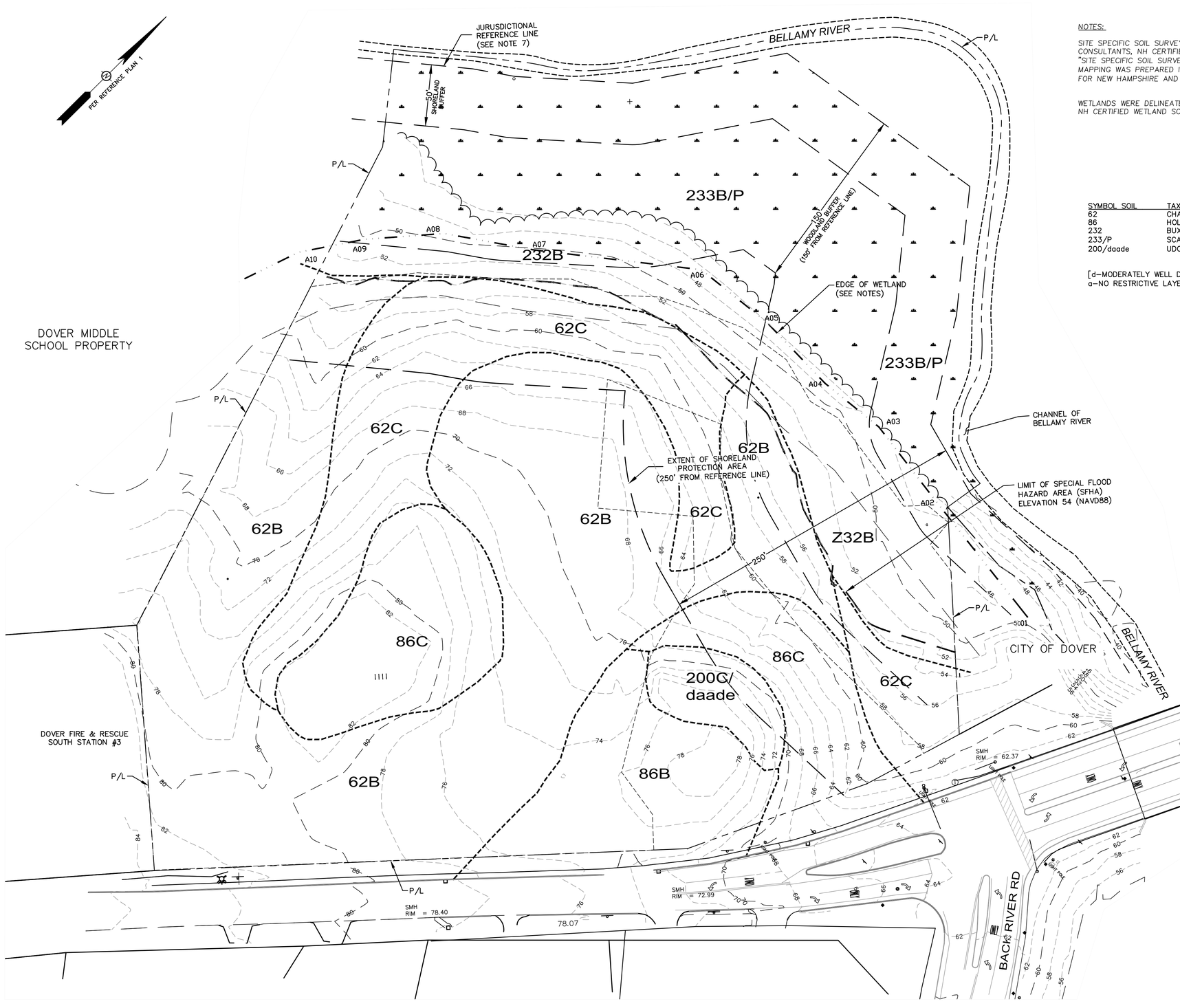
STATE OF NEW HAMPSHIRE No. 661 KEVIN M. McENEANEY LICENSED LAND SURVEYOR

McEneaney Survey Associates
of NEW ENGLAND
P.O. Box 681 – 24 CHESTNUT STREET
DOVER, NH 03820 (603) 742–0911

SURVEYING – PLANNING – CONSULTING

P22-38 2 OF 31

File: \\chesserver1\MSA Projects\2188\Drawings\21-2188-3.dwg Layout: 2188 EC
4/22/2022 3:04:11 PM



NOTES:

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WETLANDS WERE DELINEATED BY JOHN ST. JOHN OF ECOSYSTEMS LAND PLANNING, NH CERTIFIED WETLAND SCIENTIST #221, ON APRIL 20, 2021.

SITE SPECIFIC SOIL MAP UNIT KEY

SYMBOL SOIL	TAXONOMIC NAME	HSG CLASS	DRAINAGE CLASS
62	CHARLTON	B	WELL DRAINED
86	HOLLIS	C	WELL DRAINED
232	BUXTON	C	MODERATELY WELL-DRAINED
233/P	SCANTIC	D	POORLY DRAINED (P)
200/daade	UDORTHENTS		SMOOTH FILL REFUSE MATERIAL

[d-MODERATELY WELL DRAINED / a-NO NATURAL SOIL WITHIN 60"/ a-NO RESTRICTIVE LAYERS / d- NO KSAT / e- NO HSG]

SLOPE PHASES

SYMBOL	PHASE
A	0-3%
B	3-8%
C	8-15%
D	15-25%
E	25-50%
F	50%+

LEGEND

- PROPERTY LINE
- WETLANDS
- 60 EXISTING CONTOUR
- 26 SOIL SYMBOL
- SOIL BOUNDARY

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)

P4951

LAND CONSULTANTS

43 ROCKINGHAM ST
CONCORD, NH 03301

(603)228-5775

ALTUS ENGINEERING, INC.

133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

STATE OF NEW HAMPSHIRE CORY D. GILDEN NO. 14289 LICENSED PROFESSIONAL ENGINEER

5/6/22

THIS DRAWING HAS NOT BEEN RELEASED FOR CONSTRUCTION

ISSUED FOR: DESIGN AND PERMITTING

ISSUE DATE: MAY 5, 2022

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMITTAL	CDB	08/06/21
1	SURVEY UPDATE	CDB	05/05/22

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 4952-SITE_C010.dwg

SCALE: 24"x36" 1" = 40'
12"x18" 1" = 80'

OWNER:
7 WEST, LLC
P.O. BOX 728
DOVER, NH 03821

APPLICANT:
SUMMIT LAND DEVELOPMENT
340 CENTRAL AVE., #202
DOVER, NH 03820

PROJECT:
7 WEST COMMERCIAL DEVELOPMENT

TAX MAP H, LOT 11
DOVER, NH

TITLE:
SITE SPECIFIC SOILS SURVEY

SHEET NUMBER:
S-1

LEGEND

- PROPERTY LINE
- PROPOSED EASEMENT
- WETLAND BOUNDARY
- BUILDING SETBACK
- 100' CITY WETLAND BUFFER
- 50' LIMITED CUT ZONE
- EXISTING PAVEMENT/CURB
- VGC SGC — PROP. PAVEMENT/VERTICAL OR SLOPED GRANITE CURB
- SAWCUT LINE/MATCH EXISTING
- EXISTING/PROPOSED GUARDRAIL
- PROPOSED FENCE
- 60 — EXISTING CONTOUR
- 60 — PROPOSED CONTOUR
- x 100.00 / x 100.50T 100.00B — PROPOSED SPOT GRADE/TOP & BOTTOM (WHERE NECESSARY)
- PROPOSED RETAINING WALL
- PROPOSED STONE RETAINING WALL
- W — EXISTING WELL/WATER LINE/CURBSTOP/VALVE/HYDRANT
- S — EXISTING SEWER/MANHOLE
- G — EXISTING GAS/VALVE
- OHW UGE — EXIST. OVER/UNDERGROUND UTILITIES/POLE
- D — EXISTING DRAINAGE/CB/DMH
- W — PROPOSED THRUST BLOCK/WATER/CURB STOP/VALVE/HYDRANT
- S CO — PROPOSED SEWER/MANHOLE/CLEANOUT
- FM — PROPOSED SEWER FORCEMAIN
- G — PROPOSED GAS
- OHW — PROPOSED OVERHEAD UTILITIES/UTILITY POLE
- UGE — PROPOSED UNDERGROUND ELECTRIC/PHONE/TV
- PROPOSED DRAINAGE (HARD PIPE)/CB/DCB/DMH/FES
- PROPOSED CATCH BASIN INLET PROTECTION
- FD CO — PROPOSED DRAINAGE (FNDTN. DRAIN/PERF. PIPE)/CLEANOUT
- PROPOSED GROUND SLOPE DIRECTION
- SILTFENCE/SEDIMENT BARRIER/CONST. FENCE/CLEARING LIMITS
- STABILIZED CONSTRUCTION EXIT
- LIMIT OF DISTURBANCE/CLEARING
- EXISTING TREE/DRIP LINE
- PROPOSED TREELINE
- EXISTING/PROPOSED SHRUB LINE
- 44 — TREE PROTECTION/TREE REMOVAL/PARKING COUNT PER ROW
- PROPOSED EROSION CONTROL BLANKET
- PROPOSED RIPRAP
- PROPOSED CONCRETE
- PROPOSED DRIPEDGE
- PROPOSED PAVERS
- PROPOSED PAVEMENT RECLAMATION OR REMOVAL
- PROPOSED CONCRETE RECLAMATION OR REMOVAL
- PROPOSED RAINGARDEN w/ 3/4" STONE
- PROPOSED STONE VELOCITY REDUCTION APRON
- PROPOSED 100' CITY WETLAND BUFFER IMPACT

GENERAL SITE NOTES:

1. THE INTENT OF THIS PLAN SUBMITTAL IS TO PROVIDE THE NECESSARY INFORMATION FOR THE DESIGN AND REVIEW OF A COMMERCIAL DEVELOPMENT SITE ON ASSESSOR'S PARCEL H, LOT 11 FOR CITY AND STATE PERMIT APPLICATIONS. THIS PLAN SET PROVIDES DETAILED INFORMATION FOR THE GENERAL LAYOUT, GRADING, AND UTILITY LOCATIONS. ADDITIONAL DETAILED ENGINEERING DESIGN WILL BE REQUIRED TO IMPLEMENT CONSTRUCTION.
2. OWNER OF RECORD: 7 WEST, LLC
   P.O. BOX 728
   DOVER, NH 03821

   _____
   AUTHORIZED SIGNATURE
3. THE PROJECT PARCEL IS SHOWN AS LOT NO. 11, MAP H OF THE CITY OF DOVER TAX ASSESSOR'S MAPS.
4. THE PROJECT PARCEL CONTAINS 8.69 ACRES OR 378,500± SQUARE FEET AREA OF LAND.
5. TITLE REFERENCE FOR THE PROJECT PARCEL IS THE STRAFFORD COUNTY REGISTRY OF DEEDS, BOOK NO. 4468, PAGE NO. 979.
6. PROJECT PLAN REFERENCES:
   1.) SUBDIVISION OF LAND FOR THE DOVER SCHOOL DISTRICT, DURHAM ROAD (NH ROUTE 108), DOVER, NEW HAMPSHIRE; SCALE: 1" = 40'; DATED: 3/3/98; BY: DOUCET SURVEY, INC.; RECORDED S.C.R.D. PLAN 51–56.
   2.) PLAN OF PROPOSED FEDERAL AID PRIMARY PROJECT FG–BRF–043–1(1), N.H. PROJECT NO. C–3556, DURHAM ROAD, (N.H. ROUTE 108); BY: STATE OF NEW HAMPSHIRE PUBLIC WORKS AND HIGHWAYS; APPROVED 1/18/85.
   3.) PROPERTY ACQUIRED BY STATE OF NEW HAMPSHIRE FROM SALVATORE BONANNO IN DOVER, N.H. STRAFFORD COUNTY; SCALE: 1" = 20'; DATED: 28 MAY 1984; RECORDED S.C.R.D. PLAN 17E–68.
   4.) PLAN OF LAND IN DOVER, N.H. FOR D2M ASSOCIATES, SHEET 2 OF 2; SCALE: 1" = 40'; DATED: 6/28/83; BY: KIMBALL CHASE COMPANY, INC.; RECORDED S.C.R.D. PLAN 24–46.
   5.) PLAN OF PROPERTY OF THE SAWYER MILLS OWNED BY AMERICAN WOOLEN CO.; SCALE: 1" = 100'; DATED: APRIL 1932; BY: JOHN FRANKLIN, CE; RECORDED S.C.R.D. PLAN 1, POCKET 7, FOLDER 2.
   6.) PLAN OF LOT ON CENTRAL AVENUE OWNED BY CHA.S H. SAWYER; SCALE: 1" = 40'; DATED: JUNE 30, 1905; BY: WM A. GROVER; RECORDED S.C.R.D. PLAN 20, POCKET 10, FOLDER 1.
7. THE SUBJECT PROPERTY IS ENCUMBERED BY THE FOLLOWING EASEMENTS: WATER, DRAINAGE, ACCESS AND UTILITY.

   NO KNOWN EASEMENTS
8. ZONING DIMENSIONAL AND DENSITY REQUIREMENTS ARE SHOWN IN TABLE LOCATED ON THE SITE PLAN, SHEET C-2:
9. VARIANCE OR SPECIAL EXCEPTIONS - NO VARIANCES OR SPECIAL EXEMPTIONS HAVE BEEN GRANTED BY THE ZONING BOARD OF ADJUSTMENT FOR THE PROPOSED DEVELOPMENT

   CONDITIONAL USE PERMIT - THREE CONDITIONAL USE PERMITS ARE REQUIRE:
   > WETLANDS CONDITIONAL USE PERMIT
   > CONDITIONAL USE PERMIT OF ADDITIONAL PARKING
   > CONDITIONAL USE PERMIT FOR GATEWAY ARCHITECTURAL AND DIMENSIONAL STANDARDS
10. PROPERTY LINE INFORMATION HAS BEEN OBTAINED FROM A SURVEY PERFORMED BY MCENEANEY SURVEY ASSOCIATES , INC.

    AS REFERENCED IN THE ATTACHED "EXISTING CONDITIONS PLAN", DATED APRIL 22, 2022.
11. SUBJECT PARCEL IS LOCATED WITHIN A FEDERALLY DESIGNATED FLOOD HAZARD AREA.

    FROM SURVEYOR
12. WETLANDS WERE FLAGGED BY ECOSYSTEMS LAND PLANNING, JOHN ST. JOHN, CERTIFIED WETLANDS SCIENTIST #221, IN ACCORDANCE WITH CHAPTER 170-27.1 OF THE ZONING ORDINANCE AND SURVEYED BY MCENEANEY SURVEY INC.

    ADDITIONALLY, A SITE SPECIFIC SOILS REPORT WAS PREPARED BY BRUCE GILDAY (CERT #022), ON MARCH 28, 2022.
    THE SOILS SURVEY WAS COMPLETED IN ACCORDANCE WITH THE SITE-SPECIFIC SOIL MAPPING STANDARDS FOR NEW HAMPSHIRE AND VERMONT, VERSION 4.0 BY THE SOCIETY OF SOIL SCIENTISTS OF NORTHERN NEW ENGLAND AND STANDARDS ESTABLISHED BY THE NATIONAL COOPERATIVE SOIL SURVEY. THE SOIL SURVEY IS ALSO MEETS THE STANDARDS FOR AN ORDER 1 SOIL SURVEY AS DEFINED IN THE NH STATE-WIDE NUMERICAL SOIL LEGEND.
13. AS-BUILT PLANS OF THE SITE SHALL BE SUBMITTED ON PAPER AND IN A DIGITAL FORMAT IN PDF AND AUTOCAD DWG, AUTOCAD DXF OR AN 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 L.L.S. OR P.E. DIGITAL FILES SHALL BE GEO-REFERENCED TO NEW HAMPSHIRE STATE PLANE COORDINATES NAD83 AND SHALL BE EXPRESSED IN FEET.
14. THE INSTALLATION OF ELECTRIC POWER, CABLE TELEVISION AND TELEPHONE LINES SHALL BE UNDERGROUND THROUGHOUT THE SITE FOR WHICH DEVELOPMENT IS PROPOSED.
15. THE SUBJECT PARCEL IS SERVED BY MUNICIPAL WATER AND SEWER.
16. ALL CONSTRUCTION SHALL CONFORM WITH THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" AND WITH THE CITY OF DOVER COMMUNITY SERVICES REGULATIONS AND STANDARD SPECIFICATION FOR CONSTRUCTION. THE MORE STRINGENT SPECIFICATION SHALL APPLY.
17. SHEET D-1 PROVIDES EROSION CONTROL NOTES AND REQUIREMENTS.

    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. NO TREATMENT SWALES ARE PROPOSED FOR THIS PROJECT.
20. A LETTER OF CREDIT FOR THE COST OF REVEGETATING ALL DISTURBED AREAS ON THE SITE SHALL BE SUBMITTED, AND THE APPROVED CONSTRUCTION SIGN INSTALLED PRIOR TO ANY EARTH DISTURBING ACTIVITY OCCURS.
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. 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. SITE CONSTRUCTION HOURS SHALL BE LIMITED TO:

    MONDAY-FRIDAY 7 AM-6 PM,
    SATURDAY 9 AM-4 PM.
    SUNDAY - NO WORK ALLOWED WITHOUT APPROVAL FROM CITY
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 COMMERCIAL . APPROXIMATELY 42,480 SQUARE FEET OF GLA OF COMMERCIAL SPACE WILL BE PROVIDED IN THE NEW BUILDING.
25. THE FOLLOWING FEDERAL AND STATE PERMITS HAVE BEEN ISSUED FOR THE SUBJECT PROPERTY AND CONTRACTOR SHALL COMPLY WITH ALL CONDITIONS OF PERMITS :

    NHDES SHORELAND PERMIT *(PERMIT: #_____)*
    NHDES ALTERATION OF TERRAIN PERMIT *(PERMIT: #_____)*
    NHDES SEWER CONNECTION PERMIT *(PERMIT: #_____)*
    EPA NPDES CONSTRUCTION GENERAL PERMIT *(TO BE PROVIDED 2 WEEKS PRIOR TO CONSTRUCTION)*
26. COMMERCIAL VEHICLE ROUTE DURING CONSTRUCTION SHALL CONFORM WITH 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 AND SHALL BE STAMPED BY A STRUCTURAL ENGINEER.
28. ANY FENCE TALLER THAN SEVEN FEET (7') REQUIRES THE ISSUANCE OF A BUILDING PERMIT FROM INSPECTION SERVICES.
29. 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
30. 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 TO THE REQUIREMENTS FOR MAINTENANCE AND REPORTING.
31. FIRE DEPARTMENT ACCESS ROAD(S) SHALL BE INSTALLED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF FIRE APPARATUS IN ALL WEATHER CONDITIONS AT ALL TIMES.
32. THE MAXIMUM PARKING SPACE CALCULATION IS 255 SPACES (BASED ON 1 STALL PER 275 GLA) AND 210 SPACES ARE PROVIDED. A CONDITIONAL USE PERMIT IS REQUIRED.
33. EXTERIOR LIGHTING SHALL BE CUT-OFF TYPE FIXTURES PER CHAPTER 153-14-E AND SHALL PROVIDE LIGHTING DIRECTED ON-SITE ONLY.
34. TOPOGRAPHIC SURVEY PERFORMED BY MCENEANEY SURVEY ASSOCIATES, INC. IN MARCH/APRIL OF 2020 AND UPDATED IN APRIL 2022.
35. VERTICAL DATUM IS NAVD88 BASED ON GPS OBSERVATION DATA.

    BASIS OF BEARING IS NH STATE PLANE (NAD83) BASED ON GPS OBSERVATION.
36. A SECURITY SYSTEM SHALL BE INSTALLED AS REQUIRED BY CHAPTER 58, ARTICLE I, SECTION 58-2 OF THE CODE OF THE CITY OF DOVER.
37. APPROVED BACKFLOW PREVENTORS SHALL BE PROVIDED FOR BOTH FIRE AND DOMESTIC WATER LINES.
38. THE *PROPOSED* STRUCTURES SHALL BE SERVED BY A SPRINKLER SYSTEM AS REQUIRED UNDER CHAPTER 109- 30 OF THE CODE OF THE CITY OF DOVER AND THE 2015 STATE BUILDING CODES.
39. 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.
40. 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.
41. THE SITE LAYOUT IS DESIGNED IN COMPLIANCE WITH APPLICABLE ACCESSIBILITY REGULATIONS. THE PROPOSED STRUCTURE WILL BE ALSO BE DESIGNED IN ACCORDANCE WITH APPLICABLE ACCESSIBILITY REGULATIONS.

CONDITIONS OF APPROVAL:

THE CITY OF DOVER PLANNING BOARD GRANTED CONDITIONAL APPROVAL FOR THE PROPOSED SITE PLAN AT THE _____ PLANNING BOARD MEETING, FILE #22–38. THE CONDITIONS TO BE MET PRIOR TO THE PLANNING BOARD CHAIR SIGNING OF THE PLANS ARE COMPLETED AND INCLUDED IN THIS SUBMITTAL. THE FOLLOWING ADDITIONAL CONDITIONS SHALL BE NET BY AS REQUIRED PRIOR TO CONSTRUCTION, ISSUANCE OF A BUILDING PERMIT, AND FOR OCCUPANCY:

CONDITIONS TO BE MET PRIOR TO ANY CONSTRUCTION ACTIVITY:

TO BE COMPLETED AFTER PLANNING BOARD CONDITIONAL APPROVAL

CONDITIONS TO BE MET PRIOR TO ISSUANCE OF A BUILDING PERMIT:

TO BE COMPLETED AFTER PLANNING BOARD CONDITIONAL APPROVAL

CONDITIONS TO BE MET PRIOR TO OCCUPANCY:

TO BE COMPLETED AFTER PLANNING BOARD CONDITIONAL APPROVAL

ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

STATE OF NEW HAMPSHIRE — CORY D. BELDEN No. 14239 LICENSED PROFESSIONAL ENGINEER

10/5/22

THIS DRAWING HAS NOT BEEN RELEASED FOR CONSTRUCTION

ISSUED FOR: PLANNING BOARD

ISSUE DATE: OCTOBER 5, 2022

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMITTAL	CDB	10/14/21
1	PLANNING BOARD	CDB	05/05/22
2	TRC COMMENTS	CDB	10/05/22

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 4952–DETAILS.dwg

SCALE: 24"x36" N.T.S.
12"x18" N.T.S.

OWNER:
7 WEST, LLC
P.O. BOX 728
DOVER, NH 03821

APPLICANT:
SUMMIT LAND DEVELOPMENT
340 CENTRAL AVE., #202
DOVER, NH 03820

PROJECT:
7 WEST COMMERCIAL DEVELOPMENT

(FILE NO. P22–38)
TAX MAP H, LOT 11
DOVER, NH

TITLE:
GENERAL NOTES

SHEET NUMBER:
GN-1

P4952

DEMOLITION NOTES

1. CONTRACTOR SHALL SAFELY SECURE THE SITE WITH SECURITY FENCING. FENCING SHALL BE LOCKED DURING NON-WORK HOURS.
2. CITY DEMOLITION PERMIT REQUIRED PRIOR TO ANY DEMOLITION ACTIVITIES. CONTRACTOR IS NOTIFIED THAT THIS PERMIT PROCESS MAY REQUIRE A 30-DAY LEAD TIME.
3. CONTRACTOR SHALL PRESERVE AND PROTECT ALL EXISTING UTILITIES SCHEDULED TO REMAIN.
4. THIS DEMOLITION PLAN IS INTENDED TO PROVIDE MINIMUM GUIDELINES FOR THE DEMOLITION OF EXISTING SITE FEATURES. UNLESS OTHERWISE NOTED TO REMAIN, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL PAVEMENT, CONCRETE, CURBING, SIGNS, POLES, UTILITIES, FENCES, VEGETATION AND OTHER EXISTING FEATURES AS NECESSARY TO FULLY CONSTRUCT THE PROJECT.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE TIMELY NOTIFICATION OF ALL PARTIES, CORPORATIONS, COMPANIES, INDIVIDUALS AND STATE AND LOCAL AUTHORITIES OWNING AND/OR HAVING JURISDICTION OVER ANY UTILITIES RUNNING TO, THROUGH OR ACROSS AREAS TO BE DISTURBED BY DEMOLITION AND/OR CONSTRUCTION ACTIVITIES WHETHER OR NOT SAID UTILITIES ARE SUBJECT TO DEMOLITION, RELOCATION, MODIFICATION AND/OR CONSTRUCTION.
6. ALL UTILITY DISCONNECTIONS/DEMOLITIONS/RELOCATIONS TO BE COORDINATED BETWEEN THE CONTRACTOR, ALL APPROPRIATE UTILITY COMPANIES AND THE DEPARTMENT OF PUBLIC WORKS. UNLESS OTHERWISE SPECIFIED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RELATED EXCAVATION, TRENCHING AND BACKFILLING.
7. ALL STRUCTURES, CURBING, CONCRETE, PAVEMENT AND SUBBASE MATERIALS SHALL BE REMOVED FROM PROPOSED LANDSCAPE AREAS AND REPLACED WITH LOAM MATERIALS SUITABLE FOR LANDSCAPE AND/OR STORMWATER MANAGEMENT PURPOSES AND MEETING THE PROJECT SPECIFICATIONS.
8. WHERE SPECIFIED TO REMAIN, MANHOLE RIMS, CATCH BASIN GRATES, VALVE COVERS, HANDHOLES, MONITORING WELLS, ETC. SHALL BE ADJUSTED TO FINISH GRADE.
9. NO BURNING SHALL BE PERMITTED PER LOCAL REGULATIONS.
10. HAZARDOUS MATERIALS ENCOUNTERED DURING DEMOLITION AND CONSTRUCTION ACTIVITIES SHALL BE ABATED IN STRICT ACCORDANCE WITH ALL APPLICABLE STATE AND LOCAL REGULATIONS.
11. IN AREAS WHERE CONSTRUCTION IS TO BE ADJACENT TO ABUTTING PROPERTIES, THE CONTRACTOR SHALL INSTALL ORANGE CONSTRUCTION FENCING ALONG THE PROPERTY LINE IN ALL AREAS WHERE SILT FENCING IS NOT OTHERWISE REQUIRED.
12. SEE EROSION CONTROL PLANS FOR EROSION CONTROL REQUIREMENTS TO BE IN PLACE PRIOR TO START OF DEMOLITION ACTIVITIES, INCLUDING, BUT NOT LIMITED TO; PERIMETER EROSION CONTROL MEASURES AND STORM DRAIN INLET PROTECTION.
13. ALL DEMOLISHED MATERIALS OR MATERIALS SCHEDULED TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS SPECIFIED.
14. ALL MATERIALS SCHEDULED TO BE REMOVED SHALL BE LEGALLY DISPOSED IN ACCORDANCE WITH ALL LOCAL, STATE, & FEDERAL REGULATIONS AND CODES.
15. LEDGE REMOVAL IS ANTICIPATED ON THE PROJECT. THE CONTRACTOR SHALL PROVIDE THE CITY WITH A LEDGE REMOVAL PLAN. IF BLASTING IS TO BE PERFORMED, ALL STATE AND LOCAL REQUIREMENTS SHALL BE COMPLIED WITH. SEE BEST MANAGEMENT PRACTICES FOR BLASTING NOTES.
16. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL DISCONNECTIONS/INSTALLATIONS WITH EVERSOURCE. CONTACT NICK KOSKO @ 603-332-4227, EXT. 5555334
17. CONTRACTOR SHALL COORDINATE ALL NATURAL GAS DISCONNECTIONS/INSTALLATIONS WITH UNITIL CORPORATION. CONTACT DAVID BEAULIEU @ 603-294-5144
18. CONTRACTOR SHALL COORDINATE ALL CABLE DISCONNECTIONS/INSTALLATIONS WITH COMCAST. CONTACT MIKE COLLINS @ 603-679-5695 EXT 1037
19. CONTRACTOR SHALL COORDINATE ALL TELE-COMMUNICATION DISCONNECTIONS AND INSTALLATION WITH FAIRPOINT COMMUNICATIONS. CONTACT JOE CONSIONE @ 603-427-5255

SITE NOTES

1. ALL BONDS AND FEES SHALL BE PAID/POSTED PRIOR TO INITIATING CONSTRUCTION.
2. ALL CONDITIONS OF APPROVAL SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.
3. ALL CONSTRUCTION SHALL MEET THE MINIMUM CONSTRUCTION STANDARDS OF THE CITY OF DOVER & NHDOT'S STANDARD SPECIFICATIONS FOR ROAD & BRIDGE, LATEST EDITION. THE MORE STRINGENT SPECIFICATION SHALL GOVERN.
4. CLEAN AND COAT VERTICAL FACE OF EXISTING PAVEMENT AT SAWCUT LINE WITH RS-1 IMMEDIATELY PRIOR TO PLACING NEW BITUMINOUS CONCRETE.
5. THE CONTRACTOR SHALL VERIFY ALL BENCHMARKS AND TOPOGRAPHY IN THE FIELD PRIOR TO CONSTRUCTION.
6. THE CONTRACTOR SHALL VERIFY ALL BUILDING DIMENSIONS WITH THE ARCHITECTURAL AND STRUCTURAL PLANS PRIOR TO CONSTRUCTION. ALL DISCREPANCIES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER FOR RESOLUTION.
7. AREA OF DISTURBANCE IS OVER 43,560 SF, SO COVERAGE UNDER EPA NPDES PHASE II CONSTRUCTION GENERAL PERMIT IS REQUIRED (NOI TO BE PREPARED AND SUBMITTED BY CONTRACTOR, SWPPP AND INSPECTIONS TO BE PREPARED AND PERFORMED BY CONTRACTOR).
8. SITEWORK ACTIVITIES ARE OVER 100,000 SF. NHDES ALTERATION OF TERRAIN PERMIT IS REQUIRED.
9. SNOW SHALL BE STORED AT THE EDGE OF PAVEMENT, IN UPLAND AREAS SHOWN THEREON. NO SNOW STORAGE SHALL BE PROVIDED IN THE LANDSCAPED ISLAND BETWEEN THE DRIVEWAY ENTRANCE AND EXIT THAT WOULD RESTRICT SITE VEHICULAR AND PEDESTRIAN SIGHT DISTANCE. IF ADEQUATE ON-SITE SNOW STORAGE IS NOT AVAILABLE, THE SNOW SHALL BE REMOVED FROM THE SITE AND LEGALLY DISPOSED.
10. PAVEMENT MARKINGS SHALL BE CONSTRUCTED USING WHITE, YELLOW, OR BLUE TRAFFIC PAINT (WHERE SPECIFIED) MEETING THE REQUIREMENTS OF AASHTO M248, TYPE F OR EQUAL. PAINTED ISLANDS AND LOADING ZONES SHALL BE 4"-WIDE DIAGONAL WHITE LINES 3'-0" O.C. BORDERED BY 4"-WIDE WHITE LINES. PARKING STALLS SHALL BE SEPARATED BY 4"-WIDE WHITE LINES. SEE DETAILS FOR HANDICAP SYMBOLS, SIGNS AND SIGN DETAILS. PAVEMENT MARKINGS SHALL BE INSTALLED AT LEAST 14-DAYS AFTER INSTALLATION OF WEARING COURSE PAVEMENT. CONTRACTOR SHALL APPLY TWO (2) COATS OF ALL PAVEMENT MARKINGS.
11. PAVEMENT MARKINGS AND SIGNS SHALL CONFORM TO THE REQUIREMENTS OF THE "MANUAL ON UNIFORM TRAFFIC DEVICES," "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS" AND THE AMERICANS WITH DISABILITIES ACT (ADA), LATEST EDITIONS.
12. ALL IMPROVEMENTS SHOWN ON THIS SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THIS SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE DOVER PLANNING DIRECTOR.
13. SITEWORK CONTRACTOR SHALL PREPARE A LICENSED LAND SURVEYOR (LLS) STAMPED AS-BUILT SITE PLAN & PROVIDE A DIGITAL (CAD FORMAT) COPY FOR THE CITY'S G.I.S. DATA BASE.
14. THE PROPOSED LIGHTING SHALL BE DARK SKY FRIENDLY.
15. THE SITE SHALL BE CONSTRUCTED ON ACCORDANCE WITH ALL APPLICABLE STANDARDS IN ACCORDANCE WITH THE AMERICAN DISABILITIES ACT (ADA).
16. IT IS THE INTENT THAT THE PLANS PROVIDED COMPLY WITH ADA STANDARDS AND NH RSA 155-A:5. THE CONTRACTOR SHALL OBTAIN AND SUBMIT TO THE OWNER OF THE PUBLIC BUILDING A WRITTEN CERTIFICATION FROM A PERSON QUALIFIED UNDER RSA 155-A:5-B THAT THE CONSTRUCTION DRAWINGS FOR THE PROPOSED NEW CONSTRUCTION MEETS THE ACCESSIBILITY STANDARDS OF THE STATE BUILDING CODE.

GRADING AND DRAINAGE NOTES

1. ALL BENCHMARKS AND TOPOGRAPHY SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO INITIATING CONSTRUCTION
2. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL READ AND FAMILIARIZE THEMSELVES WITH THE PROJECT GEOTECHNICAL REPORT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FOLLOWING ALL THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT.
3. DEWATERING ACTIVITIES SHALL BE DONE IN ACCORDANCE WITH TEH USEPA CONSTRUCTION GENERAL PERMIT AND NHDES REGULATIONS AND GUIDELINES.
4. PROTECTION OF SUBGRADE: THE CONTRACTOR SHALL BE REQUIRED TO MAINTAIN STABLE, DEWATERED SUBGRADES FOR FOUNDATIONS, PAVEMENT AREAS, UTILITY 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 EFFECTIVE DEWATERING PROGRAM. SOILS EXHIBITING HEAVING OR INSTABILITY SHALL BE OVER EXCAVATED TO MORE COMPETENT BEARING SOIL AND BEARING SOIL AND REPLACED WITH FREE DRAINING STRUCTURAL FILL IF THE EARTHWORK IS PERFORMED DURING FREEZING WEATHER, EXPOSED SUBGRADES AREA SUSCEPTIBLE TO FROST. NO FILL OR UTILITIES SHALL BE PLACED ON FROZEN SOIL CRUST AT THE COMMENCEMENT OF EACH DAY'S OPERATIONS DEGREE OF INSULATION AGAINST FREEZING.
5. IF SUITABLE, EXCAVATED MATERIALS SHALL BE PLACED AS FILL WITHIN UPLAND AREAS ONLY AND SHALL NOT BE PLACED WITHIN WETLANDS. 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. ALL STORM DRAIN PIPE SHALL BE ADS N-12 OR EQUAL AND APPROVED BY THE ENGINEER.
7. ALL CATCH BASIN, GATE VALVE COVERS, AND MANHOLE RIMS SHALL BE SET FLUSH WITH OR NO LESS THAN 0.1' BELOW FINISHED GRADE IN PAVED AREAS.. ANY RIM OR VALVE COVER ABOVE SURROUNDING FINISHED GRADE WILL NOT BE ACCEPTED.
8. ALL CATCH BASINS SHALL BE PRECAST, H-20 LOADING AND BE EQUIPPED WITH 4-FOOT DEEP MIN SEDIMENTATION SUMPS AND GREASE HOODS. (SEE DETAILS)
9. ALL SPOT GRADES ARE AT THE FINISH GRADE AND BOTTOM OF CURB WHERE APPLICABLE.
10. UNLESS OTHERWISE SPECIFIED, RETAINING WALL AND BUILDING PERIMETER DRAINS SHALL BE DIRECTED TO THE NEAREST DRAINAGE STRUCTURE. IF DEEMED APPROPRIATE, CONTRACTOR SHALL PROVIDE ADDITIONAL UNDERDRAINS AT THE DIRECTION OF THE ENGINEER.
11. RETAINING WALLS OVER 4 FEET IN HEIGHT MUST BE DESIGNED AND STAMPED BY A STRUCTURAL ENGINEER.
12. MATCH EXISTING SHOULDER GRADE SLOPE ALONG DURHAM ROAD.
13. CONTRACTOR SHALL PROTECT ALL RAINGARDENS AND STORMWATER MANAGEMENT AREAS FROM CONSTRUCTION STORMWATER RUNOFF. TEMPORARY SEDIMENT BASINS SHALL BE CONSTRUCTED DURING CONSTRUCTION. STORMWATER SHALL NOT BE DIRECTED TO THE RAINGARDENS UNTIL THE WATERSHED AREA HAS BEEN STABILIZED.
14. ALL SLOPES STEEPER THAN 4:1 AND 4 FEET IN HEIGHT SHALL BE PROTECTED WITH EROSION CONTROL BLANKET UNTIL THE VEGETATION IS ESTABLISHED AND THE SLOPE IS STABILIZED.

UTILITY NOTES

1. ALL ROAD/LANE CLOSURES OR OTHER TRAFFIC INTERRUPTIONS ON CITY ROADS SHALL BE COORDINATED WITH THE DOVER POLICE DEPARTMENT AND DPW.
2. ALL WATER MAIN INSTALLATIONS AND SERVICE CONNECTIONS SHALL CONFORM TO DOVER WATER DEPARTMENT STANDARDS.
3. ALL SEWER INSTALLATIONS AND SERVICE CONNECTIONS SHALL CONFORM TO DOVER SEWER STANDARDS. CONTRACTOR SHALL CONTACT DOVER DPW FOR TESTING OF SEWER LINES.
4. DO NOT BEGIN CONSTRUCTION UNTIL ALL STATE, LOCAL, AND FEDERAL PERMITS HAVE BEEN APPLIED FOR AND RECEIVED. CONTRACTOR SHALL FAMILIARIZE THEMSELVES WITH ALL PERMIT CONDITIONS AND REQUIREMENTS.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR POSTING OF ALL BONDS AND PAYMENT OF ALL TAP, TIE-IN AND CONNECTION FEES.
6. ALL TRENCHING, PIPE LAYING AND BACKFILLING SHALL CONFORM TO FEDERAL OSHA AND CITY REGULATIONS.
7. SITEWORK CONTRACTOR SHALL COORDINATE ALL WORK WITH MECHANICAL DRAWINGS.
8. SEE ARCHITECTURAL/MECHANICAL DRAWINGS FOR EXACT LOCATIONS & ELEVATIONS OF UTILITY CONNECTIONS AT BUILDINGS. COORDINATE ALL WORK WITHIN FIVE (5) FEET OF BUILDINGS WITH BUILDING CONTRACTOR AND ARCHITECTURAL/MECHANICAL DRAWINGS. ALL CONFLICTS AND DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY AND PRIOR TO COMMENCING RELATED WORK.
9. FINAL UTILITY LOCATIONS TO BE COORDINATED BETWEEN THE CONTRACTOR, ALL APPROPRIATE UTILITY COMPANIES AND THE ARCHITECT.
10. CONTRACTOR SHALL COORDINATE ALL TELECOMMUNICATIONS INSTALLATIONS WITH FAIRPOINT COMMUNICATIONS.
11. CONTRACTOR SHALL COORDINATE ALL CABLE INSTALLATIONS WITH COMCAST.
12. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL INSTALLATIONS WITH EVERSOURCE. ALL ELECTRIC CONDUIT INSTALLATION SHALL BE INSPECTED BY EVERSOURCE PRIOR TO BACKFILL, 48-HOUR MINIMUM NOTICE REQUIRED.
13. TRANSFORMER SHALL BE PAD MOUNTED. COORDINATE WITH ARCHITECT & EVERSOURCE.
14. DETECTABLE WARNING TAPE SHALL BE PLACED OVER THE ENTIRE LENGTH OF ALL BURIED UTILITIES, COLORS PER THE RESPECTIVE UTILITY PROVIDERS.
15. THE TESTING OF THE MUNICIPAL SEWER INFRASTRUCTURE IMPROVEMENTS SHALL BE UNDER THE SUPERVISION OF THE DOVER DEPARTMENT OF PUBLIC WORKS (DPW).

GENERAL NOTES

1. THE INTENT OF THIS PLAN SET IS TO PROVIDE THE NECESSARY INFORMATION FOR THE REVIEW, PERMITTING AND DEVELOPMENT OF THE PROPOSED COMMERCIAL DEVELOPMENT SITE ON DURHAM ROAD, IN DOVER, NH. THESE PLANS PROVIDE DETAILED INFORMATION FOR THE SITE LAYOUT, GRADING, UTILITIES, STORMWATER MANAGEMENT, AND LANDSCAPE IMPROVEMENTS. THE PROJECT INTENDS TO IMPLEMENT A NEW 3-STORY BUILDING WITH ASSOCIATED SITE IMPROVEMENTS, INCLUDING; PARKING, DRIVEWAYS, SIDEWALKS/ WALKWAYS, UTILITIES, DRAINAGE AND STORMWATER MANAGEMENT FACILITIES.
2. DO NOT BEGIN CONSTRUCTION UNTIL ALL STATE, LOCAL AND FEDERAL PERMITS HAVE BEEN APPLIED FOR AND RECEIVED. THE LANDOWNER AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH LOCAL, STATE AND FEDERAL WETLAND PERMITTING REQUIREMENTS INCLUDING PROTECTION OF NATURAL RESOURCES AND THEIR BUFFERS.
3. CONTRACTOR SHALL CALL DIG SAFE AT 1 (800) DIG-SAFE AT LEAST SEVENTY-TWO (72) HOURS PRIOR TO COMMENCING CONSTRUCTION.
4. CONTRACTOR SHALL NOTIFY CITY OF DOVER DEPARTMENT OF PUBLIC WORKS PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES.
5. CONTRACTOR SHALL INSTALL AND MAINTAIN A TEMPORARY SECURITY FENCE AROUND THE PERIMETER OF THE WORK AREA THROUGHOUT CONSTRUCTION.
6. CONTRACTOR SHALL INSTALL AND MAINTAIN TEMPORARY SEDIMENT AND EROSION CONTROL ITEMS TO PREVENT SEDIMENT FROM CONSTRUCTION ACTIVITIES FROM LEAVING THE SITE. CONTROLS SHALL BE INSPECTED ON A REGULAR BASIS AND AFTER ALL RAIN EVENTS OF 0.25 INCHES OR GREATER. ANY DEFICIENCIES IN THE CONTROLS SHALL BE ADDRESSED IMMEDIATELY AND BROUGHT TO THE ATTENTION OF THE OWNER. ALL STORMS DRAINS WITHIN OR ADJACENT TO THE WORK AREA, WITH THE POTENTIAL TO RECEIVE RUNOFF FROM EXPOSED CONSTRUCTION AREAS, SHALL RECEIVE STORM DRAIN INLET PROTECTION.
7. CONTRACTOR SHALL PREVENT TRACKING OF DIRT ONTO ANY PUBLIC OR PRIVATE ROADWAYS. IF TRACKING OF DIRT FROM CONSTRUCTION VEHICLES IS PRESENT ON THE OPEN STREETS, CONTRACTOR WILL BE REQUIRED TO SWEEP THE ROADWAY AT NO ADDITIONAL EXPENSE TO THE OWNER.

BEST MANAGEMENT PRACTICES FOR BLASTING

All activities related to blasting shall follow Best Management Practices (BMPs) to prevent contamination of groundwater including preparing, reviewing and following an approved blasting plan; proper drilling, explosive handing and loading procedures; observing the entire blasting procedures; evaluating blasting performance; and handling and storage of blasted rock.

(1) Loading practices. The following blasthole loading practices to minimize environmental effects shall be followed:

a. Drilling logs shall be maintained by the driller and communicated directly to the blaster. The logs shall indicate depths and lengths of voids, cavities, and fault zones or other weak zones encountered as well as groundwater conditions.

b. Explosive products shall be managed on-site so that they are either used in the borehole, returned to the the delivery vehicle, or placed in secure containers for off-site disposal.

c. Spillage around the borehole shall either be placed in the borehole or cleaned up and returned to an appropriate vehicle for handling or placement in secured containers for off-site disposal.

d. Loaded explosives shall be detonated as soon as possible and shall not be left in the blastholes overnight, unless weather or other safety concerns reasonably dictate that detonation should be postponed.

e. Loading equipment shall be cleaned in an area where wastewater can be properly contained and handled in a manner that prevents release of contaminants to the environment.

f. Explosives shall be loaded to maintain good continuity in the column load to promote complete detonation. Industry accepted loading practices for priming, stemming, decking and column rise need to be attended to.

(2) Explosive Selection. The following BMPs shall be followed to reduce the potential for groundwater contamination when explosives are used:

a. Explosive products shall be selected that are appropriate for site conditions and safe blast execution.

b. Explosive products shall be selected that have the appropriate water resistance for the site conditions present to minimize the potential for hazardous effect of the product upon groundwater.

(1) Prevention of Misfires. Appropriate practices shall be developed and implemented to prevent misfires.

(2) Muck Pile Management. Muck piles (the blasted pieces of rock) and rock piles shall be managed in a manner to reduce the potential for contamination by implementing the following measures:

a. Remove the muck pile from the blast area as soon as reasonably possible.

b. Manage the interaction of blasted rock piles and stormwater to prevent contamination of water supply wells or surface water.

(5) Spill Prevention Measures and Spill Mitigation. Spill prevention and spill mitigation measures shall be implemented to prevent the release of fuel and other related substances to the environment. The measures shall include at a minimum:

a. The fuel storage requirements shall include:

1. Storage of regulated substances on an impervious surface.
2. Secure storage areas against unauthorized entry.
3. Label regulated containers clearly and visibly.
4. Inspect storage areas weekly.
5. Cover regulated containers in outside storage areas.
6. Wherever possible, keep regulated containers that are stored outside more than 50 feet from surface water and storm drains, 75 feet from private wells, and 400 feet from public wells.
7. Secondary containment is required for containers containing regulated substances stored outside, except for on premise use heating fuel tanks, or aboveground or underground storage tanks otherwise regulated.

b. The fuel handling requirements shall include:

1. Except when in use, keep containers containing regulated substances closed and sealed.
2. Place drip pans under spigots, valves, and pumps.
3. Have spill control and containment equipment readily available in all work areas.
4. Use funnels and drip pans when transferring regulated substances.
5. Perform transfers of regulated substances over an impervious surface.

c. The training of on-site employees and the on-site posting of release response information describing what to do in the event of a spill of regulated substances.

d. Fueling and maintenance of excavation, earthmoving and other construction related equipment will comply with the regulations of the New Hampshire Department of Environmental Services [note these requirements are summarized in WD-DWGB-22-6 Best Management Practices for Fueling and Maintenance of Excavation and Earthmoving Equipment" or its successor document. (see http://des.nh.gov/organization/commisioner/pip/factsheets/dwgb/documents/dwgb-22-6.pdf)

ALTUS ENGINEERING, INC.
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STATE OF NEW HAMPSHIRE
CORY D. BELDEN
No. 14239
LICENSED PROFESSIONAL ENGINEER
10/5/22

THIS DRAWING HAS NOT BEEN RELEASED FOR CONSTRUCTION

ISSUED FOR: PLANNING BOARD

ISSUE DATE: OCTOBER 5, 2022

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	PLANNING BOARD	CDB	05/05/22
1	TRC COMMENTS	CDB	10/05/22

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 4952-DETAILS.dwg

SCALE: 24"x36" N.T.S.
12"x18" N.T.S.

OWNER:
7 WEST, LLC
P.O. BOX 728
DOVER, NH 03821

APPLICANT:
SUMMIT LAND DEVELOPMENT
340 CENTRAL AVE., #202
DOVER, NH 03820

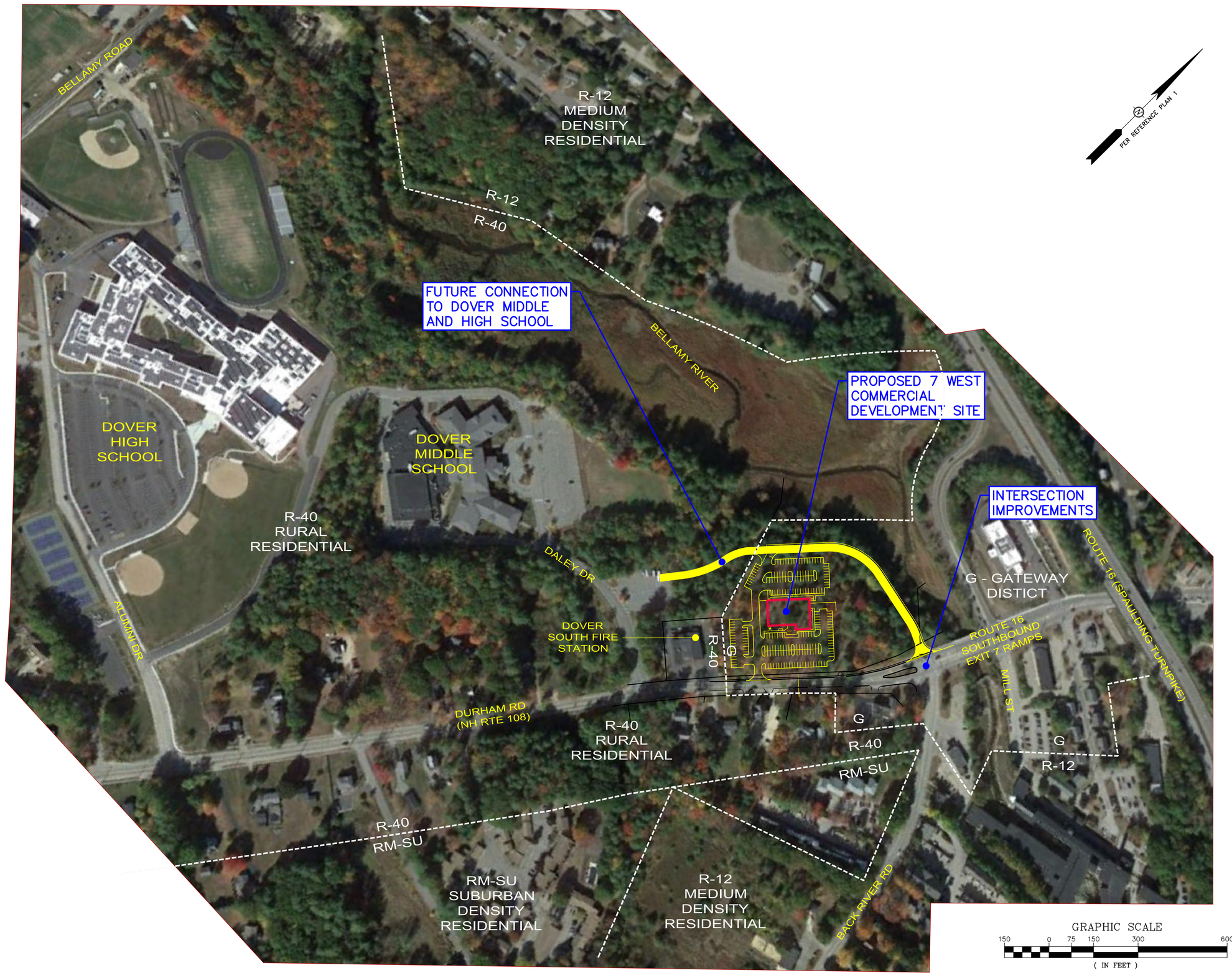
PROJECT:
7 WEST
COMMERCIAL
DEVELOPMENT

(FILE NO. P22-38)
TAX MAP H, LOT 11
DOVER, NH

TITLE:
GENERAL NOTES

SHEET NUMBER:
GN-2

P4952



GRAPHIC SCALE

150 0 75 150 300 600

(IN FEET)

P4951

ALTUS
ENGINEERING, INC.

133 COURT STREET PORTSMOUTH, NH 03801
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STATE OF NEW HAMPSHIRE
CORY D. BELDEN
No. 14283
LICENSED
PROFESSIONAL ENGINEER
5/6/22

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ISSUED FOR:
PLANNING BOARD

ISSUE DATE:
MAY 5, 2022

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMITTAL	CDB	5/05/22

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 4952-SITE.dwg

SCALE: 24"x36" 1" = 150'
12"x18" 1" = 300'

OWNER:
7 WEST, LLC
P.O. BOX 728
DOVER, NH 03821

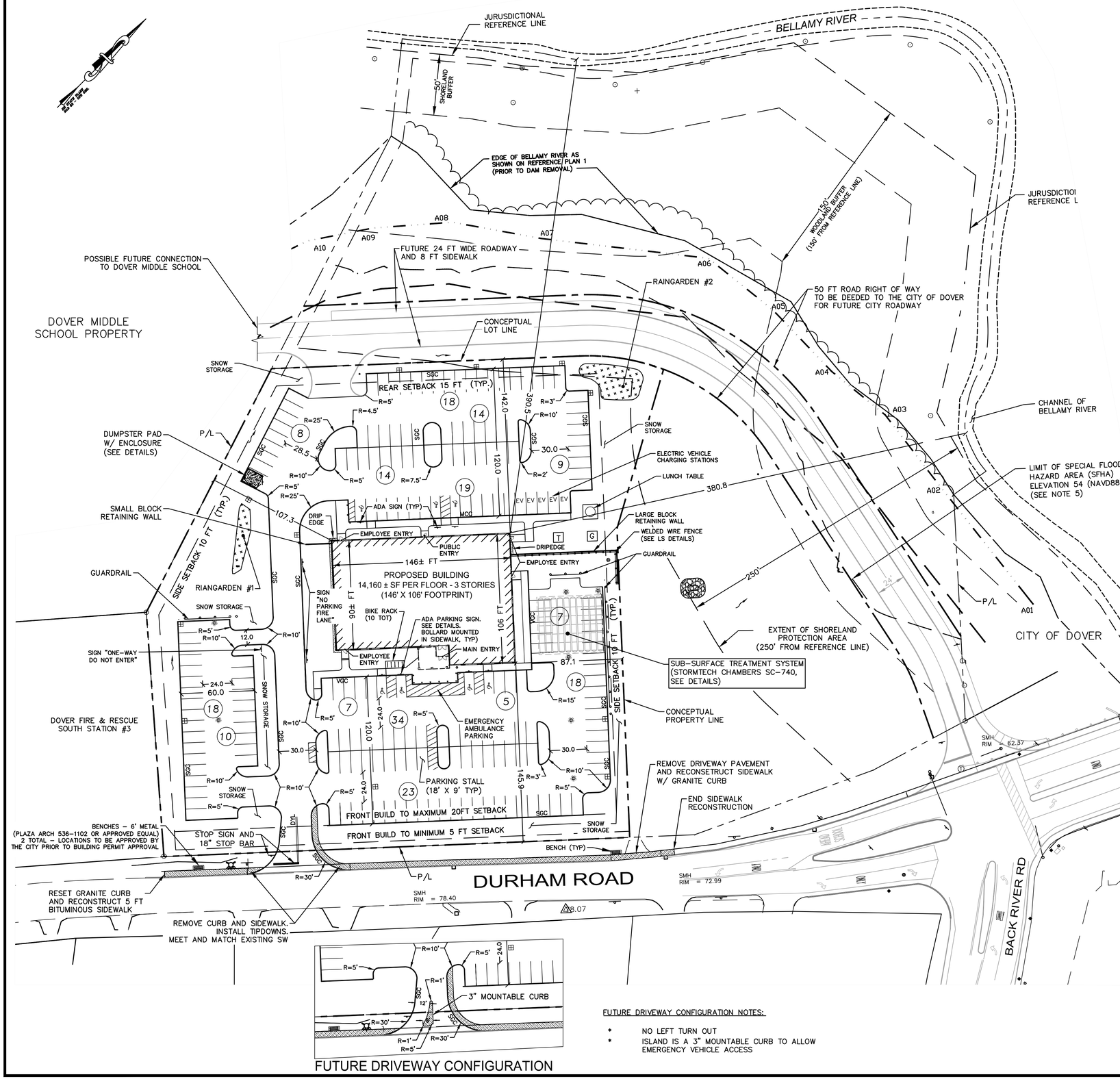
APPLICANT:
SUMMIT LAND DEVELOPMENT
340 CENTRAL AVE., #202
DOVER, NH 03820

PROJECT:
7 WEST
COMMERCIAL
DEVELOPMENT

(FILE NO. P22-38)
TAX MAP H, LOT 11
DOVER, NH

TITLE:
NEIGHBORHOOD
SITE PLAN

SHEET NUMBER:
C-1



FUTURE DRIVEWAY CONFIGURATION

FUTURE DRIVEWAY CONFIGURATION NOTES:

* NO LEFT TURN OUT
* ISLAND IS A 3" MOUNTABLE CURB TO ALLOW EMERGENCY VEHICLE ACCESS

PARKING CALCULATIONS:
PER SECTION 153-14.D.1.B. AND AS DETERMINED BY DOVER DIRECTOR OF PLANNING AND COMMUNITY DEVELOPMENT.

ALLOWED (4.8 PARKING SPACES/1000 SF GLA)	=	205 PARKING SPACES
PROPOSED	=	205 SPACES PROVIDED

* 2% OF THE TOTAL NUMBER OF NEW PARKING SPACES SHALL HAVE ELECTRIC VEHICLE SUPPLY EQUIPMENT PER, SITE PLAN REGULATION 153-14.D.3
* BICYCLE PARKING SHALL BE PROVIDED FOR 5% OF VEHICLE PARKING SPACES.

LEGEND:
(XX) = NUMBER OF PARKING STALLS

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)

P4952

PLANNING BOARD APPROVAL

Signature: _____

Date: _____

NOTES:

BASE PLAN IS FROM "EXISTING CONDITIONS PLAN" FOR 7 WEST, LLC PERFORMED BY MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND, DATED AUGUST 9, 2021 AND REVISED APRIL 22, 2022.

1.) OWNER OF RECORD:
7 WEST, LLC
C/O SUMMIT LAND DEVELOPMENT, LLC
340 CENTRAL AVE STE 202
DOVER, NEW HAMPSHIRE 03820
S.C.R.D, VOLUME 4468, PAGE 979

2.) H / 11 - DENOTES TAX MAP AND PARCEL NUMBER.

3.) PARCEL AREA = 378,500± S.F. S.F. / 8.69± Ac.

4.) ZONING DISTRICT: G (GATEWAY)
WETLAND PROTECTION AND CONSERVATION DISTRICT

DIMENSIONAL REQUIREMENTS:		PROVIDED
MINIMUM LOT SIZE	= N/A	
LOT COVERAGE	= 50% MINIMUM	9.8 %
FRONTAGE BUILD-OUT	= 60% MINIMUM	38.4%
BUILDING SETBACK REQUIREMENTS:		
FRONT BUILD TO	= 5-25 FEET	145.9 FEET
SIDE SETBACK	= 10 FEET	87.1 FEET
REAR SETBACK	= 15 FEET	142.0 FEET
BUILDING HEIGHT	= 2-4 STORY	3 STORIES

5.) A PORTION OF THE SUBJECT PARCEL IS LOCATED WITHIN THE SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1 PERCENT ANNUAL CHANCE FLOOD, ZONE AE (BASE FLOOD ELEVATION 54.0); AS SHOWN ON FLOOD INSURANCE RATE MAP 33017C0320E; EFFECTIVE DATE 9/30/2015.

* THE FLOOD ZONE MAPPING DOES NOT ACCOUNT FOR THE REMOVAL OF THE SAWYER MILL DAM IN 2019 ADJACENT TO THE PROJECT SITE. A FEMA LETTER OF MAP REVISION (LOMR) IS BEING PREPARED (BY OTHERS) TO ADJUST THE FLOOD ZONE ELEVATION IN THE PROJECT AREA BASED ON THE DAM REMOVAL. DATES FOR SUBMITTALS, APPROVAL, AND WHEN THE NEW ELEVATIONS BECOME EFFECTIVE ARE UNKNOWN.

6.) BASIS OF BEARING IS NH STATE PLANE (NAD83) BASED ON GPS OBSERVATION. VERTICAL DATUM IS NAVD88 BASED ON GPS OBSERVATION.

7.) JURISDICTIONAL WETLANDS AND REFERENCE LINE IDENTIFIED AND FLAGGED BY JOHN ST. JOHN, N.H.C.W.S. 221 OF ECOSYSTEMS LAND PLANNING ON APRIL 21, 2021 AND FIELD LOCATED BY THIS OFFICE.

8.) PORTIONS OF THE PARCELS ARE SUBJECT TO THE RULES OF THE SHORELAND WATER QUALITY PROTECTION ACT (NH RSA 483-B), THOSE AREAS WITHIN TWO HUNDRED AND FIFTY (250) FEET OF THE BELLAMY RIVER REFERENCE LINE.

