CITY OF DOVER

PLANNING TECHNICAL REVIEW COMMITTEE –AGENDA

Meeting Type: Regular Meeting
Meeting Location: Council Conference Room – City Hall, Dover NH
Meeting Date: **Thursday, August 26, 2021**
Meeting Time: **10:30 AM**

1. 10:30 AM – 11:15 AM: Site Review for Downtown Dover Storage, LLC., Assessor's Map 4, Lot 5, zoned CBD – General, located at 14 Broadway. (Proposal is to construct a 14,888 sq. ft. 4-story residential building with 24 units with parking and 3,450 s.f. of ground floor retail). A related CUP and Lot Line Adjustment application will also appear before the Planning Board. (P21-29)

2. 11:15 AM – 12:00 PM: Site Review for American Durafilm Co., Inc., (Owner: Dover Business & Industrial Development Authority), Assessor's Map D, Lot 11-1, zoned IT, located at Venture Drive. (Proposal is to construct a 15,000 s.f. light manufacturing building with associated parking as well as a future 5,000 s.f. addition). A related CUP application will also appear before the Planning Board. (P21-49)

CHRISTOPHER G. PARKER, AICP
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City of Dover, New Hampshire

DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT

INSTRUCTIONS TO APPLICANTS TO THE DOVER PLANNING BOARD

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

Dear Applicant:

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

The Board primarily reviews 5 types of applications:

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

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

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

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

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

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

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

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

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

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

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

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

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

City of Dover, New Hampshire
SITE REVIEW APPLICATION

[Revision Date: July 1, 2021]

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

APPLICANT AND OWNER INFORMATION

Name of Applicant: Downtown Dover Storage, LLC Telephone #_____

Address of Applicant: 42 L Dover Point Road, Dover, NH 03820

E-Mail Address: _____

Name of Property Owner (*if different from applicant*): _____ Telephone #_____

Address of Property Owner: _____

PROPERTY INFORMATION

Address of Property: 14 Broadway, Dover, NH 03820

Assessor's Map # 4 Lot(s) # 5

Zoning District(s) CBD General Sub-District Overlay District(s) _____

Size of Parcel: 19,471 sq. ft. 0.447 ac. Property Deed: Book 4719 Page: 976

Existing Use of Property: 1-story warehouse and parking lot

SITE PLAN INFORMATION

Describe Proposed Use: 4-story residential building with first floor commercial/retail space, and parking lot

Area of Parcel to be Developed: 19,471 sq. ft.

If Multi-family Residential: Number of Units 24 & Buildings Proposed 1

If lodging: Number of Units _____ & number of Buildings _____

Number of Parking Spaces: Existing 40 Proposed 67

Highway Access (check where applicable): ✓ City Street ____ State Highway

Number of Employees Total: _____ In Maximum Shift: _____

Disposition of Parcel:

Building Footprint 14,880 sq. ft.

Total Building Area 51,249 sq. ft.

Paved Area 12,012 sq. ft.

Building Setbacks:

Front Yard 1 ft.

Rear Yard 10 ft.

Side Yard: Right 10 ft. Left 10 ft.

City Water? ✓ Yes ___ No How far is city water from the property? 14 feet

City Sewer? ✓ Yes ___ No How far is city sewer from the property? 34 feet

TRANSFER OF DEVELOPMENT RIGHTS INFORMATION

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

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

Relief sought (Check All That Apply):

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

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

_____

_____

_____

BUILDING INFORMATION

Type of Building to be Built: 4-story residential building with first floor commercial/retail space.

Height of Building: 4-story Finished Floor Elevation: _____

Number of Seats (where applicable) _____

Estimated value of construction: _____Refuse removal: Public/Private (circle one)

WAIVER REQUESTS

Site Review Regulations section(s) to be waived: _____

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

_____

_____

_____

_____

_____

_____

_____

SURVEYOR INFORMATION

Name of Surveyor and Company (Licensed in N.H.) Hancock Associates

Address 185 Centre Street, Danvers, MA 01923 Telephone #: (978) 777-3050

Professional License #: _____ E-mail address: _____

ENGINEER INFORMATION

Name of Engineer and Company (Licensed in N.H.) Chris Raymond, P.E. (TEC, Inc.)

Address 169 Ocean Boulevard, PO Box 249, Hampton, NH 03842 Telephone #: (603) 601-8154

Professional License #: 16305 E-mail address: craymond@theengineeringcorp.com

ARCHITECT INFORMATION

Name of Architect and Company (Licensed in N.H.) Lassel Architects

Address 370 Main Street, South Berwick, ME 03908 Telephone #: (207) 384-2049

Professional License #: _____ E-mail address: _____

LANDSCAPE ARCHITECT INFORMATION

Name of Landscape Architect and Company (Licensed in N.H.) _____

Address _____ Telephone #: _____

Professional License #: _____ E-mail address: _____

SOIL SCIENTIST INFORMATION

Name of Soil Scientist and Company (Licensed in N.H.) John Turner Consulting, Inc.

Address 19 Dover Street, Dover, NH 03820 Telephone #: _____

Professional License #: _____ E-mail address: _____

CONSERVATION EASEMENT HOLDER

Name of Easement Holder: _____ Telephone #_____

Address Easement Holder: _____

SIGNATURES

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

Signature of Property Owner: _____ Date: 8-5-21

Signature of Applicant (*if different from owner*): _____ Date: _____

Signature of Agent: Chris Rymond Date: 8/5/21

AUTHORIZATION TO ENTER SUBJECT PROPERTY

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

Signature of Property Owner: _____ Date: 8-5-21

AUTHORIZATION TO COMPLETE THE PROJECT ON SUBJECT PROPERTY

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

Signature of Property Owner: _____ Date: 8-5-21

Signature of Applicant (*if different from owner*): _____ Date: _____

CERTIFICATION OF FEES

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

Signature of Property Owner: _____ Date: 8-5-21

Signature of Applicant (*if different from owner*): _____ Date: _____

CITY OF DOVER SITE REVIEW
LIST OF ABUTTERS

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

Owner:

TAX MAP	LOT #	PROPERTY OWNER	MAILING ADDRESS
4	5	Downtown Dover Storage, LLC	42 L Dover Point Road, Dover, NH

Applicant (if different from owner):

APPLICANT NAME	APPLICANT COMPANY	MAILING ADDRESS

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	MAILING ADDRESS
Chris Raymond	TEC, Inc.	169 Ocean Blvd., Hampton, NH 03824

Conservation Easement Holder:

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	MAILING ADDRESS

PLANNING BOARD FEE SCHEDULE/INVOICE

(Revised July 1, 2021)

Below are the fees associated with plan review and are subject to a nonrefundable application fee to cover administrative expenses. Please complete the information below and provide payment with your application submittal. **Plan Review Fees shall be paid prior to technical review committee (TRC) being scheduled.** For plans not requiring TRC review, **fees are due 21 days prior** to the Planning Board meeting. Staff will coordinate abutter/notice fees, which will be invoiced and must be paid 28 hours before the Planning Board meeting for an application to be heard. Fees shall be paid by cash or check made payable to "City of Dover".

A. Plan Review Fees

1. Application fee for the following (SELECT ALL THAT APPLY):

- ☐ SUBDIVISION Application fee $200.00 + $150.00 x # _____ new lots created = $_____
- ☑ LOT LINE ADJUSTMENT Application fee $200.00 + $100.00 X # _2_ of lots involved = $ 400.00
- ☐ TRANSFER OF DEVELOPMENT RIGHTS Application fee $200.00 = $_____
- ☑ SITE REVIEW – RESIDENTIAL Application fee $200.00+ $100.00 x # 24 per dwelling unit =$ 2,600.00
- ☐ SITE REVIEW – NON-RESIDENTIAL Application fee $200.00 + (not to exceed $10,000)
  - New construction $.15 sq. ft. x # _____ sq. ft.= $_____
  - Additions (new floor space) $.10 per sq. ft. x # _____sq. ft.= $_____
- ☐ MOTEL/HOTEL $35.00 x # ___ per lodging unit= $_____
- ☐ CHANGE OF USE Application fee $200.00 + (not to exceed $5,000)
  - Existing floor spaces $.10 per sq. ft. x # _____ sq. ft. = $_____
- ☑ CONDITIONAL USE PERMIT Application fee $200.00 x # __1__ per Application = $ 200.00
- ☐ GRAVEL PIT/ EXCAVATIONS
  - Application fee $50.00= $_____
  - Permit fee $75.00= $_____
- ☐ EXTENSIONS/AMENDMENTS/WAIVERS FOR AN APPROVED PLAN Application fee $200.00 = $_____
- ☐ REQUEST FOR REZONING Application fee $200.00 = $_____
- ☐ DRIVEWAY WAIVER Application fee $200.00 = $_____

2. TOTAL IMPERVIOUS PAVED AREA (for new development, roadways or additions to existing parking lots, (not to exceed $10,000)) Application fee of $200.00 is N/A if it is part of a Site Review or Subdivision Plan. $200.00 + $.07 per sq. ft. x # _____ sq. ft. = $_____

SUBTOTAL PLAN REVIEW FEE (A) = $ 3,200.00

AND

B. Abutter Notification/Mailing Labels - this office will create and print the abutter list and provide labels in triplicate for each abutter. The applicant/owner will review the list for accuracy and provide to us the engineer, architect, licensed land surveyor (LLS), licensed landscape architect (LLA) and/or soil scientist whose professional seal appears on the plan with names and addresses for notices.

- ☐ Applicant & Owner, engineer, architect, LLS, LLA and/or soil scientist
  - Certified letters fee # _____ of x $8.00= $_____
- ☐ Certified letters fee: # of abutters _____ X $8.00= $_____
- ☐ First Class Mail fee (for individual owner of units within a condominium or other collective form of ownership): # of abutters _____ X $1.00= $_____
- ☐ Creating/Printing Abutter Labels in triplicate per sheet _____ x $10.00= $_____

C. Foster's newspaper public notice fee $100.00 x # _____ applications = $_____

SUBTOTAL NOTICE FEE (B & C) = $_____

TOTAL INVOICE AMOUNT (A, B & C) = $_____

PLAN REVIEW FEE COLLECTED/PAID = $ _____

BALANCE DUE = $ _____

The balance due must be paid 28 hours prior to the Planning Board Meeting, to be heard.

City of Dover, New Hampshire
SITE PLAN REVIEW SUBMISSION CHECKLIST

[Revision Date: June 4, 2019]

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

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

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

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

APPLICANT: Downtown Dover Storage, LLC File Number: _____

PROJECT TITLE: Proposed Residential Development

PROPERTY LOCATION: 14 Broadway, Dover, NH 03820 Tax Map: 4 Lot: 5

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

	Explain How Provided	Reviewed
Depict pedestrian walkways and accessible access	Layout & Materials Plan	
Existing and proposed property lines with dimensions and bearings tied into Dover's Geographic Information System coordinate system	Lot Line Adjustment Plan	
Existing and proposed topographic information at two foot intervals	Grading & Drainage Plan	
Existing and proposed buildings and structure locations	Layout & Materials Plan	
Minimum building setbacks or build to lines on all lots	Layout & Materials Plan	
Location and size of existing and proposed electric, telephone, gas cable and other underground utilities	Landscape, Lighting & Utility Plan	
Existing and proposed water lines and fire hydrants, including materials and capacity needed	Landscape, Lighting & Utility Plan	
Location and materials of sanitary sewage facilities within project site and projected additional peak hour sewer load	Landscape, Lighting & Utility Plan	
Existing and proposed stormwater lines and facilities	Grading & Drainage Plan	
Lighting plan depicting all existing and proposed exterior light fixtures and a lighting level analysis for parking lots	Landscape, Lighting & Utility Plan	
Location of Flood Hazard Zone	N/A	
Location of all bodies of water and watercourses	N/A	
Location of wetlands and buffers	N/A	
Neighborhood plan with aerial underlay showing how project relates to abutting uses within the plan set	Neighborhood Plan	
Existing natural features and/or significant vegetation on property	Layout & Materials Plan	
Depict existing contours up to 100 ft. beyond project limits	Grading & Drainage Plan	
Landscape plan depicting existing and proposed landscaping, prepared by a licensed Professional Landscape Architect	Landscape, Lighting & Utility Plan	
Location of parking layout delineating spaces and arrangement; note addressing maximum required spaces	Layout & Materials Plan	
Location, material and size of existing and proposed pavement area	Layout & Materials Plan	
Location of proposed fire lanes	N/A	
Specify finished floor elevations of buildings	Layout & Materials Plan	
Location of solid waste disposal facilities (dumpster, pad and screening, etc.), including required screening	Layout & Materials Plan	
Depict all service, storage, loading bays and utility areas	Layout & Materials Plan	
All applicable Dover Common Site Plan notes	Legend & General Notes	
11. Additional Information if appropriate		
Stormwater Management Plan depicting the existing & proposed storm drainage system and engineered drainage analysis	Drainage Report	
Stormwater Management System Operation and Maintenance Plan	Drainage Report	
Letter to Serve from Public and Private Utilities		
Erosion and Sedimentation Control Plan	Erosion & Sediment Control Plan	
Landscape Operation and Maintenance Plan	Drainage Report	
Proposed restrictive covenants or homeowners association documents	N/A	
Dates and permit numbers of all required state and federal permits	N/A	
If wetland buffer, indicate placards locations, as applicable	N/A	
Depict test boring locations, groundwater elevations and soil profiles and/or soils types call-outs	Drainage Report (Geotechnical Data)	
Location of proposed drive-in facilities	N/A	
Provide additional exhibits/technical data determined appropriate by the Planning Board or its staff as required	Submission	

REVIEWED BY: _____ DATE_____ TRC DATE_____

CITY OF DOVER PLANNING DEPARTMENT
Revised August 10, 2020

APPLICANT: _____ FILE NUMBER: _____

List of Common Site Plan Notes

The following list of commonly required notes is intended to be used as a guide to applicants and should not be construed as a comprehensive note requirement list for all projects. A preapplication conference with the Planning Department is suggested to help determine the actual notes that may be required.

1. The intent of this plan is to *(describe the purpose of the plan).*

2. Owners of Record are: Name
   Street address
   Municipality, State, Zip Code
   _____
   Authorized Signature

3. The parcel(*s*) is (*are*) shown as Lot No. _____, Map ____ of the City of Dover Tax Assessor's Maps.

4. The subject parcel(s) contains ____ acres or _____ sq. ft. area of land.

5. Title reference for the project parcel(*s*) is the Strafford County Registry of Deeds, Book No. ___, Page No. ___.

6. Reference Plans: (*List all reference plans and their SCRD #)*

7. All applicable right-of-way, conservation, slope, construction, power line, cross travel, or other easements shall be referenced in a note.

8. Zoning dimensional and density requirements are as follows:

   Required: Provided:

   a. Zoning district _____ sub-district _____
   b. Minimum lot size: _____ acres (sq. ft.)
   c. Minimum lot frontage: _____ ft.
   d. Minimum yard setbacks/build-to-lines:
      Front _____ft.
      Side _____ft.
      Rear _____ft.
      Abut-a-street _____ ft.
   e. Maximum/minimum lot coverage _____ %
   f. Minimum/maximum bldg. height _____ ft./stories

   This property falls within the following zoning overlay districts: *(List districts)*

9. List any variances or special exceptions granted by the Zoning Board of Adjustment or Conditional Use Permits granted by the Planning Board for the proposed use or structure, including the case number and date of decision and any conditions.

10. Property line information has been obtained from a survey performed by *(surveyor)* on (*date*) with an error not greater than 1 in 10,000 (*or has been obtained from* _____ *Plan, prepared by (surveyor)*).

11. Subject parcel is (*is not*) located within a Federally designated flood hazard area (Community panel number 33017C0xxxD, Effective Date: September 30, 2015).

12. Wetlands were delineated by _____, Certified Wetlands Scientist, Certification Number ____, in accordance with Chapter 170-27.1 of the Zoning Ordinance, on _____, 20___.

13. As-built plans of the subdivision shall be submitted on paper and in digital format AutoCAD DWG, AutoCAD DXF or ESRI format to the City of Dover Engineer's Office upon completion of project if a street is proposed for City acceptance. 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(s) is (are) served by municipal water and sewer (*or is served by on-site well and septic system*).

16. All construction shall conform with the State of New Hampshire Department of Transportation (NHDOT) "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. All erosion control notes shall include provisions for construction sequencing, temporary erosion control measures, and permanent standards such as loam spread rate for disturbed areas, rates of lime, type and rates for fertilizer, and seed and mulch mixture with rates of application.

18. The limits of construction disturbance that are located in or within the 50 ft. of Conservation and Wetland Districts shall be staked, flagged and clearly identified prior any earth disturbing activity occurs.

19. All treatment swales to be constructed shall have sod bottoms.

20. A letter of credit for the cost of 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. Site Construction hours shall be limited to Monday-Friday 7 AM-6 PM, Saturday and Sunday 9 AM-4 PM. Hours of construction must be documented on a site construction sign along with the contact information for the general contractor. Said signage must be located and approved by the City Engineer or Assistant City Manager.

23. Building addresses (including apt/unit numbers if applicable) shall be assigned by the Building Official at the time of issuance of a building permit.

24. The proposed use for the site (structure) is _____. (More specific uses are encouraged, such as single family, duplex, multi-family, restaurant, hotel, doctor's office, etc. Should more than one use be proposed, an indication of the percentage of each use is suggested.)

25. The following federal and state permits have been issued for the subject property: (*List permit type, number and date of issuance.)*

26. Commercial vehicle route during construction shall conform to Dover City Code or be coordinated with the Community Services Director.

27. Any retaining wall taller than four feet (4') requires issuance of a building permit from Inspection Services.

28. Any fence taller than seven feet (7') requires the issuance of a building permit from Inspection Services.

29. 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/entities that may acquire any property subject to the requirements and responsibilities described in the approved STORMWATER Management Plan. The notice shall comply with the applicable requirements for recording contained in RSA 477 and 478. The notice need not set forth the requirements at length, so long as it is sufficient to provide notice to prospective purchasers to the requirements for maintenance and reporting.

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 _____ (broken down) and ____ spaces are provided.

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 _____ on *(dates)*.

35. Elevations are based on U.S.G.S. NVD 1988 datum. (**or** Elevations depicted are based on information obtained from the City Engineer's Office and was derived from coordinates for control stations _____ and _____. These coordinates have not been adjusted to 1983 datum).

36. A security system shall be installed as required by Chapter 45, Article I, section 45-2 of the Code of the City of Dover. (*If a business establishment or multi-family dwelling contained in a new, altered or repaired structure*)

37. Approved backflow preventers shall be provided for both fire and domestic water lines.

38. The (*existing or proposed*) structure shall be served by a sprinkler system as required by Chapter 81- 30 of the Code of the City of Dover and the adopted State of NH Building and Fire Codes.

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. (i.e. IBC, ANSI-117.1) and NH RSA 155-A:5.

REMARKS:

City of Dover, New Hampshire
CONDITIONAL USE PERMIT APPLICATION

[Revision Date: October 19, 2020]

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

APPLICANT AND OWNER INFORMATION

Name of Applicant: Downtown Dover Storage, LLC Telephone #_____

Address of Applicant: 42 L Dover Point Road, Dover, NH 03820

E-Mail Address: _____

Name of Property Owner (if different from applicant): _____ Telephone #_____

Address of Property Owner: _____

PROPERTY INFORMATION

Assessor's Map # 4 Lot(s) # 5

Address of Property: 14 Broadway, Dover, NH 03820

Zoning District(s) CBD General Sub-District Overlay District(s) _____

Existing Use of Property: 1-story warehouse and parking lot

CONDITIONAL USE PERMIT INFORMATION

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

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

Describe Proposed Use or Activity That Requires Conditional Use Permit and Describe Any Impacts:

First floor commercial/retail space does not meet the required 20% minimum gross floor area.

This commercial/retail space is located along the frontage of the property as required, but increasing the area of this use would be detrimental to the required on site parking.

List Any Associated State or Federal Permits That Have Been or Will Be Applied For and Indicate Their Status: _____

_____

Name of Professional That Prepared Plans: Chris Raymond, P.E. (TEC, Inc.)

Address 169 Ocean Boulevard, PO Box 249, Hampton, NH 03842 Telephone #: (603) 601-8154

Professional License #: 16305 E-mail address: _____

SIGNATURES

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

Signature of Property Owner: _____ Date: 8-5-21

Signature of Applicant (if different from owner): _____ Date: _____

Signature of Agent: Chris Raymond Date: 8/5/21

AUTHORIZATION TO ENTER SUBJECT PROPERTY

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

Signature of Property Owner: _____ Date: 8-5-21

CITY OF DOVER CONDITIONAL USE
LIST OF ABUTTERS

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

Owner:

TAX MAP	LOT #	PROPERTY OWNER	MAILING ADDRESS
4	5	Downtown Dover Storage, LLC	42 L Dover Point Road, Dover, NH

Applicant (if different from owner):

APPLICANT NAME	APPLICANT COMPANY	MAILING ADDRESS

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	MAILING ADDRESS
Chris Raymond	TEC, Inc.	169 Ocean Blvd., Hampton, NH 03824

Conservation Easement Holder:

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	MAILING ADDRESS

PLANNING BOARD FEE SCHEDULE/INVOICE

(Revised July 1, 2021)

Below are the fees associated with plan review and are subject to a nonrefundable application fee to cover administrative expenses. Please complete the information below and provide payment with your application submittal. **Plan Review Fees shall be paid prior to technical review committee (TRC) being scheduled.** For plans not requiring TRC review, **fees are due 21 days prior** to the Planning Board meeting. Staff will coordinate abutter/notice fees, which will be invoiced and must be paid 28 hours before the Planning Board meeting for an application to be heard. Fees shall be paid by cash or check made payable to "City of Dover".

A. Plan Review Fees

1. Application fee for the following (SELECT ALL THAT APPLY):

- ☐ SUBDIVISION Application fee $200.00 + $150.00 x # _____ new lots created = $_____
- ☑ LOT LINE ADJUSTMENT Application fee $200.00 + $100.00 X # 2 of lots involved = $ 400.00
- ☐ TRANSFER OF DEVELOPMENT RIGHTS Application fee $200.00 = $_____
- ☑ SITE REVIEW – RESIDENTIAL Application fee $200.00+ $100.00 x # 24 per dwelling unit = $ 2,600.00
- ☐ SITE REVIEW – NON-RESIDENTIAL Application fee $200.00 + (not to exceed $10,000)
  - New construction $.15 sq. ft. x # _____ sq. ft.= $_____
  - Additions (new floor space) $.10 per sq. ft. x # _____sq. ft.= $_____
- ☐ MOTEL/HOTEL $35.00 x # ___ per lodging unit= $_____
- ☐ CHANGE OF USE Application fee $200.00 + (not to exceed $5,000)
  - Existing floor spaces $.10 per sq. ft. x # _____ sq. ft. = $_____
- ☑ CONDITIONAL USE PERMIT Application fee $200.00 x # 1 per Application = $ 200.00
- ☐ GRAVEL PIT/ EXCAVATIONS
  - Application fee $50.00= $_____
  - Permit fee $75.00= $_____
- ☐ EXTENSIONS/AMENDMENTS/WAIVERS FOR AN APPROVED PLAN Application fee $200.00 = $_____
- ☐ REQUEST FOR REZONING Application fee $200.00 = $_____
- ☐ DRIVEWAY WAIVER Application fee $200.00 = $_____

2. TOTAL IMPERVIOUS PAVED AREA (for new development, roadways or additions to existing parking lots, (not to exceed $10,000)) Application fee of $200.00 is N/A if it is part of a Site Review or Subdivision Plan. $200.00 + $.07 per sq. ft. x # _____ sq. ft. = $_____

SUBTOTAL PLAN REVIEW FEE (A) = $ 3,200.00

AND

B. Abutter Notification/Mailing Labels - this office will create and print the abutter list and provide labels in triplicate for each abutter. The applicant/owner will review the list for accuracy and provide to us the engineer, architect, licensed land surveyor (LLS), licensed landscape architect (LLA) and/or soil scientist whose professional seal appears on the plan with names and addresses for notices.

- ☐ Applicant & Owner, engineer, architect, LLS, LLA and/or soil scientist
  - Certified letters fee # _____ of x $8.00= $_____
- ☐ Certified letters fee: # of abutters _____ X $8.00= $_____
- ☐ First Class Mail fee (for individual owner of units within a condominium or other collective form of ownership): # of abutters _____ X $1.00= $_____
- ☐ Creating/Printing Abutter Labels in triplicate per sheet _____ x $10.00= $_____

C. Foster's newspaper public notice fee $100.00 x # _____ applications = $_____

SUBTOTAL NOTICE FEE (B & C) = $_____

TOTAL INVOICE AMOUNT (A, B & C) = $_____

PLAN REVIEW FEE COLLECTED/PAID = $ _____

BALANCE DUE = $ _____

The balance due must be paid 28 hours prior to the Planning Board Meeting, to be heard.

CHRISTOPHER G. PARKER, AICP
Assistant City Manager
Planning & Strategic Initiatives
c.parker@dover.nh.gov

288 Central Avenue
Dover, New Hampshire 03820-4169
(603) 516-6008
Fax: (603) 516-6049
www.dover.nh.gov

City of Dover, New Hampshire

DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT

INSTRUCTIONS TO APPLICANTS TO THE DOVER PLANNING BOARD

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

Dear Applicant:

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

The Board primarily reviews 5 types of applications:

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

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

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

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

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

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

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

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

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

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

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

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

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

City of Dover, New Hampshire
MINOR LOT LINE ADJUSTMENT APPLICATION

[Revision Date: June 4, 2019]

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

APPLICANT INFORMATION

Name of Applicant: Downtown Dover Storage, LLC Telephone #_____

Address of Applicant: 42 L Dover Point Road, Dover, NH 03820

FIRST PROPERTY OWNER AND PARCEL INFORMATION

Name of 1st Property Owner (*if different from applicant*): _____ Telephone #_____

Address of 1st Property Owner: _____

Address of Property: 14 Broadway, Dover, NH 03820

Assessor's Map # 4 Lot(s) # 5

Property Deed: Book 4719 Page: 976

Zoning District(s) CBD General Sub-District Overlay District(s) _____

Size of Existing Parcel (sq. ft.): 19,471 Size of Proposed Parcel (sq. ft.): 19,471

SECOND PROPERTY OWNER AND PARCEL INFORMATION

Name of 2nd Property Owner (*if different from applicant*): Clayton F. Randall Living Revocable Trust Telephone #_____

Address of 2nd Property Owner: 131 Clement Road, Rollinsford, NH 03869

Address of Property: 12 Broadway, Dover, NH 03820

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

Property Deed: Book 2555 Page: 323

Zoning District(s) CBD General Sub-District Overlay District(s) _____

Size of Existing Parcel (sq. ft.): 20,621 Size of Proposed Parcel (sq. ft.): 20,621

THIRD PROPERTY OWNER AND PARCEL INFORMATION

Name of 3rd Property Owner (*if different from applicant*): _____ Telephone #_____

Address of 3rd Property Owner: _____

Address of Property: _____

Assessor's Map # _____ Lot(s) # _____

Property Deed: Book _____ Page: _____

Zoning District(s) _____ Overlay District(s) _____

Size of Existing Parcel (sq. ft.): _____ Size of Proposed Parcel (sq. ft.): _____

[Use additional application form if more than two lots are being adjusted]

SURVEYOR INFORMATION

Name of Surveyor and Company (Licensed in N.H.) Hancock Associates

Address 185 Centre Street, Danvers, MA 01923 Telephone #: _____

Professional License #: _____ E-mail address: _____

CONSERVATION EASEMENT HOLDER (s)

Name of Easement Holder: _____ Telephone #_____

Address Easement Holder: _____

Name of 2nd Easement Holder: _____ Telephone #_____

Address 2nd Easement Holder: _____

SIGNATURES

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

Signature of First Property Owner: _____ Date: 8-5-21

Signature of Second Property Owner: _____ Date: 8-5-2021

Signature of Applicant (*if different from owner*): _____ Date: _____

Signature of Agent: Chris Bryant Date: 8/5/21

AUTHORIZATION TO ENTER SUBJECT PROPERTY

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

Signature of Property Owner: _____ Date: 8-5-21

CITY OF DOVER MINOR LOT LINE ADJUSTMENT
LIST OF ABUTTERS

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

Owner:

TAX MAP	LOT #	PROPERTY OWNER	MAILING ADDRESS
4	5	Downtown Dover Storage, LLC	42 L Dover Point Road, Dover, NH

Applicant (if different from owner):

APPLICANT NAME	APPLICANT COMPANY	MAILING ADDRESS

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	MAILING ADDRESS
Chris Raymond	TEC, Inc.	169 Ocean Blvd., Hampton, NH 03824

Conservation Easement Holder:

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	MAILING ADDRESS

City of Dover, New Hampshire
LOT LINE ADJUSTMENT SUBMISSION CHECKLIST

[Revision Date: June 4, 2019]

This review checklist is intended to assist the applicant in the planning process of preparing a Subdivision application for Planning Board action. The size of the project will determine the types of information required for review, therefore, a **pre-application conference** with the Planning Department to determine the list of items that must be completed is strongly encouraged.

Plan Review Fees are due along with three (3) full size and twelve (12) half size (11x17), folded, copies of the plan set and materials, 3 weeks prior to the Planning Board meeting. Abutter/Notice Fees will be invoiced and are due 28 hours prior to Planning Board.

The applicant is cautioned that this checklist is only a guide and is not intended to be a complete list of all subdivision requirements. Please refer to the Subdivision Regulations for full details.

APPLICANT: Downtown Dover Storage, LLC File Number: _____

PROPERTY LOCATION: 14 Broadway, Dover, NH 03820 Tax Map: 4 Lot: 5 and Lot: 3

	Where/How Provided	Reviewed
1. Completed and signed Application form	Submission	
2. Plan Review Fees are provided	Submission	
3. Electronic copy of the surveyed plat layout	Submission	
4. Electronic copy of supplementary materials and application	Submission	
5. Fifteen copies of LLA plan w/scale of not less than 1"=50' or 1"=100' for larger adjustments. Plans shall contain the following items as appropriate:	Submission	
Location map at appropriate scale	Title Sheet	
Planning File #	Plans	
Date, north arrow and scale	Plans	
Names of all abutting property owners	Existing Conditions Plan	
Name and address of owners	Existing Conditions Plan	
Signature & stamp of NH licensed land surveyor	Existing Conditions Plan	
Zoning District boundaries, including any special or overlay districts	N/A	
Location of Conservation District areas	N/A	
Location, names and widths of existing and streets, including pavement widths, grades, curbs and crosswalks	Layout & Materials Plan	
Location and widths of existing & proposed easements & right of ways	Layout & Materials Plan	
Existing and proposed property lines with dimensions and bearings tied into Dover's Geographic Information System coordinate system	Lot Line Adjustment Plan	
Existing and proposed lot areas in square feet	Lot Line Adjustment Plan	
Existing and proposed buildings and structure locations	Layout & Materials Plan	
Minimum building setbacks or build to lines on all lots	Layout & Materials Plan	
Map and lot numbers for existing and proposed lots as assigned by Tax Assessor	Plans	
Location, material and size of existing and proposed permanent monuments	N/A	
All applicable Dover Common Subdivision notes	Legend & General Notes	

REVIEWED BY: _____ DATE_____

PLANNING BOARD FEE SCHEDULE/INVOICE

(Revised July 1, 2021)

Below are the fees associated with plan review and are subject to a nonrefundable application fee to cover administrative expenses. Please complete the information below and provide payment with your application submittal. **Plan Review Fees shall be paid prior to technical review committee (TRC) being scheduled.** For plans not requiring TRC review, **fees are due 21 days prior** to the Planning Board meeting. Staff will coordinate abutter/notice fees, which will be invoiced and must be paid 28 hours before the Planning Board meeting for an application to be heard. Fees shall be paid by cash or check made payable to "City of Dover".

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1. Application fee for the following (SELECT ALL THAT APPLY):

- ☐ SUBDIVISION Application fee $200.00 + $150.00 x # _____ new lots created = $_____
- ☑ LOT LINE ADJUSTMENT Application fee $200.00 + $100.00 X # 2 of lots involved = $ 400.00
- ☐ TRANSFER OF DEVELOPMENT RIGHTS Application fee $200.00 = $_____
- ☑ SITE REVIEW – RESIDENTIAL Application fee $200.00+ $100.00 x # 24 per dwelling unit = $ 2,600.00
- ☐ SITE REVIEW – NON-RESIDENTIAL Application fee $200.00 + (not to exceed $10,000)
  - New construction $.15 sq. ft. x # _____ sq. ft.= $_____
  - Additions (new floor space) $.10 per sq. ft. x # _____sq. ft.= $_____
- ☐ MOTEL/HOTEL $35.00 x # ___ per lodging unit= $_____
- ☐ CHANGE OF USE Application fee $200.00 + (not to exceed $5,000)
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- ☑ CONDITIONAL USE PERMIT Application fee $200.00 x # 1 per Application = $ 200.00
- ☐ GRAVEL PIT/ EXCAVATIONS
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- ☐ REQUEST FOR REZONING Application fee $200.00 = $_____
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2. TOTAL IMPERVIOUS PAVED AREA (for new development, roadways or additions to existing parking lots, (not to exceed $10,000)) Application fee of $200.00 is N/A if it is part of a Site Review or Subdivision Plan. $200.00 + $.07 per sq. ft. x # _____ sq. ft. = $_____

SUBTOTAL PLAN REVIEW FEE (A) = $ 3,200.00

AND

B. Abutter Notification/Mailing Labels - this office will create and print the abutter list and provide labels in triplicate for each abutter. The applicant/owner will review the list for accuracy and provide to us the engineer, architect, licensed land surveyor (LLS), licensed landscape architect (LLA) and/or soil scientist whose professional seal appears on the plan with names and addresses for notices.

- ☐ Applicant & Owner, engineer, architect, LLS, LLA and/or soil scientist
  - Certified letters fee # _____ of x $8.00= $_____
- ☐ Certified letters fee: # of abutters _____ X $8.00= $_____
- ☐ First Class Mail fee (for individual owner of units within a condominium or other collective form of ownership): # of abutters _____ X $1.00= $_____
- ☐ Creating/Printing Abutter Labels in triplicate per sheet _____ x $10.00= $_____

C. Foster's newspaper public notice fee $100.00 x # _____ applications = $_____

SUBTOTAL NOTICE FEE (B & C) = $_____

TOTAL INVOICE AMOUNT (A, B & C) = $_____

PLAN REVIEW FEE COLLECTED/PAID = $ _____

BALANCE DUE = $ _____

The balance due must be paid 28 hours prior to the Planning Board Meeting, to be heard.

CITY OF DOVER PLANNING DEPARTMENT
Created June 4, 2019

APPLICANT: _____ FILE NUMBER: _____

List of Common Lot Line Adjustment Plan Notes

The following list of commonly required notes is intended to be used as a guide to applicants and should not be construed as a comprehensive note requirement list for all projects. A preapplication conference with the Planning Department is suggested to help determine the actual notes that may be required.

1. The intent of this plan is to *(describe the purpose of the plan).*

2. Owners of Record are: Name
   Street address
   Municipality, State, Zip Code
   _____
   Authorized Signature

3. The parcels are shown as Lot Nos. _____, and _____ on Map ____ of the City of Dover Tax Assessor's Maps.

4. The subject parcels contains ____ acres or _____ sq. ft. area of land. *(existing and proposed)*

5. Title reference for the project parcels are the Strafford County Registry of Deeds, Book No. ___, Page No. ___ and Book No. ___, Page No. ___

6. Reference Plans: (*List all reference plans and their SCRD #)*

7. All applicable right-of-way, conservation, slope, construction, power line, cross travel, or other easements shall be referenced in a note.

8. Zoning dimensional and density requirements are as follows:

   Required: Provided:

   a. Zoning district _____ sub-district _____
   b. Minimum lot size: _____ acres (sq. ft.)
   c. Minimum lot frontage: _____ ft.
   d. Minimum yard setbacks/build-to-lines:
      Front _____ft.
      Side _____ft.
      Rear _____ft.
      Abut-a-street _____ ft.
   e. Maximum/minimum lot coverage _____ %
   f. Minimum/maximum bldg. height _____ ft./stories

   These properties falls within the following zoning overlay districts: *(List districts)*

9. List any variances or special exceptions granted by the Zoning Board of Adjustment or Conditional Use Permits granted by the Planning Board for the subject parcels, including the case number and date of decision and any conditions.

10. Property line information has been obtained from a survey performed by *(surveyor)* on (*date*) with an error not greater than 1 in 10,000 (*or has been obtained from _____ Plan, prepared by (surveyor)*).

11. Subject parcels are (*are not*) located within a Federally designated flood hazard area (Community panel number 33017C0xxxD, Effective Date: September 30, 2015).

12. The subject parcels are served by municipal water and sewer (*or are served by on-site well and septic system*).

13. Basis of bearing is the City of Dover GIS system stations _____ and _____ which were used to determine location, orientation and vertical datum.

REMARKS:

_____

_____

_____

_____

_____

_____

_____

_____

169 Ocean Boulevard/PO Box 249
Hampton, NH 03842
603.601.8154
TheEngineeringCorp.com
Create | Design | Innovate

Mr. Chris Parker
Assistant City Manager: Director of Planning and Strategic Initiatives
City of Dover Planning Department
288 Central Ave
Dover, NH 03820

August 5, 2021

Ref. N0946.02

Re: Technical Review Committee Narrative
Proposed Residential Development at 14 Broadway

Dear Mr. Parker:

On behalf of Downtown Dover Storage, LLC, The Owner and Applicant ("Applicant"), TEC, Inc. respectfully submits this letter to supplement the enclosed application with supporting documents for review by the Technical Review Committee (TRC) for the Proposed Residential Development at 14 Broadway in Dover, NH. The Applicant is proposing to redevelop the existing 1-story warehouse and gravel area located at 14 Broadway, Dover, NH (Assessors Map 4, Lot 5). The project will also include redeveloping the bituminous concrete parking area of 12 Broadway (Assessors Map 4, Lot 3). The Applicant is proposing to demolish the existing warehouse and construct a 4-story, 24-unit residential building with commercial use space on the first floor, parking areas totaling 68 spaces between Lot 4-3, Lot 4-5, and Broadway, and landscaped areas to beautify the site.

The purpose of the project is to rejuvenate an existing abandoned lot located in the heart of the City with a modern residential building with space for commercial uses along Broadway. This project will have a positive impact on the immediate area and the City in general by providing a source of housing in a fast-growing area. The project aims to increase the amount of greenspace on site, treat all stormwater runoff, provide sufficient off-street parking, and utilize municipal utilities along Broadway.

The project will require the following approvals and permits from the Planning Board:

Minor Lot Line Adjustment
A Minor Lot Line Adjustment between Lots 4-3 and 4-5 is being sought to provide the lot with feasibility to meet the required 75% minimum lot coverage. The existing shape of the lot presents a challenge with meeting this requirement while creating a development that will benefit the immediate area of influence and the City in terms of aesthetics and functionality. The proposed lot line will create a more traditional "block" style lot for Lot 4-5, allowing the dimensional requirements of the CBD General Sub-District to be more easily met. The areas of both lots will remain unchanged, Lot 4-3 being 20,592 SF and Lot 4-5 being 19,471 SF.

Conditional Use Permit
A Conditional Use Permit is being sought to grant relief to the required 20% minimum first floor commercial use space in the CBD General Sub-District. This relief complies with all standards established in the City of Dover Zoning Ordinance Chapter 170-20B(1)&(2).

Site Review
The project will require Site Review by the Planning Board.

Enclosed please find the following documents as part of the Application to the Technical Review Committee:

- Completed and Signed *"Site Review Application"* (8 copies)
- Completed and Signed *"Conditional Use Permit Application"* (8 copies)
- Completed and Signed *"Minor Lot Line Adjustment Application"* (8 copies)
- Plans (8 copies)
- Drainage Report (8 copies)
- Traffic Analysis Memo (8 copies)
- Photographs of Site (8 copies)
- List of Abutters (8 copies)
- Check for Plan Review Fees

Please do not hesitate to contact me directly if you have any questions concerning our Application for TRC Review at (603) 601-8154.Thank you for your consideration.

Sincerely,
TEC, Inc.
*"**T**he **E**ngineering **C**orporation"*

Christopher Raymond, PE
Civil Engineer – Design Engineer

Site Plans

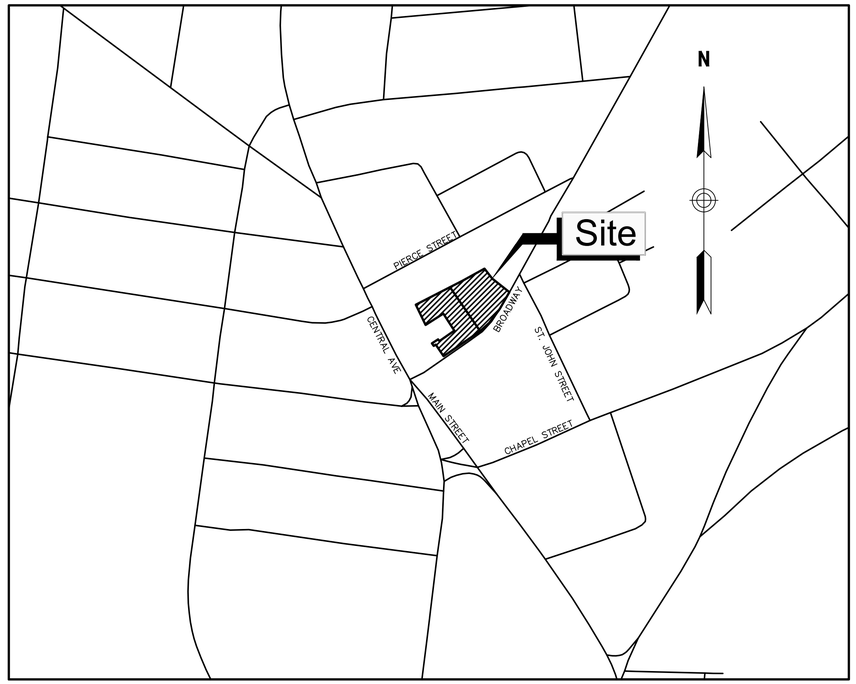
Proposed Residential Development

14 Broadway, Dover, NH 03820

Assessor's Map 4, Lot 5

Site Plans Index

No.	Drawing Title	Latest Issue
C-1	Title & Index Sheet	August 5, 2021
C-2	Legend & General Notes	August 5, 2021
C-3	Lot Line Adjustment Plan	August 5, 2021
C-4	Neighborhood Plan	August 5, 2021
C-5	Demolition Plan	August 5, 2021
C-6	Layout & Materials Plan	August 5, 2021
C-7	Grading & Drainage Plan	August 5, 2021
C-8	Landscape, Lighting & Utility Plan	August 5, 2021
C-9	Erosion & Sediment Control Plan	August 5, 2021
C-10	Construction Details	August 5, 2021
C-11	Construction Details	August 5, 2021
C-12	Construction Details	August 5, 2021



LOCATION MAP

250 0 250 500

SCALE IN FEET

Reference Plans Index

No.	Drawing Title	Latest Issue
1	Existing Conditions Plan	February 19, 2021
2	Architectural Elevations	August 5, 2021

TEC
The Engineering Corp

TEC, Inc.

146 Dascomb Road
Andover, MA 01810
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169 Ocean Boulevard
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(603) 601-8154

www.TheEngineeringCorp.com

DESIGNED BY	CPR
DRAWN BY	MWP
CHECKED BY	CPR
DATE	8/5/2021
SCALE	As Noted

PREPARED FOR

Downtown Dover Storage, LLC
42 L Dover Point Road
Dover, NH 03820

REVISIONS

ISSUED FOR

Permitting

PROJECT TITLE

Proposed Residential Development

PROJECT LOCATION

14 Broadway
Dover, NH 03820

DRAWING TITLE

Title & Index Sheet

STATE OF NEW HAMPSHIRE
CHRISTOPHER P. RAYMOND No.16305 LICENSED
PROFESSIONAL ENGINEER

PROJECT NO.
N0946.02

TEC CAD FILE
N0946.02_COV

DRAWING NO.
C-1

SHEET 1 OF 12

GENERAL NOTES

1. CONTRACTOR SHALL NOTIFY DIG-SAFE (1-888-344-7233) AND THE LOCAL MUNICIPAL WATER & SEWER DEPT. AT LEAST 72 HOURS BEFORE EXCAVATING.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY. CONSTRUCTION ACTIVITIES SHALL BE IN ACCORDANCE WITH OSHA STANDARDS AND LOCAL REQUIREMENTS. A 6-FOOT TEMPORARY CHAINLINK FENCE SHALL BE PROVIDED AROUND ALL CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL LEAVE NO UNSECURED OPEN EXCAVATIONS.
3. 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.
4. SITE CONSTRUCTION HOURS SHALL BE LIMITED TO MONDAY THROUGH FRIDAY BETWEEN 7 AM AND 6 PM, SATURDAY AND SUNDAY BETWEEN 9 AM AND 4 PM. 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.
5. HANDICAP ACCESSIBLE ROUTES, PARKING SPACES, RAMPS, SIDEWALKS AND WALKWAYS SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE FEDERAL AMERICANS WITH DISABILITIES ACT/ARCHITECTURAL ACCESS BOARD (AAB), AND WITH STATE AND LOCAL LAWS AND REGULATIONS (WHICHEVER ARE MORE STRINGENT).
6. WORK WITHIN THE LOCAL RIGHT-OF-WAY SHALL CONFORM TO LOCAL MUNICIPAL STANDARDS. WORK WITHIN STATE RIGHT-OF-WAY SHALL CONFORM TO THE LATEST EDITION OF THE STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION.
7. UPON AWARD OF CONTRACT, CONTRACTOR SHALL MAKE NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN NECESSARY PERMITS, PAY FEES, AND POST BONDS ASSOCIATED WITH THE WORK INDICATED ON THE DRAWINGS, IN THE SPECIFICATIONS, AND IN THE CONTRACT DOCUMENTS. DO NOT CLOSE OR OBSTRUCT ROADWAYS, SIDEWALK, AND FIRE HYDRANTS, WITHOUT APPROPRIATE PERMITS.
8. TRAFFIC SIGNAGE AND PAVEMENT MARKINGS SHALL CONFORM TO THE CURRENT EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
8. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AT NO ADDITIONAL COST TO THE OWNER.
9. IN THE EVENT THAT SUSPECTED CONTAMINATED SOIL, GROUNDWATER, AND OTHER MEDIA ARE ENCOUNTERED DURING EXCAVATION AND CONSTRUCTION ACTIVITIES BASED ON VISUAL, OLFACTORY, OR OTHER EVIDENCE, THE CONTRACTOR SHALL STOP WORK IN THE VICINITY OF THE SUSPECT MATERIAL TO AVOID FURTHER SPREADING OF THE MATERIAL, AND SHALL NOTIFY THE OWNER IMMEDIATELY SO THAT THE APPROPRIATE TESTING AND SUBSEQUENT ACTION CAN BE TAKEN.
10. CONTRACTOR SHALL PREVENT DUST, SEDIMENT, AND DEBRIS FROM EXITING THE SITE AND SHALL BE RESPONSIBLE FOR CLEANUP, REPAIRS AND CORRECTIVE ACTION IF SUCH OCCURS.
11. CONTRACTOR SHALL CONTROL STORMWATER RUNOFF DURING CONSTRUCTION TO PREVENT ADVERSE IMPACTS TO OFF SITE AREAS, AND SHALL BE RESPONSIBLE TO REPAIR RESULTING DAMAGES, IF ANY, AT NO COST TO OWNER.
12. THERE SHALL BE NO STORAGE OF HAZARDOUS MATERIALS OR HAZARDOUS WASTE WITHIN THE SUBJECT LOT.
13. ALL CONSTRUCTION SHALL CONFORM WITH THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION (NHDOT) "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" AND WITH THE CITY OF DOVER COMMUNITY SERVICES REGULATIONS AND STANDARD SPECIFICATIONS FOR CONSTRUCTION. THE MORE STRINGENT SPECIFICATIONS SHALL APPLY.
14. ANY RETAINING WALL TALLER THAN FOUR FEET (4') REQUIRES ISSUANCE OF A BUILDING PERMIT FROM INSPECTION SERVICES.
15. ANY FENCE TALLER THAN SEVEN FEET (7') REQUIRES THE ISSUANCE OF A BUILDING PERMIT FROM INSPECTION SERVICES.

ABBREVIATIONS

GENERAL

AC	ACRES
ADJ	ADJUST
APPROX	APPROXIMATE
BLDG	BUILDING
BO	BY OTHERS
BIT	BITUMINOUS CONCRETE
BTM	BOTTOM
CEM	CEMENT
CLF	CHAIN LINK FENCE
CONC	CONCRETE
DIA	DIAMETER
ELEV	ELEVATION
EN	ENTRANCE/EXIT
ESHWT	ESTIMATED SEASONAL HIGH WATER TABLE
EOP	EDGE OF PAVEMENT
EXIST	EXISTING
EX	EXIT
FDC	FIRE DEPARTMENT CONNECTION
GE	GRANITE EDGING
HDPE	HIGH DENSITY POLYETHYLENE
HMA	HOT MIX ASPHALT
LA	LANDSCAPE AREA
LD	LOADING DOCK
LF	LINEAR FEET
MAX	MAXIMUM
MCC	MONOLITHIC CONCRETE CURB
MIN	MINIMUM
MTD	MOUNTED
NTS	NOT TO SCALE
PROP	PROPOSED
PVMT	PAVEMENT
R	RADIUS
REM	REMOVE
RET	RETAIN
SGE	SLOPED GRANITE EDGING
SW	SIDEWALK
TYP	TYPICAL
VGC	VERTICAL GRANITE CURB
WCR	WHEELCHAIR RAMP

UTILITIES

CB	CATCH BASIN
CIT	CHANGE IN TYPE
CLDI	CEMENT LINED DUCTILE IRON PIPE
COND	CONDUIT
DMH	DRAINAGE MANHOLE
DOM	DOMESTIC WATER SERVICE
ETC	ELECTRIC, TELEPHONE, & CABLE
F&G	FRAME AND GRATE
F&C	FRAME AND COVER
GV	GAS VALVE
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HYD	HYDRANT
INV	INVERT ELEVATION
OCS	OUTLET CONTROL STRUCTURE
PVC	POLYVINYL CHLORIDE PIPE
RCP	REINFORCED CONCRETE PIPE (CLASS III)
RD	ROOF DRAIN
SMH	SEWER MANHOLE
TEL	TELEPHONE
TSV	TAPPING SLEEVE AND VALVE
UP	UTILITY POLE
WV	WATER VALVE

GRADING, DRAINAGE AND UTILITY NOTES

1. THE LOCATIONS, SIZES, AND TYPES OF EXISTING UNDERGROUND UTILITIES ARE SHOWN AS AN APPROXIMATE REPRESENTATION ONLY. THE OWNER OR ITS REPRESENTATIVE(S) HAVE NOT INDEPENDENTLY VERIFIED THIS INFORMATION AS SHOWN ON THE PLANS. THE UTILITY INFORMATION SHOWN DOES NOT GUARANTEE THE ACTUAL EXISTENCE, SERVICEABILITY, OR OTHER DATA CONCERNING THE UTILITIES, NOR DOES IT GUARANTEE AGAINST THE POSSIBILITY THAT ADDITIONAL UTILITIES MAY BE PRESENT THAT ARE NOT SHOWN ON THE PLANS. PRIOR TO ORDERING MATERIALS AND BEGINNING CONSTRUCTION THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATION, SIZES, AND ELEVATION OF EXISTING UTILITIES.
2. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, OR EXISTING CONDITIONS DIFFER FROM THOSE SHOWN SUCH THAT THE WORK CANNOT BE COMPLETED AS INTENDED, THE LOCATION, ELEVATION, AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED IN WRITING TO THE OWNER'S REPRESENTATIVE FOR THE RESOLUTION OF THE CONFLICT. FAILURE TO PROVIDE OR PERFORM THE ABOVE PRIOR TO PERFORMING ANY WORK SHALL NOT BE GROUNDS FOR EXTRA PAYMENTS TO THE CONTRACTOR.
3. AT ALL LOCATIONS WHERE EXISTING CURBING OR PAVEMENT ABUTS NEW CONSTRUCTION, THE EDGE OF THE EXISTING CURB OR PAVEMENT SHALL BE SAW CUT TO A CLEAN, SMOOTH EDGE. BLEND NEW PAVEMENT, CURBS, AND EARTHWORK SMOOTHLY INTO EXISTING BY MATCHING LINES, GRADES, AND JOINTS.
4. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES, AS REQUIRED.
5. ALL UTILITY COVERS, GRATES, ETC. SHALL BE ADJUSTED TO BE FLUSH WITH THE PAVEMENT FINISH GRADE UNLESS OTHERWISE NOTED.
6. INSTALL ALL UTILITIES (INCLUDING CONCRETE PADS) PER UTILITY COMPANY AND DPW STANDARDS.
7. EXISTING TREES AND SHRUBS OUTSIDE THE LIMITS OF GRADING SHALL BE REMOVED ONLY UPON PRIOR APPROVAL OF THE OWNER.
8. UNLESS OTHERWISE INDICATED, ABANDONED EXISTING UTILITY LINES SHALL BE CAPPED AND ABANDONED IN PLACE UNLESS THEY CONFLICT WITH PROPOSED IMPROVEMENTS, WHERE THEY SHALL THEN BE REMOVED. CAP REMAINING PORTIONS WHERE PARTIALLY REMOVED.
9. ALL WATER INFRASTRUCTURE SHALL CONFORM TO MUNICIPAL STANDARDS.
10. INSULATE SANITARY PIPES WHERE INVERT DEPTH IS LESS THAN FIVE (5) FEET BELOW FINISHED GRADE.
11. CONTRACTOR SHALL PROTECT ALL UNDERGROUND DRAINAGE, SEWER, AND UTILITY FACILITIES FROM EXCESSIVE VEHICULAR LOADS DURING CONSTRUCTION. ANY DAMAGE TO THESE FACILITIES RESULTING FROM CONSTRUCTION LOADS WILL BE RESTORED TO ORIGINAL CONDITION (AT NO ADDITIONAL COST TO THE OWNER) BY THE CONTRACTOR.
12. ALL WATER AND SEWER UTILITY WORK SHALL CONFORM TO LOCAL UTILITY DIVISION SPECIFICATIONS, DETAILS, RULES AND REGULATIONS AND HAVE FIVE (5) FEET OF MINIMUM COVER. GAS, ELECTRIC, AND TELEPHONE LOCATIONS AND ROUTING ARE SUBJECT TO REVIEW AND APPROVAL BY THE APPROPRIATE UTILITY COMPANIES.
13. FIRE ALARM CONNECTION LOCATIONS AND ROUTING ARE SUBJECT TO REVIEW AND APPROVAL BY THE FIRE DEPARTMENT.
14. THE CONTRACTOR SHALL REMOVE ALL EROSION CONTROL BARRIERS AFTER REVEGETATION OF DISTURBED AREAS AND AFTER APPROVAL BY THE LOCAL APPROVING AUTHORITY.
15. EXCAVATION REQUIRED IN THE PROXIMITY OF EXISTING UTILITY LINES SHALL BE DONE BY HAND. CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING UTILITY LINES OR STRUCTURES INCURRED DURING CONSTRUCTION OPERATIONS AT NO COST TO THE OWNER.
16. STOCKPILED TOPSOIL SHALL BE PLACED NEATLY IN AN AREA APPROVED BY THE OWNER/REPRESENTATIVE.
17. THE CONTRACTOR SHALL SCHEDULE THEIR WORK TO ALLOW THE FINISHED SUBGRADE ELEVATIONS TO DRAIN PROPERLY WITHOUT PUDDLING. SPECIFICALLY, ALLOW WATER TO ESCAPE WHERE PROPOSED CURB MAY RETAIN RUNOFF PRIOR TO APPLICATION OF THE FINISH SUBGRADE AND/OR SURFACE PAVING.
18. THE APPLICANT SHOULD OBTAIN AN EXCAVATION PERMIT FROM THE CITY OF DOVER PRIOR TO THE START OF WORK ON THE SITE.
19. THE APPLICANT SHOULD OBTAIN ANY ADDITIONAL LOCAL UTILITY PERMITTING IF REQUIRED.

GENERAL SYMBOLS

EXISTING	PROPOSED	
		CATCH BASIN
		GUTTER INLET
		DRAIN MANHOLE
		SEWER MANHOLE
		ELECTRIC MANHOLE
		TELEPHONE MANHOLE
		WATER GATE
		FIRE HYDRANT
		GAS GATE
		STREET SIGN
		LIGHT POLE
		WALL MOUNTED LIGHT
		UTILITY POLE
		GUY POLE
		GUY WIRE
		MONITORING WELL
		TEST PIT (W/ I.D.)
	EOP	EDGE OF PAVEMENT
VGC	VGC	GRANITE CURB
SGC	GE	GRANITE EDGING
	BB	BITUMINOUS BERM
		GUARD RAIL
		CHAINLINK FENCE
		DRAINAGE LINE
	S	SEWER LINE
		WATER LINE
G	G	GAS LINE
		UNDERGROUND ELECTRIC LINE
		UNDERGROUND TELEPHONE LINE
		ELEC., TELE., CATV, CONDUIT
OHW	OHW	OVERHEAD WIRE
		STONE WALL
		CHAIN LINK FENCE
		STOCKADE FENCE
		TREE LINE
		SHORELINE
		CONCRETE
	▲	ENTRANCE/EXIT DOOR
PC 10 N00° 00' 00"E +57.59	PC 10 N00° 00' 00"E +57.59	BASELINE
N00° 00' 00"E	N00° 00' 00"E	TOWN LAYOUT
N00° 00' 00"E	N00° 00' 00"E	PROPERTY LINE
GB OR CB	■ BND	HIGHWAY/PROPERTY BOUND (TYPE NOTED)
		IRON PIPE/REBAR
		TREE (SIZE AND TYPE NOTED)

PAVEMENT MARKINGS AND SIGNING SYMBOLS

EXISTING	PROPOSED	
CW	CW	CROSSWALK, 12" WHITE LINE (WIDTH NOTED)
SL	SL	STOP LINE, 12" WHITE LINE 4' BEHIND CW (TYP.)
SL	SWL, SWLL	SOLID WHITE LINE/SOLID WHITE LANE LINE-4"
	BWLL	BROKEN WHITE LANE LINE-4"
	DWLL	DOTTED WHITE LANE LINE-4"
SYL	SYL	SOLID YELLOW LINE-4"
DYL	DYCL	DOUBLE YELLOW CENTER LINE- 2-4" LINES
		ADA-ACCESSIBLE PARKING SPACE

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DESIGNED BY	CPR
DRAWN BY	MWP
CHECKED BY	CPR
DATE	8/5/2021
SCALE	Not to Scale

PREPARED FOR

Downtown Dover Storage, LLC
42 L Dover Point Road
Dover, NH 03820

REVISIONS

ISSUED FOR
Permitting

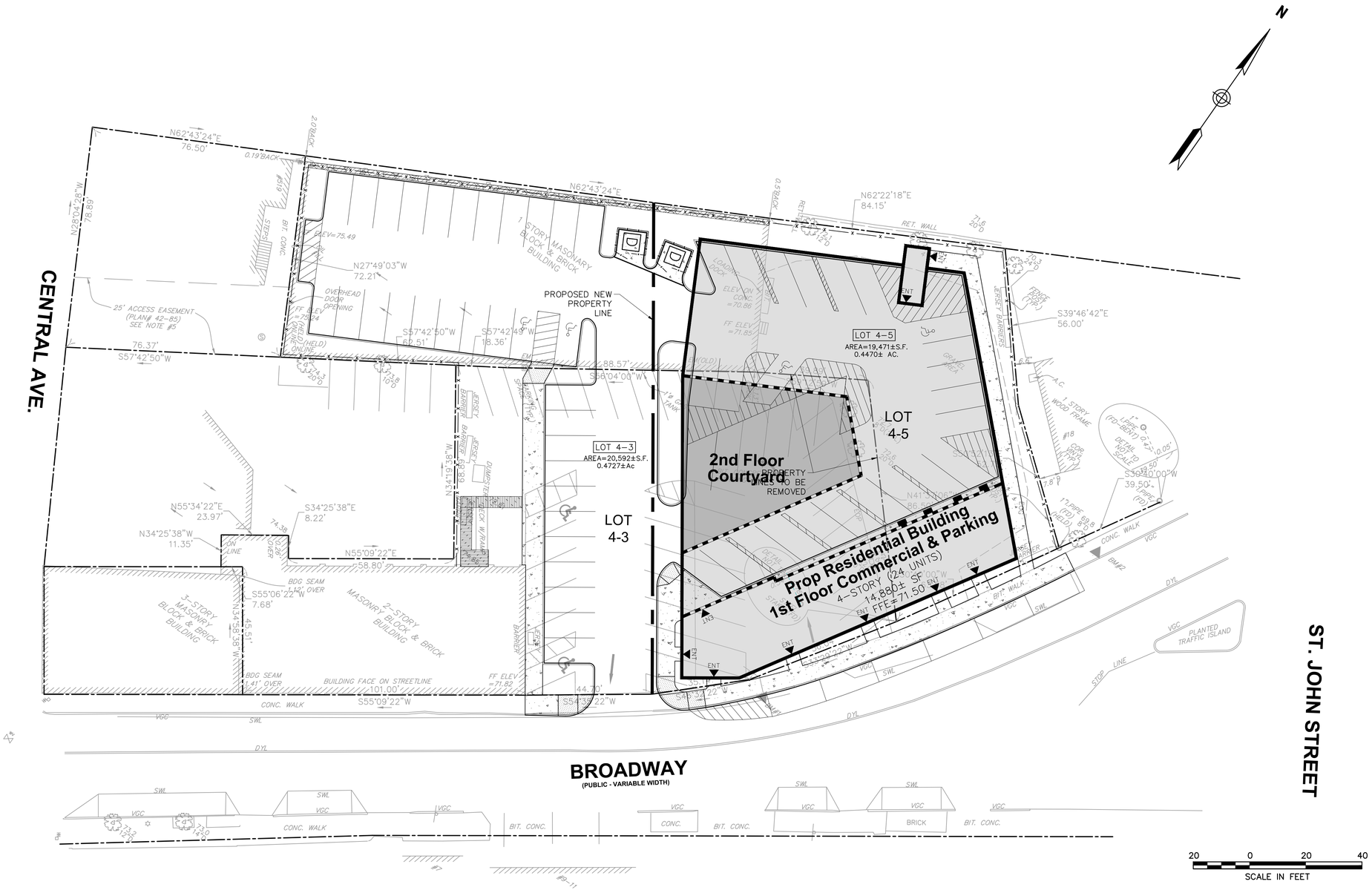
PROJECT TITLE
Proposed Residential Development

PROJECT LOCATION
14 Broadway
Dover, NH 03820

DRAWING TITLE
Legend & General Notes

STATE OF NEW HAMPSHIRE · CHRISTOPHER P. RAYMOND No.16305 LICENSED PROFESSIONAL ENGINEER

PROJECT NO. N0946.02
TEC CAD FILE N0946.02_LEG
DRAWING NO. C-2
SHEET 2 OF 12



LOT AREA TABLE		
LOT #	EXISTING AREA (SF)	PROPOSED AREA (SF)
4-3	20,592	20,592
4-5	19,471	19,471

TEC, Inc.

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DRAWN BY	MWP
CHECKED BY	CPR
DATE	8/5/2021
SCALE	1"=20'

PREPARED FOR

Downtown Dover Storage, LLC
42 L Dover Point Road
Dover, NH 03820

REVISIONS

ISSUED FOR

Permitting

PROJECT TITLE

Proposed Residential Development

PROJECT LOCATION

14 Broadway
Dover, NH 03820

DRAWING TITLE

Lot Line Adjustment Plan

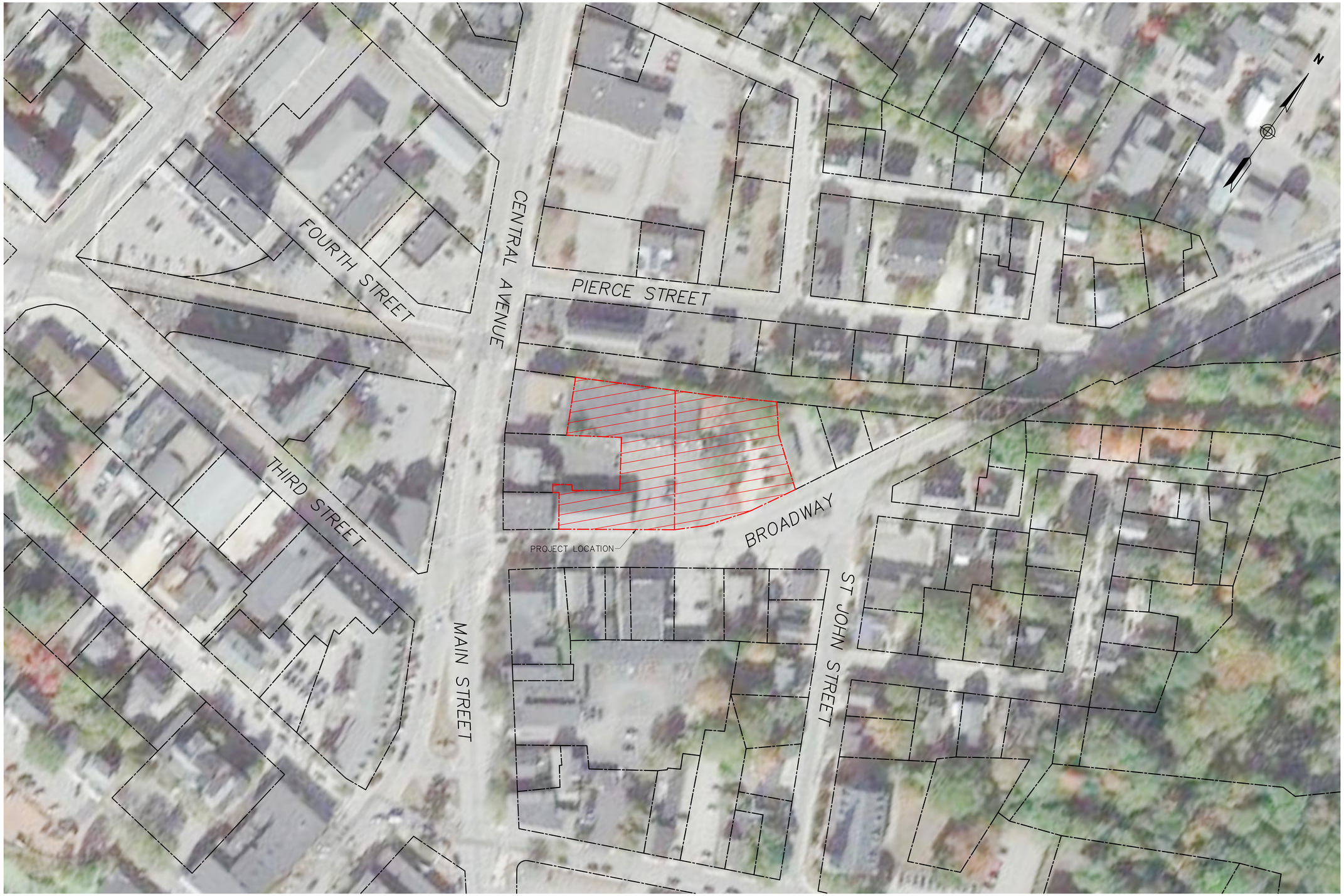
STATE OF NEW HAMPSHIRE – CHRISTOPHER P. RAYMOND No.16305 – LICENSED PROFESSIONAL ENGINEER

PROJECT NO. N0946.02

TEC CAD FILE N0946.02_LOT

DRAWING NO. C-3

SHEET 3 OF 12



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DESIGNED BY	CPR
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DATE	8/5/2021
SCALE	1"=40'

PREPARED FOR

Downtown Dover Storage, LLC
42 L Dover Point Road
Dover, NH 03820

REVISIONS

ISSUED FOR

Permitting

PROJECT TITLE

Proposed Residential Development

PROJECT LOCATION

14 Broadway
Dover, NH 03820

DRAWING TITLE

Neighborhood Plan

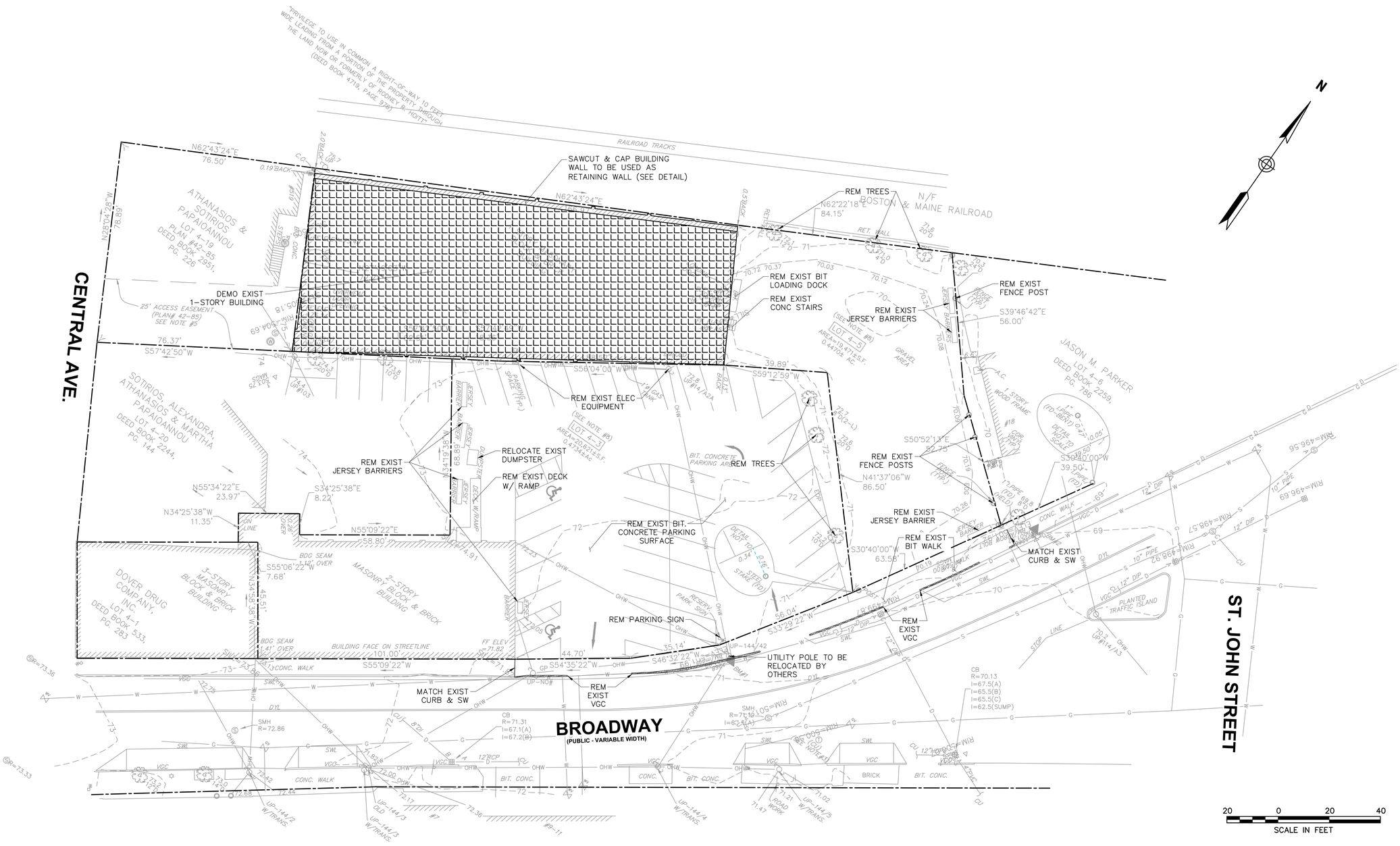
STATE OF NEW HAMPSHIRE
CHRISTOPHER P. RAYMOND
No. 16305
LICENSED PROFESSIONAL ENGINEER

PROJECT NO.
N0946.02

TEC CAD FILE
N0946.02_NBH

DRAWING NO.
C-4

SHEET 4 OF 12



NOTES:

1. ALL UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND ELEVATIONS OF EACH UTILITY PRIOR TO REMOVING OR RELOCATING. CONTRACTOR SHALL NOTIFY DIG-SAFE (1-888-344-7233) AND THE LOCAL MUNICIPAL WATER & SEWER DEPT. AT LEAST 72 HOURS BEFORE EXCAVATING.
2. THE CONTRACTOR SHALL DISCONNECT ALL UTILITIES FROM THE BUILDING PRIOR TO DEMOLITION.
3. THE CONTRACTOR IS TO REMOVE AND TO DISPOSE OF EXISTING MANMADE SURFACE FEATURES WITHIN THE LIMITS OF WORK INCLUDING BUILDINGS, STRUCTURES, PAVEMENTS, SLABS, CURBING, FENCES, UTILITY POLES, SIGNS, ETC. UNLESS INDICATED OTHERWISE ON THE DRAWINGS. REMOVE AND DISPOSE OF EXISTING UTILITIES, FOUNDATIONS, AND UNSUITABLE MATERIAL WITHIN THE PROPOSED BUILDING FOOTPRINT, TEN FEET BEYOND AND BENEATH PROPOSED EXTERIOR COLUMNS, AND CONFLICTING WITH ANY PROPOSED SITE WORK, PER DRAWINGS AND SPECIFICATIONS.
4. EXISTING UTILITIES SHALL BE TERMINATED, UNLESS OTHERWISE NOTED, IN CONFORMANCE WITH LOCAL, STATE, AND INDIVIDUAL UTILITY COMPANIES' STANDARD SPECIFICATIONS AND DETAILS. THE CONTRACTOR SHALL COORDINATE UTILITY SERVICE DISCONNECTS WITH THE UTILITY REPRESENTATIVES.
5. THE CONTRACTOR SHALL DISPOSE OF DEMOLITION DEBRIS IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS, ORDINANCES, AND STATUTES.
6. ALL EROSION CONTROL DEVICES ARE TO BE INSTALLED AND APPROVED PRIOR TO DEMOLITION.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY. CONSTRUCTION ACTIVITIES SHALL BE IN ACCORDANCE WITH OSHA STANDARDS AND LOCAL REQUIREMENTS. A 6-FOOT TEMPORARY CHAIN LINK FENCE SHALL BE PROVIDED AROUND ALL CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL LEAVE NO UNSECURED OPEN EXCAVATIONS.
8. ALL EXISTING DRAINAGE STRUCTURES SHALL REMAIN IN PLACE AND FUNCTIONAL UNTIL THE PROPOSED DRAINAGE SYSTEM IS OPERATIONAL, UNLESS OTHERWISE NOTED BY THE ENGINEER.
9. THE CONTRACTOR SHALL NOTIFY THE OWNER AT LEAST 72 HOURS PRIOR TO BEGINNING ANY DEMOLITION.
10. THE LOCATION OF THE EXISTING SEWER SERVICE IS APPROXIMATE. THE EXISTING SERVICE SHALL BE REMOVED IN CONFORMANCE WITH STATE AND LOCAL REGULATIONS.
11. IN THE EVENT THAT SUSPECTED CONTAMINATED SOIL, GROUNDWATER, AND OTHER MEDIA ARE ENCOUNTERED DURING EXCAVATION AND CONSTRUCTION ACTIVITIES BASED ON VISUAL, OLFACTORY, OR OTHER EVIDENCE, THE CONTRACTOR SHALL STOP WORK IN THE VICINITY OF THE SUSPECT MATERIAL TO AVOID FURTHER SPREADING OF THE MATERIAL, AND SHALL NOTIFY THE OWNER IMMEDIATELY SO THAT THE APPROPRIATE TESTING AND SUBSEQUENT ACTION CAN BE TAKEN.

LEGEND:

BUILDING TO BE DEMOLISHED

VGC TO BE REMOVED

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DATE	8/5/2021
SCALE	1"=20'

PREPARED FOR

Downtown Dover Storage, LLC
42 L Dover Point Road
Dover, NH 03820

REVISIONS

ISSUED FOR

Permitting

PROJECT TITLE

Proposed Residential Development

PROJECT LOCATION

14 Broadway
Dover, NH 03820

DRAWING TITLE

Demolition Plan

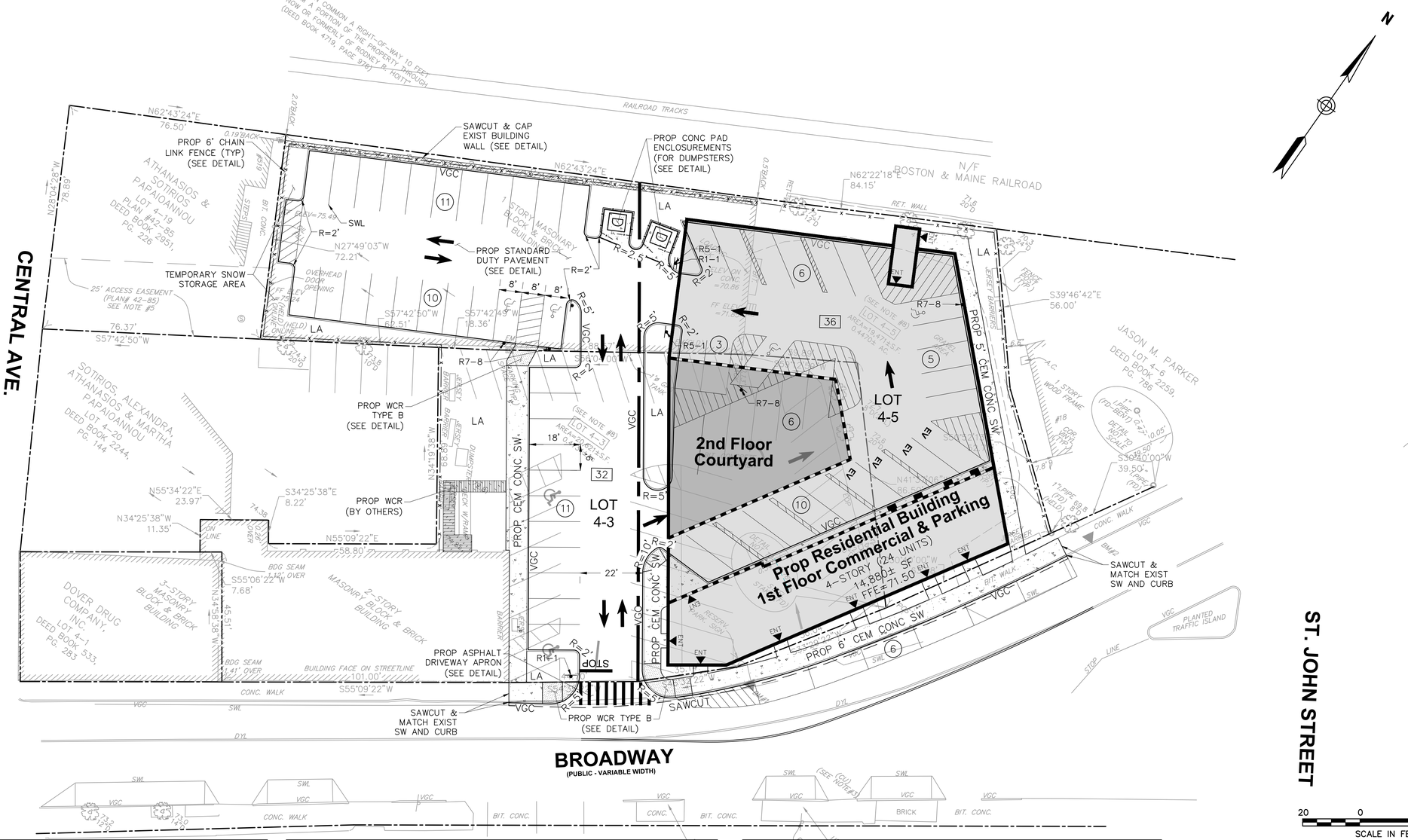
STATE OF NEW HAMPSHIRE
CHRISTOPHER P. RAYMOND No.16305
LICENSED PROFESSIONAL ENGINEER

PROJECT NO. N0946.02

TEC CAD FILE N0946.02_DEMO

DRAWING NO. C-5

SHEET 5 OF 12



ZONING TABLE

ZONING DISTRICT	CBD GENERAL SUB-DISTRICT	
PROPOSED USE	RESIDENTIAL (24 UNITS)	
PROPOSED USE ALLOWABLE BY	BY RIGHT	
DIMENSIONAL REQUIREMENTS	**REQUIRED**	**PROVIDED**
LOT SIZE	N/A	19,471 SF
MINIMUM LOT COVERAGE	75%	76.4%
MINIMUM FRONTAGE BUILD-OUT	70%	83%
FRONT PRIMARY BUILD TO LINE	6.7 FT*	1 FT
FRONT SECONDARY BUILD TO LINE	N/A	N/A
SIDE SETBACK	0 FT (MIN), 24 FT (MAX)	10 FT
REAR SETBACK	10 FT (MIN)	10 FT
BUILDING HEIGHT	5-STORY (MAX), 2-STORY (MIN)	4-STORY

* AVERAGE OF ALL FRONT SETBACKS OF LOTS WITHIN THE SAME ZONE LOCATED ON THE SAME SIDE OF THE STREET, 250 FT IN EACH DIRECTION FROM THE CENTER OF THE FRONT LOT LINE

TRAFFIC SIGN SUMMARY

ID NUMBER	SIZE OF SIGN (in)			TEXT DIMENSIONS (in)			NUMBER OF SIGNS REQUIRED	NUMBER OF POSTS REQUIRED
	WIDTH	HEIGHT	LEGEND	LETTER HEIGHT	VERTICAL SPACING	ROUTE MARKER		
R1-1	30	30		SEE MUTCD SIGN STANDARDS			2	2
R7-8	12	24					4	4
R5-1	30	30					2	2

* HANDICAP PARKING SIGNS SHALL BE IN ACCORDANCE WITH CITY OF DOVER STANDARDS, AND ADA/AAB REGULATIONS

** VAN SIGNS SHALL BE LOCATED AT ALL ADA SPACES. PER ADA ACCESSIBILITY GUIDELINES (AMENDED 2002) ANY SPACE WITH A VAN SIGN IS NOT INTENDED TO BE RESTRICTED ONLY TO VANS

PARKING TABLE

REQUIRED PARKING (MAX)	LOT 4-3: 7 RESIDENTIAL UNITS, 3,241 SF RETAIL & 4,956 SF OFFICE/RETAIL=38 SPACES LOT 4-5: 24 RESIDENTIAL UNITS & 3,437 SF COMMERCIAL=53 SPACES TOTAL REQUIRED PARKING (MAX)=91 SPACES	
PROPOSED PARKING	LOT 4-3: 32 SPACES LOT 4-5: 30 SPACES (1/UNIT & 6 GUEST SPACES) BROADWAY: 6 SPACES TOTAL PROPOSED PARKING=68 SPACES	
PARKING REQUIREMENTS	**REQUIRED**	**PROVIDED**
HANDICAP ACCESSIBLE SPACES	4	4
AISLE WIDTH	22 FT	22 FT
STALL WIDTH	9 FT	9 FT
LENGTH OF SPACE	18 FT	18 FT

NOTES:

1. THE INTENT OF THIS PLAN IS TO CONSTRUCT A 14,880± SF RESIDENTIAL BUILDING WITH FIRST FLOOR COMMERCIAL AND PARKING ON LOT 4-5, AND REDEVELOP THE EXISTING PARKING AREA ON LOT 4-3.
2. THE PARCELS ARE SHOWN AS LOT NO. 3 & 5, MAP 4 OF THE CITY OF DOVER TAX ASSESSOR'S MAPS.
3. TITLE REFERENCE FOR THE PROJECT PARCEL IS THE STRAFFORD COUNTY REGISTRY OF DEEDS, BOOK NO. 4719, PAGE NO. 976.
6. CONDITIONAL USE PERMIT BEING SOUGHT TO PROVIDE RELIEF TO THE MINIMUM 20% FIRST FLOOR COMMERCIAL USE SPACE.
7. PROPERTY LINE INFORMATION HAS BEEN OBTAINED FROM A SURVEY PERFORMED BY HANCOCK ASSOCIATES ON 4/18/2020 WITH AN ERROR NOT GREATER THAN 1 IN 10,000.
8. BUILDING ADDRESSES (INCLUDING APT/UNIT NUMBERS IF APPLICABLE) SHALL BE ASSIGNED BY THE BUILDING OFFICIAL AT THE TIME OF ISSUANCE OF A BUILDING PERMIT.
9. SNOW TO BE TEMPORARILY STORED AT WEST EDGE OF LOT BEFORE BEING REMOVED.
10. 25' ACCESS EASEMENT (PLAN #42-85) TO EXPIRE.

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Proposed Residential Development

PROJECT LOCATION

14 Broadway
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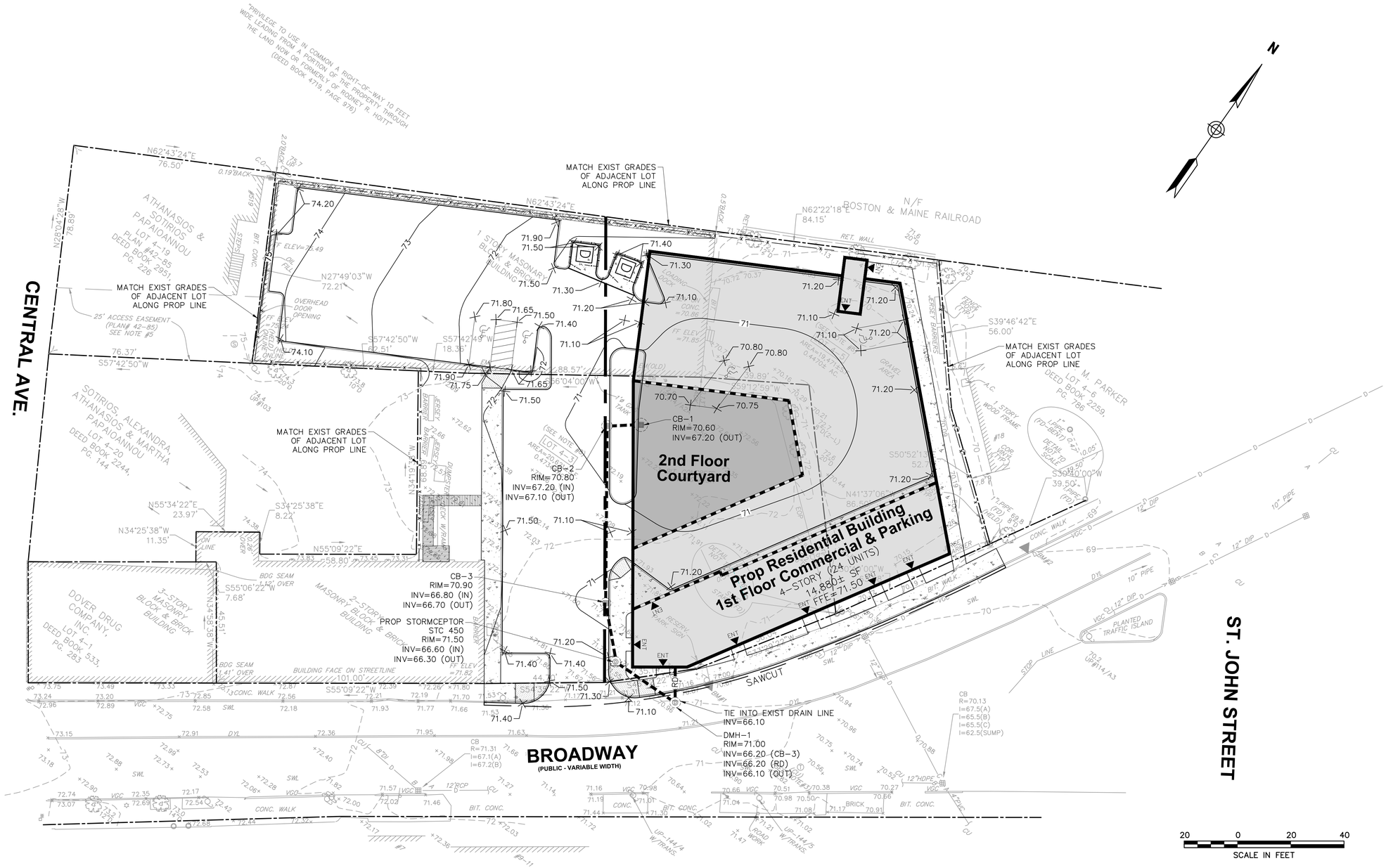
DRAWING TITLE

Layout & Materials Plan

STATE OF NEW HAMPSHIRE
CHRISTOPHER P. RAYMOND No.16305
PROFESSIONAL ENGINEER
LICENSED

PROJECT NO. N0946.02
TEC CAD FILE N0946.02_LM
DRAWING NO. C-6
SHEET 6 OF 12



LOT COVERAGE TABLE		
EXISTING USE	10,417 SF WAREHOUSE W/ PARKING AREA	
PROPOSED USE	14,900± SF RESIDENTIAL BUILDING W/ FIRST FLOOR COMMERCIAL USE SPACE AND PARKING	
LOT COVERAGE	EXISTING	PROPOSED
IMPERVIOUS AREA	32,2581 SF (92.1%)	28,994 SF (82.8%)
PERVIOUS AREA	2,774 SF (7.9%)	6,039 SF (17.2%)

NOTES:

1. SUBJECT PARCEL IS NOT LOCATED WITHIN A FEDERALLY DESIGNATED FLOOD HAZARD AREA, COMMUNITY PANEL NUMBER 33017C0330E, EFFECTIVE DATE: SEPTEMBER 30, 2015.
2. ALL DRAINAGE PIPING TO BE 12" HDPE.

TEC
The Engineering Corp
TEC, Inc.
146 Dascomb Road
Andover, MA 01810
(978) 794-1792
169 Ocean Boulevard
Unit 101, PO Box 249
Hampton, NH 03842
(603) 601-8154
www.TheEngineeringCorp.com

DESIGNED BY	CPR
DRAWN BY	MWP
CHECKED BY	CPR
DATE	8/5/2021
SCALE	1"=20'

PREPARED FOR

Downtown Dover Storage, LLC
42 L Dover Point Road
Dover, NH 03820

REVISIONS

ISSUED FOR

Permitting

PROJECT TITLE

Proposed Residential Development

PROJECT LOCATION

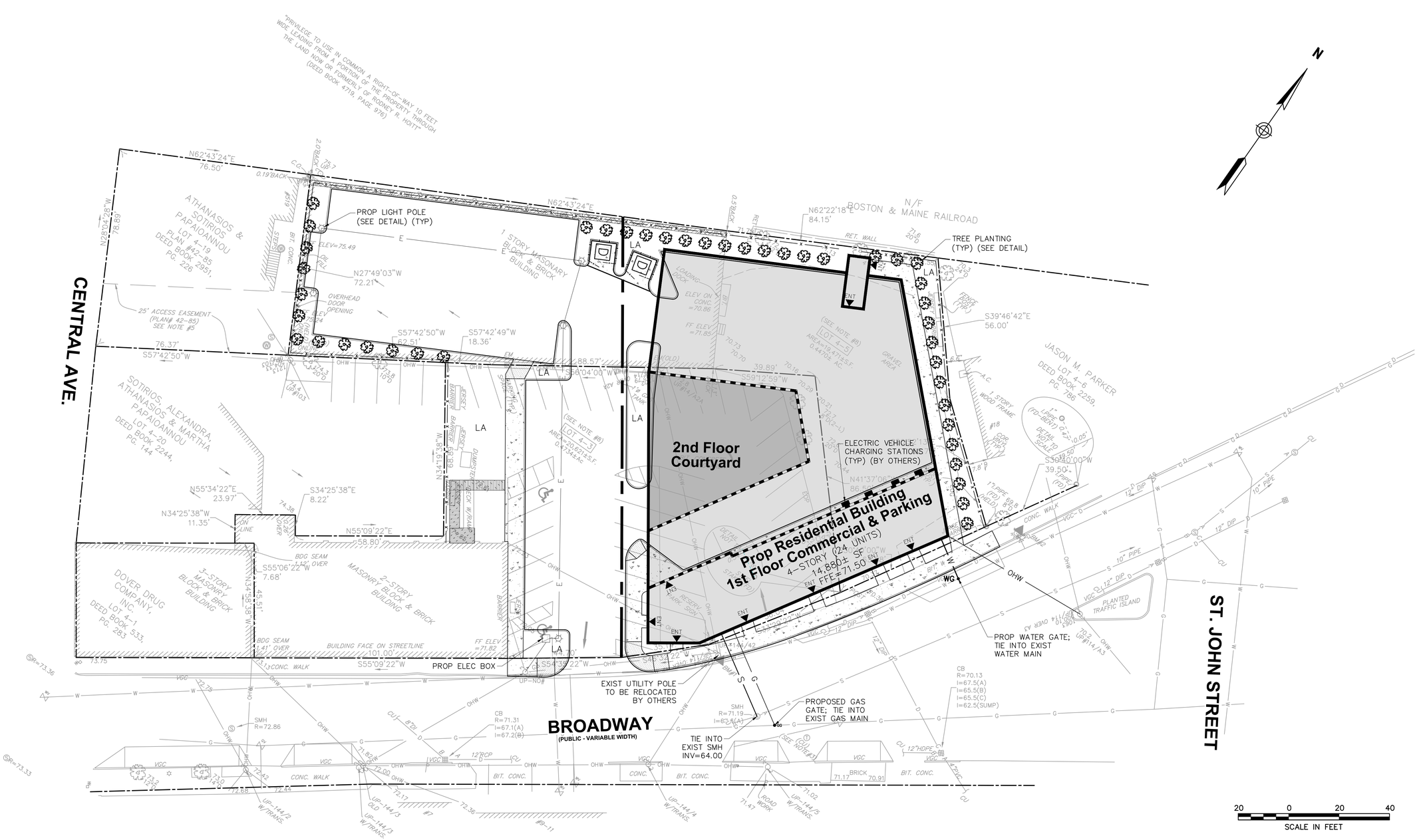
14 Broadway
Dover, NH 03820

DRAWING TITLE

Grading & Drainage Plan

STATE OF NEW HAMPSHIRE
CHRISTOPHER P. RAYMOND No.16305 LICENSED PROFESSIONAL ENGINEER

PROJECT NO. N0946.02
TEC CAD FILE N0946.02_GD
DRAWING NO. C-7
SHEET 7 OF 12



NOTES:

1. THE INSTALLATION OF ELECTRIC POWER, CABLE TELEVISION AND TELEPHONE LINES SHALL BE UNDERGROUND THROUGHOUT THE SITE FOR WHICH DEVELOPMENT IS PROPOSED.
2. THE SUBJECT PARCEL IS SERVED BY MUNICIPAL WATER AND SEWER.
3. EXTERIOR LIGHTING SHALL BE CUT-OFF TYPE FIXTURES PER CHAPTER 153-14-E AND SHALL PROVIDE LIGHTING DIRECTED ON-SITE ONLY.
4. LANDSCAPE ARCHITECT TO DETERMINE LAYOUT OF PROPOSED PLANTINGS.

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DRAWN BY	MWP
CHECKED BY	CPR
DATE	8/5/2021
SCALE	1"=20'

PREPARED FOR

Downtown Dover Storage, LLC
42 L Dover Point Road
Dover, NH 03820

REVISIONS

ISSUED FOR

Permitting

PROJECT TITLE

Proposed Residential Development

PROJECT LOCATION

14 Broadway
Dover, NH 03820

DRAWING TITLE

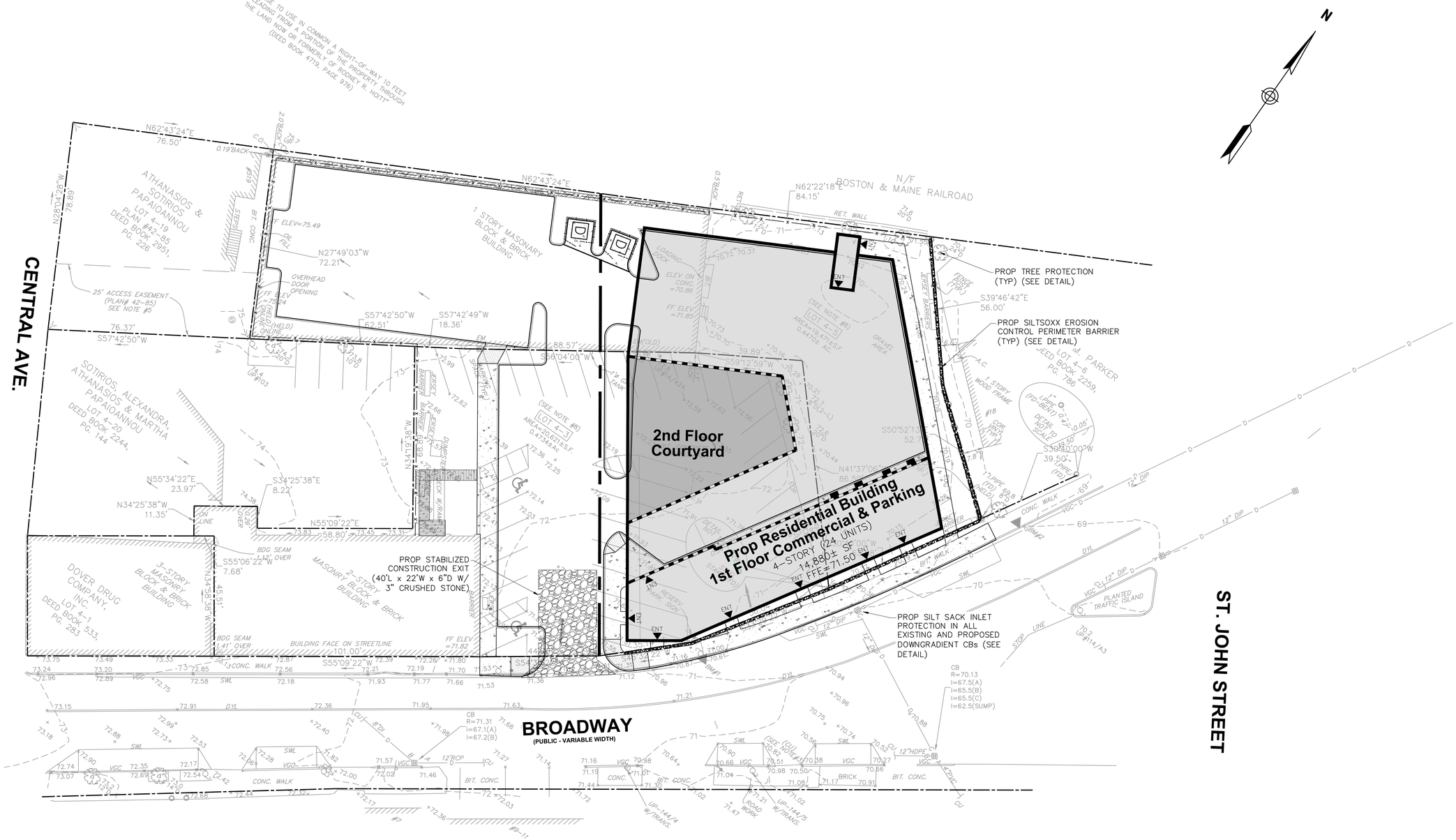
Landscape, Lighting & Utility Plan

STATE OF NEW HAMPSHIRE – CHRISTOPHER P. RAYMOND No. 16305 LICENSED PROFESSIONAL ENGINEER

PROJECT NO. N0946.02

TEC CAD FILE N0946.02_LA&UT

DRAWING NO. C-8



NOTES:

1. THE CONDITION OF EROSION CONTROLS MUST BE CHECKED AFTER EVERY STORM EVENT. REPAIRS AND MAINTENANCE MUST BE PERFORMED WITHIN 24 HOURS AFTER A STORM EVENT.
2. THE SITE AND SURROUNDING AREA SHALL BE SWEPT REGULARLY TO CONTROL DUST AND DEBRIS.
3. LIMIT OF WORK IS THE PROPERTY LINES OF LOTS 4-3 & 4-5.

TEC, Inc.

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DRAWN BY	MWP
CHECKED BY	CPR
DATE	8/5/2021
SCALE	1"=20'

PREPARED FOR

Downtown Dover Storage, LLC
42 L Dover Point Road
Dover, NH 03820

REVISIONS

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Permitting

PROJECT TITLE

Proposed Residential Development

PROJECT LOCATION

14 Broadway
Dover, NH 03820

DRAWING TITLE

Erosion & Sediment Control Plan

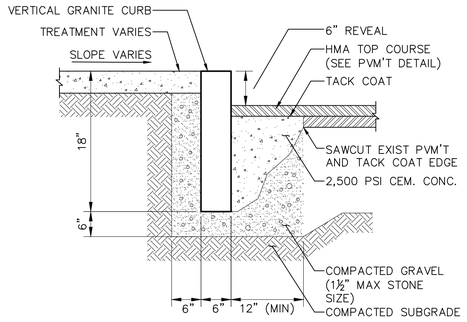
STATE OF NEW HAMPSHIRE - CHRISTOPHER P. RAYMOND No.16305 LICENSED PROFESSIONAL ENGINEER -

PROJECT NO. N0946.02

TEC CAD FILE N0946.02_ESED

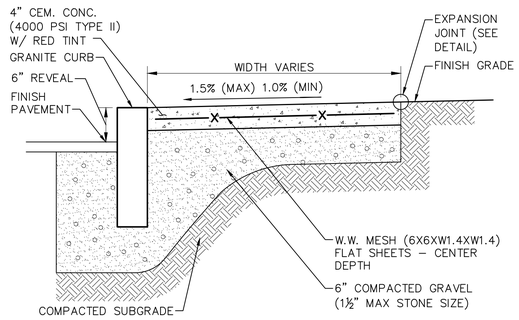
DRAWING NO. C-9

SHEET 9 OF 12



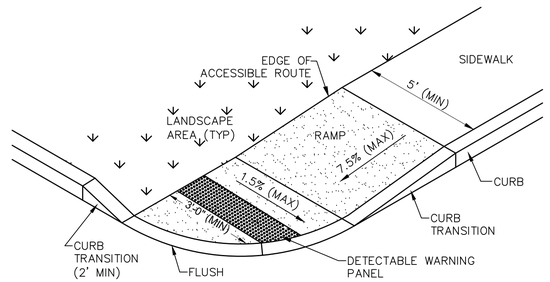
VERTICAL GRANITE CURB IN EXISTING PAVEMENT

N.T.S.



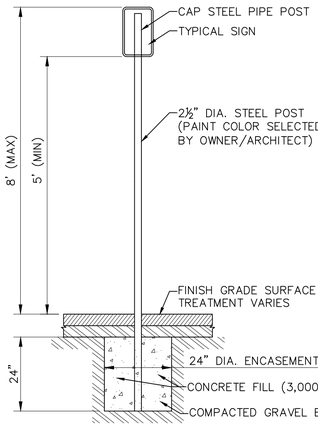
CONCRETE SIDEWALK

N.T.S.



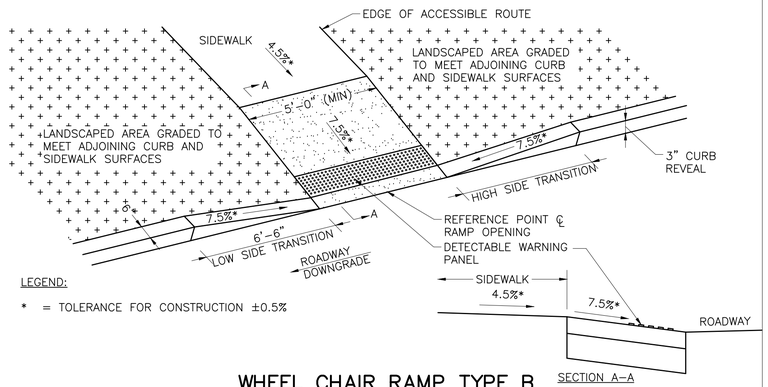
WHEELCHAIR RAMP TYPE B

N.T.S.

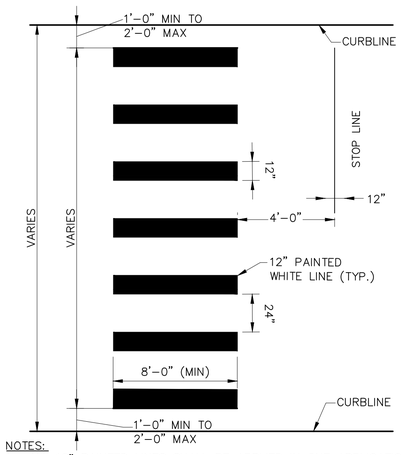


SIGN POST

N.T.S.



WHEEL CHAIR RAMP TYPE B

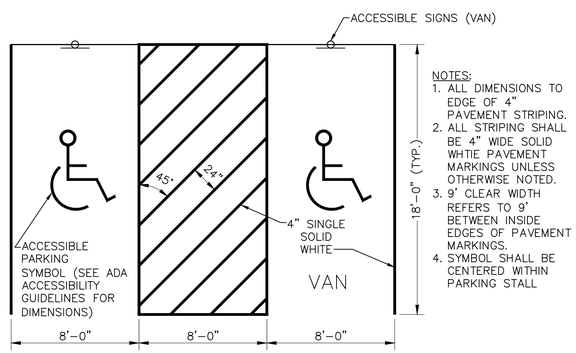


NOTES:

1. ALL 12" PAINTED LINES SHALL BE APPLIED IN ONE APPLICATION, NO COMBINATION OF LINES (TWO – 6" LINES) WILL BE ACCEPTED.
2. LAYOUT OF CROSSWALKS SHALL BE APPROVED THE ENGINEER PRIOR TO APPLICATION OF PAINT.
3. ALL CROSSWALKS INSTALLED SHALL CONFORM TO THE RELEVANT PROVISIONS OF THE MASSACHUSETTS HIGHWAY DEPARTMENT "STANDARD SPECIFICATION FOR HIGHWAY AND BRIDGES" DATED 1988.
4. THE PAVEMENT MARKINGS FOR CROSSWALKS WITHIN THE PUBLIC WAY MAY VARY AND SHALL BE APPROVED BY THE CITY ENGINEER PRIOR TO THE APPLICATION OF PAINT.

CROSSWALK PAVEMENT MARKING

N.T.S.

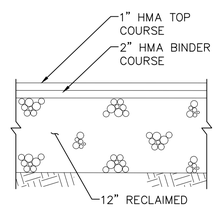


NOTES:

1. ALL DIMENSIONS TO EDGE OF 4" PAVEMENT STRIPING.
2. ALL STRIPING SHALL BE 4" WIDE SOLID WHTIE PAVEMENT MARKINGS UNLESS OTHERWISE NOTED.
3. 9' CLEAR WIDTH REFERS TO 9' BETWEEN INSIDE EDGES OF PAVEMENT MARKINGS.
4. SYMBOL SHALL BE CENTERED WITHIN PARKING STALL

ACCESSIBLE PARKING STALL STRIPING DETAIL

N.T.S.



STANDARD DUTY PAVEMENT

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DRAWN BY	MWP
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DATE	8/5/2021
SCALE	Not to Scale

PREPARED FOR

Downtown Dover Storage, LLC
42 L Dover Point Road
Dover, NH 03820

REVISIONS

ISSUED FOR

Permitting

PROJECT TITLE

Proposed Residential Development

PROJECT LOCATION

14 Broadway
Dover, NH 03820

DRAWING TITLE

Construction Details

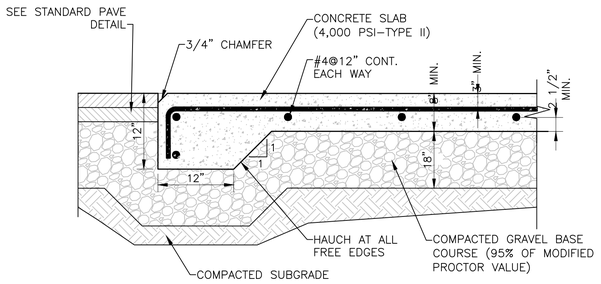
STATE OF NEW HAMPSHIRE
CHRISTOPHER P. RAYMOND No.16305
PROFESSIONAL ENGINEER
LICENSED

PROJECT NO.
N0946.02

TEC CAD FILE
N0946.02_DET

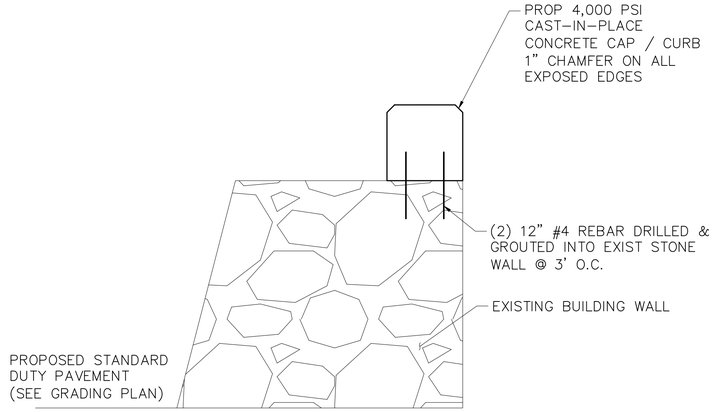
DRAWING NO.
C-10

SHEET 10 OF 12

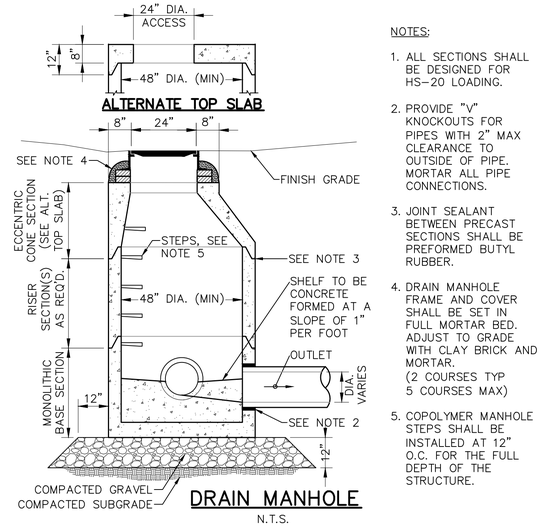


NOTES:
1. CONCRETE SHALL HAVE A MINIMUM 28–DAY COMPRESSIVE STRENGTH OF 4000 PSI.
2. MAXIMUM ALLOWABLE SLUMP SHALL NOT EXCEED 4" AND THE MAXIMUM W/C RATIO SHALL NOT EXCEED 0.45.
3. REINFORCING STEEL SHALL BE ASTM A615 GR 60 DEFORMED BARS (UNCOATED).
4. CONTRACTOR TO CONSULT THE PROJECTS GEOTECHNICAL ENGINEER TO ENSURE THAT THE BASE COURSE HAS BEEN PREPARED PROPERLY PRIOR TO CONCRETE PLACEMENT.
5. PROPOSED SLAB TO BE CONSTRUCTED TO MATCH PROPOSED DRAINAGE PATTERN IN PAVED AREA. ELECTRICAL PAD SHALL BE CONSTRUCTED 1.0' MIN ABOVE SURROUNDING GRASSED AREAS TO ALLOW DRAINAGE TO FLOW AROUND PAD.

COMPACTOR/DUMPSTER/LOADING PAD
N.T.S.

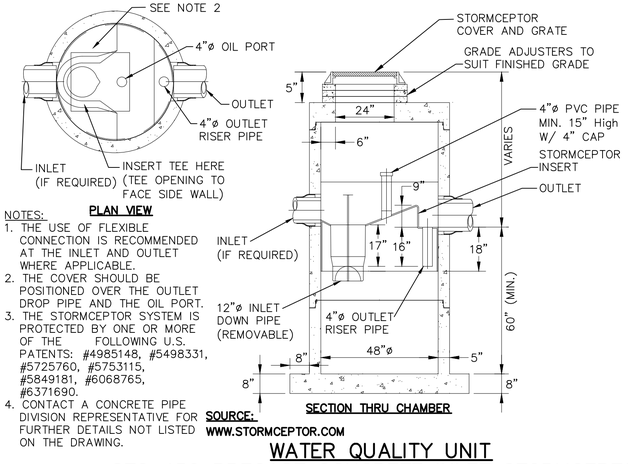


BUILDING WALL CAP
N.T.S.



DRAIN MANHOLE
N.T.S.

NOTES:
1. ALL SECTIONS SHALL BE DESIGNED FOR HS–20 LOADING.
2. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
3. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
4. DRAIN MANHOLE FRAME AND COVER SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR. (2 COURSES TYP 5 COURSES MAX)
5. COPOLYMER MANHOLE STEPS SHALL BE INSTALLED AT 12" O.C. FOR THE FULL DEPTH OF THE STRUCTURE.



NOTES:
1. THE USE OF FLEXIBLE CONNECTION IS RECOMMENDED AT THE INLET AND OUTLET WHERE APPLICABLE.
2. THE COVER SHOULD BE POSITIONED OVER THE OUTLET DROP PIPE AND THE OIL PORT.
3. THE STORMCEPTOR SYSTEM IS PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: #4985148, #5498331, #5725760, #5753115, #5849181, #6068765, #6371690.
4. CONTACT A CONCRETE PIPE DIVISION REPRESENTATIVE FOR FURTHER DETAILS NOT LISTED ON THE DRAWING.

SOURCE: WWW.STORMCEPTOR.COM

WATER QUALITY UNIT STC 450 PRECAST CONCRETE INLET STORMCEPTOR® (450 U.S. GALLON CAPACITY)
N.T.S.

NOTE:
1. WATER LINE INSTALLATIONS MUST HAVE MINIMUM 5' COVER FOR FROST PROTECTION

*= FOR HDPE PIPE, DIMENSION IS 24" (MIN)

UTILITY TRENCH DETAIL
N.T.S.

NOTES:
1. FRAME AND GRATE SHALL BE RATED FOR HS–20 LOADING.
2. USE 3 FLANGE FRAMES AT CURB INLET.
3. MIN FRAME WEIGHT:
   4 FLANGE – 295 LB
   3 FLANGE – 264 LB
4. ALL CB FRAME AND GRATES SHALL BE ADA AND AAB COMPLIANT.

CATCH BASIN FRAME & GRATE
N.T.S.

NOTES:
1. ALL SECTIONS SHALL BE DESIGNED FOR HS–20 LOADING.
2. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
3. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
4. CATCH BASIN FRAME AND GRATE SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR. (2 COURSES TYP 5 COURSES MAX).

DEEP SUMP CATCH BASIN WITH HOOD
N.T.S.

CONDUIT TRENCH DETAIL
N.T.S.

NOTES:
1. FRAME AND COVER SHALL BE RATED FOR HL–93 LOAD
2. MATERIAL – CAST IRON.
3. MINIMUM MASS – 265 LBS.
4. ALL MH FRAMES AND COVERS SHALL BE ADA AND AAE COMPLIANT.
5. MANHOLE COVERS SHALL HAVE A DIAMOND PATTERN, F HOLES, AND THE WORD "DRAIN" CAST IN 3–INCH LETTE

MANHOLE FRAME & COVER
N.T.S.

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DATE	8/5/2021
SCALE	Not to Scale

PREPARED FOR

Downtown Dover Storage, LLC
42 L Dover Point Road
Dover, NH 03820

REVISIONS

ISSUED FOR
Permitting

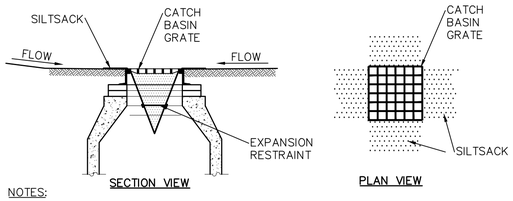
PROJECT TITLE
Proposed Residential Development

PROJECT LOCATION
14 Broadway
Dover, NH 03820

DRAWING TITLE
Construction Details

STATE OF NEW HAMPSHIRE
CHRISTOPHER P. RAYMOND No.16305 LICENSED PROFESSIONAL ENGINEER

PROJECT NO. N0946.02
TEC CAD FILE N0946.02_DET
DRAWING NO. C-11
SHEET 11 OF 12

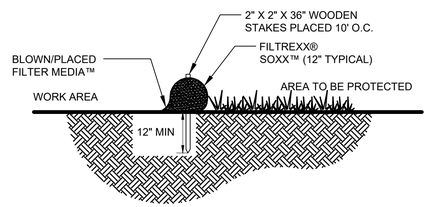


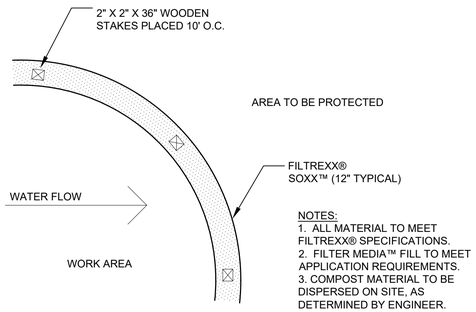
NOTES:

1. INSTALL SILTSACK IN EXISTING CATCH BASINS BEFORE COMMENCING WORK, AND IN NEW CATCH BASINS IMMEDIATELY AFTER INSTALLATION OF STRUCTURE. MAINTAIN UNTIL BINDER COURSE PAVING IS COMPLETE OR A PERMANENT STAND OF GRASS HAS BEEN ESTABLISHED.
2. GRATE TO BE PLACED OVER SILTSACK.
3. SILTSACK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS AND CLEANING OR REPLACEMENT SHALL BE PERFORMED PROMPTLY AS NEEDED.

INLET PROTECTION – SILT SACK IN CATCH BASIN

N.T.S.

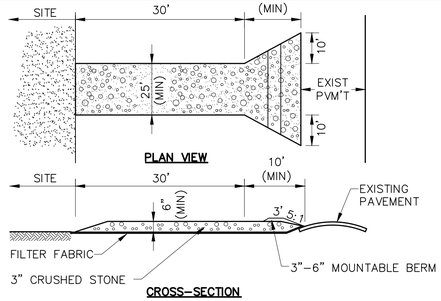




NOTES:
1. ALL MATERIAL TO MEET FILTREXX® SPECIFICATIONS.
2. FILTER MEDIA™ FILL TO MEET APPLICATION REQUIREMENTS.
3. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.

SILTSOXX PERIMETER EROSION BARRIER DETAIL

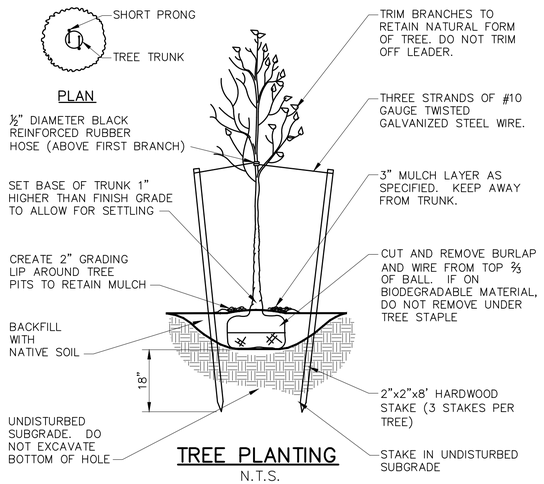
N.T.S.



1. ENTRANCE WIDTH SHALL BE A TWENTY–FIVE (25) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
2. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH SHALL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR 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. BERM SHALL BE PERMITTED. PERIODIC INSPECTION AND MAINTENANCE SHALL BE PROVIDED AS NEEDED.
3. STABILIZED CONSTRUCTION EXIT SHALL BE REMOVED PRIOR TO FINAL FINISH MATERIALS BEING INSTALLED.

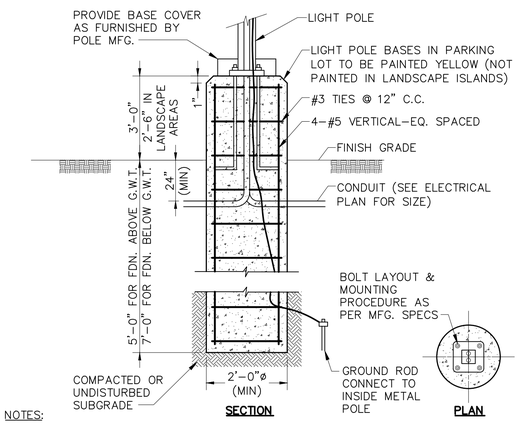
STABILIZED CONSTRUCTION EXIT

N.T.S.



TREE PLANTING

N.T.S.

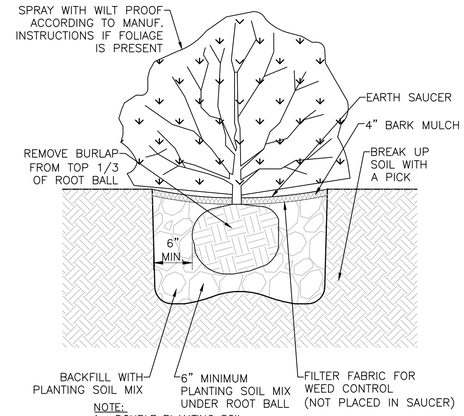


NOTES:

1. LIGHT POLE FOUNDATION DESIGN IS SUBJECT TO CHANGE BASED ON FINAL POLE AND FIXTURE SELECTION AND GEOTECHNICAL SITE INVESTIGATION.

LIGHT POLE BASE

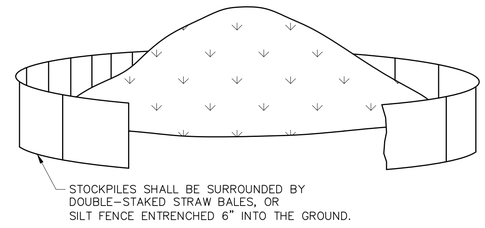
N.T.S.



NOTE:
1. DOUBLE PLANTING SOIL MIX DIMENSIONS IN LEDGE.

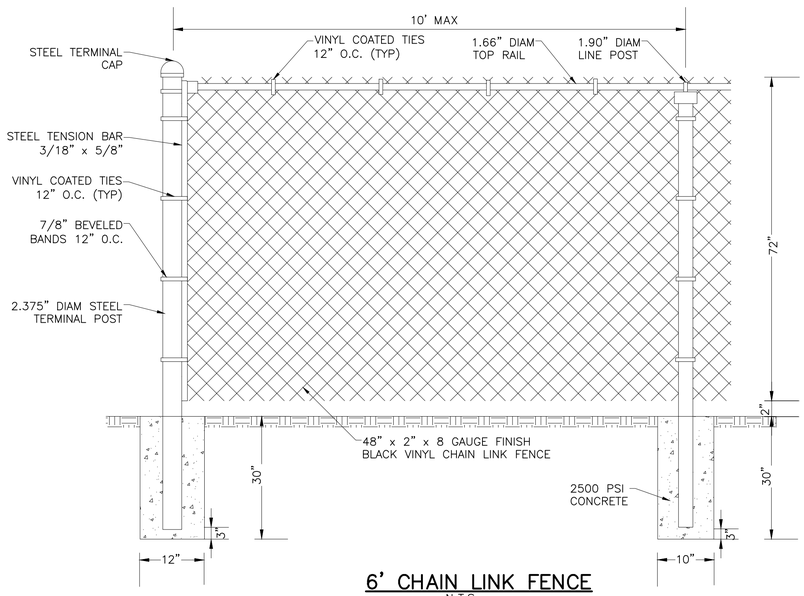
SHRUB PLANTING DETAIL

N.T.S.



SOIL STOCKPILE

N.T.S.



6' CHAIN LINK FENCE

N.T.S.

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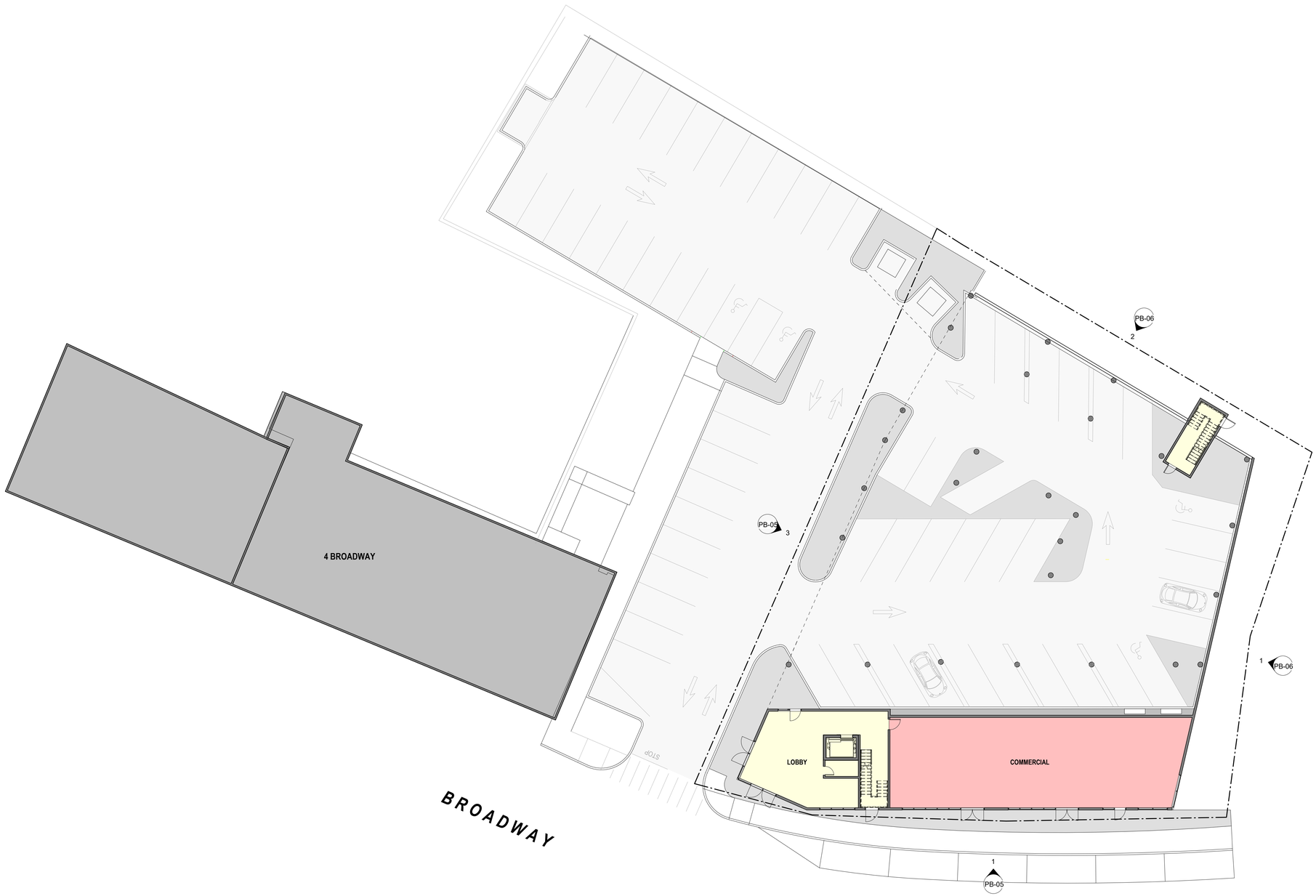
STATE OF NEW HAMPSHIRE – CHRISTOPHER P. RAYMOND No.16305 – LICENSED PROFESSIONAL ENGINEER

PROJECT NO.
N0946.02
TEC CAD FILE
N0946.02_DET
DRAWING NO.
C-12
SHEET 12 OF 12

LASSEL
ARCHITECTS
370 MAIN STREET
SOUTH BERWICK, ME 03908
207 384 2049
lasselarchitects.com



1 SITE PLAN
1" = 15'-0"

PROJECT:
14 BROADWAY

ADDRESS:
14 BROADWAY
DOVER, NH

CLIENT:
RICHARD CYR

REV: DATE: NOTES:

PROJECT NUMBER: 21.12
DATE: AUG 2021
SCALE: AS NOTED
REVISION:

NORTH:

DRAWING NAME:
SITE PLAN

DRAWING NUMBER:
PB-01

PLANNING BOARD SUBMITTAL

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8/4/2021 10:07:50 AM C:\Users\lassel\Documents\Cyr Dover Apt iteration 6 - Central_simonTNEQJ.rvt

1 FLOOR PLAN - LEVEL 2
1/8" = 1'-0"

LASSEL
ARCHITECTS
370 MAIN STREET
SOUTH BERWICK, ME 03908
207 384 2049
lasselarchitects.com

PROJECT:
14 BROADWAY

ADDRESS:
14 BROADWAY
DOVER, NH

CLIENT:
RICHARD CYR

REV: DATE: NOTES:

PROJECT NUMBER: 21.12
DATE: AUG 2021
SCALE: AS NOTED
REVISION:

NORTH:

DRAWING NAME:
FLOOR PLAN - LEVEL 2

DRAWING NUMBER:
PB-02

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1 FLOOR PLAN - LEVELS 3 & 4
1/8" = 1'-0"

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207 384 2049
lasselarchitects.com

PROJECT:
14 BROADWAY

ADDRESS:
14 BROADWAY
DOVER, NH

CLIENT:
RICHARD CYR

REV: DATE: NOTES:

PROJECT NUMBER: 21.12
DATE: AUG 2021
SCALE: AS NOTED
REVISION:

NORTH:

DRAWING NAME:
FLOOR PLAN - LEVELS 3 & 4

DRAWING NUMBER:
PB-03

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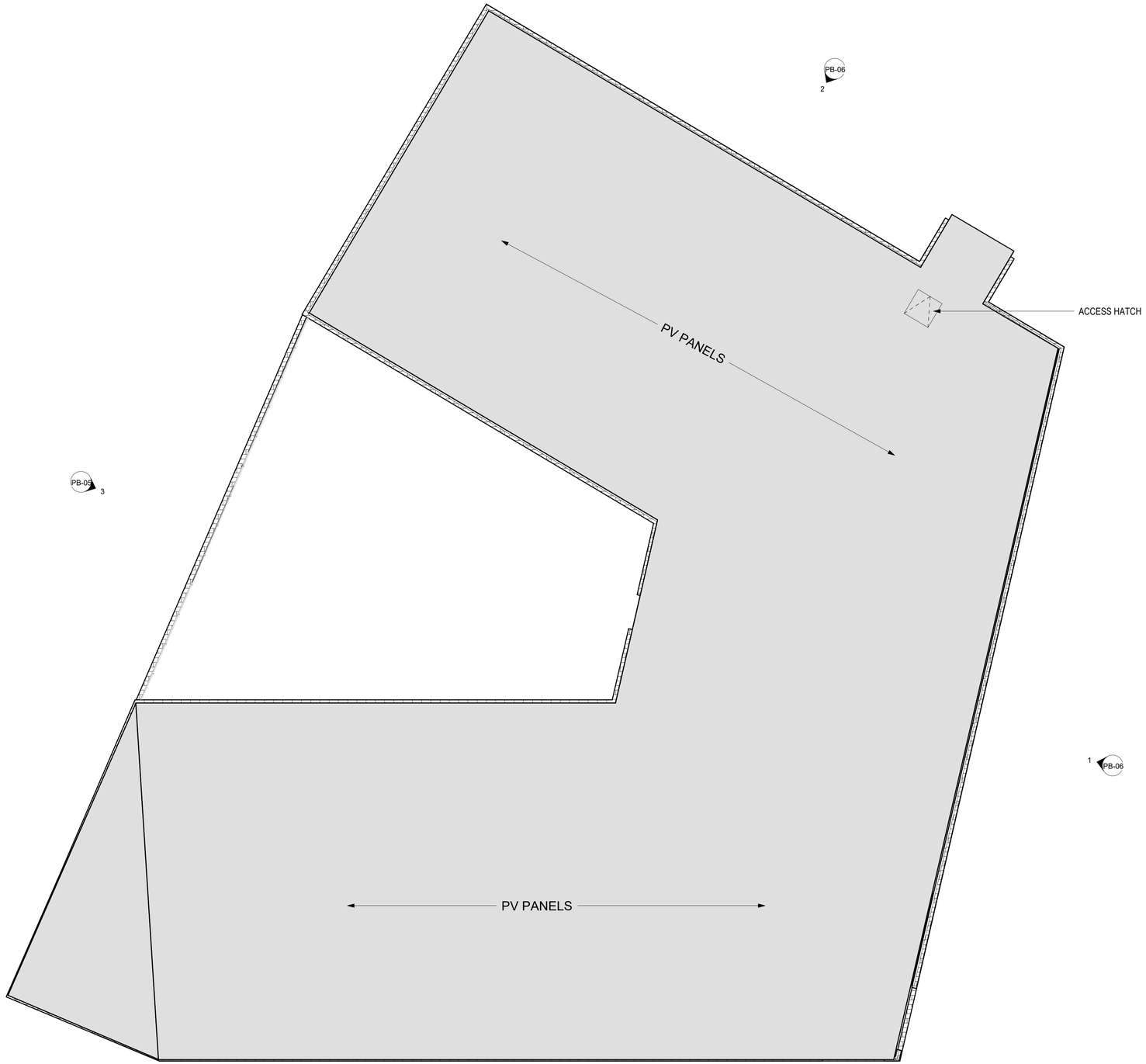

1 ROOF PLAN
1/8" = 1'-0"

1
PB-05

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370 MAIN STREET
SOUTH BERWICK, ME 03908
207 384 2049
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PROJECT:
14 BROADWAY

ADDRESS:
14 BROADWAY
DOVER, NH

CLIENT:
RICHARD CYR

REV: DATE: NOTES:

PROJECT NUMBER: 21.12
DATE: AUG 2021
SCALE: AS NOTED
REVISION:

NORTH:

DRAWING NAME:
ROOF PLAN

DRAWING NUMBER:
PB-04

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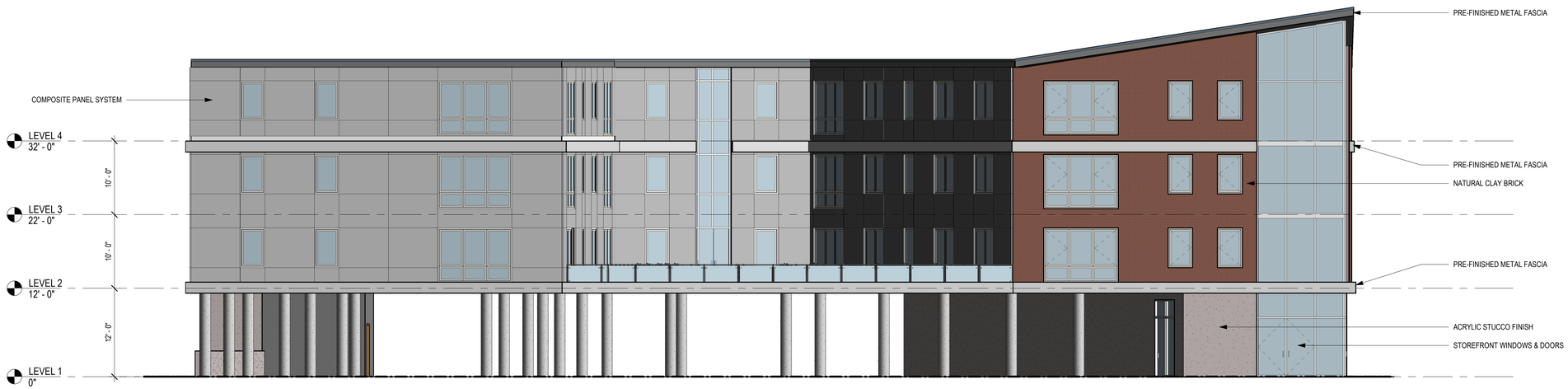
SOUTH BERWICK, ME 03908
207 384 2049
lasselarchitects.com

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



3 SOUTH - WEST ELEVATION
1/8" = 1'-0"

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PROJECT:
14 BROADWAY

ADDRESS:
14 BROADWAY
DOVER, NH

CLIENT:
RICHARD CYR

REV: DATE: NOTES:

PROJECT NUMBER: 21.12
NORTH:
DATE: AUG 2021
SCALE: AS NOTED
REVISION:

DRAWING NAME:
ELEVATIONS - SOUTH-EAST & SOUTH-WEST

DRAWING NUMBER:
PB-05

PLANNING BOARD SUBMITTAL

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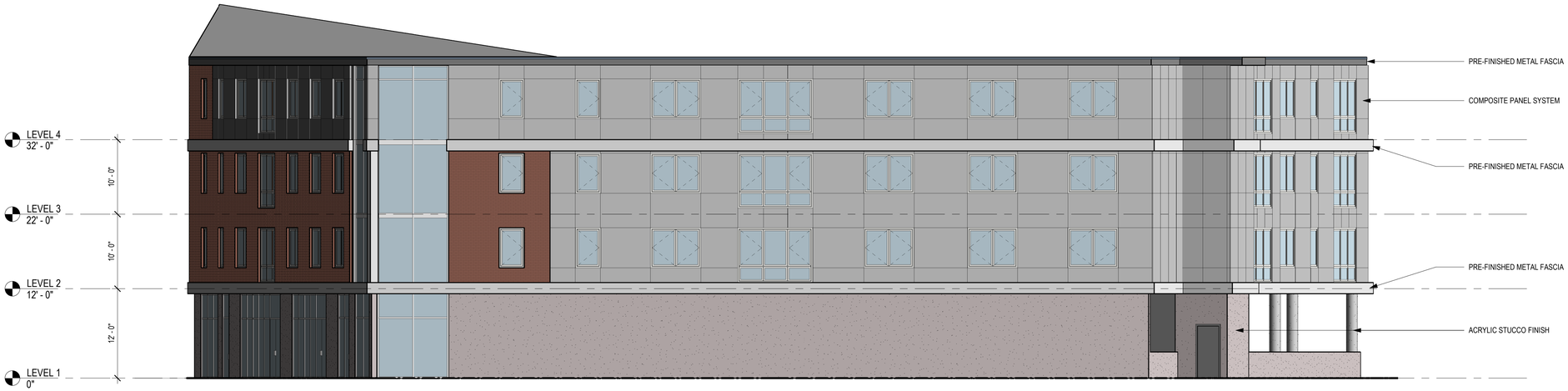
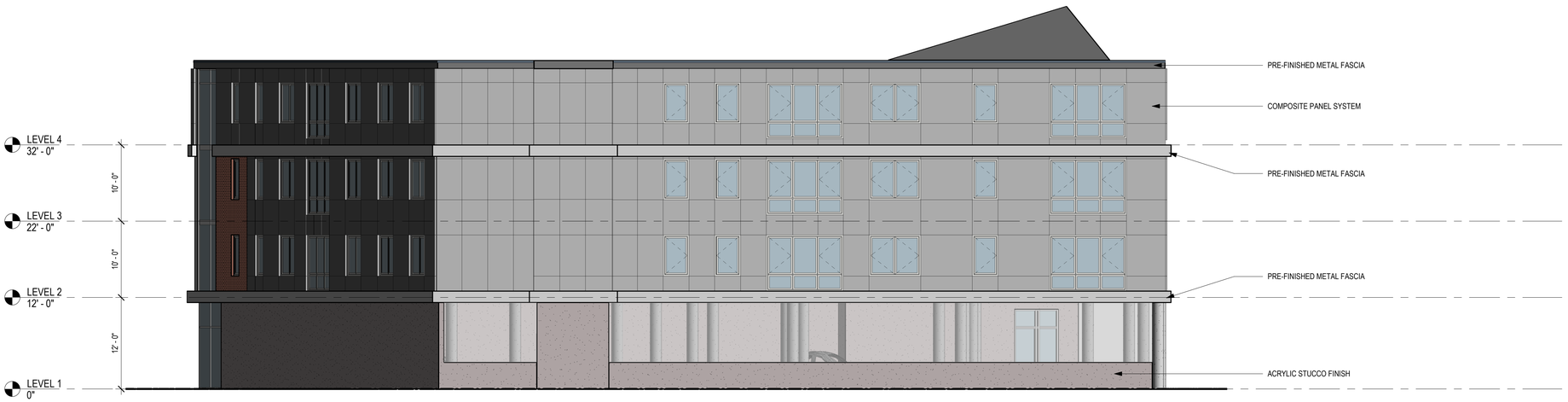


1 EAST ELEVATION
1/8" = 1'-0"



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

8/4/2021 10:09:01 AM C:\Users\lassel\Documents\Cyr Dover Apt iteration 6 - Central_simonTNEQJ.rvt

PROJECT:
14 BROADWAY

ADDRESS:
14 BROADWAY
DOVER, NH

CLIENT:
RICHARD CYR

REV: DATE: NOTES:

PROJECT NUMBER: 21.12
NORTH:
DATE: AUG 2021
SCALE: AS NOTED
REVISION:

DRAWING NAME:
ELEVATIONS - EAST & NORTH

DRAWING NUMBER:
PB-06

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370 MAIN STREET
SOUTH BERWICK, ME 03908
207 384 2049
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VIEW FROM BROADWAY NEAR MAIN STREET CORNER

PROJECT:
14 BROADWAY

ADDRESS:
14 BROADWAY
DOVER, NH

CLIENT:
RICHARD CYR

REV: DATE: NOTES:

PROJECT NUMBER: 21.12
NORTH:
DATE: AUG 2021
SCALE: AS NOTED
REVISION:

DRAWING NAME:
STREETSCAPE RENDERING

DRAWING NUMBER:
PB-07

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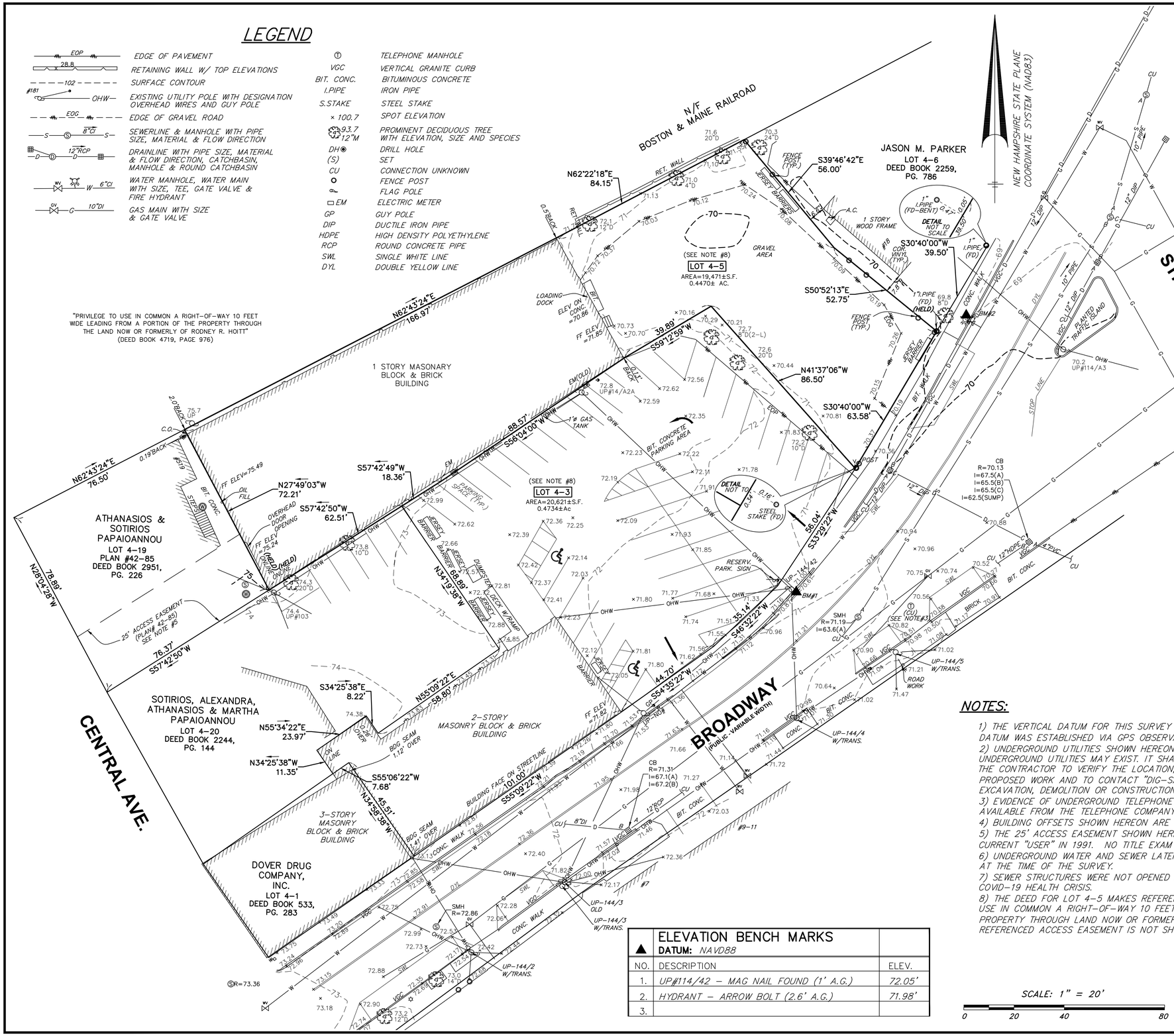
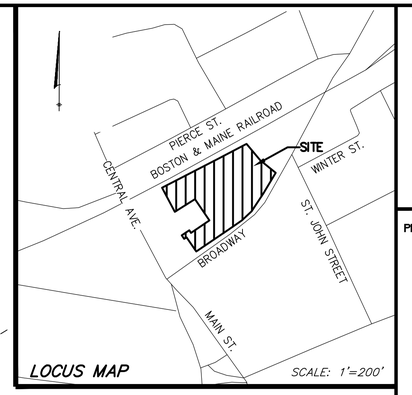
LEGEND

EOP	EDGE OF PAVEMENT
28.8	RETAINING WALL W/ TOP ELEVATIONS
102	SURFACE CONTOUR
#181 OHW	EXISTING UTILITY POLE WITH DESIGNATION OVERHEAD WIRES AND GUY POLE
EOG	EDGE OF GRAVEL ROAD
S 8"CI S	SEWERLINE & MANHOLE WITH PIPE SIZE, MATERIAL & FLOW DIRECTION
D 12"RCP D	DRAINLINE WITH PIPE SIZE, MATERIAL & FLOW DIRECTION, CATCHBASIN, MANHOLE & ROUND CATCHBASIN
WV W 6"CI	WATER MANHOLE, WATER MAIN WITH SIZE, TEE, GATE VALVE & FIRE HYDRANT
GV G 10"DI	GAS MAIN WITH SIZE & GATE VALVE

T	TELEPHONE MANHOLE
VGC	VERTICAL GRANITE CURB
BIT. CONC.	BITUMINOUS CONCRETE
I.PIPE	IRON PIPE
S.STAKE	STEEL STAKE
× 100.7	SPOT ELEVATION
93.7 12"M	PROMINENT DECIDUOUS TREE WITH ELEVATION, SIZE AND SPECIES
DH	DRILL HOLE
(S)	SET
CU	CONNECTION UNKNOWN
	FENCE POST
	FLAG POLE
EM	ELECTRIC METER
GP	GUY POLE
DIP	DUCTILE IRON PIPE
HDPE	HIGH DENSITY POLYETHYLENE
RCP	ROUND CONCRETE PIPE
SWL	SINGLE WHITE LINE
DYL	DOUBLE YELLOW LINE





ELEVATION BENCH MARKS DATUM: NAVD88		
NO.	DESCRIPTION	ELEV.
1.	UP#114/42 – MAG NAIL FOUND (1' A.G.)	72.05'
2.	HYDRANT – ARROW BOLT (2.6' A.G.)	71.98'
3.		

SCALE: 1" = 20'

0 20 40 80

ASSESSORS:

MAP 4, LOT 3 (RANDALL)
MAP 4, LOT 5 (DOWNTOWN DOVER)

ZONING:

MIXED USE – CBD (CENTRAL BUSINESS DISTRICT)

REFERENCES:

DEED BOOK 4719 PAGE 976 (LOT 4–5)
DEED BOOK 2555 PAGE 323 (LOT 4–3)
PLAN #42–85
PLAN IN POCKET #3, FOLDER #2, PLAN #55

RECORD OWNER:

CLAYTON F. RANDALL LIVING REVOCABLE TRUST OF 2002
131 CLEMENT ROAD
ROLLINSFORD, NH 03869

DOWNTOWN DOVER STORAGE, LLC
42 L DOVER POINT ROAD
DOVER, NH 03820

NOTES:

1) THE VERTICAL DATUM FOR THIS SURVEY IS THE NORTH AMERICAN VERTICAL DATUM (NAVD88). SAID DATUM WAS ESTABLISHED VIA GPS OBSERVATIONS UTILIZING REALIZATION NAD83(2011) AND GEOID 12A.
2) UNDERGROUND UTILITIES SHOWN HEREON ARE FROM FIELD LOCATIONS OF STRUCTURES. OTHER UNDERGROUND UTILITIES MAY EXIST. IT SHALL BE THE RESPONSIBILITY OF THE DESIGN ENGINEER AND THE CONTRACTOR TO VERIFY THE LOCATION, SIZE & ELEVATION OF ALL UTILITIES WITHIN THE AREA OF PROPOSED WORK AND TO CONTACT "DIG–SAFE" AT 811 AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION, DEMOLITION OR CONSTRUCTION.
3) EVIDENCE OF UNDERGROUND TELEPHONE EXISTS WITHIN BROADWAY. NO INFORMATION WAS AVAILABLE FROM THE TELEPHONE COMPANY AT THE TIME OF THE SURVEY.
4) BUILDING OFFSETS SHOWN HEREON ARE TO CORNER CONCRETE BLOCK UNLESS OTHERWISE NOTED.
5) THE 25' ACCESS EASEMENT SHOWN HEREON MAY OR MAY NOT EXIST, AS IT WAS FOR THE CURRENT "USER" IN 1991. NO TITLE EXAM HAS BEEN CONDUCTED TO IDENTIFY CURRENT STATUS.
6) UNDERGROUND WATER AND SEWER LATERAL CONNECTIONS TO THE BUILDINGS WERE NOT AVAILABLE AT THE TIME OF THE SURVEY.
7) SEWER STRUCTURES WERE NOT OPENED AT THE TIME OF THE SURVEY DUE TO THE ONGOING COVID–19 HEALTH CRISIS.
8) THE DEED FOR LOT 4–5 MAKES REFERENCE TO A CONVEYANCE WHICH INCLUDES A PRIVILEGE TO USE IN COMMON A RIGHT–OF–WAY 10 FEET WIDE LEADING FROM A PORTION OF THE DESCRIBED PROPERTY THROUGH LAND NOW OR FORMERLY OF RODNEY R. HOITT (LOT 4–3) TO BROADWAY. THE REFERENCED ACCESS EASEMENT IS NOT SHOWN ON THE SURVEY.

14 BROADWAY

Dover, New Hampshire 03820

PREPARED FOR:

NEW SPACE REAL ESTATE, LLC

42 Dover Road, Unit L
Dover, New Hampshire 03820

HANCOCK ASSOCIATES

Civil Engineers

Land Surveyors

Landscape Architects

Wetland Scientists

185 CENTRE STREET, DANVERS, MA 01923
VOICE (978) 777–3050, FAX (978) 774–7816
WWW.HANCOCKASSOCIATES.COM

NO.	BY	APP	DATE	ISSUE/REVISION DESCRIPTION
1.	JML	JAE	2/19/21	UPDATED TOPO/BOUNDARY

DATE: 4/18/20	DRAWN BY: JAE/JAH
SCALE: 1"=20'	CHECK BY: WCJ

EXISTING CONDITIONS PLAN OF LAND IN DOVER, NH

PLOT DATE: Feb 19, 2021 3:53 pm
PATH: O:\Civil 3D Projects\24569 – Cyr – Dover, NH\Surv\DWG\

DWG: 24569ec.dwg	
LAYOUT: EC	
SHEET: 1 OF 1	
PROJECT NO.:	24569

DRAINAGE REPORT

PROPOSED RESIDENTIAL DEVELOPMENT

Assessor's Map 4, Lot 5
14 Broadway
Dover, New Hampshire

Prepared for:

Downtown Dover Storage, LLC
42 L Dover Point Road
Dover, NH 03820

Prepared by:

TEC, Inc.
169 Ocean Boulevard
Unit 101 PO BOX 249
Hampton, NH 03842

TEC
The Engineering Corp

August 5, 2021

Table of Contents

List of Tables ii

List of Figures iii

Narrative 1

Introduction 1
Existing Conditions 2
Proposed Conditions 2
Methodology 3
Pre-Development Runoff 3
Post-Development Runoff 4
TSS Removal 5
Regulatory Compliance 5
Conclusion 5

Appendix

A Hydrologic Calculations
B Water Quality Data
TSS Removal Spreadsheet
Stormceptor Information/Sizing
MASTEP Technology Review
Rhode Island Stormceptor Certification
C Geotechnical Data
D Operation & Maintenance Plan

List of Tables

Table No.	Title	Page
1	Peak Flow Summary	5

List of Figures

Figure No.	Title	Page
1	Project Location Map	9
2	FEMA FIRM (100-Year Floodplain)	11
D-1	Pre-Development Drainage Areas	12
D-2	Post-Development Drainage Areas	13

1
Narrative

Introduction

Downtown Dover Storage, LLC (the "Applicant") is proposing to redevelop the existing 1-story warehouse and gravel area located at 14 Broadway, Dover, NH (Assessors Map 4, Lot 5). The project will also include redeveloping the bituminous concrete parking area of 12 Broadway (Assessors Map 4, Lot 3). The total project area is 35,032 square feet (SF) situated between the Boston & Maine Railroad Tracks (northerly), Papa Jay's Pizzeria (easterly), Broadway (southerly), and Dover House of Pizza (westerly), located within the Central Business District, General Sub District overlay. The project is defined on the *Project Location Map* (Figure 1).

The Applicant is proposing to redevelop the site by demolishing the existing warehouse and constructing a 4-story residential building with associated parking and landscaped areas. A lot line adjustment is being proposed between Lot 4-5 and the adjacent Lot 4-3 to account for the proposed use, which requires a larger building footprint, increased parking count, and larger landscape areas to provide for methods of stormwater treatment.

This drainage study was performed in order to assess the potential impacts of the proposed improvements and to provide measures to mitigate any impacts of the Project. The Project will provide a stormwater management system incorporating traditional and Low Impact Design (LID) Best Management Practices (BMPs) elements. This analysis has been prepared to verify that the Project will not have an adverse effect on the stormwater conditions both on-site and off-site.