ALTUS ENGINEERING, INC.
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STATE OF NEW HAMPSHIRE
CORY D. BELDEN
No. 14239
LICENSED PROFESSIONAL ENGINEER
10/5/22

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Owner's signature: _____

Date: _____

ISSUED FOR: PLANNING BOARD

ISSUE DATE: OCTOBER 5, 2022

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMITTAL	CDB	02/16/22
1	PRE-TRC COMMENTS	CDB	05/05/22
2	TRC COMMENTS	CDB	10/05/22

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 4952-SITE.dwg

SCALE: 24"x36" 1" = 40'
12"x18" 1" = 80'

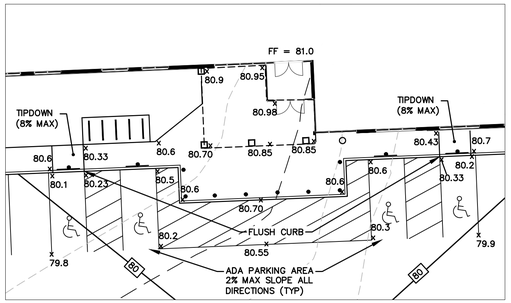
OWNER:
7 WEST, LLC
P.O. BOX 728
DOVER, NH 03821

APPLICANT:
SUMMIT LAND DEVELOPMENT
340 CENTRAL AVE., #202
DOVER, NH 03820

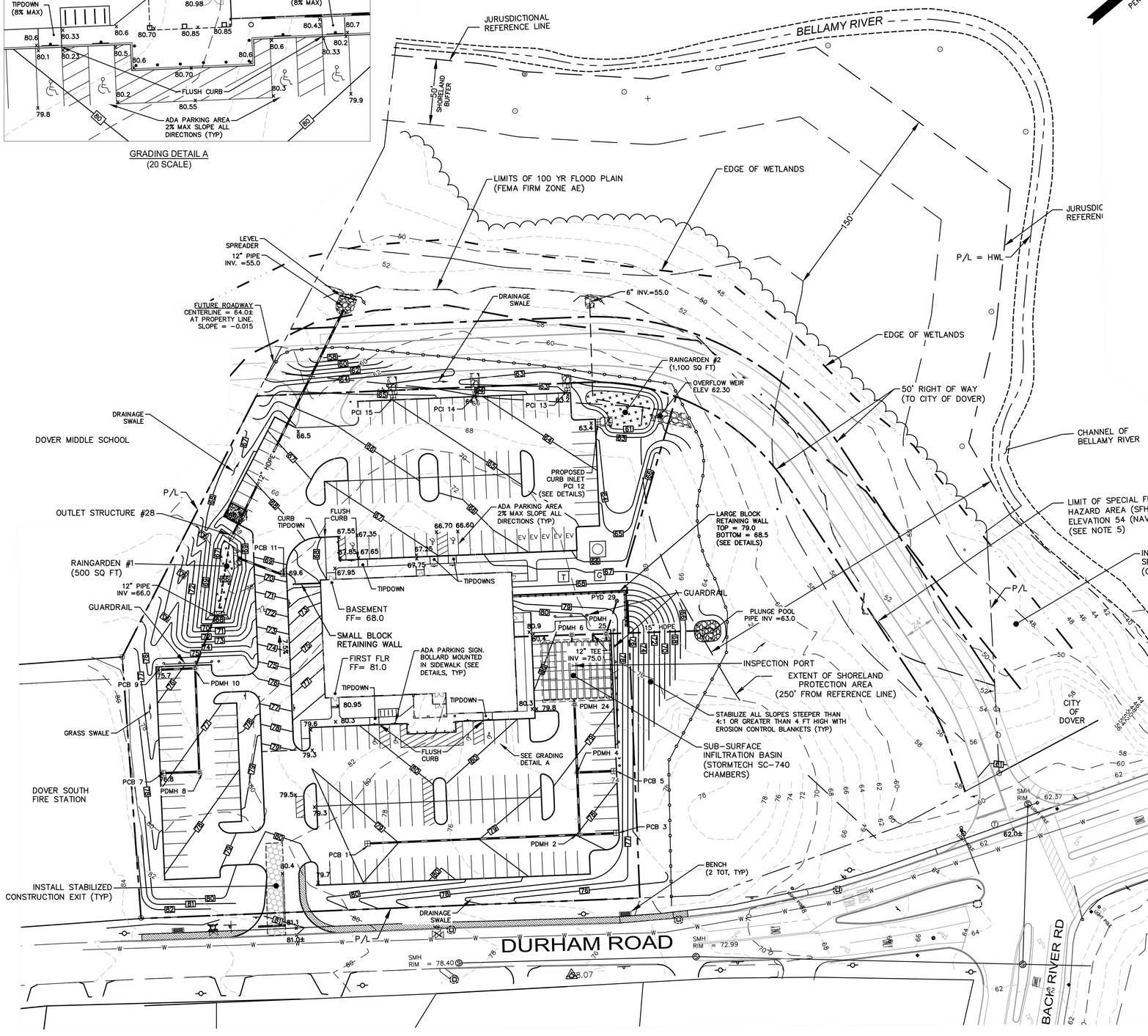
PROJECT:
7 WEST
COMMERCIAL
DEVELOPMENT
(FILE NO. P22-38)
TAX MAP H, LOT 11
DOVER, NH

TITLE:
SITE PLAN

SHEET NUMBER:
C-2



GRADING DETAIL A
(20 SCALE)



NOTES

1. SEE SHEET GN-1 FOR SITE NOTES.

PROPOSED DRAINAGE STRUCTURES

PCB 1
RIM=78.70
12" INV. OUT= 75.20

PDMH 2
RIM=78.00
12" INV. IN=74.40 (PCB 1)
12" INV. IN=74.40 (PCB 3)
12" INV OUT=74.30

PCB 3
RIM= 77.50
12" INV OUT= 74.60

PDMH 4
RIM= 78.80
12" INV IN= 74.10 (PDMH 2)
12" INV IN= 74.10 (PCB 5)
12" INV OUT= 74.00

PCB 5
RIM=78.2
12" INV OUT= 74.25

PDMH 6
RIM=79.8
12" INV. IN= 74.70 (BLDG)
12" INV. OUT= 74.60 (SWG)
12" INV. OUT= 75.10 (PDMH 25)

PCB 7
RIM=76.80
12" INV OUT= 73.80

PDMH 8
RIM=77.60
12" INV IN= 73.60 (PCB 7)
12" INV. OUT= 73.50

PCB 9
RIM= 75.70
12" INV OUT= 72.70

PDMH 10
RIM= 76.30
12" INV. IN= 72.50 (PCB 9)
12" INV. IN=73.10 (PDMH 8)
12" INV. OUT= 72.40

PCB 11
RIM= 69.60
12" INV. OUT= 66.60
8" INV. IN = 66.70 (PYD 29)

PCI 12
RIM=63.40
INV. OUT= 62.40

PCI 13
RIM= 63.20
INV. OUT= 62.20

PCI 14
RIM= 64.10
INV. OUT=63.10

PCI 15
RIM=65.00
INV. OUT=64.00

PDMH 24 (INLET TO SWG)
RIM= 79.5
12" INV. IN= 73.75 (PCB 4)
12" INV. OUT= 73.65 (SWG)

PDMH 25
8" INV. IN = 74.50 (PYD 30)
12" INV. IN = 75.0 (PDMH6)
6" INV. IN = 73.0 (SWG-UD)
12" INV. IN = 75.0 (SWG)
15" INV. OUT = 72.9 (PDMH 26)

PYD 29
RIM = 78.50
8" INV OUT = 74.70 (PDMH 25)

PROPOSED STORMWATER TREATMENT PRACTICES

RAINGARDEN #1
BOTTOM AREA = 500 SF
BOTTOM ELEV = 66.0
UD ELEV = 63.25

OUTLET STRUCTURE #28
18" BEEHIVE GATE = 67.50
6" INV IN = 63.25
12" INV OUT = 62.75

RAINGARDEN #2
BOTTOM AREA = 1100 SF
BOTTOM ELEV = 61.0
UD ELEV = 58.25

OVERFLOW WEIR
ELEV = 62.30

SUB-SURFACE INFILTRATION BASIN (STORMTECH SC-740)
60 CHAMBERS (10 X 6)
STONE: 49.0L X 55.5W X 4.5H
12" STONE BASE = 72.5
CHAMBER BASE = 73.5
(SEE DETAILS)

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CORY D. BELDEN
No. 14239
LICENSED PROFESSIONAL ENGINEER
10/5/22

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ISSUE DATE: OCTOBER 5, 2022

REVISIONS

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1	TRC COMMENTS	CDB	10/05/22

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 4952-Site.dwg

SCALE: 24"x36" 1" = 40'
12"x18" 1" = 80'

OWNER:
7 WEST, LLC
P.O. BOX 728
DOVER, NH 03821

APPLICANT:
SUMMIT LAND DEVELOPMENT
340 CENTRAL AVE., #202
DOVER, NH 03820

PROJECT:
7 WEST
COMMERCIAL
DEVELOPMENT

(FILE NO. P22-38)
TAX MAP H, LOT 11
DOVER, NH

TITLE:
GRADING, DRAINAGE, AND EROSION AND SEDIMENT CONTROL PLAN

SHEET NUMBER:
C-3

P4952

LEGEND

- W — EXISTING WATER/CURB STOP/VALVE/HYDRANT
- S — EXISTING SEWER/MANHOLE
- G — EXISTING GAS/VALVE
- UGE — EXIST. OVER/UNDERGROUND UTILITIES/POLE
- MH — SC — PB — ELEC MANHOLE/SECTOR CABINET/PULL BOX/TRANSFORMER
- D — EXISTING DRAINAGE/CB/DMH
- OHP — EXISTING OVERHEAD UTILITIES/UTILITY POLE
- PW — PROPOSED THRUST BLOCK/WATER/CURB STOP/VALVE/HYDRANT
- PS — CO — PROPOSED SEWER/MANHOLE/CLEANOUT
- PG — PROPOSED NATURAL GAS
- UGE — PROPOSED UNDERGROUND ELECTRIC/PHONE/TV
- FS — PROPOSED FIRE SERVICE
- PROPOSED DRAINAGE (HARD PIPE)/CB/DMH/HEADWALL

PER REFERENCE PLAN 1

I.R.(fnd)

EDGE OF BELLAMY RIVER AS SHOWN ON REFERENCE PLAN 1 (PRIOR TO DAM REMOVAL)

A01 A02 A03 A04 A05 A06 A07 A08 A09 A10

P/L

12" HDPE

PROVIDE ELEC FOR EV CHARGING STATIONS

NEW TRANSFORMER/ ELECTRICAL SERVICE (COORDINATE WITH EVERSOURCE)

NEW GENERATOR (COORDINATE WITH EVERSOURCE)

15" HDPE

FIRE DEPT CONNECTION (FDC)

6" SEWER INV. = 74.0

SEWER CLEANOUT

6" FIRE SUPPRESSION SERVICE VERIFY SIZE W/MECH. DWGS

PROPOSED GAS (COORDINATE SIZING WITH MECHANICAL AND UNITIL)

2" DOMESTIC WATER SERVICE W/ 2" GATE VALVE VERIFY SIZE W/MECH. ENGINEER

8" DI WATER (CL 52)

6" PVC SDR 35 SEWER SERVICE (S = 0.008)

DOVER FIRE & RESCUE SOUTH STATION #3

REMOVE ABANDONED POLE (COORDINATE WITH CITY TO RELOCATE SIGNS ("FIRE STATION", "SIGNAL AHEAD")

EXISTING 12" D.I. WATER MAIN (VERIFY IN FIELD)

PROPOSED UG ELECTRICAL SERVICE

UP SIGNAL LIGHT

EXISTING HYDRANT

DURHAM ROAD

CONNECT TO SMH SMH RIM = 78.40 6" SEWER INV. = 72.5± (VERIFY IN FIELD)

CB RIM = 78.14

CB RIM = 77.67

UP 31 2/23 LIGHT

UP 32 2/24

UP 29 2/21 UGT

UP 2/20 378/28 UGU

UP 2/19

UP 2/20F

UP ABANDONED

CB RIM = 72.77

SMH RIM = 72.99

CB RIM = 66.41

CONNECT TO 12" WATER MAIN 12" X 8" STAINLESS STEEL TAPPING SLEEVE DOMESTIC WATER & FIRE SERVICE (VERIFY SIZES WITH MECHANICAL, TYP)

PROVIDE NEW ELECTRIC SERVICE FROM SOUTH SIDE OF DURHAM RD. COORDINATE WITH EVERSOURCE.

TRENCH & REPAIR DURHAM ROAD FOR ALL NEW SERVICE CONNECTIONS. COORDINATE WITH DOVER DPW AND UTILITY. POLICE DETAIL REQUIRED FOR ALL WORK IN ROADWAY.

ADJUST ELEC MH COVER TO GRADE

ADJUST SMH COVER TO GRADE

RELOCATE MAST ARM (PENDING INTERSECTION DESIGN)

8" SEWER INV. = 56.0±

EXISTING 8" SEWER

CITY OF DOVER

BELLAMY RIVER

ROUTE 16 SOUTHBOUND EXIT 7 RAMPS

ON RAMP

OFF RAMP

MILL ST

BACK RIVER RD

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)

P4951

UTILITY NOTES:

1. COORDINATE UTILITY WORK WITH UTILITY COMPANIES.
   UNITIL: DAVID BEAULIEU – (603) 294–5144
   EVERSOURCE: NICK KOSKO – (603) 332–4227
   CONSOLIDATED COMMUNICATIONS: JASON CUNHA – (603) 325–2041
   CITY OF DOVER, COMMUNITY SERVICES: BILL BOULANGER – (603) 516–6450
2. UNDERGROUND UTILITIES INSTALLATION SHALL MEET THE MINIMUM REQUIREMENTS OF THE UTILITY COMPANIES AND THE CITY OF DOVER.
   CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING CABLES.
3. ALL ELECTRIC, CABLE, AND TELECOMMUNICATION SERVICES AND CONDUITS SHALL BE LOCATED UNDERGROUND.
4. THE SUBJECT PARCEL IS SERVED BY MUNICIPAL WATER AND SEWER.
5. CONTRACTOR SHALL VERIFY THE EXACT LOCATION & ELEVATIONS OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. ANY DISCREPANCIES BETWEEN FIELD AND PLAN SHALL BE IMMEDIATELY REPORTED TO ENGINEER.
6. ALL SEWER INSTALLATIONS SHALL CONFORM TO THE MINIMUM REQUIREMENTS OF THE DOVER PUBLIC WORKS DEPARTMENT AND THE NHDES. THE MORE STRINGENT SPECIFICATION SHALL GOVERN.
7. A NHDES SEWER CONNECTION PERMIT HAS BEEN ISSUED FOR THIS PROJECT (D2020–0603). ALL PIPE MATERIALS, INSTALLATION, AND INSPECTION SHALL CONFORM TO THE PERMIT REQUIREMENTS AND PROJECT SPECIFICATIONS. PVC SEWER PIPE SHALL CONFORM WITH ASTM D3034 AND ASTM D2412 AND ALL PVC PIPE JOINT SEALS SHALL CONFORM WITH ASTM D3212
8. ALL WATER, SEWER, AND DRAINAGE WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH NHDOT "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" (LATEST ADDITION) AND SHALL COMPLY WITH APPLICABLE CITY OF DOVER STANDARDS.
9. VERIFY LOCATION OF UTILITY BOXES WITH OWNER AND UTILITY COMPANIES.
10. COORDINATE WATER MAIN AND HYDRANT INSTALLATION WITH THE DOVER WATER DEPARTMENT.
11. CONTRACTOR SHALL TEST WATER AND SEWER SERVICES PER DOVER SEWER DEPARTMENT REQUIREMENTS.
12. CONTRACTOR SHALL MAINTAIN WATER SERVICE AT ALL TIMES TO USERS AT ADJACENT PROPERTIES. CONTRACTOR SHALL PROVIDE PLANS IN ADVANCE OF TESTING AND CONNECTION TO EXISTING SYSTEM FOR ADDRESSING WATER SERVICE TO ADJACENT PROPERTIES.
13. UNLESS OTHERWISE AGREED IN WRITING, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING TEMPORARY BENCHMARKS (TBMS) AND PERFORMING ALL CONSTRUCTION SURVEY LAYOUT.
14. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES, ANTICIPATE CONFLICTS, REPAIR ANY DAMAGE DONE TO EXISTING UTILITIES, AND RELOCATE EXISTING UTILITIES (IF REQUIRED) AT NO EXTRA COST TO THE OWNER. UTILITY CONFLICTS SHALL BE RESOLVED WITH THE INVOLVEMENT OF THE ENGINEER, DOVER DPW, AND APPROPRIATE UTILITY COMPANIES.
15. SEWER AND WATER CONSTRUCTION PLANS AND SPECIFICATIONS SHALL BE SUBMITTED TO THE CITY OF DOVER SEWER AND WATER DEPARTMENT FOR APPROVAL PRIOR TO CONSTRUCTION.
16. SEWER AND STORM DRAIN MANHOLES SHALL HAVE STEPS AT THE REQUEST OF THE CITY OF DOVER.
17. THE PROPOSED STRUCTURES SHALL BE SERVED BY A SPRINKLER SYSTEM AS REQUIRED UNDER CHAPTER 81, ARTICLE IV, SECTION 81–27 OF THE CODE OF THE CITY OF DOVER.
18. 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.
19. FIRE DEPARTMENT CONNECTIONS SHALL BE LOCATED ON THE STREET SIDE OF THE BUILDING PER NFPA 13.
20. A SECURITY SYSTEM SHALL BE INSTALLED AS REQUIRED BY CHAPTER 58, ARTICLE I, SECTION 58–2 OF THE CODE OF THE CITY OF DOVER
21. APPROVED BACKFLOW PREVENTERS SHALL BE PROVIDED FOR BOTH FIRE AND DOMESTIC WATER LINES.
22. TRANSFORMERS TO BE SCREENED WITH ENCLOSURE. PLANTINGS MAY BE USED AS SCREENING AS APPROVED BY THE CITY OF DOVER BUILDING INSPECTION DEPT.
23. ALL METERING OF SERVICES SUCH AS WATER, ELECTRIC AND GAS WILL BE INTERIOR TO BUILDINGS.
24. VERIFY LOCATION OF EXISTING ELECTRICAL LINES PRIOR TO INSTALLATION OF CATCH BASINS. RELOCATE ELECTRICAL LINES AS NEEDED. COORDINATE WITH EVERSOURCE.
25. 2% OF THE TOTAL NUMBER OF NEW PARKING SPACES SHALL HAVE ELECTRIC VEHICLE SUPPLY EQUIPMENT PER, SITE PLAN REGULATION 153–14.D.3

ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433–2335 www.ALTUS–ENG.com

STATE OF NEW HAMPSHIRE · CORY D. BELDEN No. 14239 LICENSED PROFESSIONAL ENGINEER

10/5/22

THIS DRAWING HAS NOT BEEN RELEASED FOR CONSTRUCTION

ISSUED FOR: PLANNING BOARD

ISSUE DATE: MAY 5, 2022

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMITTAL	CDB	05/05/22

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 4952–SITE.dwg

SCALE: 24"x36" 1" = 40'
12"x18" 1" = 80'

OWNER:
7 WEST, LLC
P.O. BOX 728
DOVER, NH 03821

APPLICANT:
SUMMIT LAND DEVELOPMENT
340 CENTRAL AVE., #202
DOVER, NH 03820

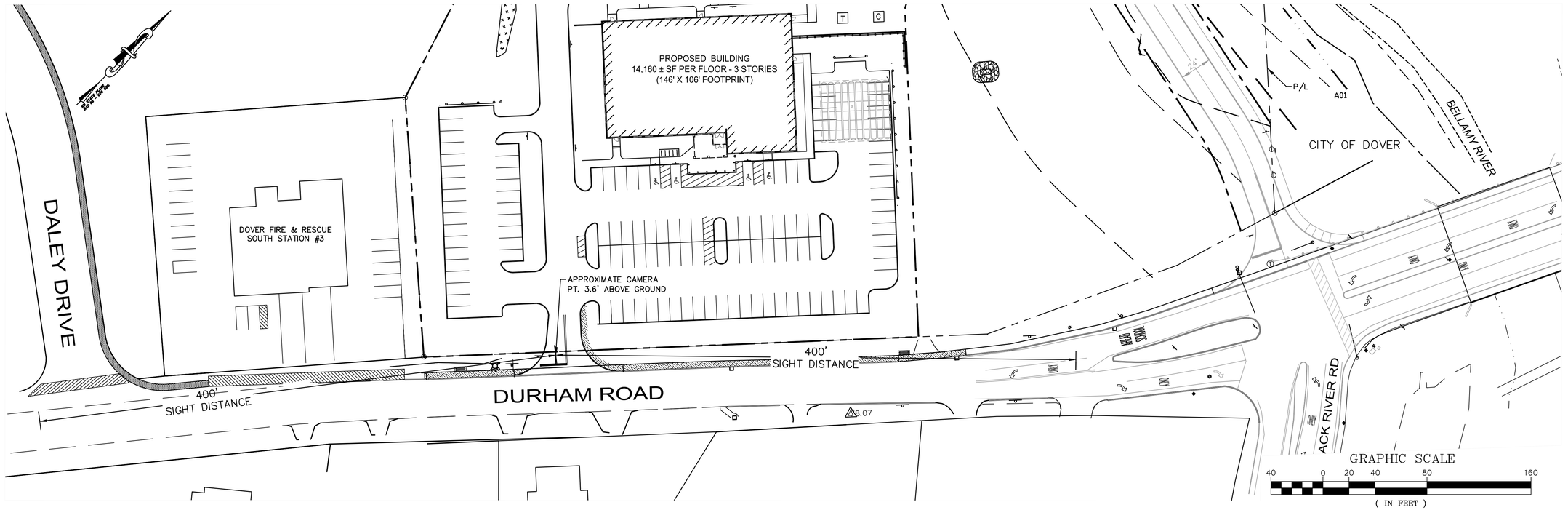
PROJECT:
7 WEST COMMERCIAL DEVELOPMENT
(FILE NO. P22–38)
TAX MAP H, LOT 11
DOVER, NH

TITLE:

UTILITIES PLAN

SHEET NUMBER:

C-4



SOUTH-WEST SIGHT LINE

NORTH-EAST SIGHT LINE

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STATE OF NEW HAMPSHIRE
CORY D. BELDEN
No. 14239
LICENSED PROFESSIONAL ENGINEER
10/5/22

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ISSUED FOR:
PLANNING BOARD

ISSUE DATE:
OCTOBER 5, 2022

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMITTAL	CDB	10/05/22

DRAWN BY: MBS
APPROVED BY: EDW
DRAWING FILE: 4952-SITE.dwg

SCALE: 24"x36" 1" = 40'
12"x18" 1" = 80'

OWNER:
7 WEST, LLC
P.O. BOX 728
DOVER, NH 03821

APPLICANT:
SUMMIT LAND DEVELOPMENT
340 CENTRAL AVE., #202
DOVER, NH 03820

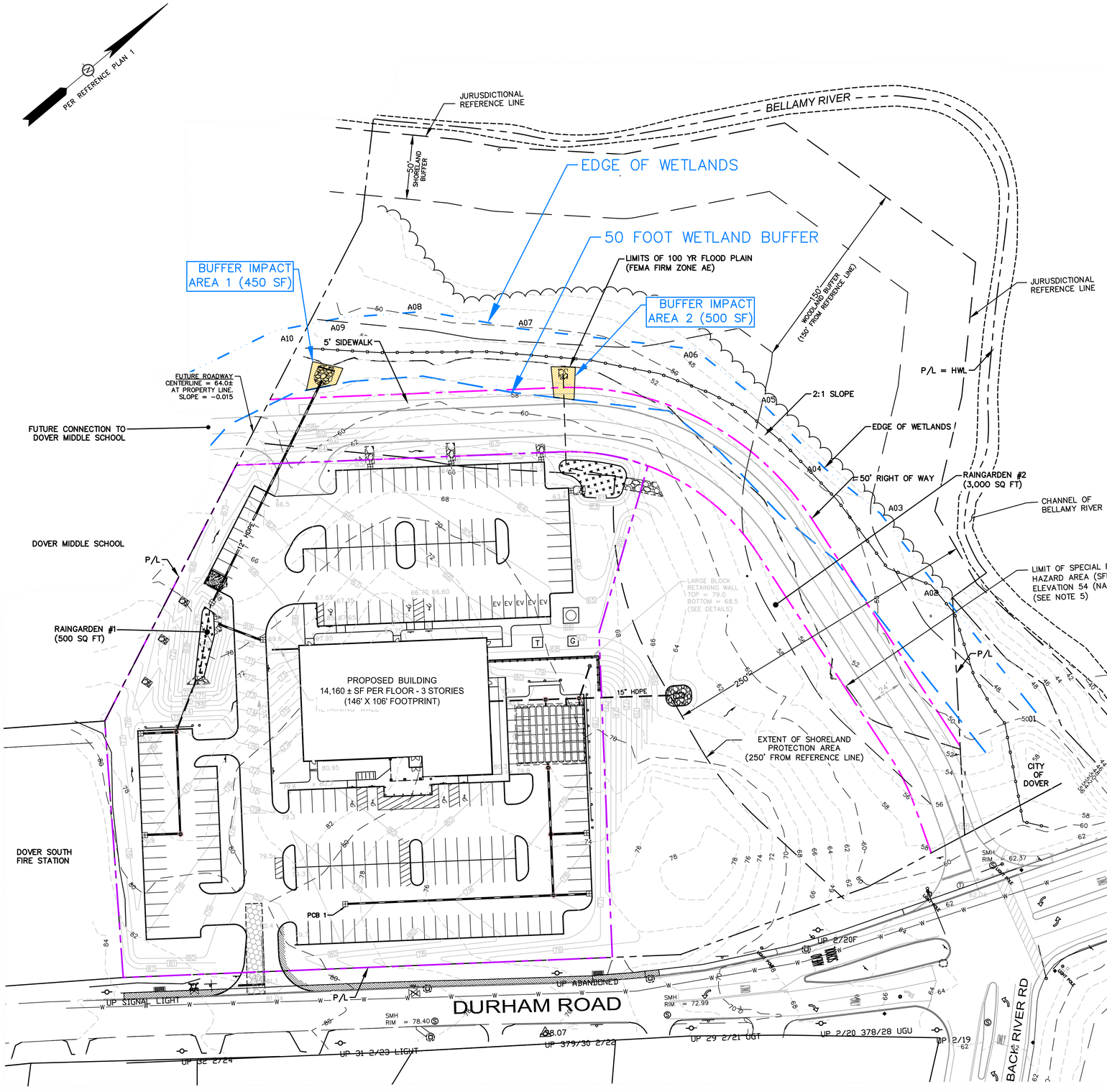
PROJECT:
7 WEST
COMMERCIAL
DEVELOPMENT

(FILE NO. P22-38)
TAX MAP H, LOT 11
DOVER, NH

TITLE:
SIGHT DISTANCE

SHEET NUMBER:
C-5

P4952



NOTES:

1. NO WORK SHALL BE PERFORMED WITHIN 50 FEET OF THE WETLAND BUFFER WITHOUT AUTHORIZATION THROUGH AN APPROVED CONDITIONAL USE PERMIT.
2. NO WORK OUTSIDE OF THE APPROVED WETLAND BUFFER IMPACTS ARE AUTHORIZED.

WETLAND IMPACT TABLE

Lot H-11	DIRECT IMPACTS	BUFFER IMPACTS
Area 1	0	450 SF
Area 2	0	500 SF
TOTAL	0 SF	950 SF

WETLAND BUFFER IMPACTS

ALTUS ENGINEERING, INC.
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STATE OF NEW HAMPSHIRE — CORY D. BELDEN No. 14239 LICENSED PROFESSIONAL ENGINEER
10/5/22

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ISSUED FOR: PLANNING BOARD

ISSUE DATE: OCTOBER 5, 2022

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMITTAL	CDB	05/05/22
1	TRC COMMENTS	CDB	10/05/22

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 4952-Site.dwg

SCALE: 24"x36" 1" = 40'
12"x18" 1" = 80'

OWNER:
7 WEST, LLC
P.O. BOX 728
DOVER, NH 03821

APPLICANT:
SUMMIT LAND DEVELOPMENT
340 CENTRAL AVE., #202
DOVER, NH 03820

PROJECT:
7 WEST
COMMERCIAL
DEVELOPMENT

(FILE NO. P22-38)
TAX MAP H, LOT 11
DOVER, NH

TITLE:
WETLANDS
CONDITIONAL
USE PLAN

SHEET NUMBER:
CUP-1

P4952

SEDIMENT AND EROSION CONTROL NOTES

PROJECT NAME AND LOCATION

7 WEST COMMERCIAL DEVELOPMENT
DURHAM ROAD
DOVER, NEW HAMPSHIRE

LONGITUDE: 70.8797 W
LATITUDE: 43.1790 N
TAX MAP H LOT 11

OWNER:
POINTE WEST, LLC
P.O. BOX 728
DOVER, NH 03821

APPLICANT:
SUMMIT LAND DEVELOPMENT
340 CENTRAL AVE., #202
DOVER, NH 03820

DESCRIPTION

The project consists of a single 3-Story commercial building approximately 14,160 square feet in size (footprint). The site will provide associated site improvements including parking, walkways, lighting, utilities, stormwater management and landscaping improvements. The project is located on an 8.4 acre lot identified as Assessor's parcel Tax Map H, Lot 11 in the City of Dover, NH.

DISTURBED AREA

The total area to be disturbed for the site development improvements is approximately ±153,604 SF (±3.5 acres).

NAME OF RECEIVING WATER

The site drains to the Bellamy River.

NPDES CONSTRUCTION GENERAL PERMIT

Contractor shall prepare a Stormwater Pollution Prevention Plan (SWPPP) is accordance with federal storm water permit requirements (see "Developing Your Stormwater Pollution Prevention Plan", EPA 833-R-060-4). The SWPPP must be prepared in a format acceptable to the Owner and three (3) copies provided to the Municipality at least fourteen (14) days prior to initiating construction. Contractor is responsible for all cost associated with preparation and implementation of SWPPP including any temporary erosion control measures (whether indicated or not on these drawings) as required for the contractor's sequence of activities.

The Contractor and Owner shall each file a Notice of Intent (NOI) with the U.S.E.P.A. under the NPDES Construction General Permit. (U.S.E.P.A., 1200 Pennsylvania Avenue NW, Washington, DC 20460) All work shall be in accordance with NPDES General Permit: NHG07000, including NOI requirements, effluent limitations, standards and management for construction. The Contractor shall be responsible for obtaining a USEPA Construction Dewatering Permit, if required.

SEQUENCE OF MAJOR ACTIVITIES

1. Prepare SWPPP and file NPDES Notice of Intent (NOI), 14 days prior to any construction activities (Required).
2. Hold a pre-construction meeting with City & stake holders, as required.
3. Install temporary erosion control measures including organic filter berms, stabilized construction exits, inlet sediment filters, and temporary sediment traps as noted on the plan. All temporary erosion control measures shall be maintained in good working condition for the duration of the project.
4. DO NOT construct or direct construction flows to proposed raingardens or other stormwater management practices until site is stabilized.
5. Rough grade site including ledge removal. Blasting permit to be obtained by Contractor if required.
6. Prepare building area per geotechnical engineering reccomendations.
7. Construct utility services.
8. Construct drainage structures, culverts, and swales.
9. Construct building foundations, driveways and parking area base course paving & curbing.
10. Construct final grading, loam (6" min) and seed all disturbed areas not paved or otherwise stabilized.
11. Complete building construction.
12. When site is fully stabilized, complete construction of raingardens.
13. Install top course paving, pavement markings and signs.
14. When all construction activity is complete and as each phase is stabilized, remove all temporary erosion control measures and any sediment that has been trapped by these devices.
15. File a Notice of Termination (N.O.T.) with U.S.E.P.A. (Required)

CONSTRUCTION SEQUENCE / EROSION CONTROL

- THE 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.
- PERIMETER CONTROLS SHALL BE INSTALLED PRIOR TO EARTH MOVING OPERATIONS.
- TEMPORARY WATER DIVERSION (SWALES, BASINS, ETC) MUST BE USED AS NECESSARY UNTIL AREAS ARE STABILIZED.
- PONDS AND SWALES SHALL BE INSTALLED EARLY ON IN THE CONSTRUCTION SEQUENCE (BEFORE ROUGH GRADING THE SITE).
- ALL DITCHES AND SWALES SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
- ALL ROADWAYS AND PARKING LOTS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
- ALL CUT AND FILL SLOPES SHALL BE SEEDED/LOAMED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE
- ALL EROSION CONTROLS SHALL BE INSPECTED WEEKLY AND AFTER EVERY HALF-INCH OF RAINFALL.
- THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION, BUT IN NO CASE SHALL EXCEED 55,000 SQUARE FEET AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED.
- AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
  - BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED.
  - A MINIMUM OF 85 PERCENT VEGETATED GROWTH HAS BEEN ESTABLISHED.
  - A MINIMUM OF 3 INCHES OF NON-EROSIVE MATERIAL SUCH STONE OR RIPRAP HAS BEEN INSTALLED.
  - OR, EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
- ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.

TEMPORARY EROSION & SEDIMENT CONTROL AND STABILIZATION PRACTICES

All work shall be in accordance with state and local permits. Work shall conform to the practices described in the "New Hampshire Stormwater Manual, Volumes 1 – 3", issued December 2008, as amended. As indicated in the sequence of Major Activities, the silt fences shall be installed prior to commencing any clearing or grading of the site. Structural controls shall be installed concurrently with the applicable activity. Once construction activity ceases permanently in an area, silt fences and any earth/dikes will be removed once permanent measures are established.

During construction, runoff will be diverted around the site with stabilized channels where possible. Sheet runoff from the site shall be filtered through hay bale barriers, stone check dams, and silt fences. All storm drain inlets shall be provided with hay bale filters or stone check dams. Stone rip rap shall be provided at the outlets of drain pipes and culverts where shown on the drawings.

Stabilize all ditches, swales, & level spreaders prior to directing flow to them.

Temporary and permanent vegetation and mulching is an integral component of the erosion and sedimentation control plan. All areas shall be inspected and maintained until vegetative cover is established. These control measures are essential to erosion prevention and also reduce costly rework of graded and shaped areas.

Temporary vegetation shall be maintained in these areas until permanent seeding is applied. Additionally, erosion and sediment control measures shall be maintained until permanent vegetation is established.

INSTALLATION, MAINTENANCE AND INSPECTION PROCEDURES FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES

A. GENERAL

These are general inspection and maintenance practices that shall be used to implement the plan:

1. The smallest practical portion of the site shall be denuded at one time.
2. All control measures shall be inspected at least once each week and following any storm event of 0.5 inches or greater.
3. All measures shall be maintained in good working order; if a repair is necessary, it will be initiated within 24 hours.
4. Built-up sediment shall be removed from silt fence or other barriers when it has reached one-third the height of the fence or bale, or when "bulges" occur.
5. All diversion dikes shall be inspected and any breaches promptly repaired.
6. Temporary seeding and planting shall be inspected for bare spots, washouts, and unhealthy growth.
7. The owner's authorized engineer shall inspect the site on a periodic basis to review compliance with the Plans.
8. An area shall be considered stable if one of the following has occurred:
   a. Base coarse gravels have been installed in areas to be paved;
   b. A minimum of 85% vegetated growth as been established;
   c. A minimum of 3 inches of non-erosive material such as stone of riprap has been installed; – or –
   d. Erosion control blankets have been properly installed.
9. The length of time of exposure of area disturbed during construction shall not exceed 45 days.

B. MULCHING

Mulch shall be used on highly erodible soils, on critically eroding areas, on areas where conservation of moisture will facilitate plant establishment, and where shown on the plans.

1. Timing – In order for mulch to be effective, it must be in place prior to major storm events. There are two (2) types of standards which shall be used to assure this:
   a. Apply mulch prior to any storm event. This is applicable when working within 100 feet of wetlands. It will be necessary to closely monitor weather predictions, usually by contacting the National Weather Service in Concord, to have adequate warning of significant storms.
   b. Required Mulching within a specified time period. The time period can range from 21 to 28 days of inactivity on a area, the length of time varying with site conditions. Professional judgment shall be used to evaluate the interaction of site conditions (soil erodibility, season of year, extent of disturbance, proximity to sensitive resources, etc.) and the potential impact of erosion on adjacent areas to choose an appropriate time restriction.

2. Guidelines for Winter Mulch Application –

Type	Rate per 1,000 s.f.	Use and Comments
Hay or Straw	70 to 90 lbs.	Must be dry and free from mold. May be used with plantings.
Wood Chips or Bark Mulch	460 to 920 lbs.	Used mostly with trees and shrub plantings.
Jute and Fibrous Matting (Erosion Blanket	As per manufacturer Specifications	Used in slope areas, water courses and other Control areas.
Crushed Stone 1/4" to 1-1/2" dia.	Spread more than 1/2" thick	Effective in controlling wind and water erosion.
Erosion Control Mix	2" thick (min)	* The organic matter content is between 80 and 100%, dry weight basis. * Particle size by weight is 100% passing a 6" screen and a minimum of 70 %, maximum of 85%, passing a 0.75" screen. * The organic portion needs to be fibrous and elongated. * Large portions of silts, clays or fine sands are not acceptable in the mix. * Soluble salts content is less than 4.0 mmhos/cm. * The pH should fall between 5.0 and 8.0.

3. Maintenance – All mulches must be inspected periodically, in particular after rainstorms, to check for rill erosion. If less than 90% of the soil surface is covered by mulch, additional mulch shall be immediately applied.

C. TEMPORARY GRASS COVER

1. Seedbed Preparation –
   Apply fertilizer at the rate of 600 pounds per acre of 10-10-10. Apply limestone (equivalent to 50 percent calcium plus magnesium oxide) at a rate of three (3) tons per acre.

10. Seeding –
    a. Utilize annual rye grass at a rate of 40 lbs/acre.
    b. Where the soil has been compacted by construction operations, loosen soil to a depth of two (2) inches before applying fertilizer, lime and seed.
    c. Apply seed uniformly by hand, cyclone seeder, or hydroseeder (slurry including seed and fertilizer). Hydroseedings, which include mulch, may be left on soil surface. Seeding rates must be increased 10% when hydroseeding.

3. Maintenance –
   Temporary seedings shall be periodically inspected. At a minimum, 95% of the soil surface should be covered by vegetation. If any evidence of erosion or sedimentation is apparent, repairs shall be made and other temporary measures used in the interim (mulch, filter barriers, check dams, etc.).

D. FILTERS

1. Silt Fence
   a. Synthetic filter fabric shall be a pervious sheet of propylene, nylon, polyester or ethylene yarn and shall be certified by the manufacturer or supplier as conforming to the following requirements:

Physical Property	Test	Requirements
Filtering Efficiency	VTM-51	75% minimum
Tensile Strength at 20% Maximum Elongation*	VTM-52	Extra Strength 50 lb/lin in (min) Standard Strength 30 lb/lin in (min)
Flow Rate	VTM-51	0.3 gal/sf/min (min)

   * Requirements reduced by 50 percent after six (6) months of installation.

   Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizer to provide a minimum of six (6) months of expected usable construction life at a temperature range of 0 degrees F to 120° F.

INSTALLATION, MAINTENANCE AND INSPECTION PROCEDURES FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES (CON'T)

   b. Posts shall be spaced a maximum of ten (10) feet apart at the barrier location or as recommended by the manufacturer and driven securely into the ground (minimum of 16 inches).
   c. A trench shall be excavated approximately six (6) inches wide and eight (8) inches deep along the line of posts and upslope from the barrier.
   d. When standard strength filter fabric is used, a wire mesh support fence shall be fastened securely to the upslope side of the posts using heavy duty wire staples at least one (1) inch long, tie wires or hog rings. The wire shall extend no more than 36 inches above the original ground surfaces.
   e. The "standard strength" filter fabric shall be stapled or wired to the fence, and eight (8) inches of the fabric shall be extended into the trench. The fabric shall not extend more than 36 inches above the original ground surface. Filter fabric shall not be stapled to existing trees.
   f.
   g. When extra strength filter fabric and closer post spacing are used, the wire mesh support fence may be eliminated. In such a case, the filter fabric is stapled or wired directly to the posts with all other provisions of item (g) applying.
   h. The trench shall be backfilled and the soil compacted over the filter fabric.
   i. Silt fences shall be removed when they have served their useful purpose but not before the upslope areas has been permanently stabilized.

2. Sequence of Installation –
   Sediment barriers shall be installed prior to any soil disturbance of the contributing upslope drainage area.

3. Maintenance –
   a. Silt fence barriers shall be inspected immediately after each rainfall and at least daily during prolonged rainfall. They shall be repaired if there are any signs of erosion or sedimentation below them. Any required repairs shall be made immediately. If there are signs of undercutting at the center or the edges, or impounding of large volumes of water, the sediment barriers shall be replaced with a temporary stone check dam.
   b. Should the fabric on a silt fence or filter barrier decompose or become ineffective prior to the end of the expected usable life and the barrier still is necessary, the fabric shall be replaced promptly.
   c. Sediment deposits must be removed when deposits reach approximately one-third (1/3) the height of the barrier.
   d. Any sediment deposits remaining in place after the silt fence or other barrier is no longer required shall be removed. The area shall be prepared and seeded.
   e. Additional stone may have to be added to the construction entrance, rock barrier and riprap lined swales, etc., periodically to maintain proper function of the erosion control structure.

E. PERMANENT SEEDING –

1. Bedding – stones larger than 1", trash, roots, and other debris that will interfere with seeding and future maintenance of the area should be removed. Where feasible, the soil should be tilled to a depth of 5" to prepare a seedbed and mix fertilizer into the soil.

2. Fertilizer – lime and fertilizer should be applied evenly over the area 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 @ 100 lbs. per 1,000 s.f.
   10-20-20 fertilizer @ 12 lbs. per 1,000 s.f.

3. Seed Mixture (recommended):

Type	Lbs. / Acre	Lbs. / 1,000 sf
Tall Fescue	24	0.55
Creeping Red Fescue	24	0.55
Total	48	1.10

   Seed Mixture (For slope embankments):
   Grass Seed: Provide fresh, clean, new-crop seed complying with tolerance for purity and germination established by Official Seed Analysts of North America. Provide seed mixture composed of grass species, proportions and minimum percentages of purity, germination, and maximum percentage of weed seed, as specified:

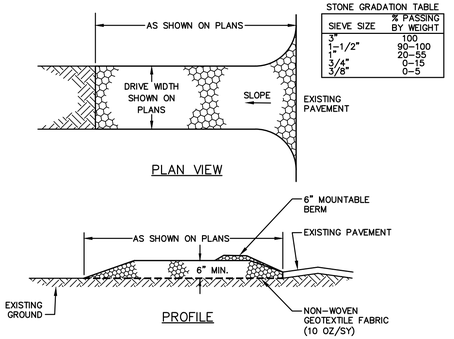
Type	Min. Purity (%)	Min. Germination (%)	Kg./Hectare (Lbs/Acre)
Creeping Red Fescue (b)	96	85	45 (40)
Perennial Rye Grass (a)	98	90	35 (30)
Redtop	95	80	5 (5)
Alsike Clover	97	90	5 (5)
		Total	90 (80)

   a. Ryegrass shall be a certified fine-textured variety such as Pennfine, Fiesta, Yorktown, Diplomat, or equal.
   b. Fescue varieties shall include – Creeping Red and/or Hard Reliant, Scaldis, Koket, or Jamestown.

4. Sodding – sodding is done where it is desirable to rapidly establish cover on a disturbed area. Sodding an area may be substituted for permanent seeding procedures anywhere on site. Bed preparation, fertilizing, and placement of sod shall be performed according to the S.C.S. Handbook. Sodding is recommended for steep sloped areas, areas immediately adjacent to sensitive water courses, easily erodible soils (fine sand/silt), etc.

WINTER CONSTRUCTION NOTES

1. All proposed vegetated areas which do not exhibit a minimum of 85% vegetative growth by October 15th, or which are disturbed after October 15th, shall be stabilized by seeding and installing erosion control blankets on slopes greater than 3:1, and elsewhere seeding and placing 3 to 4 tons of mulch per acre, secured with anchored netting. The installation of erosion control blankets or mulch and netting shall not occur over accumulated snow or on frozen ground and shall be completed in advance of thaw or spring melt events;
2. All ditches or swales which do not exhibit a minimum of 85% vegetative growth by October 15th, or which are disturbed after October 15th, shall be stabilized temporarily with stone or erosion control blankets appropriate for the design flow conditions; and
3. After October 15th, incomplete road or parking surfaces where work has stopped for the winter season shall be protected with a minimum of 3 inches of crushed gravel per NHDOT Item 304.3.



STONE GRADATION TABLE

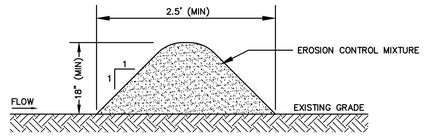
SIEVE SIZE	% PASSING BY WEIGHT
3"	100
1-1/2"	90-100
1"	20-55
3/4"	0-15
3/8"	0-5

CONSTRUCTION SPECIFICATIONS

1. STONE SIZE – NHDOT STANDARD STONE SIZE #4 – SECTION 703 OF NHDOT STANDARD.
2. LENGTH – DETAILED ON PLANS (50 FOOT MINIMUM).
3. THICKNESS – SIX (6) INCHES (MINIMUM).
4. WIDTH – FULL DRIVE WIDTH UNLESS OTHERWISE SPECIFIED.
5. FILTER FABRIC – MIRAFI 600X OR EQUAL APPROVED BY ENGINEER.
6. SURFACE WATER CONTROL – 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. MAINTENANCE – THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS WILL REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR ADDITIONAL LENGTH AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEELS SHALL BE CLEANED TO REMOVE MUD PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. STABILIZED CONSTRUCTION EXITS SHALL BE INSTALLED AT ALL ENTRANCES TO PUBLIC RIGHTS-OF-WAY, AT LOCATIONS SHOWN ON THE PLANS, AND/OR WHERE AS DIRECTED BY THE ENGINEER.

STABILIZED CONSTRUCTION EXIT

NOT TO SCALE



NOTES

1. ORGANIC FILTER BERMS MAY BE UTILIZED IN LIEU OF SILT FENCE OR OTHER SEDIMENT BARRIERS.
2. THE EROSION CONTROL MIXTURE USED IN FILTER BERMS SHALL BE A WELL-GRADED MIX OF PARTICLE SIZES THAT MAY CONTAIN ROCKS LESS THAN 4" IN DIAMETER, STUMP GRINDINGS, SHREDDED OR COMPOSTED BARK, AND/OR ACCEPTABLE MANUFACTURED PRODUCTS AND SHALL BE FREE OF REFUSE, PHYSICAL CONTAMINANTS AND MATERIAL TOXIC TO PLANT GROWTH. EROSION CONTROL MIXTURE SHALL MEET THE FOLLOWING STANDARDS:
   a) THE ORGANIC CONTENT SHALL BE 80-100% OF DRY WEIGHT.
   b) PARTICLE SIZE BY WEIGHT SHALL BE 100% PASSING A 6" SCREEN, AND 70-85% PASSING A 0.75" SCREEN.
   c) THE ORGANIC PORTION SHALL BE FIBROUS AND ELONGATED.
   d) LARGE PORTIONS OF SILTS, CLAYS, OR FINE SANDS SHALL NOT BE INCLUDED IN THE MIXTURE.
   e) SOLUBLE SALTS CONTENT SHALL BE >4.0mmhos/cm.
   f) THE pH SHALL BE BETWEEN 5.0 AND 8.0.
3. ORGANIC FILTER BERMS SHALL BE INSTALLED ALONG A RELATIVELY LEVEL CONTOUR. IT MAY BE NECESSARY TO CUT TALL GRASSES OR WOODY VEGETATION TO AVOID CREATING VOIDS AND BRIDGES THAT WOULD ENABLE FINES TO WASH UNDER THE BERM.
4. ON SLOPES LESS THAN 5%, OR AT THE BOTTOM OF SLOPES NO STEEPER THAN 3:1 AND UP TO 20' LONG, THE BERM SHALL BE A MINIMUM OF 12" HIGH (AS MEASURED ON THE UPHILL SIDE) AND A MINIMUM OF 36" WIDE. ON LONGER AND/OR STEEPER SLOPES, THE BERM SHALL BE TALLER AND WIDER TO ACCOMMODATE THE POTENTIAL FOR ADDITIONAL RUNOFF (MAXIMUM HEIGHT SHALL NOT EXCEED 2').
5. FROZEN GROUND, OUTCROPS OF BEDROCK, AND VERY ROOTED FORESTED AREAS PRESENT THE MOST PRACTICAL AND EFFECTIVE LOCATIONS FOR ORGANIC FILTER BERMS. OTHER BMP'S SHOULD BE USED AT LOW POINTS OF CONCENTRATED RUNOFF, BELOW CULVERT OUTLET APRONS, AROUND CATCH BASINS, AND AT THE BOTTOM OF STEEP PERIMETER SLOPES THAT HAVE A LARGE CONTRIBUTING AREA.
6. SEDIMENT SHALL BE REMOVED FROM BEHIND THE FILTER BERMS WHEN IT HAS ACCUMULATED TO ONE HALF THE ORIGINAL HEIGHT OF THE BERM.
7. ORGANIC FILTER BERMS MAY BE LEFT IN PLACE ONCE THE SITE IS STABILIZED PROVIDED ANY SEDIMENT DEPOSITS TRAPPED BY THEM ARE REMOVED AND DISPOSED OF PROPERLY.
8. FILTER BERMS ARE PROHIBITED AT THE BASE OF SLOPES STEEPER THAN 8% OR WHERE THERE IS FLOWING WATER WITHOUT THE SUPPORT OF ADDITIONAL MEASURES SUCH AS SILTFENCE.

ORGANIC FILTER BERM

NOT TO SCALE

P4952

ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

STATE OF NEW HAMPSHIRE – CORY D. BELDEN No. 14239 – LICENSED PROFESSIONAL ENGINEER
10/5/22

THIS DRAWING HAS NOT BEEN RELEASED FOR CONSTRUCTION

ISSUED FOR: PLANNING BOARD

ISSUE DATE: OCTOBER 5, 2022

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMITTAL	CDB	05/05/22
1	TRC COMMENTS	CDB	10/05/22

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APPROVED BY: EDW
DRAWING FILE: 4952-DETAILS.dwg

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12"x18" N.T.S.

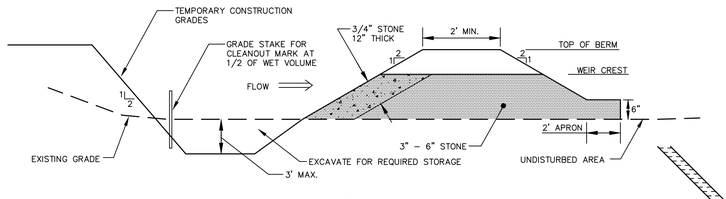
OWNER:
7 WEST, LLC
P.O. BOX 728
DOVER, NH 03821

APPLICANT:
SUMMIT LAND DEVELOPMENT
340 CENTRAL AVE., #202
DOVER, NH 03820

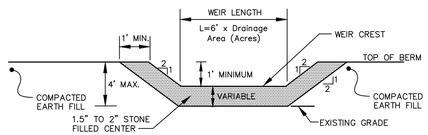
PROJECT:
7 WEST COMMERCIAL DEVELOPMENT
(FILE NO. P22-38)
TAX MAP H, LOT 11
DOVER, NH

TITLE:
DETAILS

SHEET NUMBER:
D-1



CROSS SECTION



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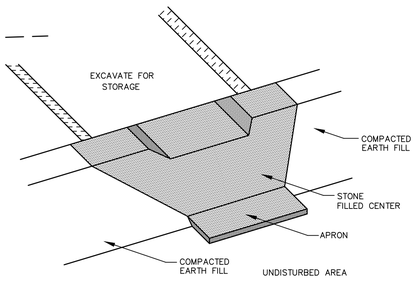
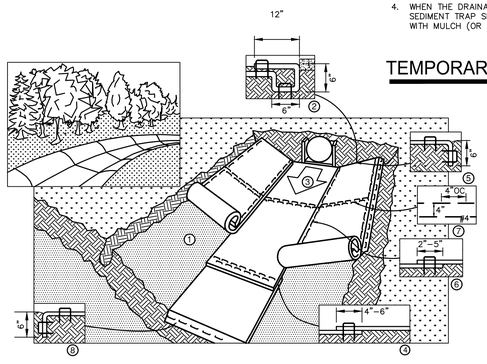


ISOMETRIC VIEW

MAINTENANCE

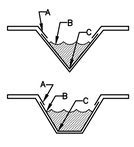
1. SEDIMENT SHALL BE REMOVED AND THE TRAP SHALL BE RESTORED TO ITS ORIGINAL CAPACITY WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN STORAGE VOLUME. SEDIMENT REMOVED SHALL BE DISPOSED OF SO THAT IT DOES NOT CAUSE A SEDIMENT PROBLEM AT ANOTHER LOCATION.
2. THE STRUCTURE SHALL BE CHECKED BI-WEEKLY AND AFTER EVERY MAJOR STORM TO INSURE THAT IT IS WORKING PROPERLY AND IS NOT DAMAGED. DAMAGE TO THE STRUCTURE SHALL BE REPAIRED IMMEDIATELY.
3. 3/4" STONE SHALL BE CHECKED DURING INSPECTION AND REPLACED WHEN THE OPENINGS IN THE STONE HAVE BECOME CLOGGED.
4. WHEN THE DRAINAGE AREA FLOWING INTO THE BASIN HAS BEEN FULLY STABILIZED, THE SEDIMENT TRAP SHALL BE REMOVED AND THE AREA VEGETATED USING LOAM AND SEED WITH MULCH (OR SOD IF NECESSARY) WITHIN 72 HOURS OF THE REMOVAL OF THE BASIN.

TEMPORARY SEDIMENT TRAP (TST) OUTLET NOT TO SCALE



NOTES

1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
2. BEGIN AT THE TOP OF THE CHANNEL BY ANCHORING THE BLANKET IN A 6" DEEP BY 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE BLANKET.
3. ROLL CENTER BLANKET IN DIRECTION OF WATER FLOW IN BOTTOM OF CHANNEL. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE.
4. PLACE CONSECUTIVE BLANKETS END OVER END (SHINGLE STYLE) WITH A 4"-6" OVERLAP. USE A DOUBLE ROW OF STAPLES STAGGERED 4" APART AND 4" ON CENTER TO SECURE BLANKETS.
5. FULL LENGTH EDGE OF BLANKETS AT TOP OF SIDE SLOPES MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN A 6" DEEP BY 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
6. ADJACENT BLANKETS MUST BE OVERLAPPED APPROXIMATELY 2"-5" (DEPENDING ON BLANKET TYPE) AND STAPLED. TO INSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH ON THE BLANKET BEING OVERLAPPED.
7. IN HIGH FLOW CHANNEL APPLICATIONS, A STAPLE CHECK SLOT IS RECOMMENDED AT 30 TO 40 FOOT INTERVALS. USE A DOUBLE ROW OF STAPLES STAGGERED 4" APART AND 4" ON CENTER OVER ENTIRE WIDTH OF THE CHANNEL.
8. THE TERMINAL END OF THE BLANKETS MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN A 6" DEEP BY 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.



CRITICAL POINTS:

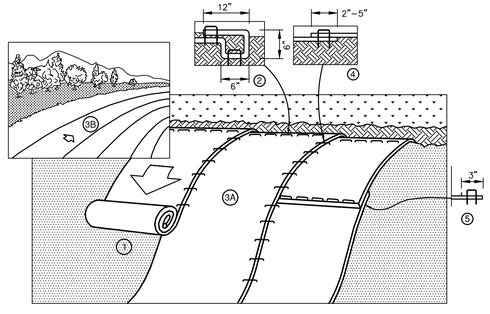
A. OVERLAPS AND SEAMS
B. PROJECTED WATER LINE
C. CHANNEL BOTTOM/SIDE SLOPE VERTICES

NOTES:

* HORIZONTAL STAPLE SPACING SHOULD BE ALTERED IF NECESSARY TO ALLOW STAPLES TO SECURE THE CRITICAL POINTS ALONG THE CHANNEL SURFACE.

** IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY ANCHOR THE BLANKETS.

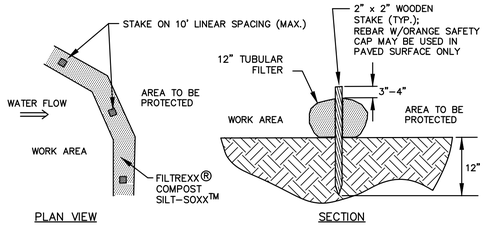
EROSION CONTROL BLANKET - SWALE NOT TO SCALE



NOTES

1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" DEEP BY 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE BLANKET.
3. ROLL THE BLANKETS (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE.
4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2"-5" OVERLAP DEPENDING ON BLANKET TYPE. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH ON THE PREVIOUSLY INSTALLED BLANKET.
5. CONSECUTIVE BLANKETS SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE BLANKET WIDTH. NOTE: IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE BLANKETS.

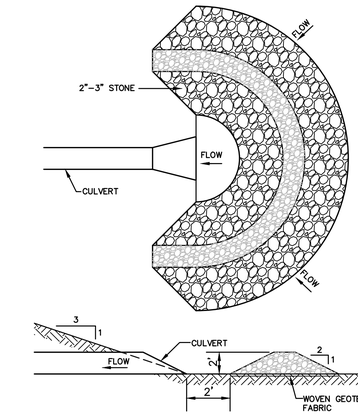
EROSION CONTROL BLANKET - SLOPE NOT TO SCALE



NOTES:

1. SILTSOXX OR APPROVED EQUAL SHALL BE USED FOR TUBULAR SEDIMENT BARRIERS.
2. ALL MATERIAL TO MEET MANUFACTURER'S SPECIFICATIONS.
3. COMPOST/SOIL/ROCK/SEED FILL MATERIAL SHALL BE ADJUSTED AS NECESSARY TO MEET THE REQUIREMENTS OF THE SPECIFIC APPLICATION.
4. ALL SEDIMENT TRAPPED BY BARRIER SHALL BE DISPOSED OF PROPERLY.

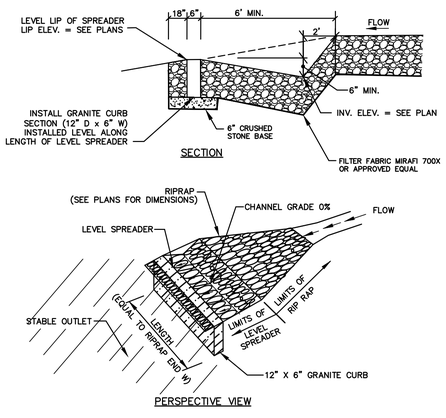
TUBULAR SEDIMENT BARRIER NOT TO SCALE



NOTES:

1. TEMPORARY CULVERT INLET PROTECTION CHECK DAMS SHALL BE CONSTRUCTED OF 2-3" CLEAN WASHED STONE OVER WOVEN GEOTEXTILE FABRIC.
2. INLET PROTECTION MEASURES SHALL BE INSTALLED AT THE OPENINGS OF ALL EXISTING AND PROPOSED CULVERTS WHERE SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER..
3. SEDIMENT SHALL BE REMOVED FROM BEHIND THE STRUCTURE WHEN IT HAS ACCUMULATED TO ONE HALF THE ORIGINAL HEIGHT OF THE STRUCTURE AND DISPOSED OF PROPERLY.
4. STRUCTURES SHALL BE REMOVED WHEN DIRECTED BY THE ENGINEER AND THE SITE IS STABILIZED WITH VEGETATION AND THE CHANNEL SHALL BE SMOOTHED AND REVEGETATED.

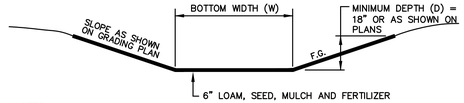
TEMPORARY CULVERT INLET PROTECTION CHECK DAM NOT TO SCALE



NOTES

1. LEVEL SPREADERS SHALL BE CONSTRUCTED PER CITY OF DOVER STANDARD DETAILS AND SPECIFICATIONS.
2. FOR STAPLE REQUIREMENTS SEE MANUFACTURER'S STANDARDS & SPECIFICATIONS FOR PROTECTIVE MATERIALS.
3. AREAS BELOW LEVEL SPREADERS SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.

LEVEL SPREADER NOT TO SCALE

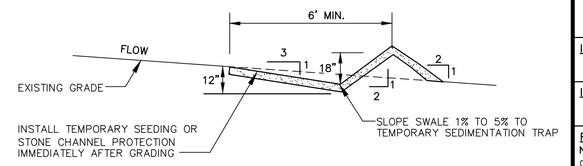


NOTES

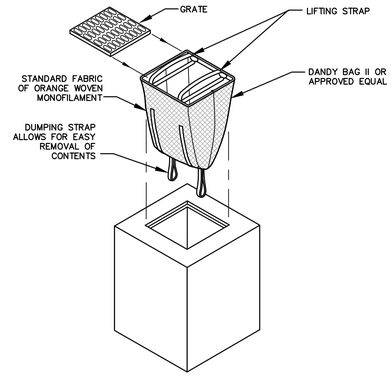
1. THE FOUNDATION AREA OF THE SWALE SHALL BE CLEARED AND GRUBBED OF ALL TREES, BRUSH, STUMPS, AND OTHER OBJECTIONABLE MATERIAL.
2. THE SWALE SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE AND CROSS SECTION AS REQUIRED TO MEET THE DESIGN CRITERIA AND BE FREE OF IRREGULARITIES.
3. EARTH FILLS REQUIRED TO MEET SUBGRADE REQUIREMENTS BECAUSE OF OVER EXCAVATION OR TOPOGRAPHY SHALL BE COMPACTED TO THE SAME DENSITY AS THE SURROUNDING SOIL TO PREVENT UNEQUAL SETTLEMENT THAT COULD CAUSE DAMAGE TO THE COMPLETED SWALE.
4. VEGETATION SHALL BE ESTABLISHED IN THE SWALE OR AN EROSION CONTROL MATTING INSTALLED PRIOR TO DIRECTING STORMWATER TO IT.
5. MAINTENANCE OF THE VEGETATION IS EXTREMELY IMPORTANT IN ORDER TO PREVENT RILLING, EROSION, AND FAILURE OF THE SWALE. MOWING SHALL BE DONE FREQUENTLY ENOUGH TO CONTROL ENCROACHMENT OF WEEDS AND WOODY VEGETATION AND TO KEEP GRASSES IN A VIGOROUS CONDITION. THE VEGETATION SHALL NOT BE MOWED TOO CLOSELY SO AS TO REDUCE THE EROSION RESISTANCE IN THE SWALE.
6. THE SWALE SHOULD BE INSPECTED PERIODICALLY AND AFTER ANY STORM GREATER THAN 0.5" OF RAINFALL IN 24 HOURS TO DETERMINE ITS CONDITION. RILLS AND DAMAGED AREAS SHOULD BE PROMPTLY REPAIRED AND REVEGETATED AS NECESSARY TO PREVENT FURTHER DETERIORATION.

VEGETATED SWALE NOT TO SCALE

SWALE SHALL BE FREE OF IRREGULARITIES WHICH MAY CAUSE PONDING. COMPACT FILLS AS NECESSARY TO STABILIZE MATERIAL.



TEMPORARY DIVERSION SWALE NOT TO SCALE



INSTALLATION AND MAINTENANCE:

INSTALLATION: REMOVE THE GRATE FROM CATCH BASIN. IF USING OPTIONAL OIL ABSORBENTS; PLACE ABSORBENT PILLOW IN UNIT. STAND GRATE ON END. MOVE THE TOP LIFTING STRAPS OUT OF THE WAY AND PLACE THE GRATE INTO CATCH BASIN INSERT SO THE GRATE IS BELOW THE TOP STRAPS AND ABOVE THE LOWER STRAPS. HOLDING THE LIFTING DEVICES, INSERT THE GRATE INTO THE INLET.

MAINTENANCE: REMOVE ALL ACCUMULATED SEDIMENT AND DEBRIS FROM VICINITY OF THE UNIT AFTER EACH STORM EVENT. AFTER EACH STORM EVENT AND AT REGULAR INTERVALS, LOOK INTO THE CATCH BASIN INSERT. IF THE CONTAINMENT AREA IS MORE THAN 1/3 FULL OF SEDIMENT, THE UNIT MUST BE EMPTIED. TO EMPTY THE UNIT, LIFT THE UNIT OUT OF THE INLET USING THE LIFTING STRAPS AND REMOVE THE GRATE. IF USING OPTIONAL ABSORBENTS; REPLACE ABSORBENT WHEN NEAR SATURATION.

UNACCEPTABLE INLET PROTECTION METHOD:

A SIMPLE SHEET OF GEOTEXTILE UNDER THE GRATE IS NOT ACCEPTABLE.