The proposed Stormwater Management Plan has been designed to meet the Stormwater Standards identified in the New Hampshire Stormwater Manual. The proposed project reduces effective impervious area and peak runoff rates, decreases the risk of erosion and sedimentation, and improves stormwater runoff quality by removing total suspended solids (TSS).

Existing Conditions

The project area is 35,032 SF consisting of a total impervious area of 25,497 SF which includes the 1-story warehouse and the bituminous concrete parking area, and a total pervious area of 9,535 SF consisting of 6,761 SF of poorly graded, compacted gravel and 2,774 SF of poorly maintained landscape area. Topography at the site varies between the two lots, where on Lot 4-5 a low point exists near the center of the gravel area preventing stormwater from traveling with ease into the Broadway closed drainage system. Lot 4-3 grades easterly toward Broadway at a slope varying between 0.5-1.5%. Stormwater treatment on this site is nearly nonexistent based on the conditions of grading, surfaces, and landscape area. Refer to Appendix C to review the full Geotechnical Data provided by John Turner Consulting, Inc., dated December 7, 2020, for which depicts the various soils present at and around the Site.

According to the FEMA Flood Insurance Rate Maps (FIRM), map number 33017C0330E, dated September 30, 2015, the site lies entirely outside of the 100-year floodplain in an area of minimal flood hazard (Zone X). Refer to the attached FIRM Figure at the end of this section (Figure 3).

Proposed Conditions

The project proposes to construct a 4-story residential building with a footprint of 14,900+/- SF, new asphalt parking lot, and associated landscaping and means of stormwater treatment. Impervious asphalt surface will cover 12,012 SF, landscaped areas will occupy 6,039 SF of the site, sidewalk will occupy 1,769 SF, building coverage will occupy 14,880 SF, and the sawcut building wall will occupy 333 SF. There are 4 proposed sub-catchments between the 2 lots which are conveyed to a single design point, the Broadway closed drainage system. The Project is considered a redevelopment as it will decrease the impervious area of the site as compared to the existing conditions. The proposed stormwater management system has been designed in accordance with the NHDES Stormwater Manual and includes traditional and LID BMPs. BMPs proposed for the site include a reduction in impervious area, deep sump and hooded catch basins, and a Stormceptor Water Quality Units.

The stormwater management system has been designed to provide water quality treatment and water quantity control for 1” of runoff from the added impervious area. The drainage system on site will consist of a two deep sump catch basins, one located in the middle of the site to collect runoff from the majority of the asphalt parking lot and one located at the site entrance. These deep catch basins will be routed to a Stormceptor Water Quality Unit before tying into the Broadway drainage system. Roof drains will also collect all runoff created by the impervious building roof and be routed to the

Broadway Drainage System. The additional greenspace that will be provided by the project will beautify the site and will allow for a reduction in peak rates of stormwater runoff leaving the site.

Methodology

The Stormwater Management Plan, which will be implemented as part of this project, will provide adequate collection, management, and treatment of the stormwater runoff. The proposed stormwater management system will comply with the standards set forth in the New Hampshire Stormwater Manual.

Existing and proposed hydrologic conditions were analyzed using HydroCAD, an SCS TR-20 based program, to calculate existing and proposed peak discharge rates. This method takes into account existing and proposed pervious and impervious areas including soil types and hydrologic classifications. Peak rainfall data was based on Appendix A – New Hampshire Rainfall Tables from Volume 2 of the New Hampshire Stormwater Manual, published by the New Hampshire Department of Environmental Services (NHDES). The 1-, 2-, 10-, 25-, 50-, and 100-year, 24-hour storm frequencies were used in the analysis in accordance with the NHDES and Town of Salem requirements.

The "Regulatory Compliance" portion of this report addresses the New Hampshire Department of Environmental Services Antidegradation requirements.

Pre-Development Runoff

In the Site's current condition, there are three existing subcatchment areas which flow towards Broadway. The *Pre-Development Drainage Areas* are depicted in Figure D-1 of this report. This figure presents the delineation of the existing subcatchment areas and the design points.

Existing Subcatchment Area 1 (EX-1) is comprised of the 1-story warehouse, gravel area, and landscaped areas, totaling 19,263 SF, where stormwater either pools and poorly infiltrates into the ground or sheet flows into the Broadway closed drainage system, Design Point 1 (DP-1).

Existing Subcatchment Area 2 (EX-2) is located at the southeast edge of the site and is comprised of the gravel area and landscape area totaling 1,013 SF, where stormwater poorly infiltrates into the ground or sheet flows into the Broadway closed drainage system, DP-1.

Existing Subcatchment Area 2 (EX-2) is located within Lot 4-3 is comprised of the bituminous concrete parking area totaling 14,756 SF, where stormwater sheet flows directly into the Broadway closed drainage system, DP-1.

Post-Development Runoff

The proposed stormwater management system is designed to mitigate the effects of the proposed development by reducing the peak rates of runoff as compared to the existing conditions. In the proposed conditions analysis, the same design points identified and analyzed under the existing conditions were analyzed. The post-development subcatchment areas are identified in Figure D-2, *Post Development Drainage Areas.*

Proposed Subcatchment Area 1 (PR-1) is comprised of 4,534 SF of pervious land area consisting of grass landscaping and 11,321 SF of impervious pavement, cement concrete sidewalk, and concrete building wall. Stormwater from PR-1 is captured by a catch basin (CB-1), routed to a Stormceptor Water Quality Unit, then discharged to the Broadway drainage (DP-1).

Proposed Subcatchment Area 2 (PR-2) is comprised of 14,880 SF of impervious roof created by the Proposed Residential Building. Stormwater from PR-2 is collected via roof drains and conveyed to the Broadway drainage system (DP-1).

Proposed Subcatchment Area 3 (PR-3) is comprised of 268 SF of pervious land area consisting of grass landscaping and 2,175 SF of impervious pavement and cement concrete sidewalk. Stormwater from PR-3 is captured by a catch basin (CB-2), routed to a Stormceptor Water Quality Unit, then discharged to the Broadway drainage system (DP-1).

Proposed Subcatchment Area 4 (PR-4) is comprised of 1,190 SF of pervious landscaped areas and 666 SF of impervious cement concrete sidewalk. Stormwater from PR-4 sheet flows into the Broadway drainage system (DP-1).

Table 1 (Peak Flow Summary)

	2-Year Storm		10-Year Storm		25-Year Storm		50-Year Storm	
Design Point	**Exist (cfs)**	**Prop (cfs)**	**Exist (cfs)**	**Prop (cfs)**	**Exist (cfs)**	**Prop (cfs)**	**Exist (cfs)**	**Prop (cfs)**
DP-1	1.82	1.72	2.96	2.84	3.87	3.74	4.71	4.57

The proposed project decreases peak runoff rates from the existing conditions for the 2-, 10-, 25-, and 50-Year storm events, in accordance with state and local regulations.

TSS Removal

Currently there are no TSS removal BMPs onsite; all of the site runoff is discharged directly into the Broadway drainage system without any treatment. The stormwater management plan for this project utilizes BMPs including street sweeping, deep hooded sump catch basins, and a water quality unit to minimize total suspended solids. All impervious area onsite will be captured by proposed deep sump catch basins and treated by a Stormceptor Water Quality Unit prior to discharge into the municipal system (see attached Stormceptor Sizing Detailed Report). The proposed project will greatly improve the quality of stormwater runoff from the site.

The proposed conditions of the project introduce no new sources of stormwater. To ensure there is no erosion or sedimentation during construction, compost filter tubes will be placed around the extents of the project and silt sacks will be placed in the existing and proposed catch basins. The project reduces the peak rate of runoff leaving the site as compared to the existing conditions with the addition of landscape area. The Rational Method was used to show the existing and proposed peak flows for the 2-year, 10-year, 25-year, and 50-year storm events, which can be seen in the attached HydroCAD Reports. Rainfall rates were taken from Appendix A of the New Hampshire Stormwater Manual.

Regulatory Compliance

Given that the project results in a contiguous land disturbance of approximately 35,000+/- SF and the site's existing impervious surface coverage was approximately 73%, the Stormwater Management for Redevelopment Standards shall apply as stated in Section 153-14(3)(c) of the City of Dover Site Review Regulations. Stormwater shall be managed in accordance with one or more of the following techniques:

- Implement measures on site that result in mitigation and treatment of at least 30% of the existing impervious cover as well as 50% of the additional proposed impervious surfaces and pavement areas through the application of LID; or
- Implement other LID techniques on site to the MEP to provide mitigation and treatment for at least 50% of the entire site area.

The proposed conditions of the site result in both of these techniques being employed through the use of deep sump catch basins and a Stormceptor Water Quality Unit. All stormwater runoff generated by impervious surfaces will undergo treatment before being discharged into the Broadway drainage system. For further details on the treatment capacity of these LID techniques, please refer to Appendix B: Water Quality Data.

Conclusion

This proposed project will improve the site over existing conditions by reducing peak runoff rates and improving the quality of stormwater runoff created by the site. By providing additional landscaping, the project will improve the aesthetics and drainage capability of the site. The Applicant is enthusiastic to reinvest in this property, beautify a degraded site, and provide a benefit to the City of Dover.

Figure 1 – Project Location Map
(Intentionally LEFT BLANK)

250 0 250 500

SCALE IN FEET

July 20, 2021

169 Ocean Boulevard
Unit 101, PO Box 249
Hampton, NH 03842
(603) 601-8154
www.TheEngineeringCorp.com

PROJECT LOCATION MAP

Location: 14 Broadway
Dover, NH 03820

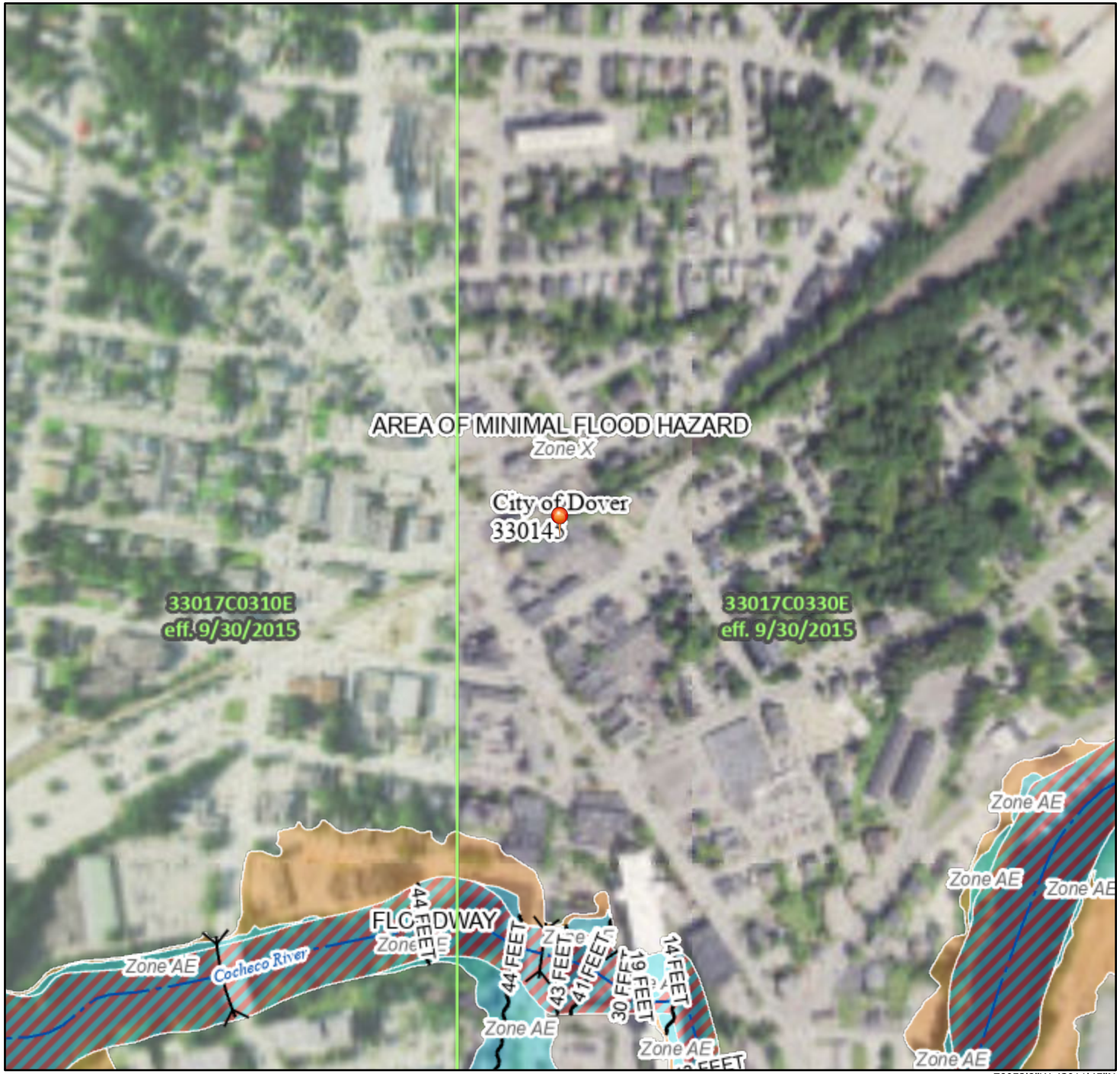
Prepared For: New Space Real Estate, LLC
42 Dover Point Road, Unit L
Dover, NH 03820

Figure 2 – FEMA FIRM
(Intentionally LEFT BLANK)

National Flood Hazard Layer FIRMette

FEMA

70°52'45"W 43°12'11"N



70°52'8"W 43°11'45"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

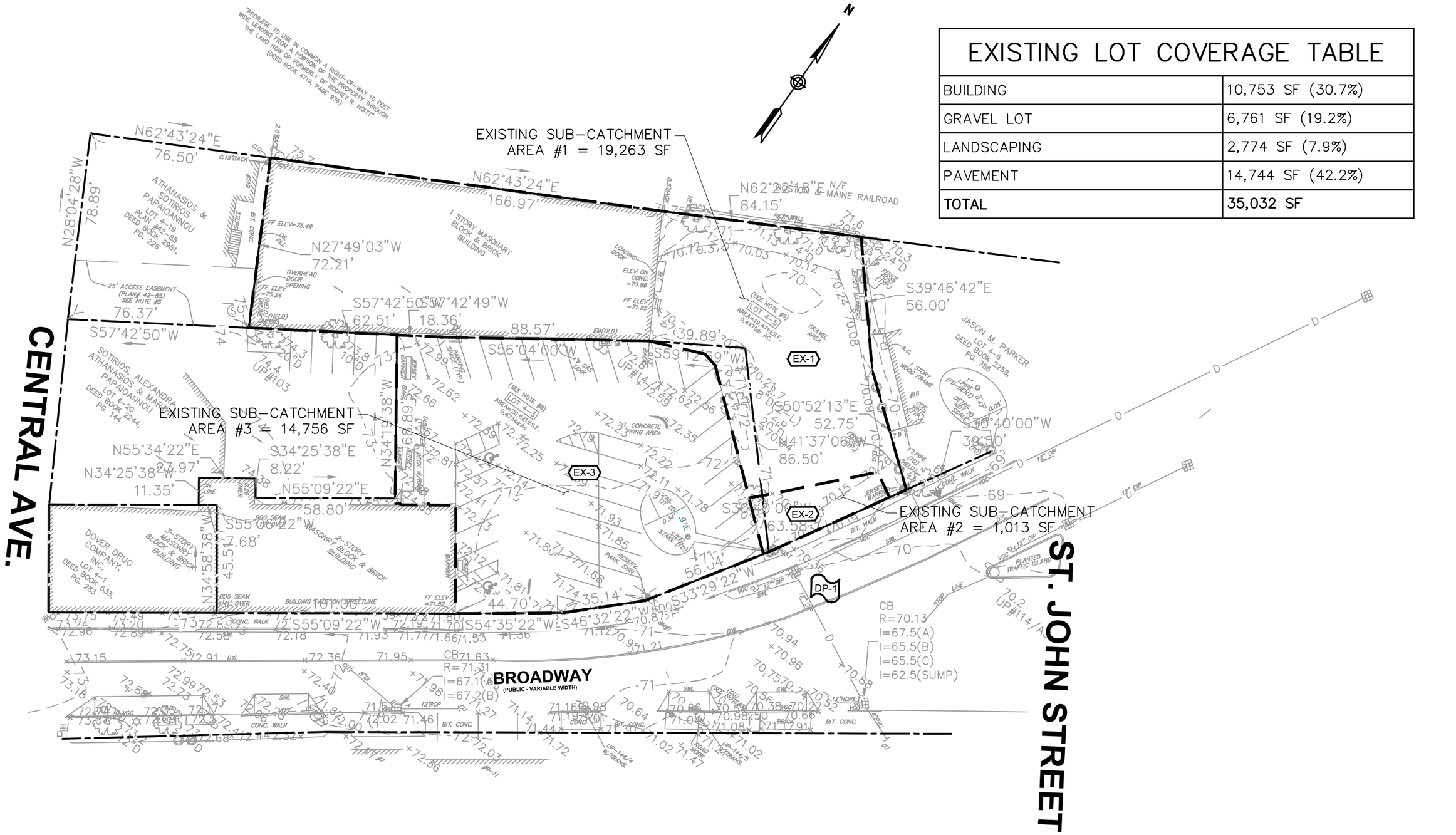
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/20/2021 at 3:27 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Figure D-1 Pre-Development Drainage Areas
(Intentionally LEFT BLANK)

EXISTING LOT COVERAGE TABLE	
BUILDING	10,753 SF (30.7%)
GRAVEL LOT	6,761 SF (19.2%)
LANDSCAPING	2,774 SF (7.9%)
PAVEMENT	14,744 SF (42.2%)
TOTAL	**35,032 SF**



Pre-Development

TEC
146 Dascomb Road | Andover, MA 01810
169 Ocean Boulevard | Unit 101, PO Box 249 | Hampton, NH 03842
t: (978) 794-1792
TheEngineeringCorp.com

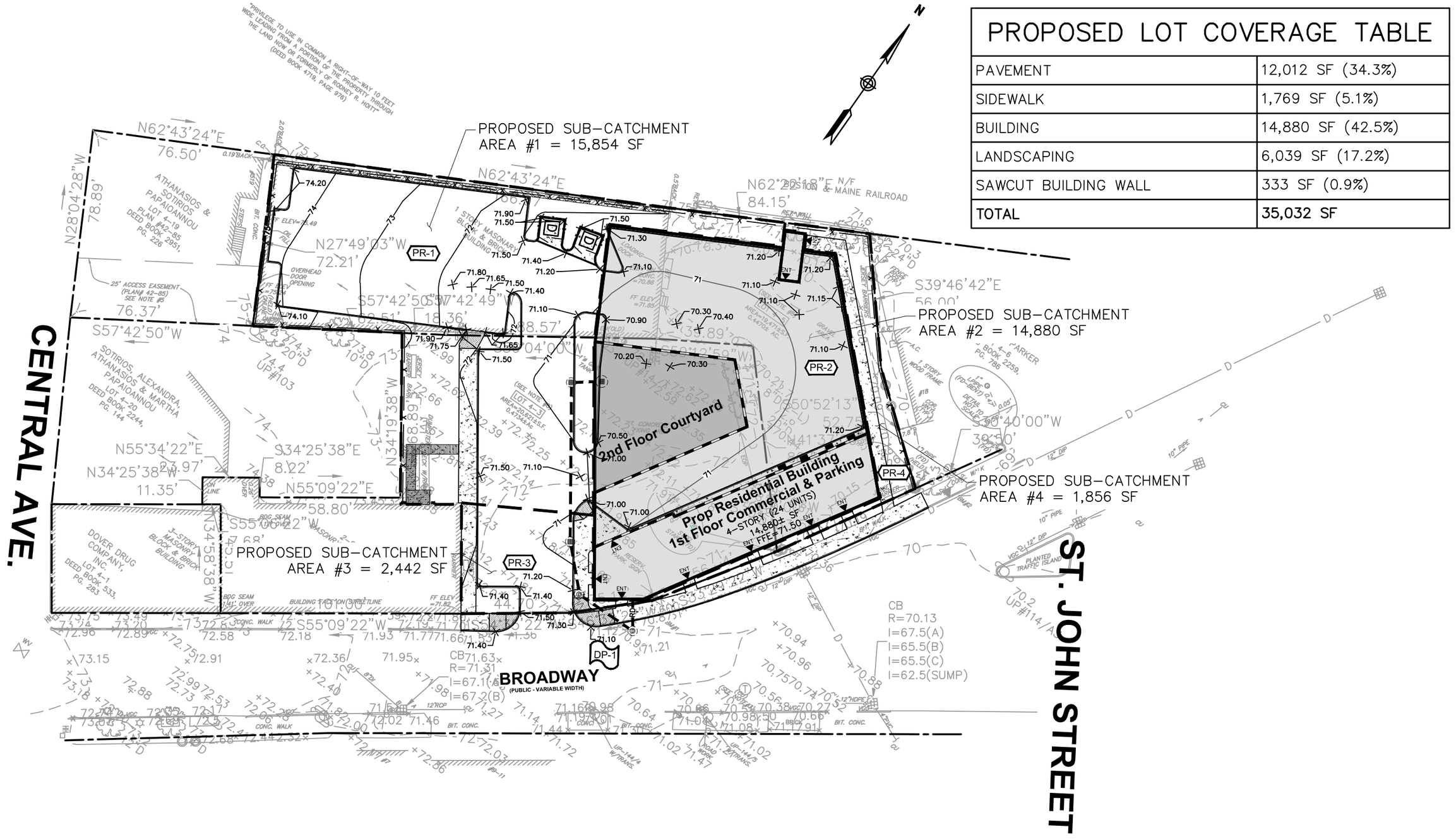
Scale: 1" = 40'

July 14, 2021

14 Broadway
Dover, NH

Figure D-2 – Post Development Drainage Areas
(Intentionally LEFT BLANK)

PROPOSED LOT COVERAGE TABLE	
PAVEMENT	12,012 SF (34.3%)
SIDEWALK	1,769 SF (5.1%)
BUILDING	14,880 SF (42.5%)
LANDSCAPING	6,039 SF (17.2%)
SAWCUT BUILDING WALL	333 SF (0.9%)
TOTAL	**35,032 SF**



Scale: 1" = 40'
July 14, 2021

40 0 40 80
SCALE IN FEET

Post-Development

14 Broadway
Dover, NH

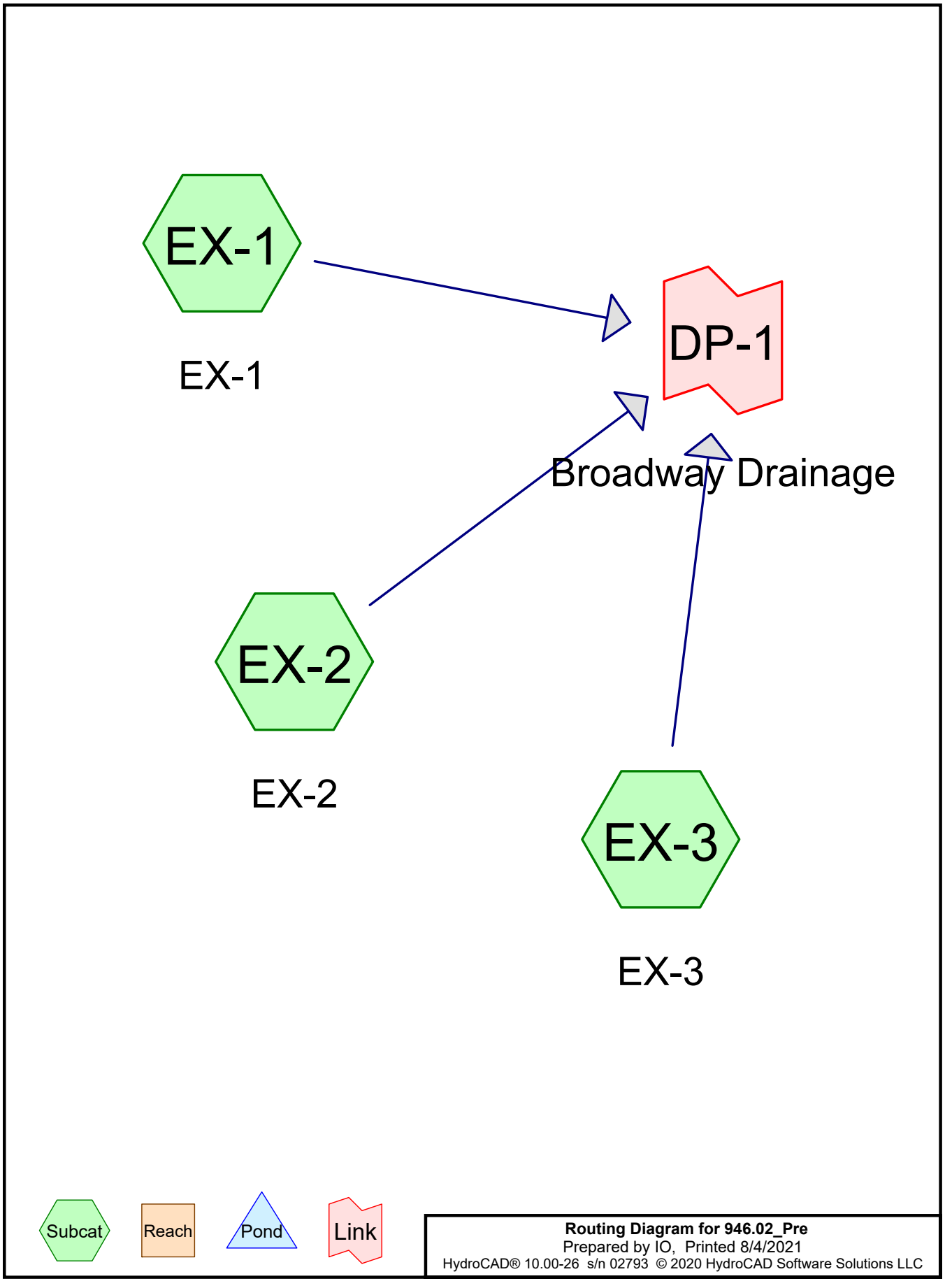
TEC
146 Dascomb Road
Andover, MA 01810
169 Ocean Boulevard
Unit 101, PO Box 249
Hampton, NH 03842
t: (978) 794-1792
TheEngineeringCorp.com

2

Appendix

A

Hydrologic Calculations



Routing Diagram for 946.02_Pre
Prepared by IO, Printed 8/4/2021
HydroCAD® 10.00-26 s/n 02793 © 2020 HydroCAD Software Solutions LLC

Project Notes

Rainfall events imported from "NRCS-Rain.txt" for 6520 NH Strafford

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.064	79	<50% Grass cover, Poor, HSG B (EX-1, EX-2)
0.155	72	Dirt roads, HSG A (EX-1, EX-2)
0.339	98	Paved parking, HSG A (EX-3)
0.247	98	Roofs, HSG A (EX-1)
0.804	**91**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.741	HSG A	EX-1, EX-2, EX-3
0.064	HSG B	EX-1, EX-2
0.000	HSG C	
0.000	HSG D	
0.000	Other	
0.804		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.064	0.000	0.000	0.000	0.064	<50% Grass cover, Poor	EX-1, EX-2
0.155	0.000	0.000	0.000	0.000	0.155	Dirt roads	EX-1, EX-2
0.339	0.000	0.000	0.000	0.000	0.339	Paved parking	EX-3
0.247	0.000	0.000	0.000	0.000	0.247	Roofs	EX-1
0.741	**0.064**	**0.000**	**0.000**	**0.000**	**0.804**	**TOTAL AREA**	

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EX-1: EX-1 Runoff Area=19,263 sf 55.76% Impervious Runoff Depth=1.78"
Tc=5.0 min CN=87 Runoff=0.87 cfs 0.066 af

Subcatchment EX-2: EX-2 Runoff Area=1,013 sf 0.00% Impervious Runoff Depth=0.99"
Tc=5.0 min CN=75 Runoff=0.02 cfs 0.002 af

Subcatchment EX-3: EX-3 Runoff Area=14,756 sf 100.00% Impervious Runoff Depth=2.82"
Tc=5.0 min CN=98 Runoff=0.93 cfs 0.080 af

Link DP-1: Broadway Drainage Inflow=1.82 cfs 0.147 af
Primary=1.82 cfs 0.147 af

Total Runoff Area = 0.804 ac Runoff Volume = 0.147 af Average Runoff Depth = 2.20"
27.22% Pervious = 0.219 ac 72.78% Impervious = 0.585 ac

Summary for Subcatchment EX-1: EX-1

[49] Hint: Tc<2dt may require smaller dt

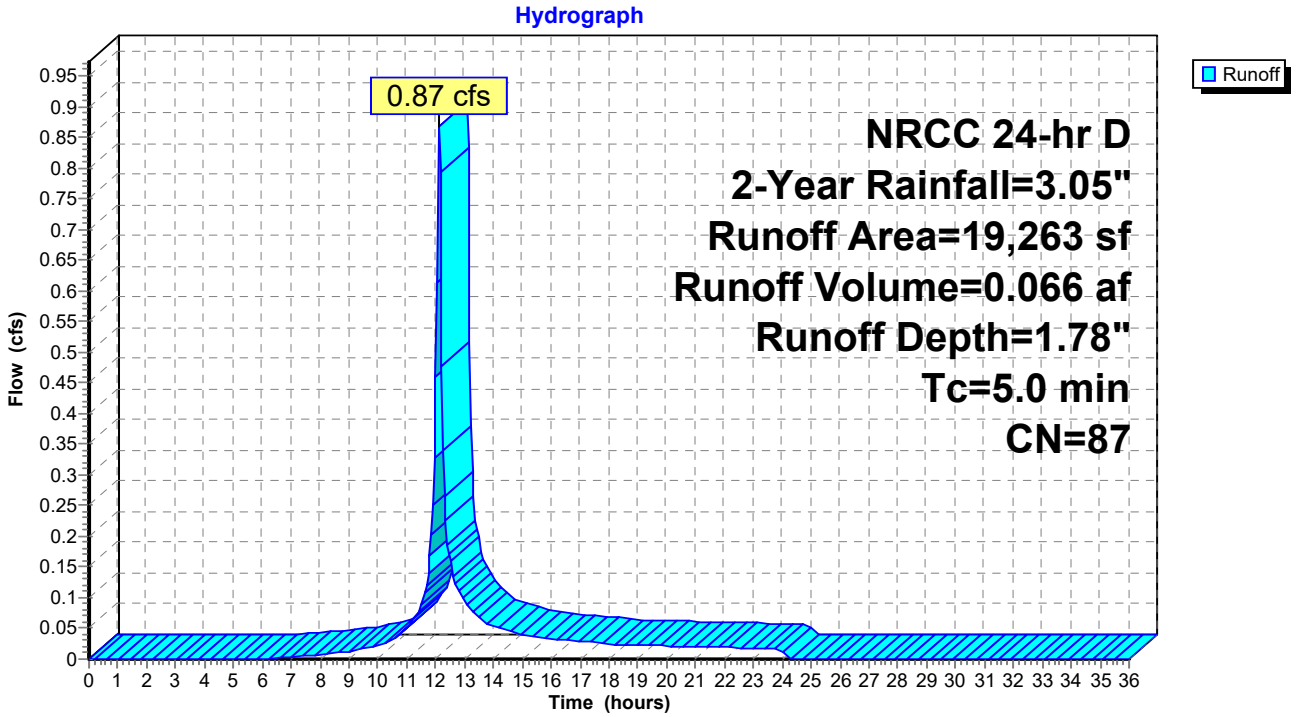
Runoff = 0.87 cfs @ 12.11 hrs, Volume= 0.066 af, Depth= 1.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.05"

Area (sf)	CN	Description
10,741	98	Roofs, HSG A
6,116	72	Dirt roads, HSG A
2,406	79	<50% Grass cover, Poor, HSG B
19,263	87	Weighted Average
8,522		44.24% Pervious Area
10,741		55.76% Impervious Area

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

Subcatchment EX-1: EX-1



Summary for Subcatchment EX-2: EX-2

[49] Hint: Tc<2dt may require smaller dt

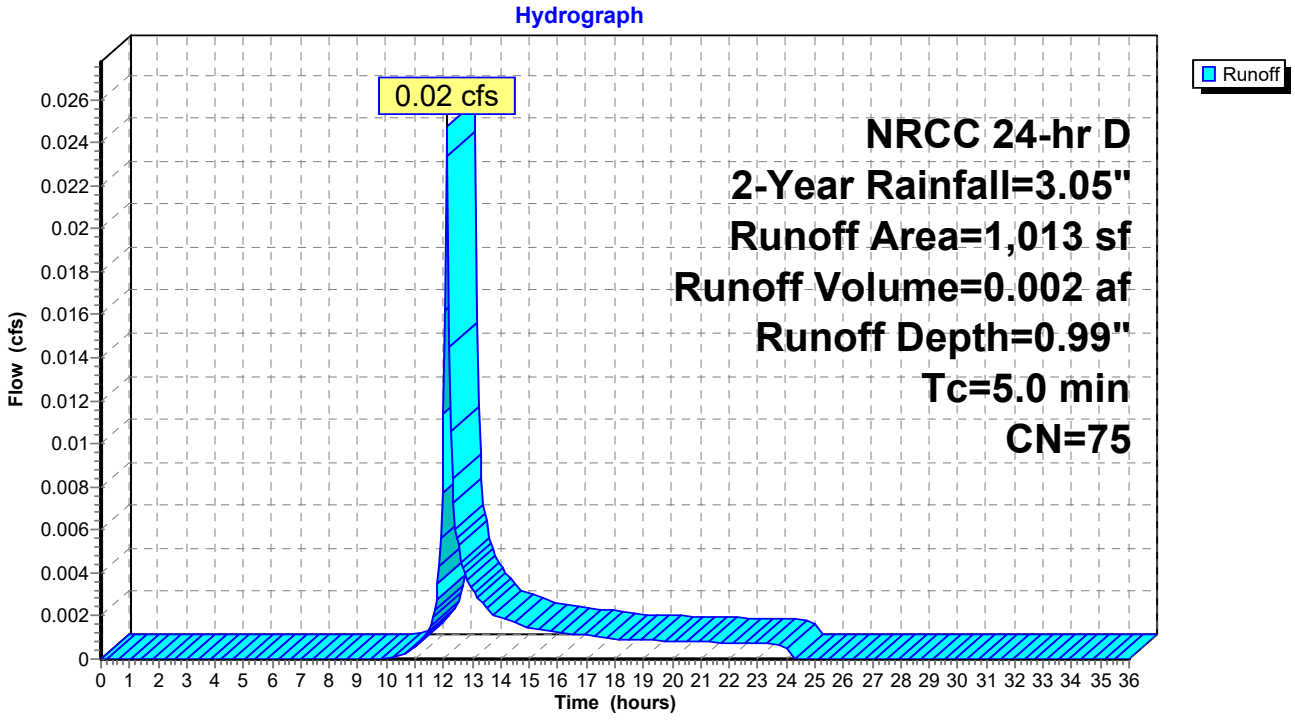
Runoff = 0.02 cfs @ 12.12 hrs, Volume= 0.002 af, Depth= 0.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.05"

Area (sf)	CN	Description
645	72	Dirt roads, HSG A
368	79	<50% Grass cover, Poor, HSG B
1,013	75	Weighted Average
1,013		100.00% Pervious Area

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

Subcatchment EX-2: EX-2



Summary for Subcatchment EX-3: EX-3

[49] Hint: Tc<2dt may require smaller dt

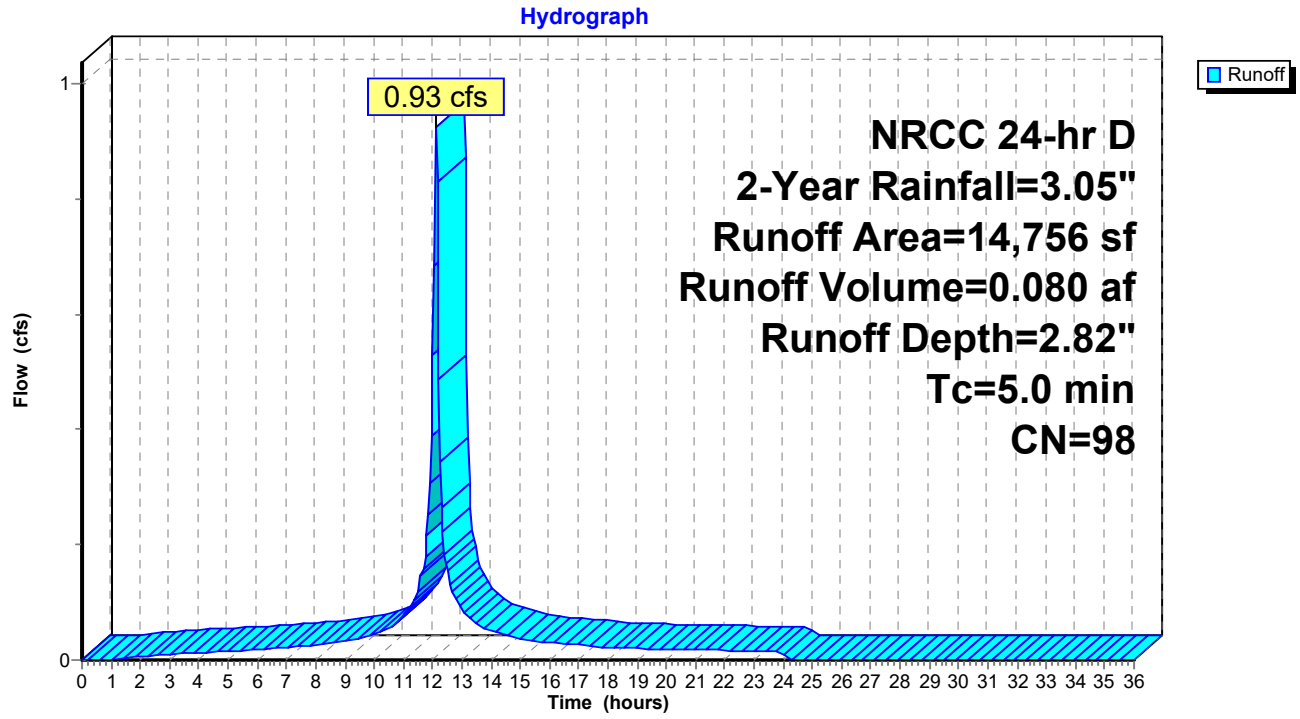
Runoff = 0.93 cfs @ 12.11 hrs, Volume= 0.080 af, Depth= 2.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.05"

Area (sf)	CN	Description
14,756	98	Paved parking, HSG A
14,756		100.00% Impervious Area

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

Subcatchment EX-3: EX-3

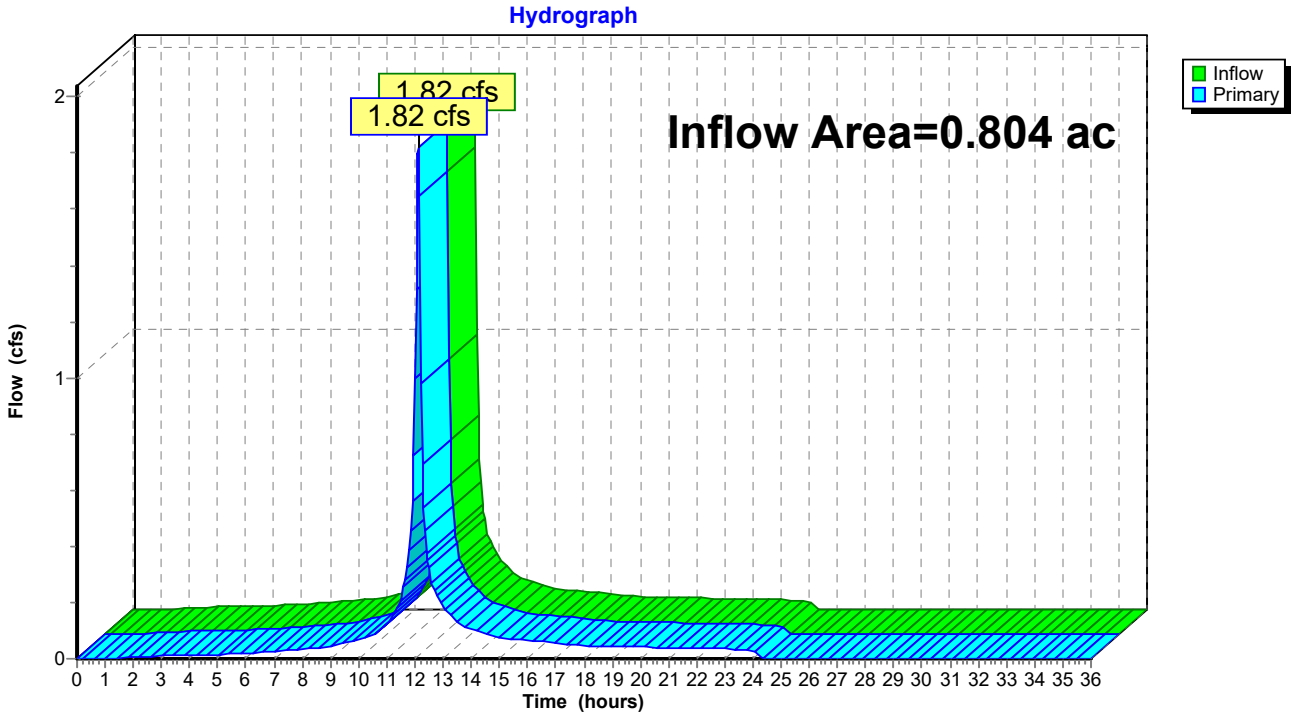


Summary for Link DP-1: Broadway Drainage

Inflow Area = 0.804 ac, 72.78% Impervious, Inflow Depth = 2.20" for 2-Year event
Inflow = 1.82 cfs @ 12.11 hrs, Volume= 0.147 af
Primary = 1.82 cfs @ 12.11 hrs, Volume= 0.147 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP-1: Broadway Drainage



Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EX-1: EX-1 Runoff Area=19,263 sf 55.76% Impervious Runoff Depth=3.16"
Tc=5.0 min CN=87 Runoff=1.51 cfs 0.117 af

Subcatchment EX-2: EX-2 Runoff Area=1,013 sf 0.00% Impervious Runoff Depth=2.11"
Tc=5.0 min CN=75 Runoff=0.05 cfs 0.004 af

Subcatchment EX-3: EX-3 Runoff Area=14,756 sf 100.00% Impervious Runoff Depth=4.33"
Tc=5.0 min CN=98 Runoff=1.40 cfs 0.122 af

Link DP-1: Broadway Drainage Inflow=2.96 cfs 0.243 af
Primary=2.96 cfs 0.243 af

Total Runoff Area = 0.804 ac Runoff Volume = 0.243 af Average Runoff Depth = 3.63"
27.22% Pervious = 0.219 ac 72.78% Impervious = 0.585 ac

Summary for Subcatchment EX-1: EX-1

[49] Hint: Tc<2dt may require smaller dt

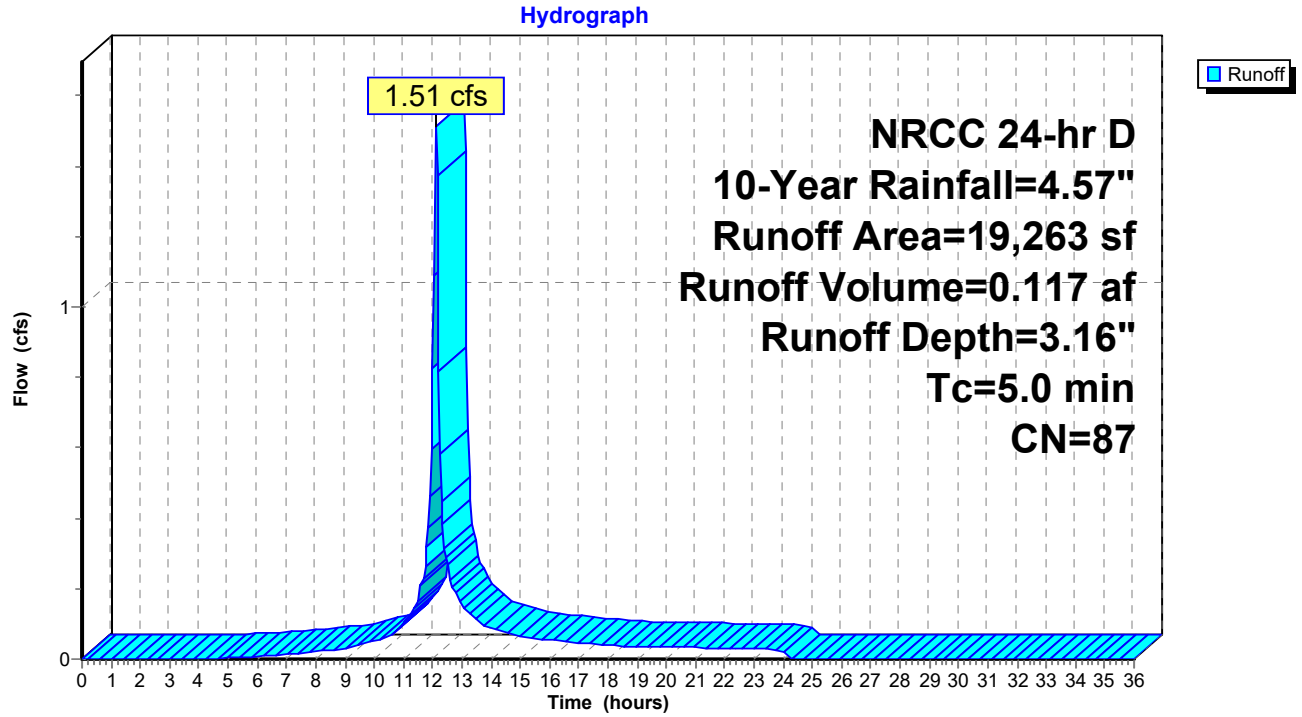
Runoff = 1.51 cfs @ 12.11 hrs, Volume= 0.117 af, Depth= 3.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.57"

Area (sf)	CN	Description
10,741	98	Roofs, HSG A
6,116	72	Dirt roads, HSG A
2,406	79	<50% Grass cover, Poor, HSG B
19,263	87	Weighted Average
8,522		44.24% Pervious Area
10,741		55.76% Impervious Area

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

Subcatchment EX-1: EX-1



Summary for Subcatchment EX-2: EX-2

[49] Hint: Tc<2dt may require smaller dt

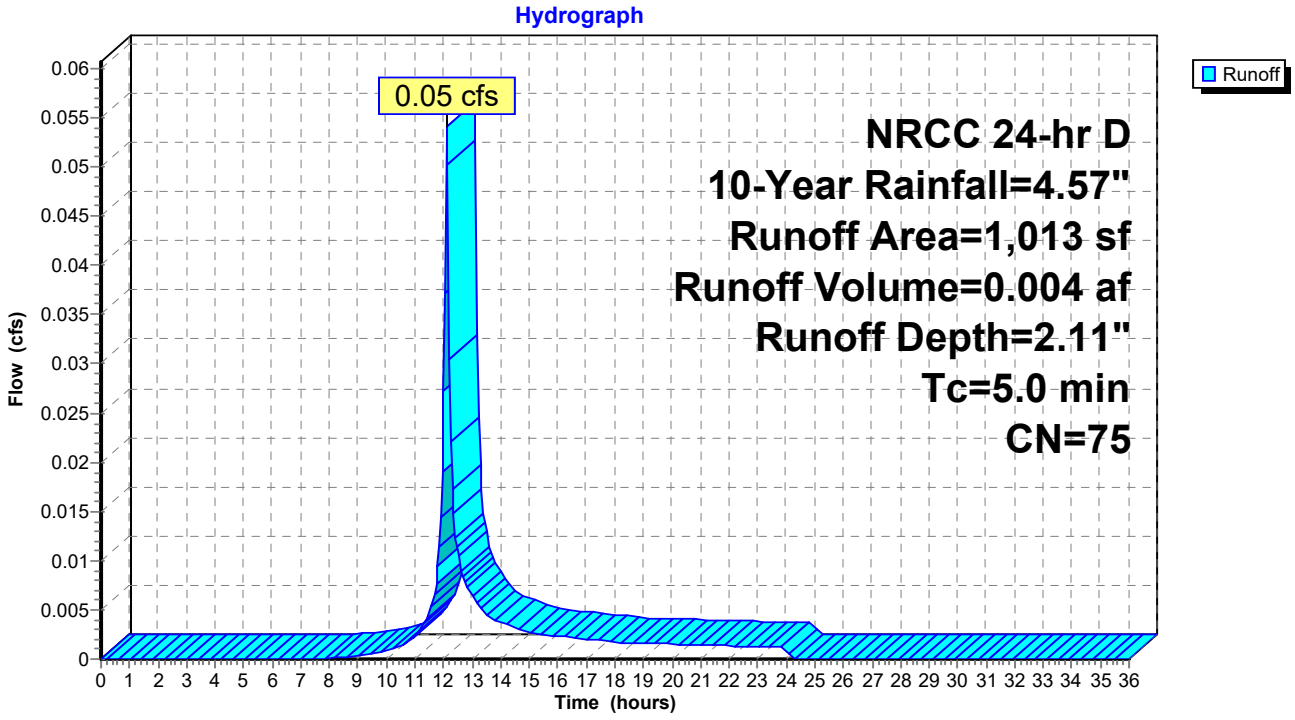
Runoff = 0.05 cfs @ 12.12 hrs, Volume= 0.004 af, Depth= 2.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.57"

Area (sf)	CN	Description
645	72	Dirt roads, HSG A
368	79	<50% Grass cover, Poor, HSG B
1,013	75	Weighted Average
1,013		100.00% Pervious Area

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

Subcatchment EX-2: EX-2



Summary for Subcatchment EX-3: EX-3

[49] Hint: Tc<2dt may require smaller dt

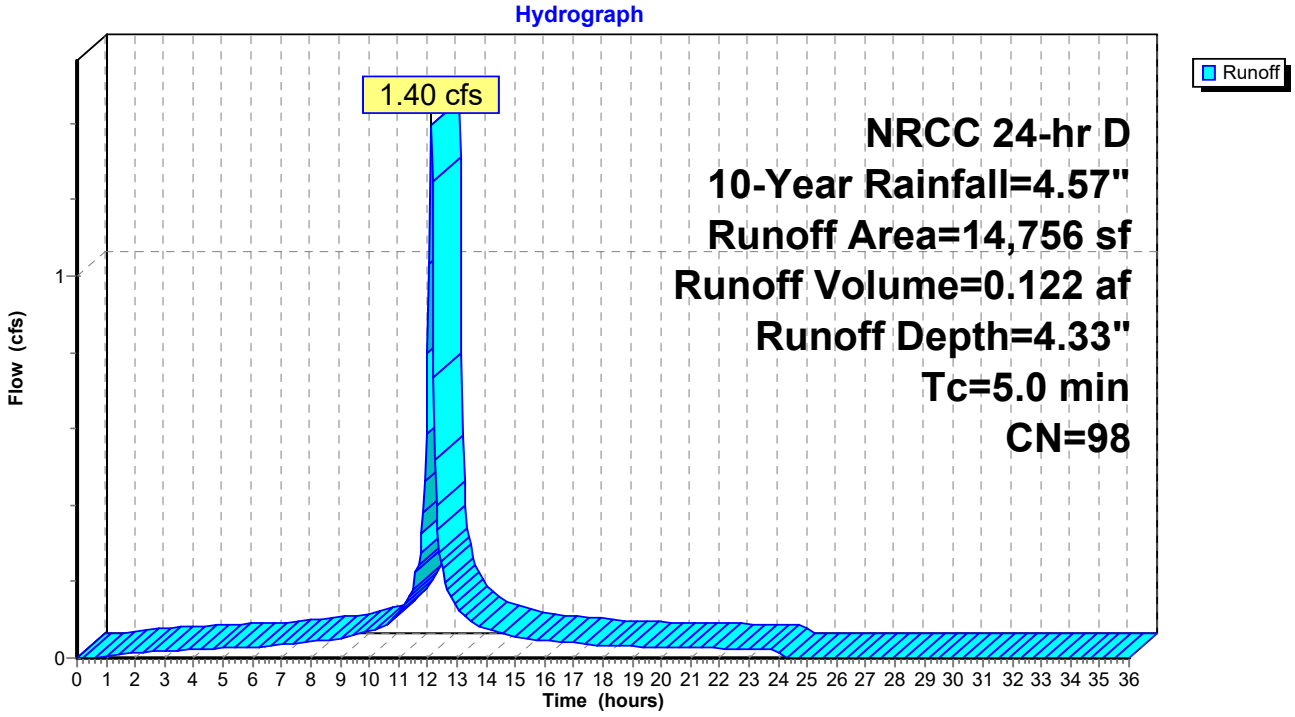
Runoff = 1.40 cfs @ 12.11 hrs, Volume= 0.122 af, Depth= 4.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.57"

Area (sf)	CN	Description
14,756	98	Paved parking, HSG A
14,756		100.00% Impervious Area

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

Subcatchment EX-3: EX-3

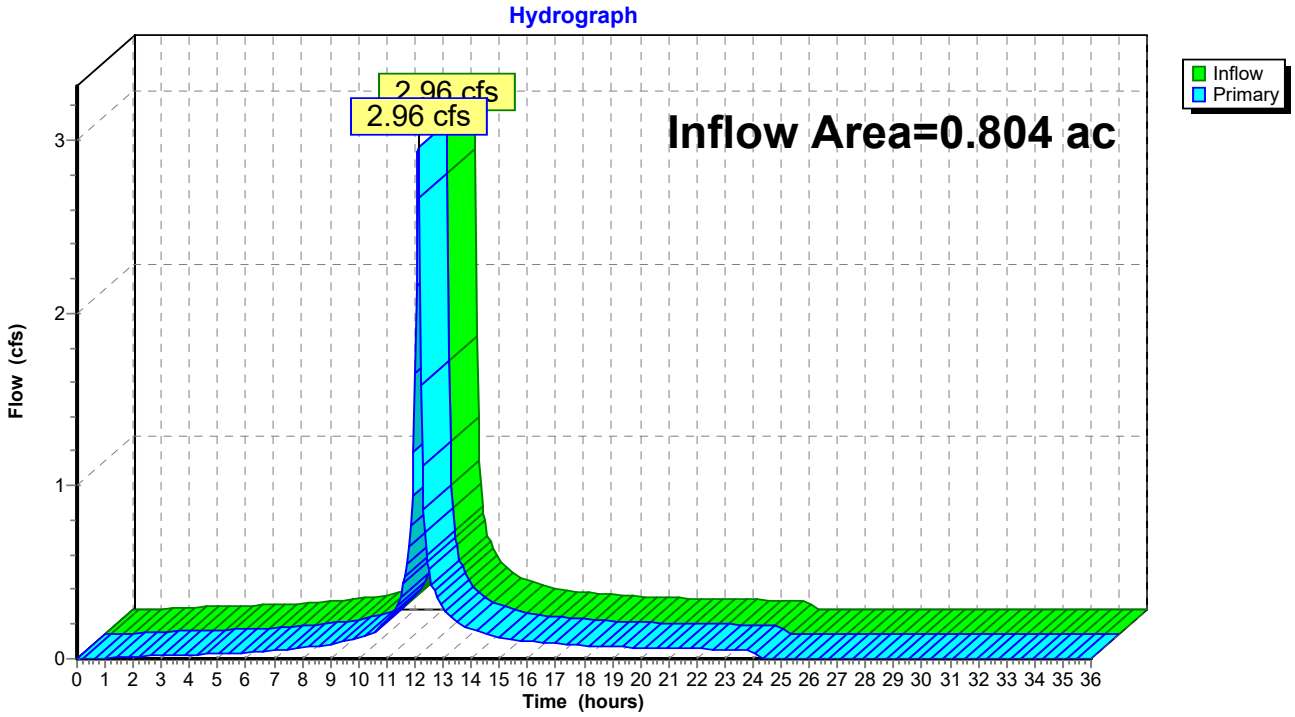


Summary for Link DP-1: Broadway Drainage

Inflow Area = 0.804 ac, 72.78% Impervious, Inflow Depth = 3.63" for 10-Year event
Inflow = 2.96 cfs @ 12.11 hrs, Volume= 0.243 af
Primary = 2.96 cfs @ 12.11 hrs, Volume= 0.243 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP-1: Broadway Drainage



Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EX-1: EX-1 Runoff Area=19,263 sf 55.76% Impervious Runoff Depth=4.30"
Tc=5.0 min CN=87 Runoff=2.02 cfs 0.158 af

Subcatchment EX-2: EX-2 Runoff Area=1,013 sf 0.00% Impervious Runoff Depth=3.09"
Tc=5.0 min CN=75 Runoff=0.08 cfs 0.006 af

Subcatchment EX-3: EX-3 Runoff Area=14,756 sf 100.00% Impervious Runoff Depth=5.53"
Tc=5.0 min CN=98 Runoff=1.77 cfs 0.156 af

Link DP-1: Broadway Drainage Inflow=3.87 cfs 0.321 af
Primary=3.87 cfs 0.321 af

Total Runoff Area = 0.804 ac Runoff Volume = 0.321 af Average Runoff Depth = 4.78"
27.22% Pervious = 0.219 ac 72.78% Impervious = 0.585 ac

Summary for Subcatchment EX-1: EX-1

[49] Hint: Tc<2dt may require smaller dt

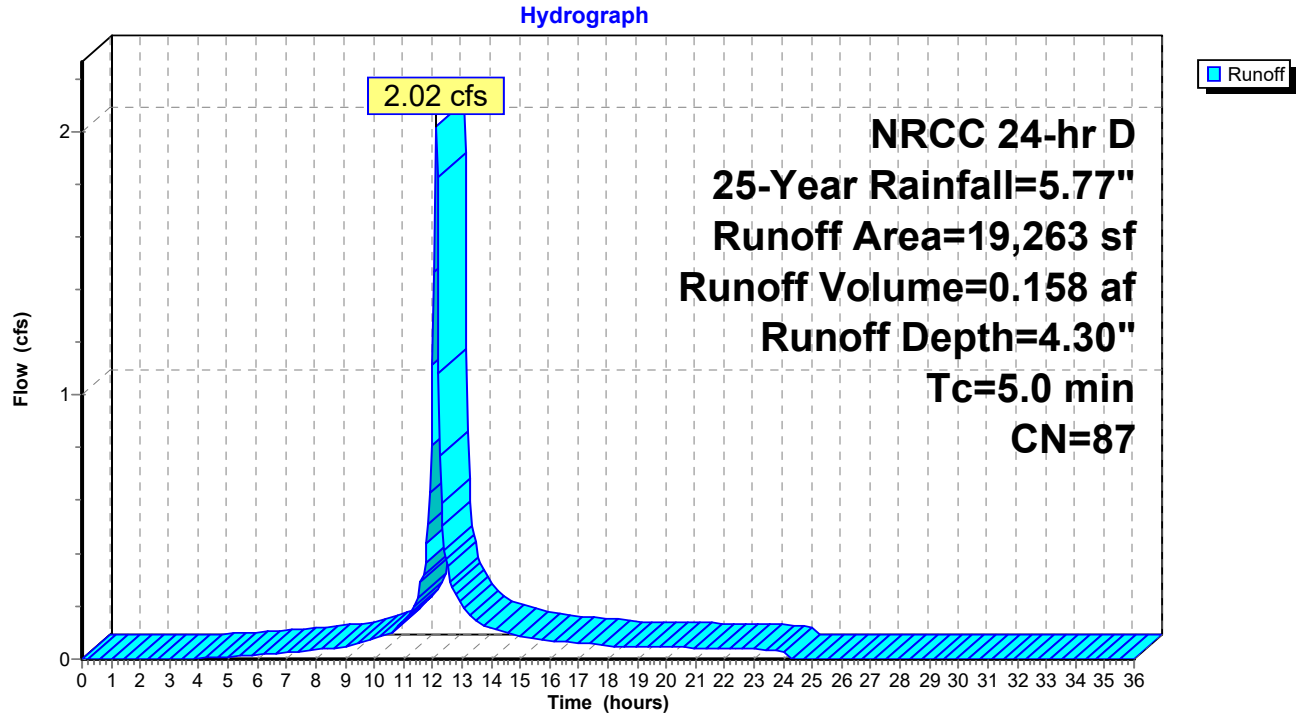
Runoff = 2.02 cfs @ 12.11 hrs, Volume= 0.158 af, Depth= 4.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.77"

Area (sf)	CN	Description
10,741	98	Roofs, HSG A
6,116	72	Dirt roads, HSG A
2,406	79	<50% Grass cover, Poor, HSG B
19,263	87	Weighted Average
8,522		44.24% Pervious Area
10,741		55.76% Impervious Area

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

Subcatchment EX-1: EX-1



Summary for Subcatchment EX-2: EX-2

[49] Hint: Tc<2dt may require smaller dt

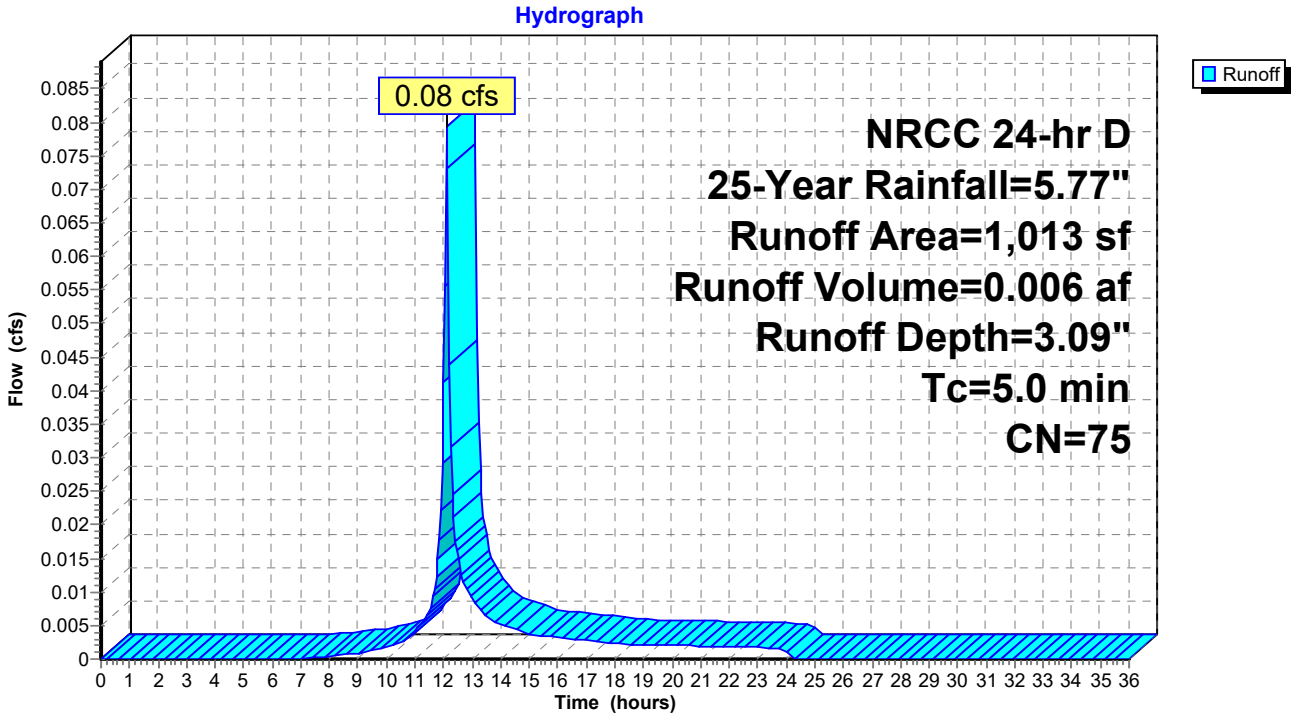
Runoff = 0.08 cfs @ 12.12 hrs, Volume= 0.006 af, Depth= 3.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.77"

Area (sf)	CN	Description
645	72	Dirt roads, HSG A
368	79	<50% Grass cover, Poor, HSG B
1,013	75	Weighted Average
1,013		100.00% Pervious Area

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

Subcatchment EX-2: EX-2



Summary for Subcatchment EX-3: EX-3

[49] Hint: Tc<2dt may require smaller dt

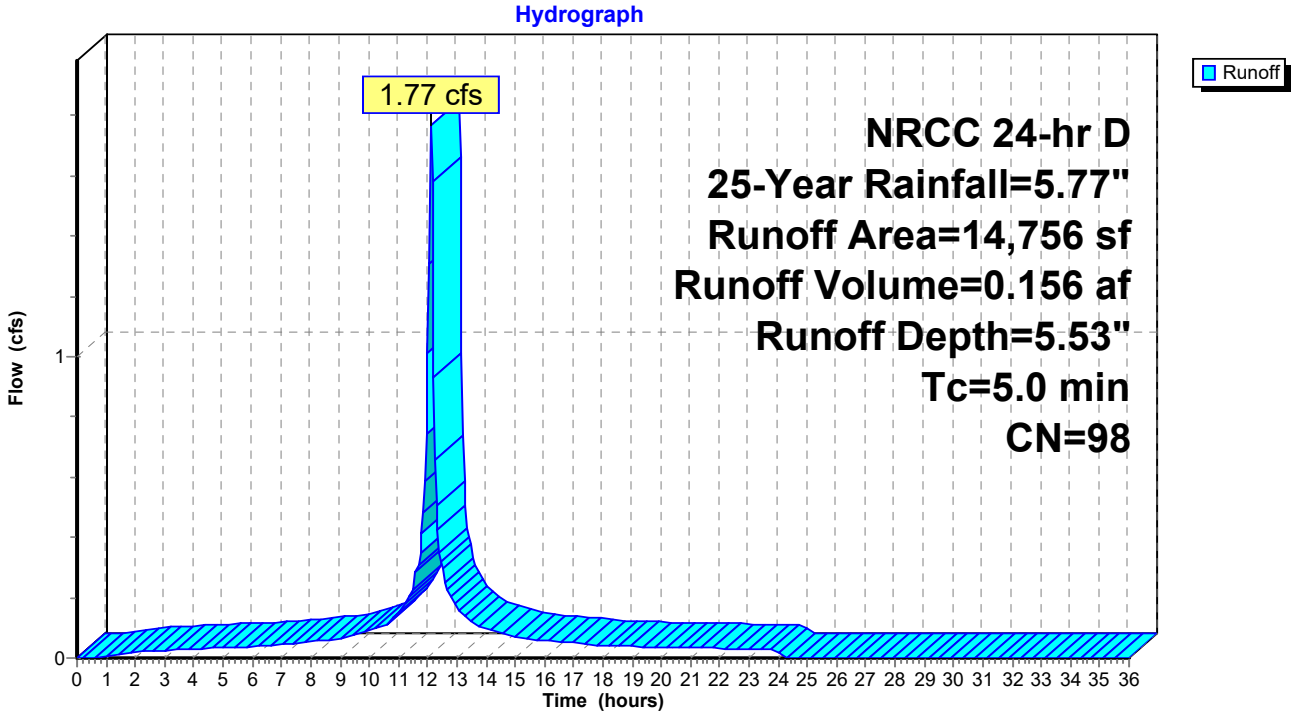
Runoff = 1.77 cfs @ 12.11 hrs, Volume= 0.156 af, Depth= 5.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.77"

Area (sf)	CN	Description
14,756	98	Paved parking, HSG A
14,756		100.00% Impervious Area

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

Subcatchment EX-3: EX-3

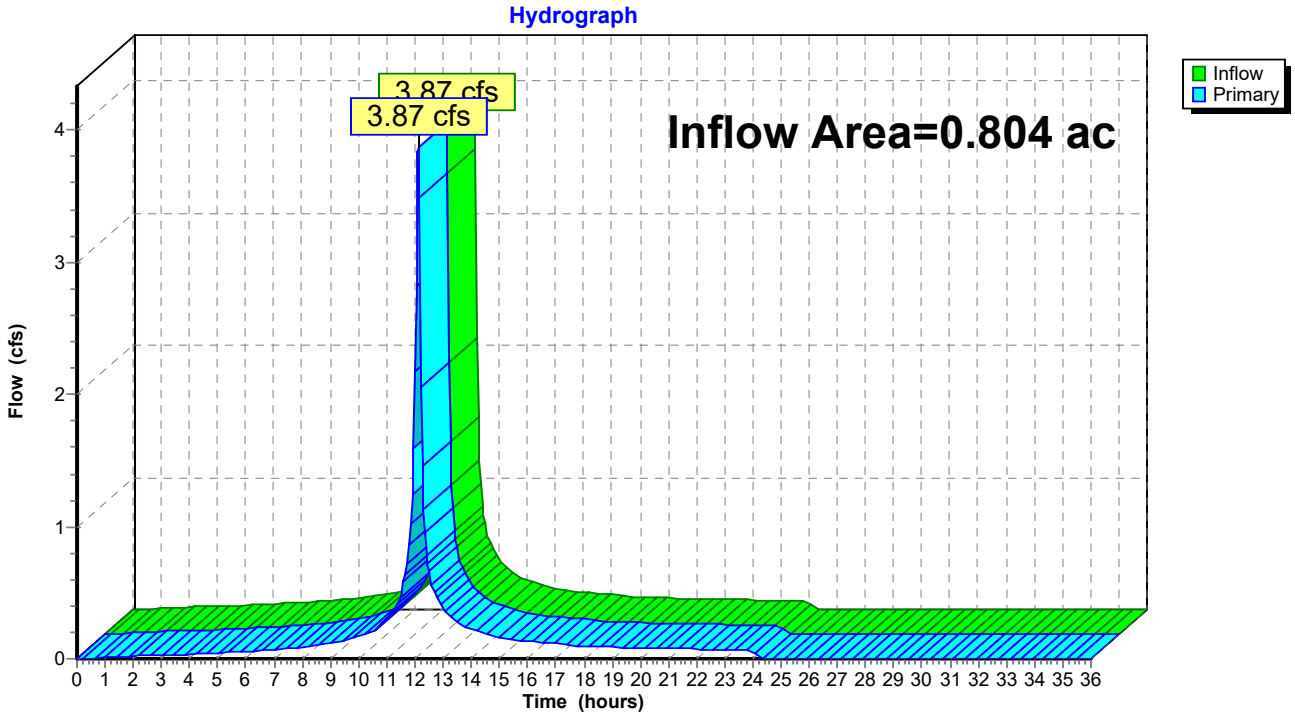


Summary for Link DP-1: Broadway Drainage

Inflow Area = 0.804 ac, 72.78% Impervious, Inflow Depth = 4.78" for 25-Year event
Inflow = 3.87 cfs @ 12.11 hrs, Volume= 0.321 af
Primary = 3.87 cfs @ 12.11 hrs, Volume= 0.321 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP-1: Broadway Drainage



Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EX-1: EX-1 Runoff Area=19,263 sf 55.76% Impervious Runoff Depth=5.36"
Tc=5.0 min CN=87 Runoff=2.49 cfs 0.198 af

Subcatchment EX-2: EX-2 Runoff Area=1,013 sf 0.00% Impervious Runoff Depth=4.04"
Tc=5.0 min CN=75 Runoff=0.10 cfs 0.008 af

Subcatchment EX-3: EX-3 Runoff Area=14,756 sf 100.00% Impervious Runoff Depth=6.64"
Tc=5.0 min CN=98 Runoff=2.11 cfs 0.187 af

Link DP-1: Broadway Drainage Inflow=4.71 cfs 0.393 af
Primary=4.71 cfs 0.393 af

Total Runoff Area = 0.804 ac Runoff Volume = 0.393 af Average Runoff Depth = 5.86"
27.22% Pervious = 0.219 ac 72.78% Impervious = 0.585 ac

Summary for Subcatchment EX-1: EX-1

[49] Hint: Tc<2dt may require smaller dt

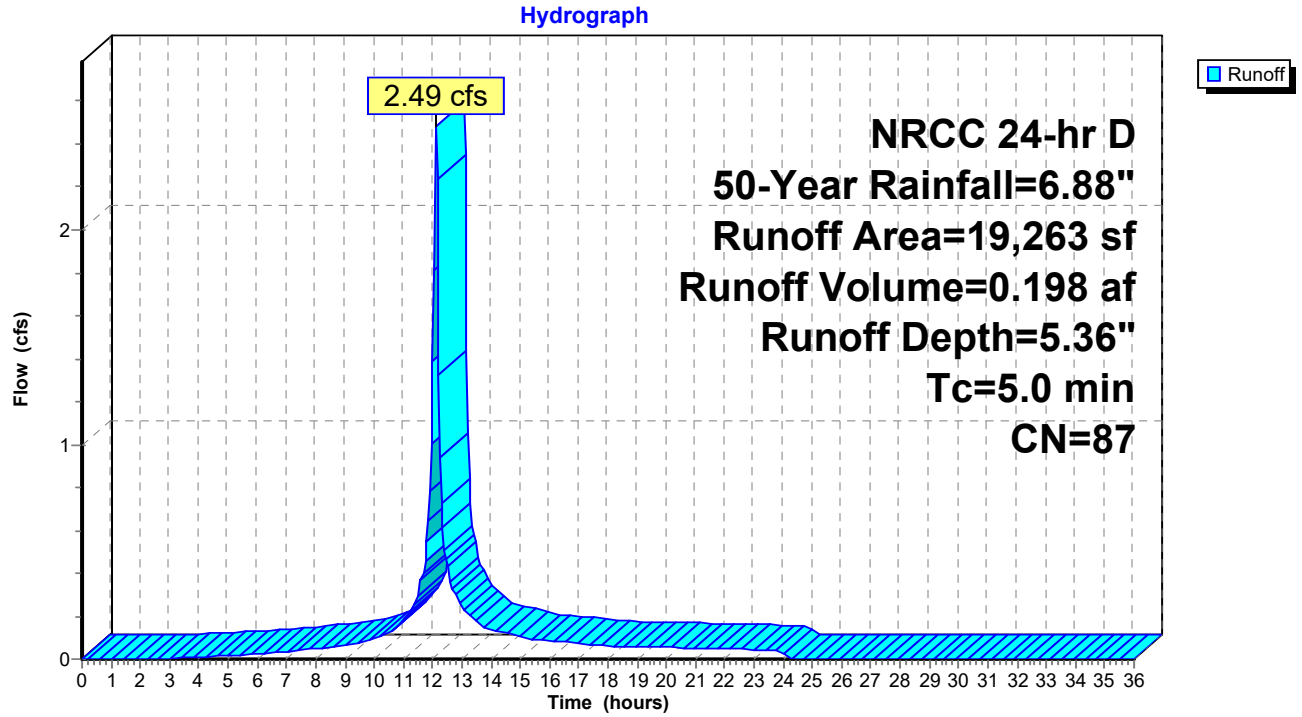
Runoff = 2.49 cfs @ 12.11 hrs, Volume= 0.198 af, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 50-Year Rainfall=6.88"

Area (sf)	CN	Description
10,741	98	Roofs, HSG A
6,116	72	Dirt roads, HSG A
2,406	79	<50% Grass cover, Poor, HSG B
19,263	87	Weighted Average
8,522		44.24% Pervious Area
10,741		55.76% Impervious Area

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

Subcatchment EX-1: EX-1



Summary for Subcatchment EX-2: EX-2

[49] Hint: Tc<2dt may require smaller dt

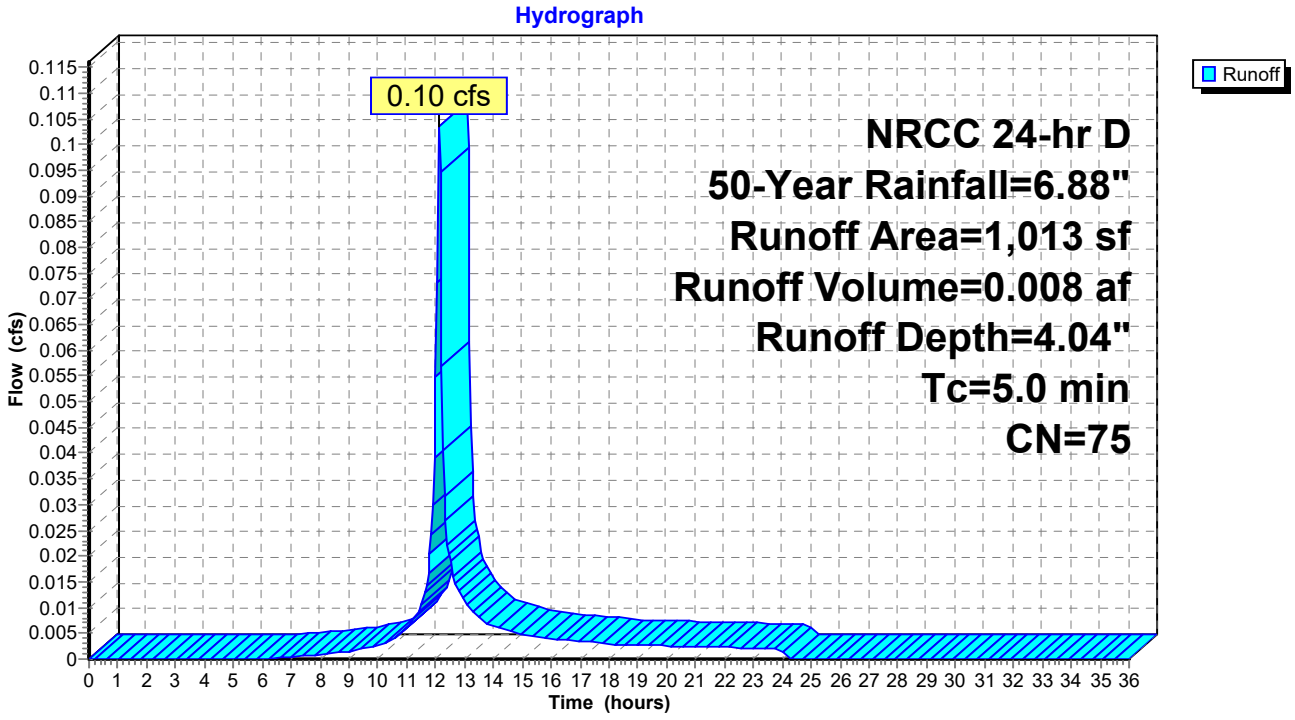
Runoff = 0.10 cfs @ 12.11 hrs, Volume= 0.008 af, Depth= 4.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 50-Year Rainfall=6.88"

Area (sf)	CN	Description
645	72	Dirt roads, HSG A
368	79	<50% Grass cover, Poor, HSG B
1,013	75	Weighted Average
1,013		100.00% Pervious Area

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

Subcatchment EX-2: EX-2



Summary for Subcatchment EX-3: EX-3

[49] Hint: Tc<2dt may require smaller dt

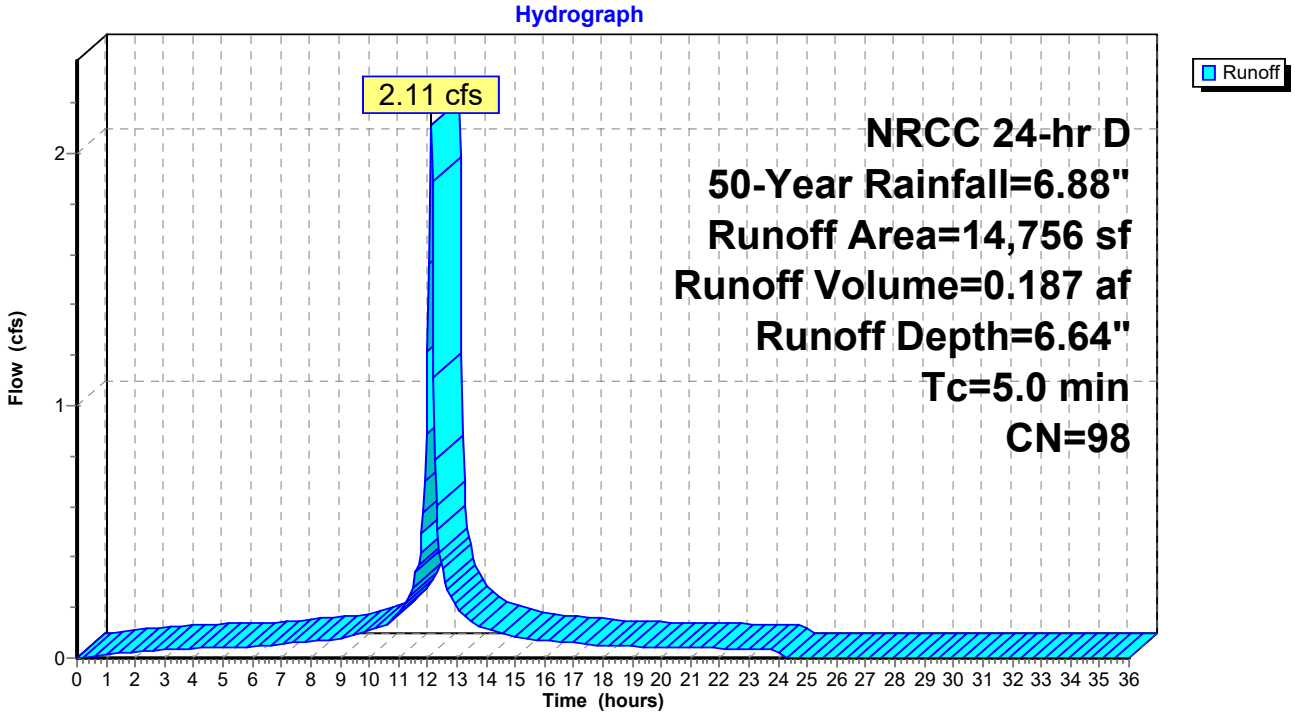
Runoff = 2.11 cfs @ 12.11 hrs, Volume= 0.187 af, Depth= 6.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 50-Year Rainfall=6.88"

Area (sf)	CN	Description
14,756	98	Paved parking, HSG A
14,756		100.00% Impervious Area

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

Subcatchment EX-3: EX-3

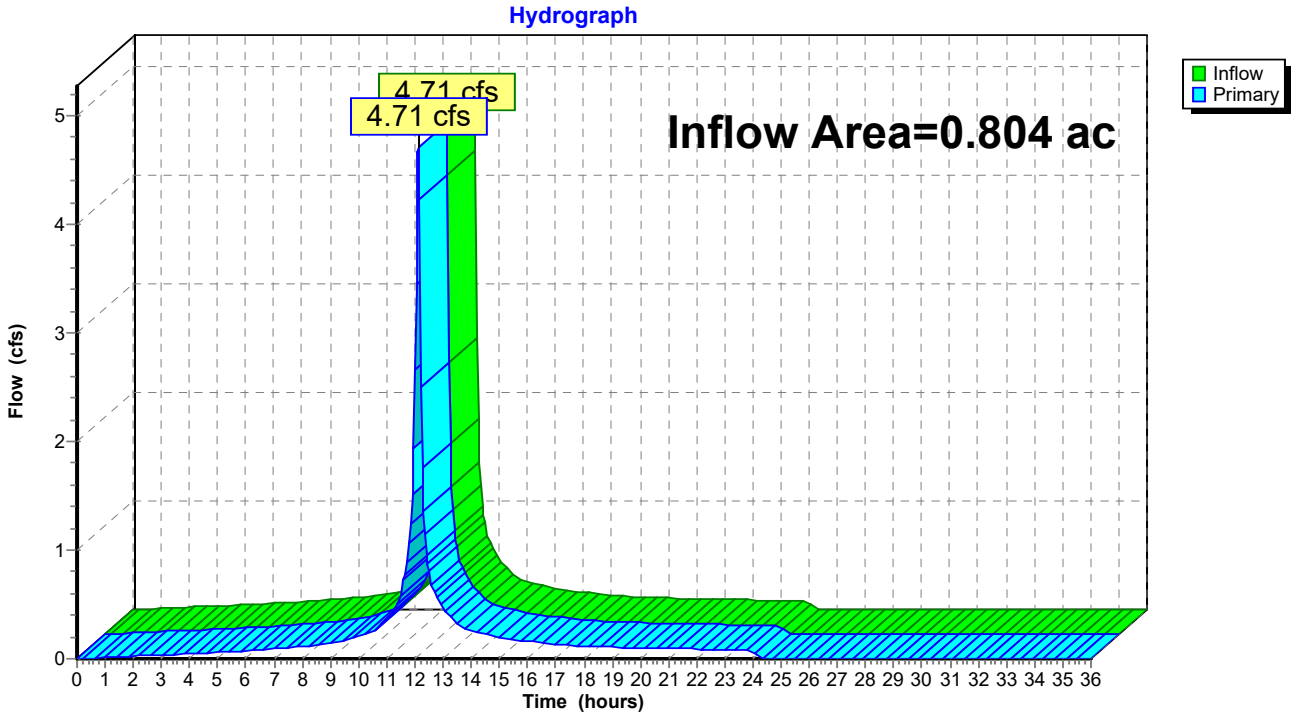


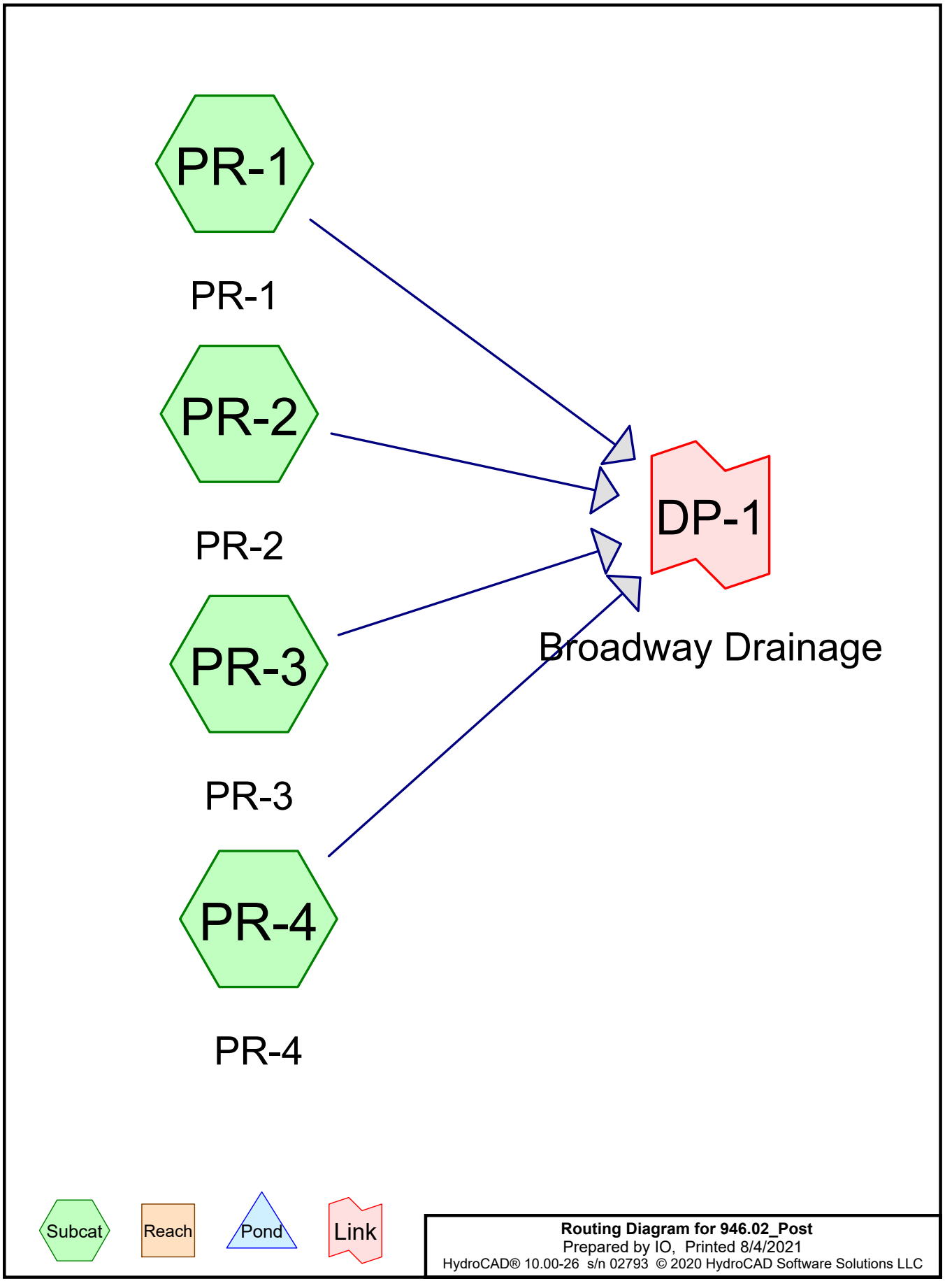
Summary for Link DP-1: Broadway Drainage

Inflow Area = 0.804 ac, 72.78% Impervious, Inflow Depth = 5.86" for 50-Year event
Inflow = 4.71 cfs @ 12.11 hrs, Volume= 0.393 af
Primary = 4.71 cfs @ 12.11 hrs, Volume= 0.393 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP-1: Broadway Drainage





Routing Diagram for 946.02_Post
Prepared by IO, Printed 8/4/2021
HydroCAD® 10.00-26 s/n 02793 © 2020 HydroCAD Software Solutions LLC

Project Notes

Rainfall events imported from "NRCS-Rain.txt" for 6520 NH Strafford

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.138	49	50-75% Grass cover, Fair, HSG A (PR-1, PR-3, PR-4)
0.008	98	Building Wall (PR-1)
0.042	98	Cement Concrete Sidewalk, HSG A (PR-1, PR-3, PR-4)
0.276	98	Paved parking, HSG A (PR-1, PR-3)
0.342	98	Roofs, HSG A (PR-2)
0.804	**90**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.797	HSG A	PR-1, PR-2, PR-3, PR-4
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.008	Other	PR-1
0.804		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.138	0.000	0.000	0.000	0.000	0.138	50-75% Grass cover, Fair	PR-1, PR-3, PR-4
0.000	0.000	0.000	0.000	0.008	0.008	Building Wall	PR-1
0.042	0.000	0.000	0.000	0.000	0.042	Cement Concrete Sidewalk	PR-1, PR-3, PR-4
0.276	0.000	0.000	0.000	0.000	0.276	Paved parking	PR-1, PR-3
0.342	0.000	0.000	0.000	0.000	0.342	Roofs	PR-2
0.797	**0.000**	**0.000**	**0.000**	**0.008**	**0.804**	**TOTAL AREA**	

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PR-1: PR-1 Runoff Area=15,855 sf 71.40% Impervious Runoff Depth=1.56"
Tc=5.0 min CN=84 Runoff=0.63 cfs 0.047 af

Subcatchment PR-2: PR-2 Runoff Area=14,880 sf 100.00% Impervious Runoff Depth=2.82"
Tc=5.0 min CN=98 Runoff=0.93 cfs 0.080 af

Subcatchment PR-3: PR-3 Runoff Area=2,443 sf 89.03% Impervious Runoff Depth=2.30"
Tc=5.0 min CN=93 Runoff=0.14 cfs 0.011 af

Subcatchment PR-4: PR-4 Runoff Area=1,856 sf 35.88% Impervious Runoff Depth=0.61"
Tc=5.0 min CN=67 Runoff=0.02 cfs 0.002 af

Link DP-1: Broadway Drainage Inflow=1.72 cfs 0.140 af
Primary=1.72 cfs 0.140 af

Total Runoff Area = 0.804 ac Runoff Volume = 0.140 af Average Runoff Depth = 2.09"
17.10% Pervious = 0.138 ac 82.90% Impervious = 0.667 ac

Summary for Subcatchment PR-1: PR-1

[49] Hint: Tc<2dt may require smaller dt

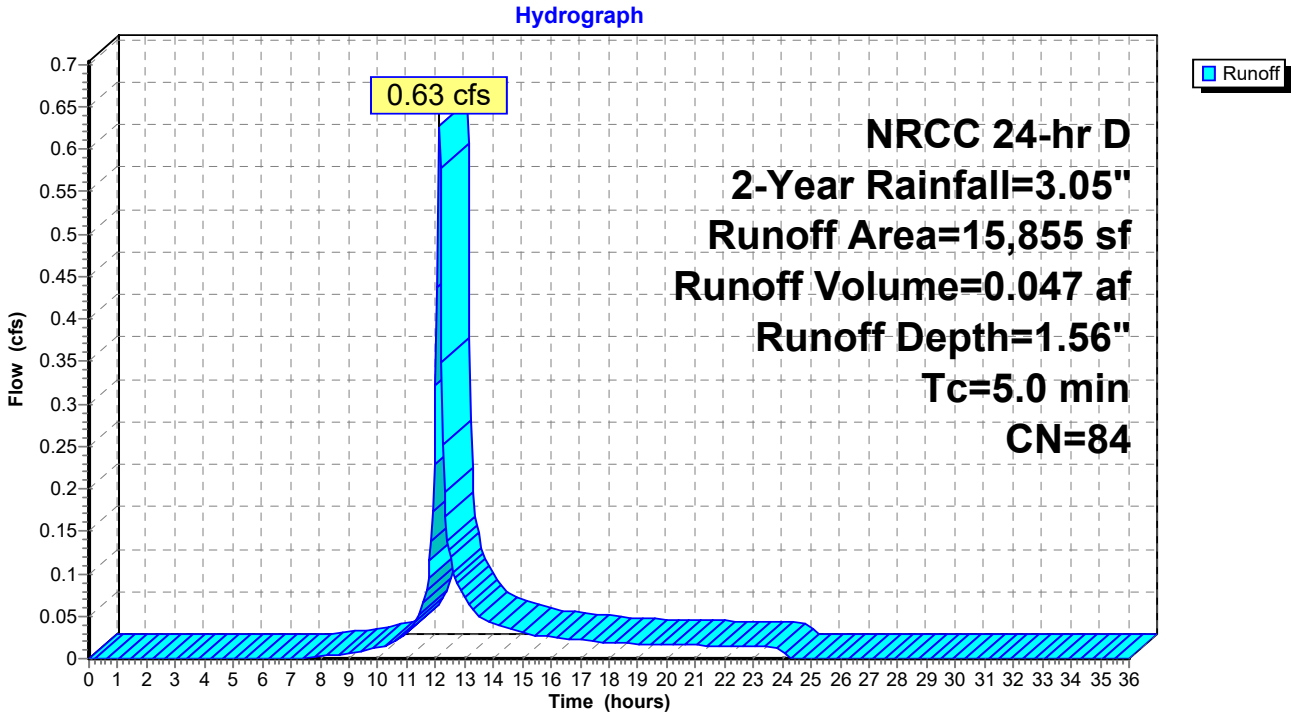
Runoff = 0.63 cfs @ 12.12 hrs, Volume= 0.047 af, Depth= 1.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.05"

	Area (sf)	CN	Description
	10,415	98	Paved parking, HSG A
	4,534	49	50-75% Grass cover, Fair, HSG A
*	333	98	Building Wall
*	573	98	Cement Concrete Sidewalk, HSG A
	15,855	84	Weighted Average
	4,534		28.60% Pervious Area
	11,321		71.40% Impervious Area

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

Subcatchment PR-1: PR-1



Summary for Subcatchment PR-2: PR-2

[49] Hint: Tc<2dt may require smaller dt

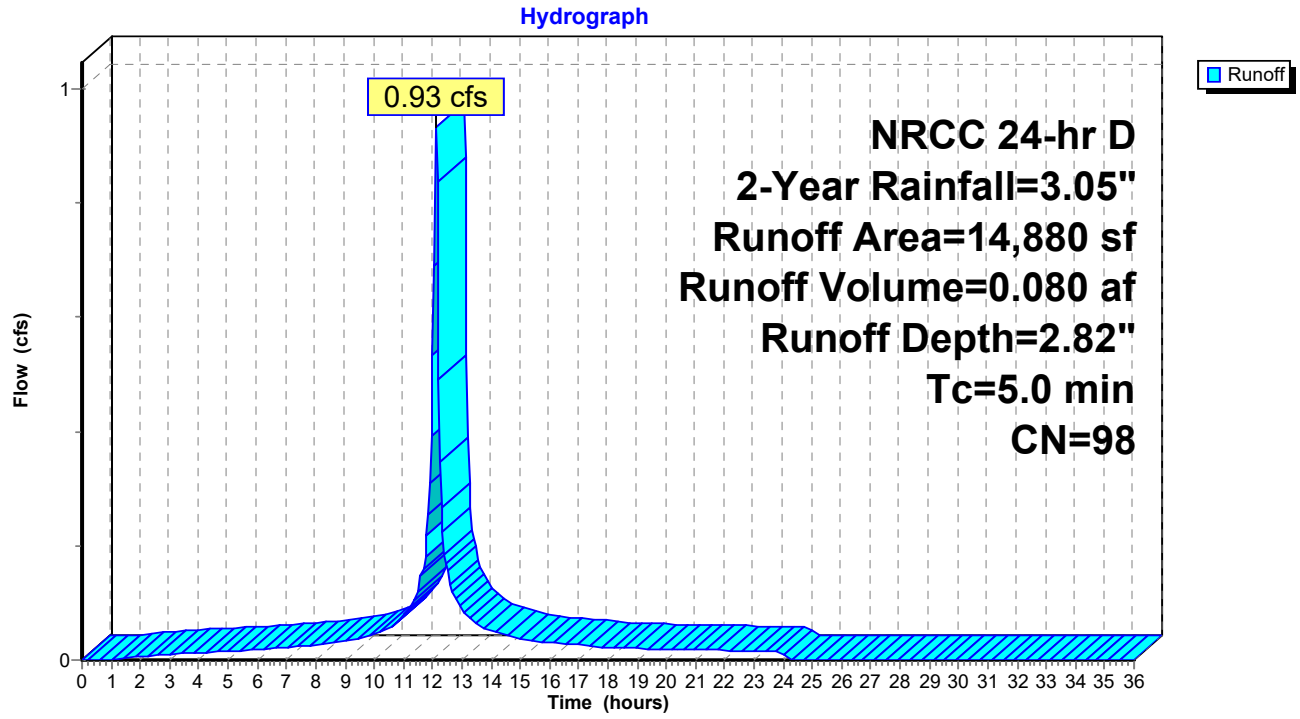
Runoff = 0.93 cfs @ 12.11 hrs, Volume= 0.080 af, Depth= 2.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.05"

Area (sf)	CN	Description
14,880	98	Roofs, HSG A
14,880		100.00% Impervious Area

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

Subcatchment PR-2: PR-2



Summary for Subcatchment PR-3: PR-3

[49] Hint: Tc<2dt may require smaller dt

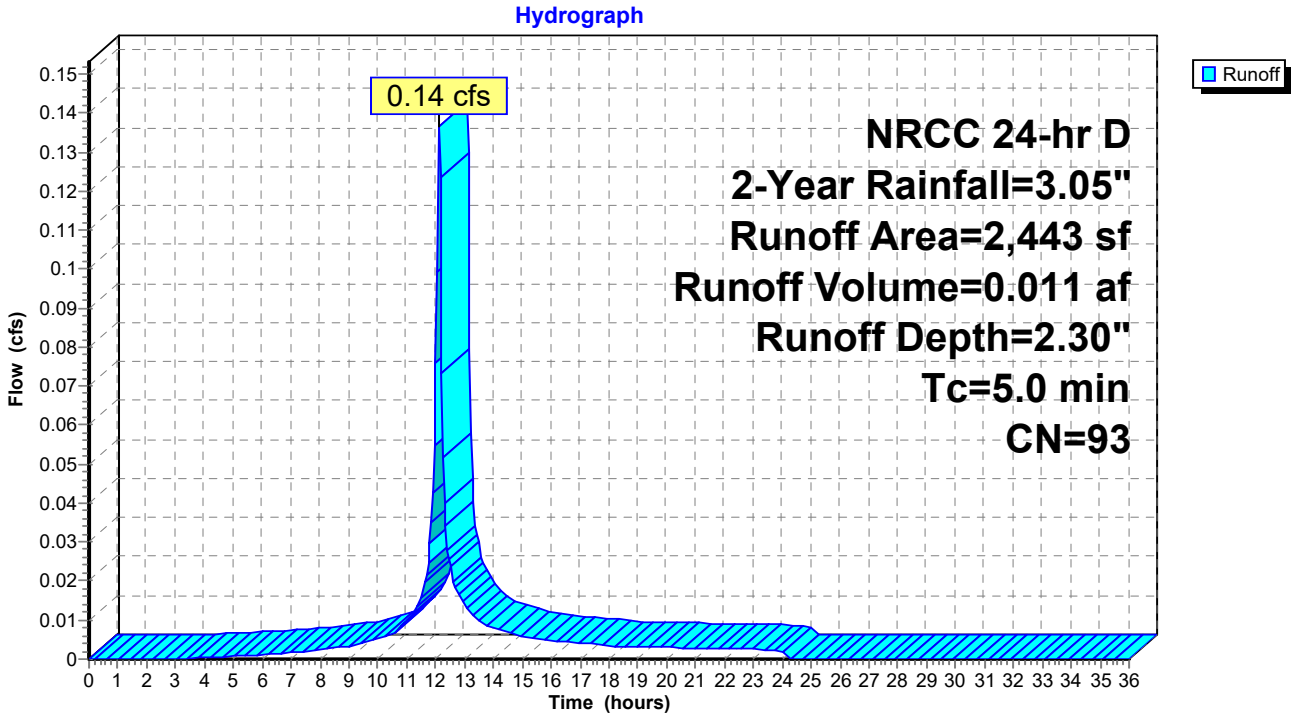
Runoff = 0.14 cfs @ 12.11 hrs, Volume= 0.011 af, Depth= 2.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.05"

	Area (sf)	CN	Description
	1,597	98	Paved parking, HSG A
	268	49	50-75% Grass cover, Fair, HSG A
*	578	98	Cement Concrete Sidewalk, HSG A
	2,443	93	Weighted Average
	268		10.97% Pervious Area
	2,175		89.03% Impervious Area

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

Subcatchment PR-3: PR-3



Summary for Subcatchment PR-4: PR-4

[49] Hint: Tc<2dt may require smaller dt

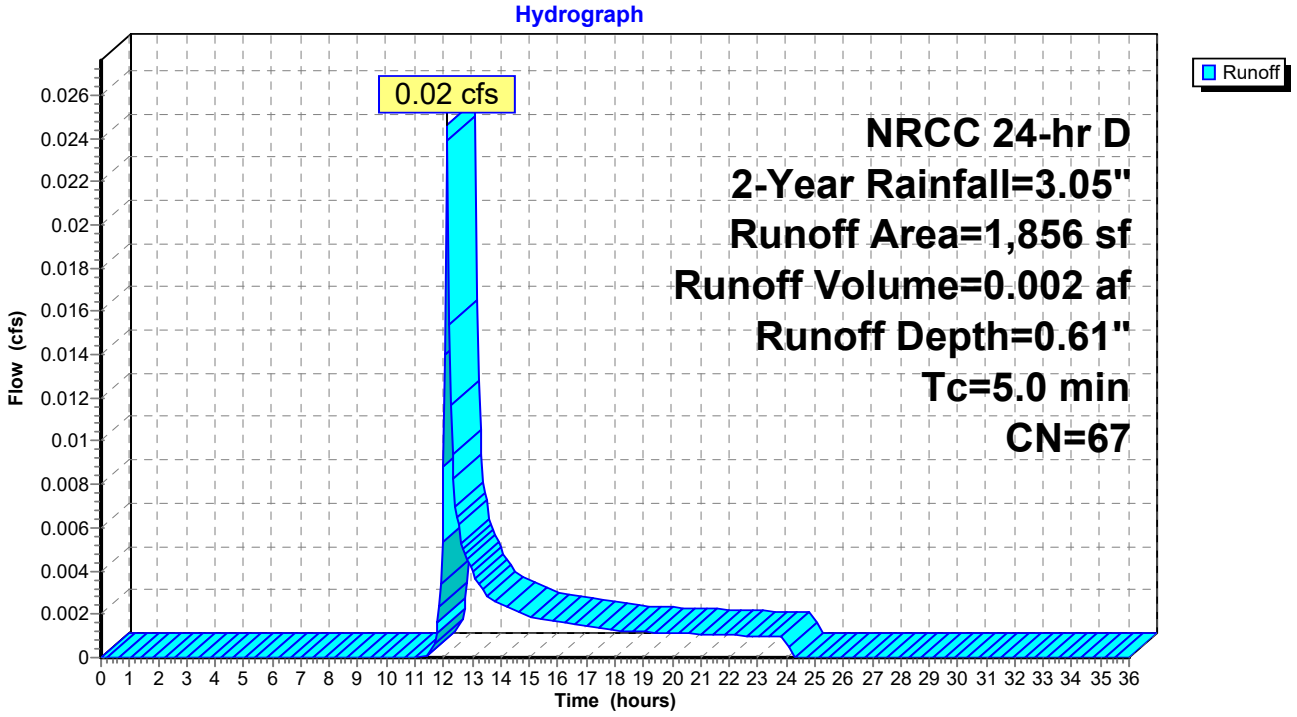
Runoff = 0.02 cfs @ 12.13 hrs, Volume= 0.002 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.05"

	Area (sf)	CN	Description
*	666	98	Cement Concrete Sidewalk, HSG A
	1,190	49	50-75% Grass cover, Fair, HSG A
	1,856	67	Weighted Average
	1,190		64.12% Pervious Area
	666		35.88% Impervious Area

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

Subcatchment PR-4: PR-4

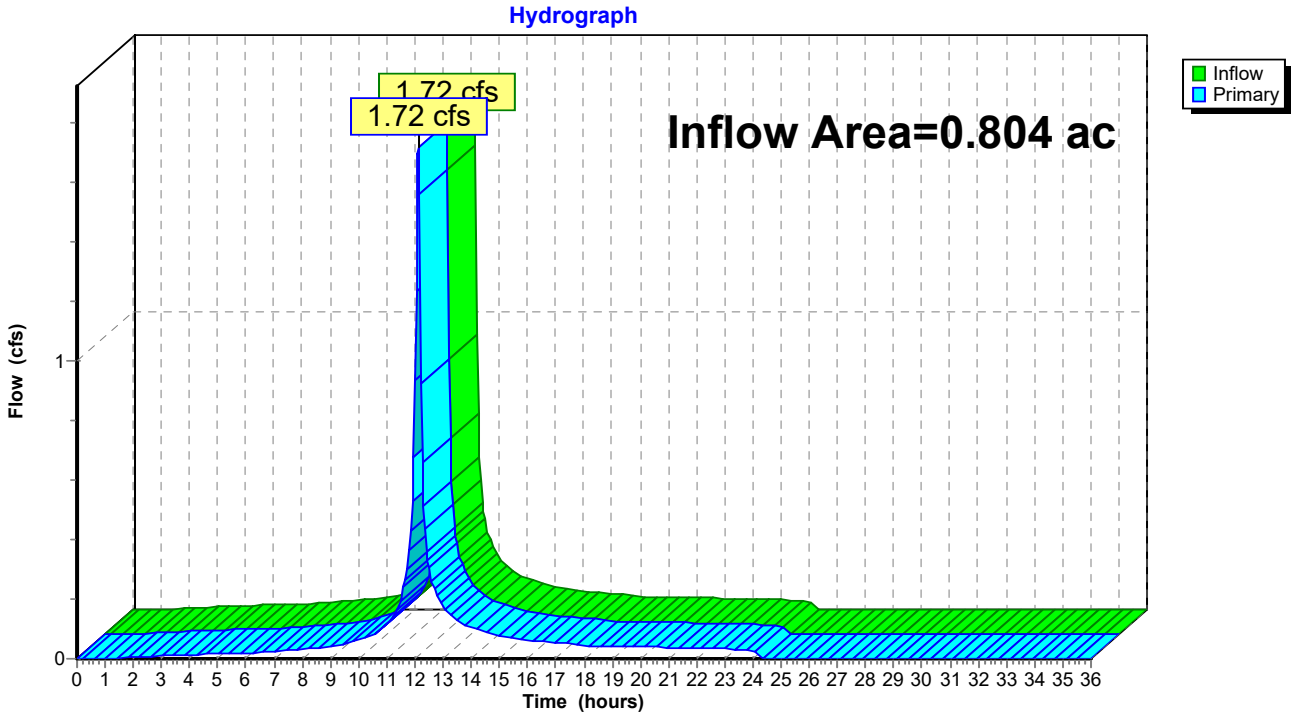


Summary for Link DP-1: Broadway Drainage

Inflow Area = 0.804 ac, 82.90% Impervious, Inflow Depth = 2.09" for 2-Year event
Inflow = 1.72 cfs @ 12.11 hrs, Volume= 0.140 af
Primary = 1.72 cfs @ 12.11 hrs, Volume= 0.140 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP-1: Broadway Drainage



Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PR-1: PR-1 Runoff Area=15,855 sf 71.40% Impervious Runoff Depth=2.88"
Tc=5.0 min CN=84 Runoff=1.15 cfs 0.087 af

Subcatchment PR-2: PR-2 Runoff Area=14,880 sf 100.00% Impervious Runoff Depth=4.33"
Tc=5.0 min CN=98 Runoff=1.41 cfs 0.123 af

Subcatchment PR-3: PR-3 Runoff Area=2,443 sf 89.03% Impervious Runoff Depth=3.78"
Tc=5.0 min CN=93 Runoff=0.22 cfs 0.018 af

Subcatchment PR-4: PR-4 Runoff Area=1,856 sf 35.88% Impervious Runoff Depth=1.51"
Tc=5.0 min CN=67 Runoff=0.07 cfs 0.005 af

Link DP-1: Broadway Drainage Inflow=2.84 cfs 0.234 af
Primary=2.84 cfs 0.234 af

Total Runoff Area = 0.804 ac Runoff Volume = 0.234 af Average Runoff Depth = 3.49"
17.10% Pervious = 0.138 ac 82.90% Impervious = 0.667 ac

Summary for Subcatchment PR-1: PR-1

[49] Hint: Tc<2dt may require smaller dt

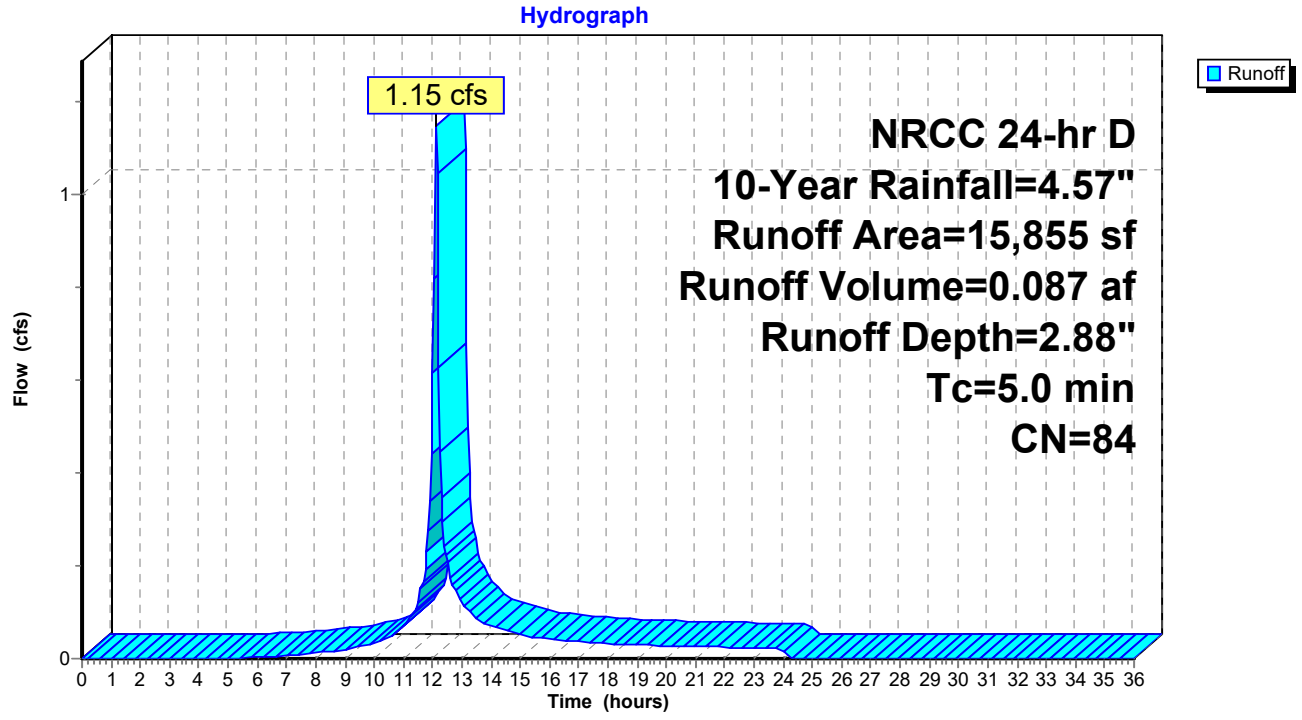
Runoff = 1.15 cfs @ 12.11 hrs, Volume= 0.087 af, Depth= 2.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.57"

	Area (sf)	CN	Description
	10,415	98	Paved parking, HSG A
	4,534	49	50-75% Grass cover, Fair, HSG A
*	333	98	Building Wall
*	573	98	Cement Concrete Sidewalk, HSG A
	15,855	84	Weighted Average
	4,534		28.60% Pervious Area
	11,321		71.40% Impervious Area

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

Subcatchment PR-1: PR-1



Summary for Subcatchment PR-2: PR-2

[49] Hint: Tc<2dt may require smaller dt

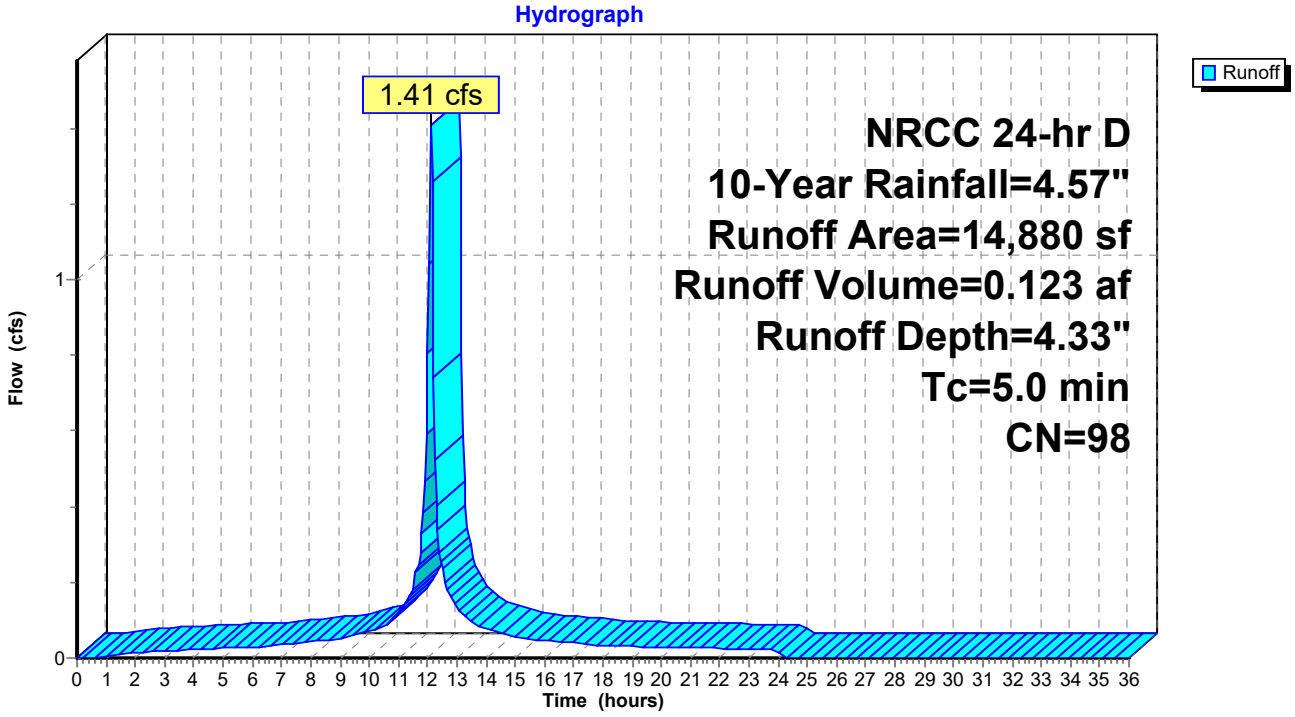
Runoff = 1.41 cfs @ 12.11 hrs, Volume= 0.123 af, Depth= 4.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.57"

Area (sf)	CN	Description
14,880	98	Roofs, HSG A
14,880		100.00% Impervious Area

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

Subcatchment PR-2: PR-2



Summary for Subcatchment PR-3: PR-3

[49] Hint: Tc<2dt may require smaller dt

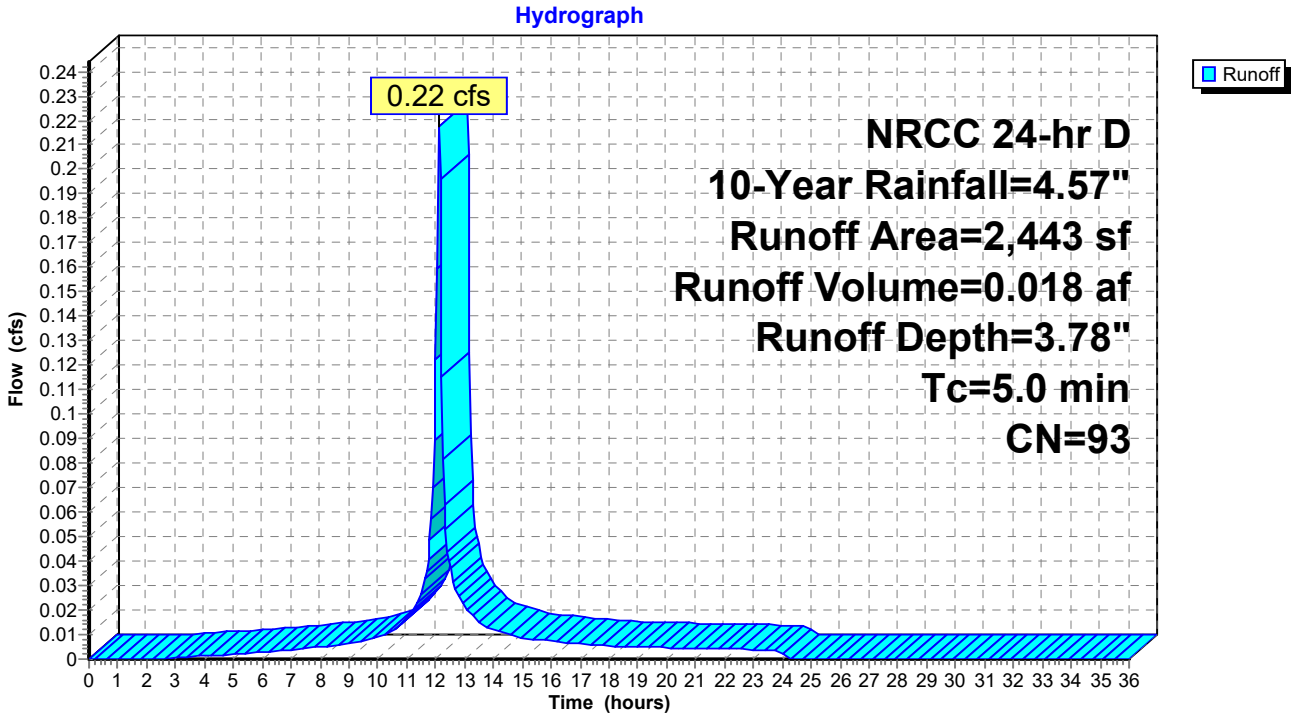
Runoff = 0.22 cfs @ 12.11 hrs, Volume= 0.018 af, Depth= 3.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.57"

	Area (sf)	CN	Description
	1,597	98	Paved parking, HSG A
	268	49	50-75% Grass cover, Fair, HSG A
*	578	98	Cement Concrete Sidewalk, HSG A
	2,443	93	Weighted Average
	268		10.97% Pervious Area
	2,175		89.03% Impervious Area

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

Subcatchment PR-3: PR-3



Summary for Subcatchment PR-4: PR-4

[49] Hint: Tc<2dt may require smaller dt

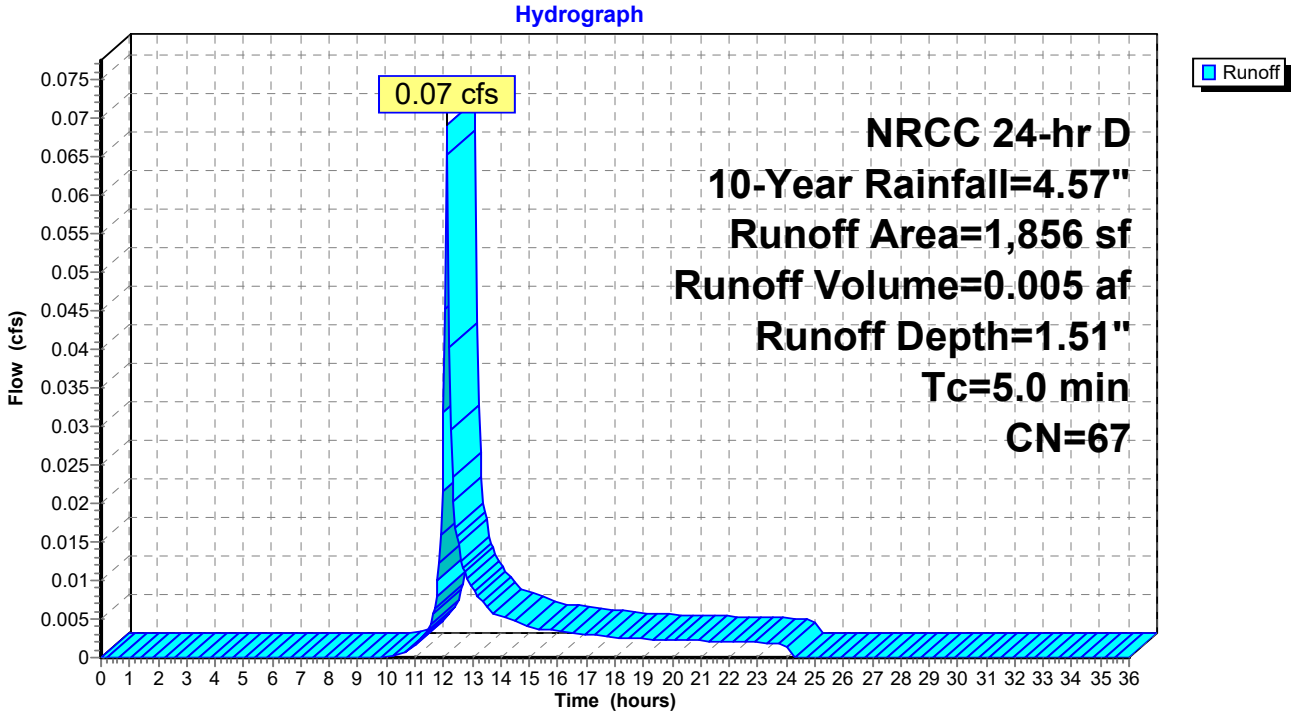
Runoff = 0.07 cfs @ 12.12 hrs, Volume= 0.005 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.57"

	Area (sf)	CN	Description
*	666	98	Cement Concrete Sidewalk, HSG A
	1,190	49	50-75% Grass cover, Fair, HSG A
	1,856	67	Weighted Average
	1,190		64.12% Pervious Area
	666		35.88% Impervious Area

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

Subcatchment PR-4: PR-4

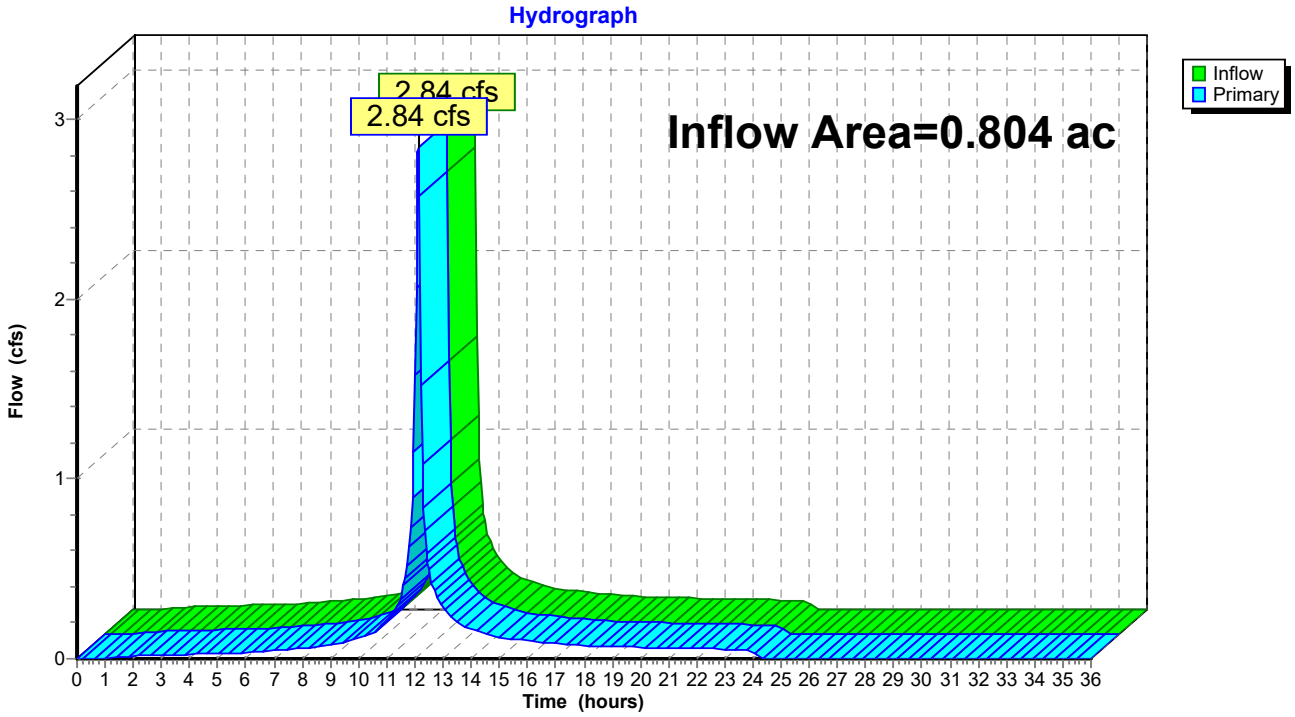


Summary for Link DP-1: Broadway Drainage

Inflow Area = 0.804 ac, 82.90% Impervious, Inflow Depth = 3.49" for 10-Year event
Inflow = 2.84 cfs @ 12.11 hrs, Volume= 0.234 af
Primary = 2.84 cfs @ 12.11 hrs, Volume= 0.234 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP-1: Broadway Drainage



Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PR-1: PR-1 Runoff Area=15,855 sf 71.40% Impervious Runoff Depth=3.98"
Tc=5.0 min CN=84 Runoff=1.57 cfs 0.121 af

Subcatchment PR-2: PR-2 Runoff Area=14,880 sf 100.00% Impervious Runoff Depth=5.53"
Tc=5.0 min CN=98 Runoff=1.78 cfs 0.157 af

Subcatchment PR-3: PR-3 Runoff Area=2,443 sf 89.03% Impervious Runoff Depth=4.96"
Tc=5.0 min CN=93 Runoff=0.28 cfs 0.023 af

Subcatchment PR-4: PR-4 Runoff Area=1,856 sf 35.88% Impervious Runoff Depth=2.36"
Tc=5.0 min CN=67 Runoff=0.11 cfs 0.008 af

Link DP-1: Broadway Drainage Inflow=3.74 cfs 0.310 af
Primary=3.74 cfs 0.310 af

Total Runoff Area = 0.804 ac Runoff Volume = 0.310 af Average Runoff Depth = 4.62"
17.10% Pervious = 0.138 ac 82.90% Impervious = 0.667 ac

Summary for Subcatchment PR-1: PR-1

[49] Hint: Tc<2dt may require smaller dt

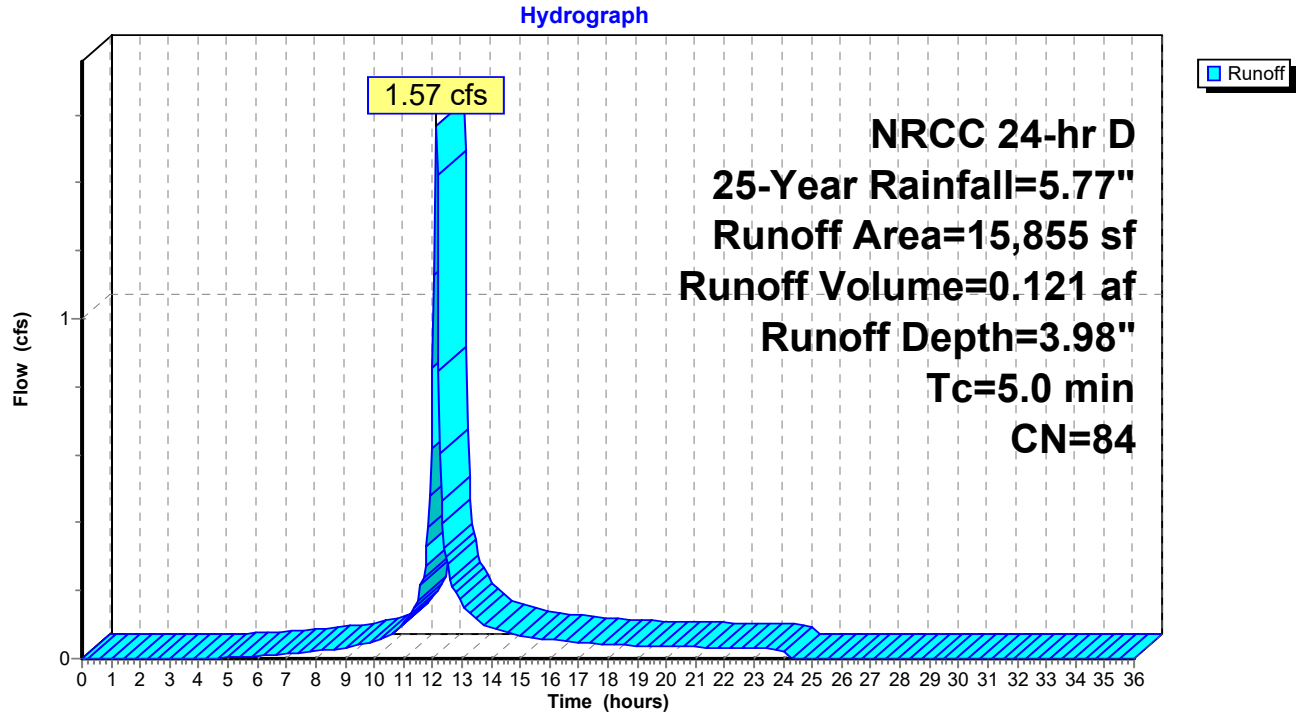
Runoff = 1.57 cfs @ 12.11 hrs, Volume= 0.121 af, Depth= 3.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.77"

	Area (sf)	CN	Description
	10,415	98	Paved parking, HSG A
	4,534	49	50-75% Grass cover, Fair, HSG A
*	333	98	Building Wall
*	573	98	Cement Concrete Sidewalk, HSG A
	15,855	84	Weighted Average
	4,534		28.60% Pervious Area
	11,321		71.40% Impervious Area

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

Subcatchment PR-1: PR-1



Summary for Subcatchment PR-2: PR-2

[49] Hint: Tc<2dt may require smaller dt

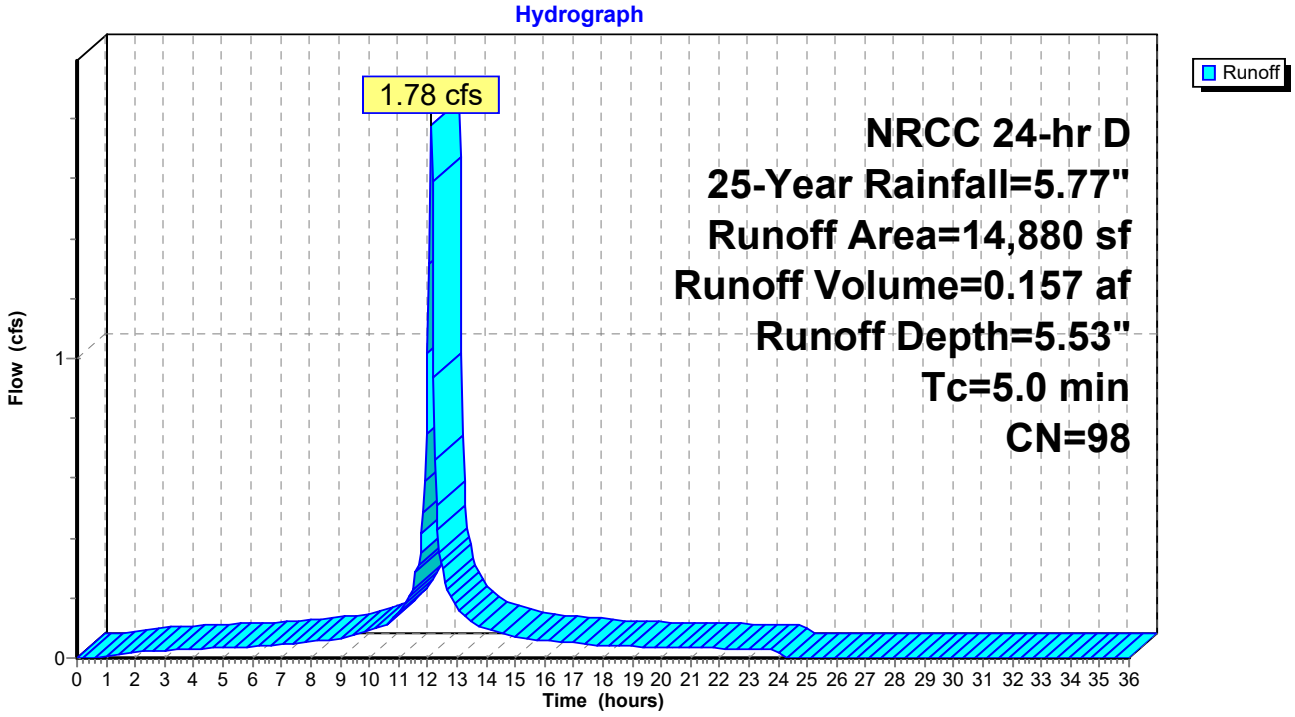
Runoff = 1.78 cfs @ 12.11 hrs, Volume= 0.157 af, Depth= 5.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.77"

Area (sf)	CN	Description
14,880	98	Roofs, HSG A
14,880		100.00% Impervious Area

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

Subcatchment PR-2: PR-2



Summary for Subcatchment PR-3: PR-3

[49] Hint: Tc<2dt may require smaller dt

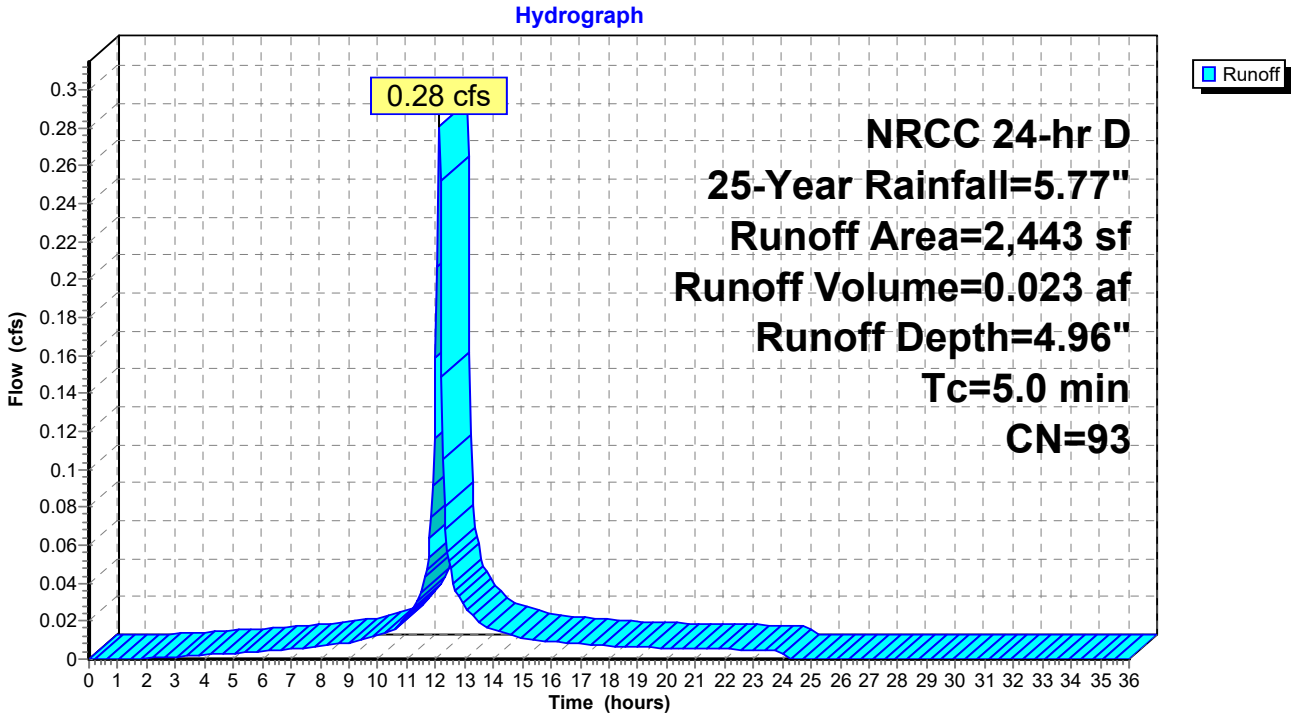
Runoff = 0.28 cfs @ 12.11 hrs, Volume= 0.023 af, Depth= 4.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.77"

	Area (sf)	CN	Description
	1,597	98	Paved parking, HSG A
	268	49	50-75% Grass cover, Fair, HSG A
*	578	98	Cement Concrete Sidewalk, HSG A
	2,443	93	Weighted Average
	268		10.97% Pervious Area
	2,175		89.03% Impervious Area

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

Subcatchment PR-3: PR-3



Summary for Subcatchment PR-4: PR-4

[49] Hint: Tc<2dt may require smaller dt

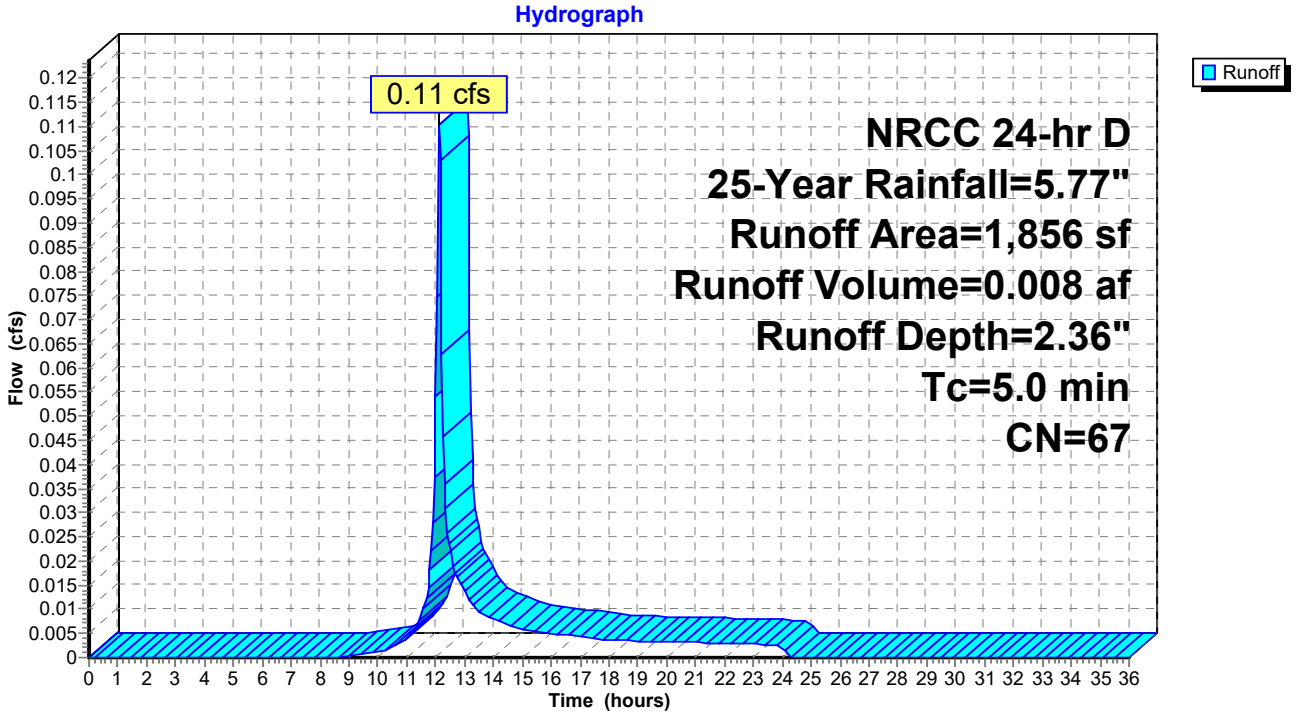
Runoff = 0.11 cfs @ 12.12 hrs, Volume= 0.008 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.77"

	Area (sf)	CN	Description
*	666	98	Cement Concrete Sidewalk, HSG A
	1,190	49	50-75% Grass cover, Fair, HSG A
	1,856	67	Weighted Average
	1,190		64.12% Pervious Area
	666		35.88% Impervious Area

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

Subcatchment PR-4: PR-4

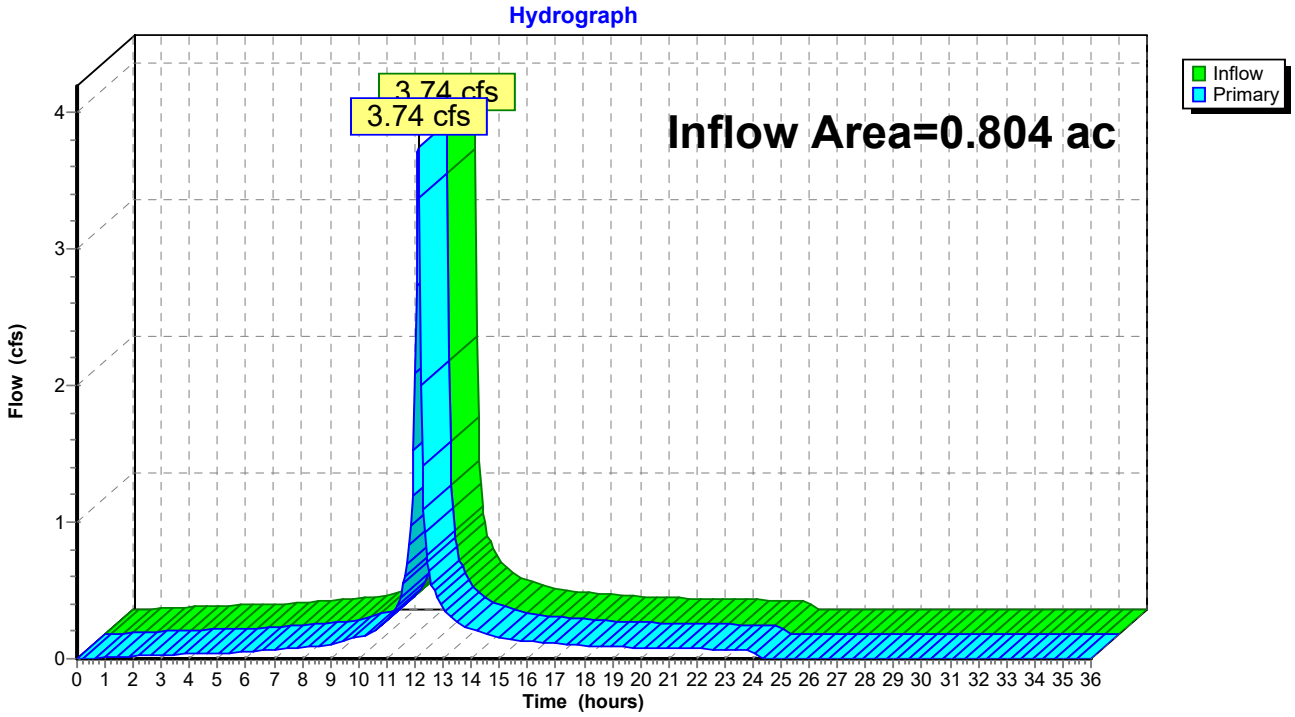


Summary for Link DP-1: Broadway Drainage

Inflow Area = 0.804 ac, 82.90% Impervious, Inflow Depth = 4.62" for 25-Year event
Inflow = 3.74 cfs @ 12.11 hrs, Volume= 0.310 af
Primary = 3.74 cfs @ 12.11 hrs, Volume= 0.310 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP-1: Broadway Drainage



Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PR-1: PR-1 Runoff Area=15,855 sf 71.40% Impervious Runoff Depth=5.03"
Tc=5.0 min CN=84 Runoff=1.95 cfs 0.152 af

Subcatchment PR-2: PR-2 Runoff Area=14,880 sf 100.00% Impervious Runoff Depth=6.64"
Tc=5.0 min CN=98 Runoff=2.13 cfs 0.189 af

Subcatchment PR-3: PR-3 Runoff Area=2,443 sf 89.03% Impervious Runoff Depth=6.05"
Tc=5.0 min CN=93 Runoff=0.34 cfs 0.028 af

Subcatchment PR-4: PR-4 Runoff Area=1,856 sf 35.88% Impervious Runoff Depth=3.21"
Tc=5.0 min CN=67 Runoff=0.15 cfs 0.011 af

Link DP-1: Broadway Drainage Inflow=4.57 cfs 0.381 af
Primary=4.57 cfs 0.381 af

Total Runoff Area = 0.804 ac Runoff Volume = 0.381 af Average Runoff Depth = 5.69"
17.10% Pervious = 0.138 ac 82.90% Impervious = 0.667 ac

Summary for Subcatchment PR-1: PR-1

[49] Hint: Tc<2dt may require smaller dt

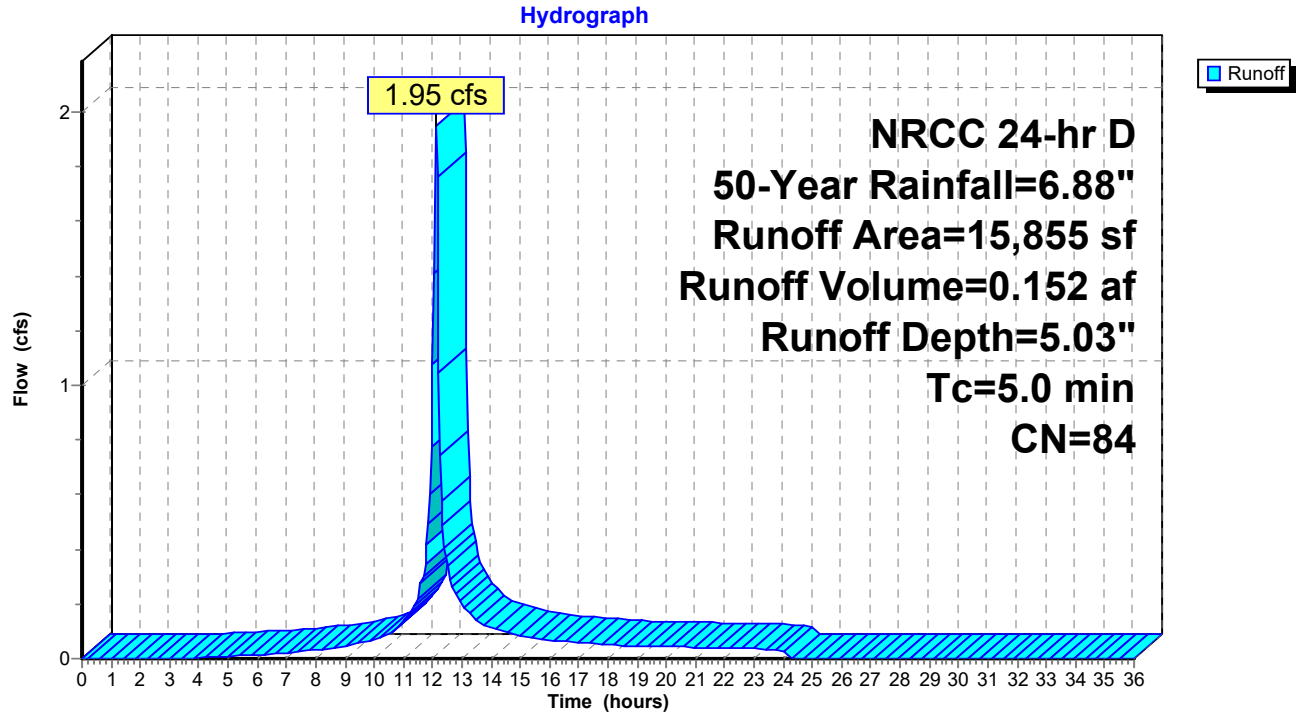
Runoff = 1.95 cfs @ 12.11 hrs, Volume= 0.152 af, Depth= 5.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 50-Year Rainfall=6.88"

	Area (sf)	CN	Description
	10,415	98	Paved parking, HSG A
	4,534	49	50-75% Grass cover, Fair, HSG A
*	333	98	Building Wall
*	573	98	Cement Concrete Sidewalk, HSG A
	15,855	84	Weighted Average
	4,534		28.60% Pervious Area
	11,321		71.40% Impervious Area

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

Subcatchment PR-1: PR-1



Summary for Subcatchment PR-2: PR-2

[49] Hint: Tc<2dt may require smaller dt

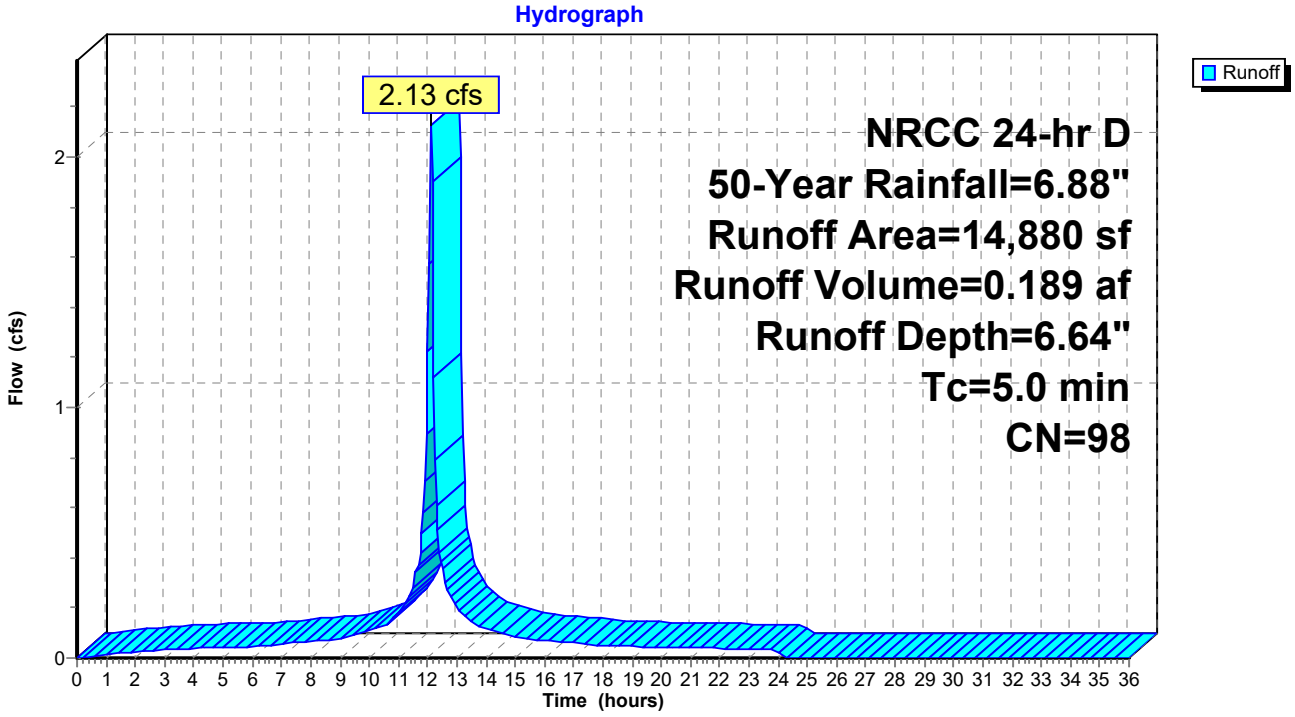
Runoff = 2.13 cfs @ 12.11 hrs, Volume= 0.189 af, Depth= 6.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 50-Year Rainfall=6.88"

Area (sf)	CN	Description
14,880	98	Roofs, HSG A
14,880		100.00% Impervious Area

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

Subcatchment PR-2: PR-2



Summary for Subcatchment PR-3: PR-3

[49] Hint: Tc<2dt may require smaller dt

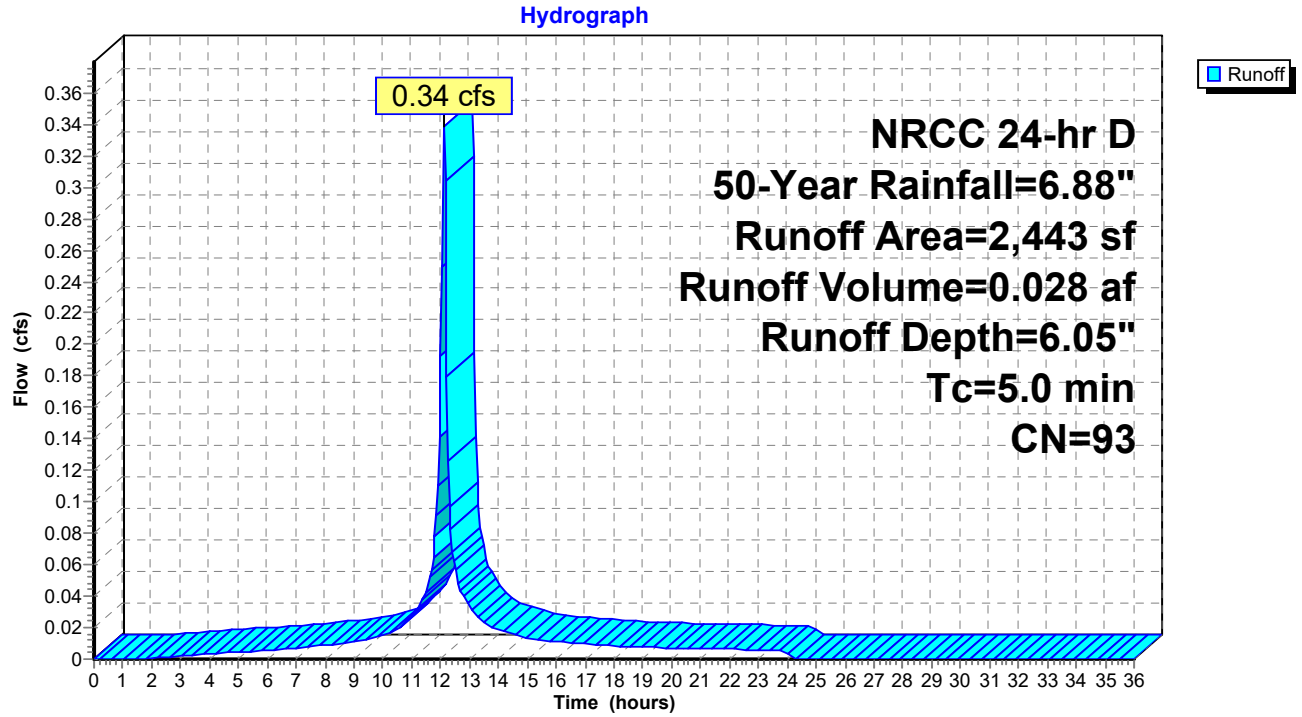
Runoff = 0.34 cfs @ 12.11 hrs, Volume= 0.028 af, Depth= 6.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 50-Year Rainfall=6.88"

	Area (sf)	CN	Description
	1,597	98	Paved parking, HSG A
	268	49	50-75% Grass cover, Fair, HSG A
*	578	98	Cement Concrete Sidewalk, HSG A
	2,443	93	Weighted Average
	268		10.97% Pervious Area
	2,175		89.03% Impervious Area

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

Subcatchment PR-3: PR-3



Summary for Subcatchment PR-4: PR-4

[49] Hint: Tc<2dt may require smaller dt

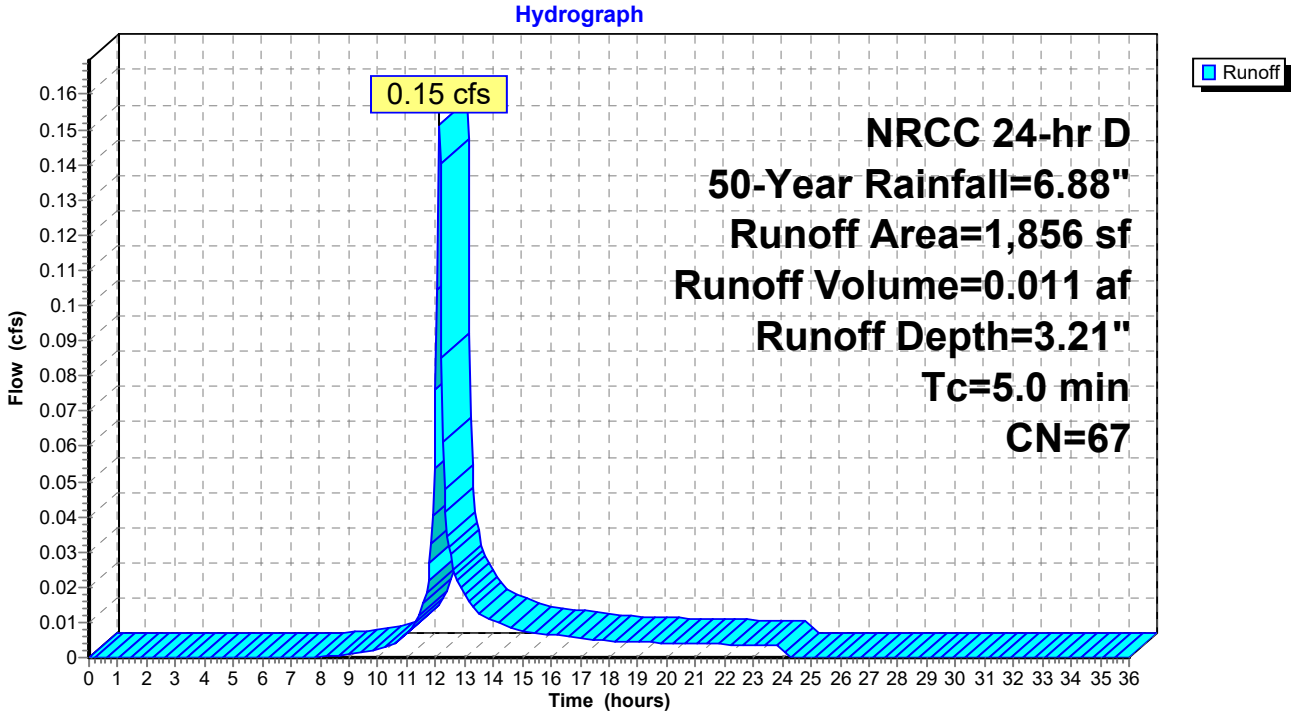
Runoff = 0.15 cfs @ 12.12 hrs, Volume= 0.011 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 50-Year Rainfall=6.88"

	Area (sf)	CN	Description
*	666	98	Cement Concrete Sidewalk, HSG A
	1,190	49	50-75% Grass cover, Fair, HSG A
	1,856	67	Weighted Average
	1,190		64.12% Pervious Area
	666		35.88% Impervious Area

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

Subcatchment PR-4: PR-4

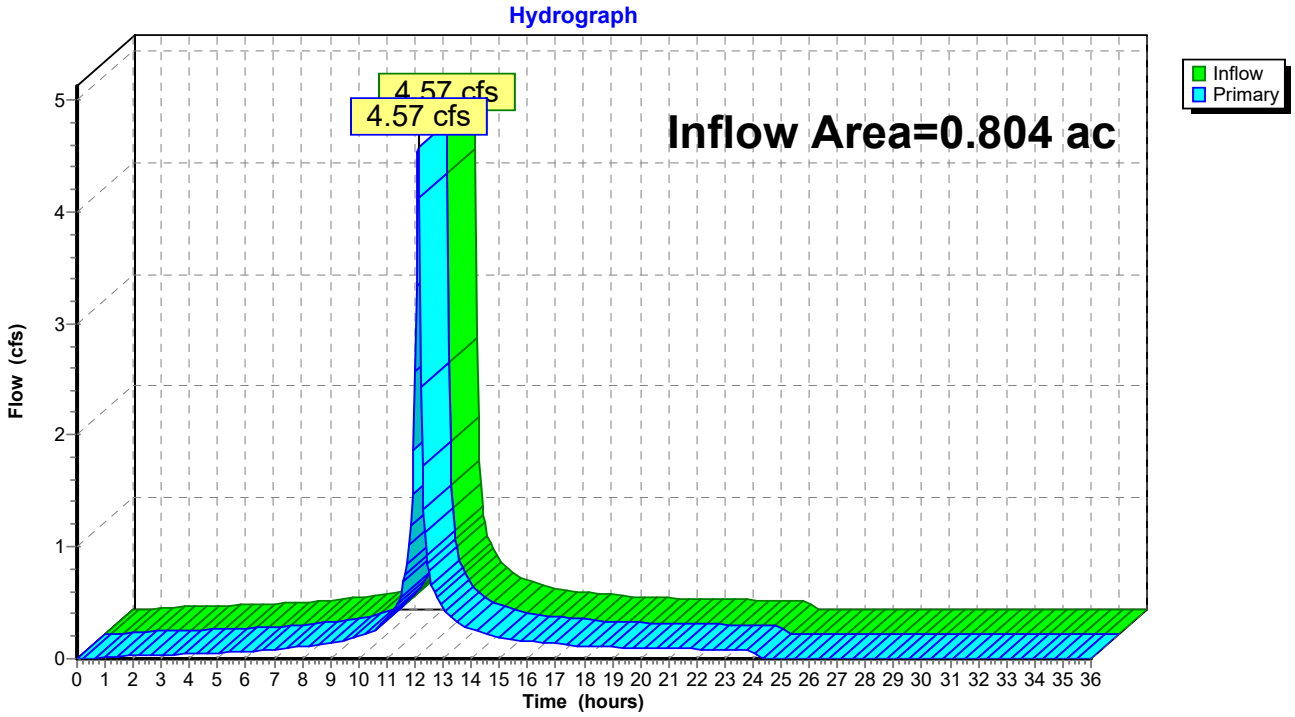


Summary for Link DP-1: Broadway Drainage

Inflow Area = 0.804 ac, 82.90% Impervious, Inflow Depth = 5.69" for 50-Year event
Inflow = 4.57 cfs @ 12.11 hrs, Volume= 0.381 af
Primary = 4.57 cfs @ 12.11 hrs, Volume= 0.381 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP-1: Broadway Drainage



B

Water Quality Data

65 Glenn Street, Lawrence, MA 01843
tel 978.794.1792 | fax 978.794.1793 | tecmass.com

CALCULATIONS

JOB: Proposed Residenial Development
JOB NUMBER: N0946.02
LOCATION: 14 Broadway, Dover, NH 03820
DATE: July 27, 2021
TITLE: Water Quality Flow Calculation
SHEET: 1 OF 1
CALCULATED BY: MWP
CHECKED BY: CPR

Water Quality Flow Calculation

$Q=(q)(A)(WQV)$

Q=flow rate associated with first 1-inch of runoff

q=unit peak discharge (in csm/in)

A=impervious surface drainage area (in square miles)

WQV=water quality volume in watershed inches (1-inch)

A=0.666 acres=1.04×10^{-3} square miles

CN=98

Tc=5 minutes

Use Tc to find q:

q=752 csm/inch

Q=(752 csm/inch)(1.04×10^{-3} square miles)(1.0 inch)

Q=0.782 cubic feet per second (cfs)

Location: **Treatment Train #1**

A BMP[1]	B TSS Removal Rate[1]	C Starting TSS Load*	D Amount Removed (B*C)	E Remaining Load (C-D)
Deep Sump and Hooded Catch Basins	**0.25**	**1.00**	**0.25**	**0.75**
Water Quality Unit (Stormceptor)	**0.77**	**0.75**	**0.58**	**0.17**

Total TSS Removal = **83%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: **N0946.02 14 Broadway Proposed Residential Development**

Prepared By: **TEC, Inc.**

Date: **7/27/2021**

*Equals remaining load from previous BMP (E) which enters the BMP

Fact Sheet #4

Stormwater Technology: Stormceptor

(Hydro Conduit, formerly CSR New England Pipe)

Revised February 2003

*The **Stormceptor Fact Sheet** is one in a series of fact sheets for stormwater technologies and related performance evaluations, which are undertaken by the **Massachusetts STrategic Envirotechnology Partnership (STEP).***

The STEP evaluation entitled, *Technology Assessment, Stormceptor CSR New England Pipe*, January 1998 is the information source for this fact sheet. When a more thorough understanding of a system is required, the full *Technology Assessment* should be reviewed. Copies are available for downloading from the STEP Web site (www.STEPSITE.org/) or by contacting the STEP Program (Phone: 617/626/1197, FAX: 617/626/1180, email: linda.benevides@state.ma.us). This fact sheet is subject to future updates as additional performance information becomes available.