STORM DRAIN INLET PROTECTION NOT TO SCALE

P4952

ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

STATE OF NEW HAMPSHIRE CORY D. BELDEN No. 14239 LICENSED PROFESSIONAL ENGINEER
10/5/22

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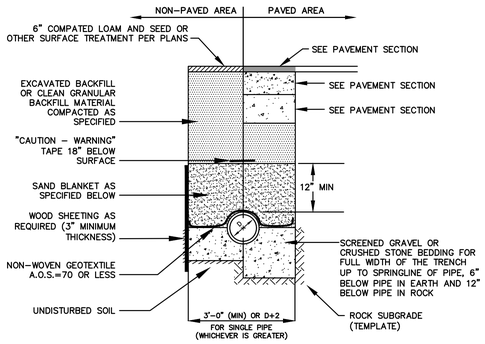


NOTES

1. BACKFILL MATERIAL BELOW PAVED OR CONCRETE AREAS, BEDDING MATERIAL, AND SAND BLANKET SHALL BE COMPACTED TO NOT LESS THAN 95% OF AASHTO T 99, METHOD C. SUITABLE BACKFILL MATERIAL BELOW LOAM AREAS SHALL BE COMPACTED TO NOT LESS THAN 90% OF AASHTO T 99, METHOD C.
2. INSULATE GRAVITY SEWER AND FORCEMAINS WHERE THERE IS LESS THAN 5'-0" OF COVER WITH 2" THICK CLOSED CELL RIGID BOARD INSULATION, 18" ON EACH SIDE OF PIPE.
3. MAINTAIN 12" MINIMUM HORIZONTAL SEPARATION AND WIDEN TRENCH ACCORDINGLY IF MULTIPLE PIPES ARE IN TRENCH.

SAND BLANKET/BARRIER

SIEVE SIZE	% FINER BY WEIGHT
1/2"	90 – 100
200	0 – 15

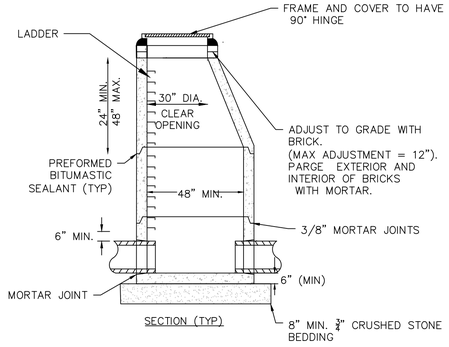
SCREENED GRAVEL OR CRUSHED STONE BEDDING*

SIEVE SIZE	% PASSING BY WEIGHT
1"	100
3/4"	90 – 100
3/8"	20 – 55
# 4	0 – 10
# 8	0 – 5

* EQUIVALENT TO STANDARD STONE SIZE #67 – SECTION 703 OF NHDOT STANDARD SPECIFICATIONS

DRAINAGE TRENCH

NOT TO SCALE

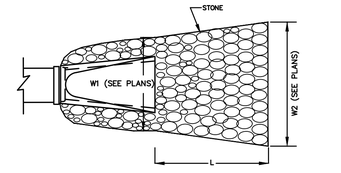


NOTES

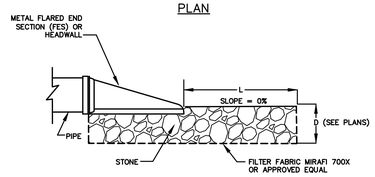
1. CORINGS TO BE SEPARATED BY 6" (MINIMUM) OF MONOLITHIC SECTION
2. ALL SECTIONS SHALL BE CONCRETE CLASS AA (4000 psi).
3. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ.IN. PER LINEAR FT. IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
4. THE TONGUE OR GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER LINEAR FT.
5. RISERS OF 1', 2', 3' & 4' CAN BE USED TO REACH DESIRED DEPTH.
6. ALL MANHOLE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
7. USE H-20 LOADING SLAB TOP SECTION IN LIEU OF ECCENTRIC TOP WHERE PIPE INVERT IS WITHIN 4 FT OF GRADE.
8. CITY OF DOVER INSTALLS STEPS IN DRAIN MANHOLES.

DRAIN MANHOLE DETAIL

NOT TO SCALE



PLAN



SECTION

MAINTENANCE

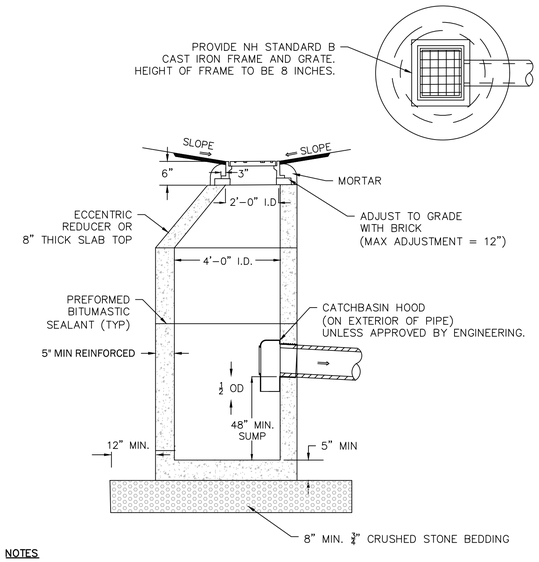
THE OUTLET PROTECTION SHOULD BE CHECKED AT LEAST ANNUALLY AND AFTER EVERY MAJOR STORM. IF THE RIPRAP HAS BEEN DISPLACED, UNDERMINED OR DAMAGED, IT SHOULD BE REPAIRED IMMEDIATELY. THE CHANNEL IMMEDIATELY BELOW THE OUTLET SHOULD BE CHECKED TO SEE THAT EROSION IS NOT OCCURRING. THE DOWNSTREAM CHANNEL SHOULD BE KEPT CLEAR OF OBSTRUCTIONS SUCH AS FALLEN TREES, DEBRIS, AND SEDIMENT THAT COULD CHANGE FLOW PATTERNS AND/OR TAILWATER DEPTHS ON THE PIPES. REPAIRS MUST BE CARRIED OUT IMMEDIATELY TO AVOID ADDITIONAL DAMAGE TO THE OUTLET PROTECTION APRON.

CONSTRUCTION SPECIFICATIONS

1. THE SUBGRADE FOR THE FILTER MATERIAL, GEOTEXTILE FABRIC, AND RIPRAP SHALL BE PREPARED TO THE LINES AND GRADES SHOWN ON THE PLANS.
2. THE ROCK OR GRAVEL USED FOR FILTER OR RIPRAP SHALL CONFORM TO THE SPECIFIED GRADATION.
3. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE ROCK RIPRAP. 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 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.

RIPRAP OUTLET PROTECTION

NOT TO SCALE

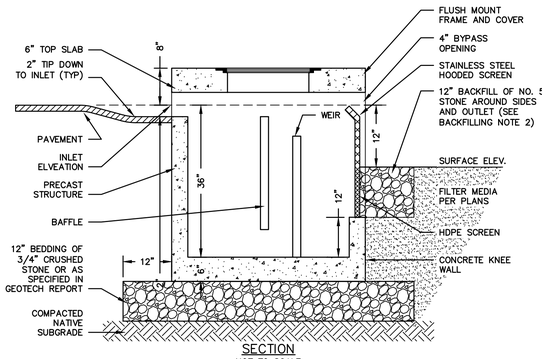


NOTES

1. ENTIRE STRUCTURE SHALL BE H-20 LOAD RATED. PROVIDE MANUFACTURER REINFORCEMENT DETAILS TO THE CITY ENGINEER UPON REQUEST. ALL SECTIONS SHALL BE CONCRETE CLASS AA (4000 PSI).
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ.IN. PER LINEAR FT. IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
3. THE TONGUE OR GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER LINEAR FT.
4. RISERS OF 1', 2', 3' & 4' CAN BE USED TO REACH DESIRED DEPTH.
5. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
6. USE H20 LOADING SLAB TOP SECTION IN LIEU OF ECCENTRIC TOP WHERE PIPE INVERT IS WITHIN 4' OF FINISH GRADE.
7. FRAME AND GRATE DIMENSIONS ARE TYPICAL BUT MAY VARY BASED ON PRODUCT SELECTED OR EQUIVALENT APPROVED BY THE ENGINEER.

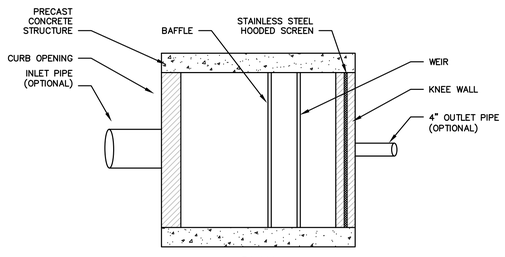
CATCH BASIN

NOT TO SCALE

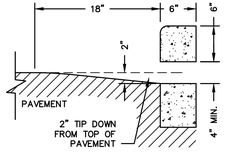


SECTION

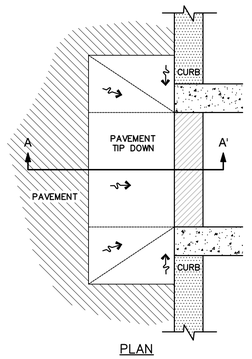
NOT TO SCALE



PLAN



SECTION A–A'



PLAN

NOTES

INSTALLATION –

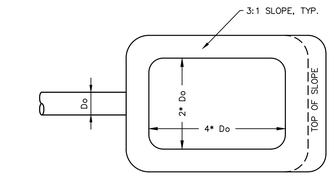
1. PLACE THE PRECAST SYSTEM TO NECESSARY ELEVATION.
2. VERIFY ELEVATIONS FOR ADJACENT CURBS, EDGE OF PAVEMENT, PAVEMENT GRADING FOR INLET GRATE FOR PRETX-DROP, SIDEWALK, PIPE INVERTS FOR INLETS AND OUTLETS, OUTLET INVERT FOR KNEE WALL.
3. VERIFY ELEVATIONS FOR ADJACENT CURBS.
4. VERIFY EDGE OF PAVEMENT TIP DOWN PAVEMENT GRADING FOR INLET GRATE.
5. VERIFY CURB ELEVATION IN RELATION TO PAVEMENT AND TIP DOWN.
6. VERIFY OUTLET INVERT FOR KNEE WALL IN RELATION TO FILTER MEDIA.
7. INSTALL BAFFLES, WEIR, AND SCREENS AS INDICATED ON DRAWINGS.
8. VERIFY MAINTENANCE ACCESS THROUGH GRATE OR COVER AND CLEARANCE FOR VACTOR.
9. INSTALL TOP OF STRUCTURE LEVEL WITH ADJACENT CURB OR SIDEWALK AS PER MANUFACTURERS SPECIFICATIONS.
10. ENGINEER FIELD VISIT REQUIRED PRIOR TO BACKFILLING.

BACKFILLING –

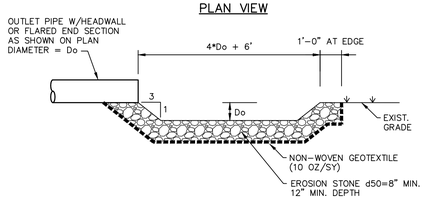
1. BACKFILL WITH APPROVED SOIL AND STONE TO THE DESIGN GRADE AS SPECIFIED IN THE DRAWINGS.
2. BACKFILL WITH 12" OF NO. 57 STONE AROUND REAR, LEFT, AND RIGHT SIDES TO LEVEL WITH TOP OF HDPE SCREEN. DO NOT MATCH NO. 57 STONE TO QUSF OR RAINGARDEN UNDERDRAIN STONE.
3. BACKFILL WITH BIORETENTION SOIL MIX BEYOND STONE BACKFILL TO EQUAL ELEVATION OF THE TOP OF HDPE SCREEN.
4. DO NOT BACKFILL SOIL OR STONE AGAINST STAINLESS SCREEN.
5. DO NOT COMPACT ADJACENT FILTRATION SYSTEM SOIL WITH MECHANICAL EQUIPMENT.
6. STABILIZE AIR REMAINING DISTURBED AREAS AND SIDE SLOPES WITH SEEDING, HYDROSEEDING, AND/ OR EROSION CONTROL BLANKETS AS INDICATED ON DRAWINGS.

PRETEX CURB INLET PRETREATMENT DEVICE

NOT TO SCALE



PLAN VIEW



SECTION

CONSTRUCTION SPECIFICATIONS

1. CONSTRUCT PLUNGE POOL TO THE WIDTHS AND LENGTHS SHOWN ON THE PLAN.
2. THE SUBGRADE FOR THE GEOTEXTILE FABRIC AND RIPRAP SHALL BE PREPARED TO LINES AND GRADES SHOWN ON THE PLANS.
3. EROSION STONE USED FOR THE PLUNGE POOL SHALL MEET THE FOLLOWING GRADATION.
4. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE EROSION STONE. 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 18 INCHES.
5. THE EROSION STONE 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.

PLUNGE POOL DETAIL

NOT TO SCALE

ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

STATE OF NEW HAMPSHIRE – CORY D. BELDEN No. 14239 LICENSED PROFESSIONAL ENGINEER

10/5/22

THIS DRAWING HAS NOT BEEN RELEASED FOR CONSTRUCTION

ISSUED FOR: PLANNING BOARD

ISSUE DATE: OCTOBER 5, 2022

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMITTAL	CDB	05/05/22
1	TRC COMMENTS	CDB	10/05/22

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 4952-DETAILS.dwg

SCALE: 24"x36" N.T.S.
12"x18" N.T.S.

OWNER:
7 WEST, LLC
P.O. BOX 728
DOVER, NH 03821

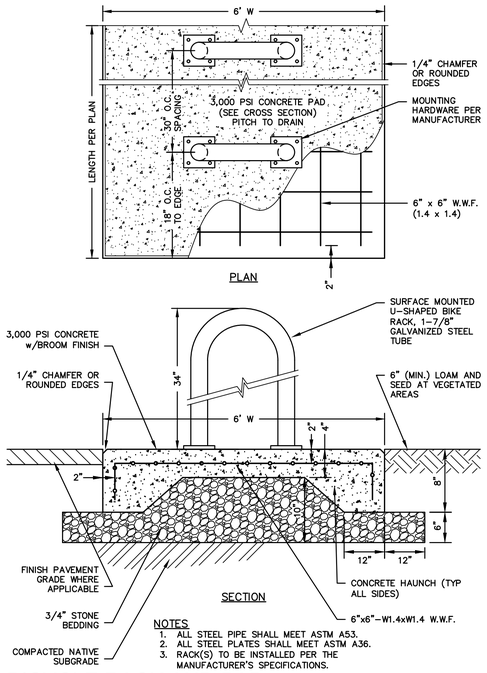
APPLICANT:
SUMMIT LAND DEVELOPMENT
340 CENTRAL AVE., #202
DOVER, NH 03820

PROJECT:
7 WEST
COMMERCIAL
DEVELOPMENT
(FILE NO. P22-38)
TAX MAP H, LOT 11
DOVER, NH

TITLE: DETAILS

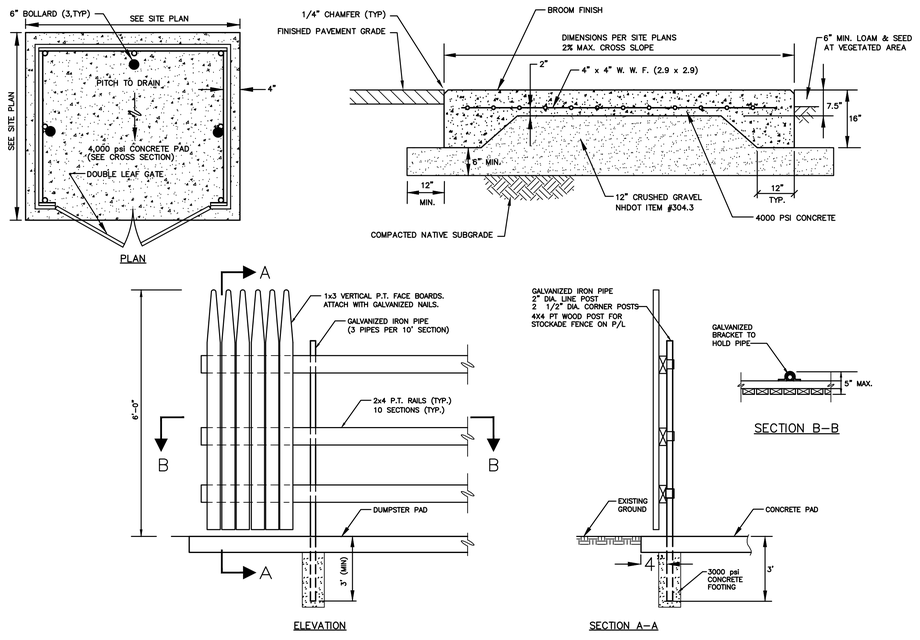
SHEET NUMBER: D-3

P4952



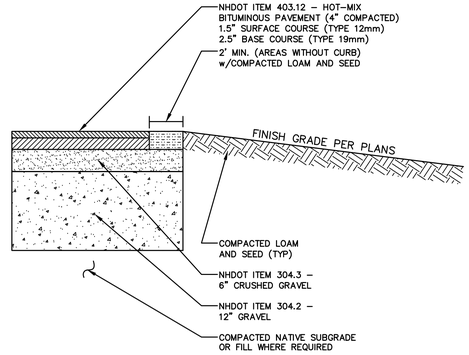
BICYCLE RACK AND PAD

NOT TO SCALE



DUMPSTER PAD AND ENCLOSURE DETAIL

NOT TO SCALE



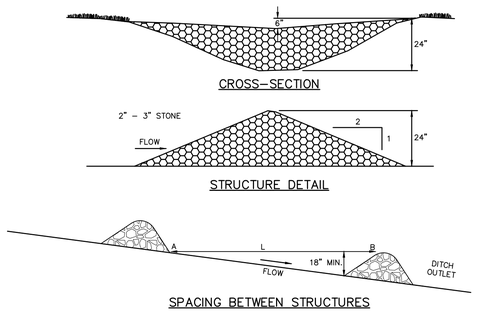
SITE PAVEMENT CROSS SECTION

NOT TO SCALE

(VERIFY WITH GEOTECHNICAL RECOMMENDATIONS)

NOTES

1. PROJECT GEOTECHNICAL REPORT MAY REQUIRE A DIFFERENT PAVEMENT CROSS SECTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR READING AND FOLLOWING ALL RECOMMENDATIONS IN THE GEOTECHNICAL REPORT. IN THE EVENT THAT THE REPORT AND CIVIL PLANS DIFFER, THE MORE STRINGENT SPECIFICATION SHALL APPLY.
2. ALL EXISTING FILL, BURIED ORGANIC MATTER, CLAY, LOAM, MUCK, AND/OR OTHER QUESTIONABLE MATERIAL SHALL BE REMOVED FROM BELOW ALL PAVEMENT, SHOULDERS AND UNDERGROUND PIPING/UTILITIES TO DEPTHS RECOMMENDED IN GEOTECHNICAL REPORT.
3. SUBGRADE SHALL BE PROOFROLLED A MINIMUM OF 6 PASSES WITH A 10-TON VIBRATORY COMPACTOR OPERATING AT PEAK RATED FREQUENCY OR BY MEANS APPROVED BY THE ENGINEER.
4. FILL BELOW PAVEMENT GRADES SHALL BE GRANULAR BORROW COMPACTED PER DOT REQUIREMENTS.
5. SITEWORK CONTRACTOR SHALL COORDINATE GEOTECHNICAL ENGINEERING INSPECTIONS WITH THE CONSTRUCTION MANAGER PRIOR TO PLACING GRAVELS.
6. TACK COAT SHALL BE APPLIED BETWEEN SUCCESSIVE LIFTS OF ASPHALT.
7. THE BITUMINOUS PAVEMENT SHALL BE COMPACTED TO 95 PERCENT OF ITS THEORETICAL MAXIMUM DENSITY AS DETERMINED BY ASTM D-2041. THE BASE AND SUBBASE MATERIALS SHOULD BE COMPACTED TO AT LEAST 95 PERCENT OF THEIR MAXIMUM DRY DENSITIES AS DETERMINED BY ASTM D-1557.



1. L = DISTANCE SUCH THAT POINTS A AND B ARE OF EQUAL ELEVATION
2. CHECK DAM SHALL BE CONSTRUCTED OF 2" TO 3" STONE WITH COMPLETE COVERAGE OF DITCH OR SWALE TO INSURE THAT THE CENTER OF THE STRUCTURE IS LOWER THAN THE EDGES.

MAINTENANCE

TEMPORARY GRADE STABILIZATION STRUCTURES SHOULD BE CHECKED AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED STORMS. ANY NECESSARY REPAIRS SHOULD BE MADE IMMEDIATELY. PARTICULAR ATTENTION SHOULD BE GIVEN TO END RUN AND EROSION AT THE DOWNSTREAM TOE OF THE STRUCTURE. WHEN THE STRUCTURES ARE REMOVED, THE DISTURBED PORTION SHOULD BE BROUGHT TO THE EXISTING CHANNEL GRADE AND THE AREAS PREPARED, SEEDED, AND MULCHED. WHILE THIS PRACTICE IS NOT INTENDED TO BE USED PRIMARILY FOR SEDIMENT TRAPPING, SOME SEDIMENT WILL ACCUMULATE BEHIND THE STRUCTURES. SEDIMENT SHALL BE REMOVED FROM BEHIND THE STRUCTURES WHEN IT HAS ACCUMULATED TO ONE HALF OF THE ORIGINAL HEIGHT OF THE STRUCTURE.

CONSTRUCTION SPECIFICATIONS

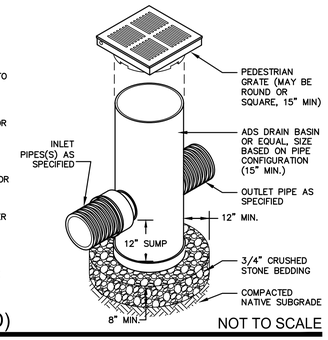
1. STRUCTURES SHALL BE INSTALLED ACCORDING TO THE DIMENSIONS SHOWN ON THE PLANS AT THE APPROPRIATE SPACING.
2. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER SO THAT EROSION AND AIR AND WATER POLLUTION WILL BE MINIMIZED.
3. SEEDING, FERTILIZING, AND MULCHING SHALL CONFORM TO THE RECOMMENDATIONS IN THE APPROPRIATE VEGETATIVE BMP.
4. STRUCTURES SHALL BE REMOVED FROM THE CHANNEL WHEN THEIR USEFUL LIFE HAS BEEN COMPLETED.

STONE CHECK DAM

NOT TO SCALE

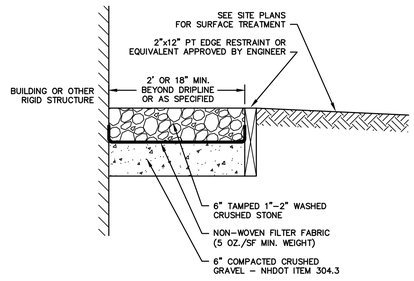
NOTES:

1. FRAMES AND GRATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN AND DETAILS.
3. DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE, N-12HP AND PVC SEWER.
4. INLINE DRAIN TO BE PVC, DIAMETER AS SPECIFIED AND AS MANUFACTURED BY ADS OR APPROVED EQUAL.
5. THE CONTRACTOR SHALL INSTALL THE DRAIN BASIN PER THE MANUFACTURER'S RECOMMENDATIONS AND AS SHOWN ON THE DRAWINGS.
6. FOR INSTALLATION IN PEDESTRIAN AND LANDSCAPE AREAS ONLY.



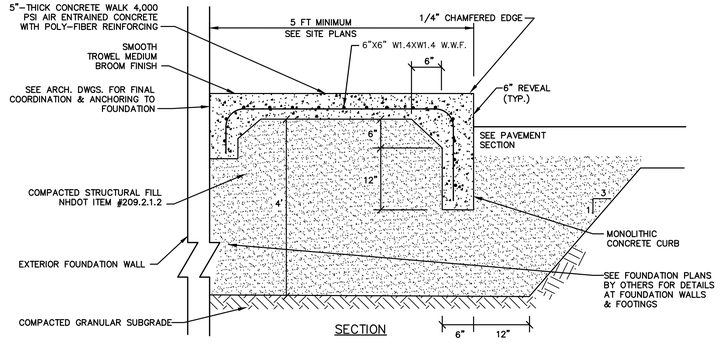
YARD DRAIN (YD)

NOT TO SCALE



STONE DRIP EDGE

NOT TO SCALE



CONCRETE SLAB (SIDEWALKS) DETAILS @ BLDG. ENTRANCE

NOT TO SCALE

P4952

ALTUS ENGINEERING, INC.
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STATE OF NEW HAMPSHIRE · CORY D. BELDEN · No. 14239 · LICENSED PROFESSIONAL ENGINEER

10/5/22

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ISSUED FOR: PLANNING BOARD

ISSUE DATE: OCTOBER 5, 2022

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMITTAL	CDB	05/05/22
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DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 4952-DETAILS.dwg

SCALE: 24"x36" N.T.S.
12"x18" N.T.S.

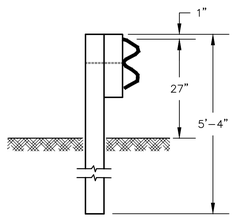
OWNER:
7 WEST, LLC
P.O. BOX 728
DOVER, NH 03821

APPLICANT:
SUMMIT LAND DEVELOPMENT
340 CENTRAL AVE., #202
DOVER, NH 03820

PROJECT:
7 WEST
COMMERCIAL
DEVELOPMENT
(FILE NO. P22-38)
TAX MAP H, LOT 11
DOVER, NH

TITLE:
DETAILS

SHEET NUMBER:
D-4

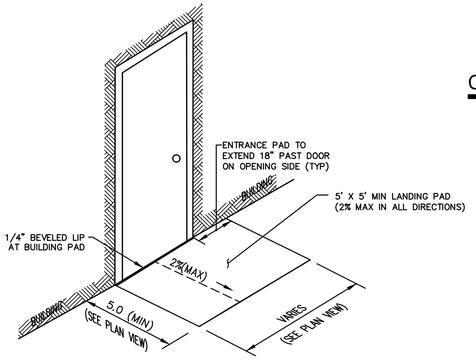


AASHTO DESIGNATION	G4(2W)
MAINE STANDARD DETAIL	HD-6
POST SPACING	6'-3"
DEFLECTION DISTANCE *	3'
POST TYPE	6" x 8" TREATED WOOD POST
BEAM TYPE	"W" SECTION, 12 GA., "CORTEN" STEEL
OFFSET BRACKETS	6" x 6" x 14" TREATED BLOCK

* CLEAR DISTANCE FROM THE BACK OF THE POST TO THE ROADSIDE OBJECTS. DECREASING THE POST SPACING TO 3.5 FEET WILL DECREASE THE DEFLECTION DISTANCE BY ONE FOOT.

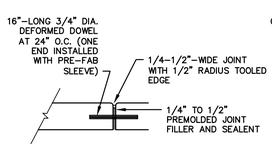
"W" BEAM GUARDRAIL DETAIL (WOOD POSTS)

NOT TO SCALE

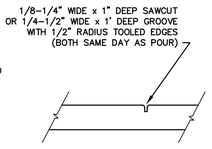


ADA ACCESSIBLE ENTRANCE PAD

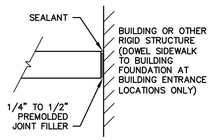
NOT TO SCALE



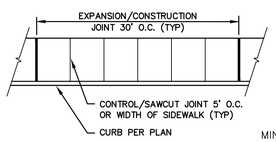
EXPANSION/CONSTRUCTION JOINT



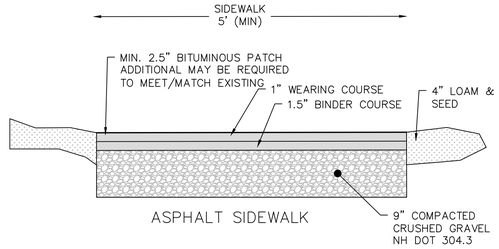
CONTROL/SAWCUT JOINT



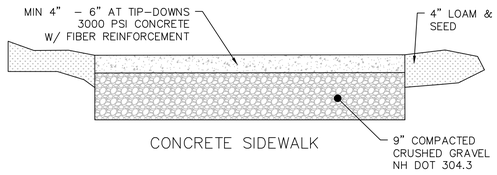
ISOLATION JOINT



PLAN



ASPHALT SIDEWALK



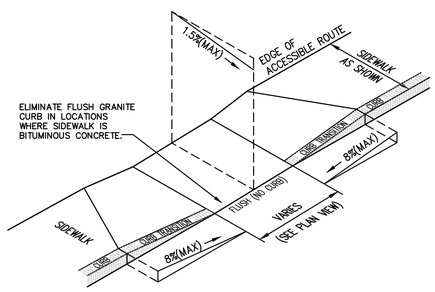
CONCRETE SIDEWALK

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.

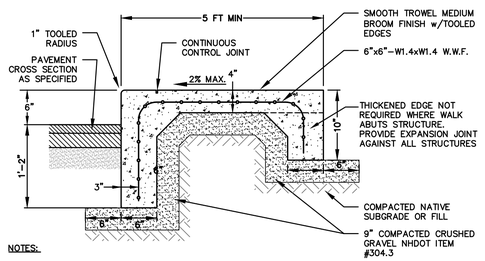
CONCRETE SIDEWALK

NOT TO SCALE



CURB RAMP (TYPE 'A')

NOT TO SCALE

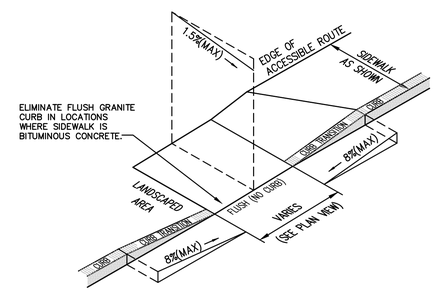


NOTES:

1. CONCRETE TO BE 4,000 PSI AIR ENTRAINED WITH POLY-FIBER REINFORCING.
2. JOINT SPACING TO BE EQUAL TO SIDEWALK WIDTH. SEE CONCRETE SIDEWALK DETAIL.
3. SEAL ALL JOINTS PER DETAILS AND SPECIFICATIONS.

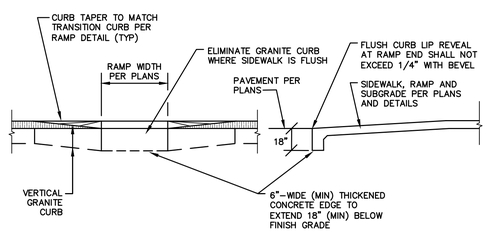
MONOLITHIC CONCRETE CURB AND SIDEWALK

NOT TO SCALE



CURB RAMP (TYPE 'I')

NOT TO SCALE



FLUSH CURB AT RAMP DETAIL

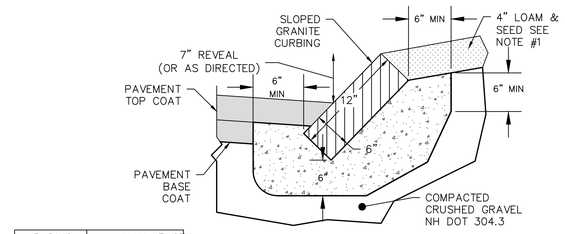
NOT TO SCALE

NOTES APPLICABLE TO ALL CURB RAMPS:

1. THE MAXIMUM ALLOWABLE CROSS SLOPE OF AN ACCESSIBLE ROUTE (SIDEWALK) AND CURB SHALL BE 2%
2. THE MAXIMUM ALLOWABLE RUNNING SLOPE OF AN ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE 5%
3. THE MAXIMUM ALLOWABLE RUNNING SLOPE OF AN ACCESSIBLE ROUTE (SIDEWALK) CURB RAMP SHALL BE 8.3% FOR A MAXIMUM ELEVATION CHANGE OF 6".
4. CURB TREATMENT VARIES, SEE PLANS FOR CURB TYPE.
5. BASE OF RAMP SHALL BE GRADED TO PREVENT THE PONDING OF WATER.
6. SEE CONCRETE SIDEWALK SECTION FOR RAMP CONSTRUCTION.
7. ALL CURB RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH AMERICANS WITH DISABILITIES ACT (ADA), PROWAG R305.21 AND ALL APPLICABLE CODES.
8. FLUSH CURB SECTIONS SHALL HAVE A MAXIMUM LIP REVEAL OF 1/4" WITH A BEVEL AT THE EDGE OF PAVEMENT.
9. EDGES OF CONCRETE SIDEWALK FOOTINGS ALONG FLUSH CURBS SHALL BE HAUNCHED SO AS TO EXTEND TO A MINIMUM DEPTH OF 1' BELOW FINISH GRADE.
10. NO RAMP SHALL BE LESS THAN 4' IN WIDTH.
11. CURB RAMPS SHALL HAVE A FLAT 2% MAX LANDING AT THE TOP AND BOTTOM OF THE RAMPS WHEN THERE IS A CHANGE IN DIRECTION.

CURB RAMP NOTES

NOT TO SCALE

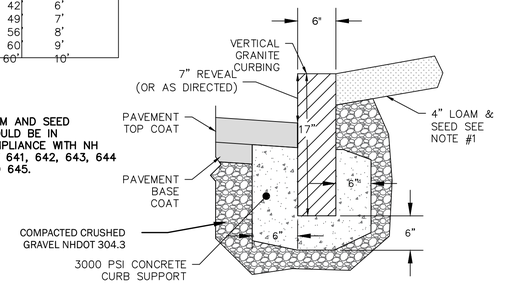


SLOPED GRANITE CURB

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:

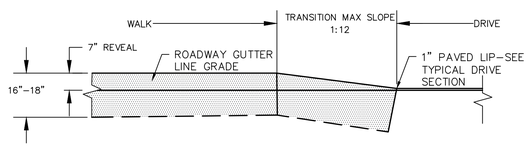
1. **LOAM AND SEED SHOULD BE IN COMPLIANCE WITH NH DOT 641, 642, 643, 644 AND 645.**



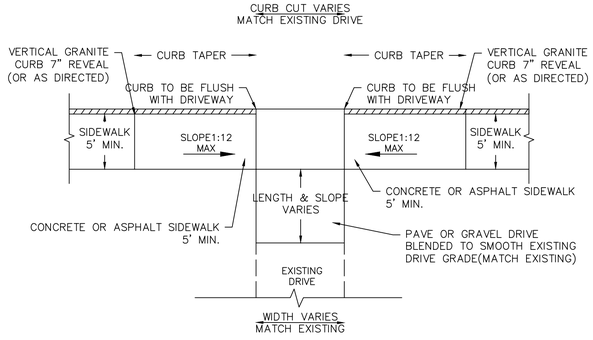
VERTICAL GRANITE CURB

GRANITE CURBS

NOT TO SCALE



GRANITE CURB TRANSITION AT TIP DOWN



DRIVEWAY PLAN WITH SIDEWALK TIP DOWNS

SIDEWALK TIPDOWN AT DRIVEWAY

NOT TO SCALE

4952

ALTUS ENGINEERING, INC.

133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

STATE OF NEW HAMPSHIRE - CORY D. BELDEN No. 14239 LICENSED PROFESSIONAL ENGINEER

10/5/22

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ISSUED FOR: *PLANNING BOARD*

ISSUE DATE: *OCTOBER 5, 2022*

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMITTAL	CDB	05/05/22
1	TRC COMMENTS	CDB	10/05/22

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 4952-DETAILS.dwg

SCALE: 24"x36" N.T.S.
12"x18" N.T.S.

OWNER:
7 WEST, LLC
P.O. BOX 728
DOVER, NH 03821

APPLICANT:
SUMMIT LAND DEVELOPMENT
340 CENTRAL AVE., #202
DOVER, NH 03820

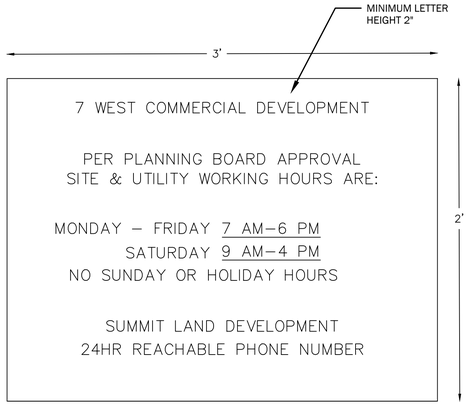
PROJECT:
7 WEST
COMMERCIAL DEVELOPMENT
(FILE NO. P22-38)
TAX MAP H, LOT 11
DOVER, NH

TITLE:

DETAILS

SHEET NUMBER:

D-5

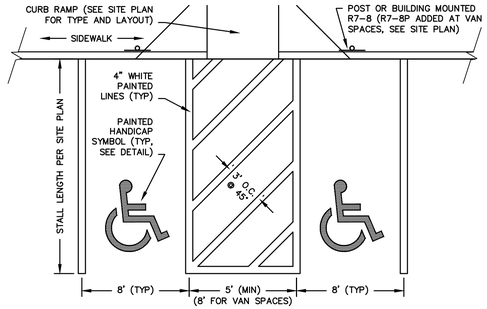


NOTES:

1. SIGN SHALL HAVE BLACK LETTERS ON A WHITE BACKGROUND
2. SIGN SHALL BE WEATHER RESISTANT AND SECURED TO THE GROUND

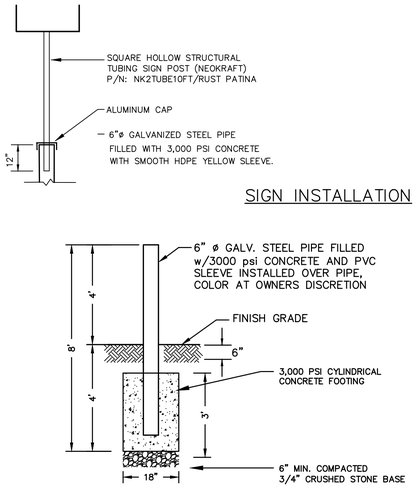
CONSTRUCTION SIGN

NOT TO SCALE



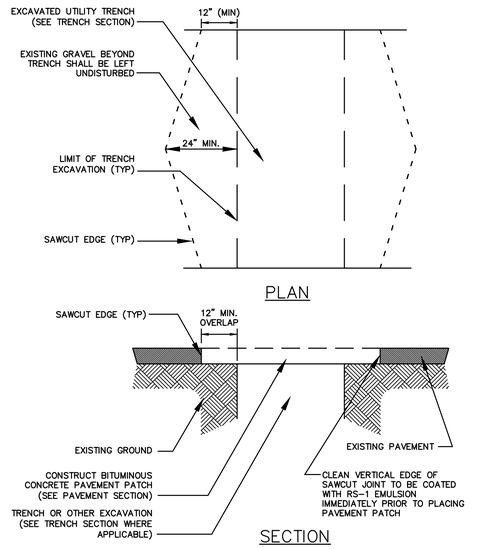
HANDICAP PARKING STALL LAYOUT

NOT TO SCALE



BOLLARD

NOT TO SCALE

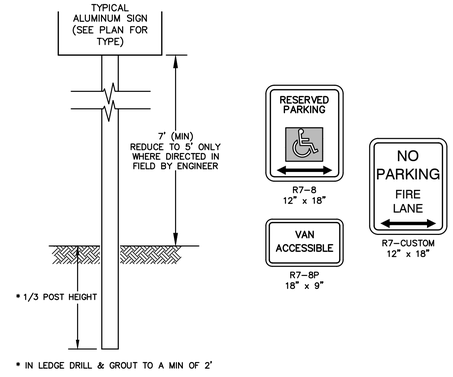


NOTES

1. MACHINE CUT EXISTING PAVEMENT.
2. ALL TEMPORARY, DAMAGED OR DEFECTIVE PAVEMENT SHALL BE REMOVED PRIOR TO PLACEMENT OF PERMANENT TRENCH REPAIRS.
3. DIAMOND PATCHES, SHALL BE REQUIRED FOR ALL TRENCHES CROSSING ROADWAY. DIAMOND PATCHES SHALL MEET NHDOT REQUIREMENTS.

TYPICAL TRENCH PATCH

NOT TO SCALE



LENGTH: AS REQUIRED

WEIGHT PER LINEAR FOOT: 1.50 LBS (MIN.)

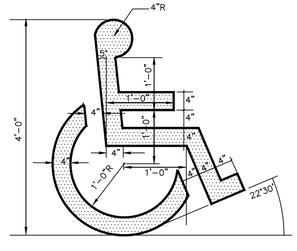
STEEL: 2–3/8" 16 GAUGE RUST–RESISTANT GALVANIZED TUBULAR STEEL, 0.065" MIN. WALL THICKNESS

NOTES

1. ALL SIGNS SHALL MEET THE REQUIREMENTS OF AND BE INSTALLED AS INDICATED IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.

SIGN DETAILS

NOT TO SCALE

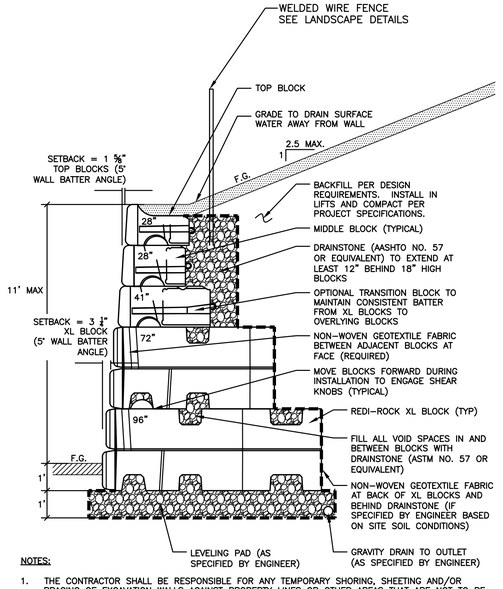


NOTES

1. SYMBOL TO BE PAINTED IN ALL HANDICAPPED ACCESSIBLE SPACES IN WHITE PAINT (BLUE–PAINTED SQUARE BACKGROUND AND WHITE BORDER OPTIONAL).

PAINTED HANDICAP SYMBOL

NOT TO SCALE

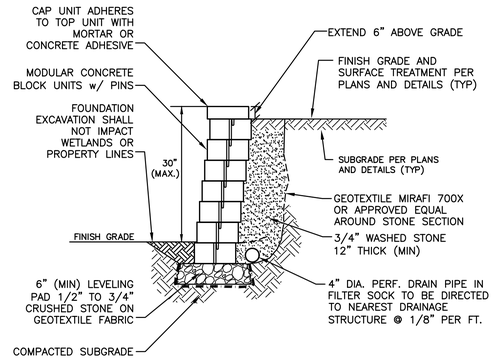


NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY TEMPORARY SHORING, SHEETING AND/OR BRACING OF EXCAVATION WALLS AGAINST PROPERTY LINES OR OTHER AREAS THAT ARE NOT TO BE UNDERMINED.
2. WALL SHALL BE REDI–ROCK OR APPROVED EQUAL.
3. NO RETAINING WALL ELEMENTS SHALL EXTEND BEYOND THE LIMITS OF THE PROPRTY.
4. THIS DRAWING IS FOR REFERENCE ONLY. FINAL PROJECT DESIGNS, INCLUDING ALL CONSTRUCTION DETAILS, SHALL BE PREPARED BY A NH LICENSED PROFESSIONAL STRUCTURAL ENGINEER USING THE ACTUAL CONDITIONS OF THE PROPOSED SITE. FINAL WALL DESIGN MUST ADDRESS BOTH INTERNAL AND EXTERNAL DRAINAGE AND ALL MODES OF WALL STABILITY.
5. FINAL WALL DESIGN PLANS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

LARGE BLOCK RETAINING WALL

NOT TO SCALE



NOTES:

1. TYPICAL MODULAR BLOCK SHALL BE PRECAST CONCRETE MEASURING APPROXIMATELY 16"x12"x6". OTHER BLOCK SIZES MAY BE APPROVED BY THE ENGINEER UPON REQUEST. CAP UNITS SHALL BE PER THE STANDARDS OF THE SELECTED MANUFACTURER.
2. BLOCK MANUFACTURER SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
3. WALL SHALL BE INSTALLED PER THE REQUIREMENTS OF THE MANUFACTURER.
4. WALL HEIGHT SHALL NOT EXCEED 4' WITHOUT DESIGN DRAWINGS STAMPED BY A PROFESSIONAL STRUCTURAL ENGINEER.
5. LOCKING PINS MAY OR MAY NOT BE REQUIRED BASED ON THE WALL MANUFACTURER APPROVED BY THE ENGINEER.
6. WALL SHALL BE EMBEDDED BELOW EXISTING GRADE THE DEPTH OF AT LEAST ONE BLOCK UNLESS OTHERWISE SPECIFIED BY THE WALL MANUFACTURER.
7. WALL BATTER SHALL BE PER THE MANUFACTURER'S SPECIFICATIONS.
8. BLOCK FINISH SHALL BE AT THE DISCRETION OF THE OWNER.
9. MODULAR BLOCK RETAINING WALL SHALL BE VERSA–LOK RETAINING WALL SYSTEMS (OR APPROVED EQUAL).

SMALL BLOCK RETAINING WALL

NOT TO SCALE

P4952

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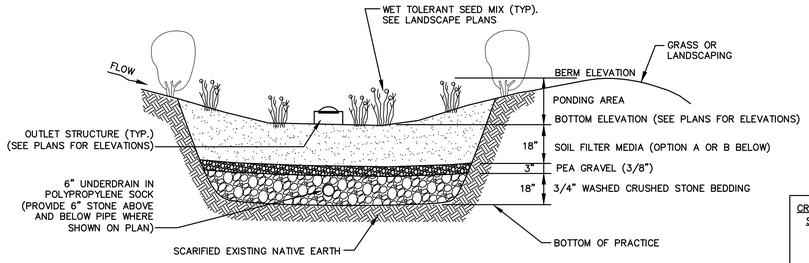
(FILE NO. P22–38)
TAX MAP H, LOT 11
DOVER, NH

TITLE:
DETAILS

SHEET NUMBER:
D-6



CRUSHED STONE BEDDING *

SIEVE SIZE	% PASSING BY WEIGHT
1"	100
3/4"	90 – 100
3/8"	20 – 55
# 4	0 –10
# 8	0 – 5

* EQUIVALENT TO STANDARD STONE SIZE #67 – SECTION 703 OF NHDOT NHDOT STANDARD SPECIFICATIONS

NOTES

1. WHEN CONTRACTOR EXCAVATES RAIN GARDEN AREA TO SUBGRADE, DESIGN ENGINEER SHALL PERFORM SUBSURFACE EVALUATION PRIOR TO THE PLACEMENT OF ANY SELECT MATERIAL OR OTHER BACKFILL.
2. SOIL FILTER MEDIA SHALL BE EITHER OPTION A OR OPTION B AT CONTRACTOR'S DISCRETION.
3. DO NOT PLACE THE RAIN GARDEN INTO SERVICE UNTIL THE BMP HAS BEEN PLANTED AND ITS CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
4. DO NOT DISCHARGE SEDIMENT-LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOFF, WATER FROM EXCAVATIONS) TO THE RAIN GARDEN AREA DURING ANY STAGE OF CONSTRUCTION.
5. DO NOT TRAFFIC EXPOSED SOIL SURFACE WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION COMPONENTS OF THE SYSTEM.

MAINTENANCE REQUIREMENTS

- SYSTEMS SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND FOLLOWING ANY RAINFALL EXCEEDING 2.5 INCHES IN A 24-HOUR PERIOD, WITH MAINTENANCE OR REHABILITATION CONDUCTED AS A WARRANTED BY SUCH INSPECTION.
- PRETREATMENT MEASURES SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND CLEANED OF ACCUMULATED SEDIMENT AS WARRANTED BY INSPECTION, BUT NO LESS THAN ONCE ANNUALLY.
- AT LEAST ONCE ANNUALLY, SYSTEM SHOULD BE INSPECTED FOR DRAWDOWN TIME. IF BIORETENTION SYSTEM DOES NOT DRAIN WITHIN 72-HOURS FOLLOWING A RAINFALL EVENT, THEN A QUALIFIED PROFESSIONAL SHOULD ASSESS THE CONDITION OF THE FACILITY TO DETERMINE MEASURES REQUIRED TO RESTORE FILTRATION FUNCTION OR INFILTRATION FUNCTION (AS APPLICABLE), INCLUDING BUT NOT LIMITED TO REMOVAL OF ACCUMULATED SEDIMENTS OR RECONSTRUCTION OF THE FILTER MEDIA.
- VEGETATION SHOULD BE INSPECTED AT LEAST ANNUALLY, AND MAINTAINED IN HEALTHY CONDITION, INCLUDING, PRUNING, REMOVAL, AND REPLACEMENT OF DEAD OR DISEASED VEGETATION, AND REMOVAL OF INVASIVE SPECIES.

DESIGN REFERENCES

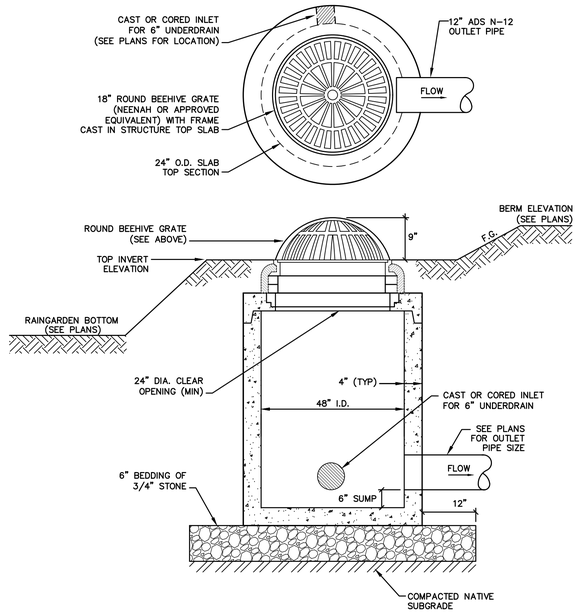
- UNH STORMWATER CENTER
- EPA (1999A)
- NEW HAMPSHIRE STORMWATER MANAGEMENT MANUAL, VOLUME 2, DECEMBER 2008 AS AMENDED.

FILTER MEDIA MIXTURES

Component Material	Percent of Mixture by Volume	Gradation of material	
		Sieve No.	Percent by Weight Passing Standard Sieve
Filter Media Option A			
ASTM C-33 concrete sand	50 to 55		
Loamy sand topsoil, with fines as indicated	20 to 30	200	15 to 25
Moderately fine shredded bark or wood fiber mulch, with fines as indicated	20 to 30	200	< 5
Filter Media Option B			
Moderately fine shredded bark or wood fiber mulch, with fines as indicated	20 to 30	200	< 5
Loamy coarse sand	70 to 80	10	85 to 100
		20	70 to 100
		60	15 to 40
		200	8 to 15

TYPICAL RAINGARDEN

NOT TO SCALE

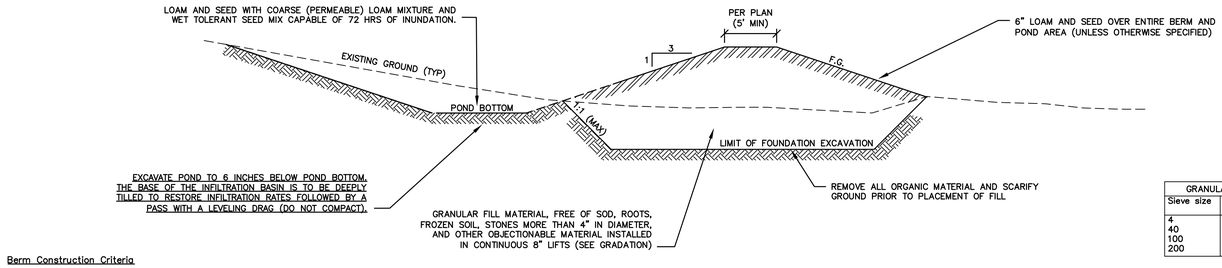


CONSTRUCTION SPECIFICATIONS

1. OUTLET STRUCTURE SHALL BE CONSTRUCTED ONSITE OR PRECAST TO EQUAL DIMENSIONS.
2. ALL JOINTS AND PIPE OPENINGS SHALL BE SEALED WATERTIGHT WITH MORTAR.
3. STRUCTURE IS TO BE BUILT TO WITHSTAND H20 LOADING.
4. SOIL UNDERLYING THE STRUCTURE'S GRAVEL BASE PAD AND THE PAD ITSELF ARE TO BE COMPACTED TO 95% MODIFIED PROCTOR.
5. ALL CONCRETE SHALL BE 4,000 PSI MINIMUM.

OUTLET STRUCTURE DETAIL

NOT TO SCALE



GRANULAR FILL GRADATION

Sieve size	Embankment Material % Passing sieve
4	90-100%
40	50-80%
100	29-43%
200	15-30%

Berm Construction Criteria

1. Foundation Preparation -- The foundation shall be cleared of trees, logs, stumps, roots, brush, boulders, sod, and rubbish. If suitable for reuse, the topsoil and sod shall be stockpiled and spread on the completed embankment and spillways. Foundation surfaces shall be sloped no steeper than 1:1. The foundation area shall be deeply tilled and scarified before placement of fill material. The surface shall have moisture added and/or it shall be compacted if necessary so that the first layer of fill can be bonded to the foundation.

   The cutoff trench and any other required excavations shall be dug to the lines and grades shown on the plans or as staked in the field. If they are suitable, excavated materials shall be used in the permanent fill.

   Existing stream channels in the foundation area shall be sloped no steeper than 1:1 and deepened and widened as necessary to remove all stones, gravel, sand, stumps, roots, and other objectionable material and to accommodate compaction equipment.

   Foundation areas shall be kept free of standing water when fill is being placed on them.

2. Granular Fill Placement -- The material placed in the fill shall be free of sod, roots, frozen soil, stones more than 4 inches in diameter and other objectionable material.

   Selected backfill material shall be placed around structures, pipe conduits, and drainage diaphragm at about the same rate on all sides to prevent damage from unequal loading.

   The placing and spreading of fill material shall be started at the lowest point of the foundation and the fill brought up in horizontal layers of such thickness that the required compaction can be obtained. The fill shall be constructed in 8" continuous horizontal layers except where openings or sectionalized fills are required. In those cases, the slope of the bonding surfaces between the embankment in place and the embankment to be placed shall not be steeper than 3 horizontal to 1 vertical. The bonding surface shall be treated the same as that specified for the foundation so as to insure a good bond with the new fill.

   The distribution and gradation of materials shall be such that no lenses, pockets, streaks, or layers of material differ substantially in texture of gradation from the surrounding material. If it is necessary to use materials of varying texture and gradation, the more impervious material shall be placed in the center and upstream parts of the fill. If zoned fills of substantially differing materials are specified, the zones shall be placed according to the lines and grades shown on the drawings. The complete work shall conform to the lines, grades, and elevations shown on the drawings or as staked in the field.

3. Moisture Control -- The moisture content of the fill material shall be adequate for obtaining the required compaction. Material that is too wet shall be dried to meet this requirement, and material that is too dry shall have water added and mixed until the requirement is met.

4. Compaction of berms -- Construction equipment shall be operated over the areas of each layer of fill to insure that the required compaction is obtained. Special equipment shall be used if needed to obtain the required compaction.

   Fill material shall be compacted to not less than 95% of AASHTO T99 Method C compaction method.

   Fill adjacent to structures, pipe conduits, and drainage diaphragm shall be compacted to a density equivalent to that of the surrounding fill by means of hand tamping or manually directed power tamper or plate vibrators. Fill adjacent to concrete structures shall not be compacted until the concrete is strong enough to support the load.

5. Protection -- A protective cover of vegetation shall be established on all exposed surfaces of the embankment, spillway, and borrow area in accordance with the plans. If soil or climatic conditions preclude the use of vegetation and protection is needed, non-vegetative means, such as mulches or gravel, may be used. In some places, temporary vegetation may be used until conditions permit establishment of permanent vegetation.

Maintenance

Maintenance is necessary if detention/retention basins are to continue to function as originally designed. A local government, a designated group such as a homeowners' association, or an individual must be assigned responsibility for maintaining the structures and the basin area. A maintenance plan should be developed that outlines the maintenance operations and a schedule for carrying out the procedures.

The following should be considered in formulating a maintenance plan:

1. Embankment -- The embankment should be inspected annually to determine if rodent burrows, wet areas, or erosion of the fill is taking place.
2. Vegetation -- The vegetated areas of the structure should be protected from damage by fire, grazing, traffic, and dense weed growth. Lime and fertilizer should be applied as necessary as determined by soil tests. Trees and shrubs should be kept off the embankment and emergency spillway areas.
3. Sediment -- Sediment should be continually checked in the basin. When sediment accumulations reach the predetermined design elevation, then the sediment should be removed and properly disposed of.
4. Safety Inspections -- All permanent impoundments should be inspected by a qualified professional engineer on a periodic basis. If there is potential for significant damage or loss of life downstream, then the inspection should be carried out annually.

BERM DETAIL

NOT TO SCALE

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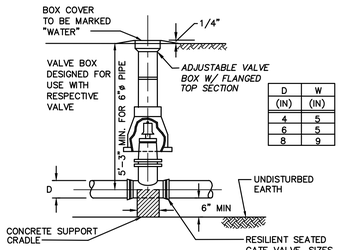
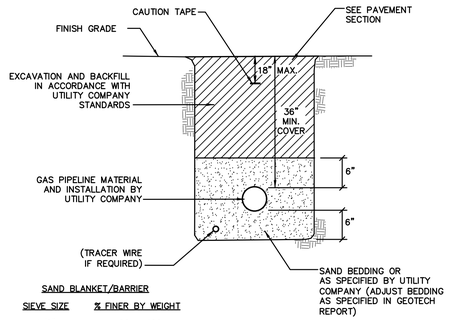
P4952



D (IN)	W (IN)
4	5
6	5
8	9

SECTION

WATER VALVE NOT TO SCALE



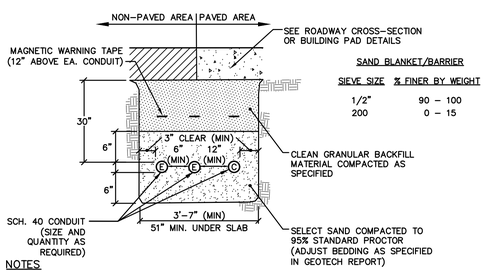
SAND BLANKET/BARRIER

SIEVE SIZE	% FINER BY WEIGHT
1/2"	90 – 100
200	0 – 15

NOTES

1. CONTRACTOR TO COORDINATE WITH UTILITY COMPANY AND PROVIDE ALL EXCAVATION, COMPACTION AND BACKFILL REQUIRED FOR PIPE INSTALLATION.
2. BACKFILL MATERIAL BELOW PAVED OR CONCRETE AREAS, BEDDING MATERIAL, AND SAND BLANKET SHALL BE COMPACTED TO NOT LESS THAN 95% OF AASHTO T 99, METHOD C. SUITABLE BACKFILL MATERIAL BELOW LOAM AREAS SHALL BE COMPACTED TO NOT LESS THAN 90% OF AASHTO T 99, METHOD C.

GAS TRENCH NOT TO SCALE



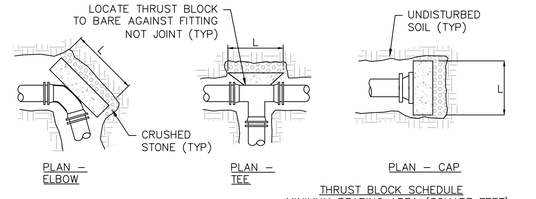
SAND BLANKET/BARRIER

SIEVE SIZE	% FINER BY WEIGHT
1/2"	90 – 100
200	0 – 15

NOTES

1. ALL CONDUIT IS TO BE SCHEDULE 40 PVC, ELECTRICAL GRADE, GRAY IN COLOR AND INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS. A 10-FOOT HORIZONTAL SECTION OF RIGID GALVANIZED STEEL CONDUIT WILL BE REQUIRED AT EACH SWEEP, UNLESS IN THE OPINION OF THE SERVICE PROVIDER DESIGNER, THE SWEEP-PVC JOINT IS NOT SUBJECT TO FAILURE DURING PULLING OF THE CABLE. ALL JOINTS ARE TO BE WATERTIGHT.
2. ALL 90 DEGREE SWEEPS WILL BE MADE WITH RIGID GALVANIZED STEEL WITH A MINIMUM RADIUS OF 36 INCHES FOR PRIMARY CABLES AND 24 INCHES FOR SECONDARY CABLES.
3. BACKFILL MAY BE MADE WITH EXCAVATED MATERIAL OR COMPARABLE, UNLESS MATERIAL IS DEEMED UNSUITABLE BY SERVICE PROVIDER. BACKFILL SHALL BE FREE OF FROZEN LUMPS, ROCKS, DEBRIS, AND RUBBISH, ORGANIC MATERIAL SHALL NOT BE USED AS BACKFILL. BACKFILL SHALL BE IN 6-INCH LAYERS AND THOROUGHLY COMPACTED.
4. A SUITABLE PULLING STRING, CAPABLE OF 300 POUNDS OF PULL, MUST BE INSTALLED IN THE CONDUIT BEFORE SERVICE PROVIDER IS NOTIFIED TO INSTALL CABLE. THE STRING SHOULD BE BLOWN INTO THE CONDUIT AFTER THE RUN IS ASSEMBLED TO AVOID BONDING THE STRING TO THE CONDUIT. A MINIMUM OF TWENTY-FOUR (24") INCHES OF ROPE SLACK SHALL REMAIN AT THE END OF EACH DUCT. PULL ROPE SHALL BE INSTALLED IN ALL CONDUIT FOR FUTURE PULLS. PULL ROPE SHALL BE NYLON ROPE HAVING A MINIMUM TENSILE STRENGTH OF THREE HUNDRED (300#) LBS.
5. SERVICE PROVIDER SHALL BE GIVEN THE OPPORTUNITY TO INSPECT ALL CONDUIT PRIOR TO BACKFILL. THE CONTRACTOR IS RESPONSIBLE FOR ALL REPAIRS SHOULD SERVICE PROVIDER BE UNABLE TO INSTALL ITS CABLE IN A SUITABLE MANNER.
6. TYPICAL CONDUIT SIZES ARE 3-INCH FOR SINGLE PHASE PRIMARY AND SECONDARY VOLTAGE CABLES, 4-INCH FOR THREE PHASE SECONDARY, AND 5-INCH FOR THREE PHASE PRIMARY. HOWEVER, SERVICE PROVIDERS MAY REQUIRE DIFFERENT NUMBERS, TYPES AND SIZES OF CONDUIT THAN THOSE SHOWN HERE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL CONDUIT SIZES, TYPES AND NUMBERS WITH EACH SERVICE PROVIDER PRIOR TO ORDERING THEM.
7. ROUTING OF CONDUIT, LOCATION OF MANHOLES, TRANSFORMERS, CABINETS, HANDHOLES, ETC., SHALL BE DETERMINED BY SERVICE PROVIDER DESIGN PERSONNEL. THE CONTRACTOR SHALL COORDINATE WITH ALL SERVICE PROVIDERS PRIOR TO THE INSTALLATION OF ANY CONDUIT.
8. ALL CONDUIT INSTALLATIONS MUST CONFORM TO THE CURRENT EDITION OF THE NATIONAL ELECTRIC SAFETY CODE, STATE AND LOCAL CODES AND ORDINANCES, AND WHERE APPLICABLE, THE NATIONAL ELECTRIC CODE. WHERE REQUIRED BY UTILITY PROVIDER, CONDUIT SHALL BE SUPPORTED IN PLACE USING PIPE STANCHIONS PLACED EVERY FIVE (5') FEET ALONG THE CONDUIT RUN.
9. UNDER A BUILDING SLAB THE CONDUIT SHALL BE ENCASED IN 8" OF CONCRETE ON ALL SIDES.
10. ALL CONDUIT TERMINATIONS SHALL BE CAPPED TO PREVENT DEBRIS FROM ENTERING CONDUIT.

ELECTRIC / COMMUNICATION TRENCH NOT TO SCALE



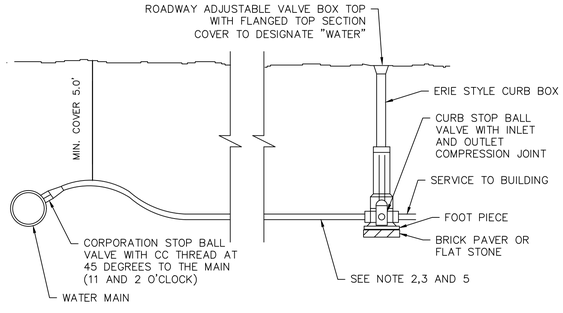
THRUST BLOCK SCHEDULE
MINIMUM BEARING AREA (SQUARE FEET)

	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.

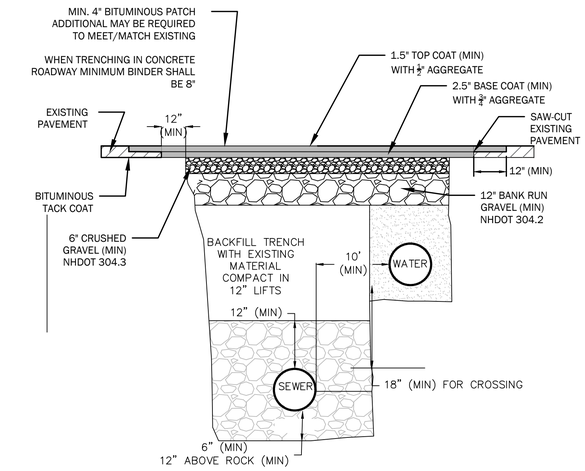
THRUST BLOCKING NOT TO SCALE



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

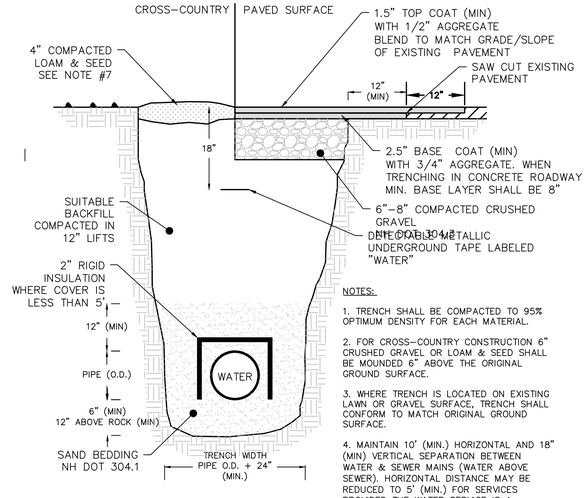
WATER SERVICE CONNECTION NOT TO SCALE



NOTES:

1. TRENCH SHALL BE COMPACTED TO 95% OPTIMUM DENSITY.
2. ALL WORK SHALL COMPLY WITH THE CITY OF DOVER CONSTRUCTION GUIDELINES AND PROCEDURES
3. 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.

CITY OF DOVER TYPICAL 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. 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 MAIN TRENCH NOT TO SCALE

ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

STATE OF NEW HAMPSHIRE
CORY D. BELDEN
No. 14239
LICENSED PROFESSIONAL ENGINEER
10/5/22

THIS DRAWING HAS NOT BEEN RELEASED FOR CONSTRUCTION

ISSUED FOR: PLANNING BOARD

ISSUE DATE: OCTOBER 5, 2022

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMITTAL	CDB	05/05/22
1	TRC COMMENTS	CDB	10/05/22

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 4952-DETAILS.dwg

SCALE: 24"x36" N.T.S.
12"x18" N.T.S.

OWNER:
7 WEST, LLC
P.O. BOX 728
DOVER, NH 03821

APPLICANT:
SUMMIT LAND DEVELOPMENT
340 CENTRAL AVE., #202
DOVER, NH 03820

PROJECT:
7 WEST COMMERCIAL DEVELOPMENT
(FILE NO. P22-38)
TAX MAP H, LOT 11
DOVER, NH

TITLE:
DETAILS

SHEET NUMBER:
D-8

P4952

MANHOLE NOTES:

1. IT IS THE INTENTION OF THE NHDES WASTEWATER BUREAU THAT THE MANHOLE, INCLUDING ALL COMPONENT PARTS, HAVE ADEQUATE SPACE, STRENGTH AND LEAKPROOF QUALITIES CONSIDERED NECESSARY BY THE BUREAU 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, WITH ADEQUATE JOINTING, OR CONCRETE CAST MONOLITHICALLY IN PLACE WITH REINFORCEMENT IN ANY APPROVED MANHOLE. THE COMPLETE STRUCTURE SHALL BE OF SUCH MATERIAL AND QUALITY AS TO WITHSTAND LOADS OF 8 TONS (H-20 LOADING) WITHOUT FAILURE AND PREVENT LEAKAGE IN EXCESS OF ONE GALLON PER DAY PER VERTICAL FOOT OF MANHOLE CONTINUOUSLY FOR THE LIFE OF THE STRUCTURE, A PERIOD GENERALLY IN EXCESS OF 25 YEARS IS TO BE UNDERSTOOD IN BOTH CASES.
2. BARRELS AND CONE SECTIONS SHALL BE PRECAST REINFORCED.
3. PRECAST CONCRETE BARREL SECTIONS, CONES AND BASES SHALL CONFORM TO ASTM C4706.
4. LEAKAGE TEST SHALL BE PERFORMED IN ACCORDANCE WITH THE NHDES REQUIREMENTS. SEE SEWER SPECIFICATIONS – 02500 SEWERS AND 02550 SEWER MANHOLES.
5. INVERTS AND SHELVES MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT CONSTRUCTED TO CONFORM TO THE SIZE OF PIPE AND FLOW AT CHANGES IN DIRECTION. THE INVERTS SHALL BE LAID OUT IN CURVES, OF THE LONGEST RADIUS POSSIBLE TANGENT TO THE CENTER LINE OF THE SEWER PIPES. 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.
6. FRAMES AND COVERS MANHOLE FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN AND PROVIDE A 30-INCH CLEAR OPENING. THE MANHOLE COVER SHALL HAVE THE WORD "SEWER" IN 3-INCH LETTERS CAST INTO THE TOP SURFACE.
7. BEDDING SCREENED GRAVEL AND/OR CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING ASTM C33.

100%	PASSING 1 INCH SCREEN
90–100%	PASSING 3/4 INCH SCREEN
20–55%	PASSING 3/8 INCH SCREEN
0–10%	PASSING #4 SIEVE
0–5%	PASSING #8 SIEVE

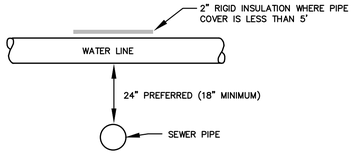
   WHERE ORDERED BY THE ENGINEER TO STABILIZE THE BASE, SCREENED GRAVEL OR CRUSHED STONE 1-1/2" TO 1/2" SHALL BE USED.
8. CONCRETE FOR DROP SUPPORT SHALL CONFORM TO THE REQUIREMENT FOR CLASS A (3000 LBS.) CONCRETE OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS AS FOLLOWS:

   CEMENT 6.0 BAGS PER CUBIC YARD
   WATER 5.75 GALLONS PER BAG CEMENT
   MAXIMUM SIZE OF AGGREGATE 1 INCH
9. FLEXIBLE JOINT A FLEXIBLE JOINT SHALL BE PROVIDED WITHIN THE FOLLOWING DISTANCES:

   PVC PIPE – 60"
   RCP & CI PIPE – ALL SIZES – 48"
   AC & VC PIPE – UP THROUGH 12" DIAMETER – 18"
   AC & VC PIPE – LARGER THAN 12" DIAMETER – 36"
10. SHALLOW MANHOLE IN LIEU OF A CONE SECTION, WHEN MANHOLE DEPTH IS LESS THAN 6 FEET, A REINFORCED CONCRETE SLAB COVER MAY BE USED HAVING AN ECCENTRIC ENTRANCE OPENING AND CAPABLE OF SUPPORTING H-20 LOADS.

STANDARD TRENCH NOTES

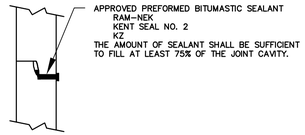
1. ORDERED EXCAVATION OF UNSUITABLE MATERIAL BELOW GRADE: BACKFILL AS STATED IN THE TECHNICAL SPECIFICATIONS OR AS SHOWN ON THE DRAWING.
2. BEDDING: SCREENED GRAVEL AND/OR CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING THE GRADATION SHOWN IN THE TRENCH DETAIL. WHERE ORDERED BY THE ENGINEER TO STABILIZE THE BASE, SCREENED GRAVEL OR CRUSHED STONE 1-1/2 INCH TO 1/2 INCH SHALL BE USED.
3. SAND BLANKET: CLEAN SAND FREE FROM ORGANIC MATTER MEETING THE GRADATION SHOWN IN THE TRENCH DETAIL. BLANKET MAY BE REPLACED WITH BEDDING MATERIAL FOR CAST-IRON, DUCTILE IRON, AND REINFORCED CONCRETE PIPE PROVIDED THAT NO STONE LARGER THAN 2" IS IN CONTACT WITH THE PIPE AND THE GEOTEXTILE IS RELOCATED ACCORDINGLY.
4. SUITABLE MATERIAL: IN ROADS, ROAD SHOULDERS, WALKWAYS AND TRAVELED WAYS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS, PIECES OF PAVEMENT, ORGANIC MATTER, TOP SOIL, ALL WET OR SOFT MUCK, PEAT, OR CLAY, ALL EXCAVATED LEDGE MATERIAL, ALL ROCKS OVER 6 INCHES IN LARGEST DIMENSION, AND ANY MATERIAL WHICH, AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION. IN CROSS COUNTRY CONSTRUCTION, SUITABLE MATERIAL SHALL BE AS DESCRIBED ABOVE, EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, MUCK, OR PEAT ONLY IF SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE AND PROVIDED THAT EASY ACCESS TO THE SEWER FOR MAINTENANCE AND POSSIBLE RECONSTRUCTION WILL BE PRESERVED.
5. BASE COURSE AND PAVEMENT SHALL MEET THE REQUIREMENTS OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES – DIVISIONS 300 AND 400 RESPECTIVELY.
6. SHEETING, IF REQUIRED: WHERE SHEETING IS PLACED ALONGSIDE THE PIPE AND EXTENDS BELOW MID-DIAMETER, IT SHALL BE CUT OFF AND LEFT IN PLACE TO AN ELEVATION 1 FOOT ABOVE THE TOP OF PIPE. WHERE SHEETING IS ORDERED BY THE ENGINEER TO BE LEFT IN PLACE, IT SHALL BE CUT OFF AT LEAST 3 FEET BELOW FINISHED GRADE, BUT NOT LESS THAT 1 FOOT ABOVE THE TOP OF THE PIPE.
7. W = MAXIMUM ALLOWABLE TRENCH WIDTH TO A PLANE 12 INCHES ABOVE THE PIPE. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, W SHALL BE NO MORE THAN 36 INCHES. FOR PIPES GREATER THAN 15 INCHES IN NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS PIPE OUTSIDE DIAMETER (O.D.) ALSO, W SHALL BE THE PAYMENT WIDTH FOR LEDGE EXCAVATION AND FOR ORDERED EXCAVATION BELOW GRADE.
8. FOR CROSS COUNTRY CONSTRUCTION, BACKFILL, FILL AND/OR LOAM SHALL BE MOUNDED TO A HEIGHT OF 6 INCHES ABOVE THE ORIGINAL GROUND SURFACE.
9. CONCRETE FOR ENCASEMENT SHALL CONFORM TO THE NEW HAMPSHIRE DOT STANDARD SPECIFICATION REQUIREMENTS FOR CLASS A (3000#) CONCRETE AS FOLLOWS:
   CEMENT: 6.0 BAGS PER CUBIC YARD
   WATER: 5.75 GALLONS PER BAG
   CEMENT MAXIMUM SIZE OF AGGREGATE: 1 INCH
   CONCRETE ENCASEMENT IS NOT ALLOWED FOR PVC PIPE.
10. CONCRETE FULL ENCASEMENT: IF FULL ENCASEMENT IS UTILIZED, DEPTH OF CONCRETE BELOW PIPE SHALL BE 1/4 I.D. (4" MINIMUM). BLOCK SUPPORT SHALL BE SOLID CONCRETE BLOCKS.
11. NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES DESIGN STANDARDS REQUIRE TEN FEET (10') SEPARATION BETWEEN WATER AND SEWER. REFER TO CITY STANDARD SPECIFICATIONS FOR METHODS OF PROTECTION IN AREAS THAT CANNOT MEET THESE REQUIREMENTS.
12. THE CONTRACTOR SHALL INSTALL TRENCH DAMS IN ACCORDANCE WITH NHDES REGULATIONS.
13. SEWER TRENCHES SHALL BE CONSTRUCRTED IN ACCORANCE WITH NHDES STANDARDS OF DESIGN AND CONSTRUCTION FOR SEWAGE AND WASTEWATER FACILITES, LATEST EDITION.



NOTES

1. A MINIMUM HORIZONTAL DISTANCE OF 10 FEET SHALL BE MAINTAINED BETWEEN WATER AND SEWER MAINS. A MINIMUM VERTICAL DISTANCE WITH WATER ABOVE SEWER SHALL BE MAINTAINED.
2. SEWER PIPE JOINTS SHALL BE LOCATED A MINIMUM OF 6 FEET HORIZONTALLY FROM WATER MAIN.
3. IF THE REQUIRED CONFIGURATION CANNOT BE MET, THE SEWER MAIN SHALL BE CONSTRUCTED TO MEET THE NHDES REQUIREMENTS FOR FORCE MAIN CONSTRUCTION.

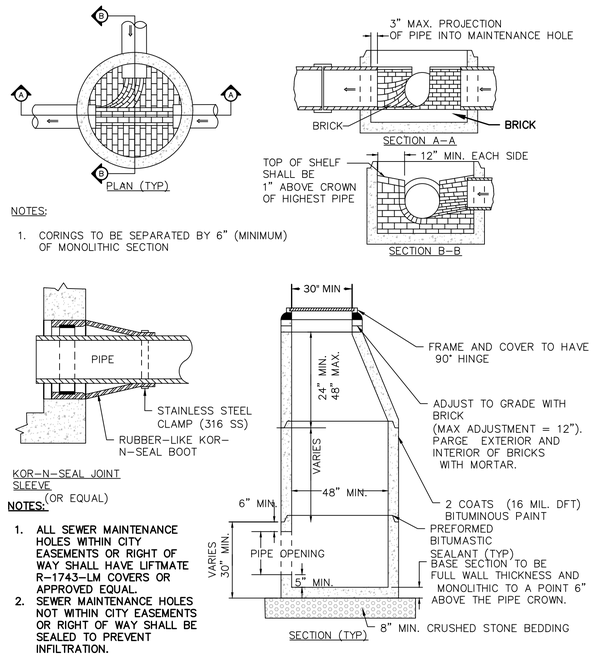
WATER MAIN / SEWER CROSSING NOT TO SCALE



NOTE: ALL GASKETS, SEALANTS, MORTAR, ETC. SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS WRITTEN INSTRUCTIONS.

DETAIL-B
(APPROVED MANHOLE SECTION JOINTING METHODS)

SEWER MANHOLE JOINT DETAIL NOT TO SCALE



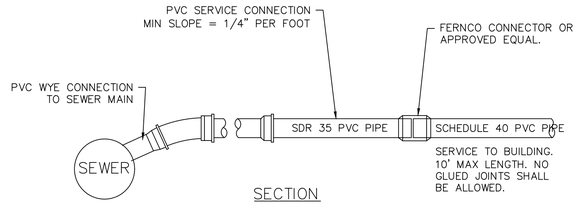
NOTES:

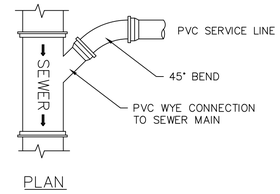
1. CORINGS TO BE SEPARATED BY 6" (MINIMUM) OF MONOLITHIC SECTION

NOTES:

1. **ALL SEWER MAINTENANCE HOLES WITHIN CITY EASEMENTS OR RIGHT OF WAY SHALL HAVE LIFTMATE R-1743-LM COVERS OR APPROVED EQUAL.**
2. **SEWER MAINTENANCE HOLES NOT WITHIN CITY EASEMENTS OR RIGHT OF WAY SHALL BE SEALED TO PREVENT INFILTRATION.**

SEWER MANHOLE DETAILS NOT TO SCALE

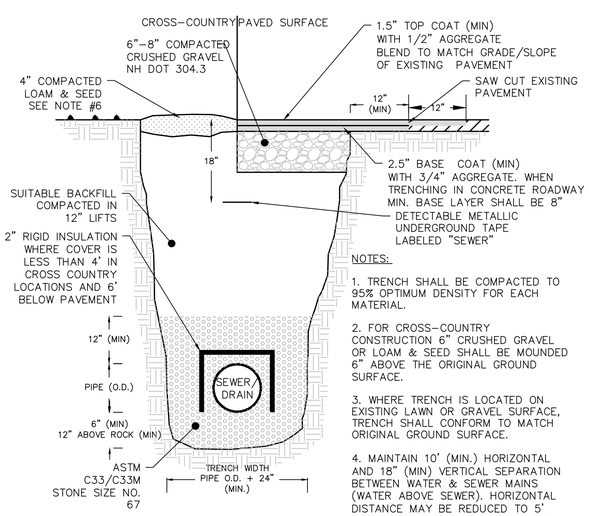




NOTES:

1. TRENCHING AND BEDDING REQUIREMENTS PER CITY SEWER TRENCH DETAIL (D-3).
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 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. 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.

SEWER TRENCH NOTES

ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

STATE OF NEW HAMPSHIRE – CORY D. BELDEN No. 14239 LICENSED PROFESSIONAL ENGINEER
10/5/22

THIS DRAWING HAS NOT BEEN RELEASED FOR CONSTRUCTION

ISSUED FOR: PLANNING BOARD

ISSUE DATE: OCTOBER 5, 2022

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMITTAL	CDB	05/05/22
1	TRC COMMENTS	CDB	10/05/22

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 4952-DETAILS.dwg

SCALE: 24"x36" N.T.S.
12"x18" N.T.S.

OWNER:
7 WEST, LLC
P.O. BOX 728
DOVER, NH 03821

APPLICANT:
SUMMIT LAND DEVELOPMENT
340 CENTRAL AVE., #202
DOVER, NH 03820

PROJECT:
7 WEST
COMMERCIAL DEVELOPMENT
(FILE NO. P22-38)
TAX MAP H, LOT 11
DOVER, NH

TITLE:
DETAILS

SHEET NUMBER:
D-9

P4952

ADVANCED DRAINAGE SYSTEMS, INC.

SiteASSIST by StormTech

FOR STORMTECH INSTRUCTIONS, DOWNLOAD THE INSTALLATION APP

SC-740 STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH SC-740.
2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "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, TESTED 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 AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 550 LBS/IN/IN. 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-740 SYSTEM

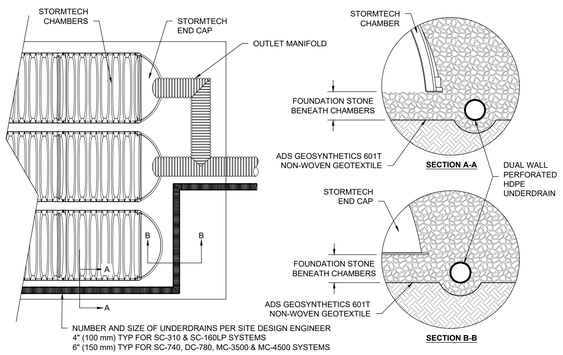
1. STORMTECH SC-740 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO 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

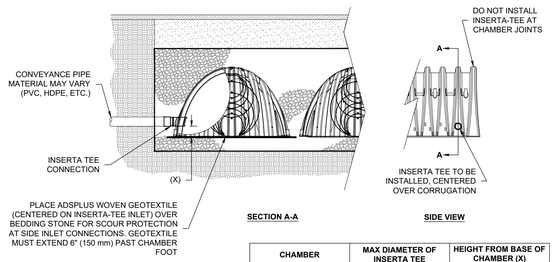
1. STORMTECH SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
2. THE USE OF CONSTRUCTION EQUIPMENT OVER SC-740 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH SC-310/SC-740/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.



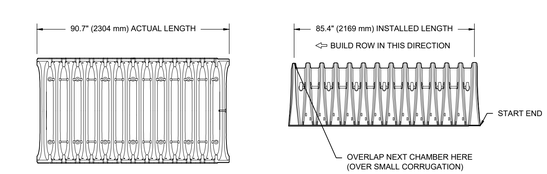
5 UNDERDRAIN DETAIL



NOTE:
PART NUMBERS WILL VARY BASED ON INLET PIPE MATERIALS. CONTACT STORMTECH FOR MORE INFORMATION.

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)
MC-3500	12" (300 mm)	6" (150 mm)
MC-4500	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		

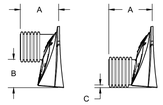
6 INSERTA-TEE SIDE INLET DETAIL



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	51.0" X 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



PRE-FAB STUB AT BOTTOM OF END CAP WITH FLAMP END WITH "BR"
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"

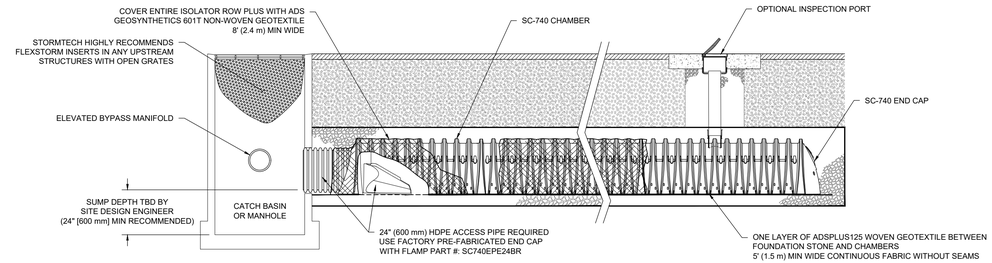
PART #	STUB	A	B	C
SC740EPE06T / SC740EPE06TPC	6" (150 mm)	10.9" (277 mm)	18.5" (470 mm)	---
SC740EPE06B / SC740EPE06BPC			---	0.5" (13 mm)
SC740EPE08T /SC740EPE08TPC	8" (200 mm)	12.2" (310 mm)	16.5" (419 mm)	---
SC740EPE08B / SC740EPE08BPC			---	0.6" (15 mm)
SC740EPE10T / SC740EPE10TPC	10" (250 mm)	13.4" (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)
SC740EPE24BR*	24" (600 mm)	18.5" (470 mm)	---	0.1" (3 mm)

ALL STUBS, EXCEPT FOR THE SC740EPE24B/SC740EPE24BR 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.

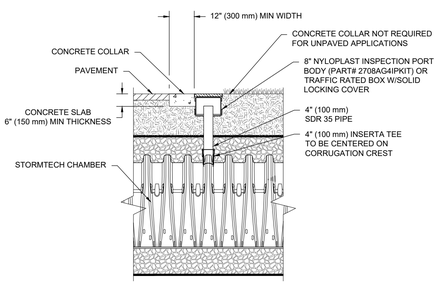
* FOR THE SC740EPE24B/SC740EPE24BR THE 24" (600 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 1.75" (44 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

NOTE: ALL DIMENSIONS ARE NOMINAL

2 SC-740 TECHNICAL SPECIFICATIONS



3 SC-740 ISOLATOR ROW PLUS DETAIL



NOTE:
INSPECTION PORTS MAY BE CONNECTED THROUGH ANY CHAMBER CORRUGATION CREST.

4 4" PVC INSPECTION PORT DETAIL (SC SERIES CHAMBER)

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.

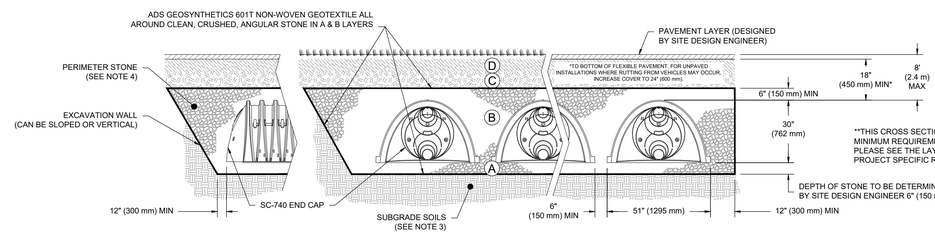
NOTES

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.

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 F2418-16a, "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/IN/IN. 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-740 CROSS SECTION DETAIL

P22-38 21 OF 31

DRAWN: DATE:
REVIEWED: PROJECT NO:
REV: NOT TO SCALE

SC-740 STANDARD DETAILS

StormTech
Chambers | Systems | Technical Design Tools
70 INVERNESS DRIVE EAST | ENGLEWOOD, CO 80112
800-524-9168 | 888-892-2694 | WWW.STORMTECH.COM

4640 TRUEMAN BLVD
HILLIARD, OH 43026

ADVANCED DRAINAGE SYSTEMS, INC.

SHEET
D-10

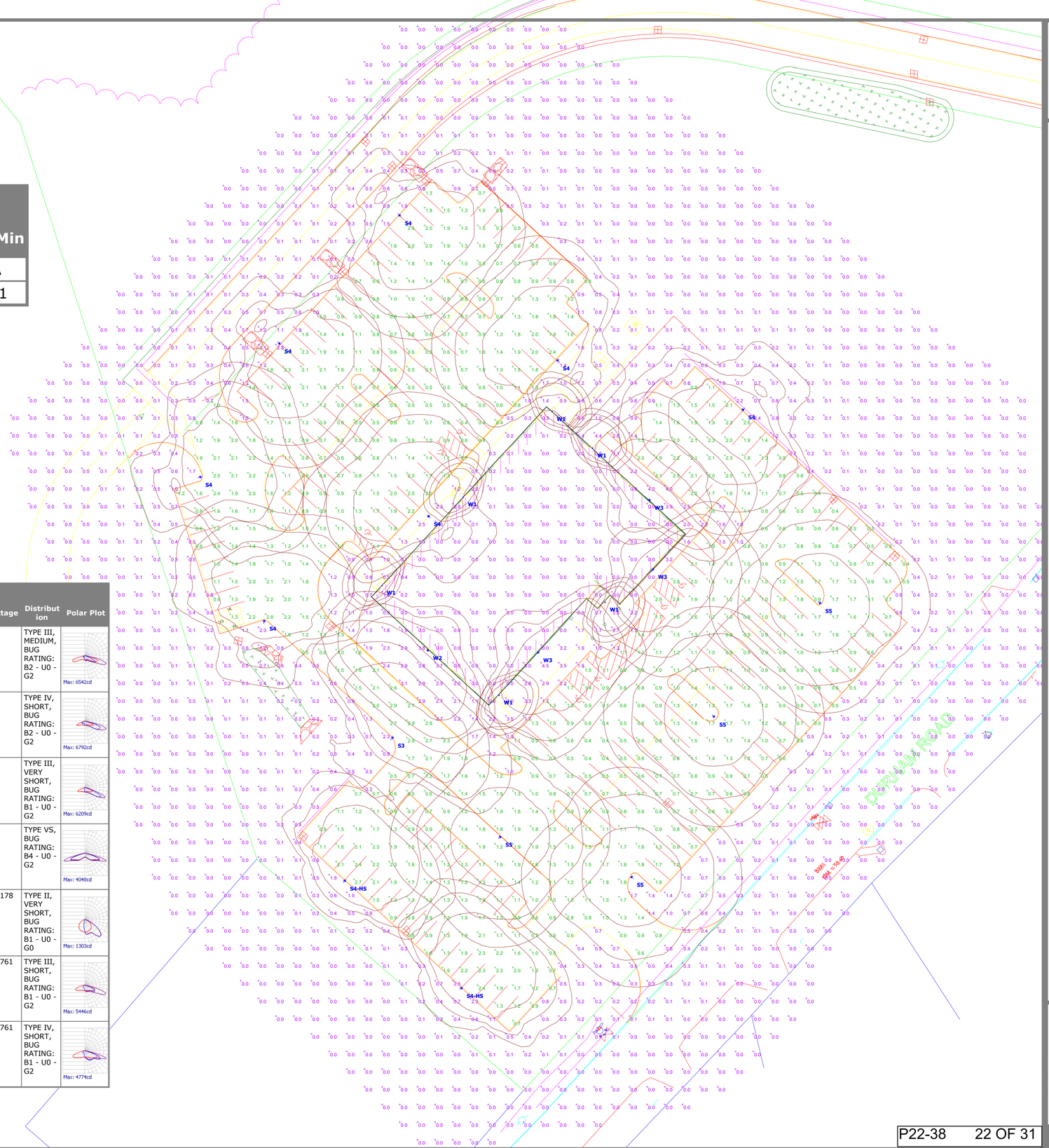
ADVANCED DRAINAGE SYSTEMS, INC. ("ADS") HAS PREPARED THIS DETAIL BASED ON REFERENCED STANDARDS. ADS HAS NOT PERFORMED ANY ENGINEERING OR DESIGN SERVICES FOR THIS PROJECT. NOR HAS ADS INDEPENDENTLY VERIFIED THE INFORMATION SUPPLIED. THE INSTALLATION DETAILS PROVIDED HEREIN ARE GENERAL RECOMMENDATIONS 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 MEETS OR EXCEEDS THE APPLICABLE NATIONAL, STATE, OR LOCAL REQUIREMENTS AND TO ENSURE THAT THE DETAILS PROVIDED HEREIN ARE ACCEPTABLE FOR THIS PROJECT.

Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Outside of Parking Lot	+	0.2 fc	7.0 fc	0.0 fc	N/A	N/A
Parking Lot	+	1.2 fc	3.8 fc	0.3 fc	12.7:1	4.0:1

Schedule

Symbol	Label	Image	QTY	Manufacturer	Catalog Number	Description	Lamp	Filename	Lumens per Lamp	LLF	Wattage	Distribution	Polar Plot
	S3		1	Lithonia Lighting	DSX0 LED P4 30K T3M MVOLT SPA DDBXD with SSS 18 4C DM19AS DDBXD	DSX0 LED Area Fixture; mounted at 20ft (18ft pole on 2ft base)	LED	DSX0_LED_P4_30K_T3M_MVOLT.ies	9520	0.9	92	TYPE III, MEDIUM, BUG RATING: B2 - U0 - G2	Max: 6542cd
	S4		7	Lithonia Lighting	DSX0 LED P4 30K TFTM MVOLT SPA DDBXD with SSS 18 4C DM19AS DDBXD	DSX0 LED Area Fixture; mounted at 20ft (18ft pole on 2ft base)	LED	DSX0_LED_P4_30K_TFTM_MVOLT.ies	9800	0.9	92	TYPE IV, SHORT, BUG RATING: B2 - U0 - G2	Max: 6792cd
	S4-HS		2	Lithonia Lighting	DSX0 LED P4 30K TFTM MVOLT HS SPA DDBXD with SSS 18 4C DM19AS DDBXD	DSX0 LED Area Fixture with houseside shield; mounted at 20ft (18ft pole on 2ft base)	LED	DSX0_LED_P4_30K_TFTM_MVOLT_HS.ies	7652	0.9	92	TYPE III, VERY SHORT, BUG RATING: B1 - U0 - G2	Max: 6209cd
	S5		4	Lithonia Lighting	DSX0 LED P4 30K T5M MVOLT SPA DDBXD with SSS 18 4C DM19AS DDBXD	DSX0 LED Area Fixture; mounted at 20ft (18ft pole on 2ft base)	LED	DSX0_LED_P4_30K_T5M_MVOLT.ies	10175	0.9	92	TYPE VS, BUG RATING: B4 - U0 - G2	Max: 4048cd
	W1		6	Lithonia Lighting	WDGE1 LED P2 30K 80CRI VF SRM DDBXD	WDGE1 LED Wallpack; mounted at 10ft	LED	WDGE1_LED_P2_30K_80CRI_VF.ies	1872	0.9	15.0178	TYPE II, VERY SHORT, BUG RATING: B1 - U0 - G0	Max: 1303cd
	W2		1	Lithonia Lighting	WDGE3 LED P2 80CRI R3 30K SRM DDBXD	WDGE3 LED Wallpack; mounted at 18ft	LED	WDGE3_LED_P2_70CRI_R3_30K.ies	7851	0.9	59.2761	TYPE III, SHORT, BUG RATING: B1 - U0 - G2	Max: 5446cd
	W3		3	Lithonia Lighting	WDGE3 LED P2 80CRI R4 30K SRM DDBXD	WDGE3 LED Wallpack; mounted at 18ft	LED	WDGE3_LED_P2_70CRI_R4_30K.ies	8090	0.9	59.2761	TYPE IV, SHORT, BUG RATING: B1 - U0 - G2	Max: 4774cd



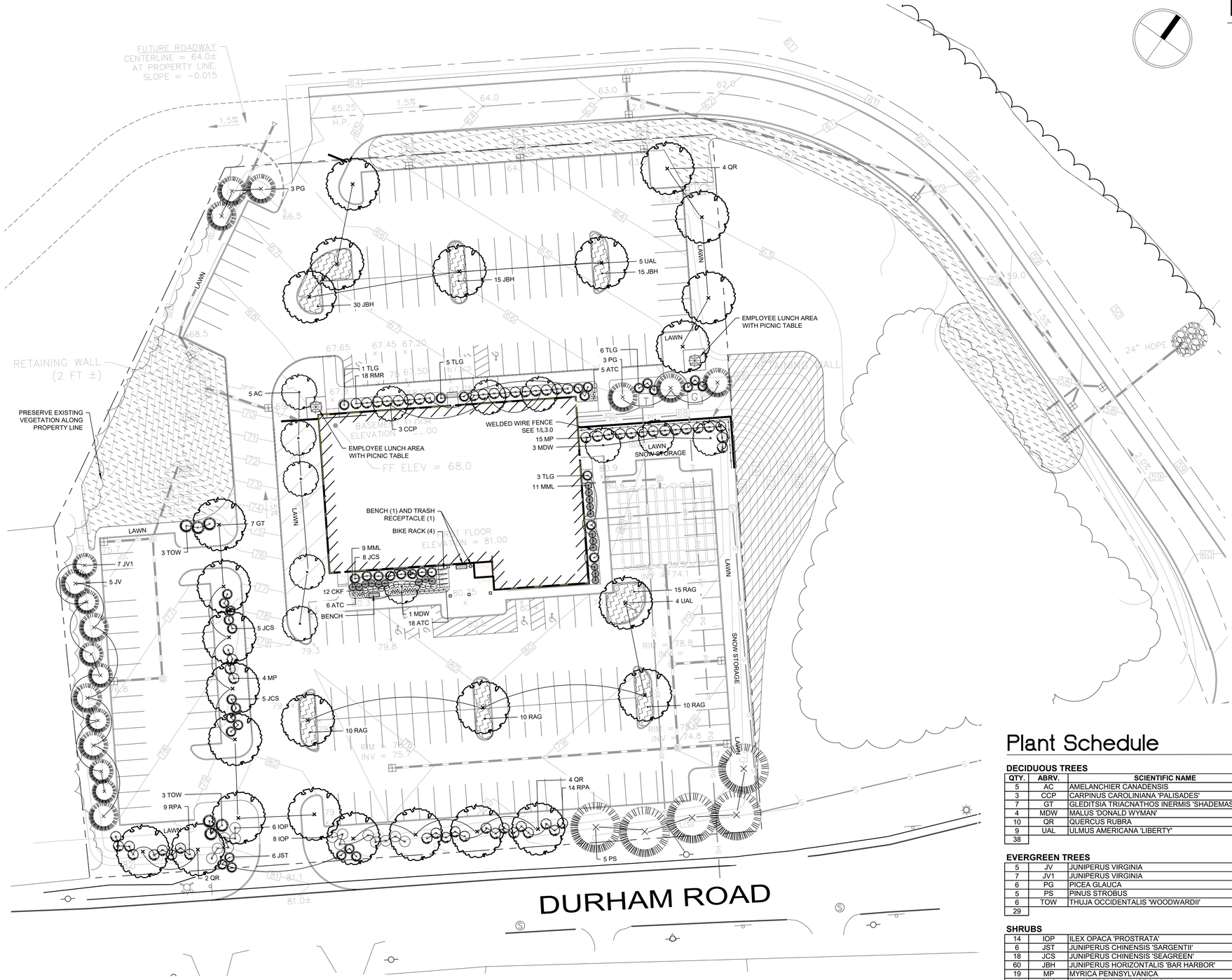
7 WEST - DOVER
Site Lighting Layout

Designer
Heidi G. Connors
Visible Light, Inc.
24 Stickney Terrace
Suite 6
Hampton, NH 03842
Date
05/05/2022
Scale
1"=30'
Drawing No.

Summary

P22-38 22 OF 31

1 of 1



Legend

- DECIDUOUS SINGLE-STEMMED TREE PLANTING, SEE 1/L2.0 & 2/L2.0
- EVERGREEN TREE PLANTING, SEE 3/L2.0
- SHRUB PLANTING, SEE 4/L2.0
- PERENNIAL / ORNAMENTAL GRASS PLANTING, SEE 5/L2.0
- GROUNDCOVER, SEE 5/L2.0
- LAWN — LOAM AND LAWN SEED MIX, SEE 6/L2.0
- EROSION CONTROL / RESTORATION SEED MIX, SEE 7/L2.0
- WILDFLOWER MEADOW SEED MIX, SEE 8/L2.0

GENERAL NOTES:

1. SEE CIVIL DRAWINGS FOR INFORMATION NOT DEPICTED ON THE LANDSCAPE DRAWINGS.
2. TREES LOCATED ADJACENT TO BUILDING TO BE ALIGNED BETWEEN WINDOWS.
3. PLANT LOCATIONS SHOWN ON THE PLANTING PLAN ARE SUBJECT TO FIELD MODIFICATION TO ACCOMMODATE EXISTING CONDITIONS. FIELD ADJUSTMENTS SHALL BE COORDINATED WITH THE LANDSCAPE ARCHITECT.
4. CONTACT DIGSAFE PRIOR TO BEGINNING WORK.
5. SEE ADDITIONAL PLANTING NOTES ON L2.1

Plant Schedule

DECIDUOUS TREES

QTY.	ABRV.	SCIENTIFIC NAME	COMMON NAME	SIZE	REMARKS
5	AC	AMELANCHIER CANADENSIS	SERVICEBERRY	2"-2 1/2" CAL	B&B
3	CCP	CARPINUS CAROLINIANA 'PALISADES'	PALISADE AMERICAN HORNBEAM	3"-3 1/2" CAL	B&B
7	GT	GLEDITSIA TRIACNATHOS INERMIS 'SHADEMASTER'	SHADEMASTER HONEY LOCUST	3"-3 1/2" CAL	B&B
4	MDW	MALUS 'DONALD WYMAN'	DONALD WYMAN CRABAPPLE	2"-2 1/2" CAL	B&B
10	QR	QUERCUS RUBRA	RED OAK	3"-3 1/2" CAL	B&B
9	UAL	ULMUS AMERICANA 'LIBERTY'	LIBERTY ELM	3"-3 1/2" CAL	B&B
38					

EVERGREEN TREES

5	JV	JUNIPERUS VIRGINIA	EASTERN RED CEDAR	6'-7' HT	B&B
7	JV1	JUNIPERUS VIRGINIA	EASTERN RED CEDAR	5'-6' HT	B&B
6	PG	PICEA GLAUCA	WHITE SPRUCE	7'-8' HT	B&B
5	PS	PINUS STROBUS	WHITE PINE	7'-8' HT	B&B
6	TOW	THUJA OCCIDENTALIS 'WOODWARDII'	WOODWARD GLOBAL ARBORVITAE	5'-6' HT	B&B
29					

SHRUBS

14	IOP	ILEX OPACA 'PROSTRATA'	PROSTRATE AMERICAN HOLLY	2'-2 1/2' HT	B&B
6	JST	JUNIPERUS CHINENSIS 'SARGENTII'	SARGENT JUNIPER	#5	CONTAINER
18	JCS	JUNIPERUS CHINENSIS 'SEAGREEN'	SEAGREEN JUNIPER	2'-2 1/2' HT	B&B
60	JBH	JUNIPERUS HORIZONTALIS 'BAR HARBOR'	BAR HARBOR JUNIPER	#2	CONTAINER
19	MP	MYRICA PENNSYLVANICA	NORTHERN BAYBERRY	2'-2 1/2' HT	B&B
45	RAG	RHUS AROMATICA 'GRO LOW'	GROUNDCOVER SUMAC	#2	CONTAINER
18	RMR	RHODODENDRON MAXIMUM 'ROSEUM'	PINK ROSEBAY RHODODENRON	2'-2 1/2' HT	B&B
23	RPA	RHODODENDRON PJM ALBA	WHITE PJM RHODODENDRON	2'-2 1/2' HT	B&B
15	TLG	THUJA OCCIDENTALIS 'LITTLE GIANT'	LITTLE GIANT ARBORVITAE	#5	CONTAINER
218					

PERENNIALS

29	ATC	ACHILLEA 'TERRA COTTA'	TERRA COTTA YARROW	#1	CONTAINER
12	CKF	CALAMAGROSTIS 'KARL FOERSTER'	KARL FOESTER FEATHER REED GRASS	#1	CONTAINER
20	MML	MISCANTHUS SINENSIS MORNING LIGHT	MORNING LIGHT GRASS	#2	CONTAINER
61					

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7 WEST COMMERCIAL DEVELOPMENT
DOVER, NH 03820

SHEET TITLE

LANDSCAPE PLAN

REVISION LOG

REV#	DATE	DESCRIPTION
1	10-04-2022	PER CITY REVIEW

PROJECT NO.	21060.0
DESIGN BY	J. HYLAND / K.OSGOOD
DRAWN BY	K.OSGOOD
CHECKED BY	J. HYLAND
DATE	MAY 5, 2022
SCALE	0' 30' 60' SCALE: 1" = 30'-0"

SEAL

L1.0

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P22-38 23 OF 31

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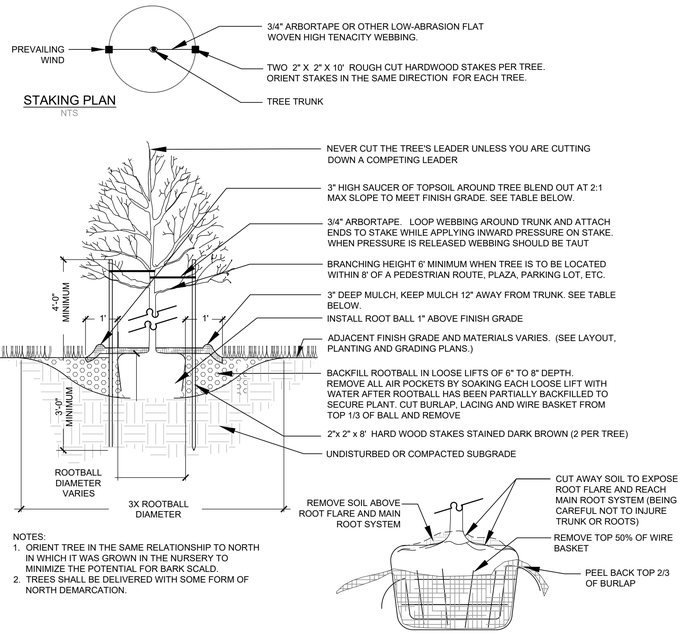

NOTES:
1. ORIENT TREE IN THE SAME RELATIONSHIP TO NORTH IN WHICH IT WAS GROWN IN THE NURSERY TO MINIMIZE THE POTENTIAL FOR BARK SCALD.
2. TREES SHALL BE DELIVERED WITH SOME FORM OF NORTH DEMARCATION.

Deciduous Tree Planting
Not to Scale

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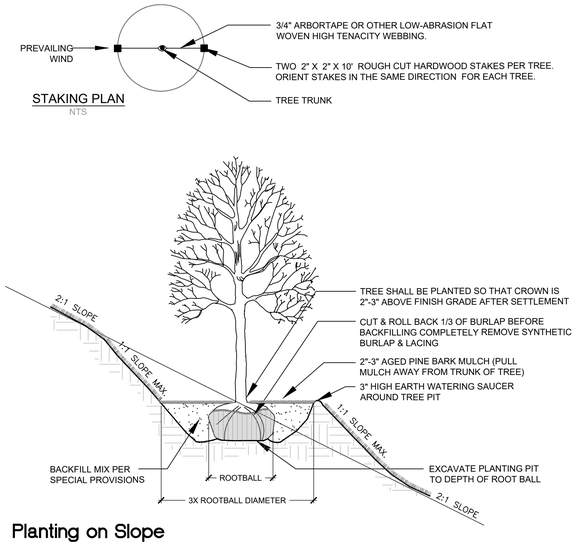
1 L2.0



Planting on Slope

Deciduous Tree Planting: on Slope
Not to Scale

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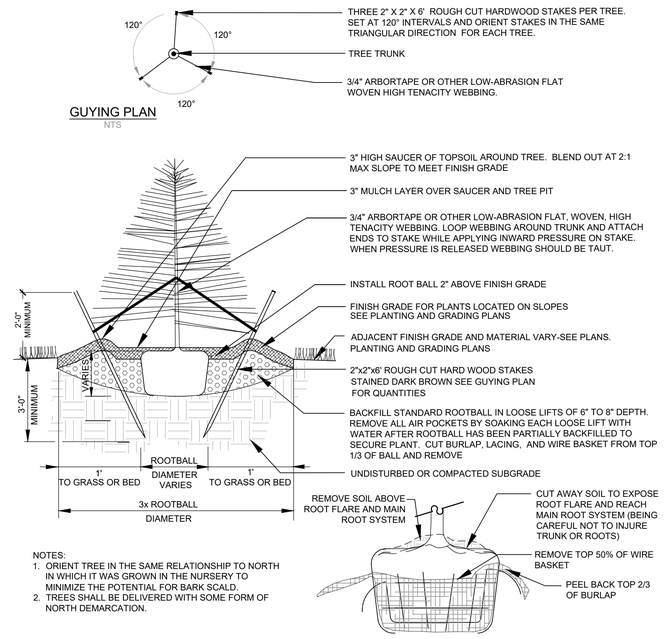
2 L2.0



NOTES:
1. ORIENT TREE IN THE SAME RELATIONSHIP TO NORTH IN WHICH IT WAS GROWN IN THE NURSERY TO MINIMIZE THE POTENTIAL FOR BARK SCALD.
2. TREES SHALL BE DELIVERED WITH SOME FORM OF NORTH DEMARCATION.

Evergreen Tree Planting
Not to Scale

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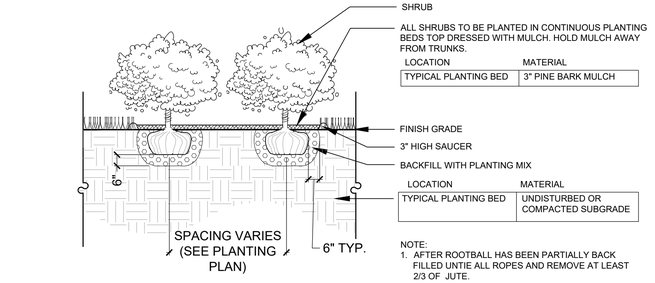
3 L2.0



NOTE:
1. AFTER ROOTBALL HAS BEEN PARTIALLY BACK FILLED UNTIE ALL ROPES AND REMOVE AT LEAST 2/3 OF JUTE.

Shrub Planting
Not to Scale

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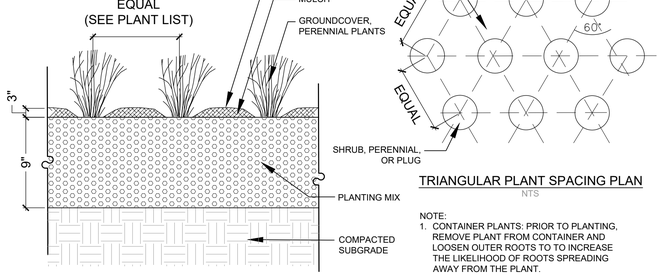
4 L2.0



NOTE:
1. CONTAINER PLANTS: PRIOR TO PLANTING, REMOVE PLANT FROM CONTAINER AND LOOSEN OUTER ROOTS TO TO INCREASE THE LIKELIHOOD OF ROOTS SPREADING AWAY FROM THE PLANT.

Perennial / Orn. Grass / Ground Cover Planting
Not to Scale

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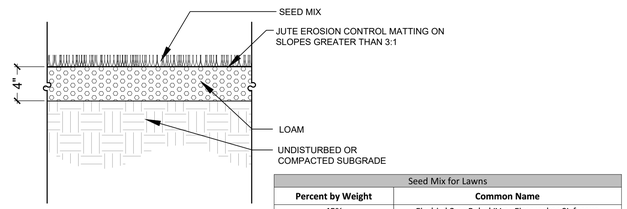
5 L2.0



NOTE:
1. LOAM ALL DISTURBED AREAS.
2. PRIOR TO SEEDING THE LAWN SEED MIX PROPERLY PREPARE THE SEED BED.

Seed Mix for Lawns	
Percent by Weight	**Common Name**
45%	Firebird 2 or Rebel IV or Firecracker SL fescue
20%	Grand slam GLD or Confetti II perennial ryegrass
15%	Radar or Compass chewings fescue
10%	Sword or Gladiator hard fescue
5%	Side Oats Grama
5%	White Dutch clover

Apply this seed mix at a rate of 305 lbs/acre (7lbs per 1000sf)

Loam and Lawn Seed Mix
Not to Scale

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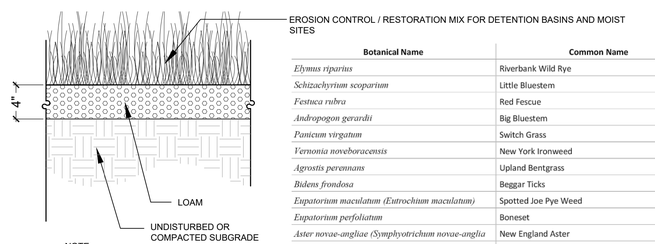
6 L2.0



Botanical Name	Common Name
Elymus riparius	Riverbank Wild Rye
Schizachyrium scoparium	Little Bluestem
Festuca rubra	Red Fescue
Andropogon gerardii	Big Bluestem
Panicum virgatum	Switch Grass
Vernonia noveboracensis	New York Ironweed
Agrostis perennans	Upland Bentgrass
Bidens frondosa	Beggar Ticks
Eupatorium maculatum (Eutrochium maculatum)	Spotted Joe Pye Weed
Eupatorium perfoliatum	Boneset
Aster novae-angliae (Symphyotrichium novae-anglia	New England Aster
Scirpus cyperinus	Wool Grass
Juncus effusus	Soft Rush

NOTE:
1. LOAM ALL DISTURBED AREAS.
2. PRIOR TO SEEDING THE EROSION CONTROL SEED MIX, PROPERLY PREPARE THE SEED BED.
3. INSTALL JUTE MATTING ON SLOPES GREATER THAN 3:1.

Erosion Control / Restoration Seed Mix
Not to Scale

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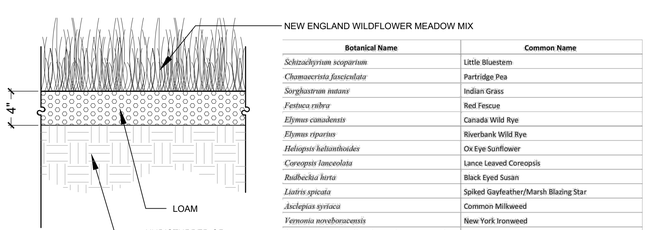
7 L2.0



Botanical Name	Common Name
Schizachyrium scoparium	Little Bluestem
Chamaecrista fasciculata	Partridge Pea
Sorghastrum nutans	Indian Grass
Festuca rubra	Red Fescue
Elymus canadensis	Canada Wild Rye
Elymus riparius	Riverbank Wild Rye
Heliopsis helianthoides	Ox Eye Sunflower
Coreopsis lanceolata	Lance Leaved Coreopsis
Rudbeckia hirta	Black Eyed Susan
Liatris spicata	Spiked Gayfeather/Marsh Blazing Star
Asclepias syriaca	Common Milkweed
Vernonia noveboracensis	New York Ironweed
Aster novae-angliae (Symphyotrichium novae-anglia	New England Aster
Eupatorium purpureum (Eutrochium maculatum)	Purple Joe Pye Weed
Asclepias tuberosa	Butterfly Milkweed
Solidago juncea	Early Goldenrod
Eupatorium perfoliatum	Boneset

Apply at rate of 23 lbs/acre. New England Wildflower Mix available at New England Wetland Plants, Ma: www.newp.com . Approved equal may be substituted.

Wildflower Meadow Seed Mix
Not to Scale

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7 WEST COMMERCIAL DEVELOPMENT
DOVER, NH 03820

SHEET TITLE
LANDSCAPE DETAILS

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DRAWN BY	K.OSGOOD
CHECKED BY	J. HYLAND
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SCALE	

SEAL

L2.0

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P22-38 24 OF 31

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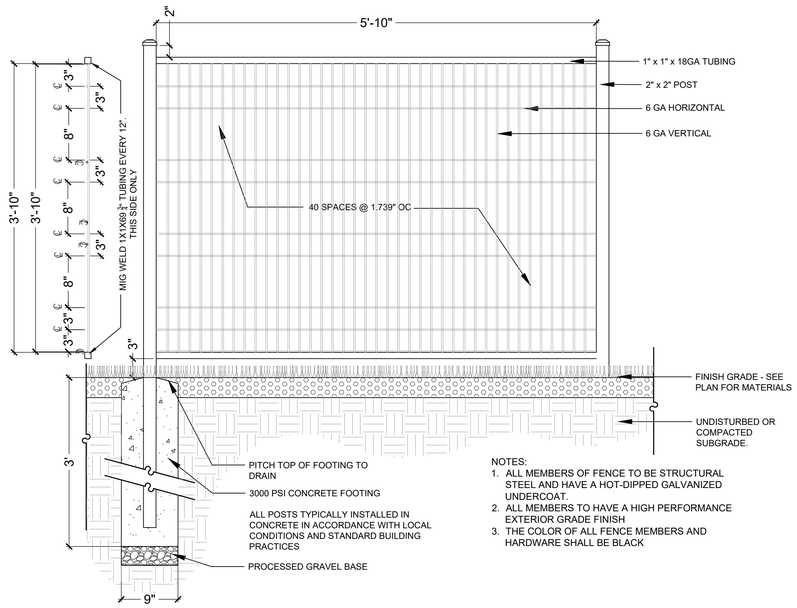
PLANTING NOTES:

1. PLEASE REVIEW AND BECOME FULLY ACQUAINTED WITH THESE NOTES, CONSTRUCTION DETAILS, AND THE PLANTING PLAN.
2. THE CONTRACTOR SHALL LOCATE AND VERIFY ALL EXISTING AND NEW UTILITY LINE LOCATIONS PRIOR TO PLANTING, AND SHALL REPORT ANY CONFLICT TO THE LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE.
3. ALL PLANT MATERIAL SHALL CONFORM TO THE GUIDELINES ESTABLISHED BY THE "AMERICAN STANDARD FOR NURSERY STOCK" PUBLISHED BY THE AMERICAN SOCIETY OF NURSERY MEN, INC. LATEST EDITION.
4. THE CONTRACTOR SHALL STAKE THE LOCATION OF ALL THE PROPOSED PLANT MATERIAL FOR APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO PLANTING. NO PLANTS SHALL BE PLANTED BEFORE THE ACCEPTANCE OF ROUGH GRADING. THE BASE OF THE FLARE OF THE TREE TRUNK SHALL BE EXPOSED, IF NECESSARY, AND PLACED 2" ABOVE FINISH GRADE.
5. ANY PROPOSED SUBSTITUTIONS OF PLANT SPECIES WILL BE PLANTS WITH EQUIVALENT OVERALL FORM, HEIGHT, BRANCHING HABIT, FLOWER COLOR, LEAF COLOR, FRUIT COLOR, AND TIME OF BLOOM, AS APPROVED BY THE LANDSCAPE ARCHITECT.
6. EXISTING LOAM: STOCKPILING OF EXISTING LOAM IS SPECIFIED ELSEWHERE. REMOVE CLAY LUMPS, BRUSH, LITTER, ROOTS, STONES 1" AND LARGER, AND OTHER FOREIGN MATERIALS.
7. ADDITIONAL LOAM: IF STOCKPILED LOAM QUANTITY IS INSUFFICIENT, PROVIDE LOAM, WHICH IS A "FINE SANDY LOAM", OR A "SANDY LOAM" DETERMINED BY MECHANICAL ANALYSIS AND BASED ON THE "U.S.D.A. CLASSIFICATION SYSTEM." IT SHALL BE OF UNIFORM COMPOSITION, WITHOUT ADMIXTURE OF SUBSOIL. LOAM SHALL HAVE AN ACIDITY RANGE OF PH 5.8 TO PH 7.0 AND SHALL CONTAIN NOT LESS THAN 4% NOR MORE THAN 10% ORGANIC MATTER AS DETERMINED BY THE LOSS OF IGNITION OF OVEN-DRIED SAMPLES. PROVIDE LOAM WHICH IS FERTILE, FRIABLE, NATURAL LOAM FREE FROM SUBSOIL, CLAY LUMPS, BRUSH, LITTER, ROOTS, STONES 1" AND LARGER, AND ANY FOREIGN MATERIALS.
8. PINE MULCH: PROVIDE PARTIALLY DECOMPOSED MINIMUM SIX MONTH AGED FINELY SHREDDED PINE BARK MULCH WITH DARK BROWN COLOR AND FREE OF WEEDS, EXCESSIVE FINE PARTICLES, STRINGY MATERIAL, AND CHUNKS OF WOOD THICKER THAN ¼". PROVIDE BARK MULCH APPROVED BY THE LANDSCAPE ARCHITECT. APPLY TACKIFIED MULCH TO ALL SEEDED AREAS.
9. ALL PLANTS SHALL BE PLUM VERTICALLY AFTER SETTLING.
10. ALL PLANT MATERIAL SHALL BE MULCHED AFTER PLANTING.
11. LESS OTHERWISE INDICATED, DICTATED BY CONDITIONS AT THE SITE, AND DIRECTED BY LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE, BACKFILL SHALL CONSIST OF UNAMENDED SOIL EXCAVATED FROM THE PLANTING PIT. BACKFILL IN 3-4" LAYERS AND CONSOLIDATE EACH LAYER WITH WATER TO ELIMINATE VOIDS AND ARE POCKETS BEFORE PLACING SUBSEQUENT LAYERS. CONTINUE UNTIL BACKFILL HAS REACHED FINISHED GRADE. WATER THOROUGHLY WHEN EXCAVATION IS BACK FILLED AND CONTINUE WATERING UNTIL SATURATED. IF EXISTING UNAMENDED SOIL IS NOT ACCEPTED, PROVIDE PLANTING SOIL MIXTURE CONSISTING OF 7 PARTS LOAM AND 1 PART HUMUS. MIX QUANTITY OF FERTILIZER AND SOIL AMENDMENTS AS RECOMMENDED BY SOIL ANALYSIS AND APPROVED BY THE LANDSCAPE ARCHITECT.
12. WATERING: FLOOD ALL PLANTS WITH WATER TWICE WITHIN THE FIRST 24 HOURS AFTER PLANTING.
13. LOAMING: LOOSEN SUBGRADE AND EXISTING LOAM AREAS BY DISCING OR ROTOTILLING TO MINIMUM DEPTH OF 6". REMOVE STONES GREATER THAN 2" AND ALL RUBBISH AND DEBRIS. PLACE LOAM IN TWO EQUAL LIFTS MIXING FIRST APPLICATION INTO LOOSENED SUBGRADE THEN PLACE SECOND LIFT TO BRING LOAM AFTER SETTLING AND COMPACTING TO THE LINES AND GRADES SHOWN IN THE CONTRACT DOCUMENTS, 6" DEEP MINIMUM. DO NOT HANDLE LOAM OR SUBSOIL IF IT IS WET OR FROZEN.
14. AFTER LOAM HAS BEEN SPREAD, IT SHALL BE CAREFULLY PREPARED BY SCARIFYING AND HAND RAKING. ALL LARGE STIFF CLODS, LUMPS, BRUSH, ROOTS, STUMPS, LITTER AND FOREIGN MATTER, AND STONES OVER ONE INCH IN DIAMETER SHALL BE REMOVED FROM THE LOAM. LOAM SHALL ALSO BE FREE OF SMALLER STONES IN EXCESSIVE QUANTITIES AS DETERMINED BY THE LANDSCAPE ARCHITECT.
15. FINE GRADING: SET SUFFICIENT GRADE STAKES FOR CHECKING THE FINISHED GRADES. STAKES MUST BE SET AT THE BOTTOM AND TOP OF SLOPES. GRADES SHALL BE ESTABLISHED THAT ARE ACCURATE TO 1/10TH OF A FOOT EITHER WAY. CONNECT CONTOURS AND SPOT ELEVATIONS WITH AN EVEN SLOPE. ALL GRADING WILL INSURE DRAINAGE AWAY FROM STRUCTURES.
16. FINE GRADE LAWN AREAS TO SMOOTH, FREE DRAINING, EVEN SURFACES WITH FINE TEXTURE. ROLL, RAKE AND DRAW LAWN AREAS TO FLATTEN RIDGES AND FILL DEPRESSIONS, EXCEPT AT SELECT AREAS SHOW ON THE DRAWINGS. CONTROL MOISTURE CONTENT TO MAINTAIN OPTIMUM CONDITIONS, BUT DO NOT CREATE A MUDDY CONDITION.
17. ROLLING - TYPICAL: ROLL THE ENTIRE AREA WITH A HAND ROLLER WEIGHTING NOT MORE THAN 100 POUNDS. DURING THE ROLLING, ALL DEPRESSIONS CAUSED BY SETTLEMENT OF ROLLING SHALL BE FILLED WITH ADDITIONAL LOAM AND THE SURFACE SHALL BE REGARDED AND ROLLED UNTIL PRESENTING A SMOOTH AND EVEN FINISH TO THE REQUIRED GRADE OR TO THE SHAPES AND CONFIGURATIONS AS SHOWN ON THE DETAILS.
18. THE SILT FENCE SHALL BE LIMIT OF SEEDING UNLESS OTHERWISE INDICATED ON THE DRAWINGS. ALL AREAS DISTURBED OUTSIDE THE LIMIT OF WORK SHALL BE SEEDED AS INDICATED ON THE DRAWINGS.
19. IN CASE OF DISCREPANCIES BETWEEN THE QUANTITIES SHOWN ON THE PLANT SCHEDULE AND THE QUANTITIES SHOWN ON THE PLANTING PLAN, THE QUANTITIES ON THE PLANTING PLAN SHALL BE PROVIDED BY THE CONTRACTOR.