Description/Definition

Stormceptor is a prefabricated, underground unit that separates oils, grease, and sediment from stormwater runoff when installed with an existing or new pipe conveyance system. The unit is divided into two chambers–a treatment and a flow bypass chamber. During typical storm events, runoff is directed by the inflow weir through a drop pipe into the lower treatment chamber where sediment, oil, and grease are separated from the flow by gravity. The bypass chamber is designed to convey excess stormwater, which overtops the inflow weir, through the system without treatment.

Equipment and Sizing

The on-line Stormceptor units are available in eight sizes ranging from six and twelve feet in diameter with capacities of 900 to 7200 gallons. Since issuing the STEP assessment in 1998, the manufacturer has expanded the Stormceptor product line to include a storm drain inlet (STC 450i) and three units (Models STC 11000, STC 13000, and STC16000). These systems are not included in the STEP evaluation. Users and decision-makers may require additional field test results and new data for these new systems in order to accept performance ratings, particularly if they are higher than those reported in the STEP technology assessment and this fact sheet.

Stormceptor units are available in either precast concrete or fiberglass for special applications. Concrete units are pre-engineered for HS-20 min. traffic loading at the surface. Fiberglass units can be used in areas where there is a potential for oil and chemical spills.

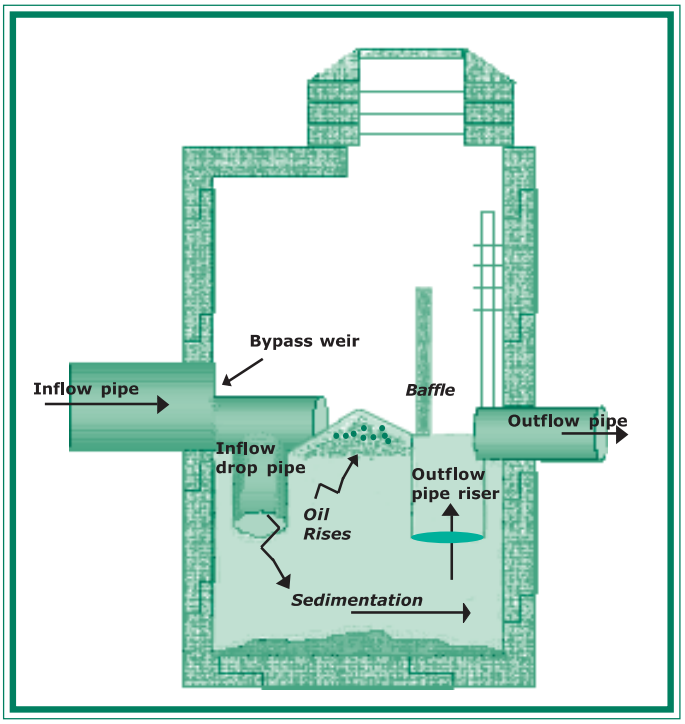


Figure 1. Stormceptor operation during average flow conditions.

Performance/Effectiveness

The system is designed to provide separation of sediment, oil, and grease from stormwater by routing runoff into a low-turbulence environment where solids settle and oils float out of solution. The system sizing is based on the drainage area, historical rainfall data, and the solids removal efficiency required. It is recommended that the system be used in combination with other stormwater controls to conform with the Massachusetts Stormwater Management Policy and standards.

An Imperial Model STC 2000 (equivalent to the Model STC 2400) in Edmonton, Canada treats flow from a 9.8 acre commercial parking lot. This system was monitored during four storm events in 1996 and shown to have an average total suspended solids (TSS) removal efficiency of 52 percent. In designing a system to achieve a comparable removal efficiency, the relationship between system size and impervious drainage area should be considered, as detailed in Table 1 and the Technology Assessment Report.

A Model STC 1200 in Westwood, Massachusetts treats flow from 0.65 acres consisting of a paved truck loading area at a manufacturing facility. The unit was monitored for six storm events in 1997, but only four events had measurable TSS influent concentrations. Of these four events, the average TSS removal efficiency was calculated to be 77 percent, which is less than the 80 percent removal targeted by the manufacturer.

Based on these field monitoring results, and when the unit sizing follows the guidance in Table 1, removal efficiencies between 52 percent and 77 percent may be achieved where installations have similar rainfall and land use characteristics as those reviewed for the STEP evaluation. It is recommended that additional field research and new data be evaluated to validate performance ratings higher than those verified by STEP.

Specific performance claims for oil and grease were not evaluated by STEP. However, total petroleum hydrocarbons (TPH) were analyzed during the Westwood study. Results indicated that the unit was effective in capturing oils.

Stormceptor Model Number	Maximum Impervious Area (acres)	
	77% TSS removal	52% TSS removal
STC 900	0.45	0.9
STC 1200	0.7	1.45
STC 1800	1.25	2.55
STC 2400	1.65	3.35
STC 3600	2.6	5.3
STC 4800	3.6	7.25
STC 6000	4.6	9.25
STC 7200	5.55	11.25

Table 1: Sizing for TSS removal (adapted from the manufacturer's sizing in the 1998 STEP Report) Use the table to determine a TSS removal rate. Use the new Rinker method for sizing Stormceptor units. The sizing method has been changed since publication of the STEP Report. **Note:** To achieve 52% and 77% TSS removal rates on some sites, it may be necessary to use lower maximum impervious areas than those in Table 1.

Technology Status

The Stormceptor system provides greater solids separation and higher TSS removal efficiencies than oil and grit separators. Stormceptor systems are among the category of hydrodynamic separators, which are flow-through devices with the capacity to settle or separate grit, oil, sediment, or other pollutants from stormwater. According to the U.S. Environmental Protection Agency, "Hydrodynamic separators are most effective where the materials to be removed from runoff are heavy particulates - which can be settled - or floatables - which can be captured, rather than solids with poor settleability or dissolved pollutants."

The field studies evaluated for the STEP assessment predate the Stormwater Best Management Practice Demonstration Tier II Protocol (2001), which is applicable in Massachusetts and other states in the Technology Acceptance Reciprocity Partnership (TARP), to ensure quality controlled studies that can be shared among participating states. Therefore, interstate reciprocity is not available to the manufacturer, based on performance claims that were evaluated by STEP in 1998. If the TARP Protocol requirements are fulfilled in the future, the manufacturer could pursue reciprocal verification for Stormceptor systems in participating TARP states. More information on the TARP Protocol is available on the following Web site: www.dep.state.pa.us/dep/deputate/pollprev/techservices/tarp.

Applications/Advantages

- Stormceptor systems identified in Table 1 should be used in combination with other BMPs to remove 80 percent of the average annual load of TSS (DEP Stormwater Policy Standard 4). Systems may be well suited for pretreatment in a mixed component system designed for stormwater recharge.
- Performance data show that Stormceptor may provide TSS removal rates in the range of 52 percent to 77 percent when sized according to Table 1. Higher TSS removal rates were achieved during low flow, low intensity storms with less than one third of an inch of runoff. Also, by reducing the impervious drainage area, relative to the system size, the STEP Technology Assessment Report indicated that higher removal efficiencies may be achievable. However, STEP recommends collection of additional data "representing a varied set of operating conditions over a realistic maintenance cycle to verify TSS removal rates greater than 80 percent."
- The Stormceptor system is suitable for new and retrofit applications. For retrofit applications, it should not

take the place of a catch basin for the systems that have been verified. Also, for retrofit applications, it should be installed in lateral lines and not main trunk lines.

- The system is particularly well suited in constricted areas and where space is limited.
- It also is suitable for use in areas of high potential pollutant loads (DEP Stormwater Policy Standard 5), where it may be used effectively in capturing and containing oil and chemical spills. *Web site:* www.state.ma.us/dep/brp/stormwtr/stormpub.htm.

Considerations/Limitations

- Systems are not expected to provide significant nutrient (nitrogen and phosphorus) or fecal coliform removal.
- The systems are not recommended for use in critical areas, such as public drinking water supplies, certified vernal pools, public swimming beaches, shellfish growing areas, cold water fisheries, and some Areas of Critical Environmental Concern (ACECs), except as a pretreatment device for BMPs that have been approved by DEP for use in critical areas. The structural BMPs approved for use in critical areas are described in Standard 6 of the Stormwater Management Policy, www.state.ma.us/dep/brp/stormwtr/stormpub.htm.
- There is a limited set of useful data for predicting the relationship between treatment efficiency and loading rates. Removal efficiencies have not been demonstrated for all unit sizes.
- Further research is needed to determine how much TSS bypasses the treatment chamber during certain, higher velocity storm events which recur less frequently.
- Systems require regular maintenance to minimize the potential for washout of the accumulated sediments.

Reliability/Maintenance

All BMPs require scheduled, routine maintenance to ensure that they operate as efficiently as possible. Although maintenance requirements are site specific, a general relationship between cleaning needs and depths of sediment has been established by the manufacturer. Inspection of the Stormceptor interior should be done after major storm events, particularly in the first year of operation. It is recommended that material in the treatment chamber be pumped out by a vacuum truck semiannually, or when the sediment and pollutant loads reach about 15 percent of the total storage. If the unit is used for spill containment, it should be pumped after the event is contained. Typical cleaning costs were estimated by the manufacturer in 1998 to be $250, with disposal costs averaging $300 to $500. The expected life of a system has been estimated to be 50 to 100 years.

Sediment Depths Indicating Required Maintenance	
Model Number	**Sediment Depth (feet)**
STC 900	0.5
STC 1200	0.75
STC 1800	1
STC 2400	1
STC 3600	1.25
STC 4800	1
STC 6000	1.5
STC 7200	1.25

Table 2: The Stormceptor clean out is based on 15 percent of the sediment storage volume in the

References

Winkler, E.S. 1998. "Technology Assessment, Stormceptor." University of Massachusetts, Amherst, MA. *STEP Web site:* www.STEPSITE.org/

Massachusetts Department of Environmental Protection and Office of Coastal Zone Management. 1997. "Stormwater Management Handbooks, Volumes One and Two." Boston, MA. *Handbooks Web site:* www.state.ma.us/dep/brp/stormwtr/stormpub.htm.

United States Environmental Protection Agency. "Storm Water Technology Fact Sheet Hydrodynamic Separators." EPA 832-F-99-017.

Stormceptor Web sites: www.rinkermaterials.com/stormceptor

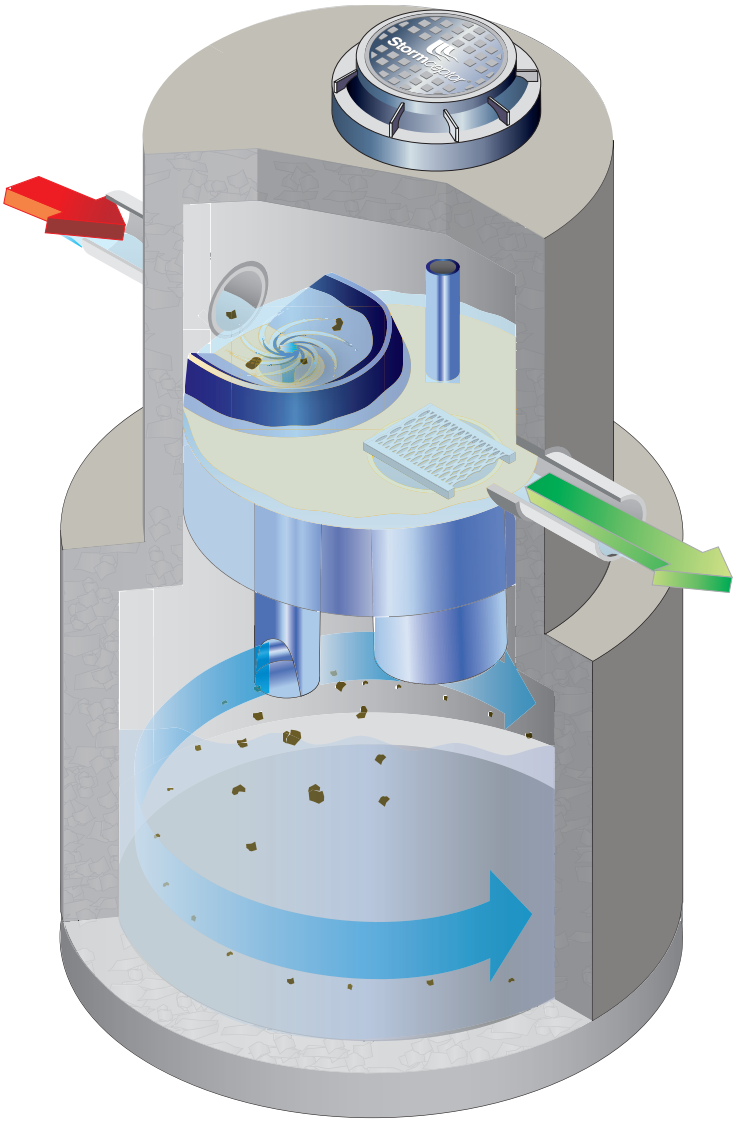
TARP Web site: www.dep.state.pa.us/dep/deputate/pollprev/techservices/tarp

STEP Verification vs. Regulatory Approval

STEP assistance to developers of innovative technologies and STEP verification of stormwater treatment systems is not required to receive necessary approvals from conservation commissions or the Department of Environmental Protection (DEP). However, if a system has received verfication, a conservation commission shall presume that the technology will function as proposed, provided the conditions are similar to those in which performance was verified. STEP reports are not technology approvals, and do not constitute an endorsement or recommendation for use. Questions on regulatory issues should be referred to the DEP regional offices.

Stormceptor®

Owner's Manual



Stormceptor is protected by one or more of the following patents:

Canadian Patent No. 2,137,942
Canadian Patent No. 2,175,277
Canadian Patent No. 2,180,305
Canadian Patent No. 2,180,338
Canadian Patent No. 2,206,338
Canadian Patent No. 2,327,768
U.S. Patent No. 5,753,115
U.S. Patent No. 5,849,181
U.S. Patent No. 6,068,765
U.S. Patent No. 6,371,690
U.S. Patent No. 7,582,216
U.S. Patent No. 7,666,303
Australia Patent No. 693.164
Australia Patent No. 707,133
Australia Patent No. 729,096
Australia Patent No. 779,401
Australia Patent No. 2008,279,378
Australia Patent No. 2008,288,900
Indonesia Patent No. 0007058
Japan Patent No. 3581233
Japan Patent No. 9-11476
Korean Patent No. 0519212
Malaysia Patent No. 118987
New Zealand Patent No. 314,646
New Zealand Patent No. 583,008
New Zealand Patent No. 583,583
South African Patent No. 2010/00682
South African Patent No. 2010/01796
Other Patents Pending

Table of Contents

1 – Stormceptor Overview

2 – Stormceptor Operation & Components

3 – Stormceptor Identification

4 – Stormceptor Inspection & Maintenance
    Recommended Stormceptor Inspection Procedure
    Recommended Stormceptor Maintenance Procedure

5 – Contact Information (Stormceptor Licensees)

Congratulations!

Your selection of a Stormceptor® means that you have chosen the most recognized and efficient stormwater oil/sediment separator available for protecting the environment. Stormceptor is a pollution control device often referred to as a “Hydrodynamic Separator (HDS)” or an “Oil Grit Separator (OGS)”, engineered to remove and retain pollutants from stormwater runoff to protect our lakes, rivers and streams from the harmful effects of non-point source pollution.

1 – Stormceptor Overview

Stormceptor is a patented stormwater quality structure most often utilized as a treatment component of the underground storm drain network for stormwater pollution prevention. Stormceptor is designed to remove sediment, total suspended solids (TSS), other pollutants attached to sediment, hydrocarbons and free oil from stormwater runoff. Collectively the Stormceptor provides spill protection and prevents non-point source pollution from entering downstream waterways.

Key benefits of Stormceptor include:

- Removes sediment, suspended solids, debris, nutrients, heavy metals, and hydrocarbons (oil and grease) from runoff and snowmelt.
- Will not scour or re-suspend trapped pollutants.
- Provides sediment and oil storage.
- Provides spill control for accidents, commercial and industrial developments.
- Easy to inspect and maintain (vacuum truck).
- “STORMCEPTOR” is *clearly* marked on the access cover (excluding inlet designs).
- Relatively small footprint.
- 3rd Party tested and independently verified.
- Dedicated team of experts available to provide support.

Model Types:

- STC (Standard)
- STF (Fiberglass)
- EOS (Extended Oil Storage)
- OSR (Oil and Sand Removal)
- MAX (Custom designed unit, specific to site)

Configuration Types:

- Inlet unit (accommodates inlet flow entry, and multi-pipe entry)
- In-Line (accommodates multi-pipe entry)
- Submerged Unit (accommodates the site’s tailwater conditions)
- Series Unit (combines treatment in two systems)

Please Maintain Your Stormceptor

To ensure long-term environmental protection through continued performance as originally designed for your site, **Stormceptor must be maintained**, as any stormwater treatment practice does. The need for maintenance is determined through inspection of the Stormceptor. Procedures for inspection are provided within this document. Maintenance of the Stormceptor is performed from the surface via vacuum truck.

If you require information about Stormceptor, or assistance in finding resources to facilitate inspections or maintenance of your Stormceptor please call your local Stormceptor Licensee or Imbrium® Systems.

2 – Stormceptor Operation & Components

Stormceptor is a flexibly designed underground stormwater quality treatment device that is unparalleled in its effectiveness for pollutant capture and retention using patented flow separation technology.

Stormceptor creates a non-turbulent treatment environment below the insert platform within the system. The insert diverts water into the lower chamber, allowing free oils and debris to rise, and sediment to settle under relatively low velocity conditions. These pollutants are trapped and stored below the insert and protected from large runoff events for later removal during the maintenance procedure.

With thousands of units operating worldwide, Stormceptor delivers reliable protection every day, in every storm. The patented Stormceptor design prohibits the scour and release of captured pollutants, ensuring superior water quality treatment and protection during even the most extreme storm events. Stormceptor's proven performance is backed by the longest record of lab and field verification in the industry.

Stormceptor Schematic and Component Functions

Below are schematics of two common Stormceptor configurations with key components identified and their functions briefly described.

Figure 1.

Inline Stormceptor

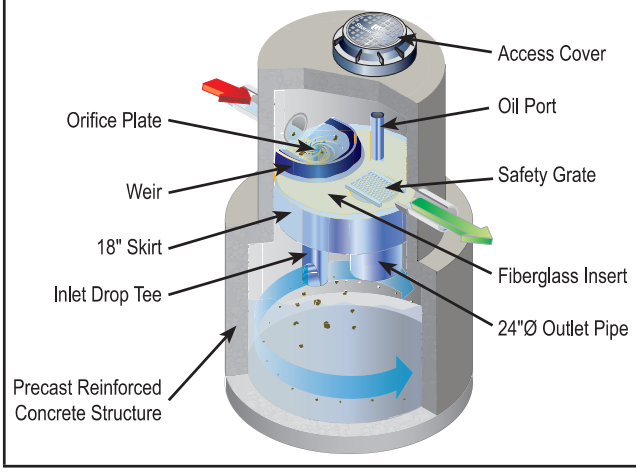
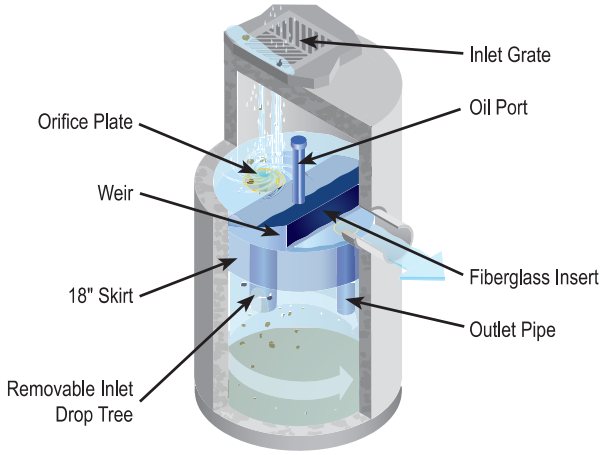


Figure 2.

Inlet Stormceptor



- **Manhole access cover** – provides access to the subsurface components
- **Precast reinforced concrete structure** – provides the vessel's watertight structural support
- **Fiberglass insert** – separates vessel into upper and lower chambers
- **Weir** – directs incoming stormwater and oil spills into the lower chamber
- **Orifice plate** – prevents scour of accumulated pollutants
- **Inlet drop tee** – conveys stormwater into the lower chamber
- **Fiberglass skirt** – provides double-wall containment of hydrocarbons
- **Outlet riser pipe** – conveys treated water to the upper chamber; primary vacuum line access port for sediment removal
- **Oil inspection port** – primary access for measuring oil depth and oil removal
- **Safety grate** – safety measure to cover riser pipe in the event of manned entry into vessel

3 – Stormceptor Identification

Stormceptor is available in both precast concrete and fiberglass vessels, with precast concrete often being the dominant material of construction.

In the Stormceptor, a patented, engineered fiberglass insert separates the structure into an upper chamber and lower chamber. The lower chamber will remain full of water, as this is where the pollutants are sequestered for later removal. Multiple Stormceptor model (STC, OSR, EOS, MAX and STF) configurations exist, each to be inspected and maintained in a similar fashion.

Each unit is easily identifiable as a Stormceptor by the trade name "Stormceptor" embossed on each access cover at the surface. To determine the location of "inlet" Stormceptor units with horizontal catch basin inlet, look down into the grate as the Stormceptor insert will be visible. The name "Stormceptor" is not embossed on inlet models due to the variability of inlet grates used/ approved across North America.

Once the location of the Stormceptor is determined, the model number may be identified by comparing the measured depth from the fiberglass insert level at the outlet pipe's invert (water level) to the bottom of the tank using **Table 1**.

In addition, starting in 1996 a metal serial number tag containing the model number has been affixed to the inside of the unit, on the fiberglass insert. If the unit does not have a serial number, or if there is any uncertainty regarding the size of the unit using depth measurements, please contact your local Stormceptor Representative for assistance.

Sizes/Models

Typical general dimensions and capacities of the standard precast STC, EOS & OSR Stormceptor models in both USA and Canada/International (excluding South East Asia and Australia) are provided in **Tables 1 and 2.** Typical rim to invert measurements are provided later in this document. The total depth for cleaning will be the sum of the depth from outlet pipe invert (generally the water level) to rim (grade) and the depth from outlet pipe invert to the precast bottom of the unit. Note that depths and capacities may vary slightly between regions.

Table 1A. (US) Stormceptor Dimensions – Insert to Base of Structure

STC Model	Insert to Base (in.)
450	60
900	55
1200	71
1800	105
2400	94
3600	134
4800	128
6000	150
7200	134
11000*	128
13000*	150
16000*	134

EOS Model	Insert to Base (in.)
4-175	60
9-365	55
12-590	71
18-1000	105
24-1400	94
36-1700	134
48-2000	128
60-2500	150
72-3400	134
110-5000*	128
130-6000*	150
160-7800*	134

OSR Model	Insert to Base (in.)
65	60
140	55
250	94
390	128
560	134
780*	128
1125*	134

Typical STF m (in.)
1.5 (60)
1.5 (61)
1.8 (73)
2.9 (115)
2.3 (89)
3.2 (127)
2.9 (113)
3.5 (138)
3.3 (128)

Notes:

1. *Depth Below Pipe Inlet Invert to the Bottom of Base Slab can vary slightly by manufacturing facility, and can be modified to accommodate specific site designs, pollutant loads or site conditions. Contact your local representative for assistance.*

**Consist of two chamber structures in series.*

Table 1B. (CA & Int'l) Stormceptor Dimensions – Insert to Base of Structure

STC Model	Insert to Base (m)
300	1.5
750	1.5
1000	1.8
1500	2.8
2000	2.8
3000	3.7
4000	3.4
5000	4.0
6000	3.7
9000*	3.4
11000*	4.0
14000*	3.7

EOS Model	Insert to Base (m)
300	1.5
750	1.5
1000	1.8
2000	2.8
3000	3.7
4000	3.4
5000	4.0
6000	3.7
9000*	3.4
10000*	4.0
14000*	3.7

OSR Model	Insert to Base (m)
300	1.7
750	1.6
2000	2.6
4000	3.6
6000	3.7
9000*	3.6
14000*	3.7

Typical STF m (in.)
1.5 (60)
1.5 (61)
1.8 (73)
2.9 (115)
2.3 (89)
3.2 (127)
2.9 (113)
3.5 (138)
3.3 (128)

Notes:

1. *Depth Below Pipe Inlet Invert to the Bottom of Base Slab can vary slightly by manufacturing facility, and can be modified to accommodate specific site designs, pollutant loads or site conditions. Contact your local representative for assistance.*

**Consist of two chamber structures in series.*

Table 2A. (US) Storage Capacities

STC Model	Hydrocarbon Storage Capacity gal	Sediment Capacity ft^3	**EOS Model**	Hydrocarbon Storage Capacity gal	**OSR Model**	Hydrocarbon Storage Capacity gal	Sediment Capacity ft^3
450	86	46	**4-175**	175	**065**	115	46
900	251	89	**9-365**	365	**140**	233	58
1200	251	127	**12-590**	591			
1800	251	207	**18-1000**	1198			
2400	840	205	**24-1400**	1457	**250**	792	156
3600	840	373	**36-1700**	1773			
4800	909	543	**48-2000**	2005	**390**	1233	465
6000	909	687	**60-2500**	2514			
7200	1059	839	**72-3400**	3418	**560**	1384	690
11000*	2797	1089	**110-5000***	5023	**780***	2430	930
13000*	2797	1374	**130-6000***	6041			
16000*	3055	1677	**160-7800***	7850	**1125***	2689	1378

Notes:

1. *Hydrocarbon & Sediment capacities can be modified to accommodate specific site design requirements, contact your local representative for assistance.*

**Consist of two chamber structures in series.*

Table 2B. (CA & Int'l) Storage Capacities

STC Model	Hydrocarbon Storage Capacity L	Sediment Capacity L	EOS Model	Hydrocarbon Storage Capacity L	OSR Model	Hydrocarbon Storage Capacity L	Sediment Capacity L
300	300	1450	**300**	662	**300**	300	1500
750	915	3000	**750**	1380	**750**	900	3000
1000	915	3800	**1000**	2235			
1500	915	6205					
2000	2890	7700	**2000**	5515	**2000**	2790	7700
3000	2890	11965	**3000**	6710			
4000	3360	16490	**4000**	7585	**4000**	4700	22200
5000	3360	20940	**5000**	9515			
6000	3930	26945	**6000**	12940	**6000**	5200	26900
9000*	10555	32980	**9000***	19010	**9000***	9300	33000
11000*	10555	37415	**10000***	22865			
14000*	11700	53890	**14000***	29715	**14000***	10500	53900

Notes:

1. *Hydrocarbon & Sediment capacities can be modified to accommodate specific site design requirements, contact your local representative for assistance.*

**Consist of two chamber structures in series.*

4 – Stormceptor Inspection & Maintenance

Regular inspection and maintenance is a proven, cost-effective way to maximize water resource protection for all stormwater pollution control practices, and is required to insure proper functioning of the Stormceptor. Both inspection and maintenance of the Stormceptor is easily performed from the surface. Stormceptor's patented technology has no moving parts, simplifying the inspection and maintenance process.

Please refer to the following information and guidelines before conducting inspection and maintenance activities.

When is inspection needed?

- Post-construction inspection is required prior to putting the Stormceptor into service.
- Routine inspections are recommended during the first year of operation to accurately assess the sediment accumulation.
- Inspection frequency in subsequent years is based on the maintenance plan developed in the first year.
- Inspections should also be performed immediately after oil, fuel, or other chemical spills.

When is maintenance cleaning needed?

- For optimum performance, the unit should be cleaned out once the sediment depth reaches the recommended maintenance sediment depth, which is approximately 15% of the unit's total storage capacity (see **Table 2**). The frequency should be adjusted based on historical inspection results due to variable site pollutant loading.

- Sediment removal is easier when removed on a regular basis at or prior to the recommended maintenance sediment depths, as sediment build-up can compact making removal more difficult.
- The unit should be cleaned out immediately after an oil, fuel or chemical spill.

What conditions can compromise Stormceptor performance?

- If construction sediment and debris is not removed prior to activating the Stormceptor unit, maintenance frequency may be reduced.
- If the system is not maintained regularly and fills with sediment and debris beyond the capacity as indicated in **Table 2**, pollutant removal efficiency may be reduced.
- If an oil spill(s) exceeds the oil capacity of the system, subsequent spills may not be captured.
- If debris clogs the inlet of the system, removal efficiency of sediment and hydrocarbons may be reduced.
- If a downstream blockage occurs, a backwater condition may occur for the Stormceptor and removal efficiency of sediment and hydrocarbons may be reduced.

What training is required?

The Stormceptor is to be inspected and maintained by professional vacuum cleaning service providers with experience in the maintenance of underground tanks, sewers and catch basins. For typical inspection and maintenance activities, no specific supplemental training is required for the Stormceptor. Information provided within this Manual (provided to the site owner) contains sufficient guidance to maintain the system properly.

In unusual circumstances, such as if a damaged component needs replacement or some other condition requires manned entry into the vessel, confined space entry procedures must be followed. Only professional maintenance service providers trained in these procedures should enter the vessel. Service provider companies typically have personnel who are trained and certified in confined space entry procedures according to local, state, and federal standards.

What equipment is typically required for inspection?

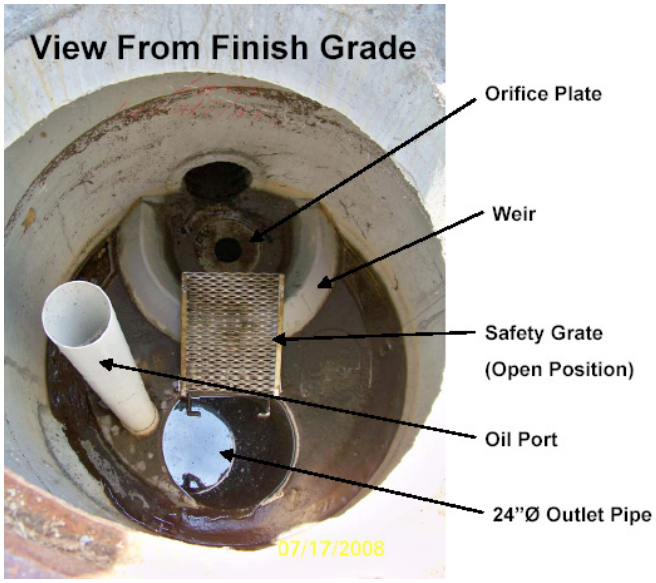
- Manhole access cover lifting tool
- Oil dipstick / Sediment probe with ball valve (typically ¾-inch to 1-inch diameter)
- Flashlight
- Camera
- Data log / Inspection Report
- Safety cones and caution tape
- Hard hat, safety shoes, safety glasses, and chemical-resistant gloves

Recommended Stormceptor Inspection Procedure:

- Stormceptor is to be inspected from grade through a standard surface manhole access cover.
- Sediment and oil depth inspections are performed with a sediment probe and oil dipstick.
- Oil depth is measured through the oil inspection port, either a 4-inch (100 mm) or 6-inch (150 mm) diameter port.
- Sediment depth can be measured through the oil inspection port or the 24-inch (610 mm) diameter outlet riser pipe.
- Inspections also involve a visual inspection of the internal components of the system.

Figure 3.

Figure 4.



What equipment is typically required for maintenance?

- Vacuum truck equipped with water hose and jet nozzle
- Small pump and tubing for oil removal
- Manhole access cover lifting tool
- Oil dipstick / Sediment probe with ball valve (typically ¾-inch to 1-inch diameter)
- Flashlight
- Camera
- Data log / Inspection Report
- Safety cones
- Hard hats, safety shoes, safety glasses, chemical-resistant gloves, and hearing protection for service providers
- Gas analyzer, respiratory gear, and safety harness for specially trained personnel if confined space entry is required

Recommended Stormceptor Maintenance Procedure

Maintenance of Stormceptor is performed using a vacuum truck.

No entry into the unit is required for maintenance. ***DO NOT ENTER THE STORMCEPTOR CHAMBER*** unless you have the proper personal safety equipment, have been trained and are qualified to enter a confined space, as identified by local Occupational Safety and Health Regulations (e.g. 29 CFR 1910.146 or Canada Occupational Safety and Health Regulations – SOR/86-304). Without the proper equipment, training and permit, entry into confined spaces can result in serious bodily harm and potentially death. Consult local, provincial, and/or state regulations to determine the requirements for confined space entry. Be aware, and take precaution that the Stormceptor fiberglass insert may be slippery. In addition, be aware that some units do not have a safety grate to cover the outlet riser pipe that leads to the submerged, lower chamber.

- Ideally maintenance should be conducted during dry weather conditions when no flow is entering the unit.
- Stormceptor is to be maintained through a standard surface manhole access cover.
- Insert the oil dipstick into the oil inspection port. If oil is present, pump off the oil layer into separate containment using a small pump and tubing.
- Maintenance cleaning of accumulated sediment is performed with a vacuum truck.
    - For 6-ft (1800 mm) diameter models and larger, the vacuum hose is inserted into the lower chamber via the 24-inch (610 mm) outlet riser pipe.
    - For 4-ft (1200 mm) diameter model, the removable drop tee is lifted out, and the vacuum hose is inserted into the lower chamber via the 12-inch (305 mm) drop tee hole.

Figure 5.

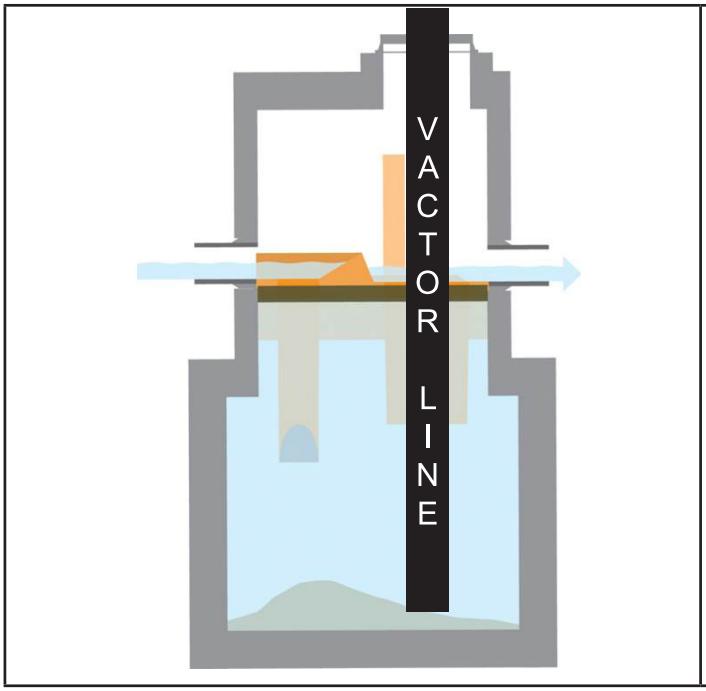
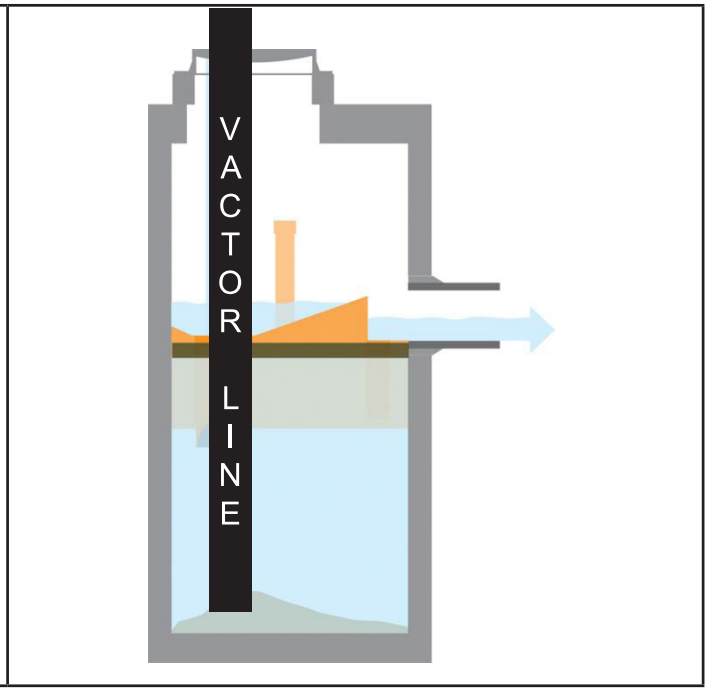


Figure 6.



- Using the vacuum hose, decant the water from the lower chamber into a separate containment tank or to the sanitary sewer, if permitted by the local regulating authority.
- Remove the sediment sludge from the bottom of the unit using the vacuum hose. For large Stormceptor units, a flexible hose is often connected to the primary vacuum line for ease of movement in the lower chamber.
- Units that have not been maintained regularly, have surpassed the maximum recommended sediment capacity, or contain damaged components may require manned entry by trained personnel using safe and proper confined space entry procedures.

Figure 7.

Figure 8.

A maintenance worker stationed at the above ground surface uses a vacuum hose to evacuate water, sediment, and debris from the system.

What is required for proper disposal?

The requirements for the disposal of material removed from Stormceptor units are similar to that of any other stormwater treatment Best Management Practices (BMP). Local guidelines should be consulted prior to disposal of the separator contents. In most areas the sediment, once dewatered, can be disposed of in a sanitary landfill. It is not anticipated that the sediment would be classified as hazardous waste. This could be site and pollutant dependent. In some cases, approval from the disposal facility operator/agency may be required.

What about oil spills?

Stormceptor is often implemented in areas where there is high potential for oil, fuel or other hydrocarbon or chemical spills. Stormceptor units should be cleaned immediately after a spill occurs by a licensed liquid waste hauler. You should also notify the appropriate regulatory agencies as required in the event of a spill.

What if I see an oil rainbow or sheen at the Stormceptor outlet?

With a steady influx of water with high concentrations of oil, a sheen may be noticeable at the Stormceptor outlet. This may occur because a hydrocarbon rainbow or sheen can be seen at

very small oil concentrations (< 10 ppm). Stormceptor is effective at removing 95% of free oil, and the appearance of a sheen at the outlet with high influent oil concentrations does not mean that the unit is not working to this level of removal. In addition, if the influent oil is emulsified, the Stormceptor will not be able to remove it. The Stormceptor is designed for free oil removal and not emulsified or dissolved oil conditions.

What factors affect the costs involved with inspection/maintenance?

The Vacuum Service Industry for stormwater drainage and sewer systems is a well-established sector of the service industry that cleans underground tanks, sewers and catch basins. Costs to clean Stormceptor units will vary. Inspection and maintenance costs are most often based on unit size, the number of units on a site, sediment/oil/hazardous material loads, transportation distances, tipping fees, disposal requirements and other local regulations.

What factors predict maintenance frequency?

Maintenance frequency will vary with the amount of pollution on your site (number of hydrocarbon spills, amount of sediment, site activity and use, etc.). It is recommended that the frequency of maintenance be increased or reduced based on local conditions. If the sediment load is high from an unstable site or sediment loads transported from upstream catchments, maintenance may be required semi-annually. Conversely once a site has stabilized, maintenance may be required less frequently (for example: two to seven year, site and situation dependent). Maintenance should be performed immediately after an oil spill or once the sediment depth in Stormceptor reaches the value specified in **Table 3** based on the unit size.

Table 3A. (US) Recommended Sediment Depths Indicating Maintenance

STC Model	Maintenance Sediment depth (in)	EOS Model	Maintenance Sediment depth (in)	Oil Storage Depth (in)	OSR Model	Maintenance Sediment depth (in)
450	8	**4-175**	9	24	**065**	8
900	8	**9-365**	9	24	**140**	8
1200	10	**12-590**	11	39		
1800	15					
2400	12	**24-1400**	14	68	**250**	12
3600	17	**36-1700**	19	79		
4800	15	**48-2000**	16	68	**390**	17
6000	18	**60-2500**	20	79		
7200	15	**72-3400**	17	79	**560**	17
11000*	17	**110-5000***	16	68	**780***	17
13000*	20	**130-6000***	20	79		
16000*	17	**160-7800***	17	79	**1125***	17

Note:

1. *The values above are for typical standard units.*

**Per structure.*

Table 3B. (CA & Int'l) Recommended Sediment Depths Indicating Maintenance

STC Model	Maintenance Sediment depth (mm)	EOS Model	Maintenance Sediment depth (mm)	Oil Storage Depth (mm)	OSR Model	Maintenance Sediment depth (mm)
300	225	**300**	225	610	**300**	200
750	230	**750**	230	610	**750**	200
1000	275	**1000**	275	990		
1500	400					
2000	350	**2000**	350	1727	**2000**	300
3000	475	**3000**	475	2006		
4000	400	**4000**	400	1727	**4000**	375
5000	500	**5000**	500	2006		
6000	425	**6000**	425	2006	**6000**	375
9000*	400	**9000***	400	1727	**9000***	425
11000*	500	**10000***	500	2006		
14000*	425	**14000***	425	2006	**14000***	425

Note:

1. *The values above are for typical standard units.*

   **Per structure.*

Replacement parts

Since there are no moving parts during operation in a Stormceptor, broken, damaged, or worn parts are not typically encountered. Therefore, inspection and maintenance activities are generally focused on pollutant removal. However, if replacements parts are necessary, they may be purchased by contacting your local Stormceptor Representative, or Imbrium Systems.

The benefits of regular inspection and maintenance are many – from ensuring maximum operation efficiency, to keeping maintenance costs low, to the continued protection of natural waterways – and provide the key to Stormceptor's long and effective service life.

Stormceptor Inspection and Maintenance Log

Stormceptor Model No: _____

Allowable Sediment Depth: _____

Serial Number: _____

Installation Date: _____

Location Description of Unit: _____

Other Comments: _____

Contact Information

Questions regarding the Stormceptor can be addressed by contacting your area Stormceptor Licensee, Imbrium Systems, or visit our website at www.stormceptor.com.

Stormceptor Licensees:

CANADA

Lafarge Canada Inc.
www.lafargepipe.com

403-292-9502 / 1-888-422-4022	Calgary, AB
780-468-5910	Edmonton, AB
204-958-6348	Winnipeg, MB, NW. ON, SK

Langley Concrete Group
www.langleyconcretegroup.com

604-502-5236	BC

Hanson Pipe & Precast Inc.
www.hansonpipeandprecast.com

519-622-7574 / 1-888-888-3222	ON

Lécuyer et Fils Ltée.
www.lecuyerbeton.com

450-454-3928 / 1-800-561-0970	QC

Strescon Limited
www.strescon.com

902-494-7400	NS, NF
506-633-8877	NB, PE

UNITED STATES

Rinker Materials
www.rinkerstormceptor.com
1-800-909-7763

AUSTRALIA & SOUTHEAST ASIA, including New Zealand & Japan

Humes Water Solutions
www.humes.com.au
+61 7 3364 2894

Imbrium Systems Inc. & Imbrium Systems LLC

Canada	1-416-960-9900 / 1-800-565-4801
United States	1-301-279-8827 / 1-888-279-8826
International	+1-416-960-9900 / +1-301-279-8827
Email	info@imbriumsystems.com

www.imbriumsystems.com
www.stormceptor.com

RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
235 Promenade Street, Providence, RI 02908-5767 TDD 401-222-4462

Rhode Island Alternative Stormwater Technology Certification

Vendor Contact:
Mr. John F. Czach, PE
Regional Engineer
Rinker Material – Concrete Pipe Division
69 Neck Road
Westfield, MA 01085
(413) 562-3647
Johnf.czach@cemex.com
www.rinkerpipe.com

Technology Name:
Stormceptor© Stormwater Treatment System (Specific models attached)

Approval Type:
Pretreatment/Retrofits
LUPPHL (conditional)

Certification Dates:
Issued: February 5, 2016
Expires: February 5, 2021

The Technology Review Team which consists of members from the Department of Environmental Management (DEM), and the Coastal Resources Management Council (CRMC) have reviewed the Stormceptor© Application to for Technology Approval and accepted use for Stormwater Treatment in the State of Rhode Island.

In accordance with Section 3.2.3 of the Rhode Island Stormwater Design and Installation Standards Manual (RISDISM) amended March 2015, Rinker Material has petitioned the permitting agencies to add this technology to the list of acceptable structural stormwater controls described in Chapter 6 – Pretreatment Practices. The applicant has submitted monitoring results and supporting information developed in accordance with the provisions of the Technology Assessment Protocol (TAPE and TARP) included in Appendix J of the RISDISM.

The Stormceptor© system is a pretreatment or retrofit device that captures both TSS and free oil (TPH) from stormwater runoff. The Stormceptor© is a vertically oriented cylindrical structure manufactured from pre-cast reinforced concrete and fiber reinforced plastic, designed to remove hydrocarbons and sediment from stormwater. This unit is approved for **in-line** as well as **off-line** use.

The manufacturer has demonstrated that this product meets the minimum water quality standards for pretreatment. It is approved for the following pollutant removals; **75% TSS. The Stormceptor is NOT recognized for removal of Pathogens, Total Phosphorus or, Nitrogen**. This device may be used as an **Oil and Grit Separator** for use on **LUHPPL sites** in accordance with section 6.6.2 of the Rhode Island Designs and Installations Standards Manual provided the following conditions are met.

I. GENERAL CERTIFICATION REQUIREMENTS

1. The STC devices listed Appendix F – "Summary Table of Stormceptor© Models" are **certified as pretreatment devices** in Rhode Island provided the device treats the flow of the first inch of runoff from the capture area unless waived by the state permitting agency.

2. The EOS 12-590 and the STC 2400 or greater models meet (**LUHPPL**) minimum requirements for sites that are classified as **LUHPPLS or MSGPs** that are required to have an oil and water separator. These models meet the minimum 500 gallon hydrocarbon storage capacity required for pretreatment.

3. The applicant must provide the RI specific manufacturers design sheet for Departmental review or provide the manufacturer's review approval. All units that capture greater than one acre of impervious cover must be reviewed by the manufacturer.

30% post-consumer fiber

4. This device is **certified as a retrofit device** in accordance with Section 1.2 and Appendix C of the RISDISM. Retrofits are allowed flexibility with regards to the standards in the RISDISM, but in general they are considered effective if they capture at least 50% of the catchment, and meet the target water quality treatment of at least the first 0.5 inches of the water quality volume.

5. The approved devices shall be located such that they are accessible for maintenance and/or emergency removal of oil or chemical spills.

II. MAINTENANCE REQUIREMENTS

1. The device must be maintained in accordance with the manufacturer's specifications and before the sediment capacity exceeds 15%.

2. The device must be maintained by a manufacturers recognized vendor, a licensed waste hauler, or a municipal employee trained to operate a vacuum truck.

3. All material removed from the unit must by properly disposed of and is the responsibility of the owner.

III. REPORTING REQUIREMENTS

1. The Vendor shall provide a listing with Latitude and Longitude of the site center point to the RIDEM Office of Water Resources of all systems within the State of Rhode Island on an annual basis.

IV. RIGHTS OF THE RIDEM AND CRMC

1. The RIDEM may suspend, modify or revoke this approval for cause, including but not limited to: non-compliance with any of the conditions or provisions of this approval, misrepresentation or failure to fully disclose all relevant data, or receipt of new information indicating that the use of the System is contrary to the public interest, public health or the environment.

2. This approval does not represent an endorsement of the System by the RIDEM. This letter of approval may be reproduced only in its entirety.

B. M Moore 2-8-16

Brian M. Moore, P.E. Date
Chief, Groundwater and Wetlands Protection

ATTACHMENT

Summary Table of Stormceptor Models

Stormceptor Model	Total Storage Volume U.S. Gal (L)	Hydrocarbon Storage Capacity U.S. Gal (L)	Max. Sediment Capacity ft^3 (L)	Water Quality Flow (cfs)	* Approx. Impervious Area (Ac)
STC 450i	470 (1,780)	86 (330)	46 (1,302)	0.283	0.38
STC 900	952 (3,600)	251 (950)	89 (2,520)	0.636	0.85
STC 1200	1,234 (4,670)	251 (950)	127 (3,596)	0.636	0.85
STC 1800	1,833 (6,940)	251 (950)	207 (5,861)	0.636	0.85
EOS 12-590	1,833 (6,940)	590 (2,233)	166 (4,707)	0.636	0.85
STC 2400	2,462 (9,320)	840 (3,180)	205 (5,805)	1.059	1.42
STC 3600	3,715 (1,406)	840 (3,180)	373 (10,562)	1.059	1.42
STC 4800	5,059 (1,950)	909 (3,440)	543 (15,376)	1.766	2.38
STC 6000	6,136 (23,230)	909 (3,440)	687 (19,453)	1.766	2.38
STC 7200	7,420 (28,090)	1,059 (4,010)	839 (23,757)	2.472	3.33
STC 11000	11,194 (42,370)	2,797 (10,590)	1,086 (30,752)	3.531	4.75
STC 13000	13,348 (50,530)	2,797 (10,590)	1,374 (38,907)	3.531	4.75
STC 16000	15,918 (60,260)	3,055 (11,560)	1,677 (47,487)	4.944	6.66

* Impervious areas are approximate only. Actual areas will vary based on site-specific conditions.

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AT AMHERST
Water Resources Research Center
Blaisdell House, UMass
310 Hicks Way
Amherst, MA 01003

Massachusetts Stormwater Evaluation Project

(413) 545-5532
(413) 545-2304 FAX
www.mastep.net

MASTEP Technology Review

Technology Name: Stormceptor

Studies Reviewed: Final NJCAT Technology Verification Stormceptor STC900 September 2004; Coventry University Study, 1996; Technology Assessment, University of Massachusetts, 1997; SeaTac Stormceptor Performance report 2001; SWAMP report Ontario 2004; Phoenix Group Edmonton report 1995; Stormceptor 1200 Field Evaluation report 2004; Applied Hydrology Associates Denver report 2003; Rinker Materials Como Park St. Paul MN report 2002; VA DOT / UVA "Testing of Ultra-Urban Stormwater Best Management Practices" report 2001.
Hydrodynamic Separator Sediment Retention Testing, Mohseni, 2010.

Date: September 17, 2013

Reviewer: Jerry Schoen

Rating: 2

Brief rationale for rating: This rating is primarily based on the 2005 NJCAT Technology Verification study. In general, this was a well-conducted test, which in large part followed NJDEP test guidelines for laboratory studies, which MASTEP considers as the laboratory equivalent of TARP field protocols. Issues of concern: the study measured suspended sediment concentration (SSC) rather than total suspended solids (TSS). Although SSC is considered by many scientists to be the preferred method, it is at odds with Massachusetts stormwater regulations, which are based on TSS treatment. Comparing SSC and TSS results is considered an inexact science. The test was conducted with higher influent sediment concentrations than is preferred, but results were fairly consistent across all ranges studied. The particle size distribution also appears to be slightly higher than the target test range. There are additional field studies that in general support the results obtained in this laboratory studies. These studies do not satisfy TARP protocols, but they do not contradict results obtained in the NJCAT study.

TARP Requirements Not Met*:

- Measurements in TSS.
- Influent sediment concentration is 100 – 300 mg/l: actual was 153-460.
- No documentation of a Quality Assurance Project Plan
- Third party studies are preferred. This was conducted by Stormceptor personnel, with sample analyses conducted by an external laboratory.

Other Comments:
* The 2010 Mohseni study evaluates the susceptibility of the Stormceptor to scouring, or washout of collected sediments. Report concluded that the unit does not scour at high flows as long as sediment depth does not exceed maintenance level.

* Criteria also based on NJDEP laboratory testing guidelines.

C

Geotechnical Data

JOHN TURNER CONSULTING

GEOTECHNICAL DATA SUMMARY

TEST PITS & INFILTRATION TESTING

PROPOSED PARKING LOT
519 Broadway
Dover, New Hampshire

Prepared for:

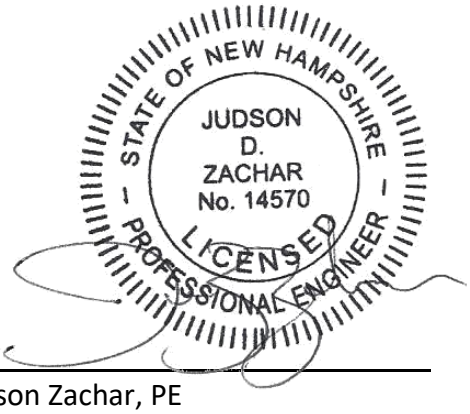
Nick Couturier
Downtown Dover Storage, LLC
Dover, NH

Prepared by:

John Turner Consulting, Inc.
19 Dover Street
Dover, NH 03820

JTC Project No. 20-04-097

December 7, 2020



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JOHN TURNER
CONSULTING

Table of Contents

1.0 INTRODUCTION 1
2.0 PROJECT INFORMATION 1
Site and Project Description 1
3.0 SUBSURFACE EXPLORATION 1
4.0 SUBSURFACE CONDITIONS 2
Existing Fill 2
Marine Silt and Clay 2
Groundwater 2
5.0 GEOTECHNICAL LABORATORY TESTING 2
6.0 INFILTRATION TESTING 3
Testing Setup 3
Infiltration Test Procedure 3
Infiltration Test Results 4
7.0 CLOSING 4
APPENDIX A: Limitations
APPENDIX B: Test Pit & Infiltration Test Location Plan
APPENDIX C: Test Pit Logs & Key To Symbols And Descriptions
APPENDIX D: Laboratory Test Results
APPENDIX E: Site Photographs

1.0 INTRODUCTION

John Turner Consulting, Inc. (JTC) is pleased to present this *Geotechnical Data Summary* for the Proposed Parking Lot at 519 Broadway in Dover, New Hampshire. The purpose of the geotechnical investigation was to obtain information on the subsurface conditions at the site and provide geotechnical engineering recommendations to support the planning, design, and construction of the proposed project. Infiltration testing was performed on November 12, 2020.

The contents of this report are subject to the attached *Limitations*.

2.0 PROJECT INFORMATION

The following subsections provide general descriptions of the site, the proposed development, and the regional geologic setting.

Site and Project Description

The subject property is a partially developed parcel of land in downtown Dover with numerous commercial and residential buildings within close proximity. The site is bounded by Broadway to the south, railroad tracks to the north, and commercial/retail businesses to the east and west.

While the project is still in the schematic state, JTC understands that the proposed development involves the construction of a new parking lot accessible from Broadway.

3.0 SUBSURFACE EXPLORATION

On November 11, 2020, a total of three (3) test pits (designated as TP-1, TP-2, and TP-3) and three shallower, adjacent infiltration test pits (IT-1, IT-2, and IT-3) were excavated by O'Brien Landscape Co. utilizing a Bobcat mini excavator. JTC set up the PVC pipes in the ground at designated depths and performed infiltration testing directly adjacent to TP-1, TP-2, and TP-3. The test pits were advanced to depths ranging from 7.5 feet to 8.0 feet below the ground surface (bgs). The test pits were backfilled with soil cuttings upon completion of the excavation. Selected soil samples were sealed in moisture-tight containers and returned to JTC's office for further review, classification, and/or geotechnical laboratory testing. Detailed records of the drilling/excavation, testing, sampling performed, and the soil, bedrock, and groundwater conditions observed at each test boring location are provided on the attached *Test Pit Logs*. A brief summary has been provided below.

4.0 SUBSURFACE CONDITIONS

Existing Fill

Soils interpreted to be Existing Fill were encountered at TP-1, TP-2, and TP-3. The Fill material consisted of dark brown, sand with silt (SP-SM) at TP-1 and TP-2. The Fill encountered at TP-3 consisted of light brown, sand (SP). This soil layer was approximately 2.5 to 5.5 feet thick.

Marine Silt and Clay

Soils interpreted to be Marine Silt and Clay were encountered below the Existing Fill layer to the full depth of excavation terminated at all test pit locations. The material typically consisted of light brown Clay (CH).

Groundwater

Groundwater was only encountered during our subsurface exploration at TP-1, near 6.0 feet. JTC estimates that this investigation occurred during a period of seasonally moderate groundwater. Site groundwater levels should be expected to fluctuate seasonally and in response to precipitation events, construction activity, site use, and adjacent site use.

5.0 GEOTECHNICAL LABORATORY TESTING

JTC recovered representative soil samples within the excavations at all test pit locations for geotechnical laboratory testing and USCS Classification at our in-house laboratory. The following tests were performed:

- 3 Moisture contents
- 3 Particle-size analyses
- 1 Atterberg

Geotechnical laboratory testing was performed in general accordance with ASTM procedures. Test results are provided on the attached *Geotechnical Laboratory Testing Reports* and are summarized in the following table.

Summary of Sieve and Moisture Analyses

Location	Depth (ft bgs)	Soil Type	% Gravel	% Sand	% Silt	In-Situ Moisture (%)
TP-3	0 - 4’	Sand (SP)	7.5	90.1	2.4	4.3
TP-2	0 – 3’	Sand (SP-SM) with silt	11.3	78.5	10.2	13.3
TP-3	4’ – 8’	Clay (CH)	0.1	12.7	87.9	23.9

6.0 INFILTRATION TESTING

JTC performed infiltration tests at each test pit location directly adjacent to the excavated test pits in order to observe the soils at deeper depths than the required infiltration depths. Essentially, three test pits were excavated 7.5’ to 8’ bgs, and the infiltration tests were performed at shallower depths (as noted in Table below) in virgin soils, therefore separate, adjacent infiltration test pits were excavated for the IT’s, utilizing corresponding labels. Testing was performed in accordance with the NHDES AoTB requirements.

Testing Setup

At the designated bottom of each of the infiltration test pits (adjacent to deeper test pits), a clean, virgin, flat surface was prepared. Then a 3-inch diameter Schedule 40 PVC pipe was slightly driven into the testing surface to seat the PVC, and the excavated spoils were placed around the outside of the PVC pipe and tamped, securing the pipe in a vertically plumb orientation. Subsequently, JTC added approximately 6-inches of gravel inside of the PVC pipe, to prevent scouring and hydraulic conductivity laterally during testing. Lastly, 2-feet of water was added inside the PVC pipe and the soils left to soak for the next 24 hours. This procedure occurred at each of the three respective infiltration testing locations.

Infiltration Test Procedure

JTC returned to the site the following day to perform infiltration testing at each of the three prepared locations. The testing procedure consisted of:

- Filling the pipe with water to a depth of 2 feet above the ground surface;
- Taking regular water level measurements over the following hour;
- Refilling the water after each hour and repeating the process for a total of four cycles.

Infiltration Test Results

The test results are summarized in the following tables:

Summary of Infiltration Testing

Infiltration Test #	Proximal Test Pit Designation	Depth (feet bgs)	Soil Type	Measured Infiltration Rate (in/hr)				Average Measured Rate (in/hr)
				Trial 1	Trial 2	Trial 3	Trial 4	
IT-1	TP-1	3.5	Sand with silt (SP-SM)	**22.1**	**19.0**	**19.7**	**22.7**	**20.9**
IT-2	TP-2	6.0	Clay (CH)	**0**	**0**	**0**	**0**	**0**
IT-3	TP-3	3.0	Sand (SP)	**24.2**	**24.4**	**21.0**	**16.7**	**21.6**

As presented in the tables above, JTC concludes that the Sand with silt (SP-SM) encountered at test location IT-1 exhibited an infiltration rate of approximately 20.9 in/hr, the Sand (SP) encountered at test location IT-3 exhibited an infiltration rate of approximately 21.6 in/hr, and the Clay (CH) in IT-2 did not allow the water to infiltrate during the time constraints of this testing program.

No factors of safety have been applied to the measured rates presented in the table. JTC recommends applying a minimum safety factor of 2 to the measured rates for design purposes.

7.0 CLOSING

We trust the contents of this memorandum are responsive to your needs at this time. Should you have any questions or require additional assistance, please do not hesitate to contact our office.

APPENDIX A: LIMITATIONS

Explorations

1. The analyses and recommendations presented in this report are based in part upon the data obtained from widely-spaced subsurface explorations. Subsurface conditions between exploration locations may vary from those encountered at the exploration locations. The nature and extent of variations between explorations may not become evident until construction. If variations appear, it will be necessary to re-evaluate the recommendations of this report.
2. The generalized soil profile described in the text is intended to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized and have been developed by interpretation of widely-spaced explorations and samples; actual strata transitions are probably more gradual. For specific information, refer to the individual test pit and/or boring logs.
3. Water level readings have been made in the test pits and/or test borings under conditions stated on the logs. These data have been reviewed and interpretations have been made in the text of this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature, and other factors differing from the time the measurements were made.

Review

4. It is recommended that John Turner Consulting, Inc. be given the opportunity to review final design drawings and specifications to evaluate the appropriate implementation of the geotechnical engineering recommendations provided herein.
5. In the event that any changes in the nature, design, or location of the proposed areas are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed, and conclusions of the report modified or verified in writing by John Turner Consulting, Inc.

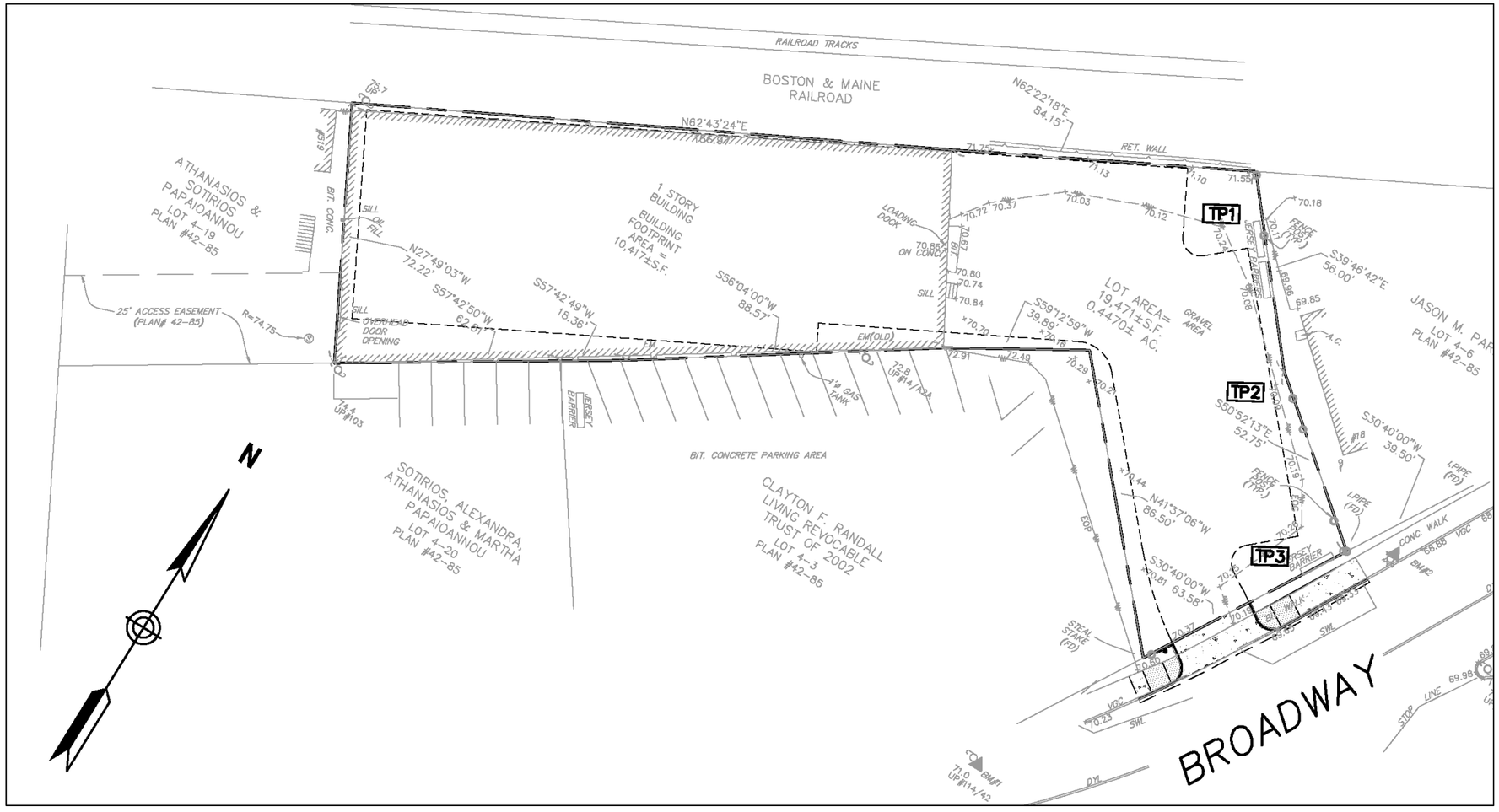
Construction

6. It is recommended that John Turner Consulting, Inc. be retained to provide geotechnical engineering services during the installation phases of the work. This is to observe compliance with the design concepts, specifications, and recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated prior to the start of construction.

Use of Report

7. This report has been prepared for the exclusive use of Downtown Dover Storage, LLC for the project located at 519 Broadway in Dover, NH. All considerations are based on the available information and is in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made.
8. This report has been prepared for this project by John Turner Consulting, Inc. This report was completed for preliminary design purposes and may be limited in its scope to complete an accurate bid. Contractors wishing a copy of the report may secure it with the understanding that its scope is limited to preliminary geotechnical design considerations.

APPENDIX B: TEST PIT & INFILTRATION TEST LOCATION PLAN



Notes:

1. Test borings were performed on Nov. 11, 2020 under the direction of JTC. Test boring locations should be considered approximate.
2. Refer to the Test Boring Logs for the subsurface conditions encountered at each boring location.
3. Basemap source(s): October 26, 2020 “Test Pits” prepared by TEC
4. Not to Scale.