NOTES:
1. ALL MEMBERS OF FENCE TO BE STRUCTURAL STEEL AND HAVE A HOT-DIPPED GALVANIZED UNDERCOAT.
2. ALL MEMBERS TO HAVE A HIGH PERFORMANCE EXTERIOR GRADE FINISH
3. THE COLOR OF ALL FENCE MEMBERS AND HARDWARE SHALL BE BLACK

Welded Wire Fence

Not to Scale

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1 / L3.0

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7 WEST COMMERCIAL DEVELOPMENT
DOVER, NH 03820

SHEET TITLE
LANDSCAPE DETAILS

REVISION LOG

REV#	DATE	DESCRIPTION
1	10-04-2022	PER CITY REVIEW

PROJECT NO.	21060.0
DESIGN BY	J. HYLAND / K.OSGOOD
DRAWN BY	K.OSGOOD
CHECKED BY	J. HYLAND
DATE	MAY 5, 2022
SCALE	

SEAL

L2.1

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GENERAL PLAN NOTES

1. GENERAL CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS AND DIMENSIONS. NOTIFY ARCHITECT IF FIELD CONDITIONS ARE DIFFERENT THAN SHOWN IN THE DRAWINGS. REFERENCE LIFE SAFETY DRAWINGS A0.20-A0.2# FOR ADDITIONAL INFORMATION
2. REFERENCE DRAWING A0.01 THROUGH A0.04 FOR ROOF-CEILING ASSEMBLIES, FLOOR-CEILING ASSEMBLIES AND EXTERIOR WALL & PARTITION TYPES.
3. REFERENCE DRAWING A0.01 THROUGH A0.04 FOR PARTITION AND ROOF-CEILING FRAMING DETAILS.
4. ACCESSIBLE CLEARANCES ARE REQUIRED AT ALL ACCESSIBLE FIXTURES AND EQUIPMENT.
5. ALL DOORS SHALL BE INSTALLED WITH HINGED SIDE OF FINISHED OPENING 6" FROM ADJACENT WALL, OR CENTERED WITHIN WALL, UNLESS NOTED OTHERWISE.
6. ALL DOORS INTENDED FOR PASSAGE MUST MEET ACCESSIBILITY MANEUVERING CLEARANCES.
7. EXTERIOR OPENINGS ARE DIMENSIONED TO CENTER LINE OF OPENING UNLESS NOTED OTHERWISE.
8. ALL WORK SHALL COMPLY WITH APPLICABLE LOCAL CODES AS WELL AS STATE AND FEDERAL GUIDELINES.
9. REFER TO A4 SERIES SHEETS FOR UNIT PLANS & ENLARGED PLANS
10. SEE DETAIL ON SHEET A#.## FOR TYPICAL UNIT ENTRIES
11. REFER TO A6.10 FOR DOOR AND FRAME TYPES.
12. REFER TO A6.20 FOR WINDOW TYPES.
13. REFER TO SHEET A0.00 FOR ABBREVIATIONS, SYMBOLS, AND GRAPHIC CONVENTIONS.

GRID LEGEND - NEW

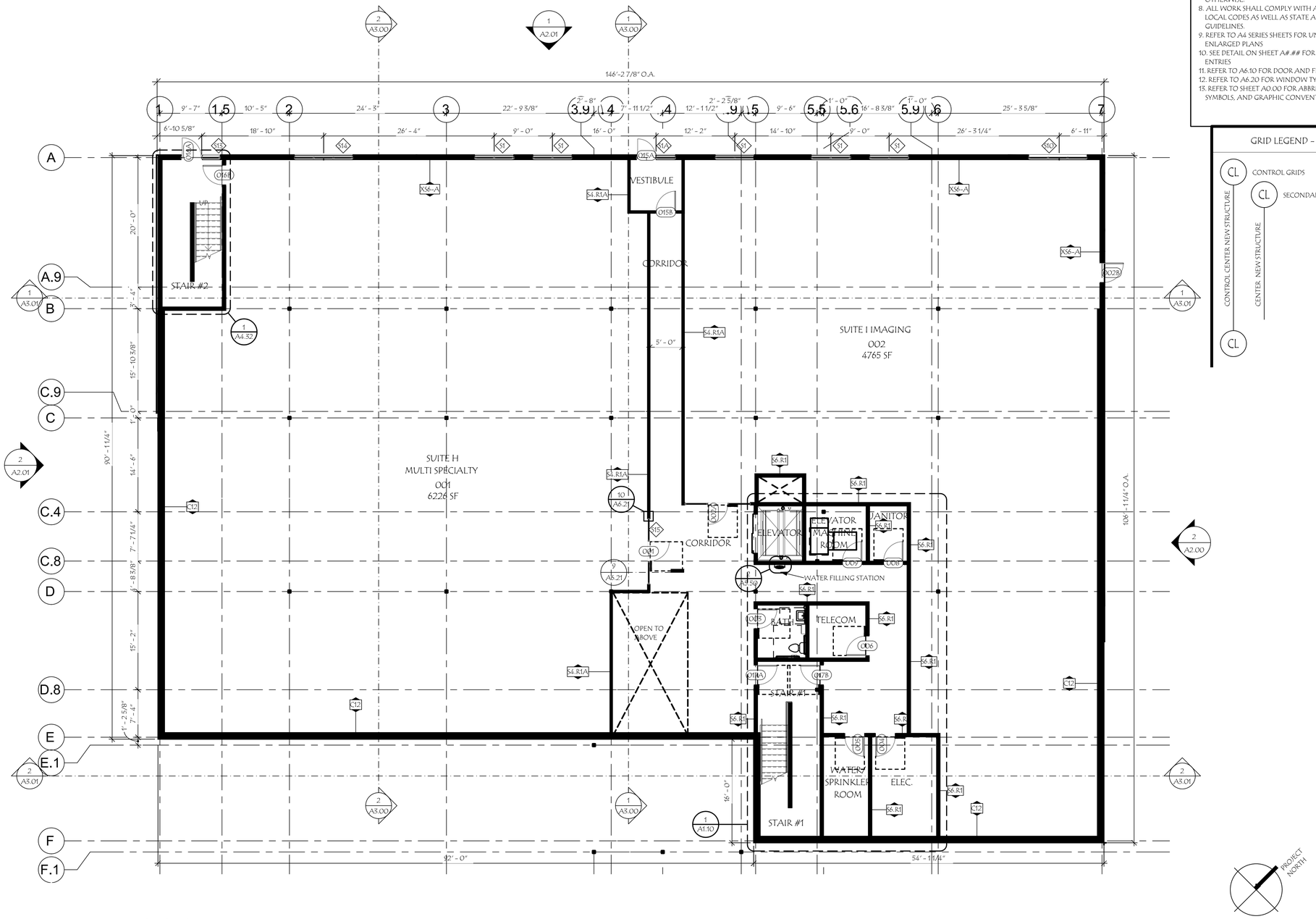
CL. CONTROL GRIDS

CL. SECONDARY GRIDS

CONTROL CENTER: NEW STRUCTURE

CENTER: NEW STRUCTURE

CL.



1 LOWER LEVEL
1/8" = 1'-0"

104 Congress St., STE 205
Portsmouth, NH 03801
PH: 603.501.0302

DOVER MEDICAL OFFICE BUILDING

DURHAM ROAD
DOVER, NH

NOT FOR CONSTRUCTION

Revisions:
Description | Date

Scale: As indicated
Drawn By: VA
Checked By: CMO
Project No.: 2021048
PROGRESS DRAWINGS
Date: February 25, 2022

Title: OVERALL LOWER LEVEL PLAN

A1.00

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3/28/2022 10:08:23 AM

GENERAL PLAN NOTES

1. GENERAL CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS AND DIMENSIONS. NOTIFY ARCHITECT IF FIELD CONDITIONS ARE DIFFERENT THAN SHOWN IN THE DRAWINGS. REFERENCE LIFE SAFETY DRAWINGS A0.20-A0.2# FOR ADDITIONAL INFORMATION
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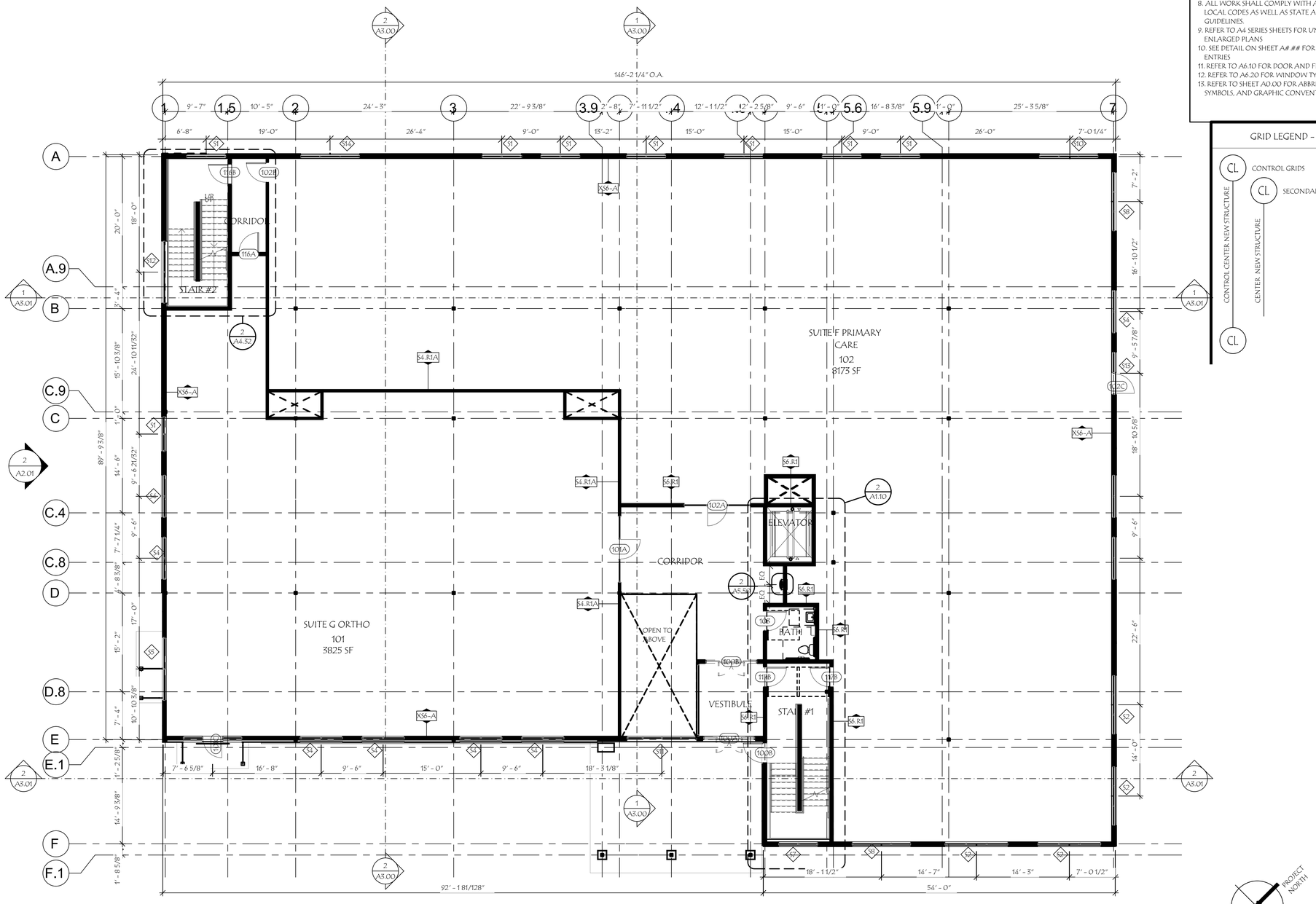

1 OVERALL FIRST PLAN
1/8" = 1'-0"

GRID LEGEND - NEW

CONTROL GRIDS
SECONDARY GRIDS
CONTROL: CENTER: NEW STRUCTURE
CENTER: NEW STRUCTURE

PROJECT NORTH

104 Congress St., STE 205
Portsmouth, NH 03801
PH: 603.501.0302

DOVER MEDICAL OFFICE BUILDING

DURHAM ROAD
DOVER, NH

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Revisions:
Description | Date

Scale: As indicated
Drawn By: VA
Checked By: CMO
Project No.: 2021048
PROGRESS DRAWINGS
Date: Feburary 25, 2022

Title: OVERALL FIRST FLOOR PLAN

A1.01

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5/28/2022 10:08:31 AM

GENERAL PLAN NOTES

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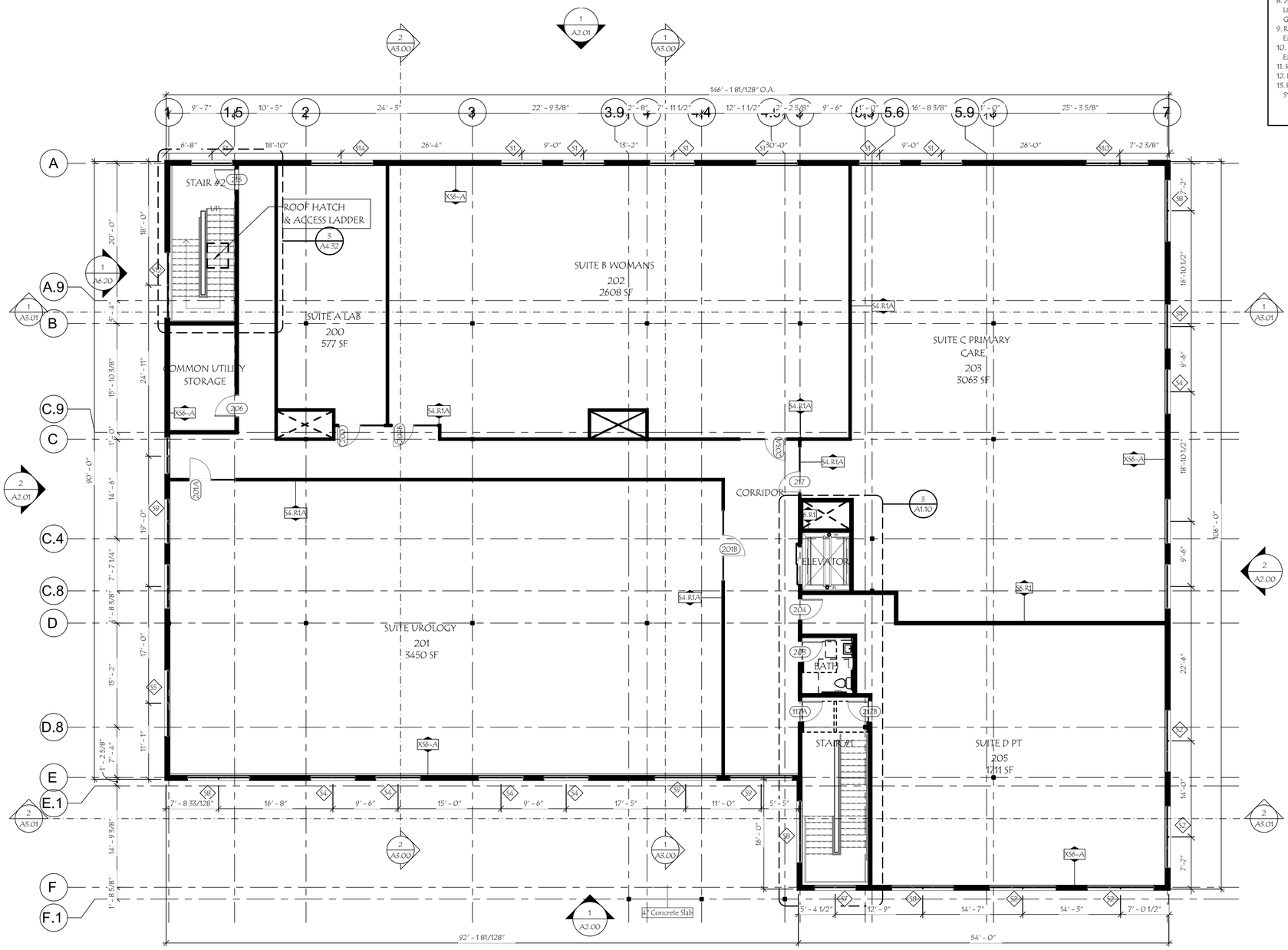

1 OVERALL SECOND PLAN
1/8" = 1'-0"

GRID LEGEND - NEW

CL. CONTROL GRIDS
CL. SECONDARY GRIDS
CONTROL: CENTER: NEW STRUCTURE

PROJECT NORTH

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Portsmouth, NH 03801
PH: 603.501.0302

DOVER MEDICAL OFFICE BUILDING

DURHAM ROAD
DOVER, NH

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Revisions:
Description — Date

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Drawn By: VA
Checked By: Checker
Project No.: 2021048
PROGRESS DRAWINGS
Date: Feburary 25, 2022

Title: OVERALL SECOND FLOOR PLAN

A1.02

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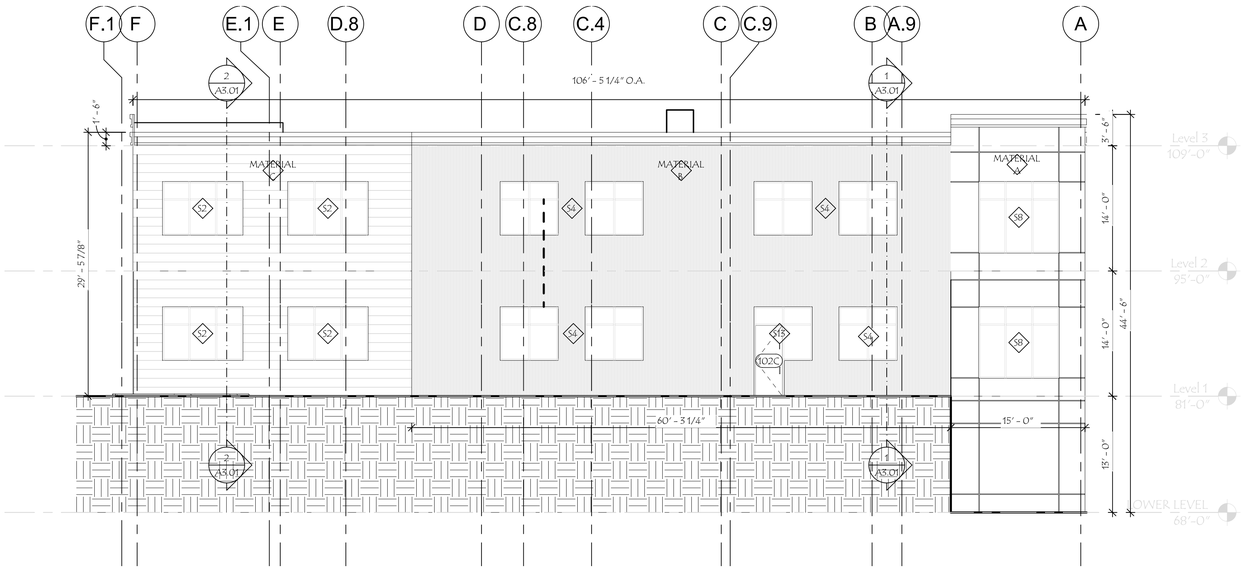
8/28/2022 10:08:37 AM

EXTERIOR FINISH NOTES :

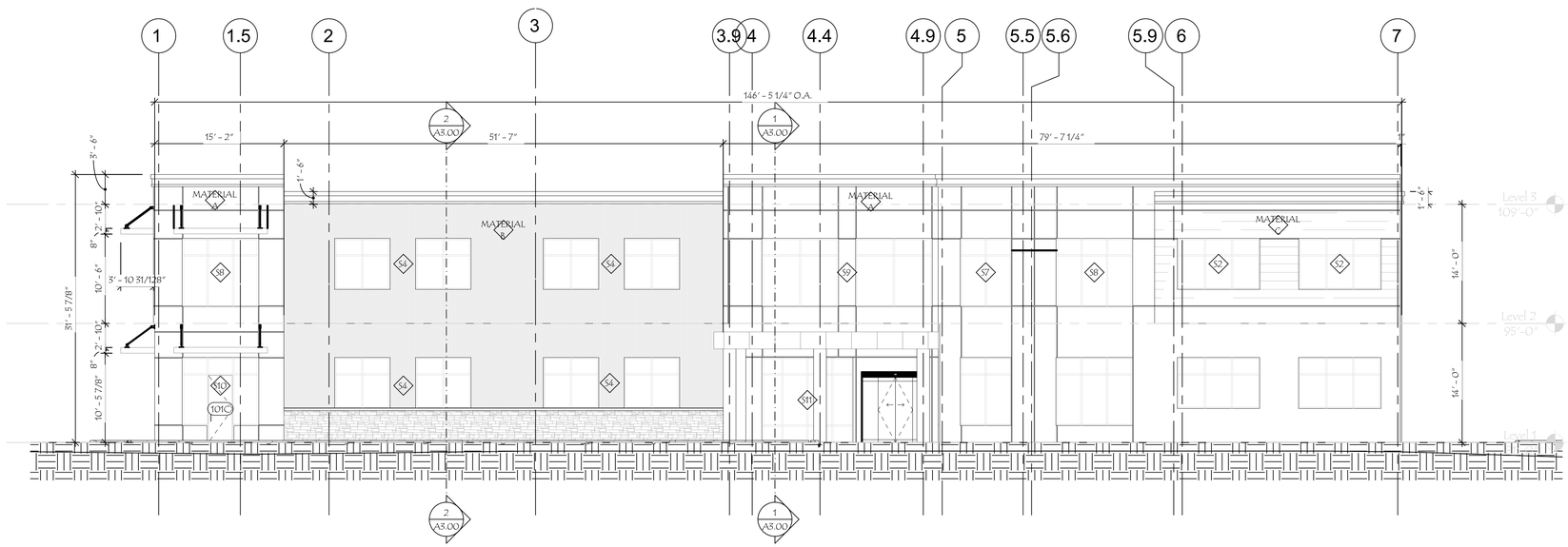
1. MATERIAL A = ALPOLIC / PE METAL COMPOSITE PANELS, OR EQUIVALENT.

2. MATERIAL B = ALPOLIC / PE METAL COMPOSITE PANELS, OR EQUIVALENT.

3. MATERIAL C = NICHIHA HORIZONTAL FIBER CEMENT SIDING, OR EQUIVALENT.



2 EXTERIOR ELEVATION - EAST
1/8" = 1'-0"



1 EXTERIOR ELEVATION - NORTH
1/8" = 1'-0"

104 Congress St., STE 205
Portsmouth, NH 03801
PH: 603.501.0302

DOVER MEDICAL OFFICE BUILDING

DURHAM ROAD
DOVER, NH

NOT FOR CONSTRUCTION

Revisions:
Description
Date

Scale: 1/8" = 1'-0"
Drawn By: VA
Checked By: CMO
Project No.: 2021048
PROGRESS DRAWINGS
Date: Feburary 25, 2022

Title: EXTERIOR ELEVATIONS

A2.00

2021 Market Square Architects

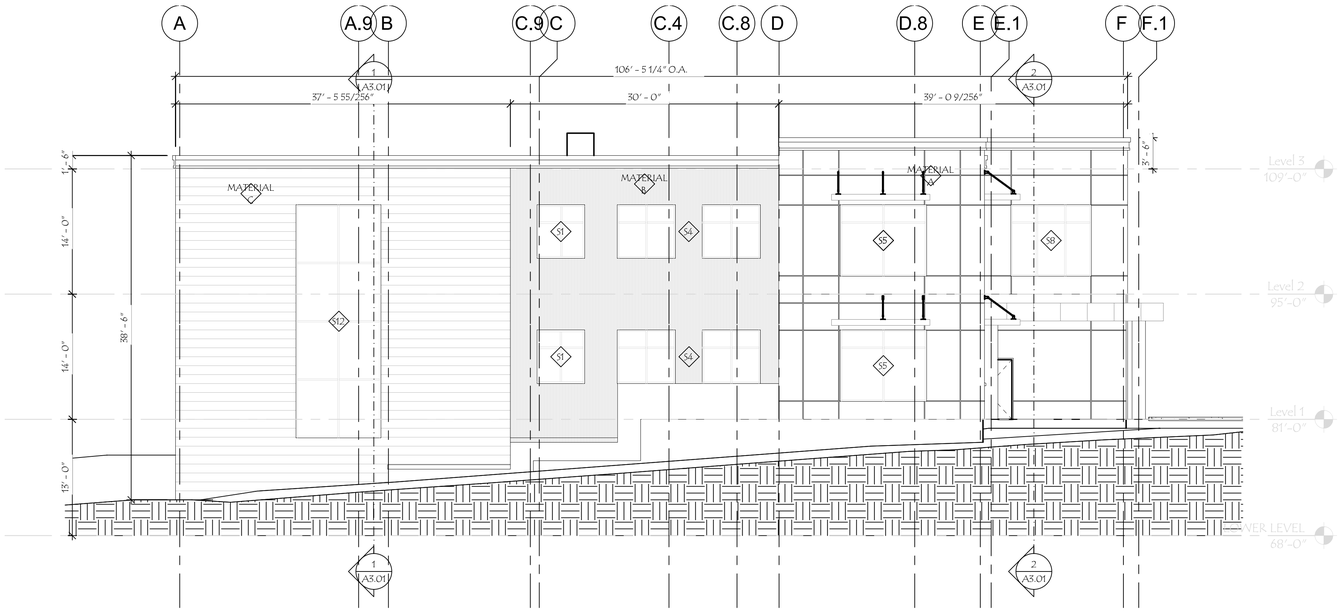
8/28/2022 10:08:48 AM

EXTERIOR FINISH NOTES :

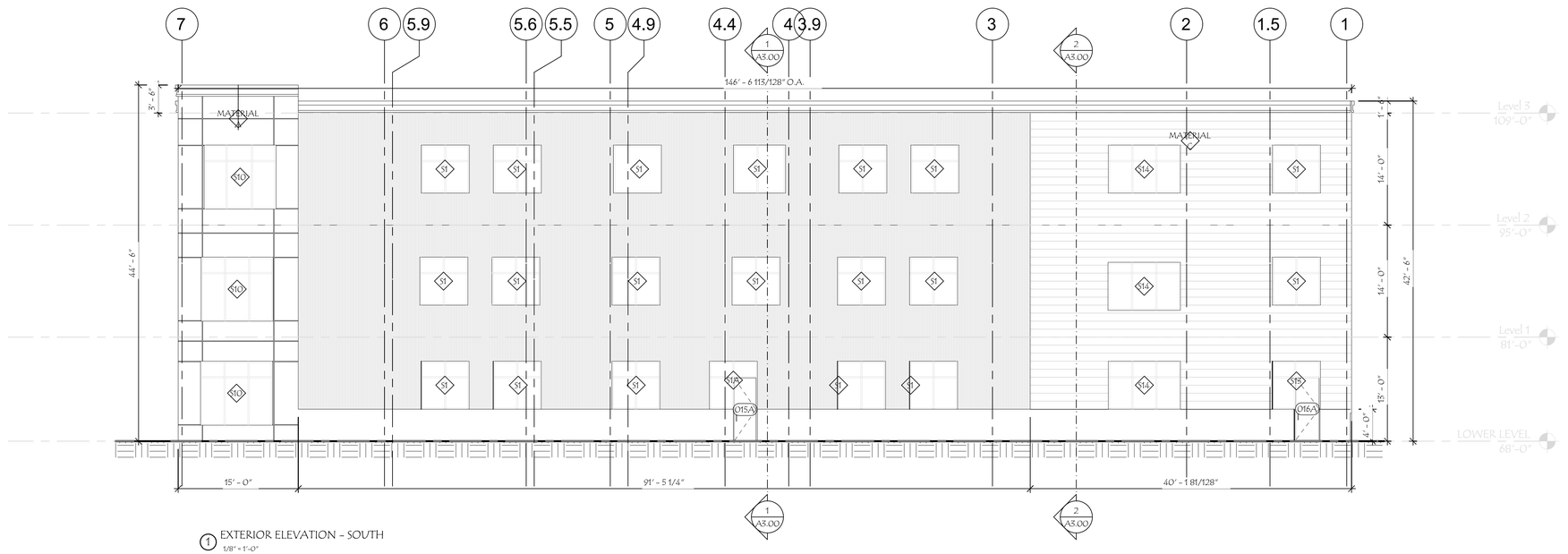
1. MATERIAL A = ALPOLIC / PE METAL COMPOSITE PANELS, OR EQUIVALENT.

2. MATERIAL B = ALPOLIC / PE METAL COMPOSITE PANELS, OR EQUIVALENT.

3. MATERIAL C = NICHIHA HORIZONTAL FIBER CEMENT SIDING, OR EQUIVALENT.



2 EXTERIOR ELEVATION - WEST
1/8" = 1'-0"



1 EXTERIOR ELEVATION - SOUTH
1/8" = 1'-0"

104 Congress St., STE 205
Portsmouth, NH 03801
PH: 603.501.0302

DOVER MEDICAL OFFICE BUILDING

DURHAM ROAD
DOVER, NH

NOT FOR CONSTRUCTION

Revisions:
Description — Date

Scale: 1/8" = 1'-0"
Drawn By: VA
Checked By: CMO
Project No.: 2021048
PROGRESS DRAWINGS
Date: February 25, 2022

Title: EXTERIOR ELEVATIONS

A2.01

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3/28/2022 10:05:54 AM

MARKET
SQUARE
ARCHITECTS

DRAINAGE STUDY

Applicant:

Summit Land Development

340 Central Ave #202

Dover, New Hampshire 03820

Project:

7 West Commercial Development

Tax Map H, Lot 11

Owner:

7 West, LLC

P.O. Box 728 Dover, NH 03821

Prepared October 5, 2022

ALTUS ENGINEERING

Civil
Site Planning
Environmental
Engineering

133 Court Street
Portsmouth, NH
03801-4413

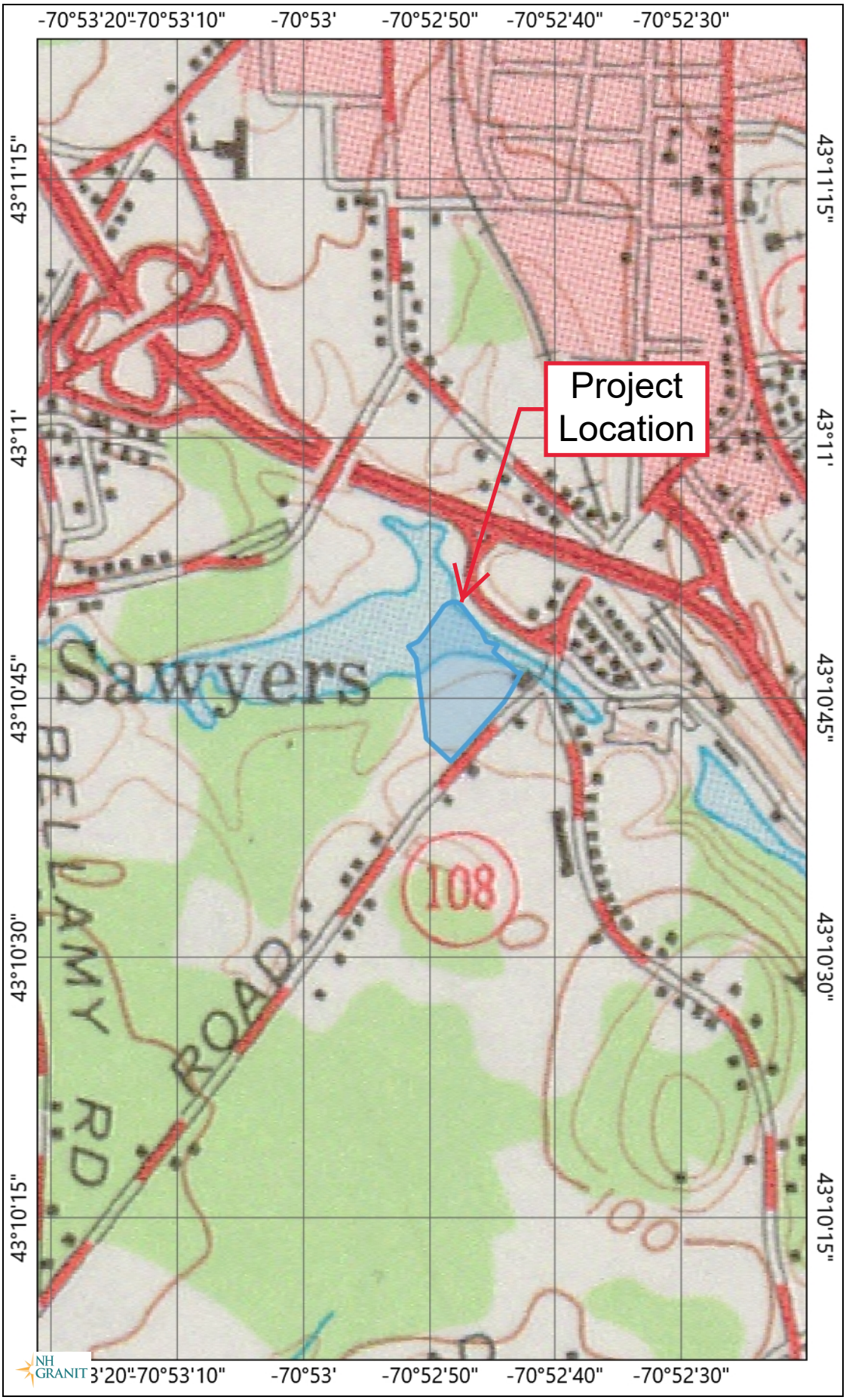
7 West Commercial Development
Dover, NH 03820
(Tax Map H, Lot 11)

TABLE OF CONTENTS

1) USGS Site Location Map
2) Project Narrative
3) NHB Letter
4) Web Soils Survey Map
5) Aerial Photographs
6) BMP Worksheets
7) Drainage Analysis
   - Extreme Precipitation Tables
   - Pre-Development Analysis
   - Post Development Analysis
8) Riprap / Plunge Pool Calculations
9) Site Specific Soil Survey
10) StreamStats Results for Bellamy River
11) Inspection and Maintenance Manual

Appendix: Plans: Site Specific Soils Plan
Pre-Development Watershed Plan
Post-Development Watershed Plan
Project Plans *(project plans under separate attachment)*

7 West Commercial Development



Legend

1956 with vegetation

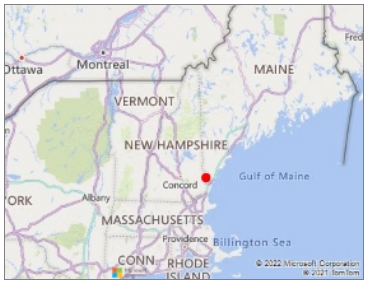
Map Scale

1: 10,000

© NH GRANIT, www.granit.unh.edu

Map Generated: 4/12/2022

Notes



SECTION 2

PROJECT NARRATIVE

7 West Commercial Development
Dover, NH 03820
(Tax Map H, Lot 11)

Site Overview

The Applicant, Summit Land Development, is proposing to construct a new commercial development on Durham Road in Dover, NH located on Tax Map H, Lot 11. The proposed development is for a medical office building which will be three stories and approximately 14,160 square feet (footprint). The existing lot is approximately 8.7 acres in size and abuts the Dover Fire Station and Elementary School to the west, the Bellamy River to the North, and the Spaulding Turnpike (Exit 7) ramps to the east. The proposed site has been designed with a stormwater treatment system that consists of deep sump catch basins, raingardens, and a sub-surface chamber system.

Drainage Summary

A complete summary of the drainage model is included later in this report. The following table compares pre- and post-development peak rates of runoff for all analyzed storm events at the Point of Analysis, located downstream from the proposed project:

Stormwater Modeling Summary
Peak Q (cfs) for Type III 24-Hour Storm Events

	2-Yr Storm (3.62 inch)	10-Yr Storm (5.46inch)	25-Yr Storm (6.91 inch)	50-Yr Storm (8.26 inch)
POA #1				
Pre	5.25	13.36	20.68	27.91
Post	5.16	12.96	20.65	27.71
Net Change	**-0.09**	**-0.40**	**-0.03**	**-0.20**

Note: Includes 15% increase for NH Seacoast communities, per NHDES guidelines.

As shown in the above table, the results from the stormwater modelling indicate a reduction in the peak runoff rates for all analyzed storm events.

Pre-Development (Existing Conditions)

The pre-development site conditions reflect the current conditions of the site, as depicted on the Existing Conditions Plan, prepared by McEneaney Survey Associates (MSA). The existing site is primarily an undeveloped wooded lot and discharges to the Bellamy River to the east by surface runoff. The Sawyer Mill Dam, located on the Bellamy River, just downstream from the project site, was removed in 2020. However, there has not yet been a Letter of Map Revision (LOMR) to adjust the FEMA Flood elevations in the project area. It is understood that Vanesse Hangen Brustlin, Inc. (VHB), who were the engineers for the dam removal project, are working with the State of NH to complete the LOMR.

The Pre-Development analysis models the existing conditions from the site. The soil data from the Site Specific Soil Survey Technical Letter Report (by BAG Land Services) was used to the determine the hydrologic soil conditions for the site. The existing conditions survey and soil conditions were used to develop a model of the existing conditions to compare to the post-development conditions.

The study area for this drainage analysis is primarily the 8.7 acre lot parcel for development. Watersheds were extended outside of the lot for the analysis as needed. The existing watershed reflects the existing site conditions. All of the surface water discharges to the Bellamy River located to the north and east. Therefore a single Points of Analysis (POA) was used for comparison of pre to post development conditions.

Site topography, existing features, proposed site improvements, proposed grading, drainage and erosion control measures are shown on the accompanying plans. Recommended erosion control measures are based upon the December 2008 edition of the "New Hampshire Stormwater Manual Volumes I through 3" prepared by NHDES and Comprehensive Environmental, Inc. as amended.

Site Soils

A Site Specific Soils Survey was performed for the project site and indicated the presence of the following soil types:

Soil Series	Description	Hydrologic Soil Group
62	Charlton, well drained	HSG B
86	Hollis, well drained	HSG C
232	Buxton, moderately well drained	HSG C
233/P	Scantic, somewhat poorly drained	HSG D
200	Udorthents	

A copy of Site Specific Soils Report is included in the Appendix of this report.

Post-Development (Proposed Site Design)

The proposed project will construct a new three story medical office building, approximately 42,480 gross square feet (14,160 sf footprint). The new paved surfaces (roadways and parking) will be constructed to provide approximately 205 surface parking stalls, driveway aisles, and sidewalks. The stormwater management system proposed for the site includes deep sump catch basins, two new raingardens, and a sub-surface (Stormtech) chamber system.

The Drainage Summary Table on Page 1 illustrates that the peak flows are managed for the 2, 10, 25, and 50 year 24-hr storm events per Env-Wq 1507.05. The point of analysis for the project is on the Bellamy River just upstream of the Durham Road crossing. The off-site upstream watershed area contributing to his point is approximately 27.2 square miles (17,408 acres) and the peak flow rates in the river at this location are as shown below: The StreamStat program was used to analyze the off-site flows and a report is included in the appendix.

Storm Event	Peak Flow
10 year	725 cfs
50 year	1120 cfs

The Stormwater Modeling Summary on page 1 shows a reduction in the peak runoff rates for all analyzed storm events. Additionally, the site is draining to a river with a 27 square mile watershed. Therefore, the proposed on-site improvements will not impact the overall peak flows for the watershed, including off-site flows at the downstream location from site.

The "Post-Development Watershed Plan" illustrates the proposed stormwater management system. The original sub-catchment has been divided into numerous smaller areas to emulate the proposed grading and stormwater management system proposed for construction. The post-development conditions were analyzed at the same primary discharge point examined in the pre-development modeling.

Pollutant Removal

Based on the New Hampshire Stormwater Manual – Appendix E, the following pollutant removal rates would be expected from the implementation of the infiltration practices:

Pollutant	Bioretention Raingarden Removal %	Infiltration Practice Removal %
Total Suspended Solids (TSS)	90%	90%
Total Nitrogen (TN)	65%	60%
Total Phosphorus (TP)	65%	65%

CONCLUSION

This proposed development at 15 Durham Road (7 West) in Dover, NH will not have an adverse effect on abutting properties and infrastructure as a result of stormwater runoff. The project will treat all proposed impervious areas with two raingardens and a sub-surface infiltration basin. Pre-treatment will be provided to all paved areas with deep sump catch basins. The post-construction peak rates of runoff from the site will managed accordingly for the 2, 10, 25, and 50 year storms. Appropriate steps will be taken to properly mitigate erosion and sedimentation through construction with the use of temporary and permanent Best Management Practices for sediment and erosion control.

CALCULATION METHODS

The drainage study was completed using the USDA SCS TR-20 Method within the HydroCAD Stormwater Modeling System. Reservoir routing was performed with the Dynamic Storage Indication method which automates the calculation of Tailwater conditions. A Type III 24-hour rainfall distribution was utilized in analyzing the data for the 2, 10, 25, and 50 yr 24-hour storm events using rainfall data obtained from the Northeast Regional Climate Center (NRCC) Extreme Precipitation Tables.

Disclaimer

Altus Engineering, Inc. notes that stormwater modeling is limited in its capacity to precisely predict peak rates of runoff and flood elevations. Results should not be considered to represent actual storm events due to the number of variables and assumptions involved in the modeling effort. Surface roughness coefficients (n), entrance loss coefficients (ke), velocity factors (kv) and times of concentration (Tc) are based on subjective field observations and engineering judgment using available data. For design purposes, curve numbers (Cn) describe the average conditions. However, curve numbers will. vary from storm to storm depending on the antecedent runoff conditions (ARC) including saturation and frozen ground. Also, higher water elevations than predicted by modeling could occur if drainage channels, closed drain systems or culverts are not maintained and/or become blocked by debris before and/or during a storm event as this will impact flow capacity of the structures. Structures should be re-evaluated if future changes occur within relevant drainage areas in order to assess any required design modifications.

SECTION 3

National Heritage Bureau (NHB) Letter

New Hampshire Natural Heritage Bureau
NHB DataCheck Results Letter

To: Bruce Gilday, BAG Land Consultants
43 Rockingham Street

Concord, NH 03301

From: NH Natural Heritage Bureau
Date: 4/23/2021 (valid until 4/23/2022)
Re: Review by NH Natural Heritage Bureau of request submitted 4/12/2021
Permits: MUNICIPAL POR - Dover, NH, NHDES - Alteration of Terrain Permit, NHDES - Shoreland Standard Permit, USACE - General Permit, USEPA - Stormwater Pollution Prevention

NHB ID: NHB21-1227 **Applicant:** Bruce Gilday

Location: Dover
Durham Road

Project Description: Project will be a proposed new office building (w/ access road, parking stalls, and storm water treatment structures) on an existing 6 acre +/- commercial lot in the City of Dover. There will not be any wetland impacts proposed, but there will be an application for DES Alteration of Terrain and a potential Shoreland Protection permit application.

The NH Natural Heritage database has been checked by staff of the NH Natural Heritage Bureau and/or the NH Nongame and Endangered Species Program for records of rare species and exemplary natural communities near the area mapped below. The species considered include those listed as Threatened or Endangered by either the state of New Hampshire or the federal government.

It was determined that, although there was a NHB record (e.g., rare wildlife, plant, and/or natural community) present in the vicinity, we do not expect that it will be impacted by the proposed project. This determination was made based on the project information submitted via the NHB Datacheck Tool on 4/12/2021 12:28:30 PM, and cannot be used for any other project.

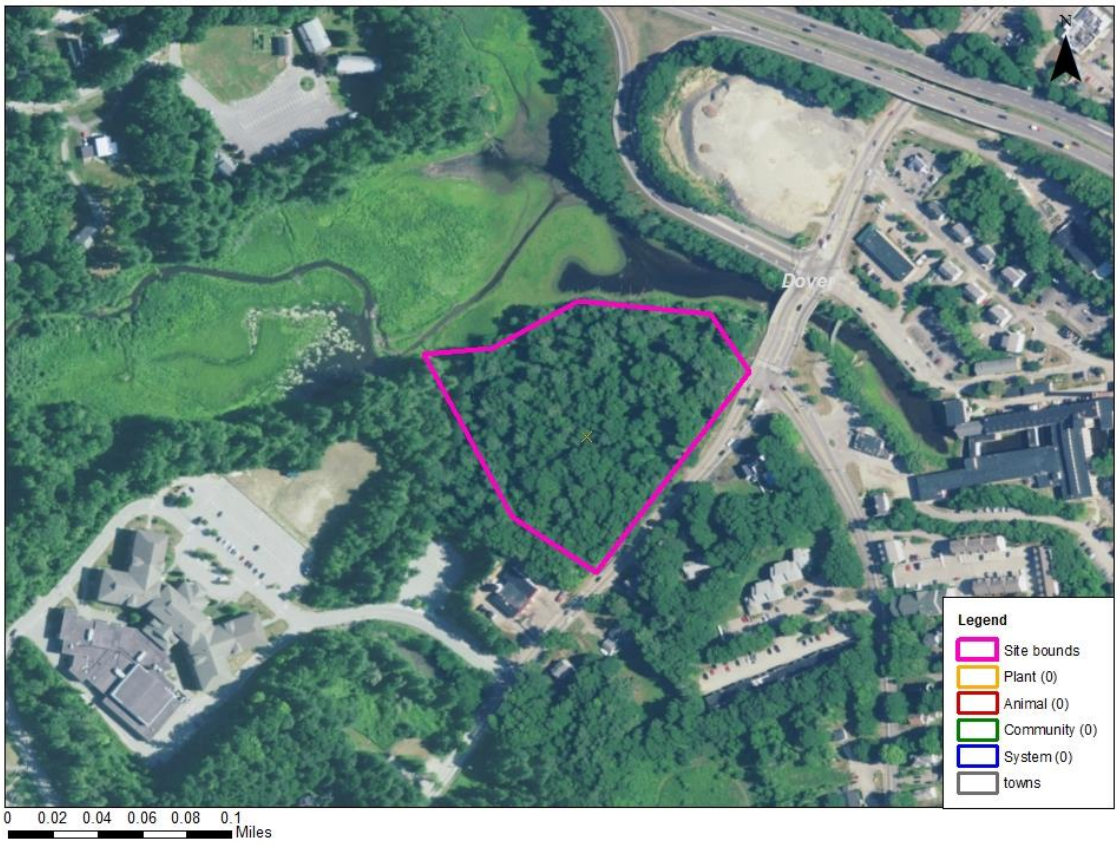
Department of Natural and Cultural Resources
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DNCR/NHB
172 Pembroke Rd.
Concord, NH 03301

New Hampshire Natural Heritage Bureau
NHB DataCheck Results Letter

MAP OF PROJECT BOUNDARIES FOR: **NHB21-1227**

NHB21-1227



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

SECTION 4

Web Soils Survey Map

Soil Map—Strafford County, New Hampshire
(7 West)

Map Scale: 1:1,760 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 25 50 100 150

Feet
0 50 100 200 300

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
BzB	Buxton silt loam, 3 to 8 percent slopes	5.2	74.3%
HcC	Hollis-Charlton fine sandy loams, 8 to 15 percent slopes	1.7	24.3%
W	Water	0.1	1.4%
Totals for Area of Interest		**7.1**	**100.0%**

SECTION 5

Aerial Photographs

Aerial Photograph
7 West Dover, NH

SECTION 6

BMP Worksheets

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/Node Name: **Bioretention (Raingarden) HydroCAD Node 1R**

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
0.62	ac	A = Area draining to the practice	
0.36	ac	A_I = Impervious area draining to the practice	
0.58	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.57	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.36	ac-in	WQV= 1" x Rv x A	
1,289	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
322	cf	25% x WQV (check calc for sediment forebay volume)	
966	cf	75% x WQV (check calc for surface sand filter volume)	
deep sump		Method of Pretreatment? (not required for clean or roof runoff)	
	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	≥ 25%WQV
Calculate time to drain if system IS NOT underdrained:			
500	sf	A_{SA} = Surface area of the practice	
-	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
		If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
yes	Yes/No	(Use the calculations below)	
-	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	≤ 72-hrs
Calculate time to drain if system IS underdrained:			
67.20	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
1.88	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
0.38	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	≤ 72-hrs
64.50	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
63.25	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
65.50	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
64.00	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
1.25	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	≥ 1'
0.50	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	≥ 1'
(1.00)	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	≥ 1'
67.60	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
69.00	ft	Elevation of the top of the practice	
YES		50 peak elevation ≤ Elevation of the top of the practice	← yes
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	< 10 ac
	cf	V = Volume of storage[3] (attach a stage-storage table)	≥ 75%WQV
	inches	D_{FC} = Filter course thickness	18", or 24" if within GPA
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	← yes

If a bioretention area is proposed:			
YES	ac	Drainage Area no larger than 5 ac?	**← yes**
1,580	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ WQV**
18.0	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification	
3.0	:1	Pond side slopes	**≥ 3:1**
Sheet		Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
	acres	A_{SA} = Surface area of the pervious pavement	
	:1	Ratio of the contributing area to the pervious surface area	**≤ 5:1**
	inches	D_{FC} = Filter course thickness	**12", or 18" if within GPA mod. 304.1 (see spec)**
Sheet		Note what sheet in the plan set contains the filter course spec.	

1. Rate of the limiting layer (either the filter course or the underlying soil). $Ksat_{design}$ includes factor of safey. See Env-Wq 1504.14 for guidance on determining the infiltration rate.

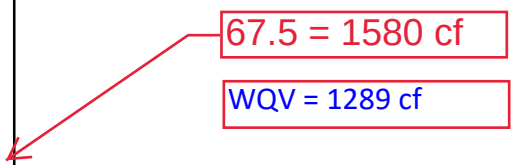
2. See lines 34, 40 and 48 for required depths of filter media.

3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet stucture, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes:

Stage-Area-Storage for Pond 1R: Raingarden 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
62.75	500	0
62.85	500	20
62.95	500	40
63.05	500	60
63.15	500	80
63.25	500	100
63.35	500	120
63.45	500	140
63.55	500	160
63.65	500	180
63.75	500	200
63.85	500	220
63.95	500	240
64.05	500	260
64.15	500	280
64.25	500	300
64.35	500	316
64.45	500	333
64.55	500	342
64.65	500	345
64.75	500	348
64.85	500	350
64.95	500	353
65.05	500	355
65.15	500	358
65.25	500	360
65.35	500	362
65.45	500	365
65.55	500	367
65.65	500	370
65.75	500	373
65.85	500	375
65.95	500	378
66.05	520	404
66.15	560	458
66.25	600	516
66.35	640	578
66.45	680	644
66.55	720	714
66.65	760	788
66.75	800	866
66.85	840	948
66.95	880	1,034
67.05	923	1,124
67.15	969	1,219
67.25	1,014	1,318
67.35	1,060	1,422
67.45	1,106	1,530
67.55	1,151	1,643
67.65	1,197	1,760
67.75	1,243	1,882
67.85	1,288	2,009
67.95	1,334	2,140
68.05	1,384	2,276
68.15	1,438	2,417
68.25	1,492	2,563
68.35	1,546	2,715
68.45	1,600	2,873
68.55	1,654	3,035
68.65	1,708	3,203
68.75	1,762	3,377
68.85	1,816	3,556
68.95	**1,870**	**3,740**



Stage-Discharge for Pond 1R: Raingarden 1

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
62.75	0.00	64.87	1.20	66.99	1.83
62.79	0.00	64.91	1.22	67.03	1.84
62.83	0.00	64.95	1.23	67.07	1.85
62.87	0.00	64.99	1.25	67.11	1.86
62.91	0.00	65.03	1.26	67.15	1.87
62.95	0.00	65.07	1.28	67.19	1.88
62.99	0.00	65.11	1.29	67.23	1.89
63.03	0.00	65.15	1.30	67.27	1.90
63.07	0.00	65.19	1.32	67.31	1.90
63.11	0.00	65.23	1.33	67.35	1.91
63.15	0.00	65.27	1.34	67.39	1.92
63.19	0.00	65.31	1.36	67.43	1.93
63.23	0.00	65.35	1.37	67.47	1.94
63.27	0.01	65.39	1.38	67.51	1.97
63.31	0.08	65.43	1.40	67.55	2.13
63.35	0.16	65.47	1.41	67.59	2.39
63.39	0.27	65.51	1.42	67.63	2.70
63.43	0.39	65.55	1.43	67.67	3.07
63.47	0.44	65.59	1.45	67.71	3.48
63.51	0.48	65.63	1.46	67.75	3.93
63.55	0.52	65.67	1.47	67.79	4.42
63.59	0.55	65.71	1.48	67.83	4.94
63.63	0.58	65.75	1.49	67.87	5.50
63.67	0.61	65.79	1.51	67.91	6.09
63.71	0.64	65.83	1.52	67.95	6.42
63.75	0.67	65.87	1.53	67.99	6.44
63.79	0.69	65.91	1.54	68.03	6.46
63.83	0.72	65.95	1.55	68.07	6.49
63.87	0.74	65.99	1.56	68.11	6.51
63.91	0.77	66.03	1.58	68.15	6.53
63.95	0.79	66.07	1.59	68.19	6.56
63.99	0.81	66.11	1.60	68.23	6.58
64.03	0.83	66.15	1.61	68.27	6.60
64.07	0.86	66.19	1.62	68.31	6.63
64.11	0.88	66.23	1.63	68.35	6.65
64.15	0.90	66.27	1.64	68.39	6.67
64.19	0.92	66.31	1.65	68.43	6.69
64.23	0.94	66.35	1.66	68.47	6.72
64.27	0.95	66.39	1.68	68.51	6.74
64.31	0.97	66.43	1.69	68.55	6.76
64.35	0.99	66.47	1.70	68.59	6.78
64.39	1.01	66.51	1.71	68.63	6.81
64.43	1.03	66.55	1.72	68.67	6.83
64.47	1.04	66.59	1.73	68.71	6.85
64.51	1.06	66.63	1.74	68.75	6.87
64.55	1.08	66.67	1.75	68.79	6.89
64.59	1.09	66.71	1.76	68.83	6.92
64.63	1.11	66.75	1.77	68.87	6.94
64.67	1.13	66.79	1.78	68.91	6.96
64.71	1.14	66.83	1.79	68.95	6.98
64.75	1.16	66.87	1.80	68.99	**7.00**
64.79	1.17	66.91	1.81		
64.83	1.19	66.95	1.82		

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/Node Name: **Bioretention (Raingarden #2) HydroCAD Node 28P**

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

yes		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
1.15	ac	A = Area draining to the practice	
0.75	ac	A_I = Impervious area draining to the practice	
0.65	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.64	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.73	ac-in	WQV= 1" x Rv x A	
2,659	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
665	cf	25% x WQV (check calc for sediment forebay volume)	
1,994	cf	75% x WQV (check calc for surface sand filter volume)	
deep sump		Method of Pretreatment? (not required for clean or roof runoff)	
	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
Calculate time to drain if system IS NOT underdrained:			
1,100	sf	A_{SA} = Surface area of the practice	
2.50	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
		If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
yes	Yes/No	(Use the calculations below)	
11.6	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
Calculate time to drain if system IS underdrained:			
61.27	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.20	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
7.39	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	**≤ 72-hrs**
59.50	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
58.25	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
60.50	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
58.00	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
1.25	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	**≥ 1'**
1.50	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	**≥ 1'**
(1.00)	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	**≥ 1'**
52.95	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
53.00	ft	Elevation of the top of the practice	
YES		50 peak elevation ≤ Elevation of the top of the practice	**← yes**
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	**< 10 ac**
	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ 75%WQV**
	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	**← yes**

If a bioretention area is proposed:			
YES	ac	Drainage Area no larger than 5 ac?	**← yes**
2,702	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ WQV**
18.0	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification	
3.0	:1	Pond side slopes	**≥ 3:1**
Sheet		Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
	acres	A_{SA} = Surface area of the pervious pavement	
	:1	Ratio of the contributing area to the pervious surface area	**≤ 5:1**
	inches	D_{FC} = Filter course thickness	**12", or 18" if within GPA mod. 304.1 (see spec)**
Sheet		Note what sheet in the plan set contains the filter course spec.	

1. Rate of the limiting layer (either the filter course or the underlying soil). $Ksat_{design}$ includes factor of safey. See Env-Wq 1504.14 for guidance on determining the infiltration rate.

2. See lines 34, 40 and 48 for required depths of filter media.

3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet stucture, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes:

The raingarden is beign constructed on a steep slope. The estimated SHWT is approximately 40" below ground based on the soils report. The raingarden will require cut and the raingarden will have an underdrain installed. Ledge is present on site, but was not identified at the this location.

Stage-Area-Storage for Pond 28P: Raingarden 2

Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
57.75	1,100	1,100	0
57.95	1,100	1,124	88
58.15	1,100	1,147	176
58.35	1,100	1,171	264
58.55	1,100	1,194	352
58.75	1,100	1,218	440
58.95	1,100	1,241	528
59.15	1,100	1,265	616
59.35	1,100	1,288	696
59.55	1,100	1,312	756
59.75	1,100	1,335	778
59.95	1,100	1,359	800
60.15	1,100	1,382	822
60.35	1,100	1,406	844
60.55	1,100	1,429	866
60.75	1,100	1,453	888
60.95	1,100	1,476	910
61.15	1,212	1,596	1,089
61.35	1,370	1,756	1,347
61.55	1,538	1,925	1,638
61.75	1,715	2,105	1,963
61.95	1,902	2,294	2,324
62.15	2,124	2,519	2,726
62.35	2,367	2,764	3,175
62.55	2,624	3,024	3,674
62.75	2,894	3,296	4,226
62.95	**3,177**	**3,582**	**4,832**

Stage-Discharge for Pond 28P: Raingarden 2

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
57.75	0.00	59.87	0.10	61.99	0.18
57.79	0.01	59.91	0.10	62.03	0.18
57.83	0.02	59.95	0.10	62.07	0.18
57.87	0.04	59.99	0.10	62.11	0.19
57.91	0.07	60.03	0.10	62.15	0.19
57.95	0.07	60.07	0.10	62.19	0.19
57.99	0.07	60.11	0.10	62.23	0.20
58.03	0.07	60.15	0.10	62.27	0.20
58.07	0.07	60.19	0.10	62.31	0.22
58.11	0.07	60.23	0.10	62.35	0.34
58.15	0.07	60.27	0.10	62.39	0.53
58.19	0.07	60.31	0.10	62.43	0.76
58.23	0.07	60.35	0.11	62.47	1.04
58.27	0.07	60.39	0.11	62.51	1.35
58.31	0.07	60.43	0.11	62.55	1.71
58.35	0.07	60.47	0.11	62.59	2.11
58.39	0.07	60.51	0.11	62.63	2.55
58.43	0.07	60.55	0.11	62.67	3.03
58.47	0.07	60.59	0.11	62.71	3.54
58.51	0.08	60.63	0.11	62.75	4.10
58.55	0.08	60.67	0.11	62.79	4.69
58.59	0.08	60.71	0.11	62.83	5.33
58.63	0.08	60.75	0.11	62.87	6.00
58.67	0.08	60.79	0.11	62.91	6.69
58.71	0.08	60.83	0.11	62.95	7.33
58.75	0.08	60.87	0.11	62.99	**7.98**
58.79	0.08	60.91	0.11		
58.83	0.08	60.95	0.12		
58.87	0.08	60.99	0.12		
58.91	0.08	61.03	0.12		
58.95	0.08	61.07	0.12		
58.99	0.08	61.11	0.12		
59.03	0.08	61.15	0.12		
59.07	0.08	61.19	0.13		
59.11	0.08	61.23	0.13		
59.15	0.09	61.27	0.13		
59.19	0.09	61.31	0.13		
59.23	0.09	61.35	0.14		
59.27	0.09	61.39	0.14		
59.31	0.09	61.43	0.14		
59.35	0.09	61.47	0.14		
59.39	0.09	61.51	0.15		
59.43	0.09	61.55	0.15		
59.47	0.09	61.59	0.15		
59.51	0.09	61.63	0.15		
59.55	0.09	61.67	0.16		
59.59	0.09	61.71	0.16		
59.63	0.09	61.75	0.16		
59.67	0.09	61.79	0.16		
59.71	0.09	61.83	0.17		
59.75	0.10	61.87	0.17		
59.79	0.10	61.91	0.17		
59.83	0.10	61.95	0.18		

SECTION 7

Drainage Analysis

- Extreme Precipitation Tables
- Pre-Development
  - Diagram
  - Area and Soils Listings
  - Full Summary (10-Year)
  - Node Listing (2-Year & 50 Year)
- Post Development
  - Diagram
  - Area and Soils Listings
  - Full Summary (10-Year)
  - Node Listing (2-Year, 25-Year, & 50 Year)

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	70.874 degrees West
Latitude	43.198 degrees North
Elevation	0 feet
Date/Time	Thu, 27 May 2021 09:14:57 -0400

Extreme Precipitation Estimates

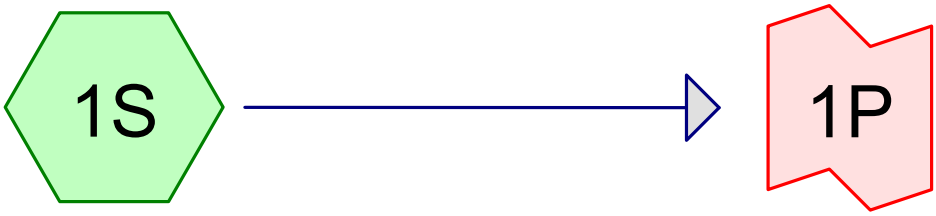
	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2d
1yr	0.26	0.40	0.50	0.65	0.81	1.03	**1yr**	0.70	0.98	1.20	1.54	2.00	2.60	2.87	**1yr**	2.31	2.7
2yr	0.32	0.49	0.61	0.81	1.01	1.29	**2yr**	0.88	1.17	1.50	1.91	2.45	3.15	3.51	**2yr**	2.79	3.3
5yr	0.37	0.57	0.72	0.96	1.23	1.58	**5yr**	1.06	1.44	1.85	2.39	3.08	3.98	4.50	**5yr**	3.53	4.3
10yr	0.40	0.63	0.80	1.09	1.42	1.85	**10yr**	1.23	1.69	2.18	2.83	3.66	4.75	5.43	**10yr**	4.21	5.2
25yr	0.46	0.74	0.94	1.30	1.72	2.27	**25yr**	1.49	2.09	2.70	3.53	4.61	6.01	6.96	**25yr**	5.32	6.7
50yr	0.52	0.83	1.06	1.49	2.00	2.67	**50yr**	1.73	2.46	3.18	4.19	5.49	7.18	8.41	**50yr**	6.35	8.0
100yr	0.58	0.94	1.21	1.71	2.33	3.13	**100yr**	2.01	2.89	3.75	4.96	6.53	8.58	10.16	**100yr**	7.59	9.7
200yr	0.64	1.05	1.36	1.96	2.71	3.68	**200yr**	2.34	3.40	4.44	5.90	7.80	10.26	12.28	**200yr**	9.08	11.
500yr	0.76	1.25	1.63	2.36	3.31	4.55	**500yr**	2.86	4.22	5.51	7.38	9.82	12.99	15.78	**500yr**	11.50	15.