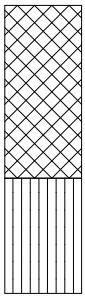
Nick Couturier **Downtown Dover Storage, LLC** **14 Broadway** **Dover, New Hampshire 03820**	**Proposed Parking Lot** **519 Broadway** **Dover, New Hampshire**
JOHN TURNER CONSULTING	**TEST BORING LOCATION PLAN**

APPENDIX C: TEST PIT LOGS & KEY TO SYMBOLS AND DESCRIPTIONS

JOHN TURNER CONSULTING

TEST PIT LOG
Test Pit No.: TP-1

PROJECT	PROJECT NO.
Downtown Dover Storage Proposed Parking lot	20-04-097
CLIENT	DATE
Downtown Dover Storage, LLC	11/11/2020
LOCATION	ELEV.
519 Broadway Dover, NH	70
EXCAVATION METHOD	LOGGER
Bobcat Excavator	JB
DEPTH TO - Water: N/A When checked: N/A	

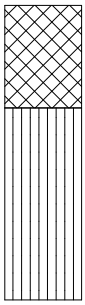
ELEVATION/ DEPTH	SOIL SYMBOLS AND SAMPLERS: GRAPHIC	BULK	USCS	DESCRIPTION
70 — 0				[FILL] Dark brown Sand with silt (SP-SM)
65 — 5				[MARINE SILT AND CLAY] Light brown clay (CH) -Ground water at 6 feet
60 — 10				
55 — 15				
50 — 20				
45 — 25				

Notes: *Test pit was backfilled with soil cuttings from the investigation.*

JOHN TURNER CONSULTING

TEST PIT LOG
Test Pit No.: TP-2

PROJECT	PROJECT NO.
Downtown Dover Storage Proposed Parking lot	20-04-097
CLIENT	DATE
Downtown Dover Storage, LLC	11/11/2020
LOCATION	ELEV.
519 Broadway Dover, NH	70
EXCAVATION METHOD	LOGGER
Bobcat Excavator	JB
DEPTH TO - Water: N/A When checked: N/A	

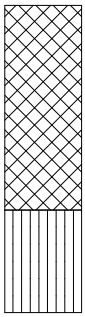
ELEVATION/ DEPTH	SOIL SYMBOLS AND SAMPLERS: GRAPHIC	BULK	USCS	DESCRIPTION
70 — 0				[FILL] Dark brown Sand with silt (SP-SM)
				[MARINE SILT AND CLAY] Light brown clay (CH)
65 — 5				
60 — 10				
55 — 15				
50 — 20				
45 — 25				

Notes: *Test pit was backfilled with soil cuttings from the investigation.*

JOHN TURNER CONSULTING

TEST PIT LOG
Test Pit No.: TP-3

PROJECT	PROJECT NO.
Downtown Dover Storage Proposed Parking lot	20-04-097
CLIENT	DATE
Downtown Dover Storage, LLC	11/11/2020
LOCATION	ELEV.
519 Broadway Dover, NH	70
EXCAVATION METHOD	LOGGER
Bobcat Excavator	JB
DEPTH TO - Water: N/A When checked: N/A	

ELEVATION/ DEPTH	SOIL SYMBOLS AND SAMPLERS: GRAPHIC	BULK	USCS	DESCRIPTION
70 / 0				[FILL] Light brown Sand (SP)
65 / 5				[MARINE SILT AND CLAY] Light brown Clay (CH)
60 / 10				
55 / 15				
50 / 20				
45 / 25				

Notes: *Test pit was backfilled with soil cuttings from the investigation.*

MAJOR DIVISIONS			SYMBOLS		TYPICAL NAMES
COARSE-GRAINED SOILS OVER 50% > No.200 SIEVE SIZE	GRAVELS	CLEAN GRAVELS WITH LESS THAN 5% FINES	GW		Well-graded gravels or gravel-sand mixtures, little or no fines
			GP		Poorly graded gravels or gravel-sand mixtures, little or no fines
	MORE THAN 1/2 OF COARSE FRACTION > No.4 SIEVE SIZE	GRAVELS WITH OVER 15% FINES	GM		Silty gravels, gravel-sand mixtures
			GC		Clayey gravels, gravel-sand-clay mixtures
	SANDS	CLEAN SANDS WITH LESS THAN 5% FINES	SW		Well-graded sand or gravelly sands, little or no fines
			SP		Poorly graded sands or gravelly sands, little or no fines
	MORE THAN 1/2 OF COARSE FRACTION < No.4 SIEVE SIZE	SANDS WITH OVER 15% FINES	SM		Silty sand, sand-silt mixtures
			SC		Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS OVER 50% < No.200 SIEVE SIZE	SILTS & CLAYS LIQUID LIMIT 50% OR LESS		ML		Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
			CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL		Organic silts and organic silty clays of low plasticity
	SILTS & CLAYS LIQUID LIMIT GREATER THAN 50%		MH		Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
			CH		Inorganic clays of high plasticity, fat clays
			OH		Organic clays of medium to high plasticity, organic silty clays, organic silts
HIGHLY ORGANIC SOILS			PT		Peat and other highly organic soils

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KEY TO SYMBOLS AND DESCRIPTIONS

TYPICAL SYMBOLS

- Shelby Tube
- Auger Cuttings
- Standard Split Spoon Sample
- 3" Split Spoon Sample
- Rock Core
- Dynamic Cone Penetrometer
- Vane Shear
- Bulk/Grab Sample
- Geoprobe Sample
- Sonic or Vibro-Core Sample
- Water Table (at time of drilling)
- Water Table (after 24 hours)

SOIL MOISTURE MODIFIERS

Term	Description
Dry	Absence of moisture; dusty, dry to touch
Moist	Damp but no visible water
Wet	Visible free water

The descriptor "damp" should not be used (use "moist").
The descriptor "saturated" should not be used (use "wet").

WELL SYMBOLS

- Recessed Cover Set in Concrete
- Top of Well, Recessed Pipe
- Covered Riser
- Capped Riser w/ Locking Cover
- Pipe Riser
- Concrete Seal
- Gravel Backfill
- Assorted Cuttings
- Bentonite Slurry
- Bentonite Pellets
- Silica Sand, blank PVC
- Slotted Pipe w/ Sand
- Endcap on Pipe Packed in Sand
- Silica Sand, No Pipe (End Plug)

CLASSIFICATION	RANGE OF GRAIN SIZES	
	U.S. Standard Sieve Size	Grain Size in Millimeters
BOULDERS	Above 12"	Above 305
COBBLES	12" to 3"	305 to 76.2
GRAVEL	3" to No. 4	76.2 to 4.75
coarse	3" to 3/4"	76.2 to 19.1
fine	3/4" to No. 4	19.1 to 4.75
SAND	No. 4 to No. 200	4.75 to 0.075
coarse	No. 4 to No. 10	4.75 to 2.00
medium	No. 10 to No. 40	2.00 to 0.425
fine	No. 40 to No. 200	0.425 to 0.075
SILT & CLAY	Below No. 200	Below 0.075

RELATIVE DENSITY/CONSISTENCY

Gravel, Sand, and Silt (nonplastic)		Silt (plastic) and Clay		
N-Value	Relative Density	N-Value	Su	Consistency
0 - 4	Very Loose	0 - 2	0 - 250	Very Soft
5 - 10	Loose	3 - 4	251 - 500	Soft
11-30	Medium Dense	5 - 8	501 - 1000	Medium Stiff
31 - 50	Dense	9 - 15	1001 - 2000	Stiff
51 +	Very Dense	16 - 30	2001 - 4000	Very Stiff
		31 +	4001+	Hard

Standard Penetration Testing (SPT) N_{60} based on blows per 12 inches.
WR = Weight of Rods; WH = Weight of Hammer

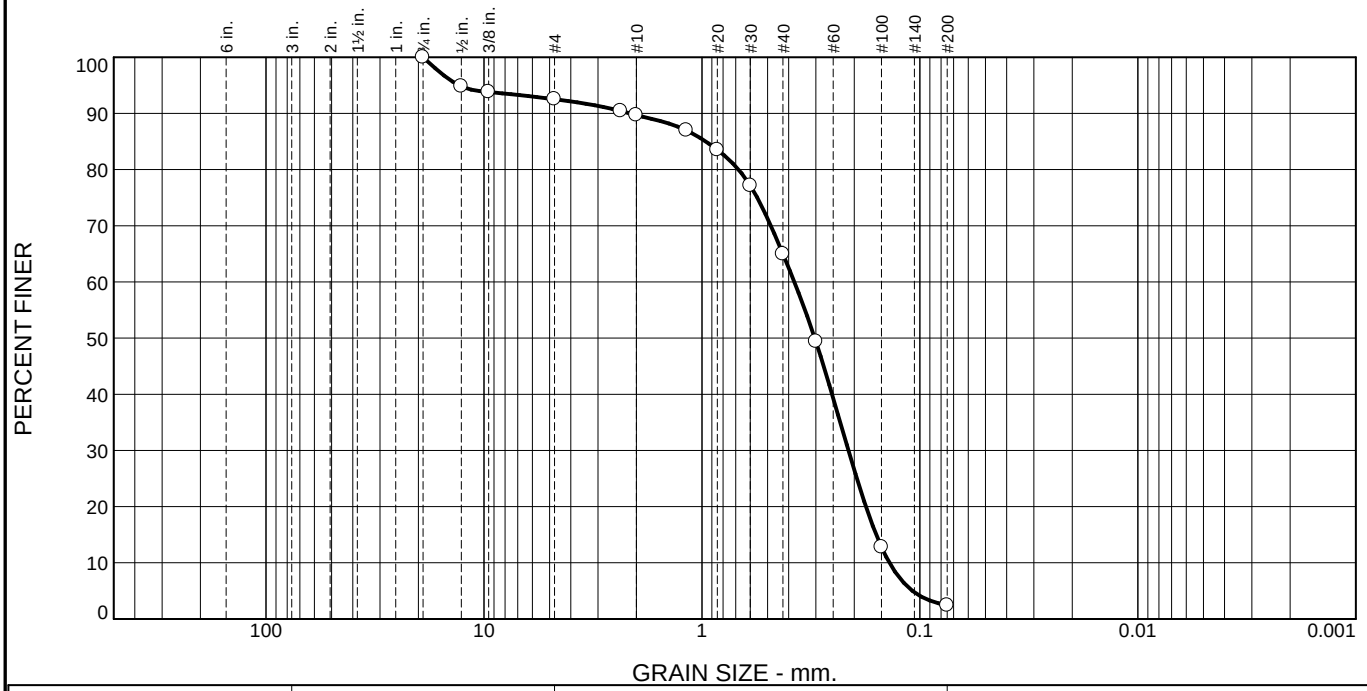
PERCENT OR PORTIONS OF SOIL

Term	Description
Parting:	> 1/16 in.
Seam:	0.5 in. to 1/16 in.
Layer:	12 in. to 0.5 in.
Stratum:	> 12 in.
Pocket:	Small erratic deposit
Lens:	Lenticular deposit
Occasional:	One or less per foot of thickness
Frequent	More than one per foot of thickness
Varved	Alternating seams or layers of silt and/or clay and sometimes f. sand

REFERENCE: UNIFIED SOIL CLASSIFICATION SYSTEM - ASTM D2488-93

APPENDIX D: LABORATORY TEST RESULTS

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	7.5	2.8	24.7	62.6	2.4	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
.75	100.0		
1/2"	94.8		
.375	93.8		
#4	92.5		
#8	90.4		
#10	89.7		
#16	87.0		
#20	83.5		
#30	77.1		
#40	65.0		
#50	49.4		
#100	12.8		
#200	2.4		

* (no specification provided)

Material Description

Light brown sand

Atterberg Limits (ASTM D 4318)

PL= - **LL=** - **PI=** -

Classification

USCS (D 2487)= SP **AASHTO (M 145)=** -

Coefficients

D_{90}= 2.1381 D_{85}= 0.9618 D_{60}= 0.3769
D_{50}= 0.3035 D_{30}= 0.2127 D_{15}= 0.1586
D_{10}= 0.1379 C_u= 2.73 C_c= 0.87

Remarks

Moisture content 4.3%

Date Received: 11/19/2020 **Date Tested:** 11/30/2020

Tested By: Matt Watson

Checked By: Rob Faria

Title: Lab Manager

Location: TP-3 middle **Date Sampled:** 11/19/2020
Sample Number: 3520-711 **Depth:** 4'

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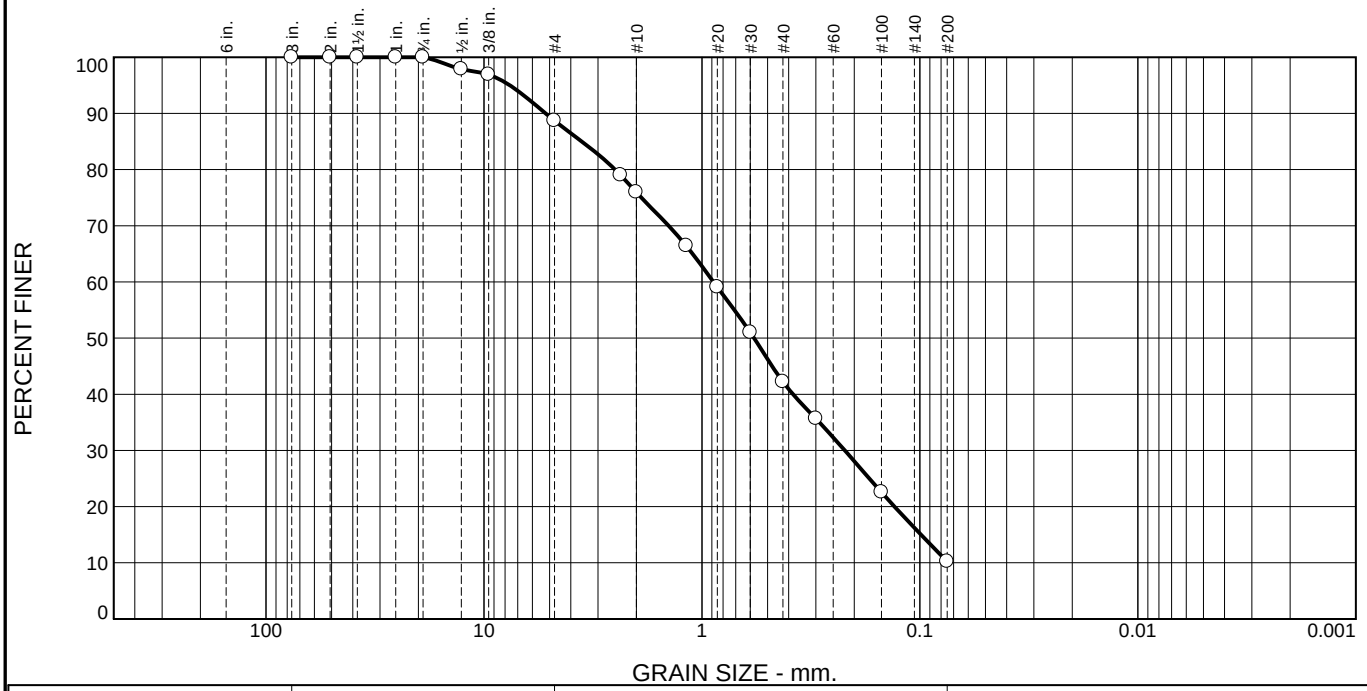
Client: Downtown Dover Storage, LLC
Project: Proposed Parking Area
14 Broadway Dover, NH
Project No: 20-04-097 **Figure** 711A

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	11.3	12.7	33.8	32.0	10.2	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3	100.0		
2	100.0		
1.5	100.0		
1	100.0		
.75	100.0		
1/2"	97.9		
.375	96.9		
#4	88.7		
#8	79.0		
#10	76.0		
#16	66.4		
#20	59.1		
#30	51.0		
#40	42.2		
#50	35.7		
#100	22.5		
#200	10.2		

* (no specification provided)

Material Description

Dark brown sand with silt

Atterberg Limits (ASTM D 4318)

PL= - **LL=** - **PI=** -

Classification

USCS (D 2487)= SP-SM **AASHTO (M 145)=** -

Coefficients

D_{90}= 5.2145 D_{85}= 3.5599 D_{60}= 0.8858
D_{50}= 0.5767 D_{30}= 0.2211 D_{15}= 0.0988
D_{10}= C_u= C_c=

Remarks

Moisture content 13.3%

Date Received: 11/19/2020 **Date Tested:** 11/30/2020

Tested By: Matt Watson

Checked By: Rob Faria

Title: Lab Manager

Location: TP-2 top
Sample Number: 3520-712 **Depth:** 0-3' bgs

Date Sampled: 11/19/2020

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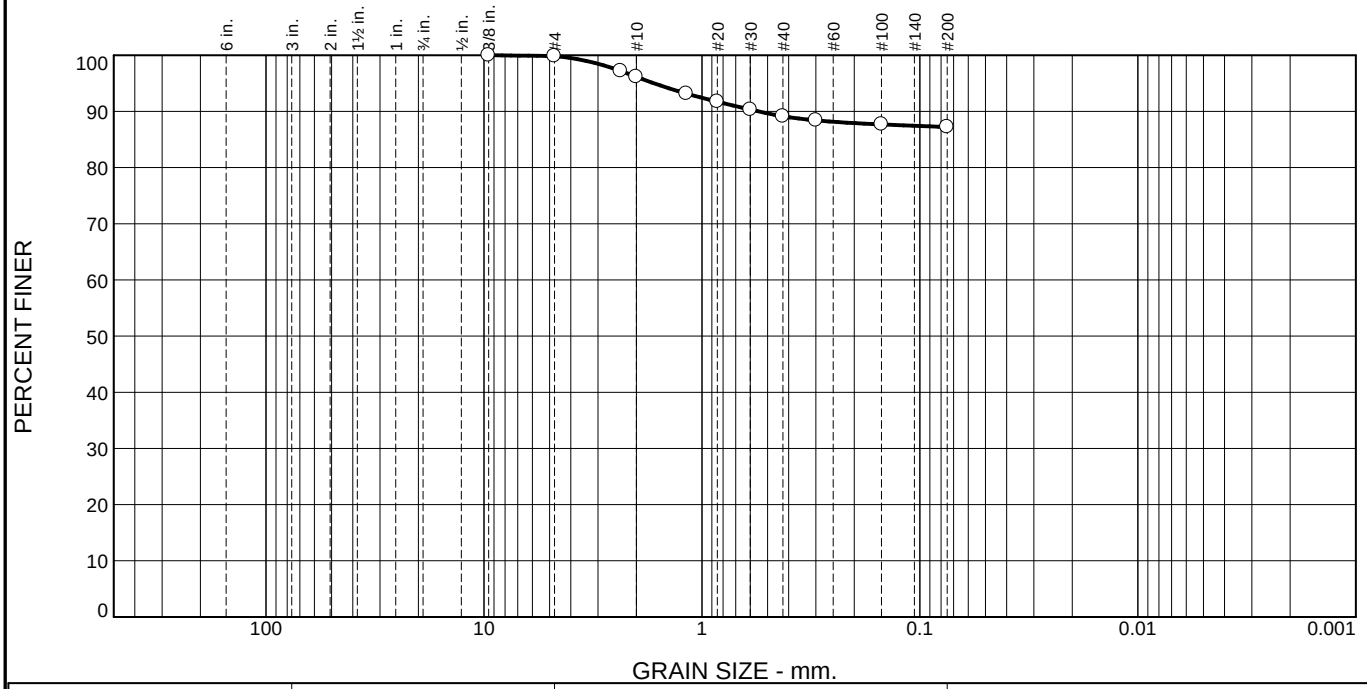
Client: Downtown Dover Storage, LLC
Project: Proposed Parking Area
14 Broadway Dover, NH
Project No: 20-04-097 **Figure** 712A

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	3.7	7.1	1.9	87.2	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
.375	100.0		
#4	99.9		
#8	97.2		
#10	96.2		
#16	93.2		
#20	91.7		
#30	90.3		
#40	89.1		
#50	88.4		
#100	87.7		
#200	87.2		

* (no specification provided)

Material Description

Light brown clay

Atterberg Limits (ASTM D 4318)

PL= 25 **LL=** 54 **PI=** 29

Classification

USCS (D 2487)= CH **AASHTO (M 145)=** A-7-6(28)

Coefficients

D_{90}= 0.5499 D_{85}= D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Remarks

Moisture content 23.9%

Date Received: 11/19/2020 **Date Tested:** 12/1/2020

Tested By: Matt Watson

Checked By: Rob Faria

Title: Lab Manager

Location: TP-3 bottom **Date Sampled:** 11/19/2020
Sample Number: 3520-715 **Depth:** 8'

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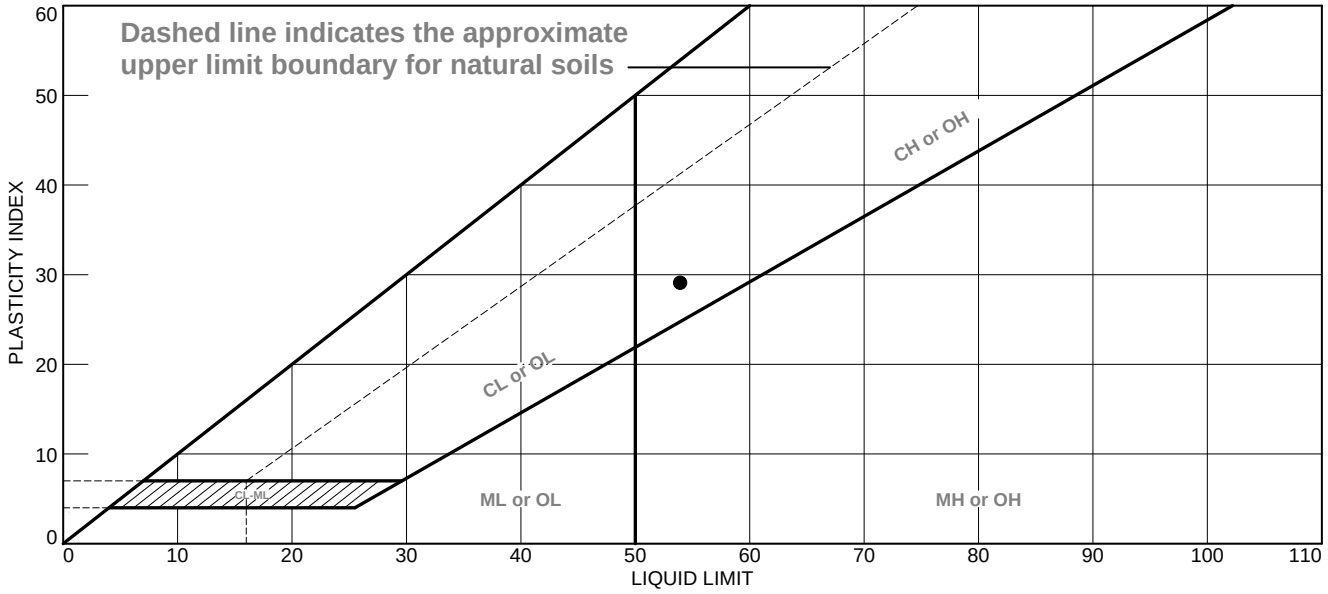
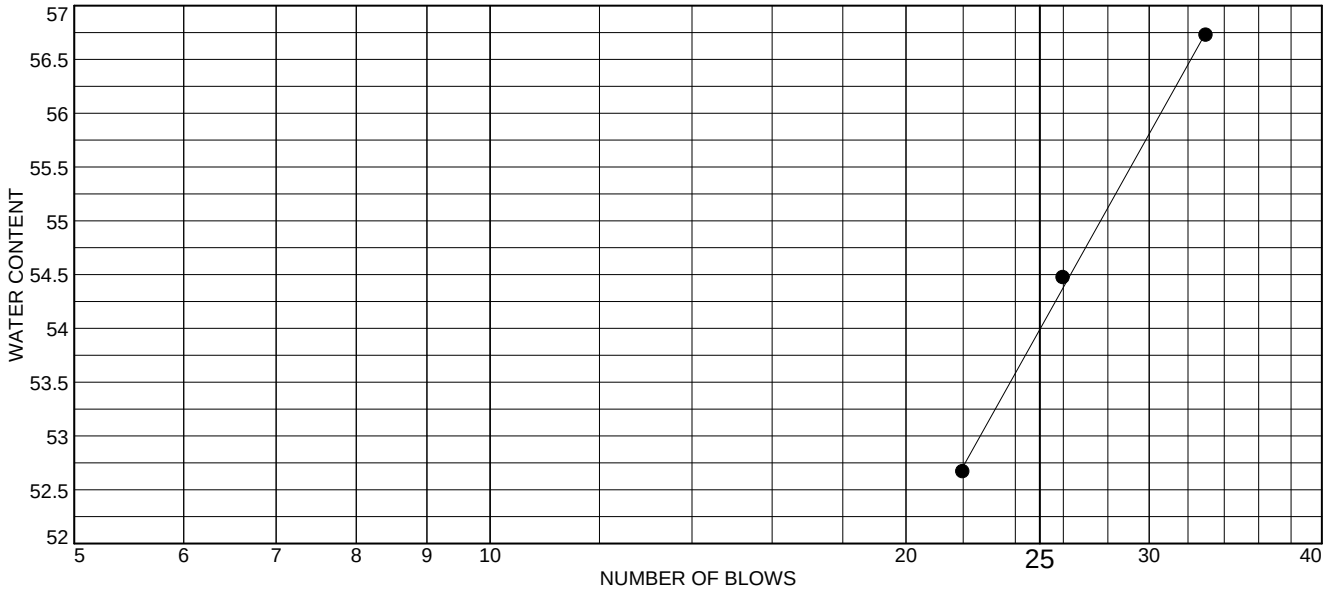
Client: Downtown Dover Storage, LLC
Project: Proposed Parking Area
14 Broadway Dover, NH
Project No: 20-04-097 **Figure** 713A

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Light brown clay	54	25	29	89.1	87.2	CH

Project No. 20-04-097 **Client:** Downtown Dover Storage, LLC

Project: Proposed Parking Area

14 Broadway Dover, NH

Location: TP-3 bottom

Sample Number: 3520-715 **Depth:** 8'

Remarks:

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Figure 715B

Tested By: Rob Faria

APPENDIX E: SITE PHOTOGRAPHS

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CONSULTING

Downtown Dover Storage, LLC
519 Broadway
Dover, New Hampshire

SITE PHOTOGRAPHS

Bobcat Mini Excavator Used to Dig Test Pits

Brick Shown in Fill at TP-3

Test Pit 2 Being Excavated

Soil Profile of Test Pit 2

Soil Profile of Test Pit 1

Site Layout

D

Operation & Maintenance Plan

Stormwater Management Operations and Maintenance Plan

PROPOSED RESIDENTIAL DEVELOPMENT

Assessor's Map 5, Lot 5
14 Broadway
Dover, New Hampshire

Prepared for: **Downtown Dover Storage, LLC**
42 L Dover Point Road
Dover, NH 03820

Prepared by: **TEC, Inc.**
169 Ocean Boulevard
Unit 101 PO BOX 249
Hampton, NH 03842

August 5, 2021

Stormwater Management Operation and Maintenance Plan
August 5, 2021

Name of Applicant: **Downtown Dover Storage, LLC**
Name of Project: **Proposed Residential Development – 14 Broadway**
Location: **Dover, New Hampshire 03820**

A detailed, written log of all scheduled preventative and corrective maintenance performed for the stormwater management measures must be kept by the Applicant, including a record of all inspections and copies of maintenance-related work orders. Attachment 1, "Inspection and Maintenance Check List" shall be maintained as a record of regularly scheduled inspection and maintenance items as outlined below for every year. Maintenance required and actions taken shall be recorded in Attachment 2, Inspection and Maintenance Log". The funding, operation, and maintenance of all stormwater management Best Management Practices (BMPs) shall be provided by the Owner or their appointee.

Maintenance routine and schedule: Routine inspections will be conducted monthly and thorough investigations will be conducted twice a year. Tasks that are common to all systems include regular removal of accumulated sediments, floatables and debris. Inspections will occur after every major storm event for the first six (6) months after construction. Inspections will be conducted by a person trained in stormwater management systems and experienced in drainage design.

Annual reports will be prepared detailing the status of the stormwater system and the maintenance performed. A copy of the annual report will be sent to the City of Dover Conservation Commission, if requested.

The Owner agrees to comply with a minimum maintenance schedule as follows:

1. **Monthly inspection for damaged or clogged catch basin and area drain grates**
   Catch basin grates shall be inspected and cleared of debris to maintain inlet capacity.

2. **Quarterly cleaning of catch basins**
   Sumps and inlets shall be cleaned four times per year and inspected on a monthly basis. All sediments shall be properly handled and disposed of in accordance with local, state and federal guidelines and regulations.

3. **Inspection and cleaning of drainage pipes and manholes**
   Drainage pipes and manhole structures shall be inspected and cleaned of sediment at least every five (5) years or as required to maintain adequate functionality of the stormwater conveyance system. All sediments shall be properly handled and disposed of in accordance with local, state and federal guidelines and regulations.

4. Grass Landscaping

The grass landscaping will be inspected after every major storm event for the two (2) months after seeding to ensure functionality. Thereafter, inspections should take place every six (6) months in the spring and fall and after severe storm events. Grass and mulched landscaping showing signs of wear and erosion will be re-loamed/re-seeded or re-mulched as necessary to prevent further erosion from taking place.

5. Snow Removal

Snow will be stored within the landscape islands onsite.

The Long-Term Pollution Prevention Plan

The Owner agrees to comply with the following Long-Term Pollution Prevention Plan to ensure long-term stormwater quality discharge from the site:

- Good housekeeping practices: The project will be maintained by the Town DPW, including snow removal, de-icing, and BMP inspection and maintenance.

- Provisions for storing materials and waste products inside or under cover: No materials or waste products will be stored on-site.

- Vehicle washing controls: Vehicle washing is not anticipated as a reasonably foreseeable use of the site.

- Requirements for routine inspections and maintenance of stormwater BMPs: The Owner will be responsible for providing the necessary inspections and maintenance for the stormwater BMPs.

- Spill prevention and response plans: There are no proposed uses at the site that would provide an opportunity for a spill of oil or hazardous materials, other than a sudden, catastrophic, vehicle failure. If a vehicle release is the result of an accident, the police and fire department will respond and address any release.

- Provisions for maintenance of lawns, gardens, and other landscaped areas: The Owner will provide long-term maintenance for the landscaped areas.

- Requirements for storage and use of fertilizers, herbicides, and pesticides: At this time there would be no foreseeable need for fertilizers, herbicides, and pesticides.

- Provisions for operation and management of septic systems: Proposed Parking Lot, no septic systems are proposed.

- Provisions for solid waste management: The proposed project is a Parking

Lot project, and any foreseeable solid waste would be litter. The Owner is responsible for litter clean up.

- Snow disposal and plowing plans relative to Wetland Resource Areas: Snow will be stored at the westerly edge of the parking lot temporarily.

- Street sweeping schedules: The Owner will be responsible for quarterly street sweeping with sweepings concentrated in the Spring and Fall.

- Provisions for prevention of illicit discharges to the stormwater management system: Only stormwater is proposed to be conveyed through the stormwater management system. No illicit materials will be permitted. The owner will be responsible to maintain this system.

- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL: Not applicable

- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan: The Owner shall appoint trained personnel to be involved with implementing Long-Term Pollution Prevention Plan.

- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan:

  Downtown Dover Storage, LLC
  42 L Dover Point Road
  Dover, New Hampshire 03820

INSPECTION AND MAINTENANCE CHECK LIST –
14 Broadway, Dover, NH

For Year: _____

	Inspection Item	Inspection Frequency* Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1	Catch Basin Grates												
2	Drainage Pipes and Manholes	at least every 5 years											
3	Grass Landscaping												
	Maintenance Item	**Maintenance Frequency* Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**
1	Roadway Sweeping												
2	Catch Basin Cleaning												
3	Drainage Pipes and Manholes	at least every 5 years											

* Actual time of inspecting and maintaining items may vary. Chart shall be used to indicate frequency of events

** This chart shall be used in conjunction with the attached "Stormwater Management Operations and Maintenance Plan", dated April 29, 2021

Name of Applicant: Downtown Dover Storage, LLC

Name of Project: Proposed Residential Development – 14 Broadway

Location: 14 Broadway, Dover, NH 03820

Inspection and Maintenance Log

Inspection No.	Date	Inspections Performed	Maintenance Actions Taken
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			

Additional Sheets shall be added as needed

169 Ocean Boulevard/PO Box 249
Hampton, NH 03842
603.601.8154
TheEngineeringCorp.com
Create | Design | Innovate

Nick Couturier
Downtown Dover Storage, LLC
14 Broadway
Dover, NH 03820

July 29, 2021

Ref. N0946.01

Re: Commercial Parking Lot - 14 Broadway; Dover, NH
Traffic Impact Assessment

Dear Mr. Couturier:

TEC, Inc. (TEC) has been retained by Downtown Dover Storage to prepare a Traffic Impact Assessment (TIA) for the proposed change in use of the property located at #14 Broadway in Dover, New Hampshire. The site is currently comprised of a one-story ±10,417 square foot (SF) warehouse building with access provided along the north side of Broadway via an unpaved driveway. The Applicant proposed to raze the existing structure and construct a four-story building to include ±3,450 SF of ground floor retail with three upper floor residential space including 24 residential units. The site will include 62 off-street parking spaces including 24 podium parking spaces as part of the building's ground floor. The project will also formalize six (6) on-street parking spaces (5 new) along the northerly side of Broadway at the project's front door.

The existing site currently has two (2) driveways along the northerly side of Broadway. Both driveways are one-way flow with the easternmost driveway providing full-access and the westernmost driveway providing full-egress. The project seeks to remove the easternmost driveway and reconfigure the westernmost driveway as a full access/egress driveway.

This TIA has been prepared as a "Standard Analysis" in accordance with Chapter 149-13-A(20) of the Dover Site Review Regulations and Chapter 155-9-I of the Dover Land Subdivision Regulations, which outline the potential impacts to the existing traffic conditions and safety in the vicinity of the project. The proposed change in use is anticipated to result in an increase in overall traffic to/from the site and the adjacent Broadway corridor. The following letter summarizes the evaluation of traffic impact resulting from the proposed development.

Existing Conditions

The project site is located at #14 Broadway (Assessor's Map 4, Lot 14) which forms an L-shaped parcel around the adjacent #6 Broadway property and its parking. The north side of the parcel directly abuts the Boston & Maine Railroad Right of Way (ROW). The existing ±10,417 SF building footprint directly abuts the property line on both the north and south sides. The building front door faces east into the parcel's unpaved parking area and driveway, which accesses Broadway just east of the #6 Broadway parking field. The existing driveway is approximately 16-feet wide. The building structure was previously utilized as a warehousing use.

Broadway, the adjacent roadway, is a two-lane, north-south minor arterial roadway maintained by the City of Dover. The roadway provides regional connection between Main Street (Route 9)

to the south and Rollins Road to the north. In the vicinity of the project site, Broadway is approximately 45 feet wide with 7 foot on-street parking stalls aligning portions of the north curb line. Directional flow along Broadway is separated by a double-yellow centerline. The posted speed limit along the corridor is 30 miles per hour (mph) adjacent to the proposed project. Sidewalks are provided along both sides of Broadway; however, no bicycle accommodations are provided. Land uses along Broadway generally include retail, commercial and residential uses.

Driveway Sight Distance Measurements

TEC measured the available sight distances at the existing site driveway along Broadway. The available sight lines were compared to minimum requirements established by the American Association of State Highway and Transportation Officials (AASHTO).

Sight distance represents the length of roadway that is visible to a driver traveling within the roadway. Two types of sight distance are typically evaluated for driveways and intersections: stopping sight distance (SSD) and intersection sight distance (ISD). SSD is the minimum distance required for a driver traveling along a roadway to perceive an object in the roadway and stop safely in advance of the object when traveling on a wet pavement surface. SSD is measured from an eye height of 3.5-feet to an object height of 2-feet above the ground, which is equivalent to a driver viewing the taillight of a vehicle ahead. SSD is measured along the centerline of the travel lane approaching the driveway or intersection.

ISD represents the length of the roadway visible to a driver waiting to exit a driveway or minor street. Minimum ISD requirements are based on the distance required for a driver to exit a minor street onto a major street without requiring an approaching vehicle to reduce its speed from the design speed to less than 70 percent of the design speed. ISD is measured from an eye height of 3.5-feet to an object height of 3.5-feet and is measured from a distance 14.5-feet beyond the edge of the travel-way of the major roadway to represent a driver waiting to exit a driveway or minor roadway.

SSD is typically considered the critical sight distance, as it represents the minimum distance required for safe stopping, while ISD represents an acceptable speed reduction for approaching vehicles. The ISD, however, must be at least equal to the minimum required SSD to prevent a driver from entering the roadway when an approaching vehicle is too close to safely stop. The guidance provided by AASHTO states:

> *"If the available sight distance for an entering or crossing vehicle is at least equal to the appropriate stopping sight distance for the major road, then drivers have sufficient sight distance to anticipate and avoid collisions. However, in some cases, this may require a major-road vehicle to stop or slow to accommodate the maneuver by a minor-road vehicle. To enhance traffic operations, intersection sight distances that exceed stopping sight distances are desirable along the major road."*

Table 1 provide a summary of the available ISD at the intersection.

Table 1 – Existing Intersection Sight Distance Measurements

Approach / Direction	Posted Speed	AASHTO Recommended Minimum	Measured Stopping Sight Distance
Site Driveway at Broadway:			
East of Driveway	30 MPH	200 FT	110 FT (190 FT [a])
West of Driveway	30 MPH	200 FT	120 FT (280 FT [b])

[a] ISD if parking space in front of site and Papa Jay's Pizzeria were removed
[b] ISD if the adjacent private parking lot was removed

As shown in Table 1, the ISD along the existing site driveway / Broadway do not meet the AASHTO minimum recommendations based on the posted speed limit along Broadway.

To the east, the sight line is obstructed by existing on-street parking stalls along the north side of Broadway. This condition is currently present at the parcel's existing driveway and curb-cut. If the on-street parking stall directly abutting the subject parcel and the adjacent space at the Papa Jay's Pizzeria front door were removed, the sight line is extended to 190 feet. An additional on-street parking stall removal will further extend the sight line greater than AASHTO minimum recommendations. Should no vehicles be parked in these aforementioned spaces, the sight line from the #14 Broadway driveway would exceed AASHTO minimum recommendations.

To the west, the sight line is obstructed by existing off-street parking stalls on the #6 Broadway property. This condition is currently present at the parcel's existing driveway and curb-cut. Should no vehicles be parked in these aforementioned spaces, the sight line from the #14 Broadway driveway would exceed AASHTO minimum recommendations.

Site Generated Traffic

The site-generated traffic volumes for the 24 residential units and ±3,450 SF of commercial space were estimated based on standard trip rates published in the Institute of Transportation Engineers' (ITE) publication *Trip Generation, 10th Edition* for Land Use Code (LUC) LUC 221 – Multifamily Midrise Housing and LUC 820 – Shopping Center. Table 2 provides a summary of the site trip generation estimates.

Table 2 - Trip Generation Summary

Time Period	Multifamily House (LUC 221)	Shopping Center (LUC 820)	Total Trips
Weekday Daily			
IN	66	65	**131**
OUT	66	65	**131**
TOTAL	132	130	**262**
Weekday Morning			
IN	3	2	**5**
OUT	7	1	**8**
TOTAL	10	3	**13**
Weekday Evening			
IN	7	6	**13**
OUT	4	7	**11**
TOTAL	11	13	**24**

As shown in Table 2, the proposed multifamily house and shopping center are anticipated to generate a total of 262 *new* vehicle trips during the typical weekday, 13 *new* vehicle trips (5 entering and 8 exiting) during the weekday morning peak hour, and 24 *new* vehicle trips (13 entering and 11 exiting) during the weekday evening peak hour. This level of new traffic to the roadway is minimal including during the peak hours of the day where traffic would be expected to result in a maximum one new vehicle every two and a half minutes (weekday evening peak hour). This level of new traffic is generally unnoticeable.

The proposed 68 space commercial and residential development and parking lot does not generate 1,000 average daily trips or 100 peak hour trips therefore does not apply for an "Advanced" analysis. Site generated trip calculations are attached.

Public Transportation

The proposed parking facility is located approximately 0.25 miles from the Dover Transportation Center which serves as the hub for multiple Cooperative Alliance for Seacoast Transportation (COAST) bus routes and AMTRAK Downeaster rail service. Public transportation data is summarized below:

- COAST Route 1 [Dover / Somersworth / Berwick] – Service is provided from the Dover Transportation Center to Sullivan Street in Berwick with several designated stops within Dover, Somersworth, and Berwick, ME. The bus operates northbound from 5:19 AM to 7:05 PM over 13 daily runs at approximately 45 to 80-minute headways. The bus operates southbound from 5:51 AM to 7:52 PM over 13 daily runs at approximately 55 to 80-minute headways. Saturday services operates northbound from 6:30 AM to 6:45 PM over eight (8) daily runs at approximately 90 to 120-minute headways. The bus operates Saturday southbound from 7:12 AM to 7:34 PM over eight (8) daily runs at approximately 90 to 120-minute headways.
- COAST Route 2 [Rochester / Somersworth / Dover / Newington / Portsmouth] – Service is provided from Market Square in Portsmouth to Highland Street in Rochester; including the Dover Transportation Center. The bus operates northbound from 5:49 AM to 10:24 PM over 20 daily runs at approximately 40 to 80-minute headways. The bus operates southbound from 5:25 AM to 9:09 PM over 20 daily runs at approximately 30 to 90-minute headways. Saturday services operates northbound from 6:44 AM to 11:07 PM over nine (9) daily runs at approximately 90 to 180-minute headways. The bus operates Saturday southbound from 7:12 AM to 7:34 PM over nine (9) daily runs at approximately 80 to 210-minute headways.
- COAST Route 3 [UNH Wildcat Service] – Service is provided from UNH to Shaw's in Dover; including the Dover Transportation Center. The bus operates outbound from 6:40 AM to 8:06 PM over eight (8) daily runs at approximately 60 to 150-minute headways. The bus operates inbound from 7:11 AM to 8:34 PM over eight (8) daily runs at approximately 60 to 150-minute headways. Saturday and Sunday services operates outbound over three (3) runs at 9:05 AM, 2:05 PM, and 6:35 PM. Saturday and Sunday services operates inbound over three (3) runs at 9:36 AM, 2:36 PM, and 7:06 PM.
- COAST Route 33 [Dover Downtown / County Complex] – Service is provided Monday through Friday from the Dover Transportation Center to the Stafford County Courthouse in Dover. The bus operates inbound from 6:57 AM to 5:29 PM over nine (9) daily runs at

approximately 70-minute headways. The bus operates outbound from 6:25 AM to 5:06 PM over nine (9) daily runs at approximately 70-minute headways.

- COAST Route 101 [Dover - Kittery] – Service is provided Monday through Friday from Government Street in Kittery, ME to the Lilac Garden Apartments in Dover; including along Main Street near Broadway. The bus operates twice each weekday leaving the Lilac Garden Apartments in Dover at 5:51 AM and 4:12 PM.
- AMTRAK Downeaster – Service is provided between Boston's North Station and Brunswick, ME with five (5) northbound and southbound trips on a typical weekday and five (5) weekend trips. The Downeaster makes stops in Dover at the Dover Transportation Center in the southbound direction at 6:17 AM, 9:16 AM, 12:57 PM, 3:17 PM, and 7:13 PM and in the northbound direction at 10:35 AM, 2:35 PM, 6:30 PM, 7:51 PM, and 11:59 PM. On weekend days, the Downeaster makes stops in Dover at the Dover Transportation Center in the southbound direction at 7:17 AM, 9:17 AM, 2:07 PM, 4:17 PM, and 7:57 PM and in the northbound direction at 11:25 AM, 2:30 PM, 6:20 PM, 8:30 PM, and 11:59 PM.

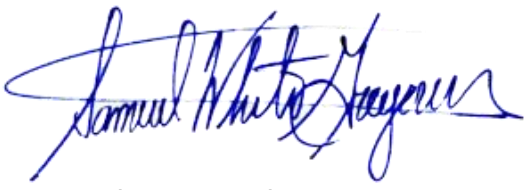
There is currently no direct public transportation service along Broadway or adjacent to the site. Bus stops for Routes 3, 33, and 101 are provided along Main Street 900 feet to the south of Broadway and Routes 2, 3, 33, and 101 along Main Street / 6Th Street 800 feet to the north of Broadway. Based on the type of uses, it is expected that a portion of residential and retail site generated traffic would travel to/from the site via public transportation; however, this has not been included in the previous site generated trip calculations.

Summary

The proposed site generated traffic to/from the site is anticipated to be minimal including during the peak hours of the day where traffic would be expected to result in a maximum one new vehicle every two and a half minute (weekday evening peak hour). This level of new traffic is generally unnoticeable. The anticipated traffic generated by the proposed development and parking lot can be safely and efficiently accommodated within the study area. The overall change in use of the site will have a negligible impact to traffic operations and safety.

Please do not hesitate to contact me directly if you have any questions concerning our evaluation at 978-794-1792.Thank you for your consideration.

Sincerely,
TEC, Inc.
*"**T**he **E**ngineering **C**orporation"*



Samuel W. Gregorio, PE, PTOE, RSP$_1$
Senior Design Engineer / Project Manager - Transportation Planning & ITS

Attachment A – Trip Generation Calculations

N:\N0946\N0946.02\Docs\Memos & Trans\N0946.02_Dover_Traffic Analysis Memo REV.docx

Attachment A - Trip Generation Assessment

Project: 14 Broadway Development - Dover, NH
Date: 7/29/2021
Analyst: TEC, Inc. / Gerson Ribeiro
Source: Institute of Transportation Engineers - *Trip Generation - 10th Ed.*

Proposed Development

Multifamily House - Midrise (LUC 221)

Units: 24 Units

	Total Trips		**Total**	% Distribution		# New Trips	
	Avg. Rates	Fitted Curve	**New Trips**	IN	OUT	IN	OUT
Weekday Daily	131	129	**132**	50%	50%	66	66
Weekday AM PH	9	8	**10**	26%	74%	3	7
Weekday PM PH	11	11	**11**	61%	39%	7	4

Shoppping Center (ITE LUC 820)

Units: 3,450 SF

	Total Trips		**Total**	% Distribution		# New Trips	
	Avg. Rates	Fitted Curve	**New Trips**	IN	OUT	IN	OUT
Weekday Daily	130	N/A	**130**	50%	50%	65	65
Weekday AM PH	3	N/A	**3**	62%	38%	2	1
Weekday PM PH	13	N/A	**13**	48%	52%	6	7

TEC The Engineering Corp

Figure 1 – 14 Broadway – Facing Northwest from Broadway – 4/23/2021

Figure 2 – 14 Broadway – Existing 1-Story Warehouse Facing West from Site– 4/23/2021

Figure 3 – 14 Broadway – Facing Southeast from North Side of Site – 4/23/2021

Figure 4 – 14 Broadway – Facing Adjacent Parcel (12 Broadway) from Broadway – 4/23/2021

Figure 5 – 14 Broadway – Facing Adjacent Parcel (18 Broadway) from Site – 4/23/2021

Figure 6 – 14 Broadway – Site Entrance Facing West from Broadway – 4/23/2021

Property ID	Location	Owner 1	Owner 2	Owner Address 1	City	State	Zip	Total Value	Land Value	Building Value	Deed Date	Last Sale Book/Page	State Class
03051-000000	14 ST JOHN ST	SAINT JOHN STREET LLC		103 BEANE LANE	NEWINGTON	NH	03801	377700	114400	263300	20201204	4840/1020	105
03052-000000	16 ST JOHN ST	BRATTER MYLES S & ELIZABETH A TRUSTEES	BRATTER FAMILY REVOCABLE TRUST	177 BARTLETT ST	PORTSMOUTH	NH	03801	375300	111800	263500	20190517	4654/677	105
03053-000000	17 19 BROADWAY	FSG3 PROPERTY GROUP LLC		10 SUMNER DR	DOVER	NH	03820	275600	111100	164500	20100329	3822/395	105
03054-000000	15 BROADWAY	HUNT MATTHEW J	CAMPBELL ALANA	35 NEW YORK ST	DOVER	NH	03820	283800	107800	176000	20201109	4830/805	105
03055-000000	13 BROADWAY	CITY OF DOVER		288 CENTRAL AVE	DOVER	NH	03820	206700	198800	7900	0	/	903
03056-000000	9 BROADWAY	CITY OF DOVER		288 CENTRAL AVE	DOVER	NH	03820	880200	117200	763000	0	/	903
03057-000000	7 BROADWAY	BROADWAY PROPERTIES LLC		7 BROADWAY	DOVER	NH	03820	168700	77500	91200	20210302	4876/473	303
03058-059000	3 5 BROADWAY	SULLIVAN JOHN W		82 ELIOT RD	KITTERY	ME	03904	349900	208800	141100	19991001	2150/700	303
03060-000000	495 503 CENTRAL AV	3L HOLDINGS LLC		1 SQUIRE WAY	STRATHAM	NH	03885	840900	211700	629200	20180604	4573/17	322
03061-000000	481 CENTRAL AV	481 CENTRAL AVE LLC		225 W SQUANTUM ST STE 200	QUINCY	MA	02171	1718000	266600	1451400	20160322	4367/210	302
03061-A00000	487 491 CENTRAL AV	3L HOLDINGS LLC		1 SQUIRE WAY	STRATHAM	NH	03885	390200	229700	160500	20180604	4573/17	326
04001-000000	505 CENTRAL AV	GARRISON PROPERTIES INC		131 CLEMENT RD	ROLLINSFORD	NH	03869	793600	231700	561900	0	0/0	303
04002-000000	4 BROADWAY	RANDALL MATTHEW		131 CLEMENT RD	ROLLINSFORD	NH	03869	417100	210100	207000	20191216	C319YR19/ET311	322
04003-000000	12 BROADWAY	RANDALL MATTHEW		131 CLEMENT RD	ROLLINSFORD	NH	03869	177100	159000	18100	20191216	C319YR19/ET311	337
04005-000000	14 BROADWAY	DOWNTOWN DOVER STORAGE LLC		42 L DOVER POINT RD	DOVER	NH	03820	258000	245300	12700	20191220	4719/976	401
04006-000000	18 BROADWAY	PARKER JASON M		18 BROADWAY	DOVER	NH	03820-3202	147400	97800	49600	20001222	2259/786	326
04007-000000	22 BROADWAY	ZELAZO THERESA E		23 BIRCH DRIVE	DOVER	NH	03820	262300	100200	162100	0	1077/69	13
04008-000000	26 BROADWAY	ASH RYAN C		26 BROADWAY	DOVER	NH	03820	192500	94300	98200	20180515	4568/51	101
04012-000000	23 25 PIERCE ST	MORNINGSTAR PROPERTIES LLC		101 PORTSMOUTH AVE	NEW CASTLE	NH	03854	379300	112000	267300	20160523	4383/47	111
04013-000000	21 PIERCE ST	MORNINGSTAR PROPERTIES LLC		101 PORTSMOUTH AVE	NEW CASTLE	NH	03854	377300	106400	270900	20160523	4383/46	111
04014-000000	17 19 PIERCE ST	MCCRACKEN MICHAEL B &	MCCRACKEN CASSANDRE M	28 HOUGH ST	DOVER	NH	03820	391000	112400	278600	20200116	4726/903	111
04015-000000	PIERCE ST	BOISSE GARY R		PO BOX 755	SOMERSWORTH	NH	03878-0755	25800	25800	0	20020926	2587/717	392
04017-000000	525 CENTRAL AV	DOVER NH CAR WASH LLC		24B LILY POND RD	BOXFORD	MA	01921	526000	238100	287900	20201223	4849/786	335
04019-000000	519 CENTRAL AV	PAPAIOANNOU ATHANASIOS &	PAPAIOANNOU SOTIRIOS	177 HENRY LAW AVENUE	DOVER	NH	03820-3816	426000	234300	191700	20040303	2951/226	326
04020-000000	511 CENTRAL AV	PAPAIONNOU SOTIRIOS & ALEXANDRA &	PAPAIONNOU ATHANASIOS AND MARTHA	1 BIRCH DR	SOUTH BERWICK	ME	03908	648300	242200	406100	20000328	2244/144	303
04021-000000	CENTRAL AV	PEOPLE'S UNITED BANK		850 MAIN ST	BRIDGEPORT	CT	06604	71900	59900	12000	0	984/445	337
04022-000000	2 10 PIERCE ST	TWO PIERCE STREET LLC		601 CENTRAL AVE	DOVER	NH	03820	363600	117000	246600	20200825	4797/574	13
04024-000000	12 PIERCE ST	PEOPLE'S UNITED BANK		850 MAIN ST	BRIDGEPORT	CT	06604	67100	60600	6500	19930922	1698/751	390
04034-000000	14 PIERCE ST	SYSTEM PROPERTIES LLC		PO BOX 297	DOVER	NH	03821	549400	115600	433800	20180810	4591/220	111
04035-000000	16 PIERCE ST	TRANSOM PROPERTIES LLC		PO BOX 1818	DOVER	NH	03821	517100	136500	380600	20191018	4700/892	104
05005-000000	526 CENTRAL AV	ADMR REALTY LLC		780 PORTSMOUTH AVE	GREENLAND	NH	03840-2121	442000	239400	202600	20140331	4204/579	326
06046-000000	488 490 CENTRAL AV	BAMFORD DAVID K		466 CENTRAL AVE SUITE 12	DOVER	NH	03820	1665800	307400	1358400	20040730	3041/644	303
24040-000000	4 WINTER ST	MCMANUS JAMES		PO BOX 1876	DOVER	NH	03820	364700	107800	256900	20090608	3746/425	111
24041-000000	15 ST JOHN ST	ATLAS MEMORIAL INC		84 BROAD ST	PORTSMOUTH	NH	03801	230200	106300	123900	20200608	4768/521	316
24042-000000	7 ST JOHN ST	CC 7 ST JOHN'S STREET LLC		PO BOX 571	GREENLAND	NH	03840	341100	112100	229000	20210108	4855/992	105

P21-29, P21-51, & P21-52 **12 & 14 Broadway**

Property ID	Location	Owner 1	Owner 2	Owner Address 1	City	State	Zip
03051-000000	14 ST JOHN ST	SAINT JOHN STREET LLC		103 BEANE LANE	NEWINGTON	NH	03801
03052-000000	16 ST JOHN ST	BRATTER MYLES S & ELIZABETH A TRUSTEES	BRATTER FAMILY REVOCABLE TRUST	177 BARTLETT ST	PORTSMOUTH	NH	03801
03053-000000	17 19 BROADWAY	FSG3 PROPERTY GROUP LLC		10 SUMNER DR	DOVER	NH	03820
03054-000000	15 BROADWAY	HUNT MATTHEW J	CAMPBELL ALANA	35 NEW YORK ST	DOVER	NH	03820
03055-000000	13 BROADWAY	CITY OF DOVER		288 CENTRAL AVE	DOVER	NH	03820
03056-000000	9 BROADWAY	CITY OF DOVER		288 CENTRAL AVE	DOVER	NH	03820
03057-000000	7 BROADWAY	BROADWAY PROPERTIES LLC		7 BROADWAY	DOVER	NH	03820
03058-059000	3 5 BROADWAY	SULLIVAN JOHN W		82 ELIOT RD	KITTERY	ME	03904
03060-000000	495 503 CENTRAL AV	3L HOLDINGS LLC		1 SQUIRE WAY	STRATHAM	NH	03885
03061-000000	481 CENTRAL AV	481 CENTRAL AVE LLC		225 W SQUANTUM ST STE 200	QUINCY	MA	02171
03061-A00000	487 491 CENTRAL AV	3L HOLDINGS LLC		1 SQUIRE WAY	STRATHAM	NH	03885
04001-000000	505 CENTRAL AV	GARRISON PROPERTIES INC		131 CLEMENT RD	ROLLINSFORD	NH	03869
04002-000000	4 BROADWAY	RANDALL MATTHEW		131 CLEMENT RD	ROLLINSFORD	NH	03869
04006-000000	18 BROADWAY	PARKER JASON M		18 BROADWAY	DOVER	NH	03820-3202
04007-000000	22 BROADWAY	ZELAZO THERESA E		23 BIRCH DRIVE	DOVER	NH	03820
04008-000000	26 BROADWAY	ASH RYAN C		26 BROADWAY	DOVER	NH	03820
04009-000000	BROADWAY	BOSTON & MAINE RR	IRON HORSE PARK	HIGH STREET	NORTH BILLERICA	MA	01862
04012-000000	23 25 PIERCE ST	MORNINGSTAR PROPERTIES LLC		101 PORTSMOUTH AVE	NEW CASTLE	NH	03854
04013-000000	21 PIERCE ST	MORNINGSTAR PROPERTIES LLC		101 PORTSMOUTH AVE	NEW CASTLE	NH	03854
04014-000000	17 19 PIERCE ST	MCCRACKEN MICHAEL B &	MCCRACKEN CASSANDRE M	28 HOUGH ST	DOVER	NH	03820
04015-000000	PIERCE ST	BOISSE GARY R		PO BOX 755	SOMERSWORTH	NH	03878-0755
04017-000000	525 CENTRAL AV	DOVER NH CAR WASH LLC		24B LILY POND RD	BOXFORD	MA	01921
04019-000000	519 CENTRAL AV	PAPAIOANNOU ATHANASIOS &	PAPAIOANNOU SOTIRIOS	177 HENRY LAW AVENUE	DOVER	NH	03820-3816
04020-000000	511 CENTRAL AV	PAPAIONNOU SOTIRIOS & ALEXANDRA &	PAPAIONNOU ATHANASIOS AND MARTHA	1 BIRCH DR	SOUTH BERWICK	ME	03908
04021-000000	CENTRAL AV	PEOPLE'S UNITED BANK		850 MAIN ST	BRIDGEPORT	CT	06604
04022-000000	2 10 PIERCE ST	TWO PIERCE STREET LLC		601 CENTRAL AVE	DOVER	NH	03820
04024-000000	12 PIERCE ST	PEOPLE'S UNITED BANK		850 MAIN ST	BRIDGEPORT	CT	06604
04030-000000	537 CENTRAL AV	PEOPLE'S UNITED BANK		850 MAIN ST	BRIDGEPORT	CT	06604
04034-000000	14 PIERCE ST	SYSTEM PROPERTIES LLC		PO BOX 297	DOVER	NH	03821
04035-000000	16 PIERCE ST	TRANSOM PROPERTIES LLC		PO BOX 1818	DOVER	NH	03821
05005-000000	526 CENTRAL AV	ADMR REALTY LLC		780 PORTSMOUTH AVE	GREENLAND	NH	03840-2121
05007-000000	530 CENTRAL AV	GOSSELLS BONNIE & BLICHER E CO-TRUSTEES	C/O 7 ELEVEN INC	PO BOX 711	DALLAS	TX	75221
06046-000000	488 490 CENTRAL AV	BAMFORD DAVID K		466 CENTRAL AVE SUITE 12	DOVER	NH	03820
06054-A00000	THIRD ST	CITY OF DOVER		288 CENTRAL AVE	DOVER	NH	03820
24040-000000	4 WINTER ST	MCMANUS JAMES		PO BOX 1876	DOVER	NH	03820
24041-000000	15 ST JOHN ST	ATLAS MEMORIAL INC		84 BROAD ST	PORTSMOUTH	NH	03801
24042-000000	7 ST JOHN ST	CC 7 ST JOHN'S STREET LLC		PO BOX 571	GREENLAND	NH	03840
04003-000000	12 BROADWAY	RANDALL MATTHEW		131 CLEMENT RD	ROLLINSFORD	NH	03869
04005-000000	14 BROADWAY	DOWNTOWN DOVER STORAGE LLC		42 L DOVER POINT RD	DOVER	NH	03820
		TEC, INC.	CHRIS RAYMOND	169 OCEAN BLVD.	HAMPTON	NH	03824
		CLAYTON F. RANDALL LIVING REVOCABLE TRUST		131 CLEMENT ROAD	ROLLINSFORD	NH	03869

City of Dover, New Hampshire
SITE REVIEW APPLICATION

[Revision Date: July 1, 2021]

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

APPLICANT AND OWNER INFORMATION

Name of Applicant: American Durafilm Co., Inc. Telephone # 508-429-8000

Address of Applicant: 55 Boynton Road PO Box 6770 Holliston, MA 01746

E-Mail Address: mhendrick@americandurafilm.com

Name of Property Owner (*if different from applicant*): DBIDA Telephone # 603-516-6008

Address of Property Owner: 288 Central Avenue Dover, NH 03820

PROPERTY INFORMATION

Address of Property: Venture Drive

Assessor's Map # D Lot(s) # 11-1

Zoning District(s) IT Overlay District(s) N/A

Size of Parcel: 1,576,436 sq. ft. 36.19 ac. Property Deed: Book 4368 Page: 691

Existing Use of Property: Vacant

SITE PLAN INFORMATION

Describe Proposed Use: Light Manufacturing/Office Building

Area of Parcel to be Developed: ± 86,900 sq. ft.

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

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

Number of Parking Spaces: Existing 0 Proposed 30

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

Number of Employees Total: 1-15 In Maximum Shift: 1

Disposition of Parcel:

Building Footprint 15,000 sq. ft.
Proposed Addition 5,000 sq. ft.
Total Building Area 20,000 sq. ft.

Paved Area 25,265 sq. ft.

Building Setbacks:

Front Yard 50 ft.

Rear Yard 50 ft.

Side Yard: Right 50 ft. Left 50 ft.

City Water? X Yes ___ No How far is city water from the property? at Venture Drive

City Sewer? X Yes ___ No How far is city sewer from the property? at Venture Drive

TRANSFER OF DEVELOPMENT RIGHTS INFORMATION N/A

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

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

Relief sought (Check All That Apply):

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

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

_____

_____

_____

BUILDING INFORMATION

Type of Building to be Built: Steel & Concrete with Metal Siding

Height of Building: 28 ft. Finished Floor Elevation: 189.5 ft.

Number of Seats (where applicable) N/A

Estimated value of construction: $350,000 Refuse removal: Public, Private (circle one)

WAIVER REQUESTS

Site Review Regulations section(s) to be waived: Article IV, Section 14. G (Landscaping) (3)(a)

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

See attached letter from Landscape Architect.

SURVEYOR INFORMATION

Name of Surveyor and Company (Licensed in N.H.) Kevin M. McEneaney, LLS McEneaney Survey Associates

Address 24 Chestnut Street Dover, NH 03820 Telephone #: 603-742-0911

Professional License #: NH LLS #661 E-mail address: kevin@surveynh.com

ENGINEER INFORMATION

Name of Engineer and Company (Licensed in N.H.) Stephen J. Haight, P.E. Civilworks New England

Address PO Box 1166 Dover, NH 03821 Telephone #: 603-749-0443

Professional License #: NH Civil Engineer #7978 E-mail address: shaight@civilworksne.com

ARCHITECT INFORMATION

Name of Architect and Company (Licensed in N.H.) John W. Tuttle, AIA - TW Designs

Address 254 Drake Hill Road Strafford, NH 03884 Telephone #: 603-664-2181

Professional License #: NH Licensed Architect # 4015 E-mail address: john@tw-designs.com

LANDSCAPE ARCHITECT INFORMATION

Name of Landscape Architect and Company (Licensed in N.H.) Jeffrey R. Hyland Ironwood Design Group, LLC

Address PO Box 873 Newmarket, NH 03857 Telephone #: 603-772-0590

Professional License #: NH Landscape Architect #0026 E-mail address: jhyland@fewood.com

WETLAND

~~SOIL~~ SCIENTIST INFORMATION

Name of ~~Soil~~ Wetland Scientist and Company (Licensed in N.H.) Damon E. Burt, CWS Fraggle Rock Environmental

Address 38 Garland Road Strafford, NH 03884 Telephone #: 603-969-5574

Professional License #: NH CWS #163 E-mail address: frenvironmental@gmail.com

CONSERVATION EASEMENT HOLDER N/A

Name of Easement Holder: _____ Telephone #_____

Address Easement Holder: _____

SIGNATURES

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

Signature of Property Owner: _____ Date: _____

X Signature of Applicant (*if different from owner*): _____ Date: 8/6/21

Signature of Agent: _____ Date: _____

AUTHORIZATION TO ENTER SUBJECT PROPERTY

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

Signature of Property Owner: _____ Date: _____

AUTHORIZATION TO COMPLETE THE PROJECT ON SUBJECT PROPERTY

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

Signature of Property Owner: _____ Date: _____

X Signature of Applicant (*if different from owner*): _____ Date: 8/6/21

CERTIFICATION OF FEES

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

Signature of Property Owner: _____ Date: _____

X Signature of Applicant (*if different from owner*): _____ Date: 8/6/21

CITY OF DOVER SITE REVIEW
LIST OF ABUTTERS

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

Owner:

TAX MAP	LOT #	PROPERTY OWNER	MAILING ADDRESS
D	11-1	DBIDA	288 Central Avenue Dover, NH 03820

Applicant (if different from owner):

APPLICANT NAME	APPLICANT COMPANY	MAILING ADDRESS
Mack Hendrick	American Durafilm Co., Inc.	55 Boynton Road Holliston, MA 01746

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	MAILING ADDRESS
Stephen J. Haight, P.E.	Civilworks New England	PO Box 1166 Dover, NH 03821
Kevin M. McEneaney, LLS	McEneaney Survey Associates	24 Chestnut Street Dover, NH 03820

Conservation Easement Holder: N/A

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	MAILING ADDRESS

PLANNING BOARD FEE SCHEDULE/INVOICE

(Revised July 1, 2021)

Below are the fees associated with plan review and are subject to a nonrefundable application fee to cover administrative expenses. Please complete the information below and provide payment with your application submittal. **Plan Review Fees shall be paid prior to technical review committee (TRC) being scheduled.** For plans not requiring TRC review, **fees are due 21 days prior** to the Planning Board meeting. Staff will coordinate abutter/notice fees, which will be invoiced and must be paid 28 hours before the Planning Board meeting for an application to be heard. Fees shall be paid by cash or check made payable to "City of Dover".

A. Plan Review Fees

1. Application fee for the following (SELECT ALL THAT APPLY):

- ☐ SUBDIVISION Application fee $200.00 + $150.00 x # _____ new lots created = $_____
- ☐ LOT LINE ADJUSTMENT Application fee $200.00 + $100.00 X # ___ of lots involved = $_____
- ☐ TRANSFER OF DEVELOPMENT RIGHTS Application fee $200.00 = $_____
- ☐ SITE REVIEW – RESIDENTIAL Application fee $200.00+ $100.00 x # __ per dwelling unit =$_____
- ☒ SITE REVIEW – NON-RESIDENTIAL Application fee $200.00 + (not to exceed $10,000)
  - New construction $.15 sq. ft. x # 20,000 sq. ft.= $ 3200.00
  - Additions (new floor space) $.10 per sq. ft. x # _____sq. ft.= $_____
- ☐ MOTEL/HOTEL $35.00 x # ___ per lodging unit= $_____
- ☐ CHANGE OF USE Application fee $200.00 + (not to exceed $5,000)
  - Existing floor spaces $.10 per sq. ft. x # _____ sq. ft. = $_____
- ☒ CONDITIONAL USE PERMIT Application fee $200.00 x # 1 per Application = $ 200.00
- ☐ GRAVEL PIT/ EXCAVATIONS
  - Application fee $50.00= $_____
  - Permit fee $75.00= $_____
- ☐ EXTENSIONS/AMENDMENTS/WAIVERS FOR AN APPROVED PLAN Application fee $200.00 = $_____
- ☐ REQUEST FOR REZONING Application fee $200.00 = $_____
- ☐ DRIVEWAY WAIVER Application fee $200.00 = $_____

2. TOTAL IMPERVIOUS PAVED AREA (for new development, roadways or additions to existing parking lots, (not to exceed $10,000)) Application fee of $200.00 is N/A if it is part of a Site Review or Subdivision Plan. $200.00 + $.07 per sq. ft. x # 25,265 sq. ft. = $ 1768.55

SUBTOTAL PLAN REVIEW FEE (A) = $ 5168.55

AND

B. Abutter Notification/Mailing Labels - this office will create and print the abutter list and provide labels in triplicate for each abutter. The applicant/owner will review the list for accuracy and provide to us the engineer, architect, licensed land surveyor (LLS), licensed landscape architect (LLA) and/or soil scientist whose professional seal appears on the plan with names and addresses for notices.

- ☒ Applicant & Owner, engineer, architect, LLS, LLA and/or soil scientist
  - Certified letters fee # _____ of x $8.00= $_____
- ☒ Certified letters fee: # of abutters _____ X $8.00= $_____
- ☐ First Class Mail fee (for individual owner of units within a condominium or other collective form of ownership): # of abutters _____ X $1.00= $_____
- ☒ Creating/Printing Abutter Labels in triplicate per sheet _____ x $10.00= $_____

C. Foster's newspaper public notice fee $100.00 x # _____ applications = $_____

SUBTOTAL NOTICE FEE (B & C) = $_____

TOTAL INVOICE AMOUNT (A, B & C) = $_____

PLAN REVIEW FEE COLLECTED/PAID = $ _____

BALANCE DUE = $ _____

The balance due must be paid 28 hours prior to the Planning Board Meeting, to be heard.

City of Dover, New Hampshire
SITE PLAN REVIEW SUBMISSION CHECKLIST

[Revision Date: June 4, 2019]

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

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

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

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

APPLICANT: American Durafilm Co., Inc. File Number: P21-

PROJECT TITLE: Site Plan for American Durafilm

PROPERTY LOCATION: Innovation Way (Venture Drive) Tax Map: D Lot: 11-1

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

	Explain How Provided	Reviewed
Depict pedestrian walkways and accessible access	x	
Existing and proposed property lines with dimensions and bearings tied into Dover's Geographic Information System coordinate system	x	
Existing and proposed topographic information at two foot intervals	x	
Existing and proposed buildings and structure locations	x	
Minimum building setbacks or build to lines on all lots	x	
Location and size of existing and proposed electric, telephone, gas cable and other underground utilities	x	
Existing and proposed water lines and fire hydrants, including materials and capacity needed	x	
Location and materials of sanitary sewage facilities within project site and projected additional peak hour sewer load	x	
Existing and proposed stormwater lines and facilities	x	
Lighting plan depicting all existing and proposed exterior light fixtures and a lighting level analysis for parking lots	x	
Location of Flood Hazard Zone	N/A	
Location of all bodies of water and watercourses	N/A	
Location of wetlands and buffers	x	
Neighborhood plan with aerial underlay showing how project relates to abutting uses within the plan set	x	
Existing natural features and/or significant vegetation on property	x	
Depict existing contours up to 100 ft. beyond project limits	x	
Landscape plan depicting existing and proposed landscaping, prepared by a licensed Professional Landscape Architect	x	
Location of parking layout delineating spaces and arrangement; note addressing maximum required spaces	x	
Location, material and size of existing and proposed pavement area	x	
Location of proposed fire lanes	x	
Specify finished floor elevations of buildings	x	
Location of solid waste disposal facilities (dumpster, pad and screening, etc.), including required screening	x	
Depict all service, storage, loading bays and utility areas	x	
All applicable Dover Common Site Plan notes	x	
11. Additional Information if appropriate		
Stormwater Management Plan depicting the existing & proposed storm drainage system and engineered drainage analysis	x	
Stormwater Management System Operation and Maintenance Plan	x	
Letter to Serve from Public and Private Utilities	x	
Erosion and Sedimentation Control Plan	x	
Landscape Operation and Maintenance Plan	x	
Proposed restrictive covenants or homeowners association documents	N/A	
Dates and permit numbers of all required state and federal permits	N/A	
If wetland buffer, indicate placards locations, as applicable	TBD	
Depict test boring locations, groundwater elevations and soil profiles and/or soils types call-outs	X	
Location of proposed drive-in facilities	N/A	
Provide additional exhibits/technical data determined appropriate by the Planning Board or its staff as required	TBD	

REVIEWED BY: _____ DATE_____ TRC DATE_____

City of Dover, New Hampshire
CONDITIONAL USE PERMIT APPLICATION

[Revision Date: October 19, 2020]

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

APPLICANT AND OWNER INFORMATION

Name of Applicant: American Durafilm Co., Inc. Telephone # 508-429-8000

Address of Applicant: 55 Boynton Road Holliston, MA 01746

E-Mail Address: mhendrick@americandurafilm.com

Name of Property Owner (if different from applicant): DBIDA Telephone # 603-516-6008

Address of Property Owner: 288 Central Avenue Dover, NH 03820

PROPERTY INFORMATION

Assessor's Map # D Lot(s) # 11-1

Address of Property: Innovation Way (Venture Drive)

Zoning District(s) IT Overlay District(s) NONE

Existing Use of Property: Vacant

CONDITIONAL USE PERMIT INFORMATION

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

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

Describe Proposed Use or Activity That Requires Conditional Use Permit and Describe Any Impacts:

The proposed site design will create a 7,276 s.f. impact within the wetland buffer for grading associated with the bio retention basin and areas adjacent to the proposed 5,000 s.f. building addition. This impact also includes 72 s.f. of the proposed paved area. There are no direct impact to the wetlands.

List Any Associated State or Federal Permits That Have Been or Will Be Applied For and Indicate Their Status: NONE

Name of Professional That Prepared Plans: Stephen J. Haight, P.E. - Civilworks New England

Address PO Box 1166 Dover, NH 03821 Telephone #: 603-749-0443

Professional License #: NH Civil Engineer #7978 E-mail address: shaight@civilworksne.com

SIGNATURES

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

Signature of Property Owner: _____ Date: _____

x

Signature of Applicant (if different from owner): _____ Date: 8/6/21

Signature of Agent: _____ Date: _____

AUTHORIZATION TO ENTER SUBJECT PROPERTY

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

Signature of Property Owner: _____ Date: _____

CITY OF DOVER CONDITIONAL USE
LIST OF ABUTTERS

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

Owner:

TAX MAP	LOT #	PROPERTY OWNER	MAILING ADDRESS
D	11-1	DBIDA	288 Central Avenue Dover, NH 03820

Applicant (if different from owner):

APPLICANT NAME	APPLICANT COMPANY	MAILING ADDRESS
Mack Hendrick	American Durafilm Co., Inc.	55 Boynton Road Holliston, MA 01746

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	MAILING ADDRESS
Stephen J. Haight, P.E.	Civilworks New England	PO Box 1166 Dover, NH 03821
Kevin M. McEneaney, LLS	McEneaney Survey Associates	24 Chestnut Street Dover, NH 03820

Conservation Easement Holder: N/A

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	MAILING ADDRESS

PROJECT NARRATIVE

for

AMERICAN DURAFILM CO., INC.

Site Plan

Innovation Way (&Venture Drive)
Tax Map D, Lot 11-1

AUGUST 2021

PROJECT OVERVIEW & SITE CHARACTERISTICS

The project parcel is shown on Tax Map D as Lot 11-1, is located within the IT District and consists of +/- 36 acres, currently undeveloped. The project applicant is proposing a +/- 15,000 s.f. (with a future 5,000 s.f. addition) light manufacturing building with associated parking. The 36+ acre lot is currently owned by the Dover Business & Industrial Development Authority (DBIDA). The Applicant has met with DBIDA and received an endorsement to proceed.

As part of this site plan proposal, the applicant will be proposing a subdivision to create a separate lot containing approximately 3 acres for their facility. The access to the lot will be located on Innovation Way. Innovation Way is a City road, however, the abutting parcel constructed this roadway and has a mechanism in place that other allows this parcel to use Innovation Way with compensation made to the abutter.

Utilities are currently located in Venture Drive. As part of this project the City of Dover will be extending utilities up Innovation Way to service this new parcel. An easement may be required to accommodate the necessary underground utilities along the ROW and will be created and shown on the proposed subdivision plan that creates the new parcel for this site.

The proposed site will include public water and sewer connections, underground electric service, natural gas service, and associated drainage improvements. A small portion of the grading and drainage work is proposed within the 50' wetland buffer with impacts of 7,276 sf. (See Conditional Use Permit application). There are no proposed impacts to any wetlands.

The project site consists of the following general improvements:

- Subdivide the parent parcel and create a lot of sufficient size to accommodate the current and future expansion building needs for the Applicant.
- Construction of +/- 15,000 SF professional/light manufacturing facility with associated parking and truck access.
- Construction of on-site stormwater detention and treatment system, grading, and other drainage requirements.
- On site utility construction.
- Construction of (2) new entrances on Innovation Way.
- Stabilize remaining areas with loam and seed.

PROJECT NARRATIVE

for

AMERICAN DURAFILM CO., INC.

Site Plan

Innovation Way (&Venture Drive)
Tax Map D, Lot 11-1

AUGUST 2021

DRIVEWAY AND PARKING LOT

Employee and visitor parking will be segregated from the truck delivery entrance. The parking area will have a 24' wide driveway entrance and the truck access will be 50' wide to accommodate delivery trucks and emergency vehicles access. Lighting for the proposed parking lot and driveway will be per the Lighting Plan and will be LED fixtures that are dark sky compliant.

For the proposed development, the City of Dover parking maximums allow for the following:

Required/Proposed:

- Office: 1 space per 300 s.f. (2,500 s.f.) = 8 surface spaces
- Warehouse: 1 space per 800 s.f (17,500 s.f) = 22 surface spaces

    - Total proposed = 30 **Surface Spaces (includes 2 Accessible Spaces)**

WETLAND SETBACK IMPACT TYPE

The project work requires a conditional use permit from the City of Dover. Approximately +/- 7,276 sf of the wetland buffer will be impacted. The project does not impact bogs, marshes, sand dunes, tidal wetlands, cedar swamps, undisturbed tidal buffer zone, or involve any work within 50 feet of a salt marsh. The project is not located within 100 feet of prime wetlands.