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2da
1yr	0.24	0.37	0.45	0.60	0.74	0.90	**1yr**	0.64	0.88	0.92	1.26	1.58	2.14	2.45	**1yr**	1.90	2.3
2yr	0.31	0.49	0.60	0.81	1.00	1.18	**2yr**	0.86	1.16	1.36	1.83	2.35	3.04	3.40	**2yr**	2.69	3.2
5yr	0.35	0.54	0.67	0.91	1.16	1.40	**5yr**	1.00	1.37	1.61	2.15	2.77	3.71	4.13	**5yr**	3.29	3.9
10yr	0.38	0.59	0.73	1.02	1.32	1.60	**10yr**	1.14	1.56	1.81	2.44	3.12	4.27	4.78	**10yr**	3.78	4.6
25yr	0.44	0.66	0.83	1.18	1.55	1.91	**25yr**	1.34	1.87	2.11	2.83	3.64	4.92	5.78	**25yr**	4.36	5.5
50yr	0.48	0.73	0.91	1.31	1.76	2.19	**50yr**	1.52	2.14	2.35	3.19	4.09	5.61	6.67	**50yr**	4.97	6.4
100yr	0.54	0.81	1.01	1.47	2.01	2.51	**100yr**	1.73	2.45	2.63	3.56	4.56	6.38	7.68	**100yr**	5.65	7.3
200yr	0.59	0.89	1.13	1.64	2.29	2.87	**200yr**	1.97	2.80	2.93	3.99	5.09	7.26	8.84	**200yr**	6.42	8.5
500yr	0.69	1.03	1.33	1.93	2.74	3.45	**500yr**	2.36	3.37	3.40	4.61	5.89	8.57	10.64	**500yr**	7.58	10.2

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2d
1yr	0.28	0.43	0.53	0.71	0.87	1.08	**1yr**	0.75	1.05	1.24	1.74	2.21	2.88	3.10	**1yr**	2.55	2.
2yr	0.33	0.51	0.62	0.85	1.04	1.25	**2yr**	0.90	1.22	1.47	1.95	2.51	3.30	3.64	**2yr**	2.92	3.



PRE-DEVELOPMENT

Point of Anlaysis

Subcat Reach Pond Link

Routing Diagram for 4952 Pre test
Prepared by Altus Engineering, Inc., Printed 10/5/2022
HydroCAD® 10.00-22 s/n 01222 © 2018 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.069	61	>75% Grass cover, Good, HSG B (1S)
0.172	74	>75% Grass cover, Good, HSG C (1S)
2.476	80	Pasture/grassland/range, Good, HSG D (1S)
3.869	55	Woods, Good, HSG B (1S)
1.681	70	Woods, Good, HSG C (1S)
0.792	72	Woods/grass comb., Good, HSG C (1S)
9.059	**67**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
3.938	HSG B	1S
2.645	HSG C	1S
2.476	HSG D	1S
0.000	Other	
9.059		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.069	0.172	0.000	0.000	0.241	>75% Grass cover, Good	1S
0.000	0.000	0.000	2.476	0.000	2.476	Pasture/grassland/range, Good	1S
0.000	3.869	1.681	0.000	0.000	5.550	Woods, Good	1S
0.000	0.000	0.792	0.000	0.000	0.792	Woods/grass comb., Good	1S
0.000	**3.938**	**2.645**	**2.476**	**0.000**	**9.059**	**TOTAL AREA**	

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Link 1P: Point of Anlaysis Inflow=13.36 cfs 1.466 af
Primary=13.36 cfs 1.466 af

Subcatchment 1S: PRE-DEVELOPMENT Runoff Area=394,608 sf 0.00% Impervious Runoff Depth>1.94"
Flow Length=955' Tc=25.5 min CN=67 Runoff=13.36 cfs 1.466 af

Total Runoff Area = 9.059 ac Runoff Volume = 1.466 af Average Runoff Depth = 1.94"
100.00% Pervious = 9.059 ac 0.00% Impervious = 0.000 ac

Summary for Link 1P: Point of Anlaysis

Inflow Area = 9.059 ac, 0.00% Impervious, Inflow Depth > 1.94" for 10-yr event
Inflow = 13.36 cfs @ 12.37 hrs, Volume= 1.466 af
Primary = 13.36 cfs @ 12.37 hrs, Volume= 1.466 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Subcatchment 1S: PRE-DEVELOPMENT

Runoff = 13.36 cfs @ 12.37 hrs, Volume= 1.466 af, Depth> 1.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.46"

Area (sf)	CN	Description
3,000	61	>75% Grass cover, Good, HSG B
7,500	74	>75% Grass cover, Good, HSG C
168,522	55	Woods, Good, HSG B
73,224	70	Woods, Good, HSG C
34,505	72	Woods/grass comb., Good, HSG C
107,857	80	Pasture/grassland/range, Good, HSG D
394,608	67	Weighted Average
394,608		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	75	0.0350	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.15"
10.4	700	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.4	180	0.0200	2.12		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
25.5	955	Total			

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Link 1P: Point of Anlaysis Inflow=5.25 cfs 0.619 af
Primary=5.25 cfs 0.619 af

Subcatchment 1S: PRE-DEVELOPMENT Runoff Area=394,608 sf 0.00% Impervious Runoff Depth>0.82"
Flow Length=955' Tc=25.5 min CN=67 Runoff=5.25 cfs 0.619 af

Total Runoff Area = 9.059 ac Runoff Volume = 0.619 af Average Runoff Depth = 0.82"
100.00% Pervious = 9.059 ac 0.00% Impervious = 0.000 ac

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Link 1P: Point of Anlaysis Inflow=20.68 cfs 2.246 af
Primary=20.68 cfs 2.246 af

Subcatchment 1S: PRE-DEVELOPMENT Runoff Area=394,608 sf 0.00% Impervious Runoff Depth>2.97"
Flow Length=955' Tc=25.5 min CN=67 Runoff=20.68 cfs 2.246 af

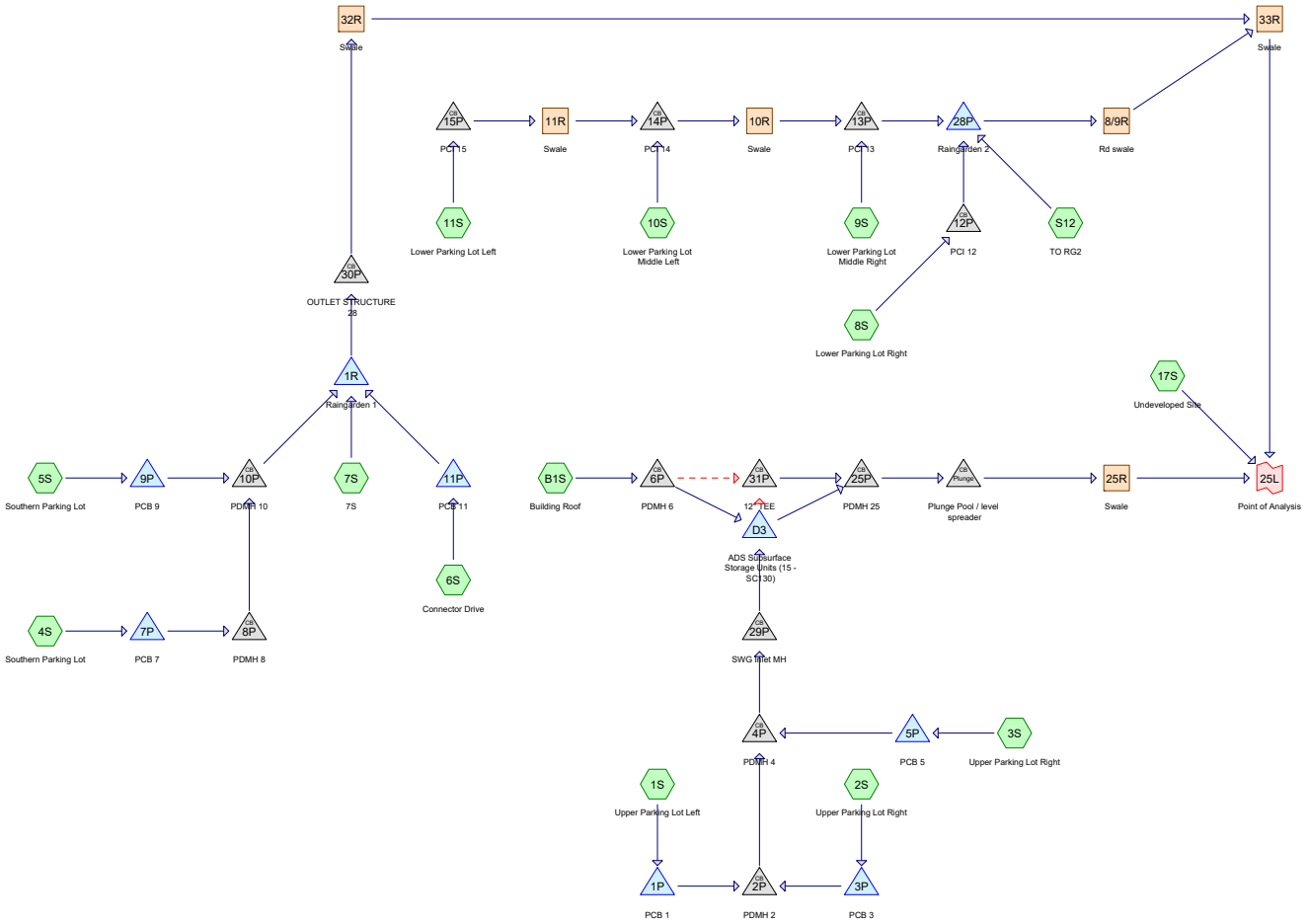
Total Runoff Area = 9.059 ac Runoff Volume = 2.246 af Average Runoff Depth = 2.97"
100.00% Pervious = 9.059 ac 0.00% Impervious = 0.000 ac

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Link 1P: Point of Anlaysis Inflow=27.91 cfs 3.026 af
Primary=27.91 cfs 3.026 af

Subcatchment 1S: PRE-DEVELOPMENT Runoff Area=394,608 sf 0.00% Impervious Runoff Depth>4.01"
Flow Length=955' Tc=25.5 min CN=67 Runoff=27.91 cfs 3.026 af

Total Runoff Area = 9.059 ac Runoff Volume = 3.026 af Average Runoff Depth = 4.01"
100.00% Pervious = 9.059 ac 0.00% Impervious = 0.000 ac



Subcat Reach Pond Link

Routing Diagram for 4952 Post 090122
Prepared by Altus Engineering, Inc., Printed 10/5/2022
HydroCAD® 10.00-22 s/n 01222 © 2018 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.366	61	>75% Grass cover, Good, HSG B (1S, 2S, 5S, 6S, 7S, 8S, 9S, 10S, 11S)
0.484	74	>75% Grass cover, Good, HSG C (1S, 6S, 9S, 17S, S12)
2.476	78	Meadow, non-grazed, HSG D (17S)
1.653	98	Paved parking, HSG B (1S, 2S, 3S, 4S, 5S, 6S, 8S, 9S, 10S, 11S)
0.193	98	Paved parking, HSG C (1S, 2S, 6S, 9S)
0.046	98	Roofs, HSG B (B1S)
0.280	98	Roofs, HSG C (B1S)
0.045	98	Unconnected pavement, HSG B (1S, 2S, 3S, 9S)
0.054	98	Unconnected pavement, HSG C (1S, 2S, 9S)
1.828	55	Woods, Good, HSG B (17S)
0.842	70	Woods, Good, HSG C (17S)
0.792	72	Woods/grass comb., Good, HSG C (17S)
9.059	**76**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
3.938	HSG B	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 17S, B1S
2.645	HSG C	1S, 2S, 6S, 9S, 17S, B1S, S12
2.476	HSG D	17S
0.000	Other	
9.059		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.366	0.484	0.000	0.000	0.850	>75% Grass cover, Good	1S, 2S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 17S, S12
0.000	0.000	0.000	2.476	0.000	2.476	Meadow, non-grazed	17S
0.000	1.653	0.193	0.000	0.000	1.846	Paved parking	1S, 2S, 3S, 4S, 5S, 6S, 8S, 9S, 10S, 11S
0.000	0.046	0.280	0.000	0.000	0.325	Roofs	B1S
0.000	0.045	0.054	0.000	0.000	0.099	Unconnected pavement	1S, 2S, 3S, 9S
0.000	1.828	0.842	0.000	0.000	2.670	Woods, Good	17S
0.000	0.000	0.792	0.000	0.000	0.792	Woods/grass comb., Good	17S
0.000	**3.938**	**2.645**	**2.476**	**0.000**	**9.059**	**TOTAL AREA**	

Pipe Listing (selected 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	1P	75.20	74.40	157.8	0.0051	0.012	12.0	0.0	0.0
2	1R	62.76	62.75	1.0	0.0100	0.012	12.0	0.0	0.0
3	2P	74.30	74.10	43.0	0.0047	0.012	12.0	0.0	0.0
4	3P	74.60	74.40	23.7	0.0084	0.012	12.0	0.0	0.0
5	4P	74.00	73.75	54.3	0.0046	0.012	12.0	0.0	0.0
6	5P	74.25	74.10	23.7	0.0063	0.012	12.0	0.0	0.0
7	6P	74.60	74.55	5.0	0.0100	0.012	12.0	0.0	0.0
8	6P	75.10	75.00	10.0	0.0100	0.012	12.0	0.0	0.0
9	7P	73.80	73.60	23.7	0.0084	0.012	12.0	0.0	0.0
10	8P	73.50	73.10	75.0	0.0053	0.012	12.0	0.0	0.0
11	9P	72.70	72.50	46.2	0.0043	0.012	12.0	0.0	0.0
12	10P	72.40	66.00	41.0	0.1561	0.012	12.0	0.0	0.0
13	11P	66.60	66.00	35.0	0.0171	0.012	12.0	0.0	0.0
14	25P	72.90	60.10	60.0	0.2133	0.012	15.0	0.0	0.0
15	28P	57.75	54.00	50.0	0.0750	0.012	6.0	0.0	0.0
16	29P	73.65	73.60	5.0	0.0100	0.012	12.0	0.0	0.0
17	30P	62.75	61.50	140.0	0.0089	0.012	12.0	0.0	0.0
18	31P	75.00	74.90	10.0	0.0100	0.012	12.0	0.0	0.0
19	D3	75.05	74.90	5.0	0.0300	0.012	12.0	0.0	0.0
20	D3	75.05	75.00	5.0	0.0100	0.012	12.0	0.0	0.0
21	D3	73.10	73.00	1.0	0.1000	0.012	6.0	0.0	0.0

Time span=1.00-48.00 hrs, dt=0.05 hrs, 941 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Pond 1P: PCB 1 Peak Elev=76.03' Storage=0.000 af Inflow=1.85 cfs 0.150 af
12.0" Round Culvert n=0.012 L=157.8' S=0.0051 '/' Outflow=1.85 cfs 0.150 af

Pond 1R: Raingarden 1 Peak Elev=66.49' Storage=675 cf Inflow=2.48 cfs 0.190 af
Outflow=1.70 cfs 0.188 af

Subcatchment 1S: Upper Parking Lot Left Runoff Area=15,579 sf 94.04% Impervious Runoff Depth=5.05"
Tc=6.0 min CN=97 Runoff=1.85 cfs 0.150 af

Pond 2P: PDMH 2 Peak Elev=76.01' Inflow=3.70 cfs 0.302 af
12.0" Round Culvert n=0.012 L=43.0' S=0.0047 '/' Outflow=3.70 cfs 0.302 af

Subcatchment 2S: Upper Parking Lot Right Runoff Area=15,439 sf 98.23% Impervious Runoff Depth=5.15"
Tc=6.0 min CN=97 Runoff=1.84 cfs 0.152 af

Pond 3P: PCB 3 Peak Elev=75.43' Storage=0.000 af Inflow=1.84 cfs 0.152 af
12.0" Round Culvert n=0.012 L=23.7' S=0.0084 '/' Outflow=1.85 cfs 0.152 af

Subcatchment 3S: Upper Parking Lot Right Runoff Area=6,296 sf 100.00% Impervious Runoff Depth>5.22"
Tc=6.0 min CN=98 Runoff=0.75 cfs 0.063 af

Pond 4P: PDMH 4 Peak Elev=76.22' Inflow=4.45 cfs 0.365 af
12.0" Round Culvert n=0.012 L=54.3' S=0.0046 '/' Outflow=4.45 cfs 0.365 af

Subcatchment 4S: Southern Parking Lot Runoff Area=4,115 sf 100.00% Impervious Runoff Depth>5.22"
Tc=6.0 min CN=98 Runoff=0.49 cfs 0.041 af

Pond 5P: PCB 5 Peak Elev=74.76' Storage=0.000 af Inflow=0.75 cfs 0.063 af
12.0" Round Culvert n=0.012 L=23.7' S=0.0063 '/' Outflow=0.76 cfs 0.063 af

Subcatchment 5S: Southern Parking Lot Runoff Area=7,631 sf 72.99% Impervious Runoff Depth=4.11"
Tc=6.0 min CN=88 Runoff=0.80 cfs 0.060 af

Pond 6P: PDMH 6 Peak Elev=75.37' Inflow=1.70 cfs 0.142 af
Primary=1.45 cfs 0.139 af Secondary=0.25 cfs 0.003 af Outflow=1.70 cfs 0.142 af

Subcatchment 6S: Connector Drive Runoff Area=9,038 sf 67.82% Impervious Runoff Depth=4.05"
Tc=6.0 min CN=87 Runoff=0.94 cfs 0.070 af

Pond 7P: PCB 7 Peak Elev=74.18' Storage=0.000 af Inflow=0.49 cfs 0.041 af
12.0" Round Culvert n=0.012 L=23.7' S=0.0084 '/' Outflow=0.49 cfs 0.041 af

Subcatchment 7S: 7S Runoff Area=6,098 sf 0.00% Impervious Runoff Depth=1.65"
Tc=6.0 min CN=61 Runoff=0.25 cfs 0.019 af

Reach 8/9R: Rd swale Avg. Flow Depth=0.37' Max Vel=3.91 fps Inflow=4.47 cfs 0.400 af
n=0.025 L=233.0' S=0.0258 '/' Capacity=83.37 cfs Outflow=4.30 cfs 0.400 af

Pond 8P: PDMH 8 Peak Elev=73.89' Inflow=0.49 cfs 0.041 af
12.0" Round Culvert n=0.012 L=75.0' S=0.0053 '/' Outflow=0.49 cfs 0.041 af

Subcatchment 8S: Lower Parking Lot Right Runoff Area=8,008 sf 65.30% Impervious Runoff Depth=3.81"
Tc=6.0 min CN=85 Runoff=0.79 cfs 0.058 af

Pond 9P: PCB 9 Peak Elev=73.24' Storage=0.000 af Inflow=0.80 cfs 0.060 af
12.0" Round Culvert n=0.012 L=46.2' S=0.0043 '/' Outflow=0.80 cfs 0.060 af

Subcatchment 9S: Lower Parking Lot Runoff Area=13,171 sf 91.65% Impervious Runoff Depth=4.93"
Tc=6.0 min CN=96 Runoff=1.55 cfs 0.124 af

Pond 10P: PDMH 10 Peak Elev=73.00' Inflow=1.30 cfs 0.101 af
12.0" Round Culvert n=0.012 L=41.0' S=0.1561 '/' Outflow=1.30 cfs 0.101 af

Reach 10R: Swale Avg. Flow Depth=0.28' Max Vel=2.52 fps Inflow=2.01 cfs 0.159 af
n=0.025 L=70.0' S=0.0143 '/' Capacity=62.10 cfs Outflow=1.97 cfs 0.159 af

Subcatchment 10S: Lower Parking Lot Runoff Area=10,699 sf 81.54% Impervious Runoff Depth=4.45"
Tc=6.0 min CN=91 Runoff=1.19 cfs 0.091 af

Pond 11P: PCB 11 Peak Elev=67.10' Storage=0.000 af Inflow=0.94 cfs 0.070 af
12.0" Round Culvert n=0.012 L=35.0' S=0.0171 '/' Outflow=0.94 cfs 0.070 af

Reach 11R: Swale Avg. Flow Depth=0.17' Max Vel=1.99 fps Inflow=0.84 cfs 0.068 af
n=0.025 L=63.0' S=0.0159 '/' Capacity=65.46 cfs Outflow=0.82 cfs 0.068 af

Subcatchment 11S: Lower Parking Lot Left Runoff Area=7,040 sf 96.31% Impervious Runoff Depth=5.06"
Tc=6.0 min CN=97 Runoff=0.84 cfs 0.068 af

Pond 12P: PCI 12 Peak Elev=63.59' Inflow=0.79 cfs 0.058 af
Outflow=0.79 cfs 0.058 af

Pond 13P: PCI 13 Peak Elev=63.71' Inflow=3.50 cfs 0.284 af
Outflow=3.50 cfs 0.284 af

Pond 14P: PCI 14 Peak Elev=64.45' Inflow=2.01 cfs 0.159 af
Outflow=2.01 cfs 0.159 af

Pond 15P: PCI 15 Peak Elev=65.20' Inflow=0.84 cfs 0.068 af
Outflow=0.84 cfs 0.068 af

Subcatchment 17S: Undeveloped Site Runoff Area=266,171 sf 0.00% Impervious Runoff Depth=2.31"
Flow Length=700' Tc=28.6 min CN=69 Runoff=9.37 cfs 1.176 af

Link 25L: Point of Analysis Inflow=12.96 cfs 2.006 af
Primary=12.96 cfs 2.006 af

Pond 25P: PDMH 25 Peak Elev=73.80' Inflow=3.07 cfs 0.242 af
15.0" Round Culvert n=0.012 L=60.0' S=0.2133 '/' Outflow=3.07 cfs 0.242 af

Reach 25R: Swale Avg. Flow Depth=0.52' Max Vel=0.48 fps Inflow=3.07 cfs 0.242 af
n=0.400 L=200.0' S=0.0700 '/' Capacity=26.53 cfs Outflow=2.57 cfs 0.242 af

Pond 28P: Raingarden 2 Peak Elev=62.78' Storage=3,926 cf Inflow=5.04 cfs 0.400 af
Outflow=4.47 cfs 0.400 af

Pond 29P: SWG Inlet MH Peak Elev=75.52' Inflow=4.45 cfs 0.365 af
12.0" Round Culvert n=0.012 L=5.0' S=0.0100 '/' Outflow=4.45 cfs 0.365 af

Pond 30P: OUTLET STRUCTURE 28 Peak Elev=63.46' Inflow=1.70 cfs 0.188 af
12.0" Round Culvert n=0.012 L=140.0' S=0.0089 '/' Outflow=1.70 cfs 0.188 af

Pond 31P: 12" TEE Peak Elev=75.50' Inflow=0.75 cfs 0.017 af
12.0" Round Culvert n=0.012 L=10.0' S=0.0100 '/' Outflow=0.75 cfs 0.017 af

Reach 32R: Swale Avg. Flow Depth=0.19' Max Vel=2.28 fps Inflow=1.70 cfs 0.188 af
n=0.040 L=300.0' S=0.0467 '/' Capacity=114.38 cfs Outflow=1.70 cfs 0.188 af

Reach 33R: Swale Avg. Flow Depth=0.47' Max Vel=0.69 fps Inflow=5.97 cfs 0.588 af
n=0.040 L=900.0' S=0.0011 '/' Capacity=110.82 cfs Outflow=3.65 cfs 0.588 af

Subcatchment B1S: Building Roof Runoff Area=14,178 sf 100.00% Impervious Runoff Depth>5.22"
Tc=6.0 min CN=98 Runoff=1.70 cfs 0.142 af

Pond D3: ADS Subsurface Storage Units (15 - Peak Elev=75.56' Storage=4,922 cf Inflow=5.90 cfs 0.504 af
Discarded=0.33 cfs 0.265 af Primary=2.32 cfs 0.225 af Secondary=0.73 cfs 0.015 af Outflow=3.38 cfs 0.504 af

Pond Plunge: Plunge Pool / level spreader Peak Elev=63.25' Inflow=3.07 cfs 0.242 af
Outflow=3.07 cfs 0.242 af

Subcatchment S12: TO RG2 Runoff Area=11,155 sf 0.00% Impervious Runoff Depth=2.74"
Flow Length=75' Slope=0.0200 '/' Tc=7.8 min CN=74 Runoff=0.76 cfs 0.058 af

Total Runoff Area = 9.059 ac Runoff Volume = 2.273 af Average Runoff Depth = 3.01"
74.94% Pervious = 6.789 ac 25.06% Impervious = 2.271 ac

Summary for Pond 1P: PCB 1

Inflow Area = 0.358 ac, 94.04% Impervious, Inflow Depth = 5.05" for 10-yr event
Inflow = 1.85 cfs @ 12.09 hrs, Volume= 0.150 af
Outflow = 1.85 cfs @ 12.09 hrs, Volume= 0.150 af, Atten= 0%, Lag= 0.1 min
Primary = 1.85 cfs @ 12.09 hrs, Volume= 0.150 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 76.03' @ 12.09 hrs Surf.Area= 0.000 ac Storage= 0.000 af

Plug-Flow detention time= 0.3 min calculated for 0.150 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (757.5 - 757.2)

Volume	Invert	Avail.Storage	Storage Description
#1	75.20'	0.001 af	**4.00'D x 3.50'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	75.20'	**12.0" Round Culvert** L= 157.8' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 75.20' / 74.40' S= 0.0051 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.80 cfs @ 12.09 hrs HW=76.02' (Free Discharge)
1=Culvert (Barrel Controls 1.80 cfs @ 3.56 fps)

Summary for Pond 1R: Raingarden 1

[79] Warning: Submerged Pond 10P Primary device # 1 OUTLET by 0.49'
[79] Warning: Submerged Pond 11P Primary device # 1 OUTLET by 0.49'

Inflow Area = 0.617 ac, 58.83% Impervious, Inflow Depth > 3.70" for 10-yr event
Inflow = 2.48 cfs @ 12.09 hrs, Volume= 0.190 af
Outflow = 1.70 cfs @ 12.18 hrs, Volume= 0.188 af, Atten= 31%, Lag= 5.3 min
Primary = 1.70 cfs @ 12.18 hrs, Volume= 0.188 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 66.49' @ 12.18 hrs Surf.Area= 698 sf Storage= 675 cf

Plug-Flow detention time= 16.8 min calculated for 0.188 af (99% of inflow)
Center-of-Mass det. time= 9.2 min (801.9 - 792.6)

Volume	Invert	Avail.Storage	Storage Description
#1	62.75'	3,834 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
62.75	500	0.0	0	0
64.25	500	40.0	300	300
64.50	500	33.0	41	341
66.00	500	5.0	38	379
67.00	900	100.0	700	1,079
68.00	1,357	100.0	1,129	2,207
69.00	1,897	100.0	1,627	3,834

Device	Routing	Invert	Outlet Devices
#1	Primary	62.76'	**12.0" Round Outlet Structure** L= 1.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 62.76' / 62.75' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	67.50'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	63.25'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 3	62.75'	**10.00 cfs Exfiltration at all elevations**

Primary OutFlow Max=1.70 cfs @ 12.18 hrs HW=66.48' (Free Discharge)
└**1=Outlet Structure** (Passes 1.70 cfs of 6.79 cfs potential flow)
  └**2=Orifice/Grate** (Controls 0.00 cfs)
  └**3=Orifice/Grate** (Orifice Controls 1.70 cfs @ 8.66 fps)
    └**4=Exfiltration** (Passes 1.70 cfs of 10.00 cfs potential flow)

Summary for Subcatchment 1S: Upper Parking Lot Left

Runoff = 1.85 cfs @ 12.09 hrs, Volume= 0.150 af, Depth= 5.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.46", Smoothing=On

Area (sf)	CN	Description
10,819	98	Paved parking, HSG B
2,621	98	Paved parking, HSG C
150	98	Unconnected pavement, HSG B
1,061	98	Unconnected pavement, HSG C
63	61	>75% Grass cover, Good, HSG B
865	74	>75% Grass cover, Good, HSG C
15,579	97	Weighted Average
928		5.96% Pervious Area
14,651		94.04% Impervious Area
1,211		8.27% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Pond 2P: PDMH 2

[57] Hint: Peaked at 76.01' (Flood elevation advised)
[79] Warning: Submerged Pond 1P Primary device # 1 INLET by 0.80'
[81] Warning: Exceeded Pond 3P by 0.57' @ 12.10 hrs

Inflow Area = 0.712 ac, 96.12% Impervious, Inflow Depth = 5.10" for 10-yr event
Inflow = 3.70 cfs @ 12.09 hrs, Volume= 0.302 af
Outflow = 3.70 cfs @ 12.09 hrs, Volume= 0.302 af, Atten= 0%, Lag= 0.0 min
Primary = 3.70 cfs @ 12.09 hrs, Volume= 0.302 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 76.01' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	74.30'	**12.0" Round Culvert** L= 43.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 74.30' / 74.10' S= 0.0047 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=3.60 cfs @ 12.09 hrs HW=75.97' (Free Discharge)
1=Culvert (Barrel Controls 3.60 cfs @ 4.59 fps)

Summary for Subcatchment 2S: Upper Parking Lot Right

Runoff = 1.84 cfs @ 12.09 hrs, Volume= 0.152 af, Depth= 5.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.46", Smoothing=On

Area (sf)	CN	Description
10,297	98	Paved parking, HSG B
3,646	98	Paved parking, HSG C
571	98	Unconnected pavement, HSG B
651	98	Unconnected pavement, HSG C
274	61	>75% Grass cover, Good, HSG B
15,439	97	Weighted Average
274		1.77% Pervious Area
15,165		98.23% Impervious Area
1,222		8.06% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Pond 3P: PCB 3

Inflow Area = 0.354 ac, 98.23% Impervious, Inflow Depth = 5.15" for 10-yr event
Inflow = 1.84 cfs @ 12.09 hrs, Volume= 0.152 af
Outflow = 1.85 cfs @ 12.09 hrs, Volume= 0.152 af, Atten= 0%, Lag= 0.1 min
Primary = 1.85 cfs @ 12.09 hrs, Volume= 0.152 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 75.43' @ 12.09 hrs Surf.Area= 0.000 ac Storage= 0.000 af

Plug-Flow detention time= 0.3 min calculated for 0.152 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (751.9 - 751.6)

Volume	Invert	Avail.Storage	Storage Description
#1	74.60'	0.001 af	**4.00'D x 3.60'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	74.60'	**12.0" Round Culvert** L= 23.7' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 74.60' / 74.40' S= 0.0084 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.80 cfs @ 12.09 hrs HW=75.42' (Free Discharge)
1=Culvert (Barrel Controls 1.80 cfs @ 3.57 fps)

Summary for Subcatchment 3S: Upper Parking Lot Right

Runoff = 0.75 cfs @ 12.09 hrs, Volume= 0.063 af, Depth> 5.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.46", Smoothing=On

Area (sf)	CN	Description
5,301	98	Paved parking, HSG B
995	98	Unconnected pavement, HSG B
6,296	98	Weighted Average
6,296		100.00% Impervious Area
995		15.80% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Pond 4P: PDMH 4

[57] Hint: Peaked at 76.22' (Flood elevation advised)
[81] Warning: Exceeded Pond 2P by 0.20' @ 12.10 hrs
[81] Warning: Exceeded Pond 5P by 1.45' @ 12.10 hrs

Inflow Area = 0.857 ac, 96.78% Impervious, Inflow Depth = 5.12" for 10-yr event
Inflow = 4.45 cfs @ 12.09 hrs, Volume= 0.365 af
Outflow = 4.45 cfs @ 12.09 hrs, Volume= 0.365 af, Atten= 0%, Lag= 0.0 min
Primary = 4.45 cfs @ 12.09 hrs, Volume= 0.365 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 76.22' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	74.00'	**12.0" Round Culvert** L= 54.3' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 74.00' / 73.75' S= 0.0046 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=4.34 cfs @ 12.09 hrs HW=76.15' (Free Discharge)
1=Culvert (Barrel Controls 4.34 cfs @ 5.53 fps)

Summary for Subcatchment 4S: Southern Parking Lot

Runoff = 0.49 cfs @ 12.09 hrs, Volume= 0.041 af, Depth> 5.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.46", Smoothing=On

Area (sf)	CN	Description
4,115	98	Paved parking, HSG B
4,115		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Pond 5P: PCB 5

Inflow Area = 0.145 ac,100.00% Impervious, Inflow Depth > 5.22" for 10-yr event
Inflow = 0.75 cfs @ 12.09 hrs, Volume= 0.063 af
Outflow = 0.76 cfs @ 12.09 hrs, Volume= 0.063 af, Atten= 0%, Lag= 0.1 min
Primary = 0.76 cfs @ 12.09 hrs, Volume= 0.063 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 74.76' @ 12.09 hrs Surf.Area= 0.000 ac Storage= 0.000 af

Plug-Flow detention time= 0.8 min calculated for 0.063 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (747.3 - 746.6)

Volume	Invert	Avail.Storage	Storage Description
#1	74.20'	0.001 af	**4.00'D x 4.00'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	74.25'	**12.0" Round Culvert** L= 23.7' CMP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 74.25' / 74.10' S= 0.0063 '/' Cc= 0.900
n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.74 cfs @ 12.09 hrs HW=74.75' (Free Discharge)
↑**1=Culvert** (Barrel Controls 0.74 cfs @ 2.75 fps)

Summary for Subcatchment 5S: Southern Parking Lot

Runoff = 0.80 cfs @ 12.09 hrs, Volume= 0.060 af, Depth= 4.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.46", Smoothing=On

Area (sf)	CN	Description
5,570	98	Paved parking, HSG B
2,061	61	>75% Grass cover, Good, HSG B
7,631	88	Weighted Average
2,061		27.01% Pervious Area
5,570		72.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Pond 6P: PDMH 6

[57] Hint: Peaked at 75.37' (Flood elevation advised)

Inflow Area = 0.325 ac,100.00% Impervious, Inflow Depth > 5.22" for 10-yr event
Inflow = 1.70 cfs @ 12.09 hrs, Volume= 0.142 af
Outflow = 1.70 cfs @ 12.09 hrs, Volume= 0.142 af, Atten= 0%, Lag= 0.0 min
Primary = 1.45 cfs @ 12.09 hrs, Volume= 0.139 af
Secondary = 0.25 cfs @ 12.09 hrs, Volume= 0.003 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 75.37' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	74.60'	**12.0" Round Culvert** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 74.60' / 74.55' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Secondary	75.10'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 75.10' / 75.00' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.42 cfs @ 12.09 hrs HW=75.36' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.42 cfs @ 3.08 fps)

Secondary OutFlow Max=0.23 cfs @ 12.09 hrs HW=75.36' (Free Discharge)
└**2=Culvert** (Barrel Controls 0.23 cfs @ 2.18 fps)

Summary for Subcatchment 6S: Connector Drive

Runoff = 0.94 cfs @ 12.09 hrs, Volume= 0.070 af, Depth= 4.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.46", Smoothing=On

Area (sf)	CN	Description
5,097	98	Paved parking, HSG B
1,033	98	Paved parking, HSG C
1,945	61	>75% Grass cover, Good, HSG B
963	74	>75% Grass cover, Good, HSG C
9,038	87	Weighted Average
2,908		32.18% Pervious Area
6,130		67.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Pond 7P: PCB 7

Inflow Area = 0.094 ac,100.00% Impervious, Inflow Depth > 5.22" for 10-yr event
Inflow = 0.49 cfs @ 12.09 hrs, Volume= 0.041 af
Outflow = 0.49 cfs @ 12.09 hrs, Volume= 0.041 af, Atten= 0%, Lag= 0.1 min
Primary = 0.49 cfs @ 12.09 hrs, Volume= 0.041 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 74.18' @ 12.09 hrs Surf.Area= 0.000 ac Storage= 0.000 af

Plug-Flow detention time= 0.6 min calculated for 0.041 af (100% of inflow)
Center-of-Mass det. time= 0.6 min (747.2 - 746.6)

Volume	Invert	Avail.Storage	Storage Description
#1	73.80'	0.001 af	**4.00'D x 4.00'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	73.80'	**12.0" Round Culvert** L= 23.7' Ke= 0.500 Inlet / Outlet Invert= 73.80' / 73.60' S= 0.0084 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.48 cfs @ 12.09 hrs HW=74.17' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.48 cfs @ 2.68 fps)

Summary for Subcatchment 7S: 7S

Runoff = 0.25 cfs @ 12.10 hrs, Volume= 0.019 af, Depth= 1.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.46", Smoothing=On

Area (sf)	CN	Description
6,098	61	>75% Grass cover, Good, HSG B
6,098		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Reach 8/9R: Rd swale

[81] Warning: Exceeded Pond 28P by 4.25' @ 1.00 hrs

Inflow Area = 1.150 ac, 65.51% Impervious, Inflow Depth = 4.18" for 10-yr event
Inflow = 4.47 cfs @ 12.15 hrs, Volume= 0.400 af
Outflow = 4.30 cfs @ 12.18 hrs, Volume= 0.400 af, Atten= 4%, Lag= 1.8 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.91 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 1.10 fps, Avg. Travel Time= 3.5 min

Peak Storage= 265 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.37'
Bank-Full Depth= 1.50' Flow Area= 9.8 sf, Capacity= 83.37 cfs

2.00' x 1.50' deep channel, n= 0.025
Side Slope Z-value= 3.0 '/' Top Width= 11.00'
Length= 233.0' Slope= 0.0258 '/'
Inlet Invert= 62.00', Outlet Invert= 56.00'

‡

Summary for Pond 8P: PDMH 8

[57] Hint: Peaked at 73.89' (Flood elevation advised)
[79] Warning: Submerged Pond 7P Primary device # 1 INLET by 0.09'

Inflow Area = 0.094 ac,100.00% Impervious, Inflow Depth > 5.22" for 10-yr event
Inflow = 0.49 cfs @ 12.09 hrs, Volume= 0.041 af
Outflow = 0.49 cfs @ 12.09 hrs, Volume= 0.041 af, Atten= 0%, Lag= 0.0 min
Primary = 0.49 cfs @ 12.09 hrs, Volume= 0.041 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 73.89' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	73.50'	**12.0" Round Culvert** L= 75.0' Ke= 0.500 Inlet / Outlet Invert= 73.50' / 73.10' S= 0.0053 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.48 cfs @ 12.09 hrs HW=73.89' (Free Discharge)
1=Culvert (Barrel Controls 0.48 cfs @ 2.54 fps)

Summary for Subcatchment 8S: Lower Parking Lot Right

Runoff = 0.79 cfs @ 12.09 hrs, Volume= 0.058 af, Depth= 3.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.46", Smoothing=On

Area (sf)	CN	Description
5,229	98	Paved parking, HSG B
2,779	61	>75% Grass cover, Good, HSG B
8,008	85	Weighted Average
2,779		34.70% Pervious Area
5,229		65.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Pond 9P: PCB 9

Inflow Area = 0.175 ac, 72.99% Impervious, Inflow Depth = 4.11" for 10-yr event
Inflow = 0.80 cfs @ 12.09 hrs, Volume= 0.060 af
Outflow = 0.80 cfs @ 12.09 hrs, Volume= 0.060 af, Atten= 0%, Lag= 0.1 min
Primary = 0.80 cfs @ 12.09 hrs, Volume= 0.060 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 73.24' @ 12.09 hrs Surf.Area= 0.000 ac Storage= 0.000 af

Plug-Flow detention time= 0.5 min calculated for 0.060 af (100% of inflow)
Center-of-Mass det. time= 0.5 min (795.2 - 794.7)

Volume	Invert	Avail.Storage	Storage Description
#1	72.70'	0.001 af	**4.00'D x 4.00'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	72.70'	**12.0" Round Culvert** L= 46.2' Ke= 0.500 Inlet / Outlet Invert= 72.70' / 72.50' S= 0.0043 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.78 cfs @ 12.09 hrs HW=73.23' (Free Discharge)
↑**1=Culvert** (Barrel Controls 0.78 cfs @ 2.67 fps)

Summary for Subcatchment 9S: Lower Parking Lot Middle Right

Runoff = 1.55 cfs @ 12.09 hrs, Volume= 0.124 af, Depth= 4.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.46", Smoothing=On

Area (sf)	CN	Description
10,057	98	Paved parking, HSG B
1,128	98	Paved parking, HSG C
265	98	Unconnected pavement, HSG B
621	98	Unconnected pavement, HSG C
499	61	>75% Grass cover, Good, HSG B
601	74	>75% Grass cover, Good, HSG C
13,171	96	Weighted Average
1,100		8.35% Pervious Area
12,071		91.65% Impervious Area
886		7.34% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Pond 10P: PDMH 10

[57] Hint: Peaked at 73.00' (Flood elevation advised)
[79] Warning: Submerged Pond 9P Primary device # 1 INLET by 0.30'

Inflow Area = 0.270 ac, 82.45% Impervious, Inflow Depth > 4.50" for 10-yr event
Inflow = 1.30 cfs @ 12.09 hrs, Volume= 0.101 af
Outflow = 1.30 cfs @ 12.09 hrs, Volume= 0.101 af, Atten= 0%, Lag= 0.0 min
Primary = 1.30 cfs @ 12.09 hrs, Volume= 0.101 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 73.00' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	72.40'	**12.0" Round Culvert** L= 41.0' Ke= 0.500 Inlet / Outlet Invert= 72.40' / 66.00' S= 0.1561 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.27 cfs @ 12.09 hrs HW=72.99' (Free Discharge)
↑**1=Culvert** (Inlet Controls 1.27 cfs @ 2.62 fps)

Summary for Reach 10R: Swale

Inflow Area = 0.407 ac, 87.40% Impervious, Inflow Depth = 4.69" for 10-yr event
Inflow = 2.01 cfs @ 12.09 hrs, Volume= 0.159 af
Outflow = 1.97 cfs @ 12.10 hrs, Volume= 0.159 af, Atten= 2%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.52 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 0.72 fps, Avg. Travel Time= 1.6 min

Peak Storage= 56 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.28'
Bank-Full Depth= 1.50' Flow Area= 9.8 sf, Capacity= 62.10 cfs

2.00' x 1.50' deep channel, n= 0.025
Side Slope Z-value= 3.0 '/' Top Width= 11.00'
Length= 70.0' Slope= 0.0143 '/'
Inlet Invert= 63.00', Outlet Invert= 62.00'

‡

Summary for Subcatchment 10S: Lower Parking Lot Middle Left

Runoff = 1.19 cfs @ 12.09 hrs, Volume= 0.091 af, Depth= 4.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.46", Smoothing=On

Area (sf)	CN	Description
8,724	98	Paved parking, HSG B
1,975	61	>75% Grass cover, Good, HSG B
10,699	91	Weighted Average
1,975		18.46% Pervious Area
8,724		81.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Pond 11P: PCB 11

Inflow Area = 0.207 ac, 67.82% Impervious, Inflow Depth = 4.05" for 10-yr event
Inflow = 0.94 cfs @ 12.09 hrs, Volume= 0.070 af
Outflow = 0.94 cfs @ 12.09 hrs, Volume= 0.070 af, Atten= 0%, Lag= 0.1 min
Primary = 0.94 cfs @ 12.09 hrs, Volume= 0.070 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 67.10' @ 12.09 hrs Surf.Area= 0.000 ac Storage= 0.000 af

Plug-Flow detention time= 0.4 min calculated for 0.070 af (100% of inflow)
Center-of-Mass det. time= 0.4 min (796.8 - 796.5)

Volume	Invert	Avail.Storage	Storage Description
#1	66.60'	0.001 af	**4.00'D x 4.00'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	66.60'	**12.0" Round Culvert** L= 35.0' Ke= 0.500 Inlet / Outlet Invert= 66.60' / 66.00' S= 0.0171 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.92 cfs @ 12.09 hrs HW=67.09' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 0.92 cfs @ 2.39 fps)

Summary for Reach 11R: Swale

Inflow Area = 0.162 ac, 96.31% Impervious, Inflow Depth = 5.06" for 10-yr event
Inflow = 0.84 cfs @ 12.09 hrs, Volume= 0.068 af
Outflow = 0.82 cfs @ 12.10 hrs, Volume= 0.068 af, Atten= 2%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.99 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 0.58 fps, Avg. Travel Time= 1.8 min

Peak Storage= 26 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.17'
Bank-Full Depth= 1.50' Flow Area= 9.8 sf, Capacity= 65.46 cfs

2.00' x 1.50' deep channel, n= 0.025
Side Slope Z-value= 3.0 '/' Top Width= 11.00'
Length= 63.0' Slope= 0.0159 '/'
Inlet Invert= 64.00', Outlet Invert= 63.00'

‡

Summary for Subcatchment 11S: Lower Parking Lot Left

Runoff = 0.84 cfs @ 12.09 hrs, Volume= 0.068 af, Depth= 5.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.46", Smoothing=On

Area (sf)	CN	Description
6,780	98	Paved parking, HSG B
260	61	>75% Grass cover, Good, HSG B
7,040	97	Weighted Average
260		3.69% Pervious Area
6,780		96.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Pond 12P: PCI 12

[57] Hint: Peaked at 63.59' (Flood elevation advised)

Inflow Area = 0.184 ac, 65.30% Impervious, Inflow Depth = 3.81" for 10-yr event
Inflow = 0.79 cfs @ 12.09 hrs, Volume= 0.058 af
Outflow = 0.79 cfs @ 12.09 hrs, Volume= 0.058 af, Atten= 0%, Lag= 0.0 min
Primary = 0.79 cfs @ 12.09 hrs, Volume= 0.058 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 63.59' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	63.40'	**36.0" W x 16.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.77 cfs @ 12.09 hrs HW=63.59' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.77 cfs @ 1.38 fps)

Summary for Pond 13P: PCI 13

[57] Hint: Peaked at 63.71' (Flood elevation advised)
[63] Warning: Exceeded Reach 10R INLET depth by 0.43' @ 12.10 hrs

Inflow Area = 0.710 ac, 89.21% Impervious, Inflow Depth = 4.79" for 10-yr event
Inflow = 3.50 cfs @ 12.10 hrs, Volume= 0.284 af
Outflow = 3.50 cfs @ 12.10 hrs, Volume= 0.284 af, Atten= 0%, Lag= 0.0 min
Primary = 3.50 cfs @ 12.10 hrs, Volume= 0.284 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 63.71' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	63.20'	**36.0" W x 16.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=3.47 cfs @ 12.10 hrs HW=63.71' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 3.47 cfs @ 2.28 fps)

Summary for Pond 14P: PCI 14

[57] Hint: Peaked at 64.45' (Flood elevation advised)
[63] Warning: Exceeded Reach 11R INLET depth by 0.28' @ 12.10 hrs

Inflow Area = 0.407 ac, 87.40% Impervious, Inflow Depth = 4.69" for 10-yr event
Inflow = 2.01 cfs @ 12.09 hrs, Volume= 0.159 af
Outflow = 2.01 cfs @ 12.09 hrs, Volume= 0.159 af, Atten= 0%, Lag= 0.0 min
Primary = 2.01 cfs @ 12.09 hrs, Volume= 0.159 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 64.45' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	64.10'	**36.0" W x 16.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.97 cfs @ 12.09 hrs HW=64.45' (Free Discharge)
1=Orifice/Grate (Orifice Controls 1.97 cfs @ 1.89 fps)

Summary for Pond 15P: PCI 15

[57] Hint: Peaked at 65.20' (Flood elevation advised)

Inflow Area = 0.162 ac, 96.31% Impervious, Inflow Depth = 5.06" for 10-yr event
Inflow = 0.84 cfs @ 12.09 hrs, Volume= 0.068 af
Outflow = 0.84 cfs @ 12.09 hrs, Volume= 0.068 af, Atten= 0%, Lag= 0.0 min
Primary = 0.84 cfs @ 12.09 hrs, Volume= 0.068 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 65.20' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	65.00'	**36.0" W x 16.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.81 cfs @ 12.09 hrs HW=65.19' (Free Discharge)
1=Orifice/Grate (Orifice Controls 0.81 cfs @ 1.41 fps)

Summary for Subcatchment 17S: Undeveloped Site

Runoff = 9.37 cfs @ 12.42 hrs, Volume= 1.176 af, Depth= 2.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.46", Smoothing=On

Area (sf)	CN	Description
12,110	55	Woods, Good, HSG B
31,711	70	Woods, Good, HSG C
107,850	78	Meadow, non-grazed, HSG D
11,780	55	Woods, Good, HSG B
14,590	55	Woods, Good, HSG B
4,985	70	Woods, Good, HSG C
41,150	55	Woods, Good, HSG B
7,490	74	>75% Grass cover, Good, HSG C
34,505	72	Woods/grass comb., Good, HSG C
266,171	69	Weighted Average
266,171		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.9	100	0.0070	0.08		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.15"
6.7	600	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
28.6	700	Total			

Summary for Link 25L: Point of Analysis

Inflow Area = 9.059 ac, 25.06% Impervious, Inflow Depth = 2.66" for 10-yr event
Inflow = 12.96 cfs @ 12.50 hrs, Volume= 2.006 af
Primary = 12.96 cfs @ 12.50 hrs, Volume= 2.006 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 25P: PDMH 25

[57] Hint: Peaked at 73.80' (Flood elevation advised)
[79] Warning: Submerged Pond D3 Primary device # 3 INLET by 0.69'

Inflow Area = 1.182 ac, 97.67% Impervious, Inflow Depth = 2.46" for 10-yr event
Inflow = 3.07 cfs @ 12.22 hrs, Volume= 0.242 af
Outflow = 3.07 cfs @ 12.22 hrs, Volume= 0.242 af, Atten= 0%, Lag= 0.0 min
Primary = 3.07 cfs @ 12.22 hrs, Volume= 0.242 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 73.80' @ 12.22 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	72.90'	**15.0" Round Culvert** L= 60.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 72.90' / 60.10' S= 0.2133 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=2.99 cfs @ 12.22 hrs HW=73.79' (Free Discharge)
1=Culvert (Inlet Controls 2.99 cfs @ 3.21 fps)

Summary for Reach 25R: Swale

Inflow Area = 1.182 ac, 97.67% Impervious, Inflow Depth = 2.46" for 10-yr event
Inflow = 3.07 cfs @ 12.22 hrs, Volume= 0.242 af
Outflow = 2.57 cfs @ 12.43 hrs, Volume= 0.242 af, Atten= 16%, Lag= 12.9 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.48 fps, Min. Travel Time= 6.9 min
Avg. Velocity = 0.15 fps, Avg. Travel Time= 22.7 min

Peak Storage= 1,073 cf @ 12.32 hrs
Average Depth at Peak Storage= 0.52'
Bank-Full Depth= 1.50' Flow Area= 30.0 sf, Capacity= 26.53 cfs

5.00' x 1.50' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 10.0 '/' Top Width= 35.00'
Length= 200.0' Slope= 0.0700 '/'
Inlet Invert= 62.00', Outlet Invert= 48.00'

‡

Summary for Pond 28P: Raingarden 2

Inflow Area = 1.150 ac, 65.51% Impervious, Inflow Depth = 4.18" for 10-yr event
Inflow = 5.04 cfs @ 12.10 hrs, Volume= 0.400 af
Outflow = 4.47 cfs @ 12.15 hrs, Volume= 0.400 af, Atten= 11%, Lag= 3.0 min
Primary = 4.47 cfs @ 12.15 hrs, Volume= 0.400 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 62.78' @ 12.15 hrs Surf.Area= 2,626 sf Storage= 3,926 cf

Plug-Flow detention time= 110.1 min calculated for 0.400 af (100% of inflow)
Center-of-Mass det. time= 110.3 min (894.2 - 783.9)

Volume	Invert	Avail.Storage	Storage Description
#1	57.75'	4,550 cf	**Custom Stage Data (Conic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
57.75	1,100	0.0	0	0	1,100
59.25	1,100	40.0	660	660	1,276
59.50	1,100	33.0	91	751	1,306
61.00	1,100	10.0	165	916	1,482
62.00	1,650	100.0	1,366	2,281	2,047
63.00	2,950	100.0	2,269	4,550	3,358

Device	Routing	Invert	Outlet Devices
#1	Primary	62.30'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** 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) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#2	Primary	57.75'	**6.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 57.75' / 54.00' S= 0.0750 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#3	Device 2	57.75'	**2.500 in/hr Exfiltration over Wetted area** Conductivity to Groundwater Elevation = 50.00'

Primary OutFlow Max=4.45 cfs @ 12.15 hrs HW=62.78' (Free Discharge)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 4.22 cfs @ 1.78 fps)
└─**2=Culvert** (Passes 0.23 cfs of 2.05 cfs potential flow)
└─**3=Exfiltration** (Controls 0.23 cfs)

Summary for Pond 29P: SWG Inlet MH

[57] Hint: Peaked at 75.52' (Flood elevation advised)
[79] Warning: Submerged Pond 4P Primary device # 1 INLET by 1.51'

Inflow Area = 0.857 ac, 96.78% Impervious, Inflow Depth = 5.12" for 10-yr event
Inflow = 4.45 cfs @ 12.09 hrs, Volume= 0.365 af
Outflow = 4.45 cfs @ 12.09 hrs, Volume= 0.365 af, Atten= 0%, Lag= 0.0 min
Primary = 4.45 cfs @ 12.09 hrs, Volume= 0.365 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 75.52' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	73.65'	**12.0" Round Culvert** L= 5.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 73.65' / 73.60' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=4.34 cfs @ 12.09 hrs HW=75.47' (Free Discharge)
└─**1=Culvert** (Inlet Controls 4.34 cfs @ 5.53 fps)

Summary for Pond 30P: OUTLET STRUCTURE 28

[57] Hint: Peaked at 63.46' (Flood elevation advised)
[79] Warning: Submerged Pond 1R Primary device # 1 INLET by 0.70'

Inflow Area = 0.617 ac, 58.83% Impervious, Inflow Depth = 3.66" for 10-yr event
Inflow = 1.70 cfs @ 12.18 hrs, Volume= 0.188 af
Outflow = 1.70 cfs @ 12.18 hrs, Volume= 0.188 af, Atten= 0%, Lag= 0.0 min
Primary = 1.70 cfs @ 12.18 hrs, Volume= 0.188 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs

Peak Elev= 63.46' @ 12.18 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	62.75'	**12.0" Round Culvert** L= 140.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 62.75' / 61.50' S= 0.0089 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.70 cfs @ 12.18 hrs HW=63.46' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 1.70 cfs @ 2.86 fps)

Summary for Pond 31P: 12" TEE

[57] Hint: Peaked at 75.50' (Flood elevation advised)
[81] Warning: Exceeded Pond 6P by 0.34' @ 12.25 hrs
[81] Warning: Exceeded Pond D3 by 0.80' @ 12.00 hrs

Inflow	=	0.75 cfs @	12.21 hrs, Volume=	0.017 af
Outflow	=	0.75 cfs @	12.21 hrs, Volume=	0.017 af, Atten= 0%, Lag= 0.0 min
Primary	=	0.75 cfs @	12.21 hrs, Volume=	0.017 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 75.50' @ 12.21 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	75.00'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 75.00' / 74.90' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.72 cfs @ 12.21 hrs HW=75.49' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 0.72 cfs @ 2.77 fps)

Summary for Reach 32R: Swale

Inflow Area =		0.617 ac, 58.83% Impervious, Inflow Depth =		3.66" for 10-yr event
Inflow	=	1.70 cfs @	12.18 hrs, Volume=	0.188 af
Outflow	=	1.70 cfs @	12.25 hrs, Volume=	0.188 af, Atten= 0%, Lag= 4.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.28 fps, Min. Travel Time= 2.2 min
Avg. Velocity = 0.78 fps, Avg. Travel Time= 6.4 min

Peak Storage= 224 cf @ 12.21 hrs
Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 1.50' Flow Area= 15.8 sf, Capacity= 114.38 cfs

3.00' x 1.50' deep channel, n= 0.040
Side Slope Z-value= 5.0 '/' Top Width= 18.00'
Length= 300.0' Slope= 0.0467 '/'
Inlet Invert= 58.00', Outlet Invert= 44.00'

‡

Summary for Reach 33R: Swale

Inflow Area = 1.767 ac, 63.18% Impervious, Inflow Depth = 4.00" for 10-yr event
Inflow = 5.97 cfs @ 12.18 hrs, Volume= 0.588 af
Outflow = 3.65 cfs @ 12.78 hrs, Volume= 0.588 af, Atten= 39%, Lag= 35.5 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.69 fps, Min. Travel Time= 21.9 min
Avg. Velocity = 0.18 fps, Avg. Travel Time= 82.9 min

Peak Storage= 4,809 cf @ 12.41 hrs
Average Depth at Peak Storage= 0.47'
Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 110.82 cfs

10.00' x 3.00' deep channel, n= 0.040
Side Slope Z-value= 3.0 '/' Top Width= 28.00'
Length= 900.0' Slope= 0.0011 '/'
Inlet Invert= 43.00', Outlet Invert= 42.00'

‡

Summary for Subcatchment B1S: Building Roof

Runoff = 1.70 cfs @ 12.09 hrs, Volume= 0.142 af, Depth> 5.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.46", Smoothing=On

Area (sf)	CN	Description
1,996	98	Roofs, HSG B
12,182	98	Roofs, HSG C
14,178	98	Weighted Average
14,178		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Pond D3: ADS Subsurface Storage Units (15 - SC130)

[81] Warning: Exceeded Pond 6P by 0.40' @ 12.25 hrs
[81] Warning: Exceeded Pond 29P by 1.01' @ 12.55 hrs

Inflow Area =	1.182 ac, 97.67% Impervious, Inflow Depth > 5.12" for 10-yr event			
Inflow =	5.90 cfs @	12.09 hrs, Volume=	0.504 af	
Outflow =	3.38 cfs @	12.22 hrs, Volume=	0.504 af, Atten= 43%, Lag= 8.0 min	
Discarded =	0.33 cfs @	12.22 hrs, Volume=	0.265 af	
Primary =	2.32 cfs @	12.22 hrs, Volume=	0.225 af	
Secondary =	0.73 cfs @	12.22 hrs, Volume=	0.015 af	

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 75.56' @ 12.22 hrs Surf.Area= 2,720 sf Storage= 4,922 cf

Plug-Flow detention time= 29.9 min calculated for 0.504 af (100% of inflow)
Center-of-Mass det. time= 29.8 min (781.5 - 751.7)

Volume	Invert	Avail.Storage	Storage Description
#1	72.50'	3,785 cf	**55.50'W x 49.00'L x 4.50'H Prismatoid** 12,238 cf Overall - 2,776 cf Embedded = 9,462 cf x 40.0% Voids
#2	73.50'	2,776 cf	**ADS_StormTech SC-740 +Cap @ 7.17' L** x 60 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.17'L = 46.3 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 10 Rows of 6 Chambers
		6,561 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	75.05'	**12.0" Round Culvert** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 75.05' / 74.90' S= 0.0300 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Secondary	75.05'	**12.0" Round Culvert** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 75.05' / 75.00' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#3	Primary	73.10'	**6.0" Round Culvert** L= 1.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 73.10' / 73.00' S= 0.1000 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#4	Discarded	72.50'	**3.000 in/hr Exfiltration over Wetted area** Conductivity to Groundwater Elevation = 66.00'

Discarded OutFlow Max=0.33 cfs @ 12.22 hrs HW=75.55' (Free Discharge)
└**4=Exfiltration** (Controls 0.33 cfs)

Primary OutFlow Max=2.27 cfs @ 12.22 hrs HW=75.55' (Free Discharge)
├**1=Culvert** (Barrel Controls 0.87 cfs @ 3.25 fps)
└**3=Culvert** (Inlet Controls 1.40 cfs @ 7.14 fps)

Secondary OutFlow Max=0.69 cfs @ 12.22 hrs HW=75.55' (Free Discharge)
└**2=Culvert** (Barrel Controls 0.69 cfs @ 2.59 fps)

Summary for Pond Plunge: Plunge Pool / level spreader

[57] Hint: Peaked at 63.25' (Flood elevation advised)
[79] Warning: Submerged Pond 25P Primary device # 1 OUTLET by 3.15'

Inflow Area = 1.182 ac, 97.67% Impervious, Inflow Depth = 2.46" for 10-yr event
Inflow = 3.07 cfs @ 12.22 hrs, Volume= 0.242 af
Outflow = 3.07 cfs @ 12.22 hrs, Volume= 0.242 af, Atten= 0%, Lag= 0.0 min
Primary = 3.07 cfs @ 12.22 hrs, Volume= 0.242 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 63.25' @ 12.22 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	63.00'	**10.0' long x 3.0' breadth Broad-Crested Rectangular Weir** 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=2.99 cfs @ 12.22 hrs HW=63.24' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 2.99 cfs @ 1.22 fps)

Summary for Subcatchment S12: TO RG2

Runoff = 0.76 cfs @ 12.11 hrs, Volume= 0.058 af, Depth= 2.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.46", Smoothing=On

Area (sf)	CN	Description
11,155	74	>75% Grass cover, Good, HSG C
11,155		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.8	75	0.0200	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.15"

Time span=1.00-48.00 hrs, dt=0.05 hrs, 941 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Pond 1P: PCB 1 Peak Elev=75.84' Storage=0.000 af Inflow=1.21 cfs 0.096 af
12.0" Round Culvert n=0.012 L=157.8' S=0.0051 '/' Outflow=1.21 cfs 0.096 af

Pond 1R: Raingarden 1 Peak Elev=65.01' Storage=354 cf Inflow=1.43 cfs 0.109 af
Outflow=1.26 cfs 0.107 af

Subcatchment 1S: Upper Parking Lot Left Runoff Area=15,579 sf 94.04% Impervious Runoff Depth=3.22"
Tc=6.0 min CN=97 Runoff=1.21 cfs 0.096 af

Pond 2P: PDMH 2 Peak Elev=75.38' Inflow=2.42 cfs 0.194 af
12.0" Round Culvert n=0.012 L=43.0' S=0.0047 '/' Outflow=2.42 cfs 0.194 af

Subcatchment 2S: Upper Parking Lot Right Runoff Area=15,439 sf 98.23% Impervious Runoff Depth=3.31"
Tc=6.0 min CN=97 Runoff=1.21 cfs 0.098 af