DRAINAGE

The parcel is located at the corner of Venture Drive and Innovation Way. The proposed development will consist of approximately 3 acres surrounded by other commercial properties within a previously established industrial park. The watershed of the parcel includes the project site. On site soils are a mix of Windsor Loamy Fine Sand, Windsor Loamy Sand, Suffield Silt Loam, and Buxton Silt Loam. The Windsor series soils are HSG A with the Suffield and Buxton series soils classified as HSG C.

The proposed development of the site includes the construction of a 15,000 s.f. light manufacturing facility and offices and a 5,000 s.f. addition with associated parking having site access from Innovation Way (use allowed with compensation to the abutter). The project also includes the installation of utility and drainage, including on-site stormwater detention and treatment system. The post development watershed is modeled utilizing the same points of analysis as the predevelopment watershed, allowing direct comparison of the peak runoff between the pre and post developed conditions (see drainage report).

PROJECT NARRATIVE

for

AMERICAN DURAFILM CO., INC.

Site Plan

Innovation Way (&Venture Drive)
Tax Map D, Lot 11-1

AUGUST 2021

UTILITIES

The proposed project will connect to City of Dover water and sewer as well as Unitil for natural gas, and Eversource for electricity. Water, sewer, electric lines and natural gas lines are currently located within Venture Drive. In conjunction with the City of Dover these utilities will be extended up Innovation Way to service the proposed building. An easement may be required to accommodate the necessary underground utilities along the ROW and will be created and shown on the subsequent subdivision plan that creates the new parcel for this site. Building connections will be made per the City's Community Services Utility Division and Fire Department requirements and standards.

WAIVER REQUEST

ACCOMPANYING

SITE REVIEW APPLICATION

for

American Durafilm Co., Inc.

Innovation Way & Venture Drive

Tax Map D, Lot 11-1

Dover Site Review Regulations: Section 153-14. C. (5)(b)

For access to a proposed nonresidential or to a multifamily dwelling containing more than four dwelling units, driveway entrances and exits shall be as follows:

(a) Where one entrance/exit is designed to service a parcel, the width shall not exceed 32 feet.
(b) Where two entrances/exits are designed to service a parcel, the width of each shall not exceed 24 feet.

The proposed project design includes two entrances/exits. One entrance/exit will be used for employee and guest vehicles and meets the 24 foot wide criteria. The second entrance/exit is 50 foot wide to accommodate large delivery trucks/tractor trailers typical for the allowed use, as well as emergency vehicles. The design of this wider entrance/exit will not negatively affect surrounding parcels or traffic flow given its location at the end of the existing ROW cul-de-sac.

Granting this waiver is in general conformance with the intent of the Site Review Regulations.

Ironwood
Landscape Architecture • Planning

August 2, 2021

Mr. Chris Parker
Director of Planning
City of Dover
288 Central Avenue
Dover, NH 03820-4169

RE: Proposed American Durafilm Building, Innovation Way
Request for waiver of minimum tree caliper

Dear Mr. Parker:
This letter is to request a waiver for the requirement of minimum tree caliper of 3.5 inches-4 inches for the proposed project on Innovation Way.

It is our experience that trees of a smaller caliper typically establish themselves both quicker and more securely than newly installed trees of the larger diameter. The smaller caliper trees will produce new growth sooner and require less maintenance than larger caliper trees, promoting a higher long-term success rate.

For this reason, the City of Portsmouth now requires trees planted in the right of way to be no larger than 2 inches-2.5 inches.

We have proposed 3 inches-3.5 inches trees as a compromise to the current Dover 3.5 inches-4 inches requirement.

Overall, the proposed landscape plantings for the American Durafilm project meet and/or exceed the intent of the City's landscape requirements with respect to aesthetic value, hardiness, diversity, and wildlife and pollinator benefit.

Sincerely,

Jeffrey R. Hyland, PLA, ASLA, CLARB
Ironwood Design Group, LLC
Firm Principal

Ironwood Design Group
PO Box 873
Exeter, NH 03833
603.772.0590 | voice

JHyland@FeWood.com
www.FeWood.com | web

Jase Gregoire

From: Jase Gregoire
Sent: Friday, August 6, 2021 1:35 PM
To: D.White@dover.nh.gov
Subject: CNE21041-American Durafilm-Innovation Way Dover, NH 03820 Tax Map D, Lot 11

Good Afternoon Dave,

American Durafilm CO, Inc is proposing to construct a commercial building on Innovation Way

Parcel: Map D, Lot 11

The project will generally consist of (1) 20,000 sf building, which is expected to generate sewer & water usage of approximately 200 gpd*.

* Volume is based on NHDES Env-Wq 1008.03 Table 1008-1 Design Flow figures: for Unspecified office space (2,000 sf) and warehouses (10 employees).

Please advise to the availability of sewer and water to the site.

Regards

Jase Gregoire

Jase R. Gregoire
Staff Engineer
Civilworks New England/Haight Engineering, PLLC
181 Watson Road
P.O. Box 1166
Dover, New Hampshire 03821
O: 603.749.0443
F: 603.749.7348
jgregoire@civilworksne.com
www.civilworksne.com

Jase Gregoire

From: Jase Gregoire
Sent: Friday, August 6, 2021 11:34 AM
To: michael.busby@eversource.com
Cc: Emmons, Trevor S; Kosko, Nickolai E; mhendrick@americandurafilm.com
Subject: CNE21041-American Durafilm-Innovation Way Dover, NH 03820 Tax Map D, Lot 11 - Ability to Serve
Attachments: 21041-American Durafilm-Draft Utility plan (8-6-21).pdf

Good morning Mr. Busby,

As part of the site planning process in the City of Dover they require that we reach out to the utility provider and request an acknowledgement of an ability to serve.

Attached is a draft utility plan showing the proposed project.

The project is located at Innovation Way, Dover NH 03820. There is currently no utilities on Innovation Way, in discussions with the City of Dover the plan is to bring all utilities (Water, Sewer, Electric, & Gas) along the right side of Innovation Way in the ROW (no utilities in the pavement).

The project proponent has estimated the power needed for the machinery in the building will need a 1200amp 480V 3 Phase system. They will need additional power for the rest of the building. The project proponent will be in contact with you to set up a work order and provide any additional information.

If you have any questions or require additional information please do not hesitate to contact me directly.

Regards

Jase R. Gregoire
Staff Engineer
Civilworks New England/Haight Engineering, PLLC
181 Watson Road
P.O. Box 1166
Dover, New Hampshire 03821
O: 603.749.0443
F: 603.749.7348
jgregoire@civilworksne.com
www.civilworksne.com

Jase Gregoire

From: Jase Gregoire
Sent: Friday, August 6, 2021 10:38 AM
To: oliver@unitil.com
Subject: CNE21041-American Durafilm-Innovation Way Dover, NH 03820 Tax Map D, Lot 11 - Ability to Serve
Attachments: 21041-American Durafilm-Draft Utility plan (8-6-21).pdf

Good morning Janet,

As part of the site planning process in the City of Dover, they require that we reach out to the utility providers and request an acknowledgement of an ability to serve.

I've attached the construction project worksheet and a sketch plan showing the location and overall intent of the project.

The project is located at Innovation Way, Dover NH 03820. There is currently no utilities on Innovation Way, in discussions with the City of Dover the plan is to bring all utilities (Water, Sewer, Electric, & Gas) along the right side of Innovation Way in the ROW (no utilities in the pavement).

If there is any question please don't hesitate to contact me.

Regards,

Jase Gregoire

Jase R. Gregoire
Staff Engineer
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181 Watson Road
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Dover, New Hampshire 03821
O: 603.749.0443
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jgregoire@civilworksne.com
www.civilworksne.com

Landscape Best Management Practices
Operations and Maintenance Plan

American Durafilm

Innovation Way

Dover, NH

Prepared for
Civil Works New England
181 Watson Road
Dover, NH 03821
July 31, 2021

Prepared by
Ironwood Design Group, LLC
Exeter, New Hampshire 03833

Ironwood
Landscape Architecture • Planning

Landscape Maintenance

The landscape enhancements proposed for the American Durafilm Development will require modest maintenance at various times throughout the year.

For the site plantings, maintenance is most important during the first 1-2 years following installation when plants are becoming established. Anyone involved in the upkeep of the facility should become familiar with the site design, installed plant materials, and design features.

Identified below are the required minimum maintenance tasks.

Weekly Tasks

1. Prune back any vegetation overhanging curbs or sidewalks.
2. Remove litter from plants bed.
3. Remove any broken or fallen branches from trees.
4. Remove sucker growth from tree trunks.
5. Remove weeds larger than 2 inches high or wide from plant beds. Weeds 2 inches and larger must be removed to minimize the opportunity for the dispersal of weed seeds; weeds should NOT be killed and left in planting beds. **The application of herbicides such as Roundup is discouraged.**
6. Any invasive species seedlings observed should be removed and disposed of properly.
7. Replace any bark mulch that has been washed out of plant beds. Smooth mulch layer if it has been disturbed.
8. Check plants for signs of stress, pests or disease.
9. Notify Owner for authorization to replace dead plants at the appropriate time (see annual tasks, September).
10. If a significant decline in plant health is attributed to an insect pest, **apply an organic product and/or process** to control the pest.
11. Water any plants that are dry and stressed.
12. Identify other tasks listed on the Annual and Monthly checklist of tasks.

Annual Tasks

Early Spring

1. Prune any winter damage on trees, and in particular look for damaged branches that interfere with public safety. Trees adjacent to pedestrian sidewalks shall have branches pruned to 6-foot height.
2. Trim any perennial foliage left in the fall for winter interest to within six inches of the ground.
3. Gently prune shrubs at appropriate time of year based on species, for shape and form. **Do not shear**.
4. Add new mulch to plant beds where the mulch depth has been reduced to less than 2 inches. Mulch depth shall not exceed two inches. Mulch is not required where shrubs or groundcover completely hide the soil surface from view.

June, July, August

No additional tasks.

September

1. Inventory all plant materials, including an exact count of all shrubs and trees.
2. Replace dead or missing plants.

October

No additional tasks.

November

1. Remove leaves from lawn areas and planting beds.
2. Remove perennial vegetation that has died back for the season.
3. Apply “WILT-PRUF” to broadleaf evergreens, according to label instructions, to protect shrubs from winter die back.
4. Prior to the first hard freeze, disconnect the garden hose from the building hose bib.

December

1. Prune any tree branches that interfere with public safety.
2. Prune street trees yearly to encourage strong growth the following growing season. Trees adjacent to pedestrian sidewalks shall have branches pruned to 6-foot height.

Stormwater Management System Inspection & Maintenance Plan

Prepared for

AMERICAN DURAFILM
Map D, Lot 11-1

Innovation Way
Dover, New Hampshire
Strafford County

August, 2021

Owner of Record:

AMERICAN DURAFILM CO. INC.
55 Boynton Rd.
Holliston, Massachusetts 01746

Prepared By:

CIVILWORKS NEW ENGLAND
P.O. Box 1166
181 Watson Road
Dover, New Hampshire 03821

Introduction

Civilworks NE, has prepared the following Stormwater Management System Inspection & Maintenance Plan for **American Durafilm Co. Inc.** The intent of this plan is to provide a list of procedures that document the inspection and maintenance requirements of the Stormwater Management System for this site.

The following inspection and maintenance program is necessary in order to keep the Stormwater Management System functioning properly. These measures will also help to minimize potential environmental impacts to the areas surrounding the developed site. By following the enclosed procedures, the property owners, and maintenance personnel will be able to maintain the functional design of the Stormwater Management System and maximize its ability to remove sediment and other contaminants from site generated stormwater runoff while at the same time ensuring the recharge of groundwater resources through continued infiltration.

This plan also requires the Owner/Operator to prepare and implement a salt minimization plan to reduce salt usage on-site and ultimately within the watershed. This plan will allow the owner/operator to monitor and modify how much salt is needed, when it should be applied, where it needs to be applied, with the ultimate goal of reducing salt-use without compromising safety. It is expected that salt-use reduction will lead to long-term cost-savings as a result of purchasing less salt and reduced impacts on vegetation (e.g., landscaping) and corrosion of infrastructure .

The salt minimization plan should include the retention of a contractor who has completed the Green SnowPro Training course and obtained NH DES Salt Application Certification.

It is anticipated that this be a living document that will be updated at regular intervals (recommend updating annually in advance of the winter season in order to facilitate adjustments).

Owner

American Durafilm Co. Inc.
55 Boynton Road
Holliston, MA 01746

In the event of a change in ownership, this Inspection and Maintenance Plan shall be transferred to the new party; transfer shall be documented to NH DES in writing.

Contact / Responsible Party

American Durafilm Co. Inc.
55 Boynton Road
Holliston, MA 01746

Mack Hendrick
PHONE: (508) 429-8000

The contact information for the Contact / Responsible Party shall be kept current; transfer shall be documented to NH DES in writing.

Management Company

American Durafilm Co. Inc.
55 Boynton Road
Holliston, MA 01746

The contact information for the Management Party shall be kept current.

Inspection Schedule / Record Retention

Inspection frequency should, at a minimum, be in accordance with New Hampshire Stormwater Manual, Volume 2, latest edition, as updated by NH DES. See the Inspection and Maintenance Plan for frequency requirements. A copy of the completed Stormwater Management System's Inspection & Maintenance Log and Deicing Salt Quantity Use Log shall be maintained, kept on-site, and be made available to local, state, or federal regulators as applicable by law. All Inspection and Maintenance records must be provided to NH DES upon request.

Stormwater Management System Components

The Stormwater Management System associated with the project is designed to mitigate both the quantity and quality of site-generated stormwater runoff and to recharge the underlying groundwater resources. As a result, its design includes the following elements:

- Pipes/Culverts
- Outlet Structures
- Energy Dissipation Structures
- Catch Basins
- Bioretention Basin
- Treatment Swale
- Pavement
- Litter / Trash Removal

Structure callouts correlate to the design plans, a copy of which shall be maintained with this Inspection and Maintenance Plan.

Control of Invasive Species

During maintenance activities, check for the presence of invasive plants and remove in a safe manner. Invasive plants shall be controlled to prevent them from reproducing, spreading, or re-growing. See the University of New Hampshire – Cooperative Extension's "Method for Disposing Non-Native Invasive Plants", included at the end of this manual, for guidance on the removal and disposal of invasive species.

Inspection and Maintenance Plan

By implementing the following procedures, the owners will be able to maintain the functional design of the Stormwater Management System and maximize the system's ability to remove sediment and other contaminants from site generated stormwater runoff and to effectively recharge the underlying groundwater resources.

PIPES/CULVERTS:

- Inspect once per year.
- Inspect for clogging and sediment accumulation.
- Remove all debris immediately and sediment accumulations ≥ 2 inches.

OUTLET STRUCTURE(S):

- Inspect once per year.
- Inspect for clogging and sediment accumulation.
- Remove all debris immediately and sediment accumulations ≥ 2 inches.

ENERGY DISSIPATION STRUCTURES (RIP RAP): As Applicable

- Inspect the outlet protection annually for damage and deterioration. Repair damages immediately.
- If stones become displaced from the riprap areas they should be replaced immediately and chinked in to assure stability. Add additional riprap as needed. Vegetation growing through the riprap should be eliminated at least yearly.

CATCH BASIN(S):

- Inspect once per year.
- Inspect for floatables, sediment accumulation, and hydrocarbons (oils and grease).
- Remove all floatables immediately and sediment accumulations ≥ 1 foot.
- Hydrocarbons shall be removed immediately by skimming, absorbent materials, or other methods and should be disposed of in accordance with applicable State and Federal regulations.

BIORETENTION BASIN:

- Inspection, by a **qualified professional**, of detention basin at least twice annually, and following any rainfall event exceeding 2.5 inches in a 24 hour period, with maintenance or rehabilitation conducted as warranted by such inspection.
- Embankments and spillways should be inspected by a **qualified professional** for settlement, erosion, seepage, animal burrows, woody vegetation, and other conditions that could degrade the embankment and reduce its stability for impounding water. Immediate corrective action should be implemented if any such conditions are found.
- Inlet and outlet pipes, inlet and outlet structures, energy dissipation structures or practices, and other structural appurtenances should be inspected by a **qualified professional**, and corrective action implemented (e.g., maintenance, repairs, or replacement) as indicated by such inspection.
- The bottoms, interior and exterior side slopes, and crest of earthen detention basins should be mowed, and the vegetation maintained in healthy condition, as appropriate to the function of the facility and type of vegetation.

- Vegetated embankments that serve as “berms” or “dams” that impound water should be mowed at least once annually to prevent the establishment of woody vegetation.
- Trash and debris should be removed from the pond and any inlet or outlet structures whenever observed.
- Accumulated sediment should be removed when it significantly affects pond capacity.

TREATMENT SWALE:

- Inspect once per year.
- Inspect for erosion, sediment accumulation, vegetation loss, and presence of invasive species.
- Remove debris and accumulated sediment, based on inspection.
- Repair eroded areas as needed; remove invasive species and dead vegetation.
- Perform periodic mowing of swales (at least twice annually), maintain a 4” stand of vegetative growth.

PAVEMENT:

- Minimize sanding.
- Minimize application of salt for ice control.
- Clean periodically (1-2 times per year) using a sweeper or vacuum sweeper. Vacuum sweeping is the preferred method.

LITTER / TRASH REMOVAL:

- Routinely patrol site for litter pick up.

DE-ICING AGENTS

- To address the concerns associated with the application of chlorides and other deicing materials, NHDES recommends that the Owner/Operator develop a Road Salt and Deicing Minimization Plan for the parking lots and roadways. The plan should develop the policies that the development will keep in place to minimize salt and other deicer use after the project has been completed. The plan should include tracking the use of salt and other deicers for each storm event and compiling salt use data annually. (See Anti-icing Data Form in the appendix).
- Use sand as primary agent for driveway and access way safety during ice and snow conditions
- Minimize the use of salt during the winter
- Use de-icing or anti-caking agents, added to enhance performance and application characteristics of sand mixtures, only as necessary and at minimum application rates.
- Recommend using a certified Winter Operator (Green SnowPro Trained) for applying de-icing agents.
- Monitor weather and apply de-icing agents based on weather conditions and temperatures.

ANTI-ICING AND SALT MINIMIZATION

- Owner to develop a Road Salt and Deicing Minimization Plan
- Provide a written policy that the “Development” will keep in place to minimize salt and other deicer use after the project has been completed.
- Use the attached form to track the use of salt and other deicers for each storm event and compiling salt use data annually.

Inspection & Maintenance Table

System Component / BMP	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance / Cleanout Threshold
Pipes/Culverts	Annually	• Check for sediment accumulation • Check for erosion • Ensure swale is stabilized • Maintain healthy stand of veg., 4" minimum • Inspect for invasive species	≥ 1 in. sediment Repair immediately Restore veg. in-kind Mow twice per year Remove/Dispose of accordingly
Outlet Structure(s)	No sanding Limit 2-4 x's Year Periodically Periodically	• No sanding • Minimize salt use for ice • Vacuum to prevent tracking issues and clogging • Monitor to ensure surface drains effectively • Check for trash/debris • See attached for winter maintenance	No sanding Minimize as Req. 2-4 x's a year Remove when noticed
Energy Dissipation (ED) Structures (RipRap)	Annually	• Check for displaced stones • Check for woody vegetation	Replace immediately Remove annually
Catch Basins	Annually	• Check for sediment accumulation • Check for floatable contaminants	≥ 1 ft. sediment depth Remove all floatables
Bio-Retention Basin • Embankments • Pond Sediment • Trash/Debris • Drawdown Time • Vegetation (Veg.)	Bi-Annually Periodically Periodically Periodically Annually Periodically	• Check for erosion, settlement, seepage, etc. • Check for sediment accumulation in pond • Check for trash (in pond and structures) • 72 hour drain time • Maintain 95% veg. (pond & slopes) • Maintain healthy stand of veg.	Repair immediately ≥ 2 in. sediment Remove all trash/debris Repair immediately Restore veg. in-kind Mow when ≥ 6 in
Treatment Swales	Annually	• Check for sediment accumulation • Check for erosion • Ensure swale is stabilized • Maintain healthy stand of veg., 4" minimum • Inspect for invasive species	≥ 1 in. sediment Repair immediately Restore veg. in-kind Mow twice per year Remove/Dispose of accordingly
Pavement • Sanding • Salt Applications • Sweep/Vacuum • Trash/Debris	Limit use As Req. 1 - 2 x's Year Periodically	• Minimize use to prevent tracking issues • RECORD APPLICATION RATES • Sweep or vacuum to prevent tracking issues • Check for trash/debris	Sweep to prevent issues Minimize as Req. Sweep/Vac as needed Remove when noticed
Litter / Trash Removal	Periodically	• Check for litter and trash	Remove when noticed

Inspection & Maintenance Checklist/Log

The following page contains a blank copy of the Stormwater Management System's Inspection & Maintenance Log and a Deicing Salt Quantity Use Log. These forms are provided to assist the owners with the inspection and maintenance of the aforementioned Stormwater Management System.

Stormwater Management System's Inspection & Maintenance Log

Date of Inspection/Maintenance: _____ Inspector: _____

System Component / BMP	Cleaning / Repair Needed (List Items / Comments)	Date of Cleaning/Repair	Performed By

Deicing Salt Quantity Use Log

Date	Amount of Material Applied	Comments

DRAINAGE ANALYSIS

for

AMERICAN DURAFILM
Map D, Lot 11-1
Innovation Way
Dover, NH 03820

August 2021

Prepared For:

American Durafilm CO. INC.
55 Boynton road
P.O. Box 6770
Holliston, MA 01746

Prepared By:

Civilworks New England
181 Watson Road, P.O. Box 1166
Dover, NH 03820

Stephen J. Haight, PE

CONTENTS

1.0 INTRODUCTION

2.0 DRAINAGE ANALYSIS

2.1 DRAINAGE DESIGN PARAMETERS

2.1.1 Watersheds
2.1.2 Soils
2.1.3 Rainfall Data
2.1.4 Runoff Curve Numbers

2.2 EXISTING CONDITIONS

2.2.1 Table A – Existing Conditions Hydrology

2.3 DEVELOPED CONDITIONS

2.3.1 Table B – Developed Conditions Hydrology

2.4 COMPARISON CHART

2.4.1 Table C – Existing vs. Developed Conditions Hydrology

3.0 APPENDIX A – HYDROLOGIC CALCULATIONS

- NRCC Precipitation Data
- Web Soil Survey

A-1 Existing Watersheds

- Routing Diagram
- Area Listing
- Soil Listing
- Node Listing – 2-yr
- Node Listing – 10-yr
- Storm Summary – 10-yr
- Node Listing – 25-yr
- Node Listing – 50-yr

A-2 Developed Watersheds

- Routing Diagram
- Area Listing
- Soil Listing
- Node Listing – 2-yr

- Node Listing – 10-yr
- Storm Summary – 10-yr
- Node Listing – 25-yr
- Node Listing – 50-yr

4.0 APPENDIX B – Watershed Plans

B-1 Pre-Developed Conditions

B-2 Post-Developed Conditions

1.0 INTRODUCTION

This is a hydrologic analysis of the subject parcel, Tax Map D – Lot 11. The parcel is located at Innovation Way, Dover, NH and is owned by Dover Business & Industrial Development Authority (DIBIDA). The parcel is approximately 35 acres in size. The applicant is proposing a subdivision to create a stand-alone lot of about 3 acres for a 15,000 s.f. (with a future 5,000 s.f. addition) light manufacturing building with associated site access, site parking, grading and drainage, and utility improvements. The site will have two points of ingress and egress to Innovation Way.

The majority of the proposed parcel slopes towards the north and northeast to the existing large wetland system, with a small portion of the south side of the property draining to the roadside ditch along Innovation Way. The site was broken into 4 (A, B, C, & D) point of analysis, 3 are located along the north property line, and the other one is the roadside ditch along Innovation Way and are the same in the pre and post drainage analysis allowing for direct comparison.

To accommodate the proposed building and associate site improvements, two (2) stormwater best management practices (BMPs), a Treatment Swale and a Bio-Retention Pond, to treat and mitigate stormwater runoff. All stormwater runoff from the proposed impervious areas will be captured by closed drainage systems that direct the water to either BMP. Both BMP systems are designed to accommodate a portion of stormwater runoff from the existing pavement in Innovation Way, see Post-Development Drainage Plan (attached).

The proposed project will have a slight increase in stormwater runoff flows (2.4.1 Table C), however it was determined that the increase would have minimal to no impact to the overall watershed as the stormwater drains to a large 6 acre +/- wetlands system located within the parent parcel.

2.0 DRAINAGE ANALYSIS

A comprehensive hydrologic study of this site has been performed utilizing nationally recognized runoff estimating techniques developed by the USDA, Soil Conservation Services (SCS). The technique and runoff models are described in various SCS publications and references as follows:

"Stormwater Management and Erosion Sediment Control Handbook for Urban and Developing Areas in New Hampshire"

"New Hampshire Stormwater Manual Volume 2 - Post-Construction Best Management Practices Selection & Design"

"Civil Engineering Reference Manual, Fifth Edition"

"Open-Channel Hydraulics" Chow.

"Stormwater Modeling System" HydroCAD Ver. 10.10-5a

2.1 DRAINAGE DESIGN PARAMETERS

A brief review of the procedures and parameters used in the drainage study follows:

2.1.1 Watersheds

The watershed and subcatchment areas were delineated using topographic and boundary data provided by McEneaney Survey Associates of New England.

2.1.2 Soils

Onsite soil information used to estimate the runoff curve numbers was provided: by the USDA Natural Resources Conservation Service (NRCS) Web Soil Survey tool.

Hydrologic Drainage Class A:
GiB – Gloucester fine sandy loam, 3-8 percent slopes
GsC – Gloucester very stony fine sandy loam, 8-15 percent slopes

Hydrologic Drainage Class C/D:
BzB - Buxton silt loam, 3-8 percent slopes

2.1.3 Rainfall Data

Extreme precipitation estimate values from the Northeast Regional Climate Center (NRCC) were utilized in this analysis. As such, the analysis has been performed for the 2-year, 10-year, 25-year, and 50-year storm events with 3.13", 4.71", 5.96", and 7.11" rainfall depths respectively. The bio-retention basin and treatment swale has been sized to accommodate the 50-yr storm event.

2.1.4 Runoff Curve Numbers

The SCS runoff curve numbers were used and are summarized within each subcatchment drainage summary in Appendix A.

2.2 EXISTING CONDTIONS

For purposes of this analysis the subject parcel was analyzed as 4 sub-watershed areas that are all analyzed with the summing points as described above.

2.2.1 Table A – Existing Conditions (2, 10, 25, and 50-year storm events)

Watershed	**Pre-Development Volume (af)**	**Pre Development Peak Flows (cfs)**			
Discharge Point	**2-yr**	**2-yr**	**10-yr**	**25-yr**	**50-yr**
A	0.000	0.00	0.01	0.03	0.09
B	0.000	0.00	0.00	0.01	0.01
C	0.000	0.00	0.00	0.01	0.02
D	0.006	0.00	0.13	0.21	0.28

2.3 DEVELOPED CONDITIONS

The post development watershed was analyzed with 13 sub-watershed areas. Post development watersheds have the same summing points as the pre development analysis.

2.3.1 Table B – Developed Conditions (2, 10, 25, and 50-year storm events)

Watershed	**Post-Development Volume (af)**	**Post Development Peak Flows (cfs)**			
Discharge Point	**2-yr**	**2-yr**	**10-yr**	**25-yr**	**50-yr**
A	0.188	0.30	0.50	0.66	0.83
B	0.000	0.00	0.00	0.01	0.02
C	0.065	0.53	0.78	1.02	1.31
D	0.000	0.00	0.01	0.02	0.03

2.4 COMPARISION CHART

2.4.1 Table C – Existing vs. Developed Conditions Hydrology

Watershed	Pre/**Post-Development Volume (af)**	Pre/**Post Development Peak Flows (cfs)**			
Discharge Point	**2-yr**	**2-yr**	**10-yr**	**25-yr**	**50-yr**
A	0.000/**0.188**	0.00/**0.30**	0.01/**0.50**	0.03/**0.66**	0.09/**0.83**
Bellamy River	0.000/**0.000**	0.00/**0.00**	0.00/**0.00**	0.01/**0.01**	0.01/**0.02**
C	0.000/**0.065**	0.00/**0.53**	0.00/**0.78**	0.01/**1.02**	0.02/**1.31**
D	0.006/**0.000**	0.04/**0.00**	0.13/**0.01**	0.21/**0.02**	0.28/**0.03**

APPENDIX A

HYDROLOGIC CALCULATIONS

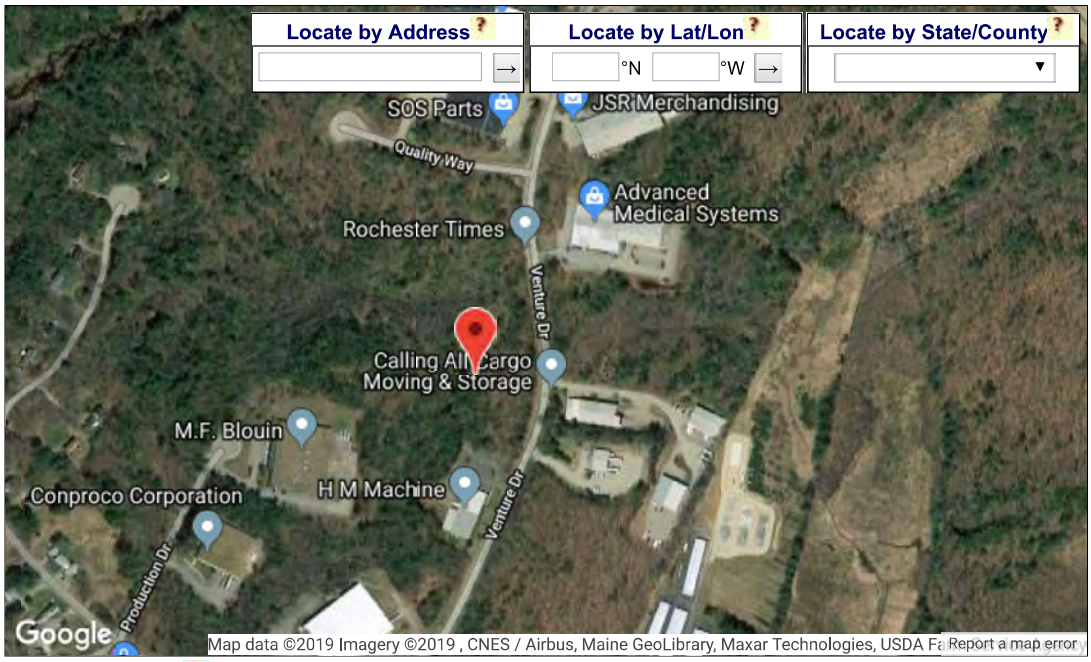
About this Project **Data & Products** **Daily Monitoring** **Documentation**

Select Product

- Extreme Precipitation Tables - HTML
- Extreme Precipitation Tables - Text/CSV
- Partial Duration Series - by Point
- Partial Duration Series - by Station
- Distribution Curves - Graphical
- Distribution Curves - Text/TBL
- Intensity Frequency Duration Graphs
- Precipitation Frequency Duration Graphs
- GIS Data Files
- Regional/State Maps

Select Location *Double-click the map to place a marker, or enter address or latitude/longitude.*

Locate by Address → | Locate by Lat/Lon °N °W → | Locate by State/County



Select Options

Smoothing	Delivery
Yes	Popup

Submit

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This project is a joint collaboration between:

Northeast Regional Climate Center (NRCC) Cornell University

Natural Resources Conservation Service (NRCS) USDA NRCS

Contact: precip@cornell.edu

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	70.910 degrees West
Latitude	43.221 degrees North
Elevation	0 feet
Date/Time	Sun, 04 Aug 2019 09:20:25 -0400

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.65	0.81	1.03	**1yr**	0.70	0.98	1.20	1.54	1.99	2.59	2.86	**1yr**	2.29	2.75	3.15	3.88	4.44	**1yr**
2yr	0.32	0.49	0.61	0.80	1.01	1.28	**2yr**	0.87	1.17	1.50	1.91	2.44	3.13	3.49	**2yr**	2.77	3.36	3.85	4.59	5.22	**2yr**
5yr	0.37	0.57	0.72	0.96	1.23	1.58	**5yr**	1.06	1.44	1.85	2.38	3.06	3.95	4.47	**5yr**	3.50	4.30	4.92	5.78	6.54	**5yr**
10yr	0.40	0.63	0.80	1.09	1.42	1.85	**10yr**	1.22	1.69	2.18	2.82	3.64	4.71	5.39	**10yr**	4.17	5.18	5.93	6.90	7.75	**10yr**
25yr	0.46	0.74	0.94	1.30	1.72	2.27	**25yr**	1.49	2.09	2.69	3.52	4.58	5.96	6.91	**25yr**	5.27	6.64	7.58	8.71	9.72	**25yr**
50yr	0.52	0.83	1.06	1.48	2.00	2.66	**50yr**	1.73	2.45	3.18	4.17	5.46	7.11	8.34	**50yr**	6.29	8.02	9.14	10.40	11.54	**50yr**
100yr	0.58	0.94	1.21	1.71	2.32	3.12	**100yr**	2.01	2.88	3.74	4.94	6.49	8.49	10.07	**100yr**	7.52	9.68	11.02	12.42	13.71	**100yr**
200yr	0.64	1.05	1.36	1.96	2.71	3.67	**200yr**	2.33	3.39	4.42	5.87	7.74	10.15	12.16	**200yr**	8.98	11.70	13.29	14.83	16.29	**200yr**
500yr	0.76	1.25	1.63	2.36	3.31	4.54	**500yr**	2.86	4.21	5.50	7.35	9.74	12.85	15.62	**500yr**	11.37	15.02	17.03	18.78	20.48	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.24	0.37	0.45	0.60	0.74	0.90	**1yr**	0.64	0.88	0.92	1.25	1.54	2.05	2.46	**1yr**	1.82	2.36	2.94	3.42	4.10	**1yr**
2yr	0.31	0.49	0.60	0.81	1.00	1.18	**2yr**	0.86	1.15	1.36	1.82	2.35	3.05	3.39	**2yr**	2.70	3.26	3.74	4.46	5.08	**2yr**
5yr	0.35	0.54	0.67	0.91	1.16	1.40	**5yr**	1.00	1.37	1.61	2.14	2.77	3.69	4.11	**5yr**	3.26	3.95	4.59	5.39	6.09	**5yr**
10yr	0.38	0.59	0.73	1.02	1.31	1.60	**10yr**	1.13	1.56	1.81	2.44	3.12	4.24	4.77	**10yr**	3.75	4.58	5.30	6.21	6.97	**10yr**
25yr	0.44	0.66	0.83	1.18	1.55	1.91	**25yr**	1.34	1.87	2.11	2.84	3.64	5.08	5.76	**25yr**	4.50	5.54	6.47	7.50	8.35	**25yr**
50yr	0.48	0.73	0.91	1.31	1.77	2.19	**50yr**	1.52	2.14	2.36	3.20	4.08	5.83	6.64	**50yr**	5.16	6.39	7.51	8.63	9.55	**50yr**
100yr	0.54	0.81	1.02	1.47	2.02	2.51	**100yr**	1.74	2.45	2.65	3.58	4.55	6.69	7.65	**100yr**	5.92	7.35	8.72	9.94	10.90	**100yr**
200yr	0.60	0.90	1.14	1.65	2.30	2.87	**200yr**	1.98	2.81	2.96	4.02	5.07	7.66	8.80	**200yr**	6.78	8.46	10.12	11.45	12.46	**200yr**
500yr	0.70	1.04	1.33	1.94	2.75	3.46	**500yr**	2.38	3.39	3.44	4.67	5.87	9.13	10.59	**500yr**	8.08	10.18	12.32	13.81	14.81	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.43	0.53	0.71	0.87	1.08	**1yr**	0.75	1.05	1.23	1.73	2.20	2.82	3.07	**1yr**	2.49	2.95	3.37	4.17	4.74	**1yr**
2yr	0.33	0.51	0.62	0.84	1.04	1.24	**2yr**	0.90	1.22	1.47	1.95	2.51	3.24	3.61	**2yr**	2.86	3.47	3.98	4.73	5.39	**2yr**
5yr	0.39	0.60	0.75	1.03	1.31	1.58	**5yr**	1.13	1.54	1.85	2.49	3.19	4.21	4.83	**5yr**	3.73	4.64	5.27	6.20	6.96	**5yr**
10yr	0.46	0.70	0.87	1.21	1.57	1.91	**10yr**	1.35	1.87	2.22	3.03	3.84	5.18	6.02	**10yr**	4.58	5.79	6.63	7.60	8.47	**10yr**
25yr	0.55	0.84	1.05	1.50	1.97	2.46	**25yr**	1.70	2.41	2.87	3.94	4.94	6.81	8.08	**25yr**	6.03	7.77	8.86	10.01	11.03	**25yr**
50yr	0.64	0.97	1.21	1.75	2.35	2.97	**50yr**	2.03	2.90	3.48	4.80	5.99	8.37	10.12	**50yr**	7.41	9.73	11.07	12.30	13.48	**50yr**
100yr	0.75	1.13	1.41	2.04	2.80	3.58	**100yr**	2.42	3.50	4.22	5.87	7.28	10.30	12.68	**100yr**	9.12	12.19	13.81	15.14	16.48	**100yr**
200yr	0.87	1.30	1.65	2.39	3.33	4.34	**200yr**	2.88	4.24	5.13	7.18	8.84	12.71	15.90	**200yr**	11.25	15.29	17.25	18.63	20.18	**200yr**
500yr	1.06	1.58	2.03	2.95	4.19	5.56	**500yr**	3.62	5.44	6.62	9.38	11.45	16.80	21.45	**500yr**	14.87	20.62	23.17	24.55	26.40	**500yr**

Powered by ACIS Northeast Regional Climate Center

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Strafford County, New Hampshire

July 26, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

Preface.....2
How Soil Surveys Are Made.....5
Soil Map.....8
Soil Map.....9
Legend.....10
Map Unit Legend.....11
Map Unit Descriptions.....11
Strafford County, New Hampshire.....13
BzB—Buxton silt loam, 3 to 8 percent slopes.....13
GlB—Gloucester fine sandy loam, 3 to 8 percent slopes.....14
GsC—Gloucester very stony fine sandy loam, 8 to 15 percent slopes.....15
References.....17

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:1,930 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	0.8	7.0%
GlB	Gloucester fine sandy loam, 3 to 8 percent slopes	5.5	50.0%
GsC	Gloucester very stony fine sandy loam, 8 to 15 percent slopes	4.8	43.0%
Totals for Area of Interest		**11.1**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or

landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Strafford County, New Hampshire

BzB—Buxton silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9d6p
Elevation: 0 to 260 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Buxton and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Buxton

Setting

Parent material: Glaciomarine

Typical profile

H1 - 0 to 10 inches: silt loam
H2 - 10 to 28 inches: silty clay loam
H3 - 28 to 43 inches: silty clay

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C/D
Ecological site: F145XY006CT - Semi-Rich Moist Lake Plain
Hydric soil rating: No

Minor Components

Elmwood

Percent of map unit: 10 percent
Hydric soil rating: No

Not named

Percent of map unit: 5 percent
Hydric soil rating: No

GIB—Gloucester fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9d73
Elevation: 70 to 1,100 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Gloucester and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gloucester

Setting

Parent material: Till

Typical profile

H1 - 0 to 14 inches: fine sandy loam
H2 - 14 to 28 inches: very gravelly loamy sand
H3 - 28 to 40 inches: very gravelly coarse sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F144AY032NH - Dry Till Uplands
Hydric soil rating: No

Minor Components

Not named pan

Percent of map unit: 5 percent
Hydric soil rating: No

Hollis
Percent of map unit: 5 percent
Hydric soil rating: No

Acton
Percent of map unit: 5 percent
Hydric soil rating: No

GsC—Gloucester very stony fine sandy loam, 8 to 15 percent slopes

Map Unit Setting
National map unit symbol: 9d76
Elevation: 0 to 1,440 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition
Gloucester and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gloucester

Setting
Parent material: Till

Typical profile
H1 - 0 to 14 inches: very stony fine sandy loam
H2 - 14 to 28 inches: very gravelly loamy sand
H3 - 28 to 40 inches: very gravelly coarse sand

Properties and qualities
Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.5 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Hollis

Percent of map unit: 5 percent
Hydric soil rating: No

Not named

Percent of map unit: 5 percent
Hydric soil rating: No

Acton

Percent of map unit: 5 percent
Hydric soil rating: No

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A-1

EXISTING WATERSHEDS

A B C D

Subcat Reach Pond Link

Routing Diagram for 21041-Pre
Prepared by Civilworks New England
HydroCAD® 10.10-5a s/n 03240 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.205	39	>75% Grass cover, Good, HSG A (A, B, C, D)
0.128	98	Paved parking, HSG A (A, D)
2.851	30	Woods, Good, HSG A (A, B, C, D)
3.183	**33**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
3.183	HSG A	A, B, C, D
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
3.183		**TOTAL AREA**

A – 1

NODE LISTING – 2-YR

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment A: A Runoff Area=60,955 sf 4.95% Impervious Runoff Depth=0.00"
Flow Length=320' Tc=11.3 min CN=34 Runoff=0.00 cfs 0.000 af

Subcatchment B: B Runoff Area=24,729 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=287' Tc=11.0 min CN=30 Runoff=0.00 cfs 0.000 af

Subcatchment C: C Runoff Area=47,038 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=560' Tc=14.6 min CN=30 Runoff=0.00 cfs 0.000 af

Subcatchment D: D Runoff Area=5,948 sf 42.84% Impervious Runoff Depth=0.49"
Flow Length=200' Tc=11.2 min CN=63 Runoff=0.04 cfs 0.006 af

Total Runoff Area = 3.183 ac Runoff Volume = 0.006 af Average Runoff Depth = 0.02"
95.99% Pervious = 3.056 ac 4.01% Impervious = 0.128 ac

A – 1

NODE LISTING – 10-YR

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment A: A Runoff Area=60,955 sf 4.95% Impervious Runoff Depth=0.03"
Flow Length=320' Tc=11.3 min CN=34 Runoff=0.01 cfs 0.004 af

Subcatchment B: B Runoff Area=24,729 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=287' Tc=11.0 min CN=30 Runoff=0.00 cfs 0.000 af

Subcatchment C: C Runoff Area=47,038 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=560' Tc=14.6 min CN=30 Runoff=0.00 cfs 0.000 af

Subcatchment D: D Runoff Area=5,948 sf 42.84% Impervious Runoff Depth=1.33"
Flow Length=200' Tc=11.2 min CN=63 Runoff=0.13 cfs 0.015 af

Total Runoff Area = 3.183 ac Runoff Volume = 0.019 af Average Runoff Depth = 0.07"
95.99% Pervious = 3.056 ac 4.01% Impervious = 0.128 ac

A – 1

STORM SUMMARY – 10-YR

Summary for Subcatchment A: A

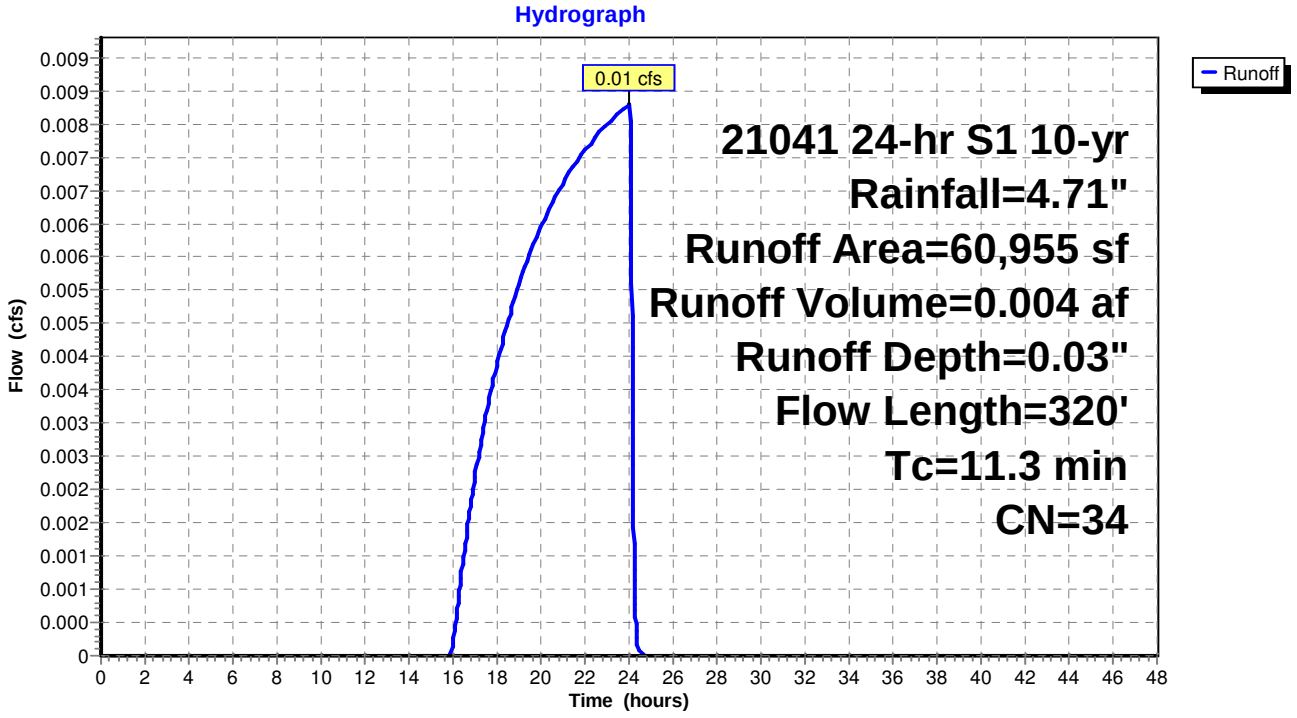
Runoff = 0.01 cfs @ 23.99 hrs, Volume= 0.004 af, Depth= 0.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
21041 24-hr S1 10-yr Rainfall=4.71"

Area (sf)	CN	Description
52,825	30	Woods, Good, HSG A
5,113	39	>75% Grass cover, Good, HSG A
3,017	98	Paved parking, HSG A
60,955	34	Weighted Average
57,938		95.05% Pervious Area
3,017		4.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	16	0.0833	0.14		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.13"
5.2	34	0.0833	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.13"
1.7	150	0.0833	1.44		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.5	120	0.0250	0.79		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.3	320	Total			

Subcatchment A: A



Summary for Subcatchment B: B

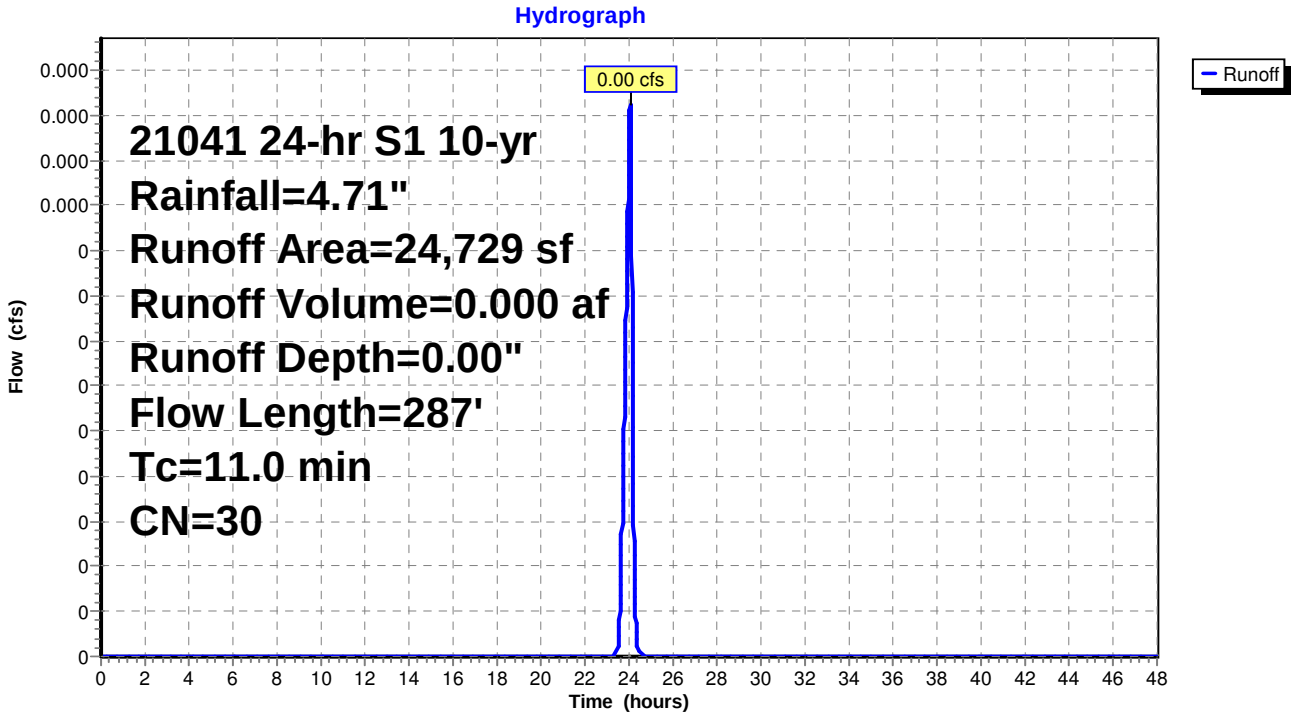
Runoff = 0.00 cfs @ 24.06 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
21041 24-hr S1 10-yr Rainfall=4.71"

Area (sf)	CN	Description
24,571	30	Woods, Good, HSG A
158	39	>75% Grass cover, Good, HSG A
24,729	30	Weighted Average
24,729		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	10	0.0780	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.13"
6.1	40	0.0780	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.13"
1.6	136	0.0780	1.40		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.0	101	0.0289	0.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.0	287	Total			

Subcatchment B: B



Summary for Subcatchment C: C

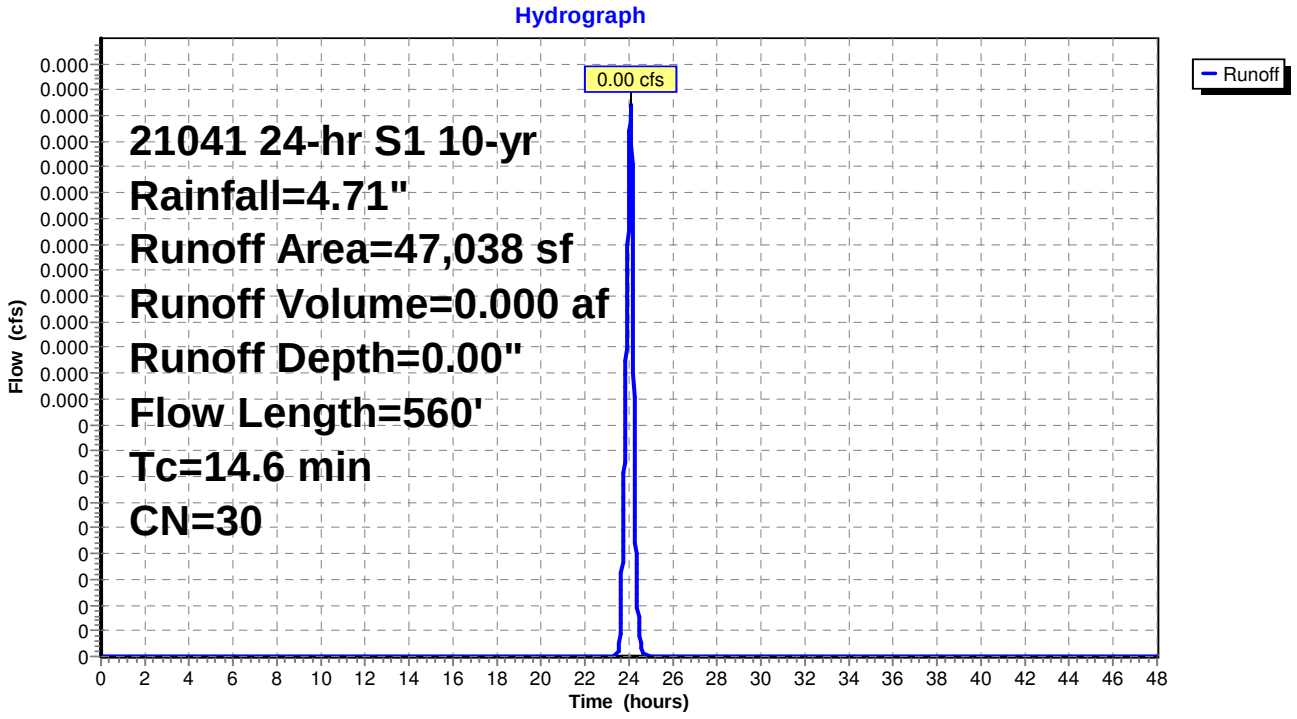
Runoff = 0.00 cfs @ 24.09 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
21041 24-hr S1 10-yr Rainfall=4.71"

Area (sf)	CN	Description
46,138	30	Woods, Good, HSG A
900	39	>75% Grass cover, Good, HSG A
47,038	30	Weighted Average
47,038		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	50	0.0425	0.14		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.13"
0.3	25	0.0425	1.44		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.1	317	0.0425	1.03		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.1	168	0.0320	0.89		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.6	560	Total			

Subcatchment C: C



Summary for Subcatchment D: D

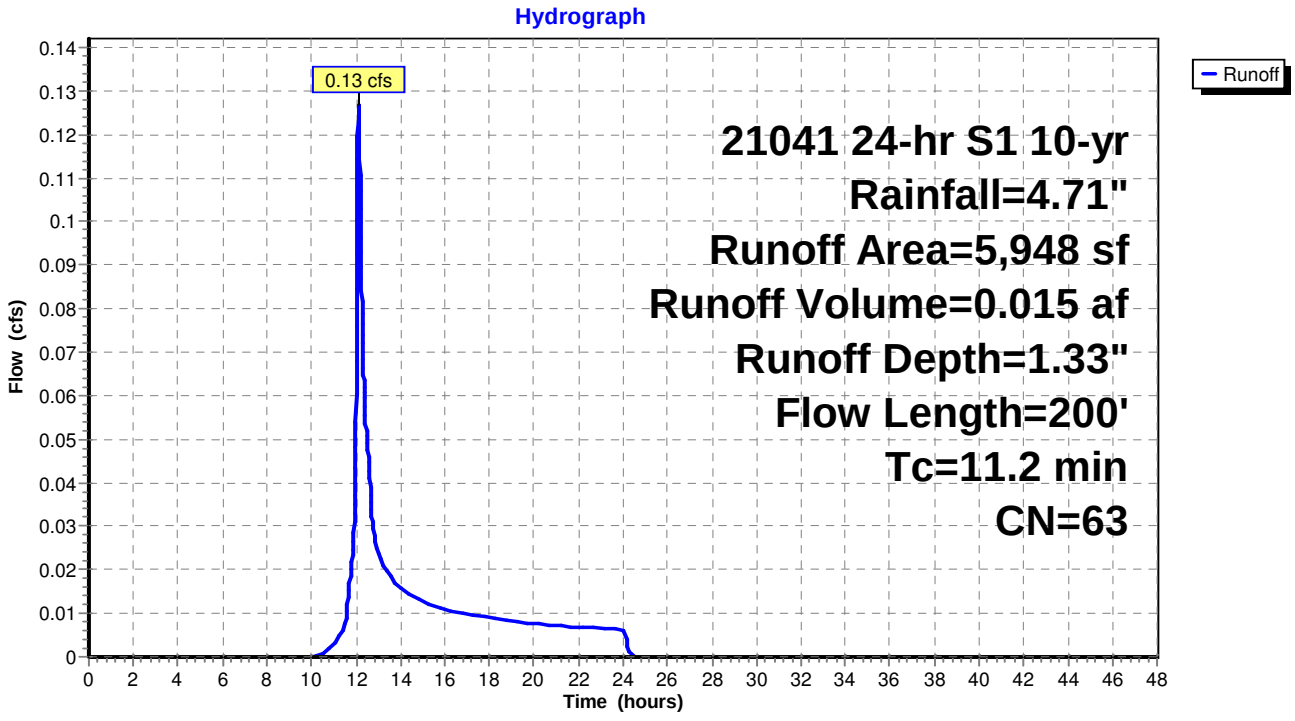
Runoff = 0.13 cfs @ 12.11 hrs, Volume= 0.015 af, Depth= 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
21041 24-hr S1 10-yr Rainfall=4.71"

Area (sf)	CN	Description
642	30	Woods, Good, HSG A
2,758	39	>75% Grass cover, Good, HSG A
2,548	98	Paved parking, HSG A
5,948	63	Weighted Average
3,400		57.16% Pervious Area
2,548		42.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	50	0.0160	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.13"
2.1	150	0.0290	1.19		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.2	200	Total			

Subcatchment D: D



A – 1

NODE LISTING – 25-YR

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment A: A Runoff Area=60,955 sf 4.95% Impervious Runoff Depth=0.20"
Flow Length=320' Tc=11.3 min CN=34 Runoff=0.03 cfs 0.023 af

Subcatchment B: B Runoff Area=24,729 sf 0.00% Impervious Runoff Depth=0.07"
Flow Length=287' Tc=11.0 min CN=30 Runoff=0.01 cfs 0.003 af

Subcatchment C: C Runoff Area=47,038 sf 0.00% Impervious Runoff Depth=0.07"
Flow Length=560' Tc=14.6 min CN=30 Runoff=0.01 cfs 0.006 af

Subcatchment D: D Runoff Area=5,948 sf 42.84% Impervious Runoff Depth=2.15"
Flow Length=200' Tc=11.2 min CN=63 Runoff=0.21 cfs 0.024 af

Total Runoff Area = 3.183 ac Runoff Volume = 0.057 af Average Runoff Depth = 0.22"
95.99% Pervious = 3.056 ac 4.01% Impervious = 0.128 ac

A – 1

NODE LISTING – 50-YR

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment A: A Runoff Area=60,955 sf 4.95% Impervious Runoff Depth=0.46"
Flow Length=320' Tc=11.3 min CN=34 Runoff=0.09 cfs 0.054 af

Subcatchment B: B Runoff Area=24,729 sf 0.00% Impervious Runoff Depth=0.23"
Flow Length=287' Tc=11.0 min CN=30 Runoff=0.01 cfs 0.011 af

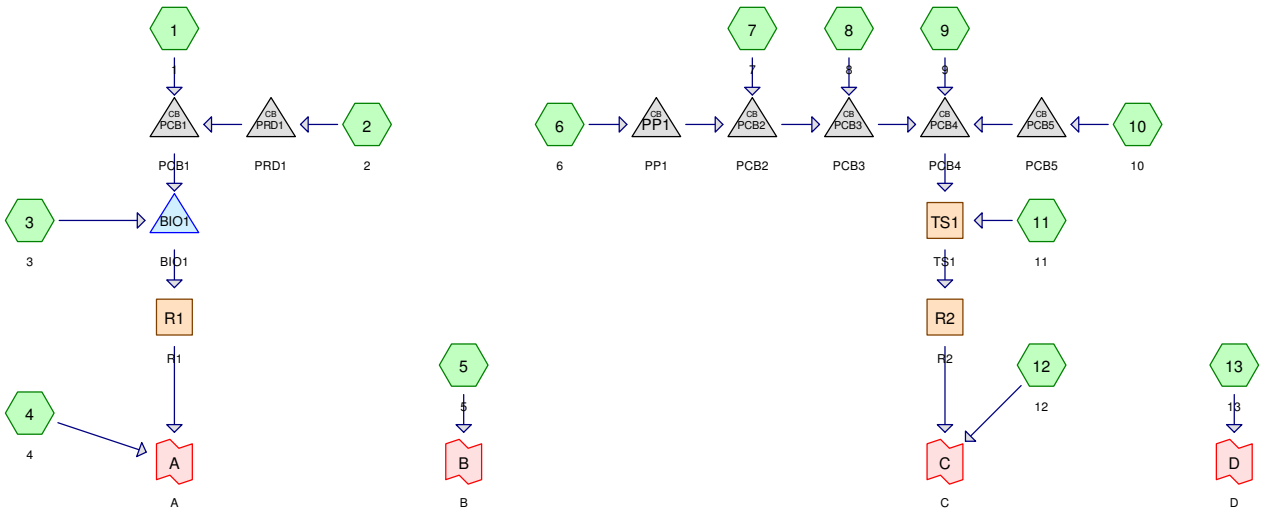
Subcatchment C: C Runoff Area=47,038 sf 0.00% Impervious Runoff Depth=0.23"
Flow Length=560' Tc=14.6 min CN=30 Runoff=0.02 cfs 0.021 af

Subcatchment D: D Runoff Area=5,948 sf 42.84% Impervious Runoff Depth=2.98"
Flow Length=200' Tc=11.2 min CN=63 Runoff=0.28 cfs 0.034 af

Total Runoff Area = 3.183 ac Runoff Volume = 0.119 af Average Runoff Depth = 0.45"
95.99% Pervious = 3.056 ac 4.01% Impervious = 0.128 ac

A-2

DEVELOPED WATERSHEDS



Subcat Reach Pond Link

Routing Diagram for 21041-Post
Prepared by Civilworks New England
HydroCAD® 10.10-5a s/n 03240 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.091	39	>75% Grass cover, Good, HSG A (3, 4, 5, 6, 8, 9, 10, 11, 12, 13)
0.707	98	Paved parking, HSG A (1, 4, 6, 7, 8, 9, 10, 13)
0.459	98	Roofs, HSG A (2)
0.927	30	Woods, Good, HSG A (4, 5, 12, 13)
3.183	**58**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
3.183	HSG A	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
3.183		**TOTAL AREA**

A – 2

NODE LISTING – 2-YR

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: 1 Runoff Area=14,393 sf 100.00% Impervious Runoff Depth=2.90"
Tc=5.0 min CN=98 Runoff=1.04 cfs 0.080 af

Subcatchment 2: 2 Runoff Area=20,000 sf 100.00% Impervious Runoff Depth=2.90"
Tc=5.0 min CN=98 Runoff=1.45 cfs 0.111 af

Subcatchment 3: 3 Runoff Area=4,051 sf 0.00% Impervious Runoff Depth=0.00"
Tc=5.0 min CN=39 Runoff=0.00 cfs 0.000 af

Subcatchment 4: 4 Runoff Area=32,578 sf 6.70% Impervious Runoff Depth=0.00"
Flow Length=320' Tc=13.9 min CN=38 Runoff=0.00 cfs 0.000 af

Subcatchment 5: 5 Runoff Area=4,309 sf 0.00% Impervious Runoff Depth=0.00"
Tc=5.0 min CN=38 Runoff=0.00 cfs 0.000 af

Subcatchment 6: 6 Runoff Area=14,489 sf 13.94% Impervious Runoff Depth=0.06"
Flow Length=187' Tc=11.4 min CN=47 Runoff=0.00 cfs 0.002 af

Subcatchment 7: 7 Runoff Area=115 sf 100.00% Impervious Runoff Depth=2.90"
Tc=5.0 min CN=98 Runoff=0.01 cfs 0.001 af

Subcatchment 8: 8 Runoff Area=2,674 sf 95.59% Impervious Runoff Depth=2.58"
Tc=5.0 min CN=95 Runoff=0.18 cfs 0.013 af

Subcatchment 9: 9 Runoff Area=4,754 sf 96.17% Impervious Runoff Depth=2.68"
Tc=5.0 min CN=96 Runoff=0.33 cfs 0.024 af

Subcatchment 10: 10 Runoff Area=5,022 sf 94.78% Impervious Runoff Depth=2.58"
Tc=5.0 min CN=95 Runoff=0.34 cfs 0.025 af

Subcatchment 11: 11 Runoff Area=5,706 sf 0.00% Impervious Runoff Depth=0.00"
Tc=5.0 min CN=39 Runoff=0.00 cfs 0.000 af

Subcatchment 12: 12 Runoff Area=30,004 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=415' Slope=0.0370 '/' Tc=16.1 min CN=33 Runoff=0.00 cfs 0.000 af

Subcatchment 13: 13 Runoff Area=575 sf 31.30% Impervious Runoff Depth=0.26"
Tc=5.0 min CN=56 Runoff=0.00 cfs 0.000 af

Reach R1: R1 Avg. Flow Depth=0.15' Max Vel=0.19 fps Inflow=0.30 cfs 0.188 af
n=0.100 L=146.0' S=0.0038 '/' Capacity=4.38 cfs Outflow=0.30 cfs 0.188 af

Reach R2: R2 Avg. Flow Depth=0.10' Max Vel=0.61 fps Inflow=0.61 cfs 0.065 af
n=0.100 L=171.0' S=0.0629 '/' Capacity=17.90 cfs Outflow=0.53 cfs 0.065 af

Reach TS1: TS1 Avg. Flow Depth=0.31' Max Vel=0.36 fps Inflow=0.87 cfs 0.065 af
n=0.120 L=160.0' S=0.0050 '/' Capacity=21.05 cfs Outflow=0.61 cfs 0.065 af

Pond BIO1: BIO1 Peak Elev=176.98' Storage=2,910 cf Inflow=2.49 cfs 0.191 af
Outflow=0.30 cfs 0.188 af

Pond PCB1: PCB1 Peak Elev=179.84' Inflow=2.49 cfs 0.191 af
15.0" Round Culvert n=0.013 L=13.0' S=0.0192 '/' Outflow=2.49 cfs 0.191 af

Pond PCB2: PCB2 Peak Elev=182.07' Inflow=0.01 cfs 0.002 af
12.0" Round Culvert n=0.013 L=26.0' S=0.0058 '/' Outflow=0.01 cfs 0.002 af

Pond PCB3: PCB3 Peak Elev=182.03' Inflow=0.19 cfs 0.016 af
12.0" Round Culvert n=0.013 L=60.0' S=0.0050 '/' Outflow=0.19 cfs 0.016 af

Pond PCB4: PCB4 Peak Elev=181.79' Inflow=0.87 cfs 0.065 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0300 '/' Outflow=0.87 cfs 0.065 af

Pond PCB5: PCB5 Peak Elev=182.45' Inflow=0.34 cfs 0.025 af
12.0" Round Culvert n=0.013 L=137.0' S=0.0047 '/' Outflow=0.34 cfs 0.025 af

Pond PP1: PP1 Peak Elev=182.23' Inflow=0.00 cfs 0.002 af
12.0" Round Culvert n=0.013 L=10.0' S=0.0100 '/' Outflow=0.00 cfs 0.002 af

Pond PRD1: PRD1 Peak Elev=181.04' Inflow=1.45 cfs 0.111 af
12.0" Round Culvert n=0.013 L=114.0' S=0.0053 '/' Outflow=1.45 cfs 0.111 af

Link A: A Inflow=0.30 cfs 0.188 af
Primary=0.30 cfs 0.188 af

Link B: B Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Link C: C Inflow=0.53 cfs 0.065 af
Primary=0.53 cfs 0.065 af

Link D: D Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 3.183 ac Runoff Volume = 0.256 af Average Runoff Depth = 0.96"
63.38% Pervious = 2.018 ac 36.62% Impervious = 1.166 ac

A – 2

NODE LISTING – 10-YR

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: 1 Runoff Area=14,393 sf 100.00% Impervious Runoff Depth=4.47"
Tc=5.0 min CN=98 Runoff=1.36 cfs 0.123 af

Subcatchment 2: 2 Runoff Area=20,000 sf 100.00% Impervious Runoff Depth=4.47"
Tc=5.0 min CN=98 Runoff=1.89 cfs 0.171 af

Subcatchment 3: 3 Runoff Area=4,051 sf 0.00% Impervious Runoff Depth=0.15"
Tc=5.0 min CN=39 Runoff=0.00 cfs 0.001 af

Subcatchment 4: 4 Runoff Area=32,578 sf 6.70% Impervious Runoff Depth=0.12"
Flow Length=320' Tc=13.9 min CN=38 Runoff=0.01 cfs 0.007 af

Subcatchment 5: 5 Runoff Area=4,309 sf 0.00% Impervious Runoff Depth=0.12"
Tc=5.0 min CN=38 Runoff=0.00 cfs 0.001 af

Subcatchment 6: 6 Runoff Area=14,489 sf 13.94% Impervious Runoff Depth=0.44"
Flow Length=187' Tc=11.4 min CN=47 Runoff=0.03 cfs 0.012 af

Subcatchment 7: 7 Runoff Area=115 sf 100.00% Impervious Runoff Depth=4.47"
Tc=5.0 min CN=98 Runoff=0.01 cfs 0.001 af

Subcatchment 8: 8 Runoff Area=2,674 sf 95.59% Impervious Runoff Depth=4.13"
Tc=5.0 min CN=95 Runoff=0.25 cfs 0.021 af

Subcatchment 9: 9 Runoff Area=4,754 sf 96.17% Impervious Runoff Depth=4.24"
Tc=5.0 min CN=96 Runoff=0.44 cfs 0.039 af

Subcatchment 10: 10 Runoff Area=5,022 sf 94.78% Impervious Runoff Depth=4.13"
Tc=5.0 min CN=95 Runoff=0.46 cfs 0.040 af

Subcatchment 11: 11 Runoff Area=5,706 sf 0.00% Impervious Runoff Depth=0.15"
Tc=5.0 min CN=39 Runoff=0.00 cfs 0.002 af

Subcatchment 12: 12 Runoff Area=30,004 sf 0.00% Impervious Runoff Depth=0.02"
Flow Length=415' Slope=0.0370 '/' Tc=16.1 min CN=33 Runoff=0.00 cfs 0.001 af

Subcatchment 13: 13 Runoff Area=575 sf 31.30% Impervious Runoff Depth=0.90"
Tc=5.0 min CN=56 Runoff=0.01 cfs 0.001 af

Reach R1: R1 Avg. Flow Depth=0.18' Max Vel=0.22 fps Inflow=0.51 cfs 0.293 af
n=0.100 L=146.0' S=0.0038 '/' Capacity=4.38 cfs Outflow=0.50 cfs 0.293 af

Reach R2: R2 Avg. Flow Depth=0.12' Max Vel=0.68 fps Inflow=0.87 cfs 0.114 af
n=0.100 L=171.0' S=0.0629 '/' Capacity=17.90 cfs Outflow=0.78 cfs 0.114 af

Reach TS1: TS1 Avg. Flow Depth=0.38' Max Vel=0.40 fps Inflow=1.16 cfs 0.114 af
n=0.120 L=160.0' S=0.0050 '/' Capacity=21.05 cfs Outflow=0.87 cfs 0.114 af

Pond BIO1: BIO1 Peak Elev=177.66' Storage=4,203 cf Inflow=3.26 cfs 0.295 af
Outflow=0.51 cfs 0.293 af

Pond PCB1: PCB1 Peak Elev=179.99' Inflow=3.26 cfs 0.294 af
15.0" Round Culvert n=0.013 L=13.0' S=0.0192 '/' Outflow=3.26 cfs 0.294 af

Pond PCB2: PCB2 Peak Elev=182.11' Inflow=0.04 cfs 0.013 af
12.0" Round Culvert n=0.013 L=26.0' S=0.0058 '/' Outflow=0.04 cfs 0.013 af

Pond PCB3: PCB3 Peak Elev=182.09' Inflow=0.26 cfs 0.034 af
12.0" Round Culvert n=0.013 L=60.0' S=0.0050 '/' Outflow=0.26 cfs 0.034 af

Pond PCB4: PCB4 Peak Elev=181.86' Inflow=1.16 cfs 0.113 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0300 '/' Outflow=1.16 cfs 0.113 af

Pond PCB5: PCB5 Peak Elev=182.51' Inflow=0.46 cfs 0.040 af
12.0" Round Culvert n=0.013 L=137.0' S=0.0047 '/' Outflow=0.46 cfs 0.040 af

Pond PP1: PP1 Peak Elev=182.30' Inflow=0.03 cfs 0.012 af
12.0" Round Culvert n=0.013 L=10.0' S=0.0100 '/' Outflow=0.03 cfs 0.012 af

Pond PRD1: PRD1 Peak Elev=181.18' Inflow=1.89 cfs 0.171 af
12.0" Round Culvert n=0.013 L=114.0' S=0.0053 '/' Outflow=1.89 cfs 0.171 af

Link A: A Inflow=0.50 cfs 0.301 af
Primary=0.50 cfs 0.301 af

Link B: B Inflow=0.00 cfs 0.001 af
Primary=0.00 cfs 0.001 af

Link C: C Inflow=0.78 cfs 0.115 af
Primary=0.78 cfs 0.115 af

Link D: D Inflow=0.01 cfs 0.001 af
Primary=0.01 cfs 0.001 af

Total Runoff Area = 3.183 ac Runoff Volume = 0.420 af Average Runoff Depth = 1.58"
63.38% Pervious = 2.018 ac 36.62% Impervious = 1.166 ac

A – 2

STORM SUMMARY – 10-YR

Summary for Subcatchment 1: 1

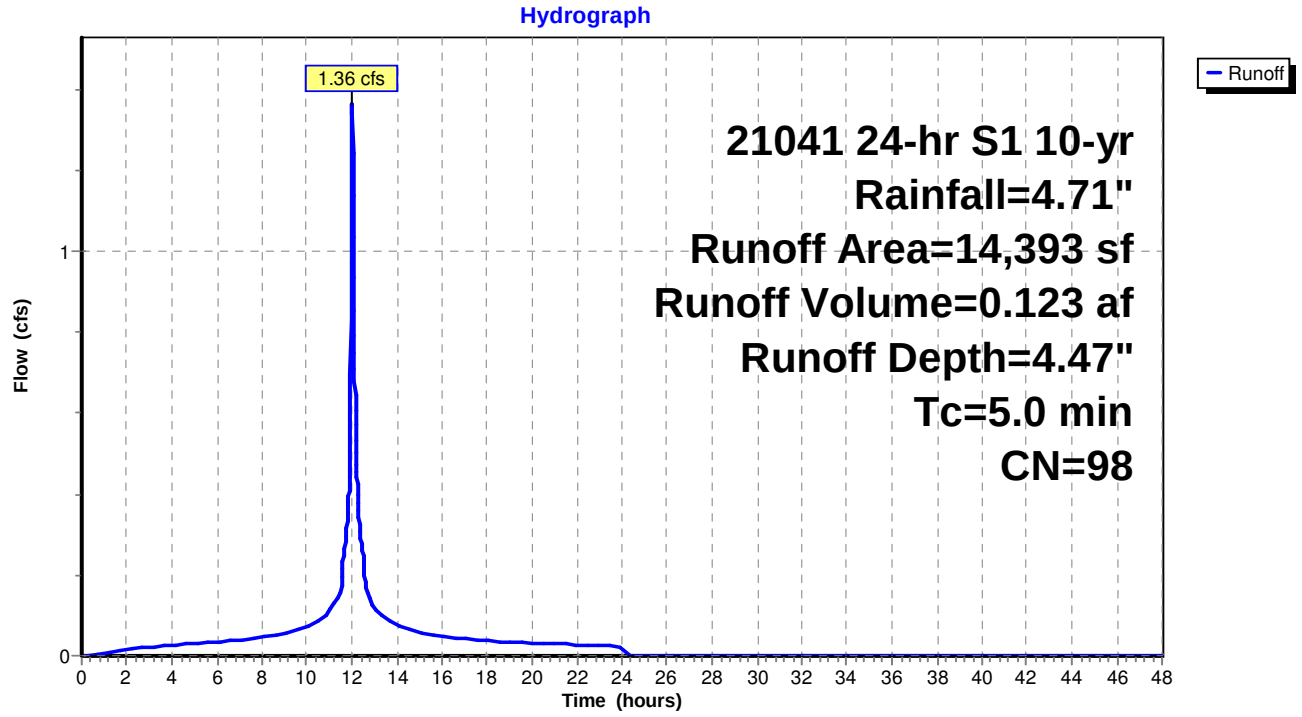
Runoff = 1.36 cfs @ 12.03 hrs, Volume= 0.123 af, Depth= 4.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
21041 24-hr S1 10-yr Rainfall=4.71"

Area (sf)	CN	Description
14,393	98	Paved parking, HSG A
14,393		100.00% Impervious Area