Pond 3P: PCB 3 Peak Elev=75.24' Storage=0.000 af Inflow=1.21 cfs 0.098 af
12.0" Round Culvert n=0.012 L=23.7' S=0.0084 '/' Outflow=1.21 cfs 0.098 af

Subcatchment 3S: Upper Parking Lot Right Runoff Area=6,296 sf 100.00% Impervious Runoff Depth=3.39"
Tc=6.0 min CN=98 Runoff=0.50 cfs 0.041 af

Pond 4P: PDMH 4 Peak Elev=75.38' Inflow=2.92 cfs 0.235 af
12.0" Round Culvert n=0.012 L=54.3' S=0.0046 '/' Outflow=2.92 cfs 0.235 af

Subcatchment 4S: Southern Parking Lot Runoff Area=4,115 sf 100.00% Impervious Runoff Depth=3.39"
Tc=6.0 min CN=98 Runoff=0.33 cfs 0.027 af

Pond 5P: PCB 5 Peak Elev=74.65' Storage=0.000 af Inflow=0.50 cfs 0.041 af
12.0" Round Culvert n=0.012 L=23.7' S=0.0063 '/' Outflow=0.50 cfs 0.041 af

Subcatchment 5S: Southern Parking Lot Runoff Area=7,631 sf 72.99% Impervious Runoff Depth=2.38"
Tc=6.0 min CN=88 Runoff=0.47 cfs 0.035 af

Pond 6P: PDMH 6 Peak Elev=75.23' Inflow=1.12 cfs 0.092 af
Primary=1.05 cfs 0.091 af Secondary=0.07 cfs 0.001 af Outflow=1.12 cfs 0.092 af

Subcatchment 6S: Connector Drive Runoff Area=9,038 sf 67.82% Impervious Runoff Depth=2.33"
Tc=6.0 min CN=87 Runoff=0.55 cfs 0.040 af

Pond 7P: PCB 7 Peak Elev=74.10' Storage=0.000 af Inflow=0.33 cfs 0.027 af
12.0" Round Culvert n=0.012 L=23.7' S=0.0084 '/' Outflow=0.33 cfs 0.027 af

Subcatchment 7S: 7S Runoff Area=6,098 sf 0.00% Impervious Runoff Depth=0.63"
Tc=6.0 min CN=61 Runoff=0.08 cfs 0.007 af

Reach 8/9R: Rd swale Avg. Flow Depth=0.21' Max Vel=2.87 fps Inflow=1.61 cfs 0.238 af
n=0.025 L=233.0' S=0.0258 '/' Capacity=83.37 cfs Outflow=1.58 cfs 0.238 af

Pond 8P: PDMH 8 Peak Elev=73.82' Inflow=0.33 cfs 0.027 af
12.0" Round Culvert n=0.012 L=75.0' S=0.0053 '/' Outflow=0.33 cfs 0.027 af

Subcatchment 8S: Lower Parking Lot Right Runoff Area=8,008 sf 65.30% Impervious Runoff Depth=2.13"
Tc=6.0 min CN=85 Runoff=0.45 cfs 0.033 af

Pond 9P: PCB 9 Peak Elev=73.11' Storage=0.000 af Inflow=0.47 cfs 0.035 af
12.0" Round Culvert n=0.012 L=46.2' S=0.0043 '/' Outflow=0.48 cfs 0.035 af

Subcatchment 9S: Lower Parking Lot Runoff Area=13,171 sf 91.65% Impervious Runoff Depth=3.11"
Tc=6.0 min CN=96 Runoff=1.00 cfs 0.078 af

Pond 10P: PDMH 10 Peak Elev=72.86' Inflow=0.80 cfs 0.061 af
12.0" Round Culvert n=0.012 L=41.0' S=0.1561 '/' Outflow=0.80 cfs 0.061 af

Reach 10R: Swale Avg. Flow Depth=0.22' Max Vel=2.19 fps Inflow=1.26 cfs 0.098 af
n=0.025 L=70.0' S=0.0143 '/' Capacity=62.10 cfs Outflow=1.24 cfs 0.098 af

Subcatchment 10S: Lower Parking Lot Runoff Area=10,699 sf 81.54% Impervious Runoff Depth=2.67"
Tc=6.0 min CN=91 Runoff=0.73 cfs 0.055 af

Pond 11P: PCB 11 Peak Elev=66.97' Storage=0.000 af Inflow=0.55 cfs 0.040 af
12.0" Round Culvert n=0.012 L=35.0' S=0.0171 '/' Outflow=0.55 cfs 0.040 af

Reach 11R: Swale Avg. Flow Depth=0.13' Max Vel=1.73 fps Inflow=0.55 cfs 0.044 af
n=0.025 L=63.0' S=0.0159 '/' Capacity=65.46 cfs Outflow=0.53 cfs 0.044 af

Subcatchment 11S: Lower Parking Lot Left Runoff Area=7,040 sf 96.31% Impervious Runoff Depth=3.23"
Tc=6.0 min CN=97 Runoff=0.55 cfs 0.044 af

Pond 12P: PCI 12 Peak Elev=63.53' Inflow=0.45 cfs 0.033 af
Outflow=0.45 cfs 0.033 af

Pond 13P: PCI 13 Peak Elev=63.58' Inflow=2.22 cfs 0.177 af
Outflow=2.22 cfs 0.177 af

Pond 14P: PCI 14 Peak Elev=64.36' Inflow=1.26 cfs 0.098 af
Outflow=1.26 cfs 0.098 af

Pond 15P: PCI 15 Peak Elev=65.15' Inflow=0.55 cfs 0.044 af
Outflow=0.55 cfs 0.044 af

Subcatchment 17S: Undeveloped Site Runoff Area=266,171 sf 0.00% Impervious Runoff Depth=1.03"
Flow Length=700' Tc=28.6 min CN=69 Runoff=3.92 cfs 0.526 af

Link 25L: Point of Analysis Inflow=5.16 cfs 0.994 af
Primary=5.16 cfs 0.994 af

Pond 25P: PDMH 25 Peak Elev=73.40' Inflow=1.11 cfs 0.124 af
15.0" Round Culvert n=0.012 L=60.0' S=0.2133 '/' Outflow=1.11 cfs 0.124 af

Reach 25R: Swale Avg. Flow Depth=0.34' Max Vel=0.38 fps Inflow=1.11 cfs 0.124 af
n=0.400 L=200.0' S=0.0700 '/' Capacity=26.53 cfs Outflow=1.08 cfs 0.124 af

Pond 28P: Raingarden 2 Peak Elev=62.54' Storage=3,345 cf Inflow=3.02 cfs 0.238 af
Outflow=1.61 cfs 0.238 af

Pond 29P: SWG Inlet MH Peak Elev=74.90' Inflow=2.92 cfs 0.235 af
12.0" Round Culvert n=0.012 L=5.0' S=0.0100 '/' Outflow=2.92 cfs 0.235 af

Pond 30P: OUTLET STRUCTURE 28 Peak Elev=63.34' Inflow=1.26 cfs 0.107 af
12.0" Round Culvert n=0.012 L=140.0' S=0.0089 '/' Outflow=1.26 cfs 0.107 af

Pond 31P: 12" TEE Peak Elev=75.13' Inflow=0.07 cfs 0.001 af
12.0" Round Culvert n=0.012 L=10.0' S=0.0100 '/' Outflow=0.07 cfs 0.001 af

Reach 32R: Swale Avg. Flow Depth=0.15' Max Vel=2.01 fps Inflow=1.26 cfs 0.107 af
n=0.040 L=300.0' S=0.0467 '/' Capacity=114.38 cfs Outflow=1.14 cfs 0.107 af

Reach 33R: Swale Avg. Flow Depth=0.27' Max Vel=0.49 fps Inflow=2.55 cfs 0.344 af
n=0.040 L=900.0' S=0.0011 '/' Capacity=110.82 cfs Outflow=1.45 cfs 0.344 af

Subcatchment B1S: Building Roof Runoff Area=14,178 sf 100.00% Impervious Runoff Depth=3.39"
Tc=6.0 min CN=98 Runoff=1.12 cfs 0.092 af

Pond D3: ADS Subsurface Storage Units (15 - Peak Elev=74.73' Storage=3,517 cf Inflow=3.97 cfs 0.326 af
Discarded=0.29 cfs 0.203 af Primary=1.11 cfs 0.123 af Secondary=0.00 cfs 0.000 af Outflow=1.40 cfs 0.326 af

Pond Plunge: Plunge Pool / level spreader Peak Elev=63.13' Inflow=1.11 cfs 0.124 af
Outflow=1.11 cfs 0.124 af

Subcatchment S12: TO RG2 Runoff Area=11,155 sf 0.00% Impervious Runoff Depth=1.32"
Flow Length=75' Slope=0.0200 '/' Tc=7.8 min CN=74 Runoff=0.36 cfs 0.028 af

Total Runoff Area = 9.059 ac Runoff Volume = 1.199 af Average Runoff Depth = 1.59"
74.94% Pervious = 6.789 ac 25.06% Impervious = 2.271 ac

Time span=1.00-48.00 hrs, dt=0.05 hrs, 941 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Pond 1P: PCB 1 Peak Elev=76.19' Storage=0.000 af Inflow=2.35 cfs 0.194 af
12.0" Round Culvert n=0.012 L=157.8' S=0.0051 '/' Outflow=2.35 cfs 0.194 af

Pond 1R: Raingarden 1 Peak Elev=67.09' Storage=1,160 cf Inflow=3.34 cfs 0.258 af
Outflow=1.85 cfs 0.256 af

Subcatchment 1S: Upper Parking Lot Left Runoff Area=15,579 sf 94.04% Impervious Runoff Depth=6.50"
Tc=6.0 min CN=97 Runoff=2.35 cfs 0.194 af

Pond 2P: PDMH 2 Peak Elev=76.57' Inflow=4.70 cfs 0.388 af
12.0" Round Culvert n=0.012 L=43.0' S=0.0047 '/' Outflow=4.70 cfs 0.388 af

Subcatchment 2S: Upper Parking Lot Right Runoff Area=15,439 sf 98.23% Impervious Runoff Depth>6.59"
Tc=6.0 min CN=97 Runoff=2.34 cfs 0.195 af

Pond 3P: PCB 3 Peak Elev=75.58' Storage=0.000 af Inflow=2.34 cfs 0.195 af
12.0" Round Culvert n=0.012 L=23.7' S=0.0084 '/' Outflow=2.34 cfs 0.195 af

Subcatchment 3S: Upper Parking Lot Right Runoff Area=6,296 sf 100.00% Impervious Runoff Depth>6.67"
Tc=6.0 min CN=98 Runoff=0.96 cfs 0.080 af

Pond 4P: PDMH 4 Peak Elev=77.12' Inflow=5.66 cfs 0.469 af
12.0" Round Culvert n=0.012 L=54.3' S=0.0046 '/' Outflow=5.66 cfs 0.469 af

Subcatchment 4S: Southern Parking Lot Runoff Area=4,115 sf 100.00% Impervious Runoff Depth>6.67"
Tc=6.0 min CN=98 Runoff=0.63 cfs 0.053 af

Pond 5P: PCB 5 Peak Elev=74.83' Storage=0.000 af Inflow=0.96 cfs 0.080 af
12.0" Round Culvert n=0.012 L=23.7' S=0.0063 '/' Outflow=0.96 cfs 0.080 af

Subcatchment 5S: Southern Parking Lot Runoff Area=7,631 sf 72.99% Impervious Runoff Depth=5.51"
Tc=6.0 min CN=88 Runoff=1.06 cfs 0.080 af

Pond 6P: PDMH 6 Peak Elev=75.46' Inflow=2.15 cfs 0.181 af
Primary=1.74 cfs 0.175 af Secondary=0.42 cfs 0.006 af Outflow=2.15 cfs 0.181 af

Subcatchment 6S: Connector Drive Runoff Area=9,038 sf 67.82% Impervious Runoff Depth=5.45"
Tc=6.0 min CN=87 Runoff=1.24 cfs 0.094 af

Pond 7P: PCB 7 Peak Elev=74.23' Storage=0.000 af Inflow=0.63 cfs 0.053 af
12.0" Round Culvert n=0.012 L=23.7' S=0.0084 '/' Outflow=0.63 cfs 0.053 af

Subcatchment 7S: 7S Runoff Area=6,098 sf 0.00% Impervious Runoff Depth=2.64"
Tc=6.0 min CN=61 Runoff=0.41 cfs 0.031 af

Reach 8/9R: Rd swale Avg. Flow Depth=0.43' Max Vel=4.27 fps Inflow=6.02 cfs 0.532 af
n=0.025 L=233.0' S=0.0258 '/' Capacity=83.37 cfs Outflow=5.87 cfs 0.532 af

Pond 8P: PDMH 8 Peak Elev=73.95' Inflow=0.63 cfs 0.053 af
12.0" Round Culvert n=0.012 L=75.0' S=0.0053 '/' Outflow=0.63 cfs 0.053 af

Subcatchment 8S: Lower Parking Lot Right Runoff Area=8,008 sf 65.30% Impervious Runoff Depth=5.18"
Tc=6.0 min CN=85 Runoff=1.06 cfs 0.079 af

Pond 9P: PCB 9 Peak Elev=73.33' Storage=0.000 af Inflow=1.06 cfs 0.080 af
12.0" Round Culvert n=0.012 L=46.2' S=0.0043 '/' Outflow=1.06 cfs 0.080 af

Subcatchment 9S: Lower Parking Lot Runoff Area=13,171 sf 91.65% Impervious Runoff Depth=6.38"
Tc=6.0 min CN=96 Runoff=1.98 cfs 0.161 af

Pond 10P: PDMH 10 Peak Elev=73.10' Inflow=1.69 cfs 0.133 af
12.0" Round Culvert n=0.012 L=41.0' S=0.1561 '/' Outflow=1.69 cfs 0.133 af

Reach 10R: Swale Avg. Flow Depth=0.32' Max Vel=2.72 fps Inflow=2.59 cfs 0.208 af
n=0.025 L=70.0' S=0.0143 '/' Capacity=62.10 cfs Outflow=2.54 cfs 0.208 af

Subcatchment 10S: Lower Parking Lot Runoff Area=10,699 sf 81.54% Impervious Runoff Depth=5.87"
Tc=6.0 min CN=91 Runoff=1.54 cfs 0.120 af

Pond 11P: PCB 11 Peak Elev=67.19' Storage=0.000 af Inflow=1.24 cfs 0.094 af
12.0" Round Culvert n=0.012 L=35.0' S=0.0171 '/' Outflow=1.24 cfs 0.094 af

Reach 11R: Swale Avg. Flow Depth=0.19' Max Vel=2.15 fps Inflow=1.06 cfs 0.088 af
n=0.025 L=63.0' S=0.0159 '/' Capacity=65.46 cfs Outflow=1.05 cfs 0.088 af

Subcatchment 11S: Lower Parking Lot Left Runoff Area=7,040 sf 96.31% Impervious Runoff Depth=6.51"
Tc=6.0 min CN=97 Runoff=1.06 cfs 0.088 af

Pond 12P: PCI 12 Peak Elev=63.63' Inflow=1.06 cfs 0.079 af
Outflow=1.06 cfs 0.079 af

Pond 13P: PCI 13 Peak Elev=63.80' Inflow=4.50 cfs 0.368 af
Outflow=4.50 cfs 0.368 af

Pond 14P: PCI 14 Peak Elev=64.52' Inflow=2.59 cfs 0.208 af
Outflow=2.59 cfs 0.208 af

Pond 15P: PCI 15 Peak Elev=65.23' Inflow=1.06 cfs 0.088 af
Outflow=1.06 cfs 0.088 af

Subcatchment 17S: Undeveloped Site Runoff Area=266,171 sf 0.00% Impervious Runoff Depth=3.45"
Flow Length=700' Tc=28.6 min CN=69 Runoff=14.21 cfs 1.758 af

Link 25L: Point of Analysis Inflow=20.65 cfs 2.893 af
Primary=20.65 cfs 2.893 af

Pond 25P: PDMH 25 Peak Elev=74.44' Inflow=5.66 cfs 0.347 af
15.0" Round Culvert n=0.012 L=60.0' S=0.2133 '/' Outflow=5.66 cfs 0.347 af

Reach 25R: Swale Avg. Flow Depth=0.68' Max Vel=0.56 fps Inflow=5.66 cfs 0.347 af
n=0.400 L=200.0' S=0.0700 '/' Capacity=26.53 cfs Outflow=4.43 cfs 0.347 af

Pond 28P: Raingarden 2 Peak Elev=62.87' Storage=4,184 cf Inflow=6.65 cfs 0.532 af
Outflow=6.02 cfs 0.532 af

Pond 29P: SWG Inlet MH Peak Elev=76.38' Inflow=5.66 cfs 0.469 af
12.0" Round Culvert n=0.012 L=5.0' S=0.0100 '/' Outflow=5.66 cfs 0.469 af

Pond 30P: OUTLET STRUCTURE 28 Peak Elev=63.50' Inflow=1.85 cfs 0.256 af
12.0" Round Culvert n=0.012 L=140.0' S=0.0089 '/' Outflow=1.85 cfs 0.256 af

Pond 31P: 12" TEE Peak Elev=75.92' Inflow=2.02 cfs 0.042 af
12.0" Round Culvert n=0.012 L=10.0' S=0.0100 '/' Outflow=2.02 cfs 0.042 af

Reach 32R: Swale Avg. Flow Depth=0.20' Max Vel=2.34 fps Inflow=1.85 cfs 0.256 af
n=0.040 L=300.0' S=0.0467 '/' Capacity=114.38 cfs Outflow=1.85 cfs 0.256 af

Reach 33R: Swale Avg. Flow Depth=0.57' Max Vel=0.77 fps Inflow=7.64 cfs 0.788 af
n=0.040 L=900.0' S=0.0011 '/' Capacity=110.82 cfs Outflow=5.11 cfs 0.788 af

Subcatchment B1S: Building Roof Runoff Area=14,178 sf 100.00% Impervious Runoff Depth>6.67"
Tc=6.0 min CN=98 Runoff=2.15 cfs 0.181 af

Pond D3: ADS Subsurface Storage Units (15 - Peak Elev=75.93' Storage=5,399 cf Inflow=7.39 cfs 0.644 af
Discarded=0.35 cfs 0.303 af Primary=3.64 cfs 0.305 af Secondary=1.81 cfs 0.036 af Outflow=5.81 cfs 0.644 af

Pond Plunge: Plunge Pool / level spreader Peak Elev=63.37' Inflow=5.66 cfs 0.347 af
Outflow=5.66 cfs 0.347 af

Subcatchment S12: TO RG2 Runoff Area=11,155 sf 0.00% Impervious Runoff Depth=3.96"
Flow Length=75' Slope=0.0200 '/' Tc=7.8 min CN=74 Runoff=1.10 cfs 0.085 af

Total Runoff Area = 9.059 ac Runoff Volume = 3.198 af Average Runoff Depth = 4.24"
74.94% Pervious = 6.789 ac 25.06% Impervious = 2.271 ac

Time span=1.00-48.00 hrs, dt=0.05 hrs, 941 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Pond 1P: PCB 1 Peak Elev=76.38' Storage=0.000 af Inflow=2.82 cfs 0.234 af
12.0" Round Culvert n=0.012 L=157.8' S=0.0051 '/' Outflow=2.82 cfs 0.234 af

Pond 1R: Raingarden 1 Peak Elev=67.57' Storage=1,670 cf Inflow=4.15 cfs 0.322 af
Outflow=2.18 cfs 0.320 af

Subcatchment 1S: Upper Parking Lot Left Runoff Area=15,579 sf 94.04% Impervious Runoff Depth>7.84"
Tc=6.0 min CN=97 Runoff=2.82 cfs 0.234 af

Pond 2P: PDMH 2 Peak Elev=77.20' Inflow=5.63 cfs 0.468 af
12.0" Round Culvert n=0.012 L=43.0' S=0.0047 '/' Outflow=5.63 cfs 0.468 af

Subcatchment 2S: Upper Parking Lot Right Runoff Area=15,439 sf 98.23% Impervious Runoff Depth>7.94"
Tc=6.0 min CN=97 Runoff=2.80 cfs 0.235 af

Pond 3P: PCB 3 Peak Elev=75.73' Storage=0.000 af Inflow=2.80 cfs 0.235 af
12.0" Round Culvert n=0.012 L=23.7' S=0.0084 '/' Outflow=2.80 cfs 0.235 af

Subcatchment 3S: Upper Parking Lot Right Runoff Area=6,296 sf 100.00% Impervious Runoff Depth>8.02"
Tc=6.0 min CN=98 Runoff=1.14 cfs 0.097 af

Pond 4P: PDMH 4 Peak Elev=78.15' Inflow=6.77 cfs 0.565 af
12.0" Round Culvert n=0.012 L=54.3' S=0.0046 '/' Outflow=6.77 cfs 0.565 af

Subcatchment 4S: Southern Parking Lot Runoff Area=4,115 sf 100.00% Impervious Runoff Depth>8.02"
Tc=6.0 min CN=98 Runoff=0.75 cfs 0.063 af

Pond 5P: PCB 5 Peak Elev=74.89' Storage=0.000 af Inflow=1.14 cfs 0.097 af
12.0" Round Culvert n=0.012 L=23.7' S=0.0063 '/' Outflow=1.15 cfs 0.097 af

Subcatchment 5S: Southern Parking Lot Runoff Area=7,631 sf 72.99% Impervious Runoff Depth=6.82"
Tc=6.0 min CN=88 Runoff=1.30 cfs 0.100 af

Pond 6P: PDMH 6 Peak Elev=75.54' Inflow=2.58 cfs 0.217 af
Primary=1.99 cfs 0.208 af Secondary=0.59 cfs 0.009 af Outflow=2.58 cfs 0.217 af

Subcatchment 6S: Connector Drive Runoff Area=9,038 sf 67.82% Impervious Runoff Depth=6.76"
Tc=6.0 min CN=87 Runoff=1.52 cfs 0.117 af

Pond 7P: PCB 7 Peak Elev=74.28' Storage=0.000 af Inflow=0.75 cfs 0.063 af
12.0" Round Culvert n=0.012 L=23.7' S=0.0084 '/' Outflow=0.75 cfs 0.063 af

Subcatchment 7S: 7S Runoff Area=6,098 sf 0.00% Impervious Runoff Depth=3.64"
Tc=6.0 min CN=61 Runoff=0.58 cfs 0.043 af

Reach 8/9R: Rd swale Avg. Flow Depth=0.48' Max Vel=4.52 fps Inflow=7.37 cfs 0.657 af
n=0.025 L=233.0' S=0.0258 '/' Capacity=83.37 cfs Outflow=7.22 cfs 0.657 af

Pond 8P: PDMH 8 Peak Elev=73.99' Inflow=0.75 cfs 0.063 af
12.0" Round Culvert n=0.012 L=75.0' S=0.0053 '/' Outflow=0.75 cfs 0.063 af

Subcatchment 8S: Lower Parking Lot Right Runoff Area=8,008 sf 65.30% Impervious Runoff Depth=6.48"
Tc=6.0 min CN=85 Runoff=1.31 cfs 0.099 af

Pond 9P: PCB 9 Peak Elev=73.41' Storage=0.000 af Inflow=1.30 cfs 0.100 af
12.0" Round Culvert n=0.012 L=46.2' S=0.0043 '/' Outflow=1.30 cfs 0.100 af

Subcatchment 9S: Lower Parking Lot Runoff Area=13,171 sf 91.65% Impervious Runoff Depth=7.72"
Tc=6.0 min CN=96 Runoff=2.37 cfs 0.195 af

Pond 10P: PDMH 10 Peak Elev=73.20' Inflow=2.05 cfs 0.163 af
12.0" Round Culvert n=0.012 L=41.0' S=0.1561 '/' Outflow=2.05 cfs 0.163 af

Reach 10R: Swale Avg. Flow Depth=0.36' Max Vel=2.87 fps Inflow=3.12 cfs 0.253 af
n=0.025 L=70.0' S=0.0143 '/' Capacity=62.10 cfs Outflow=3.07 cfs 0.253 af

Subcatchment 10S: Lower Parking Lot Runoff Area=10,699 sf 81.54% Impervious Runoff Depth=7.20"
Tc=6.0 min CN=91 Runoff=1.87 cfs 0.147 af

Pond 11P: PCB 11 Peak Elev=67.26' Storage=0.000 af Inflow=1.52 cfs 0.117 af
12.0" Round Culvert n=0.012 L=35.0' S=0.0171 '/' Outflow=1.53 cfs 0.117 af

Reach 11R: Swale Avg. Flow Depth=0.21' Max Vel=2.28 fps Inflow=1.27 cfs 0.106 af
n=0.025 L=63.0' S=0.0159 '/' Capacity=65.46 cfs Outflow=1.25 cfs 0.106 af

Subcatchment 11S: Lower Parking Lot Left Runoff Area=7,040 sf 96.31% Impervious Runoff Depth>7.86"
Tc=6.0 min CN=97 Runoff=1.27 cfs 0.106 af

Pond 12P: PCI 12 Peak Elev=63.66' Inflow=1.31 cfs 0.099 af
Outflow=1.31 cfs 0.099 af

Pond 13P: PCI 13 Peak Elev=63.88' Inflow=5.43 cfs 0.448 af
Outflow=5.43 cfs 0.448 af

Pond 14P: PCI 14 Peak Elev=64.57' Inflow=3.12 cfs 0.253 af
Outflow=3.12 cfs 0.253 af

Pond 15P: PCI 15 Peak Elev=65.26' Inflow=1.27 cfs 0.106 af
Outflow=1.27 cfs 0.106 af

Subcatchment 17S: Undeveloped Site Runoff Area=266,171 sf 0.00% Impervious Runoff Depth=4.59"
Flow Length=700' Tc=28.6 min CN=69 Runoff=18.94 cfs 2.335 af

Link 25L: Point of Analysis Inflow=27.71 cfs 3.761 af
Primary=27.71 cfs 3.761 af

Pond 25P: PDMH 25 Peak Elev=75.18' Inflow=7.61 cfs 0.449 af
15.0" Round Culvert n=0.012 L=60.0' S=0.2133 '/' Outflow=7.61 cfs 0.449 af

Reach 25R: Swale Avg. Flow Depth=0.79' Max Vel=0.61 fps Inflow=7.61 cfs 0.449 af
n=0.400 L=200.0' S=0.0700 '/' Capacity=26.53 cfs Outflow=6.21 cfs 0.449 af

Pond 28P: Raingarden 2 Peak Elev=62.95' Storage=4,416 cf Inflow=8.15 cfs 0.657 af
Outflow=7.37 cfs 0.657 af

Pond 29P: SWG Inlet MH Peak Elev=77.35' Inflow=6.77 cfs 0.565 af
12.0" Round Culvert n=0.012 L=5.0' S=0.0100 '/' Outflow=6.77 cfs 0.565 af

Pond 30P: OUTLET STRUCTURE 28 Peak Elev=63.58' Inflow=2.18 cfs 0.320 af
12.0" Round Culvert n=0.012 L=140.0' S=0.0089 '/' Outflow=2.18 cfs 0.320 af

Pond 31P: 12" TEE Peak Elev=76.26' Inflow=3.04 cfs 0.067 af
12.0" Round Culvert n=0.012 L=10.0' S=0.0100 '/' Outflow=3.04 cfs 0.067 af

Reach 32R: Swale Avg. Flow Depth=0.22' Max Vel=2.45 fps Inflow=2.18 cfs 0.320 af
n=0.040 L=300.0' S=0.0467 '/' Capacity=114.38 cfs Outflow=2.14 cfs 0.320 af

Reach 33R: Swale Avg. Flow Depth=0.65' Max Vel=0.83 fps Inflow=9.09 cfs 0.977 af
n=0.040 L=900.0' S=0.0011 '/' Capacity=110.82 cfs Outflow=6.44 cfs 0.977 af

Subcatchment B1S: Building Roof Runoff Area=14,178 sf 100.00% Impervious Runoff Depth>8.02"
Tc=6.0 min CN=98 Runoff=2.58 cfs 0.217 af

Pond D3: ADS Subsurface Storage Units (15 - Peak Elev=76.19' Storage=5,680 cf Inflow=8.76 cfs 0.773 af
Discarded=0.36 cfs 0.333 af Primary=4.58 cfs 0.382 af Secondary=2.62 cfs 0.058 af Outflow=7.57 cfs 0.773 af

Pond Plunge: Plunge Pool / level spreader Peak Elev=63.44' Inflow=7.61 cfs 0.449 af
Outflow=7.61 cfs 0.449 af

Subcatchment S12: TO RG2 Runoff Area=11,155 sf 0.00% Impervious Runoff Depth=5.16"
Flow Length=75' Slope=0.0200 '/' Tc=7.8 min CN=74 Runoff=1.43 cfs 0.110 af

Total Runoff Area = 9.059 ac Runoff Volume = 4.097 af Average Runoff Depth = 5.43"
74.94% Pervious = 6.789 ac 25.06% Impervious = 2.271 ac

SECTION 8

Riprap / Plunge Pool Calculations

OUTLET PROTECTION

FOR A PIPE FLOWING FULL WITH LOW TAILWATER

RIPRAP SIZE - D50 (inches)

PIPE DIAMETER

DISCHARGE	12"	15"	18"	21"	24"	27"	30"	36"	42"	48"	54"	60"
3cfs	4											
5cfs	4											
8cfs	5	4										
10cfs	6	5	4									
12cfs	8	6	6									
15cfs	8	6	8	5								
17cfs		8	8	5								
20cfs		10	10	6	5							
25cfs		12	12	6	6							
30cfs				8	8	6						
40cfs				12	10	8	6					
50cfs				16	12	10	8	6				
60cfs				18	16	12	10	8				
70cfs					18	15	12	8				
80cfs					20	16	15	10	8			
90cfs						18	16	12	10			
100cfs						20	18	12	10			
125cfs						24	20	16	12	10		
150cfs							24	20	16	12	10	
200cfs								24	20	18	15	12

PP#1 = 15" Pipe
3.0 cfs For 10 year

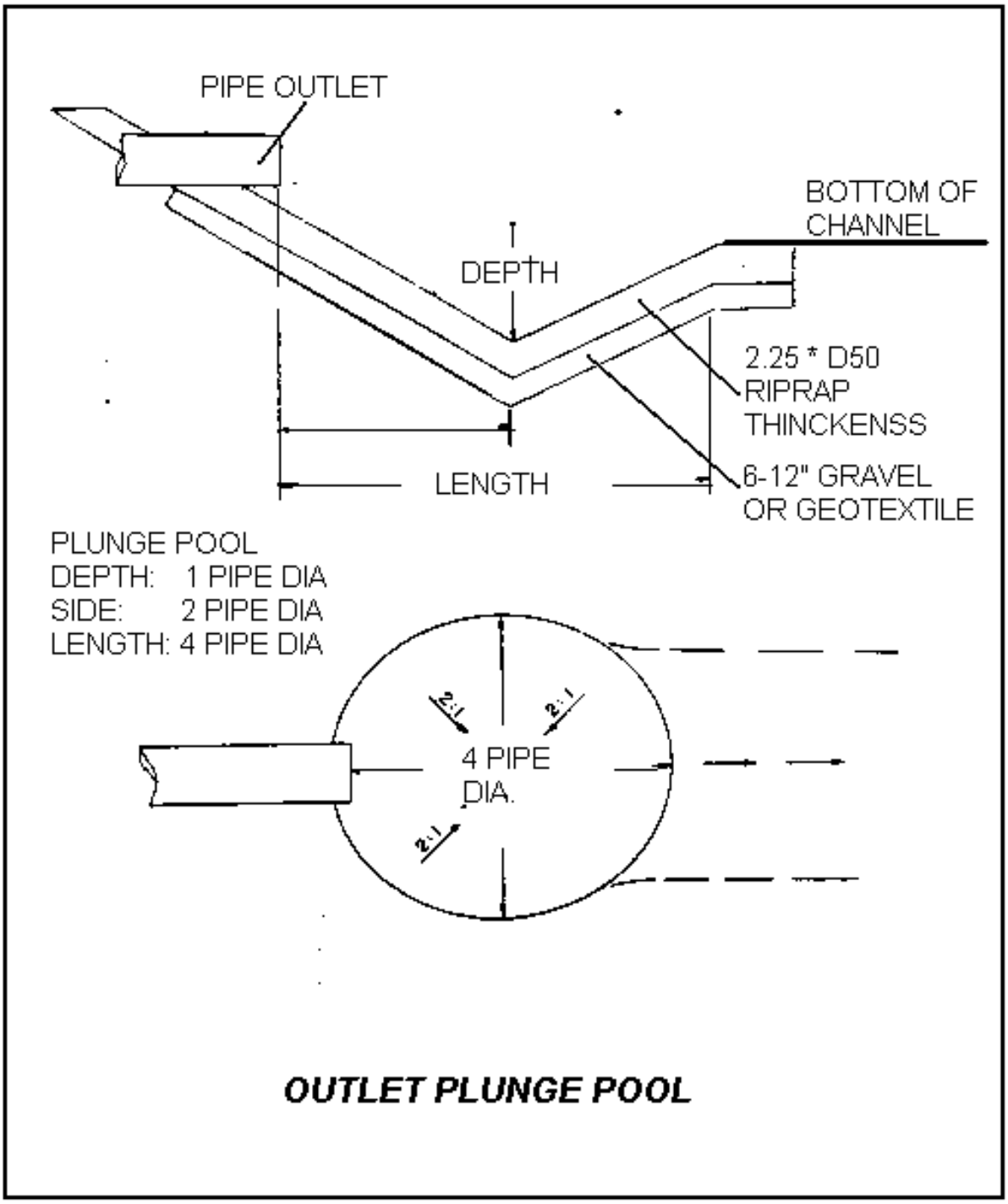
MINIMUM LENGTH OF APRON (FEET)

PIPE DIAMETER

DISCHARGE	12"	15"	18"	21"	24"	27"	30"	36"	42"	48"	54"	60"
3cfs	8											
5cfs	8											
8cfs	11	10										
10cfs	14	12	10									
15cfs	18	16	14	12								
20cfs		18	18	16	12							
30cfs			22	20	18	16						
40cfs			26	24	24	20	18					
50cfs				26	26	24	22	18				
70cfs					30	30	28	25				
100cfs						36	36	33	27			
150cfs						42	42	42	38	33	28	
200cfs								48	45	42	37	32

PP#1 = 15" Pipe
3.0 cfs For 10 year

From USDA Soild Conservation Service



OUTLET PLUNGE POOL

SECTION 9

Site Specific Soil Survey Report

B A G

LAND CONSULTANTS

July 26, 2021

Chad Kageleiry
7 West, LLC
340 Central Avenue, Ste 202
Dover, NH 03820

RE: Medical Office Building Project [6 Ac. +/-]
11 Durham Road - Dover, NH

Dear Chad:

Site Specific Soil Survey Technical Letter Report

At your request, we visited the above-referenced property to document onsite conditions for the purpose of preparing a Site-Specific Soil Map (SSSM) that would assist in the planning / design of your proposed subdivision of land. Below is a summary report that details the standards utilized, soil descriptions, and any limiting soil features encountered on the property.

Standards

The criteria under which the soil map was prepared is the *Site-specific Soil Mapping Standards for New Hampshire and Vermont*, Version 7.0, March 2021. The standards apply the very latest knowledge of soils and provide the public with the most advanced soil resource information available today. The standards are based on a universally recognized taxonomic system of soil classification and are supported by national soil mapping standards established by the USDA National Cooperative Soil Survey. They allow for the development of multi-purpose soil map products that are carefully controlled and monitored through a state, regional and national quality assessment program. The SSSM's have been developed by the Society of Soil Scientists of Northern New England (SSSNNE) in cooperation with the USDA Natural Resources Conservation Service (NRCS). Their development responded to the need to provide regulatory agencies, local officials, and land use planners with consistent high-quality large scale soil resource information.

The Site-specific Soil Map Units identified on this property come from the *New Hampshire State-wide Numerical Soils Legend*, Issue 10, January 2011. This document

represents the latest release of the permanent New Hampshire State-Wide Numerical Soils Legend since originally developed and adopted by the NRCS of NH in 1985.

Base Map

The soil map was developed on a base map of 1"= 40', with contour intervals of two (2') feet, and ground control indicators provided with wetland flags, existing utility poles, underground drainage structures, and strategically placed survey traverse stations. Topographic & boundary survey information was compiled onto our base map by McEneaney Survey Associates, Inc; Dover, NH.

Location

The project site is located on the north side of Durham Road (Route 108) in the City of Dover. The subject parcel study area is approximately 6.0 Ac.+/- and has greater than 800 feet of frontage directly on the south side of the Bellamy River. The City of Dover has a south end fire station building that abuts the southwest corner of our property.

Geomorphology

The site is situated in an area of predominant upland glacial till (ice dropped) parent materials. We did encounter large areas where the moderately-well drained soils showed evidence of weak restrictive (hardpan) layers in the subsoil. There is evidence of marine / lacustrine based parent material near and surrounding both sides of the Bellamey River.

Legend

The following is the soil identification legend for the site-specific soil map units used in the preparation of the map.

SITE SPECIFIC SOIL MAP UNIT KEY

SYMBOL	SOIL TAXONOMIC NAME	HSG CLASS	DRAINAGE CLASS
62	Charlton	B	Well Drained
86	Hollis	C	Well Drained
232	Buxton	C	Moderately Well-drained
233/P	Scantic	D	Poorly Drained (P)
200/daade	Udorthents	-	Smooth Fill Refuse Material

[d-moderately well drained / a-no natural soil within 60"/ a-no restrictive layers / d- no Ksat / e- No HSG]

Slope

The following slope phases are used to designate the percent slope of the individual soil map units. Map units not having a slope designation typically are assumed to be nearly level over most of the map unit.

Slope Designation	Percent Slope
B	0 to 8%
C	8 to 15%
D	15 to 25%
E	> 25%

Limiting Soil Features

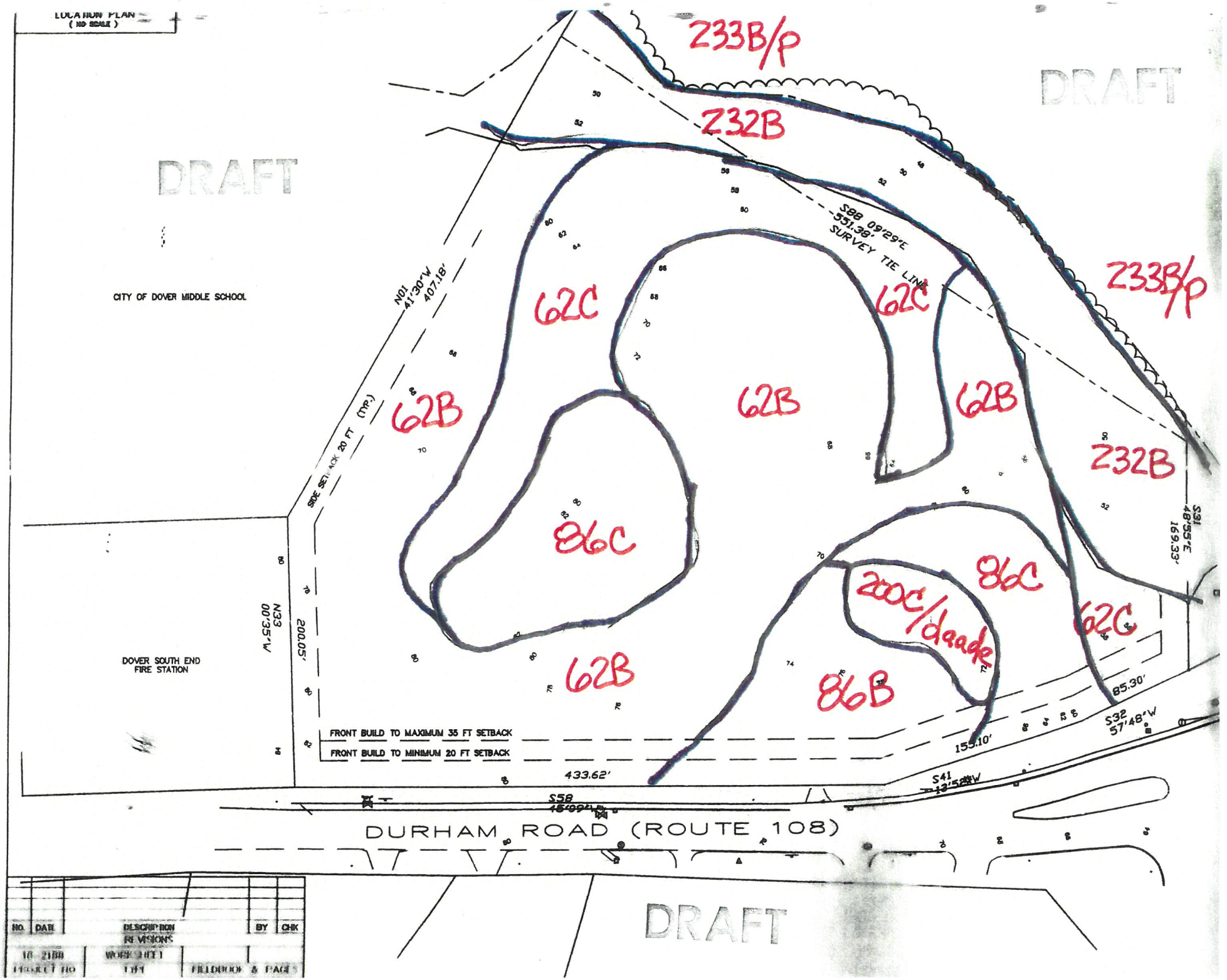
The majority of the upland soils on this property are well suited for commercial development and the placement of structures and associated parking and access roads. The most prominent soil is well drained Charlton **(62)** which has moderate infiltration rates when thoroughly wetted and has moderate to moderately rapid permeability throughout all horizons. This soil would be given a HSG 'B' hydrologic grouping assignment. The Charlton soils we observed on this property are derived from firm glacial till uplands with massive structure characteristics in the substratum layers. The other well drained soils found on the higher elevations were mapped Hollis **(86)** which was given a HSG 'C' hydrologic grouping due to its shallow to ledge characteristics.

The moderately well drained Buxton **(232)** soils have slow infiltration rates when thoroughly wetted and very slow permeability in the substratum. This soil was given a HSG 'C' hydrologic grouping assignment. In the lowest elevations, in close proximity to the Bellamy River, we mapped areas of poorly drained (P) soils. These Scantic **(233/P)** soils would fall into a HSG 'D' category. These soils have slow to very slow permeability from subsoil down through the substratum. The Udorthents **(200)** soils have no clear, natural horizons to describe - they are fill material that was deposited when the old structure onsite was razed. No HSG assignment.

Sincerely,

Bruce A. Gilday

Bruce A. Gilday
Certified Soil Scientist
BAG:3238B
Attachment: NCSS Soil Map

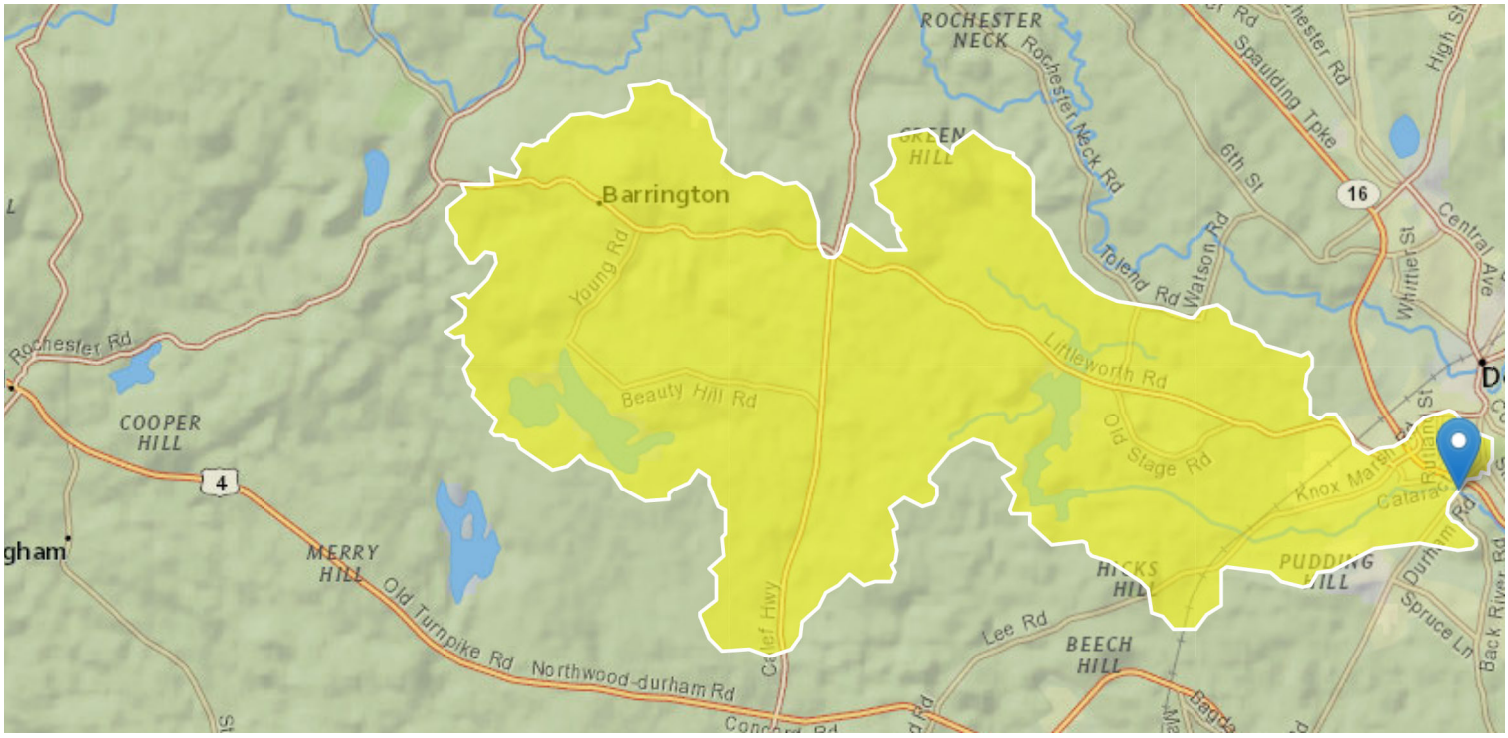

LOCATION PLAN
(NO SCALE)
DRAFT
DRAFT
DRAFT
233B/p
232B
233B/p
232B
62C
62C
62B
62B
62B
86C
86C
200C/daadc
62C
62B
86B
CITY OF DOVER MIDDLE SCHOOL
DOVER SOUTH END FIRE STATION
N01 41'30"W 407.18'
SIDE SETBACK 20 FT (TYP.)
S88 09'29"E 551.39' SURVEY TIE LINE
S81 48'55"E 196.33'
N33 00'35"W 200.05'
FRONT BUILD TO MAXIMUM 35 FT SETBACK
FRONT BUILD TO MINIMUM 20 FT SETBACK
433.62'
155.10'
85.30'
S32 57'48"W
S41
S58
DURHAM ROAD (ROUTE 108)
NO. DATE DESCRIPTION BY CHK
REVISIONS
10 2BB
WORK SHEET
TBT
FIELDBOOK & PAGE

SECTION 10

StreamStats Results for Bellamy River

StreamStats Report - Bellamy River

Region ID: NH
Workspace ID: NH20220503021953247000
Clicked Point (Latitude, Longitude): 43.17996, -70.87840
Time: 2022-05-02 22:20:13 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
APRAVPRE	Mean April Precipitation	4.23	inches
BSLDEM30M	Mean basin slope computed from 30 m DEM	4.06	percent
CONIF	Percentaqe of land surface covered by coniferous forest	15.1759	percent
CSL10_85	Change in elevation divided by length between points 10 and 85 percent of distance along main channel to basin divide - main channel method not known	12.4	feet per mi
DRNAREA	Area that drains to a point on a stream	27.2	square miles
ELEVMAX	Maximum basin elevation	513.485	feet
MINTEMP_W	Mean winter minimum air temperature over basin surface area	16.403	degrees F
MIXFOR	Percentage of land area covered by mixed deciduous and coniferous forest	26.1062	percent
PREBC0103	Mean annual precipitation of basin centroid for January 1 to March 15 winter period	7.68	inches
PREBC_1112	Mean annual precipitation of basin centroid for November 1 to December 31 period	8.86	inches

Parameter Code	Parameter Description	Value	Unit
PRECIPCENT	Mean Annual Precip at Basin Centroid	42.8	inches
PRECIPOUT	Mean annual precip at the stream outlet (based on annual PRISM precip data in inches from 1971-2000)	43.2	inches
PREG_03_05	Mean precipitation at gaging station location for March 16 to May 31 spring period	9.3	inches
PREG_06_10	Mean precipitation at gaging station location for June to October summer period	16.9	inches
SNOFALL	Mean Annual Snowfall	60.646	inches
TEMP	Mean Annual Temperature	46.742	degrees F
TEMP_06_10	Basinwide average temperature for June to October summer period	62.546	degrees F
WETLAND	Percentage of Wetlands	16.7571	percent

Peak-Flow Statistics Parameters [Peak Flow Statewide SIR2008 5206]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	27.2	square miles	0.7	1290
APRAVPRE	Mean April Precipitation	4.23	inches	2.79	6.23
WETLAND	Percent Wetlands	16.7571	percent	0	21.8
CSL10_85	Stream Slope 10 and 85 Method	12.4	feet per mi	5.43	543

Peak-Flow Statistics Flow Report [Peak Flow Statewide SIR2008 5206]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	PIu	ASEp	Equiv. Yrs.
50-percent AEP flood	349	ft^3/s	213	571	30.1	3.2
20-percent AEP flood	557	ft^3/s	336	922	31.1	4.7
10-percent AEP flood	725	ft^3/s	429	1220	32.3	6.2
4-percent AEP flood	944	ft^3/s	541	1650	34.3	8
2-percent AEP flood	1120	ft^3/s	622	2020	36.4	9
1-percent AEP flood	1340	ft^3/s	719	2500	38.6	9.8
0.2-percent AEP flood	1860	ft^3/s	921	3760	44.1	11

Peak-Flow Statistics Citations

Olson, S.A.,2009, Estimation of flood discharges at selected recurrence intervals for streams in New Hampshire: U.S.Geological Survey Scientific Investigations Report 2008-5206, 57 p. (http://pubs.usgs.gov/sir/2008/5206/)

Low-Flow Statistics Parameters [Low Flow Statewide]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	27.2	square miles	3.26	689
TEMP	Mean Annual Temperature	46.742	degrees F	36	48.7
PREG_06_10	Jun to Oct Gage Precipitation	16.9	inches	16.5	23.1

Low-Flow Statistics Flow Report [Low Flow Statewide]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	PIu	SE	ASEp
7 Day 2 Year Low Flow	1.41	ft^3/s	0.518	2.93	55.7	55.7
7 Day 10 Year Low Flow	0.558	ft^3/s	0.134	1.42	79.4	79.4

Low-Flow Statistics Citations

Flynn, R.H. and Tasker, G.D.,2002, Development of Regression Equations to Estimate Flow Durations and Low-Flow-Frequency Statistics in New Hampshire Streams: U.S.Geological Survey Scientific Investigations Report 02-4298, 66 p. (http://pubs.water.usgs.gov/wrir02-4298)

Recharge Statistics Parameters [Groundwater Recharge Statewide 2004 5019]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
PRECIPOUT	Mean Annual Precip at Gage	43.2	inches	35.83	53.11
TEMP	Mean Annual Temperature	46.742	degrees F	36.05	48.69
MINTEMP_W	Mean Winter Min Temperature	16.403	degrees F	0.8	19.88
CONIF	Percent Coniferous Forest	15.1759	percent	3.07	56.18
PREG_03_05	Mar to May Gage Precipitation	9.3	inches	6.83	11.54
SNOFALL	Mean Annual Snowfall	60.646	inches	54.46	219.07
PREG_06_10	Jun to Oct Gage Precipitation	16.9	inches	16.46	23.11
MIXFOR	Percent Mixed Forest	26.1062	percent	6.21	46.13
PREBC_1112	Nov to Dec Basin Centroid Precip	8.86	inches	6.57	15.2
PRECIPCENT	Mean Annual Precip at Basin Centroid	42.8	inches	37.44	75.91

Recharge Statistics Flow Report [Groundwater Recharge Statewide 2004 5019]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	ASEp
GW_Recharge_Jan_to_Mar15	5.56	in	15.5
GW_Recharge_Mar16_to_May	7.4	in	12.4

Statistic	Value	Unit	ASEp
GW_Recharge_Jun_to_Oct	1.97	in	26.5
GW_Recharge_Nov_to_Dec	4.07	in	15.8
GW_Recharge_Ann	20.6	in	12.4

Recharge Statistics Citations

Flynn, R.H. and Tasker, G.D.,2004, Generalized Estimates from Streamflow Data of Annual and Seasonal Ground-Water-Recharge Rates for Drainage Basins in New Hampshire, U.S. Geological Survey Scientific Investigations Report 2004-5019, 67 p. (http://pubs.usgs.gov/sir/2004/5019/http://pubs.usgs.gov/sir/2004/5019/)

Bankfull Statistics Parameters [Appalachian Highlands D Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	27.2	square miles	0.07722	940.1535

Bankfull Statistics Parameters [New England P Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	27.2	square miles	3.799224	138.999861

Bankfull Statistics Parameters [USA Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	27.2	square miles	0.07722	59927.7393

Bankfull Statistics Flow Report [Appalachian Highlands D Bieger 2015]

Statistic	Value	Unit
Bieger_D_channel_width	59.8	ft
Bieger_D_channel_depth	2.89	ft
Bieger_D_channel_cross_sectional_area	176	ft^2

Bankfull Statistics Flow Report [New England P Bieger 2015]

Statistic	Value	Unit
Bieger_P_channel_width	63.7	ft
Bieger_P_channel_depth	2.84	ft
Bieger_P_channel_cross_sectional_area	187	ft^2

Bankfull Statistics Flow Report [USA Bieger 2015]

Statistic	Value	Unit
Bieger_USA_channel_width	39.6	ft

Statistic	Value	Unit
Bieger_USA_channel_depth	2.44	ft
Bieger_USA_channel_cross_sectional_area	102	ft^2

Bankfull Statistics Flow Report [Area-Averaged]

Statistic	Value	Unit
Bieger_D_channel_width	59.8	ft
Bieger_D_channel_depth	2.89	ft
Bieger_D_channel_cross_sectional_area	176	ft^2
Bieger_P_channel_width	63.7	ft
Bieger_P_channel_depth	2.84	ft
Bieger_P_channel_cross_sectional_area	187	ft^2
Bieger_USA_channel_width	39.6	ft
Bieger_USA_channel_depth	2.44	ft
Bieger_USA_channel_cross_sectional_area	102	ft^2

Bankfull Statistics Citations

Bieger, Katrin; Rathjens, Hendrik; Allen, Peter M.; and Arnold, Jeffrey G.,2015, Development and Evaluation of Bankfull Hydraulic Geometry Relationships for the Physiographic Regions of the United States, Publications from USDA-ARS / UNL Faculty, 17p. (https://digitalcommons.unl.edu/usdaarsfacpub /1515?utm_source=digitalcommons.unl.edu%2Fusdaarsfacpub%2F1515&utm_medium=PDF& utm_campaign=PDFCoverPages)

Seasonal Flow Statistics Parameters [Low Flow Statewide]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	27.2	square miles	3.26	689
CONIF	Percent Coniferous Forest	15.1759	percent	3.07	56.2
PREBC0103	Jan to Mar Basin Centroid Precip	7.68	inches	5.79	15.1
BSLDEM30M	Mean Basin Slope from 30m DEM	4.06	percent	3.19	38.1
MIXFOR	Percent Mixed Forest	26.1062	percent	6.21	46.1
PREG_03_05	Mar to May Gage Precipitation	9.3	inches	6.83	11.5
TEMP	Mean Annual Temperature	46.742	degrees F	36	48.7
TEMP_06_10	Jun to Oct Mean Basinwide Temp	62.546	degrees F	52.9	64.4
PREG_06_10	Jun to Oct Gage Precipitation	16.9	inches	16.5	23.1
ELEVMAX	Maximum Basin Elevation	513.485	feet	260	6290

Seasonal Flow Statistics Flow Report [Low Flow Statewide]

PIl: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE:

Standard Error (other -- see report)

Statistic	Value	Unit	PIl	PIu	SE	ASEp
Jan to Mar15 60 Percent Flow	21.2	ft^3/s	14.7	29.3	21.2	21.2
Jan to Mar15 70 Percent Flow	18.2	ft^3/s	12.8	25	20.7	20.7
Jan to Mar15 80 Percent Flow	15.2	ft^3/s	11.1	20.2	18.2	18.2
Jan to Mar15 90 Percent Flow	11.6	ft^3/s	8.34	15.6	19.3	19.3
Jan to Mar15 95 Percent Flow	9.13	ft^3/s	6.41	12.5	20.7	20.7
Jan to Mar15 98 Percent Flow	7.17	ft^3/s	4.49	10.7	27.1	27.1
Jan to Mar15 7 Day 2 Year Low Flow	15	ft^3/s	11.2	19.5	17.2	17.2
Jan to Mar15 7 Day 10 Year Low Flow	8.69	ft^3/s	6.01	12	21.5	21.5
Mar16 to May 60 Percent Flow	44.3	ft^3/s	35.4	54.6	12.2	12.2
Mar16 to May 70 Percent Flow	36.1	ft^3/s	29.4	43.8	11.4	11.4
Mar16 to May 80 Percent Flow	29	ft^3/s	23.2	35.8	12.4	12.4
Mar16 to May 90 Percent Flow	22.2	ft^3/s	17.3	28	13.7	13.7
Mar16 to May 95 Percent Flow	17.4	ft^3/s	13.3	22.3	14.8	14.8
Mar16 to May 98 Percent Flow	12.4	ft^3/s	8.93	16.8	18.1	18.1
Mar16 to May 7 Day 2 Year Low Flow	20.9	ft^3/s	16.3	26.2	14.5	14.5
Mar16 to May 7 Day 10 Year Low Flow	11.9	ft^3/s	9.02	15.3	16.2	16.2
Jun to Oct 60 Percent Flow	3.69	ft^3/s	1.95	6.33	36.7	36.7
Jun to Oct 70 Percent Flow	2.66	ft^3/s	1.33	4.75	39.9	39.9
Jun to Oct 80 Percent Flow	1.92	ft^3/s	0.878	3.63	44.5	44.5
Jun to Oct 90 Percent Flow	1.18	ft^3/s	0.483	2.39	50.7	50.7
Jun to Oct 95 Percent Flow	0.828	ft^3/s	0.304	1.79	57	57
Jun to Oct 98 Percent Flow	0.629	ft^3/s	0.215	1.42	61.1	61.1
Jun to Oct 7 Day 2 Year Low Flow	1.37	ft^3/s	0.5	2.87	55.6	55.6
Jun to Oct 7 Day 10 Year Low Flow	0.538	ft^3/s	0.132	1.35	78.5	78.5
Nov to Dec 60 Percent Flow	17.8	ft^3/s	11.7	25.9	23.3	23.3
Nov to Dec 70 Percent Flow	12.6	ft^3/s	7.88	19	25.9	25.9
Nov to Dec 80 Percent Flow	8.47	ft^3/s	5.12	13.1	27.8	27.8
Nov to Dec 90 Percent Flow	5.06	ft^3/s	2.85	8.27	31.6	31.6
Nov to Dec 95 Percent Flow	3.24	ft^3/s	1.61	5.78	38.3	38.3
Nov to Dec 98 Percent Flow	1.93	ft^3/s	0.761	3.97	50.6	50.6
Oct to Nov 7 Day 2 Year Low Flow	8.83	ft^3/s	5.67	13	23.3	23.3
Oct to Nov 7 Day 10 Year Low Flow	2.83	ft^3/s	1.4	5.03	36.6	36.6

Seasonal Flow Statistics Citations

Flynn, R.H. and Tasker, G.D.,2002, Development of Regression Equations to Estimate Flow Durations and Low-

Flow-Frequency Statistics in New Hampshire Streams: U.S.Geological Survey Scientific Investigations Report 02-4298, 66 p. (http://pubs.water.usgs.gov/wrir02-4298)

Flow-Duration Statistics Parameters [Low Flow Statewide]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	27.2	square miles	3.26	689
PREG_06_10	Jun to Oct Gage Precipitation	16.9	inches	16.5	23.1
TEMP	Mean Annual Temperature	46.742	degrees F	36	48.7

Flow-Duration Statistics Flow Report [Low Flow Statewide]

PIl: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PIl	PIu	SE	ASEp
60 Percent Duration	14.3	ft^3/s	10.5	19	18	18
70 Percent Duration	8.97	ft^3/s	6.27	12.4	20.6	20.6
80 Percent Duration	5.05	ft^3/s	3.09	7.75	28	28
90 Percent Duration	2.45	ft^3/s	1.26	4.26	37.5	37.5
95 Percent Duration	1.47	ft^3/s	0.674	2.76	44.1	44.1
98 Percent Duration	0.917	ft^3/s	0.351	1.93	54.3	54.3

Flow-Duration Statistics Citations

Flynn, R.H. and Tasker, G.D.,2002, Development of Regression Equations to Estimate Flow Durations and Low-Flow-Frequency Statistics in New Hampshire Streams: U.S.Geological Survey Scientific Investigations Report 02-4298, 66 p. (http://pubs.water.usgs.gov/wrir02-4298)

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Application Version: 4.8.1

StreamStats Services Version: 1.2.22

NSS Services Version: 2.1.2

SECTION 11

Stormwater Inspection and Maintenance Manual

INSPECTION AND MAINTENANCE MANUAL
FOR
STORMWATER MANAGEMENT / BMP FACILITIES

7 West Commercial Development

15 Durham Road
Dover, New Hampshire 03820
Tax Map H, Lot 11

Proper inspection, maintenance, and repair are key elements in maintaining a successful stormwater management program on a developed property. Routine inspections ensure permit compliance and reduce the potential for deterioration of infrastructure or reduced water quality. The following responsible parties shall be in charge of managing the stormwater facilities:

RESPONSIBLE PARTIES:

Owner / Permittee		***Summit Land Development***	
	Name	*Company*	*Phone*
Inspection/ Maintenance			
	Name	*Company*	*Phone*

NOTE: Inspection and maintenance responsibilities transfer to future property owners.

Included in this Inspection and Maintenance Manual are the following components:

- Drainage Features and Site BMP Functions and Maintenance Descriptions
- Guidelines for Control of Invasive Species
- Regular Inspection and Maintenance Guidance for Bioretention Systems
- Checklists for Inspection of Bioretention Systems
- Inspection and Maintenance Checklist
- Stormwater System Operations and Maintenance Report Form
- Site Drainage Plan

RAINGARDENS AND FILTRATION BASINS

Function – Raingardens and filtration ponds provide treatment to runoff prior to directing it to stormwater systems by filtering sediment and suspended solids, trapping them in the bottom of the garden and in the filter media itself. Additional treatment is provided by the native water-tolerant vegetation which removes nutrients and other pollutants through bio-uptake. Stormwater detention and infiltration can also be provided as the filtering process slows runoff, decreases the peak rate of discharge and promotes groundwater recharge.

Detention ponds temporarily store runoff and allow for its controlled release during and after a storm event, decreasing peak rates of runoff and minimizing flooding.

Raingardens, infiltration ponds, and detention ponds shall be managed (Per AGR 3800 and RSA 430:53) to: prevent and control the spread of invasive plant, insect, and fungal species; minimize the adverse environmental and economic effects invasive species cause to agriculture, forests, wetlands, wildlife, and other natural resources of the state; and protect the public from potential health problems attributed to certain invasive species.

Maintenance

- Inspect annually and after significant rainfall event.
- If a raingarden does not completely drain within 72-hours following a rainfall event, then a qualified professional should assess the condition of the facility to determine measures required to restore its filtration and/or infiltration function(s), including but not limited to removal of accumulated sediments and/or replacement or reconstruction of the filter media.
- Replace any riprap dislodged from spillways, inlets and outlets.
- Remove any obstructions, litter and accumulated sediment or debris as warranted but no less than once a year.
- Mowing of any grassed area in or adjacent to a raingarden shall be performed on a monthly basis (when areas are not inundated) to keep the vegetation in vigorous condition. The cut grass shall be removed to prevent the decaying organic litter from clogging the filter media or choking other vegetation.
- Select vegetation should be maintained in healthy condition. This may include pruning, removal and replacement of dead or diseased vegetation.
- Remove any invasive species, Per AGR 3800 and RSA 430:53.

(See Control of Invasive Plants, pg 7)

SUB-SURFACE STORMWATER TREATMENT SYSTEM

Function – Sub-Surface treatment systems treat runoff prior to directing it to surface stormwater systems by filtering sediment and suspended solids, trapping them in the isolation rows and in the filter rock. Stormwater detention and infiltration can also be provided as the filtering process slows runoff, decreases the peak rate of discharge and promotes groundwater recharge.

The Sub-Surface Stormwater Treatment System shall be inspected and maintained at m a minimum of every 6 months for the first year and annually thereafter. Inspections shall comply with to the requirements of the manufacturer. At a minimum, the following inspection and maintenance requirements are included:

STEP 1) INSPECT ISOLATOR ROW 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 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 rows
   - b.1. Remove cover from structure at upstream end of isolator row
   - b.2. using a flashlight, inspect down the isolator row 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 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 AND ANNUALLY EVERY YEAR THEREAFTER. 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.

CULVERTS AND DRAINAGE PIPES

Function – Culverts and drainage pipes convey stormwater away from buildings, walkways, and parking areas and to surface waters or closed drainage systems.

Maintenance

- Culverts and drainage pipes shall be inspected semi-annually, or more often as needed, for accumulation of debris and structural integrity. Leaves and other debris shall be removed from the inlet and outlet to insure the functionality of drainage structures. Debris shall be disposed of on site where it will not concentrate back at the drainage structures or at a solid waste disposal facility.

- Riprap Areas - Culvert outlets and inlets shall be inspected during annual maintenance and operations for erosion and scour. If scour or creek erosion is identified, the outlet owner shall take appropriate means to prevent further erosion. Increased lengths of riprap may require a NHDES Wetlands Permit modification.

CATCH BASINS

Function – Catch basins collect stormwater, primarily from paved surfaces and roofs. Stormwater from paved areas often contains sediment and contaminants. Catch basin sumps serve to trap sediment, trace metals, nutrients and debris. Hooded catch basins trap hydrocarbons and floating debris.

Maintenance

- Remove leaves and debris from structure grates on an as-needed basis.

- Sumps shall be inspected and cleaned (as needed) on an annual basis to protect water quality and infiltration capacity. Catch basin debris shall be disposed of at a solid waste disposal facility.

VEGETATIVE SWALES

Function – Vegetative swales filter sediment from stormwater, promote infiltration, and the uptake of contaminates. They are designed to treat runoff and dispose of it safely into the natural drainage system.

Maintenance

- Timely maintenance is important to keep a swale in good working condition. Mowing of grassed swales shall be monthly to keep the vegetation in vigorous condition. The cut vegetation shall be removed to prevent the decaying organic litter from adding pollutants to the discharge from the swale.

- Fertilizing shall be bi-annual or as recommended from soil testing.

- Inspect swales following significant rainfall events.

- Woody vegetation shall not be allowed to become established in the swales or rock riprap outlet protection and if present shall be removed.

- Accumulated debris disrupts flow and leads to clogging and erosion. Remove debris and litter as necessary.

- Inspect for eroded areas. Determine cause of erosion and correct deficiency as required. Monitor repaired areas.

LEVEL SPREADERS AND PLUNGE POOLS

Function – Level spreaders and plunge pools covert concentrated stormwater flows into less-erosive sheet flow, minimizing erosion and maximizing the treatment capabilities of associated buffers. Vegetated buffers, either forested or meadow, slow runoff which promotes and reduced peak rates of runoff. The reduced velocities and the presence of vegetation encourage the filtration of sediment and the limited bio-uptake of nutrients.

Maintenance

- Inspect level spreaders and buffers at least annually for signs of erosion, sediment buildup, or vegetation loss.

- If a meadow buffer, provide periodic mowing as needed to maintain a healthy stand of herbaceous vegetation.

- If a forested buffer, then the buffer should be maintained in an undisturbed condition, unless erosion occurs.

- If erosion of the buffer (forested or meadow) occurs, eroded areas should be repaired and replanted with vegetation similar to the remaining buffer. Corrective action should include eliminating the source of the erosion problem and may require retrofit or reconstruction of the level spreader.

- Remove debris and accumulated sediment and dispose of properly.

LANDSCAPED AREAS - FERTILIZER MANAGEMENT

Function – Fertilizer management involves controlling the rate, timing and method of fertilizer application so that the nutrients are taken up by the plants thereby reducing the chance of polluting the surface and ground waters. Fertilizer management can be effective in reducing the amounts of phosphorus and nitrogen in runoff from landscaped areas, particularly lawns.

Maintenance

- Have the soil tested by your landscaper or local Soil Conservation Service for nutrient requirements and follow the recommendations.

- Do not apply fertilizer to frozen ground.
- Clean up any fertilizer spills.
- Do not allow fertilizer to be broadcast into water bodies.
- When fertilizing a lawn, water thoroughly, but do not create a situation where water runs off the surface of the lawn.

LANDSCAPED AREAS - LITTER CONTROL

Function – Landscaped areas tend to filter debris and contaminates that may block drainage systems and pollute the surface and ground waters.

Maintenance

- Litter Control and lawn maintenance involves removing litter such as trash, leaves, lawn clippings, pet wastes, oil and chemicals from streets, parking lots, and lawns before materials are transported into surface waters.
- Litter control shall be implemented as part of the grounds maintenance program.

DE-ICING CHEMICAL USE AND STORAGE

Function – Sand and salt are used for de-icing of drives.

The project is located within a watershed of a chloride-impaired waterbody. Therefore,

Salt use shall be minimized for de-icing activities.

The responsible party shall employ a New Hampshire Certified Salt Applicator for winter snow and ice management activities.

Maintenance

- **Salt use shall be minimized.** Sand shall be used for de-icing activities when possible. Salt is highly water-soluble. Contamination of fresh water wetlands and other sensitive areas can occur when salt is stored in open areas. Owner shall not store salt piles on site.

CONTROL OF INVASIVE PLANTS

Function – 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.

Maintenance

During maintenance activities, check for the presence of invasive plants and remove in a safe manner as described in the attached “Methods for Disposing Non-Native Invasive Plant” prepared by the UNH cooperative Extension.

GENERAL CLEAN UP

Upon completion of the project, the contractor shall remove all temporary stormwater structures (i.e., temporary stone check dams, silt fence, temporary diversion swales, catch basin inlet basket, etc.). Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required shall be dressed to conform to the existing grade, prepared, and seeded. Remove any sediment in catch basins and clean drain pipes that may have accumulated during construction.

Once in operation, all paved areas of the site should be swept at least once annually, preferably at the end of winter prior to significant spring rains.

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.

Background:

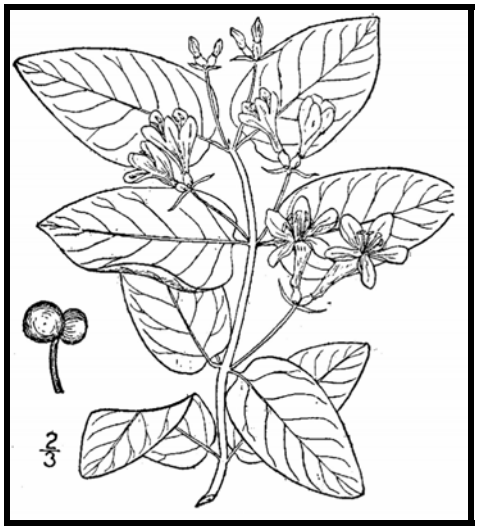
Invasive plants are introduced, alien, or non-native plants, which have been moved by people from their native habitat to a new area. Some exotic plants are imported for human use such as landscaping, erosion control, or food crops. They also can arrive as "hitchhikers" among shipments of other plants, 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.

UNIVERSITY of NEW HAMPSHIRE COOPERATIVE EXTENSION

Methods for Disposing Non-Native Invasive Plants

Prepared by the Invasives Species Outreach Group, volunteers interested in helping people control invasive plants. Assistance provided by the Piscataquog Land Conservancy and the NH Invasives Species Committee. Edited by Karen Bennett, Extension Forestry Professor and Specialist.



Tatarian honeysuckle
Lonicera tatarica
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 3: 282.

Non-native invasive plants crowd out natives in natural and managed landscapes. They cost taxpayers billions of dollars each year from lost agricultural and forest crops, decreased biodiversity, impacts to natural resources and the environment, and the cost to control and eradicate them.

Invasive plants grow well even in less than desirable conditions such as sandy soils along roadsides, shaded wooded areas, and in wetlands. In ideal conditions, they grow and spread even faster. There are many ways to remove these non-native invasives, but once removed, care is needed to dispose the removed plant material so the plants don't grow where disposed.

Knowing how a particular plant reproduces indicates its method of spread and helps determine the appropriate disposal method. Most are spread by seed and are dispersed by wind, water, animals, or people. Some reproduce by vegetative means from pieces of stems or roots forming new plants. Others spread through both seed and vegetative means.

Because movement and disposal of viable plant parts is restricted (see NH Regulations), viable invasive parts can't be brought to most transfer stations in the state. Check with your transfer station to see if there is an approved, designated area for invasives disposal. This fact sheet gives recommendations for rendering plant parts non-viable.

Control of invasives is beyond the scope of this fact sheet. For information about control visit www.nhinvasives.org or contact your UNH Cooperative Extension office.

New Hampshire Regulations

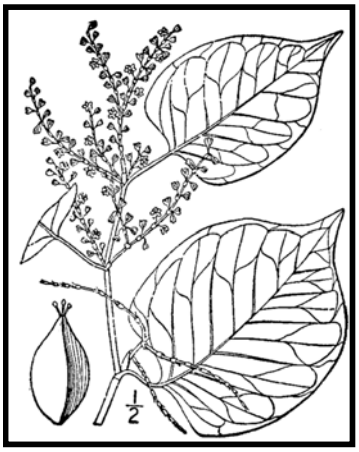
Prohibited invasive species shall only be disposed of in a manner that renders them nonliving and nonviable. (Agr. 3802.04)

No person shall collect, transport, import, export, move, buy, sell, distribute, propagate or transplant any living and viable portion of any plant species, which includes all of their cultivars and varieties, listed in Table 3800.1 of the New Hampshire prohibited invasive species list. (Agr 3802.01)

How and When to Dispose of Invasives?

To prevent seed from spreading remove invasive plants before seeds are set (produced). Some plants continue to grow, flower and set seed even after pulling or cutting. Seeds can remain viable in the ground for many years. If the plant has flowers or seeds, place the flowers and seeds in a heavy plastic bag "head first" at the weeding site and transport to the disposal site. The following are general descriptions of disposal methods. See the chart for recommendations by species.

Burning: Large woody branches and trunks can be used as firewood or burned in piles. For outside burning, a written fire permit from the local forest fire warden is required unless the ground is covered in snow. Brush larger than 5 inches in diameter can't be burned. Invasive plants with easily airborne seeds like black swallow-wort with mature seed pods (indicated by their brown color) shouldn't be burned as the seeds may disperse by the hot air created by the fire.



Japanese knotweed
Polygonum cuspidatum
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 1: 676.

Bagging (solarization): Use this technique with softer-tissue plants. Use heavy black or clear plastic bags (contractor grade), making sure that no parts of the plants poke through. Allow the bags to sit in the sun for several weeks and on dark pavement for the best effect.

Tarping and Drying: Pile material on a sheet of plastic and cover with a tarp, fastening the tarp to the ground and monitoring it for escapes. Let the material dry for several weeks, or until it is clearly nonviable.

Chipping: Use this method for woody plants that don't reproduce vegetatively.

Burying: This is risky, but can be done with watchful diligence. Lay thick plastic in a deep pit before placing the cut up plant material in the hole. Place the material away from the edge of the plastic before covering it with more heavy plastic. Eliminate as much air as possible and toss in soil to weight down the material in the pit. Note that the top of the buried material should be at least three feet underground. Japanese knotweed should be at least 5 feet underground!

Drowning: Fill a large barrel with water and place soft-tissue plants in the water. Check after a few weeks and look for rotted plant material (roots, stems, leaves, flowers). Well-rotted plant material may be composted. A word of caution- seeds may still be viable after using this method. Do this before seeds are set. This method isn't used often. Be prepared for an awful stink!

Composting: Invasive plants can take root in compost. Don't compost any invasives unless you know there is no viable (living) plant material left. Use one of the above techniques (bagging, tarping, drying, chipping, or drowning) to render the plants nonviable before composting. Closely examine the plant before composting and avoid composting seeds.

Be diligent looking for seedlings for *years* in areas where removal and disposal took place.

Suggested Disposal Methods for Non-Native Invasive Plants

This table provides information concerning the disposal of removed invasive plant material. If the infestation is treated with herbicide and left in place, these guidelines don't apply. Don't bring invasives to a local transfer station, unless there is a designated area for their disposal, or they have been rendered non-viable. This listing includes wetland and upland plants from the New Hampshire Prohibited Invasive Species List. The disposal of aquatic plants isn't addressed.

<table>
<tr><th>Woody Plants</th><th>Method of Reproducing</th><th>Methods of Disposal</th></tr>
<tr><td rowspan="2">Norway maple
(Acer platanoides)
European barberry
(Berberis vulgaris)
Japanese barberry
(Berberis thunbergii)
autumn olive
(Elaeagnus umbellata)
burning bush
(Euonymus alatus)
Morrow's honeysuckle
(Lonicera morrowii)
Tatarian honeysuckle
(Lonicera tatarica)
showy bush honeysuckle
(Lonicera x bella)
common buckthorn
(Rhamnus cathartica)
glossy buckthorn
(Frangula alnus)</td><td rowspan="2">Fruit and Seeds
 </td><td>Prior to fruit/seed ripening
Seedlings and small plants
▪ Pull or cut and leave on site with roots exposed. No special care needed.
Larger plants
▪ Use as firewood.
▪ Make a brush pile.
▪ Chip.
▪ Burn.</td></tr>
<tr><td>After fruit/seed is ripe
Don't remove from site.
▪ Burn.
▪ Make a covered brush pile.
▪ Chip once all fruit has dropped from branches.
▪ Leave resulting chips on site and monitor.</td></tr>
<tr><td rowspan="2">oriental bittersweet
(Celastrus orbiculatus)
multiflora rose
(Rosa multiflora)</td><td rowspan="2">Fruits, Seeds, Plant Fragments
 </td><td>Prior to fruit/seed ripening
Seedlings and small plants
▪ Pull or cut and leave on site with roots exposed. No special care needed.
Larger plants
▪ Make a brush pile.
▪ Burn.</td></tr>
<tr><td>After fruit/seed is ripe
Don't remove from site.
▪ Burn.
▪ Make a covered brush pile.
▪ Chip – only after material has fully dried (1 year) and all fruit has dropped from branches. Leave resulting chips on site and monitor.</td></tr>
</table>

<table>
<tr><th>Non-Woody Plants</th><th>Method of Reproducing</th><th>Methods of Disposal</th></tr>
<tr><td rowspan="2">garlic mustard
(Alliaria petiolata)
spotted knapweed
(Centaurea maculosa)
▪ Sap of related knapweed can cause skin irritation and tumors. Wear gloves when handling.
black swallow-wort
(Cynanchum nigrum)
▪ May cause skin rash. Wear gloves and long sleeves when handling.
pale swallow-wort
(Cynanchum rossicum)
giant hogweed
(Heracleum mantegazzianum)
▪ Can cause major skin rash. Wear gloves and long sleeves when handling.
dame’s rocket
(Hesperis matronalis)
perennial pepperweed
(Lepidium latifolium)
purple loosestrife
(Lythrum salicaria)
Japanese stilt grass
(Microstegium vimineum)
mile-a-minute weed
(Polygonum perfoliatum)</td><td rowspan="2">Fruits and Seeds
 </td><td>Prior to flowering
Depends on scale of infestation
Small infestation
▪ Pull or cut plant and leave on site with roots exposed.

Large infestation
▪ Pull or cut plant and pile. (You can pile onto or cover with plastic sheeting).
▪ Monitor. Remove any re-sprouting material.</td></tr>
<tr><td>During and following flowering
Do nothing until the following year or remove flowering heads and bag and let rot.

Small infestation
▪ Pull or cut plant and leave on site with roots exposed.

Large infestation
▪ Pull or cut plant and pile remaining material. (You can pile onto plastic or cover with plastic sheeting).
▪ Monitor. Remove any re-sprouting material.</td></tr>
<tr><td>common reed
(Phragmites australis)
Japanese knotweed
(Polygonum cuspidatum)
Bohemian knotweed
(Polygonum x bohemicum)</td><td>Fruits, Seeds, Plant Fragments
Primary means of spread in these species is by plant parts. Although all care should be given to preventing the dispersal of seed during control activities, the presence of seed doesn’t materially influence disposal activities.</td><td>Small infestation
▪ Bag all plant material and let rot.
▪ Never pile and use resulting material as compost.
▪ Burn.

Large infestation
▪ Remove material to unsuitable habitat (dry, hot and sunny or dry and shaded location) and scatter or pile.
▪ Monitor and remove any sprouting material.
▪ Pile, let dry, and burn.</td></tr>
</table>

January 2010

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Regular Inspection and Maintenance Guidance for Bioretention Systems / Tree Filters

Maintenance of bioretention systems and tree filters can typically be performed as part of standard landscaping. Regular inspection and maintenance is critical to the effective operation of bioretention systems and tree filters to insure they remain clear of leaves and debris and free draining. 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 but not limited to: the occurrence of large storm events, overly wet or dry periods, regional hydrologic conditions, and the upstream land use.

ACTIVITIES

The most common maintenance activity is the removal of sediment and organic debris from the system and bypass structures. 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, including infiltration rate and nutrient uptake. Vegetation care is important to system productivity and health.

ACTIVITY	FREQUENCY
CLOGGING AND SYSTEM PERFORMANCE	
A record should be kept of the time to drain for the system completely after a storm event. The system should drain completely within 72 hours.	After every major storm in the first few months, then annually at minimum.
Check to insure the filter surface remains well draining after storm events. **Remedy**: If filter bed is clogged, draining poorly, or standing water covers more than 50% of the surface 48 hours after a precipitation event, then remove top few inches of discolored material. Till, or rake remaining material as needed.	
Check inlets and outlets for leaves and debris. **Remedy**: Rake in and around the system to clear it of debris. Also, clear the inlet and overflow if obstructed.	Quarterly initially, annually as a minimum thereafter.
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	
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, outlets, sidewalls.	
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 cared for as needed.	Annually or as needed

CHECKLIST FOR INSPECTION OF BIORETENTION SYSTEM / TREE FILTERS

Location:
Inspector:
Date:
Time:
Site Conditions:
Days Since Last Rain Event:

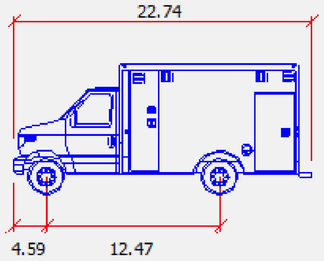
Inspection Items	Satisfactory (S) or Unsatisfactory (U)	Comments/Corrective Action
1. Initial Inspection After Planting and Mulching		
Plants are stable, roots not exposed	**S** **U**	
Surface is at design level, no evidence of preferential flow/shoving	**S** **U**	
Inlet and outlet/bypass are functional	**S** **U**	
2. Debris Cleanup (1 time/year minimum, Spring/Fall)		
Litter, leaves, and dead vegetation removed from the system	**S** **U**	
Prune/mow vegetation	**S** **U**	
3. Standing Water (1 time/year and/or after large storm events)		
No evidence of standing water after 24-48 hours since rainfall	**S** **U**	
4. Vegetation Condition and Coverage		
Vegetation condition good with good coverage (typically > 75%)	**S** **U**	
5. Other Issues		
Note any additional issues not previously covered.	**S** **U**	

Corrective Action Needed	Due Date
1.	
2.	
3.	
Inspector Signature	**Date**

Inspection & Maintenance Checklist

BMP / System	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance/ Cleanout Threshold
Paved surfaces:			
Pavement Sweeping	Routinely	N/A	N/A
Litter & Trash Removal	Routinely	N/A	Parcel will be free of litter/trash.
Deicing Agents	N/A	Keep De-Icing Log	**Low Salt**
Closed Drainage System:			
Drainage Pipes	1 time per 2 years	Check for sediment accumulation & clogging.	Less than 2" sediment depth
Catch Basins	Annually	Check for sediment accumulation (Less than 24" sediment), blocked hood, and floating debris.	Clean Sumps. Remove all floating debris.
Drain Manhole	Annually	Check for sediment, debris, and obstructions.	Remove all Obstructions.

BMP / System	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance / Cleanout Threshold
BMPs:			
Raingardens or Infiltration Pond	Annually	• Check infiltration rates and filter media. • Check for trash & debris. • Check for sediment buildup. • Check for vegetation stability. • Check for excess woody vegetation growth. • Check for invasive species.	Remove trash & debris, sediment, woody vegetation, and invasive species. Side slopes and berm are to be mowed. Replant vegetation if required.
Vegetated Swale	Annually	Check for sediment buildup, vegetation loss and invasive species, debris, and damage.	Remove sediment, debris and invasive species, repair damage, and mow grass monthly to a depth of 4 inches.
Riprap Outlet Protection	Annually	Check for sediment buildup and structure damage.	Remove excess sediment and repair damage.
Stone Berm Level Spreader	Annually	Check for sediment buildup, debris and signs of erosion.	Remove sediment and debris. Immediately repair.

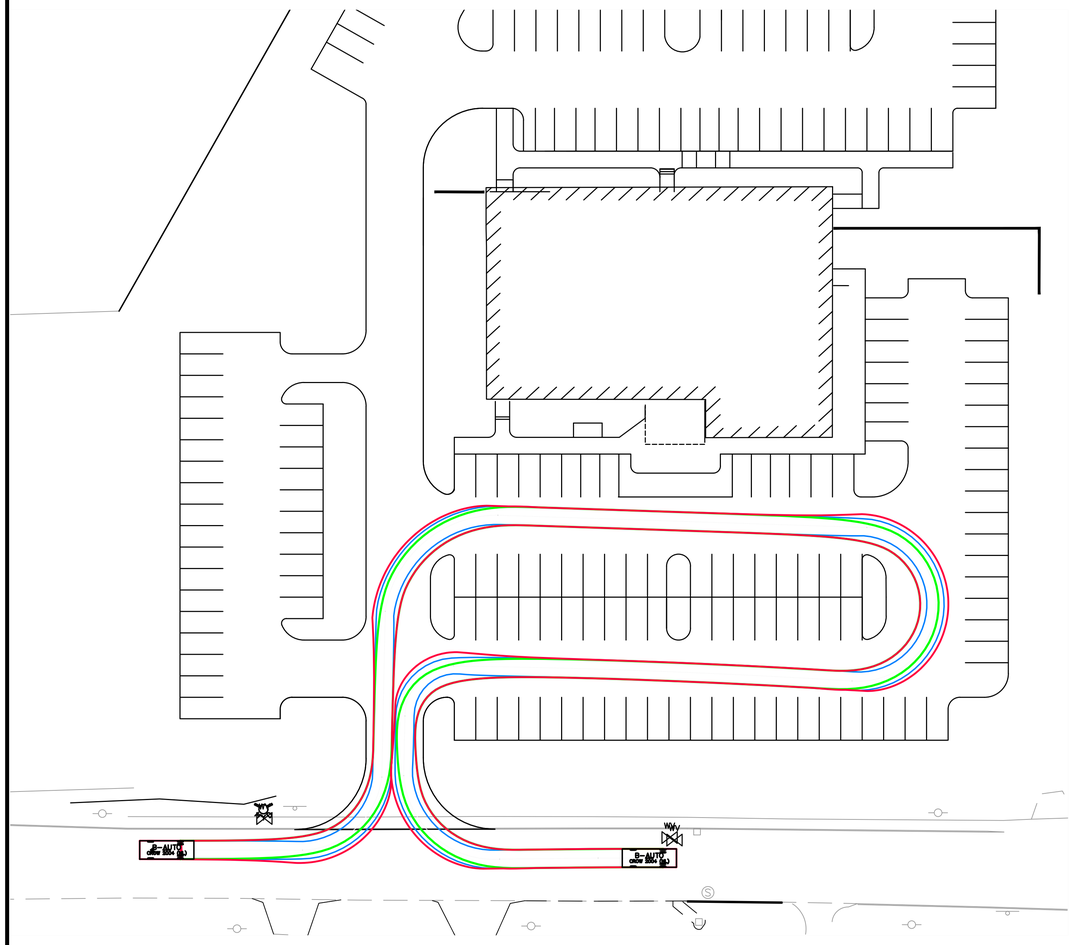


	feet
Width	: 7.71
Track	: 7.71
Lock to Lock Time	: 6.0
Steering Angle	: 47.8

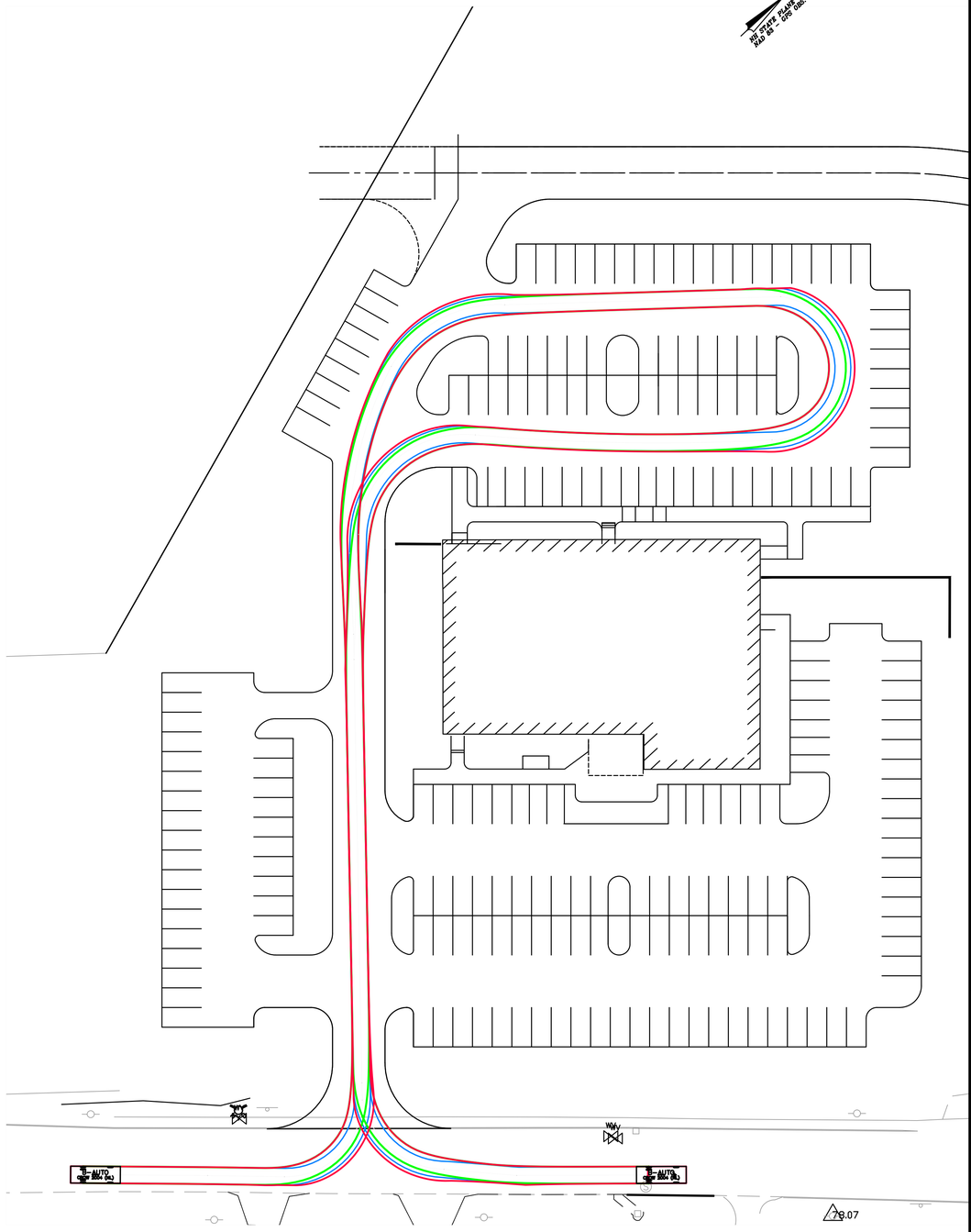
VEHICLE MODELED – AMBULANCE

LEGEND

FRONT WHEEL PATH
REAR WHEEL PATH
VEHICLE BODY



AMBULANCE
(WESTBOUND IN / OUT)



AMBULANCE
(EASTBOUND IN / OUT)

ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

THIS DRAWING HAS NOT BEEN RELEASED FOR CONSTRUCTION

ISSUED FOR: PLANNING BOARD

ISSUE DATE: OCTOBER 5, 2022

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMITTAL	CDB	10/05/22

DRAWN BY: MBS
APPROVED BY: CDB
DRAWING FILE: 4952-Site.dwg

SCALE: 24" X 36" 1" = 30'
12" X 18" 1" = 60

OWNER:
7 WEST, LLC
P.O. BOX 728
DOVER, NH 03821

APPLICANT:
SUMMIT LAND DEVELOPMENT
340 CENTRAL AVE., #202
DOVER, NH 03820

PROJECT:
7 WEST
COMMERCIAL
DEVELOPMENT

(FILE NO. P22-38)
TAX MAP H, LOT 11
DOVER, NH

TITLE:
TRUCK TURNING (AMBULANCE)

SHEET NUMBER:
T-2

P4952

STORM WATER SYSTEM OPERATION AND MAINTENANCE REPORT

General Information		
Project Name		
Owner		
Inspector's Name(s)		
Inspector's Contact Information		
Date of Inspection	**Start Time:**	**End Time:**
Type of Inspection: ☐ Annual Report ☐ Post-storm event ☐ Due to a discharge of significant amounts of sediment		
Notes:		

General Site Questions and Discharges of Significant Amounts of Sediment			
Subject		**Status**	**Notes**
A discharge of significant amounts of sediment may be indicated by (but is not limited to) observations of the following. Note whether any are observed during this inspection:			*Notes/ Action taken:*
1	Do the current site conditions reflect the attached site plan?	❑Yes ❑No	
2	Is the site permanently stabilized, temporary erosion and sediment controls are removed, and stormwater discharges from construction activity are eliminated?	❑Yes ❑No	
3	Is there evidence of the discharge of significant amounts of sediment to surface waters, or conveyance systems leading to surface waters?	❑Yes ❑No	
4	Is there evidence of concentrated flows of stormwater such as rills or channels that cause erosion when such flows are not filtered, settled or otherwise treated to remove sediment?	❑Yes ❑No	
5	Is there evidence of deposits of sediment from the site on any adjacent property or stormwater system.	❑Yes ❑No	
6	Is there evidence of discharges from the site to streams running through or along the site where visual observations indicate significant amounts of sediment present in them.	❑Yes ❑No	
7	Is there evidence of invasive species within the stormwater treatment areas?	❑Yes ❑No	

Permit Coverage and Plans				
#	BMP/Facility	Inspected	Corrective Action Needed and Notes	Date Corrected
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		☐Yes ☐No		
		☐Yes ☐No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
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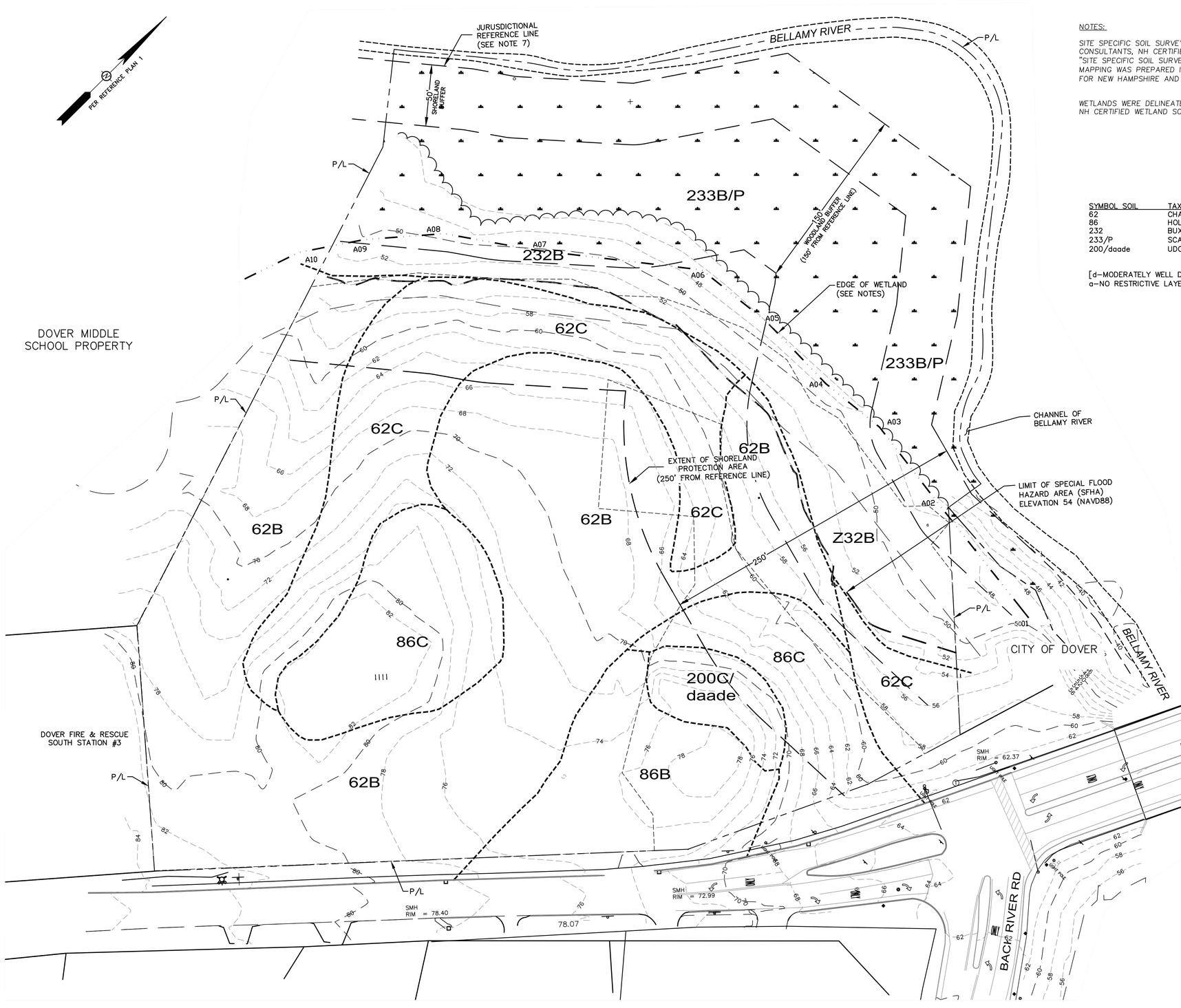
		❑Yes ❑No		
		❑Yes ❑No		



NOTES:

SITE SPECIFIC SOIL SURVEY WAS COMPLETED BY BRUCE A. GILDAY OF BAG LAND CONSULTANTS, NH CERTIFIED SOIL SCIENTIST #088, AND SHOWN ACCORDING TO THE "SITE SPECIFIC SOIL SURVEY TECHNICAL REPORT" DATED JULY 26, 2021. THE SOIL MAPPING WAS PREPARED IN ACCORDANCE WITH "SITE SPECIFIC SOIL MAPPING STANDARDS FOR NEW HAMPSHIRE AND VERMONT" VERSION. 7.0, MARCH 2021.

WETLANDS WERE DELINEATED BY JOHN ST. JOHN OF ECOSYSTEMS LAND PLANNING, NH CERTIFIED WETLAND SCIENTIST #221, ON APRIL 20, 2021.

SITE SPECIFIC SOIL MAP UNIT KEY

SYMBOL SOIL	TAXONOMIC NAME	HSG CLASS	DRAINAGE CLASS
62	CHARLTON	B	WELL DRAINED
86	HOLLIS	C	WELL DRAINED
232	BUXTON	C	MODERATELY WELL-DRAINED
233/P	SCANTIC	D	POORLY DRAINED (P)
200/daade	UDORTHENTS		SMOOTH FILL REFUSE MATERIAL

[d-MODERATELY WELL DRAINED / a-NO NATURAL SOIL WITHIN 60"/ a-NO RESTRICTIVE LAYERS / d- NO KSAT / e- NO HSG]

SLOPE PHASES

SYMBOL	PHASE
A	0-3%
B	3-8%
C	8-15%
D	15-25%
E	25-50%
F	50%+

LEGEND

- PROPERTY LINE
- WETLANDS
- 60 EXISTING CONTOUR
- 26 SOIL SYMBOL
- SOIL BOUNDARY

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)

P4951

LAND CONSULTANTS

43 ROCKINGHAM ST
CONCORD, NH 03301

(603)228-5775

ALTUS ENGINEERING, INC.

133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

STATE OF NEW HAMPSHIRE CORY D. GILDEN NO. 14289 LICENSED PROFESSIONAL ENGINEER

5/6/22

THIS DRAWING HAS NOT BEEN RELEASED FOR CONSTRUCTION

ISSUED FOR: DESIGN AND PERMITTING

ISSUE DATE: MAY 5, 2022

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMITTAL	CDB	08/06/21
1	SURVEY UPDATE	CDB	05/05/22

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 4952-SITE_C010.dwg

SCALE: 24"x36" 1" = 40'
12"x18" 1" = 80'

OWNER:
7 WEST, LLC
P.O. BOX 728
DOVER, NH 03821

APPLICANT:
SUMMIT LAND DEVELOPMENT
340 CENTRAL AVE., #202
DOVER, NH 03820

PROJECT:
7 WEST COMMERCIAL DEVELOPMENT

TAX MAP H, LOT 11
DOVER, NH

TITLE:
SITE SPECIFIC SOILS SURVEY

SHEET NUMBER:
S-1

NOTES:

SITE SPECIFIC SOIL SURVEY WAS COMPLETED BY BRUCE A. GILDAY OF BAG LAND CONSULTANTS, NH CERTIFIED SOIL SCIENTIST #012, AND SHOWN ACCORDING TO THE "SITE SPECIFIC SOIL SURVEY TECHNICAL REPORT" DATED MARCH 28, 2022. THE SOIL MAPPING WAS PREPARED IN ACCORDANCE WITH "SITE SPECIFIC SOIL MAPPING STANDARDS FOR NEW HAMPSHIRE AND VERMONT" VERSION. 7.0, MARCH 2021.

WETLANDS WERE DELINEATED BY BRUCE A. GILDAY OF BAG LAND CONSULTANTS, NH CERTIFIED WETLAND SCIENTIST #088, ON APRIL 20, 2021.

SITE SPECIFIC SOIL MAP UNIT KEY

SYMBOL SOIL	TAXONOMIC NAME	HSG CLASS	DRAINAGE CLASS
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86	HOLLIS	C	WELL DRAINED
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SYMBOL	PHASE
A	0-3%
B	3-8%
C	8-15%
D	15-25%
E	25-50%
F	50%+

LEGEND

- PROPERTY LINE
- WETLAND/SOILS BOUNDARY
- 60 EXISTING CONTOUR
- EXISTING PAVEMENT/CURB
- EXISTING TREELINE
- WATERSHED BOUNDARY
- Tc PATH
- SURFACE FLOW DIRECTION
- 1 1 1 SUBCATCHMENT/POND/REACH
- POA POINT OF ANALYSIS

SOILS LEGEND

HYDROLOGIC GROUP

- SOILS - HSG A
- SOILS - HSG B
- SOILS - HSG C
- SOILS - HSG D
- IMPERVIOUS (BLDGS/ROADS)

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)

P4951

LAND CONSULTANTS

43 ROCKINGHAM ST
CONCORD, NH 03301

(603)228-5775

Ecosystems Land Planning

36 DUNKLEE STREET
CONCORD,NH 03301
(603)224-6244

ALTUS ENGINEERING, INC.

133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

THIS DRAWING HAS NOT BEEN RELEASED FOR CONSTRUCTION

ISSUED FOR: DRAINAGE DESIGN

ISSUE DATE: May 5, 2022

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMITTAL	CDB	05/05/22

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 4952-SITE_C010.dwg

SCALE: 24"x36" 1" = 40'
12"x18" 1" = 80'

OWNER:
7 WEST, LLC
P.O. BOX 728
DOVER, NH 03821

APPLICANT:
SUMMIT LAND DEVELOPMENT
340 CENTRAL AVE., #202
DOVER, NH 03820

PROJECT:
7 WEST
COMMERCIAL
DEVELOPMENT

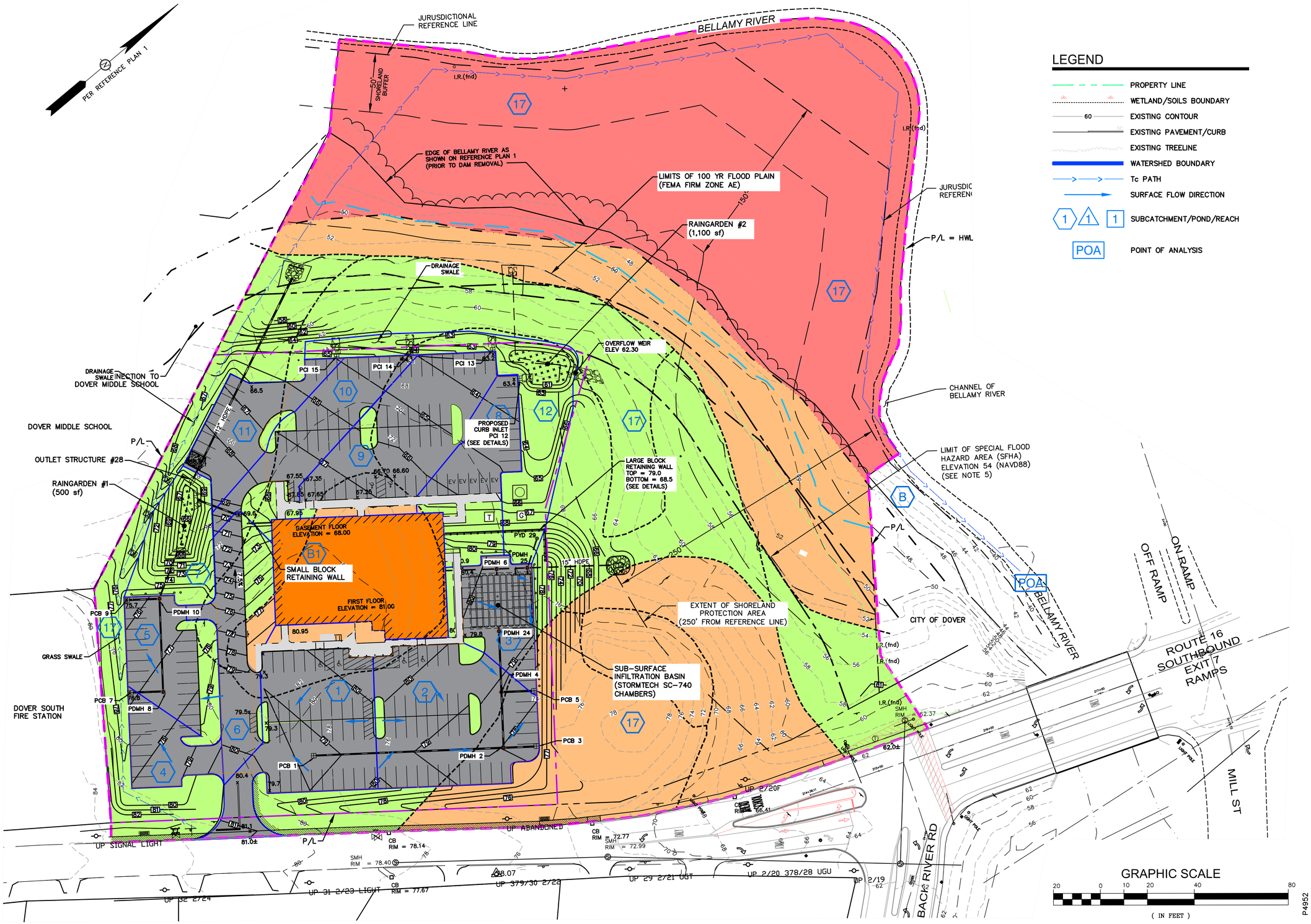
TAX MAP H, LOT 11
DOVER, NH

TITLE:

PRE-DEVELOPMENT

SHEET NUMBER:

DA-1



ENGINEER:

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DRAINAGE DESIGN

ISSUE DATE:
OCTOBER 5, 2022

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMITTAL	CDB	05/05/22
1	TRC COMMENTS	CDB	10/05/22

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 4390-DESIGN.dwg

SCALE: 24"x36" 1" = 40'
12"x18" 1" = 80'

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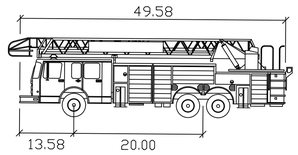
340 CENTRAL AVE., #202
DOVER, NH 03820

PROJECT:
7 WEST
COMMERCIAL
DEVELOPMENT

(FILE NO. P18-__)
TAX MAP H, LOT 11-C
DOVER, NH

TITLE:
POST DEVELOPMENT DRAINAGE AREA PLAN

SHEET NUMBER:
DA-2



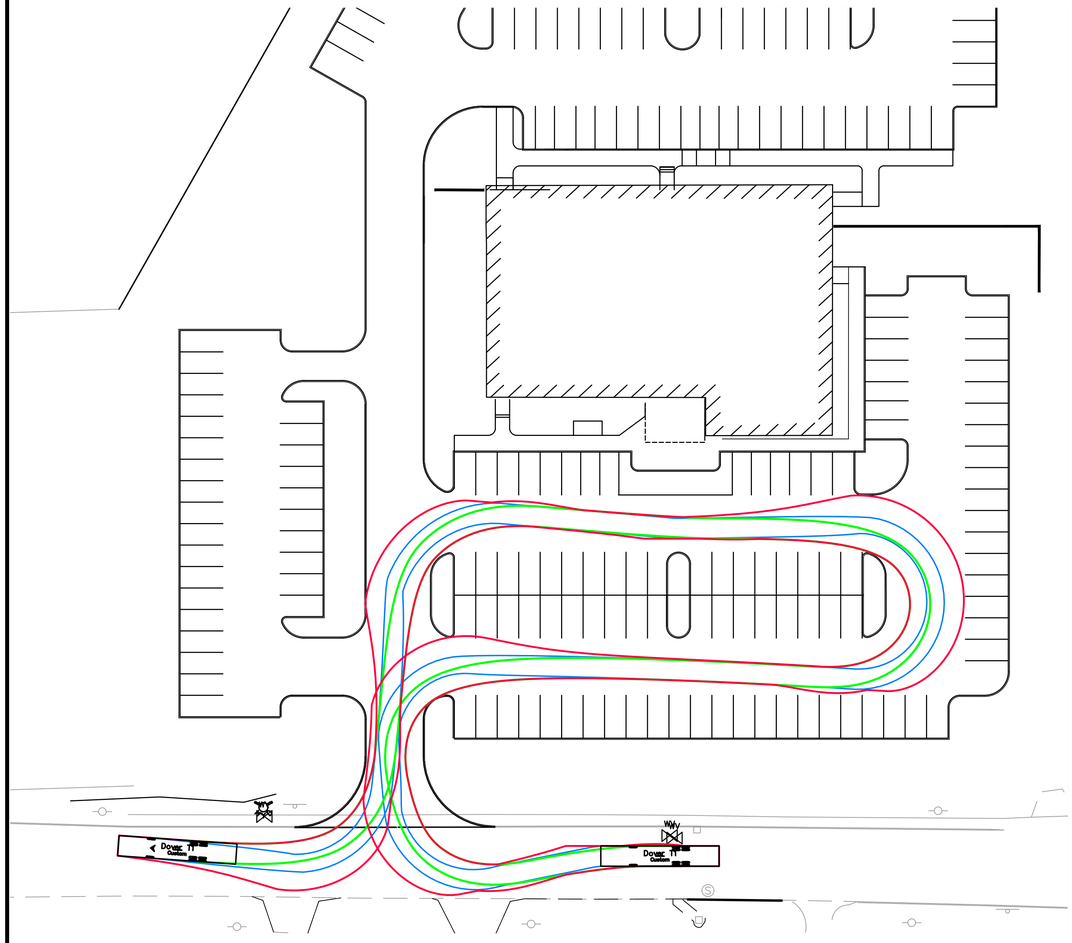
Dover T-1 FIRE

	feet
Width	: 8.50
Track	: 8.50
Lock to Lock Time	: 6.0
Steering Angle	: 44.0

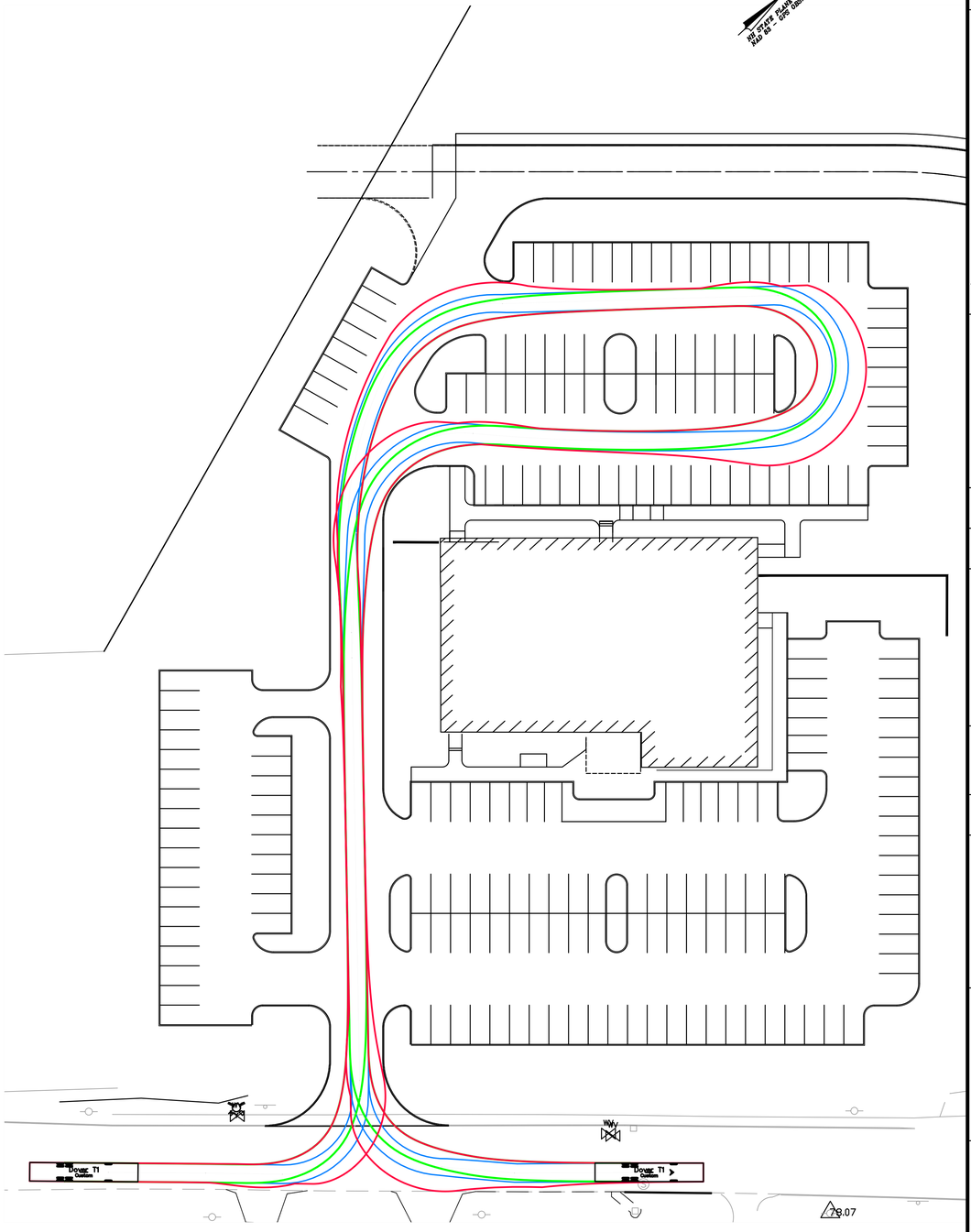
VEHICLE MODELED – DOVER T-1 FIRE TRUCK

LEGEND

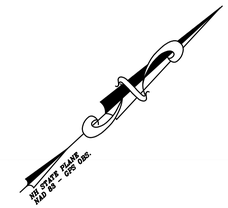
FRONT WHEEL PATH
REAR WHEEL PATH
VEHICLE BODY



DOVER T-1 FIRE TRUCK
(WESTBOUND IN / OUT)



DOVER T-1 FIRE TRUCK
(EASTBOUND IN / OUT)



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OCTOBER 5, 2022

REVISIONS

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0	INITIAL SUBMITTAL	CDB	10/05/22

DRAWN BY: MBS
APPROVED BY: CDB
DRAWING FILE: 4952-Site.dwg

SCALE: 24" X 36" 1" = 30'
12" X 18" 1" = 60

OWNER:
7 WEST, LLC
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DOVER, NH 03821

APPLICANT:
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340 CENTRAL AVE., #202
DOVER, NH 03820

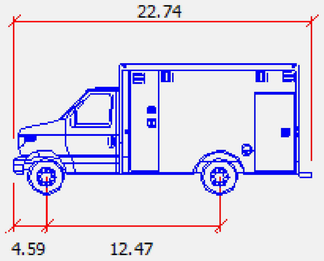
PROJECT:
7 WEST
COMMERCIAL
DEVELOPMENT

(FILE NO. P22-38)
TAX MAP H, LOT 11
DOVER, NH

TITLE:
TRUCK TURNING (DOVER T-1)

SHEET NUMBER:
T-1

P4952

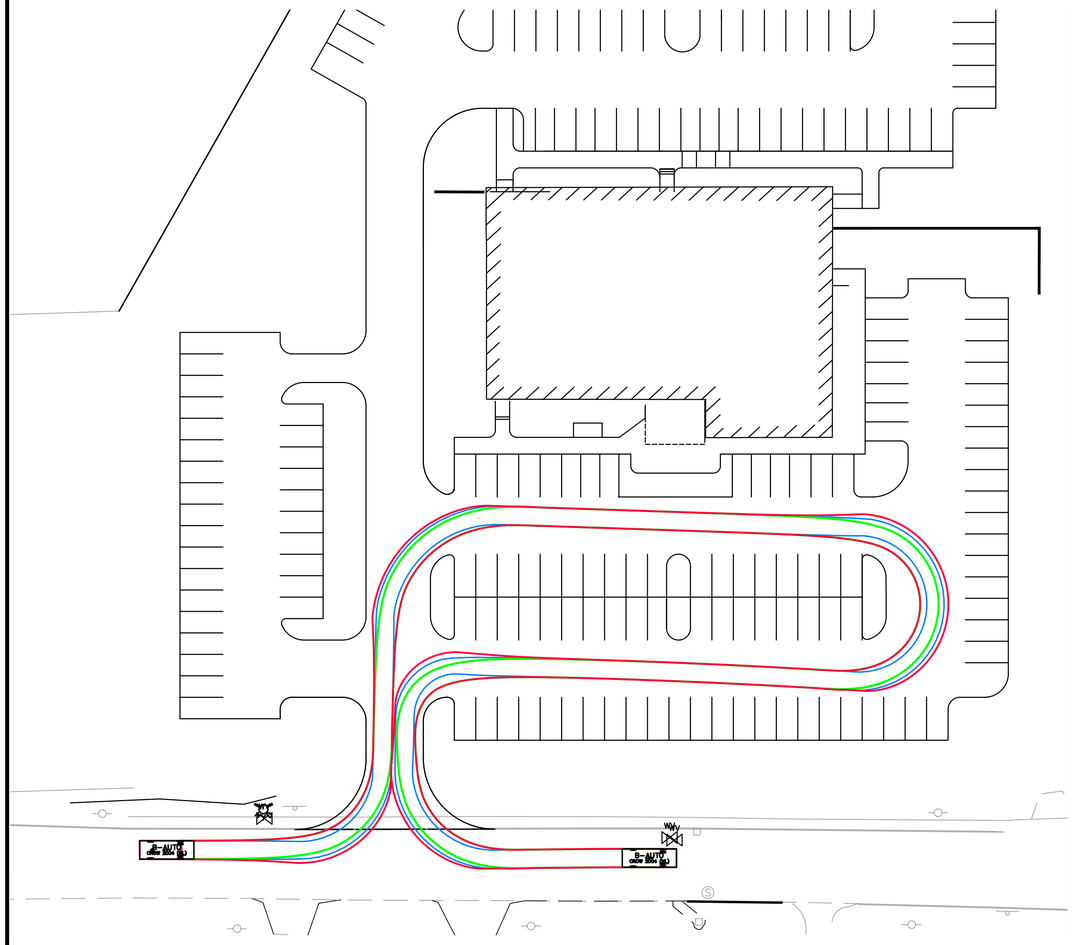


	feet
Width	: 7.71
Track	: 7.71
Lock to Lock Time	: 6.0
Steering Angle	: 47.8

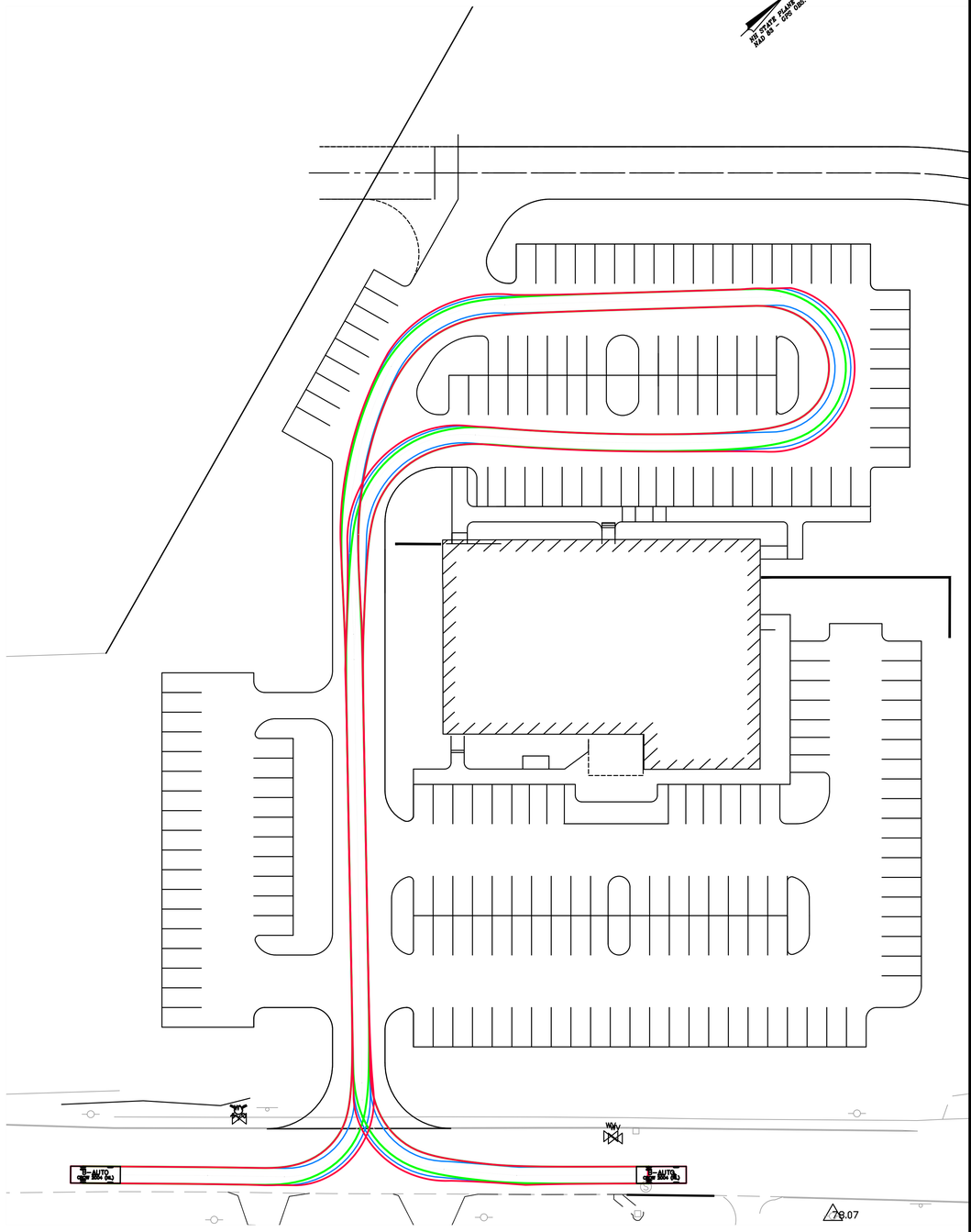
VEHICLE MODELED – AMBULANCE

LEGEND

FRONT WHEEL PATH
REAR WHEEL PATH
VEHICLE BODY



AMBULANCE
(WESTBOUND IN / OUT)



AMBULANCE
(EASTBOUND IN / OUT)

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COMMERCIAL
DEVELOPMENT

(FILE NO. P22-38)
TAX MAP H, LOT 11
DOVER, NH

TITLE:
TRUCK TURNING (AMBULANCE)

SHEET NUMBER:
T-2

P4952