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

Subcatchment 1: 1



Summary for Subcatchment 2: 2

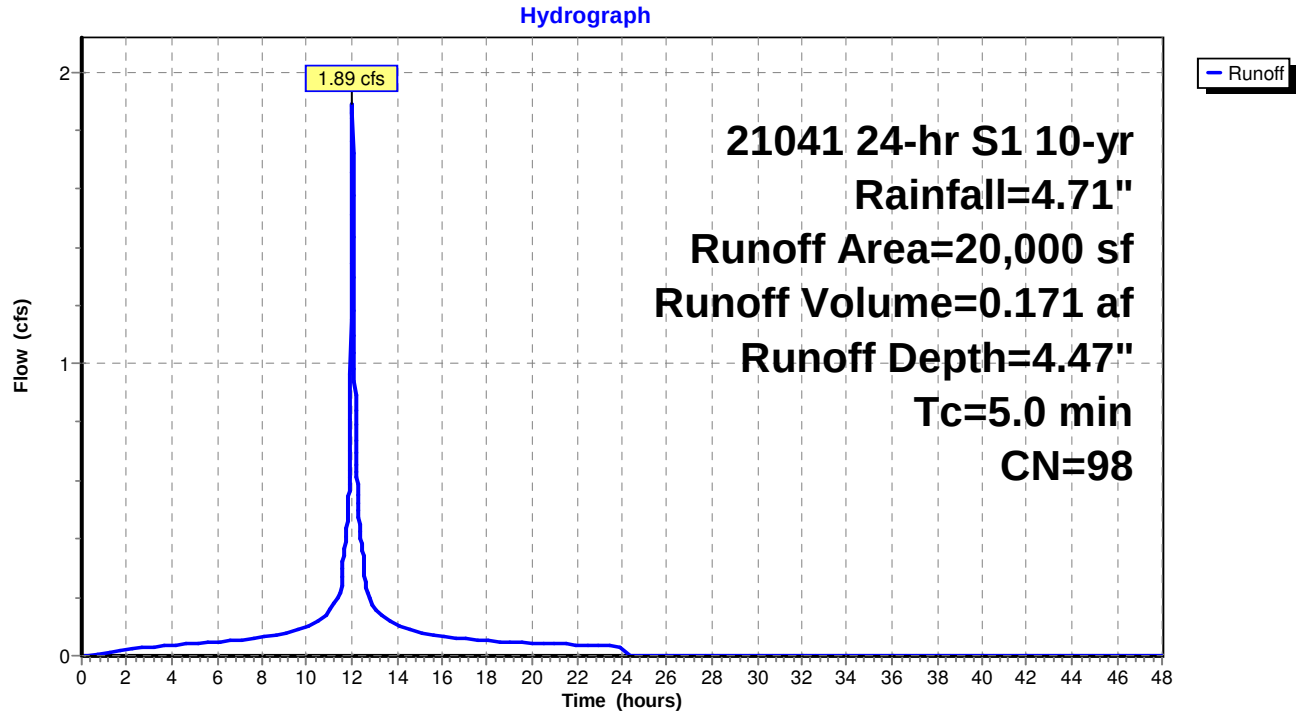
Runoff = 1.89 cfs @ 12.03 hrs, Volume= 0.171 af, Depth= 4.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
21041 24-hr S1 10-yr Rainfall=4.71"

Area (sf)	CN	Description
20,000	98	Roofs, HSG A
20,000		100.00% Impervious Area

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

Subcatchment 2: 2



Summary for Subcatchment 3: 3

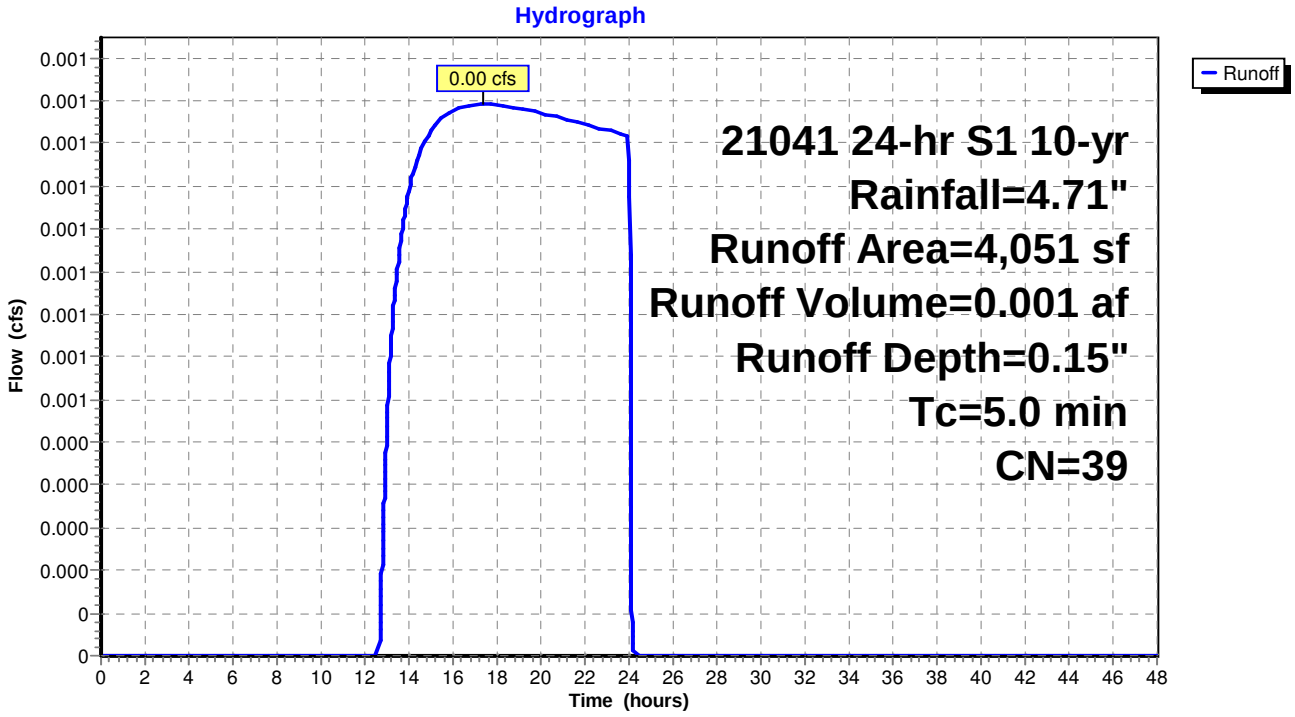
Runoff = 0.00 cfs @ 17.34 hrs, Volume= 0.001 af, Depth= 0.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
21041 24-hr S1 10-yr Rainfall=4.71"

Area (sf)	CN	Description
4,051	39	>75% Grass cover, Good, HSG A
4,051		100.00% Pervious Area

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

Subcatchment 3: 3



Summary for Subcatchment 4: 4

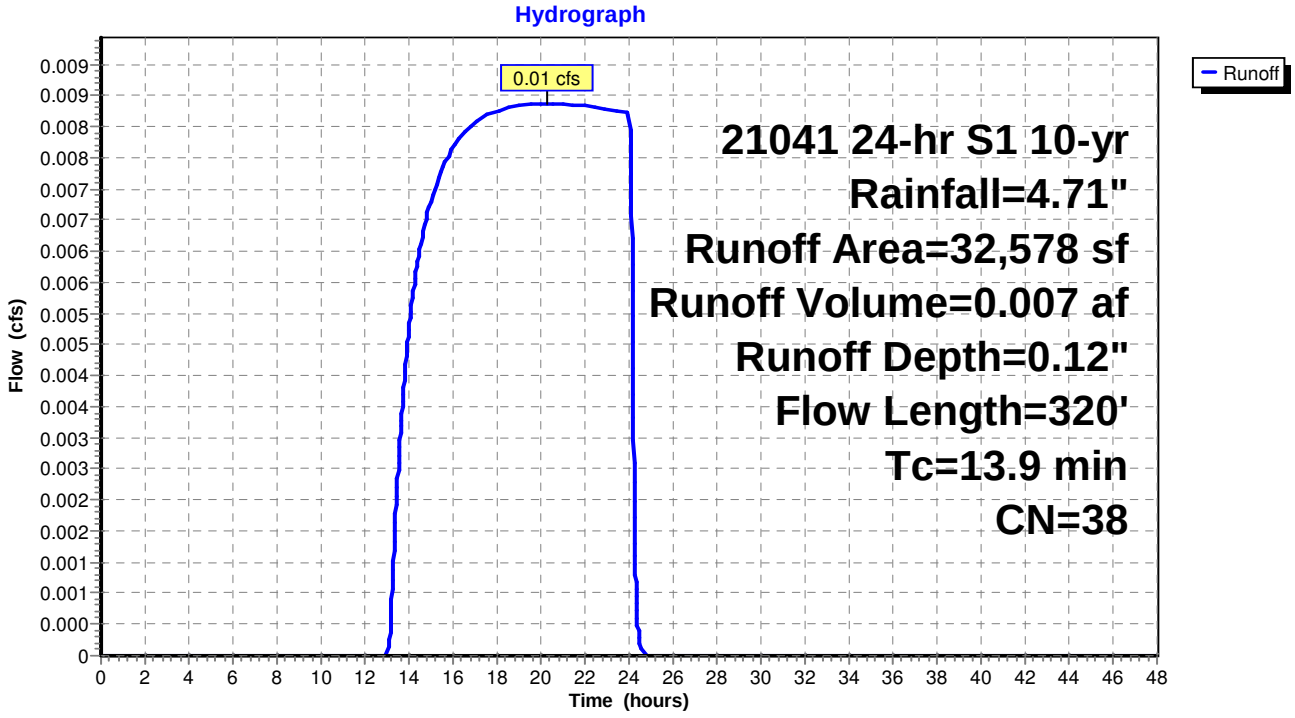
Runoff = 0.01 cfs @ 20.31 hrs, Volume= 0.007 af, Depth= 0.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
21041 24-hr S1 10-yr Rainfall=4.71"

Area (sf)	CN	Description
19,635	30	Woods, Good, HSG A
10,759	39	>75% Grass cover, Good, HSG A
2,184	98	Paved parking, HSG A
32,578	38	Weighted Average
30,394		93.30% Pervious Area
2,184		6.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	4	0.1667	0.14		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.13"
3.5	29	0.1667	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.13"
4.6	17	0.0287	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.13"
5.3	270	0.0287	0.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.9	320	Total			

Subcatchment 4: 4



Summary for Subcatchment 5: 5

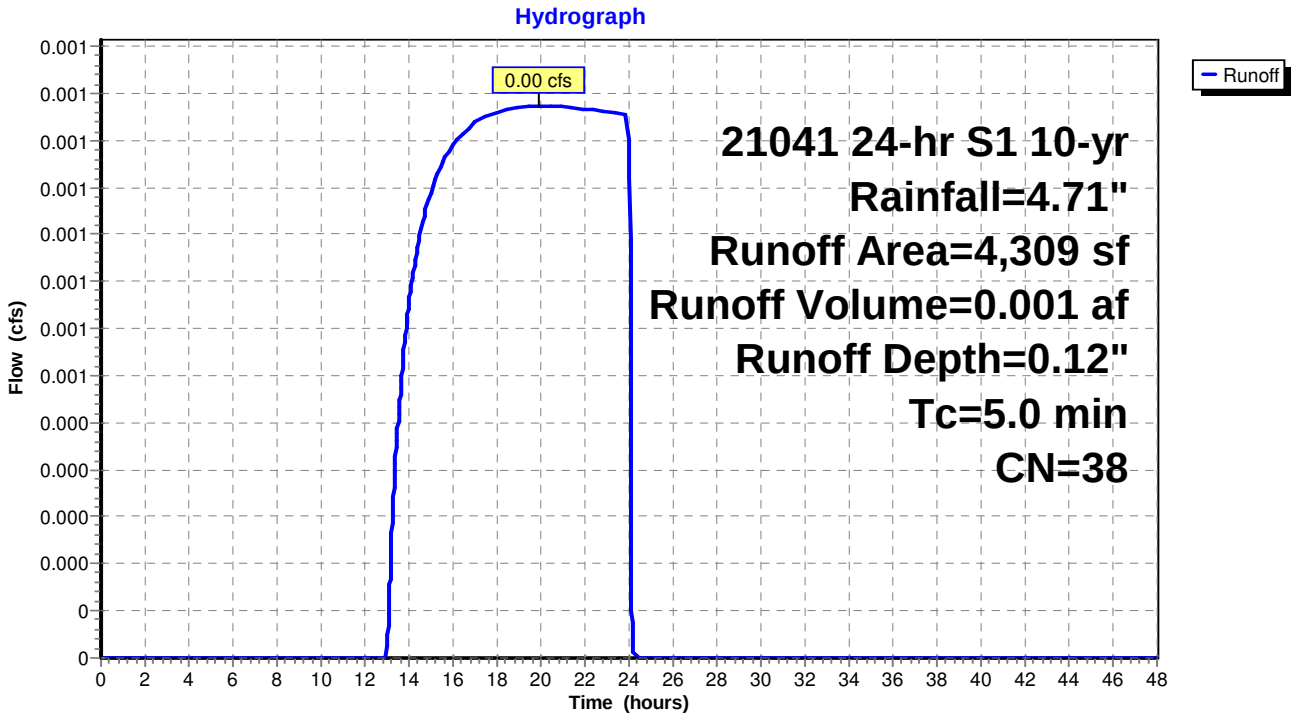
Runoff = 0.00 cfs @ 19.94 hrs, Volume= 0.001 af, Depth= 0.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
21041 24-hr S1 10-yr Rainfall=4.71"

Area (sf)	CN	Description
594	30	Woods, Good, HSG A
3,715	39	>75% Grass cover, Good, HSG A
4,309	38	Weighted Average
4,309		100.00% Pervious Area

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

Subcatchment 5: 5



Summary for Subcatchment 6: 6

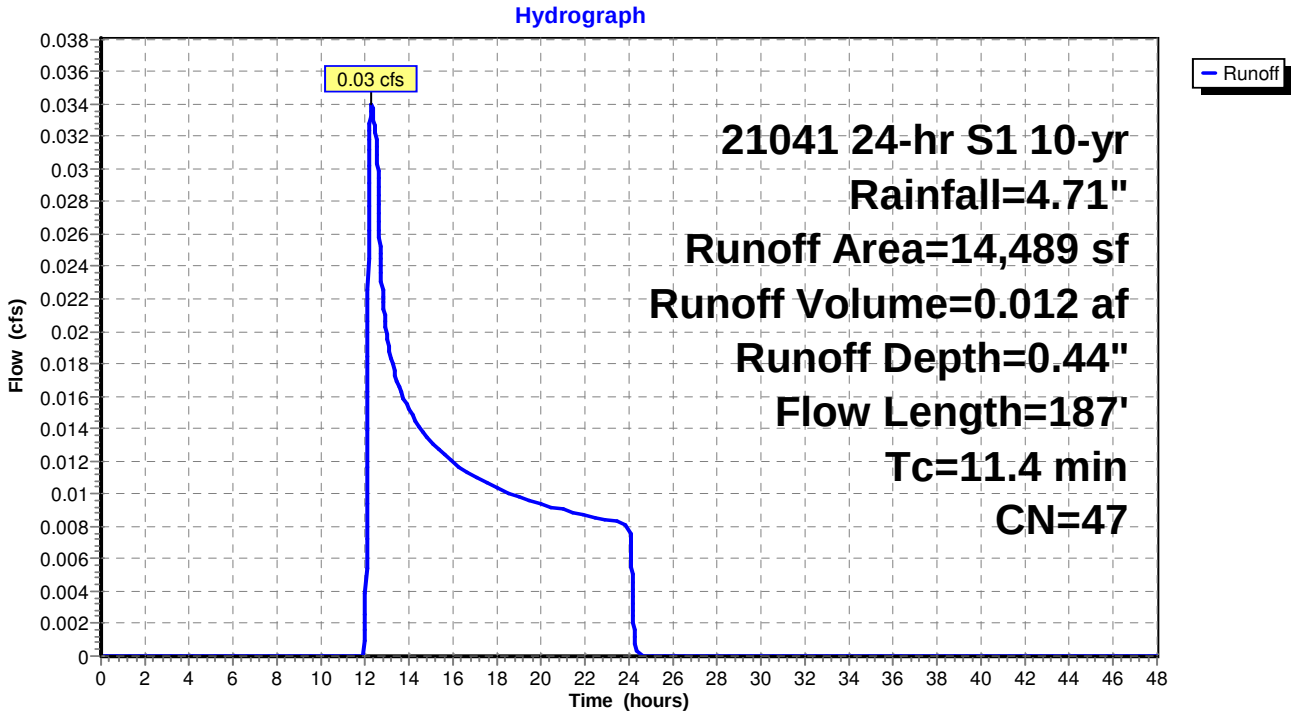
Runoff = 0.03 cfs @ 12.28 hrs, Volume= 0.012 af, Depth= 0.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
21041 24-hr S1 10-yr Rainfall=4.71"

Area (sf)	CN	Description
12,469	39	>75% Grass cover, Good, HSG A
2,020	98	Paved parking, HSG A
14,489	47	Weighted Average
12,469		86.06% Pervious Area
2,020		13.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0150	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.13"
1.7	86	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	51	0.1160	2.38		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.4	187	Total			

Subcatchment 6: 6



Summary for Subcatchment 7: 7

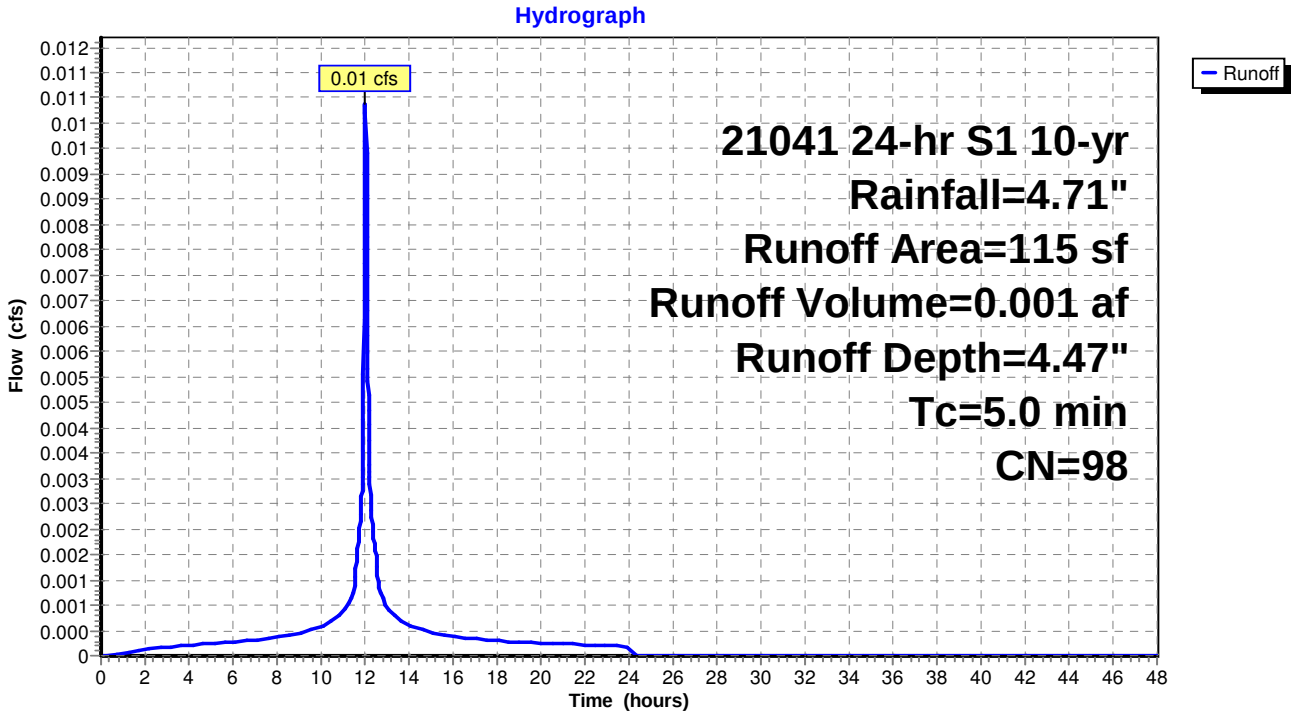
Runoff = 0.01 cfs @ 12.03 hrs, Volume= 0.001 af, Depth= 4.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
21041 24-hr S1 10-yr Rainfall=4.71"

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

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

Subcatchment 7: 7



Summary for Subcatchment 8: 8

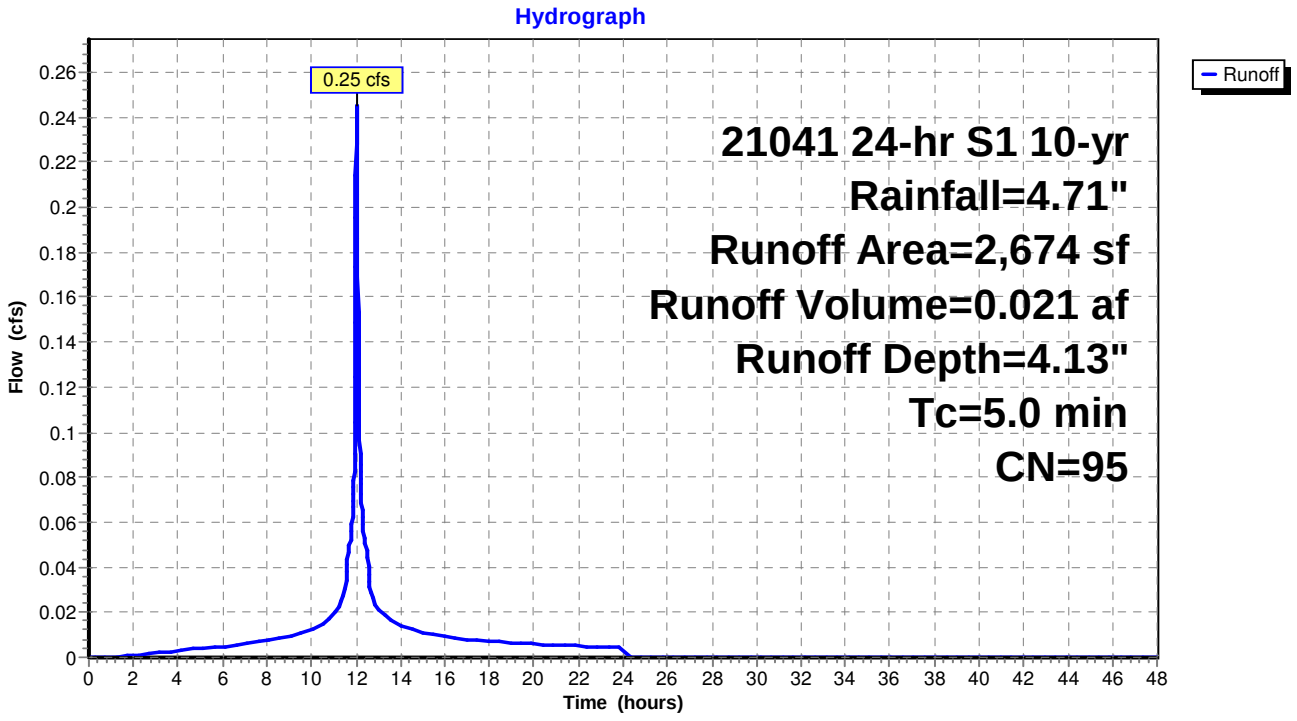
Runoff = 0.25 cfs @ 12.03 hrs, Volume= 0.021 af, Depth= 4.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
21041 24-hr S1 10-yr Rainfall=4.71"

Area (sf)	CN	Description
118	39	>75% Grass cover, Good, HSG A
2,556	98	Paved parking, HSG A
2,674	95	Weighted Average
118		4.41% Pervious Area
2,556		95.59% Impervious Area

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

Subcatchment 8: 8



Summary for Subcatchment 9: 9

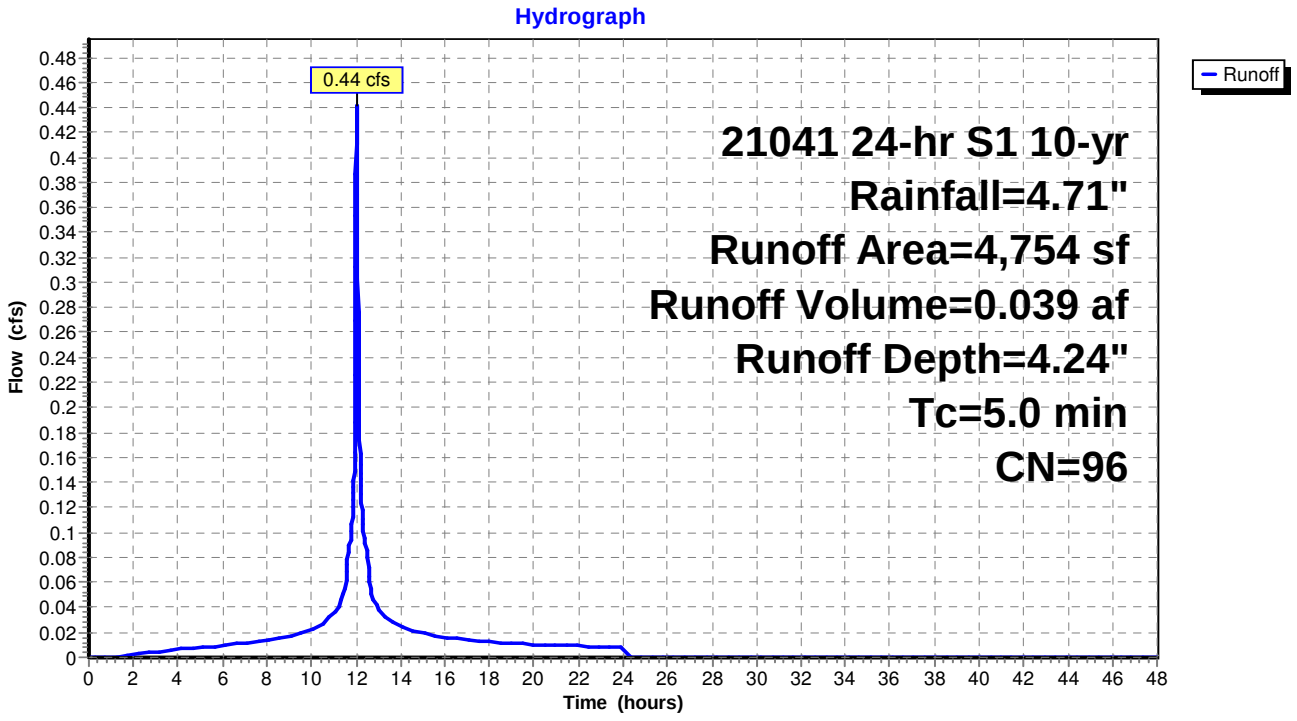
Runoff = 0.44 cfs @ 12.03 hrs, Volume= 0.039 af, Depth= 4.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
21041 24-hr S1 10-yr Rainfall=4.71"

Area (sf)	CN	Description
182	39	>75% Grass cover, Good, HSG A
4,572	98	Paved parking, HSG A
4,754	96	Weighted Average
182		3.83% Pervious Area
4,572		96.17% Impervious Area

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

Subcatchment 9: 9



Summary for Subcatchment 10: 10

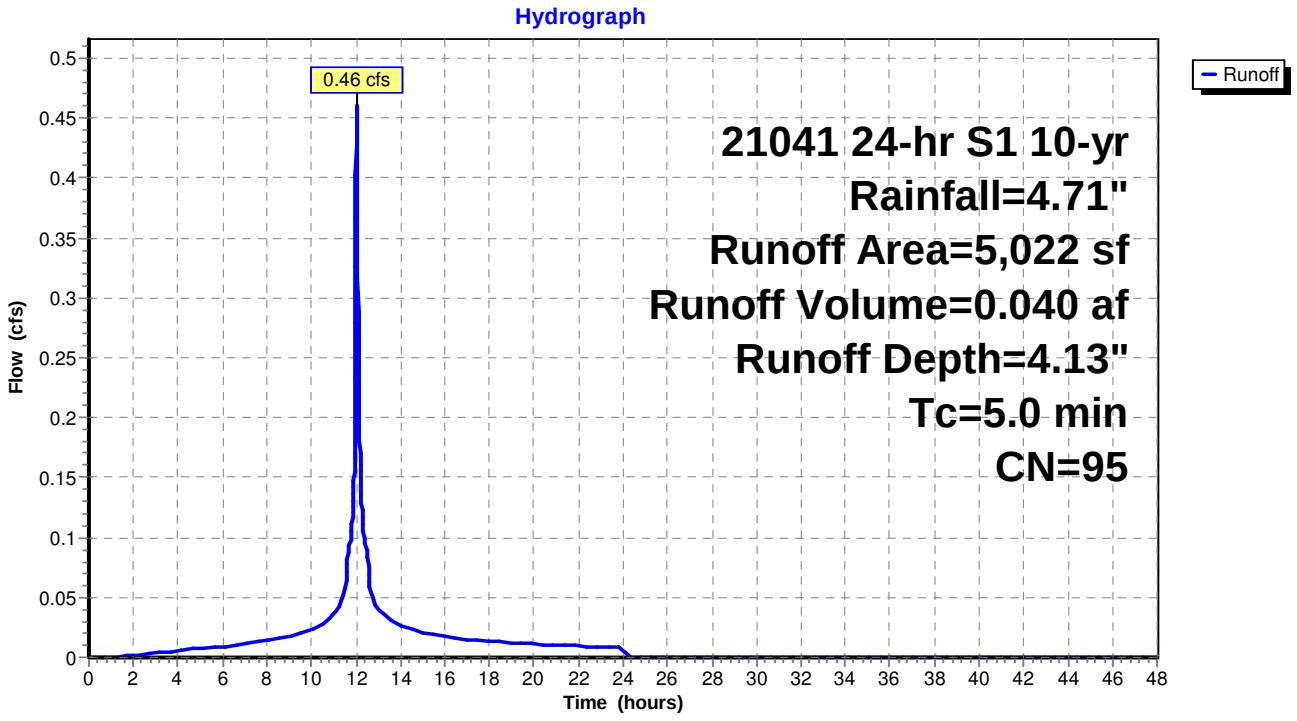
Runoff = 0.46 cfs @ 12.03 hrs, Volume= 0.040 af, Depth= 4.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
21041 24-hr S1 10-yr Rainfall=4.71"

Area (sf)	CN	Description
262	39	>75% Grass cover, Good, HSG A
4,760	98	Paved parking, HSG A
5,022	95	Weighted Average
262		5.22% Pervious Area
4,760		94.78% Impervious Area

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

Subcatchment 10: 10



Summary for Subcatchment 11: 11

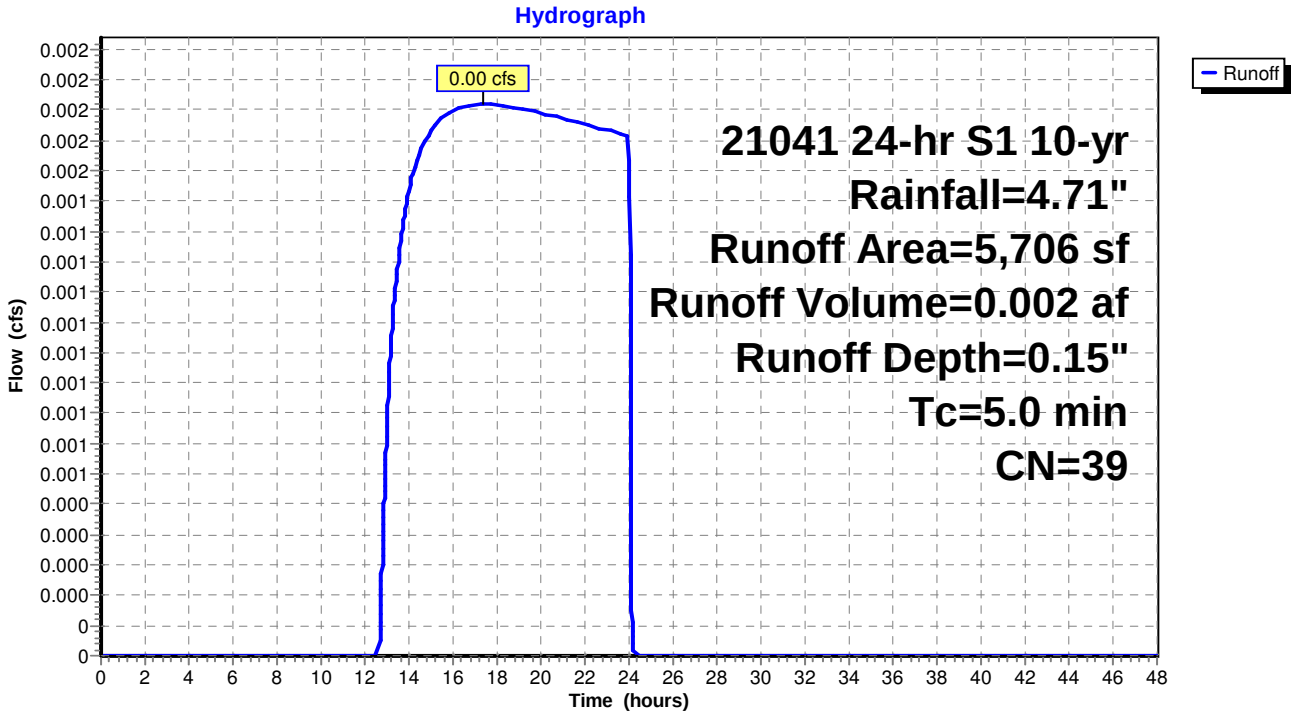
Runoff = 0.00 cfs @ 17.34 hrs, Volume= 0.002 af, Depth= 0.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
21041 24-hr S1 10-yr Rainfall=4.71"

Area (sf)	CN	Description
5,706	39	>75% Grass cover, Good, HSG A
5,706		100.00% Pervious Area

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

Subcatchment 11: 11



Summary for Subcatchment 12: 12

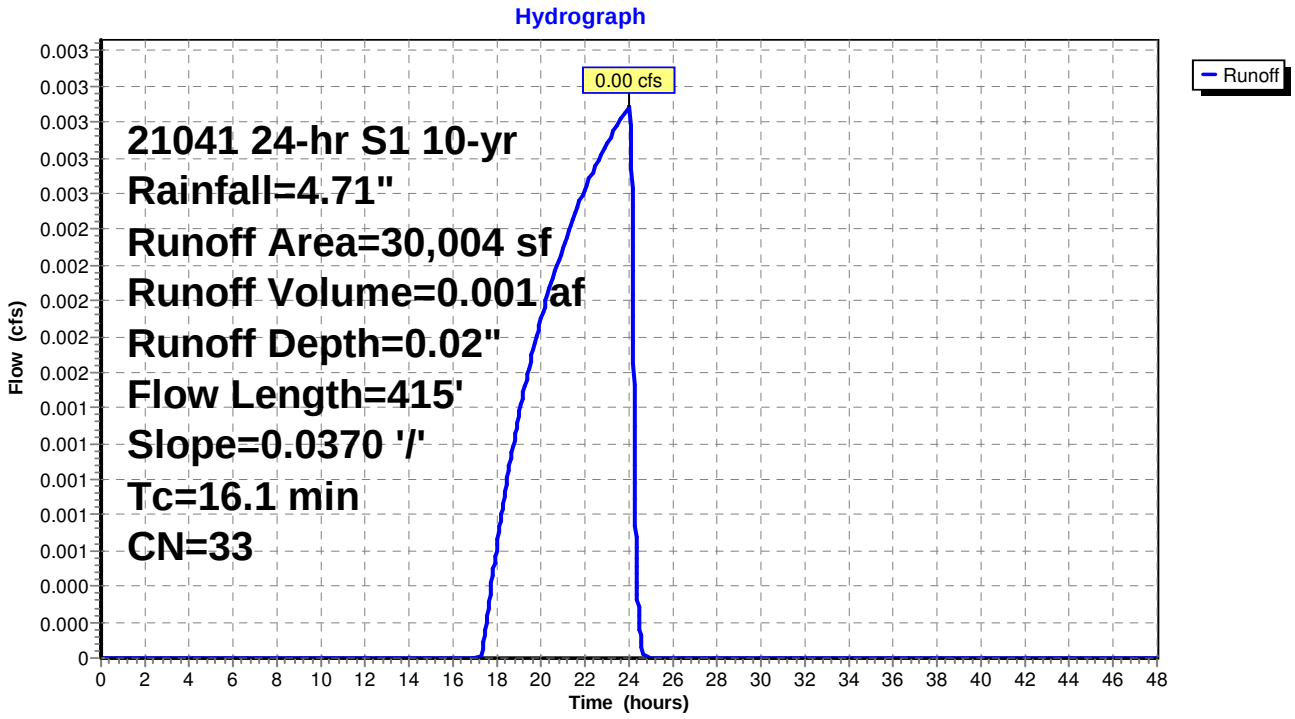
Runoff = 0.00 cfs @ 24.02 hrs, Volume= 0.001 af, Depth= 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
21041 24-hr S1 10-yr Rainfall=4.71"

Area (sf)	CN	Description
20,069	30	Woods, Good, HSG A
9,935	39	>75% Grass cover, Good, HSG A
30,004	33	Weighted Average
30,004		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	50	0.0370	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.13"
6.3	365	0.0370	0.96		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
16.1	415	Total			

Subcatchment 12: 12



Summary for Subcatchment 13: 13

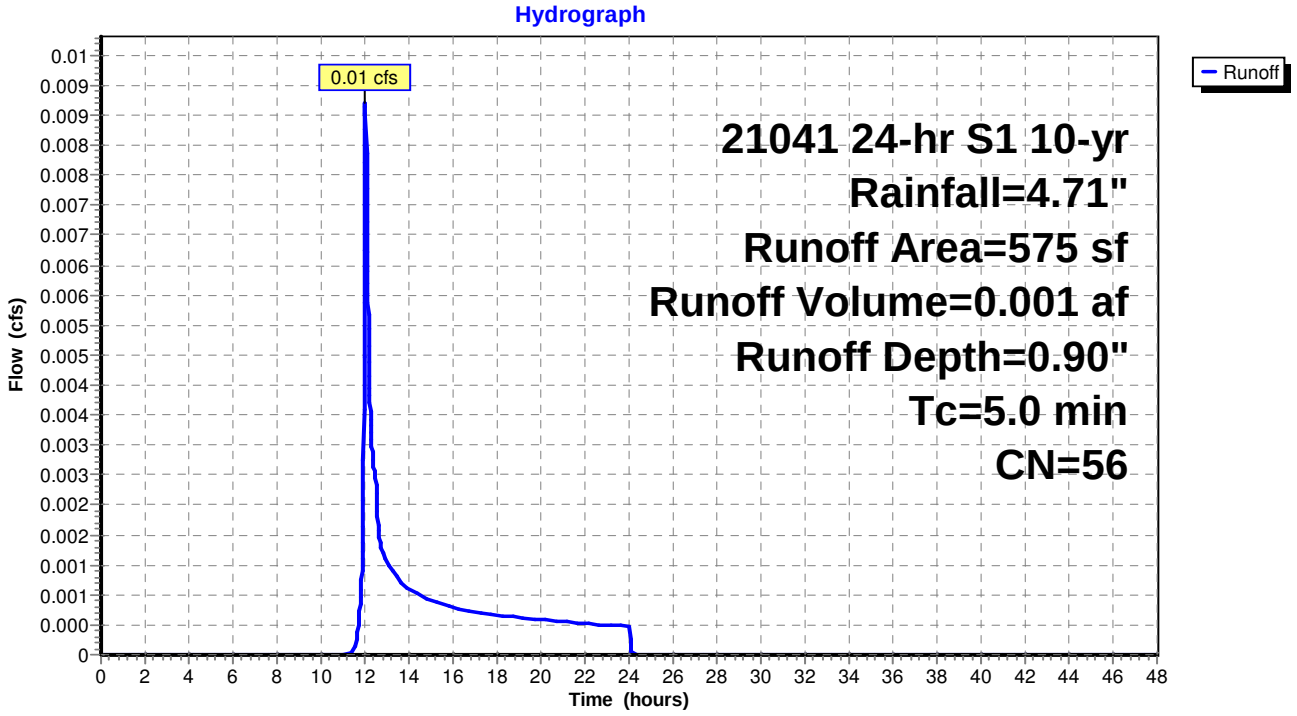
Runoff = 0.01 cfs @ 12.04 hrs, Volume= 0.001 af, Depth= 0.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
21041 24-hr S1 10-yr Rainfall=4.71"

Area (sf)	CN	Description
74	30	Woods, Good, HSG A
321	39	>75% Grass cover, Good, HSG A
180	98	Paved parking, HSG A
575	56	Weighted Average
395		68.70% Pervious Area
180		31.30% Impervious Area

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

Subcatchment 13: 13



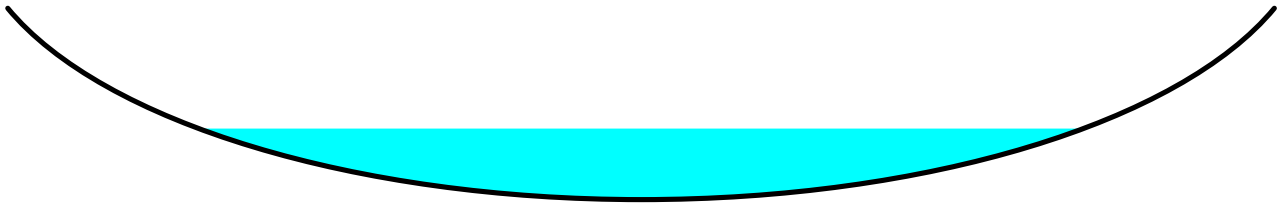
Summary for Reach R1: R1

Inflow Area = 0.883 ac, 89.46% Impervious, Inflow Depth = 3.99" for 10-yr event
Inflow = 0.51 cfs @ 12.56 hrs, Volume= 0.293 af
Outflow = 0.50 cfs @ 12.71 hrs, Volume= 0.293 af, Atten= 1%, Lag= 8.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.22 fps, Min. Travel Time= 10.8 min
Avg. Velocity = 0.09 fps, Avg. Travel Time= 27.0 min

Peak Storage= 324 cf @ 12.71 hrs
Average Depth at Peak Storage= 0.18' , Surface Width= 18.17'
Bank-Full Depth= 0.50' Flow Area= 10.0 sf, Capacity= 4.38 cfs

30.00' x 0.50' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage
Length= 146.0' Slope= 0.0038 '/'
Inlet Invert= 172.30', Outlet Invert= 171.75'



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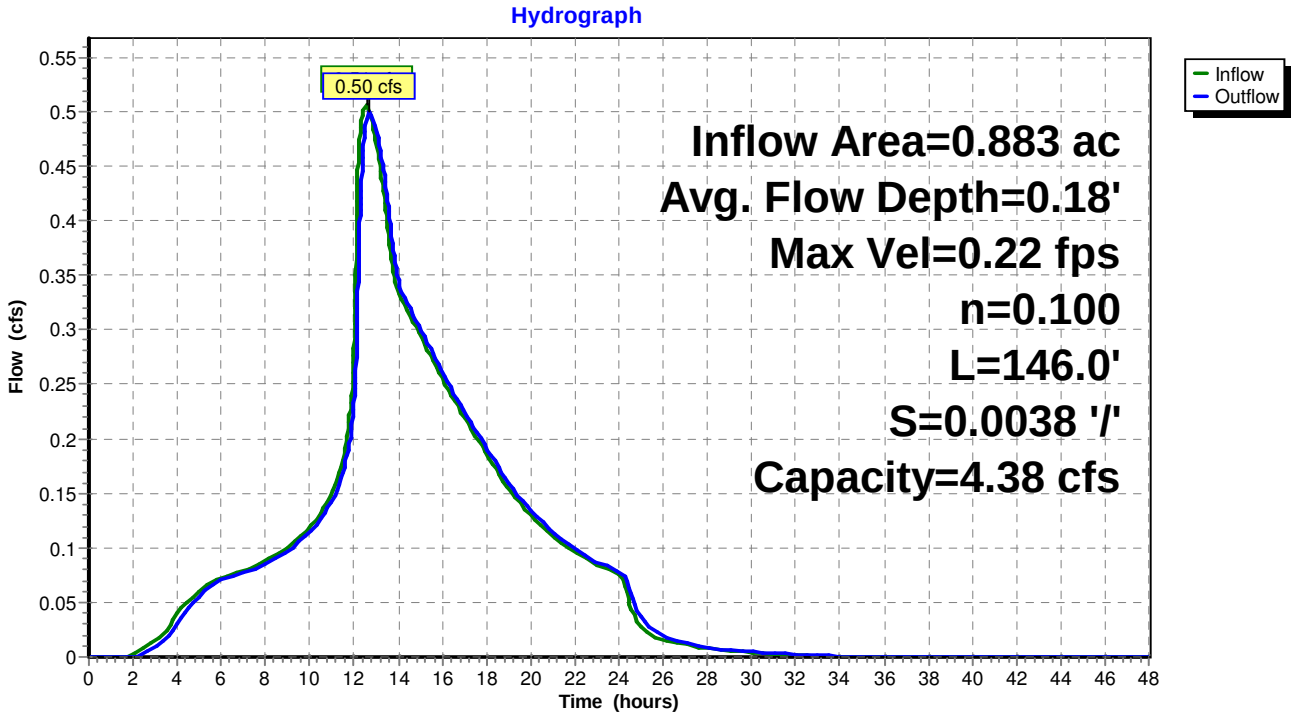
Reach R1: R1



Summary for Reach R2: R2

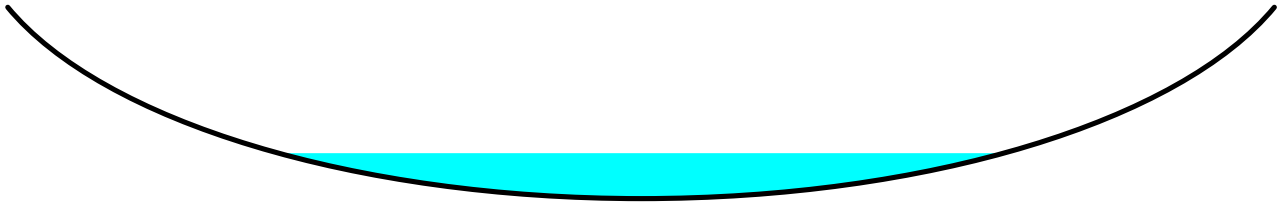
[61] Hint: Exceeded Reach TS1 outlet invert by 0.02' @ 12.13 hrs

Inflow Area = 0.752 ac, 42.81% Impervious, Inflow Depth = 1.82" for 10-yr event
Inflow = 0.87 cfs @ 12.07 hrs, Volume= 0.114 af
Outflow = 0.78 cfs @ 12.13 hrs, Volume= 0.114 af, Atten= 10%, Lag= 3.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.68 fps, Min. Travel Time= 4.2 min
Avg. Velocity = 0.24 fps, Avg. Travel Time= 11.8 min

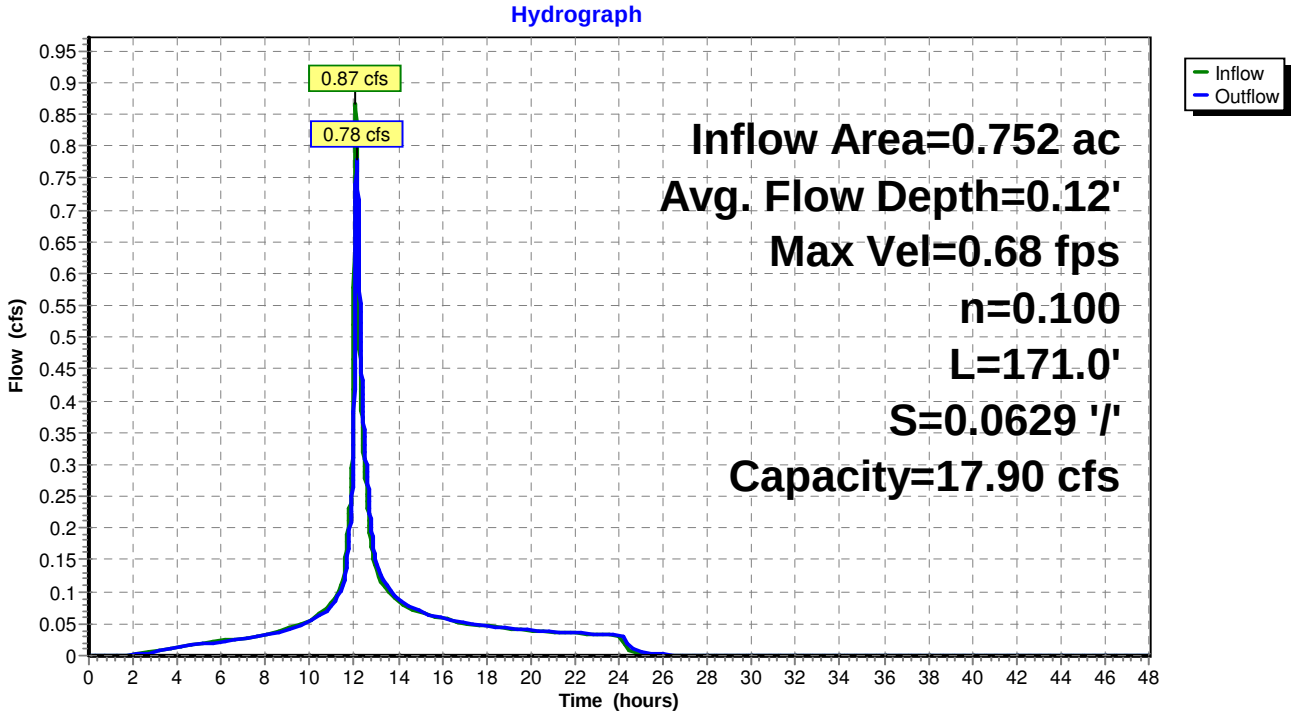
Peak Storage= 195 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.12' , Surface Width= 14.55'
Bank-Full Depth= 0.50' Flow Area= 10.0 sf, Capacity= 17.90 cfs

30.00' x 0.50' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage
Length= 171.0' Slope= 0.0629 '/'
Inlet Invert= 179.75', Outlet Invert= 169.00'



‡

Reach R2: R2



Summary for Reach TS1: TS1

Inflow Area = 0.752 ac, 42.81% Impervious, Inflow Depth = 1.82" for 10-yr event
Inflow = 1.16 cfs @ 12.03 hrs, Volume= 0.114 af
Outflow = 0.87 cfs @ 12.07 hrs, Volume= 0.114 af, Atten= 25%, Lag= 2.8 min

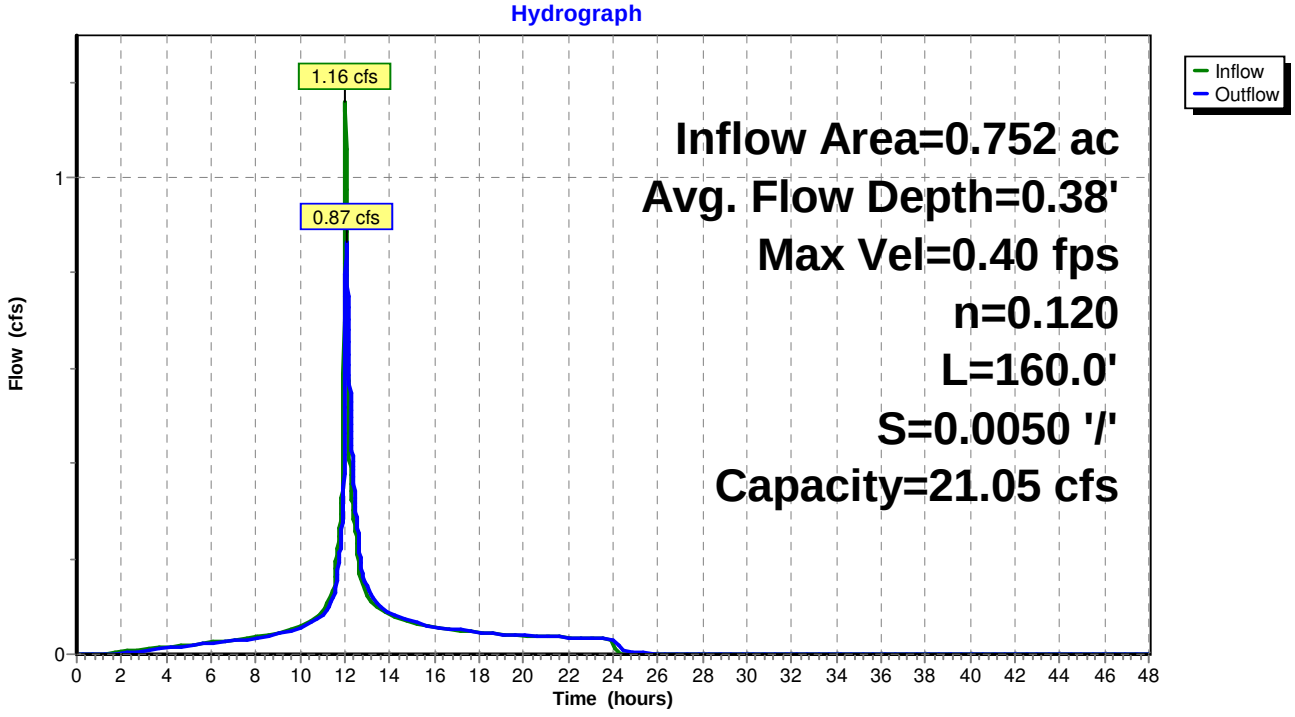
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.40 fps, Min. Travel Time= 6.6 min
Avg. Velocity = 0.13 fps, Avg. Travel Time= 21.1 min

Peak Storage= 345 cf @ 12.07 hrs
Average Depth at Peak Storage= 0.38' , Surface Width= 6.79'
Bank-Full Depth= 2.00' Flow Area= 21.0 sf, Capacity= 21.05 cfs

4.50' x 2.00' deep channel, n= 0.120
Side Slope Z-value= 3.0 '/' Top Width= 16.50'
Length= 160.0' Slope= 0.0050 '/'
Inlet Invert= 180.65', Outlet Invert= 179.85'

‡

Reach TS1: TS1



Summary for Pond BIO1: BIO1

Inflow Area = 0.883 ac, 89.46% Impervious, Inflow Depth = 4.02" for 10-yr event
Inflow = 3.26 cfs @ 12.03 hrs, Volume= 0.295 af
Outflow = 0.51 cfs @ 12.56 hrs, Volume= 0.293 af, Atten= 84%, Lag= 32.2 min
Primary = 0.51 cfs @ 12.56 hrs, Volume= 0.293 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 177.66' @ 12.56 hrs Surf.Area= 2,081 sf Storage= 4,203 cf
Flood Elev= 179.10' Surf.Area= 3,196 sf Storage= 7,812 cf

Plug-Flow detention time= 135.4 min calculated for 0.293 af (99% of inflow)
Center-of-Mass det. time= 130.1 min (881.9 - 751.7)

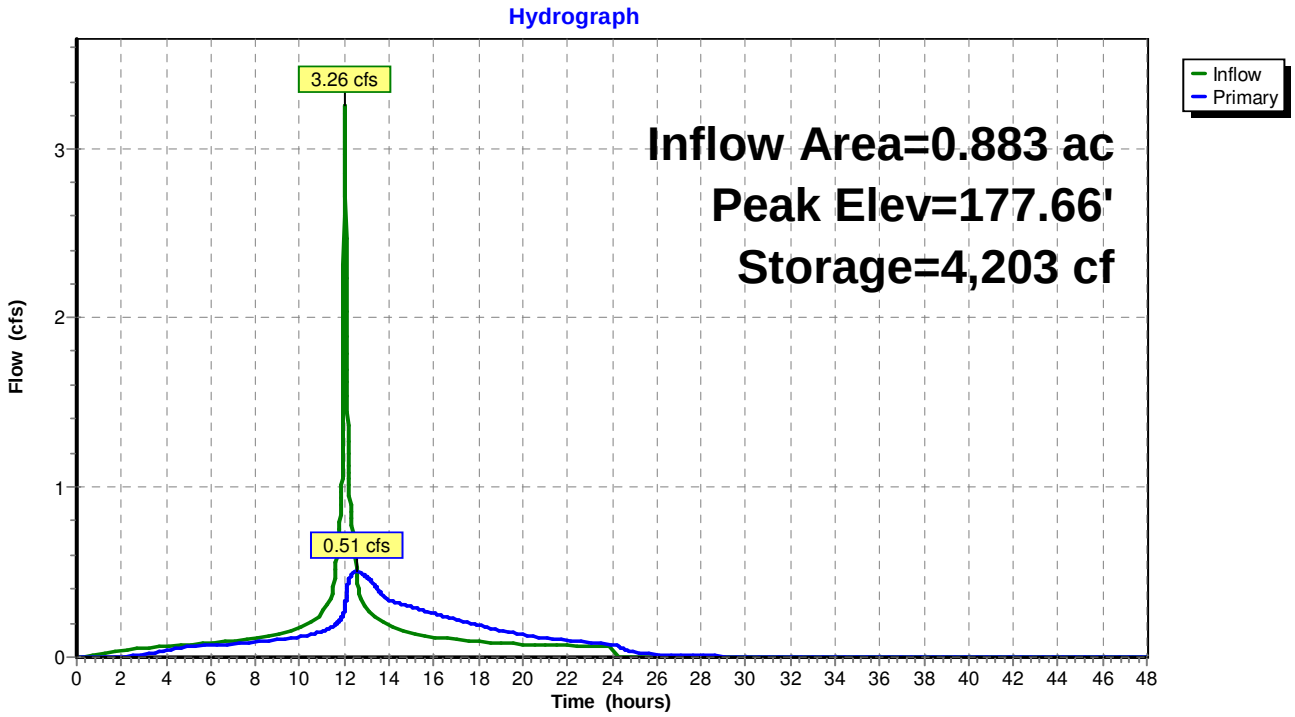
Volume	Invert	Avail.Storage	Storage Description
#1	172.25'	7,812 cf	**Bio-Retention (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
172.25	811	127.3	0.0	0	0	811
173.25	811	127.3	35.0	284	284	938
173.50	811	127.3	20.0	41	324	970
175.00	811	127.3	10.0	122	446	1,161
176.00	1,246	149.6	100.0	1,021	1,467	1,672
177.15	1,800	171.3	100.0	1,742	3,209	2,256
178.00	2,277	181.4	100.0	1,729	4,937	2,576
178.60	2,629	192.7	100.0	1,471	6,408	2,931
179.00	2,876	200.3	100.0	1,101	7,508	3,181
179.10	3,196	209.7	100.0	303	7,812	3,489

Device	Routing	Invert	Outlet Devices
#1	Primary	172.50'	**12.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 172.50' / 172.40' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	172.58'	**4.0" Round Culvert** L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 172.58' / 172.58' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.09 sf
#3	Device 2	172.58'	**10.000 in/hr Exfiltration over Wetted area above 172.58'** Excluded Wetted area = 853 sf Phase-In= 0.01'
#4	Device 1	177.20'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	178.60'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.51 cfs @ 12.56 hrs HW=177.66' TW=172.48' (Dynamic Tailwater)
- **1=Culvert** (Passes 0.51 cfs of 8.17 cfs potential flow)
  - **2=Culvert** (Passes 0.37 cfs of 0.48 cfs potential flow)
    - **3=Exfiltration** (Exfiltration Controls 0.37 cfs)
  - **4=Orifice/Grate** (Orifice Controls 0.14 cfs @ 2.80 fps)
  - **5=Orifice/Grate** (Controls 0.00 cfs)

Pond BIO1: BIO1



Summary for Pond PCB1: PCB1

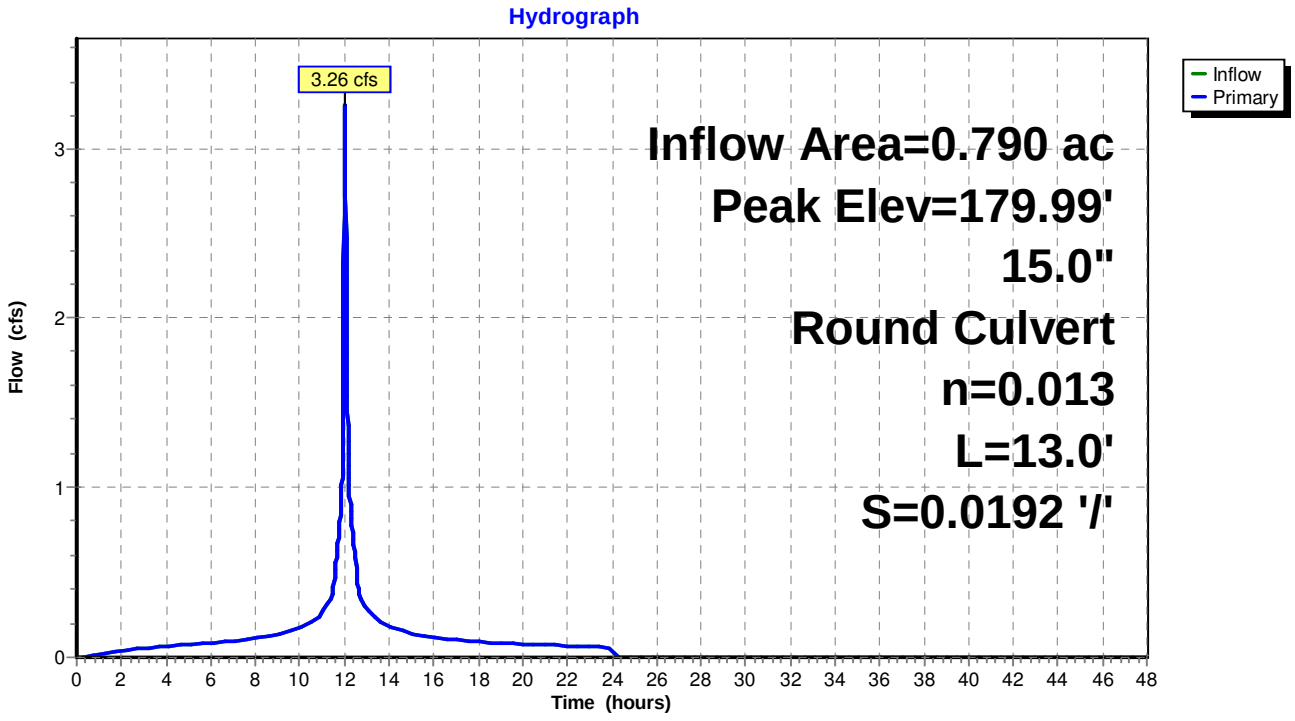
Inflow Area = 0.790 ac,100.00% Impervious, Inflow Depth = 4.47" for 10-yr event
Inflow = 3.26 cfs @ 12.03 hrs, Volume= 0.294 af
Outflow = 3.26 cfs @ 12.03 hrs, Volume= 0.294 af, Atten= 0%, Lag= 0.0 min
Primary = 3.26 cfs @ 12.03 hrs, Volume= 0.294 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 179.99' @ 12.03 hrs
Flood Elev= 183.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	179.00'	**15.0" Round Culvert** L= 13.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 179.00' / 178.75' S= 0.0192 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.24 cfs @ 12.03 hrs HW=179.99' TW=176.97' (Dynamic Tailwater)
1=Culvert (Barrel Controls 3.24 cfs @ 4.26 fps)

Pond PCB1: PCB1



Summary for Pond PCB2: PCB2

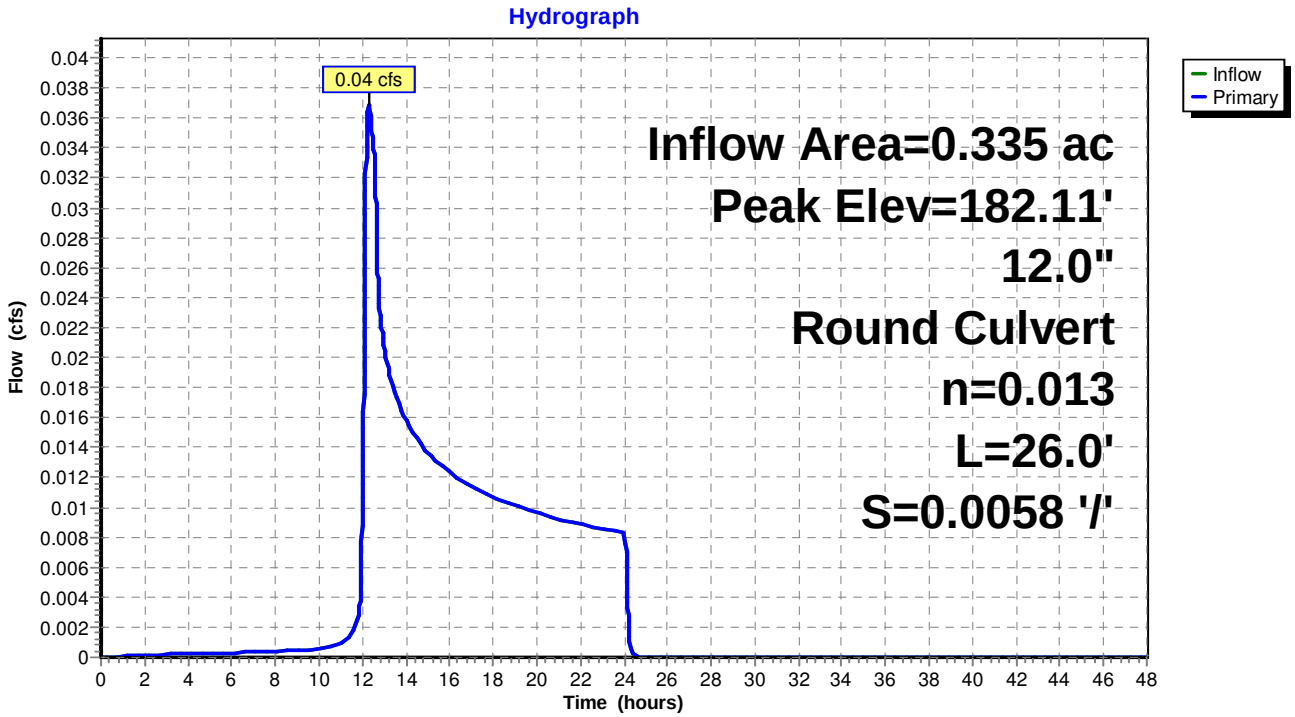
Inflow Area = 0.335 ac, 14.62% Impervious, Inflow Depth = 0.47" for 10-yr event
Inflow = 0.04 cfs @ 12.27 hrs, Volume= 0.013 af
Outflow = 0.04 cfs @ 12.27 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.0 min
Primary = 0.04 cfs @ 12.27 hrs, Volume= 0.013 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 182.11' @ 12.23 hrs
Flood Elev= 186.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	182.00'	**12.0" Round Culvert** L= 26.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 182.00' / 181.85' S= 0.0058 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.04 cfs @ 12.27 hrs HW=182.11' TW=181.94' (Dynamic Tailwater)
↳**1=Culvert** (Outlet Controls 0.04 cfs @ 1.18 fps)

Pond PCB2: PCB2



Summary for Pond PCB3: PCB3

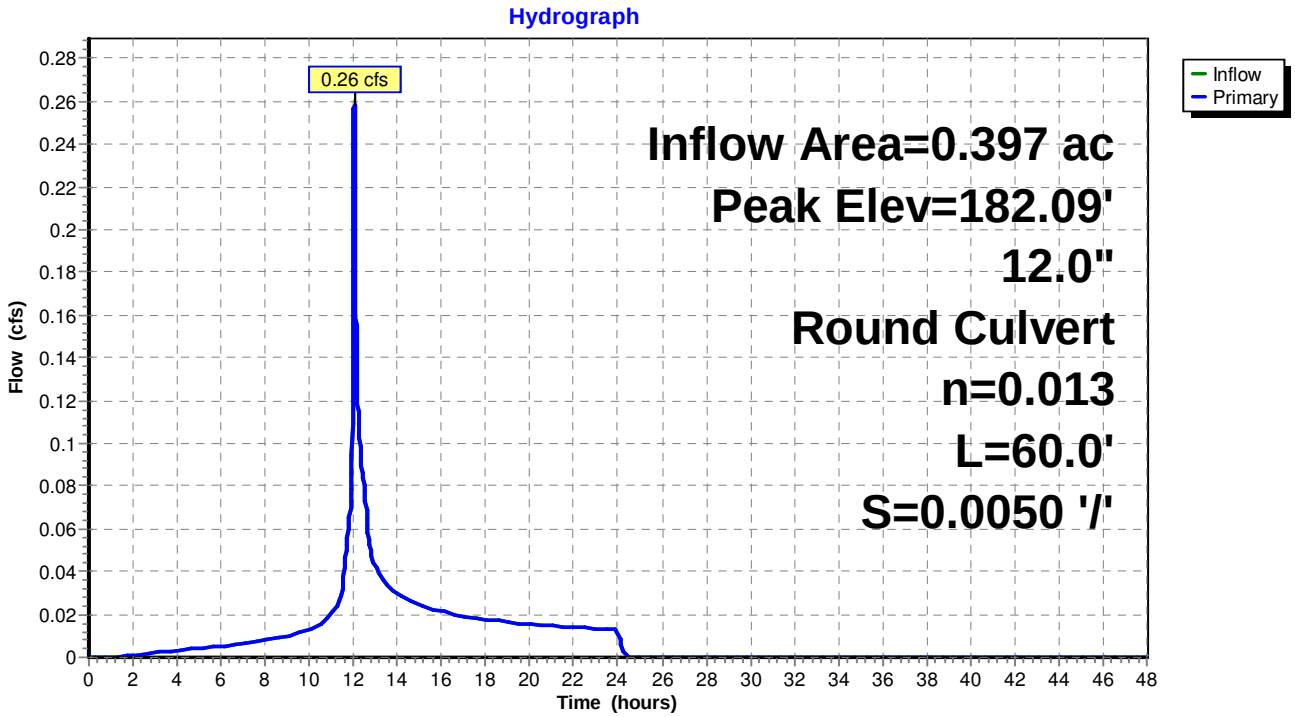
Inflow Area = 0.397 ac, 27.15% Impervious, Inflow Depth = 1.04" for 10-yr event
Inflow = 0.26 cfs @ 12.03 hrs, Volume= 0.034 af
Outflow = 0.26 cfs @ 12.03 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.0 min
Primary = 0.26 cfs @ 12.03 hrs, Volume= 0.034 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 182.09' @ 12.03 hrs
Flood Elev= 185.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	181.75'	**12.0" Round Culvert** L= 60.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 181.75' / 181.45' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.26 cfs @ 12.03 hrs HW=182.09' TW=181.86' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.26 cfs @ 1.65 fps)

Pond PCB3: PCB3



Summary for Pond PCB4: PCB4

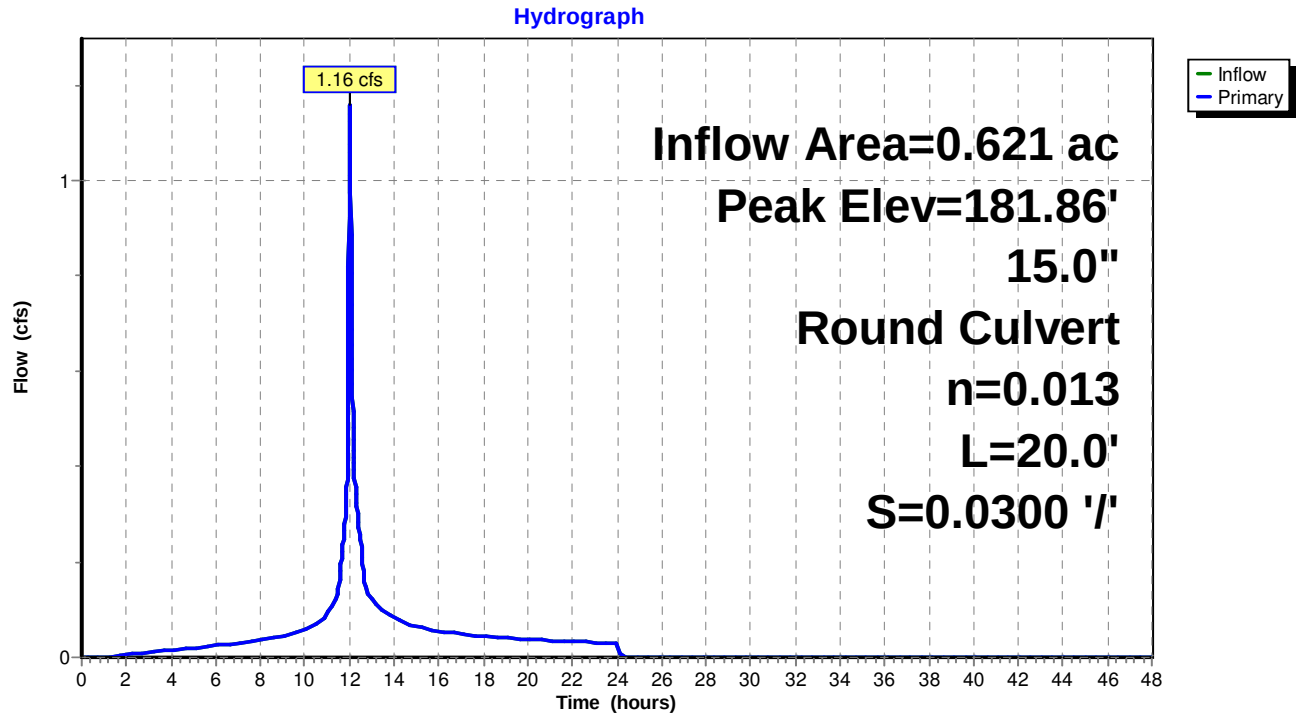
Inflow Area = 0.621 ac, 51.83% Impervious, Inflow Depth = 2.18" for 10-yr event
Inflow = 1.16 cfs @ 12.03 hrs, Volume= 0.113 af
Outflow = 1.16 cfs @ 12.03 hrs, Volume= 0.113 af, Atten= 0%, Lag= 0.0 min
Primary = 1.16 cfs @ 12.03 hrs, Volume= 0.113 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 181.86' @ 12.03 hrs
Flood Elev= 186.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	181.35'	**15.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 181.35' / 180.75' S= 0.0300 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.16 cfs @ 12.03 hrs HW=181.86' TW=181.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 1.16 cfs @ 2.44 fps)

Pond PCB4: PCB4



Summary for Pond PCB5: PCB5

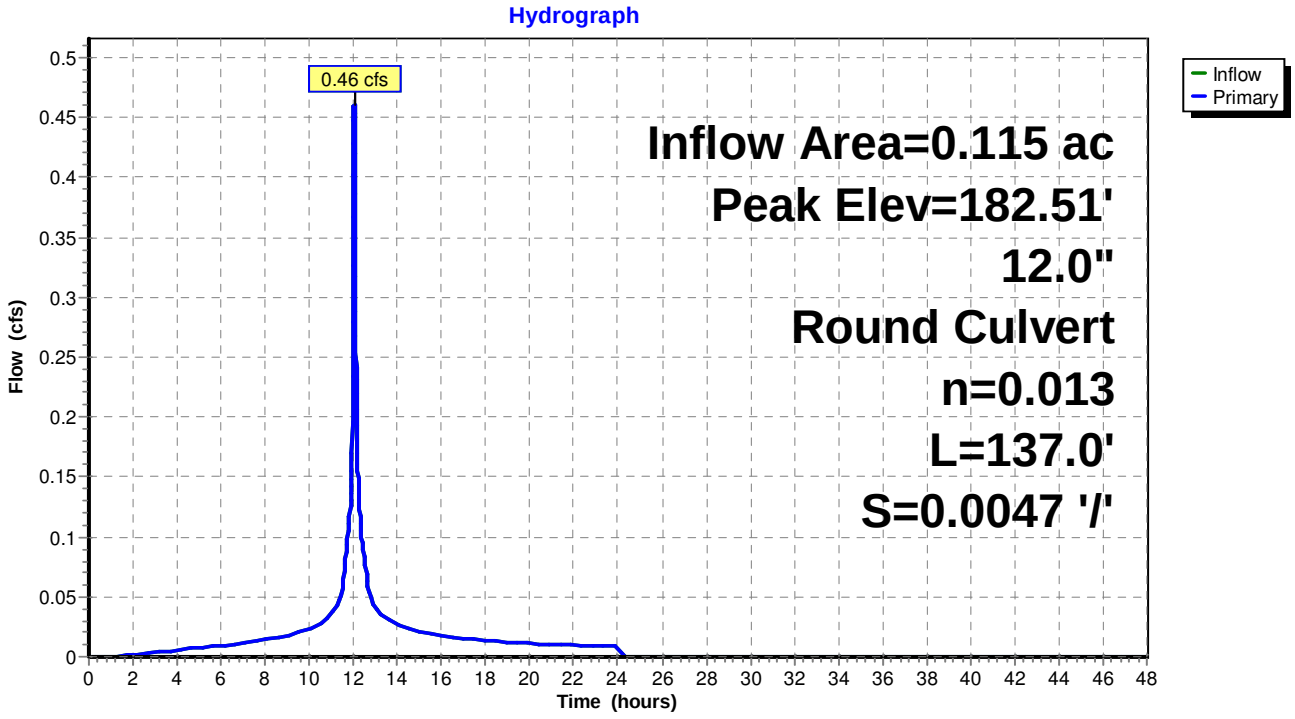
Inflow Area = 0.115 ac, 94.78% Impervious, Inflow Depth = 4.13" for 10-yr event
Inflow = 0.46 cfs @ 12.03 hrs, Volume= 0.040 af
Outflow = 0.46 cfs @ 12.03 hrs, Volume= 0.040 af, Atten= 0%, Lag= 0.0 min
Primary = 0.46 cfs @ 12.03 hrs, Volume= 0.040 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 182.51' @ 12.03 hrs
Flood Elev= 186.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	182.10'	**12.0" Round Culvert** L= 137.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 182.10' / 181.45' S= 0.0047 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.46 cfs @ 12.03 hrs HW=182.51' TW=181.86' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.46 cfs @ 2.23 fps)

Pond PCB5: PCB5



Summary for Pond PP1: PP1

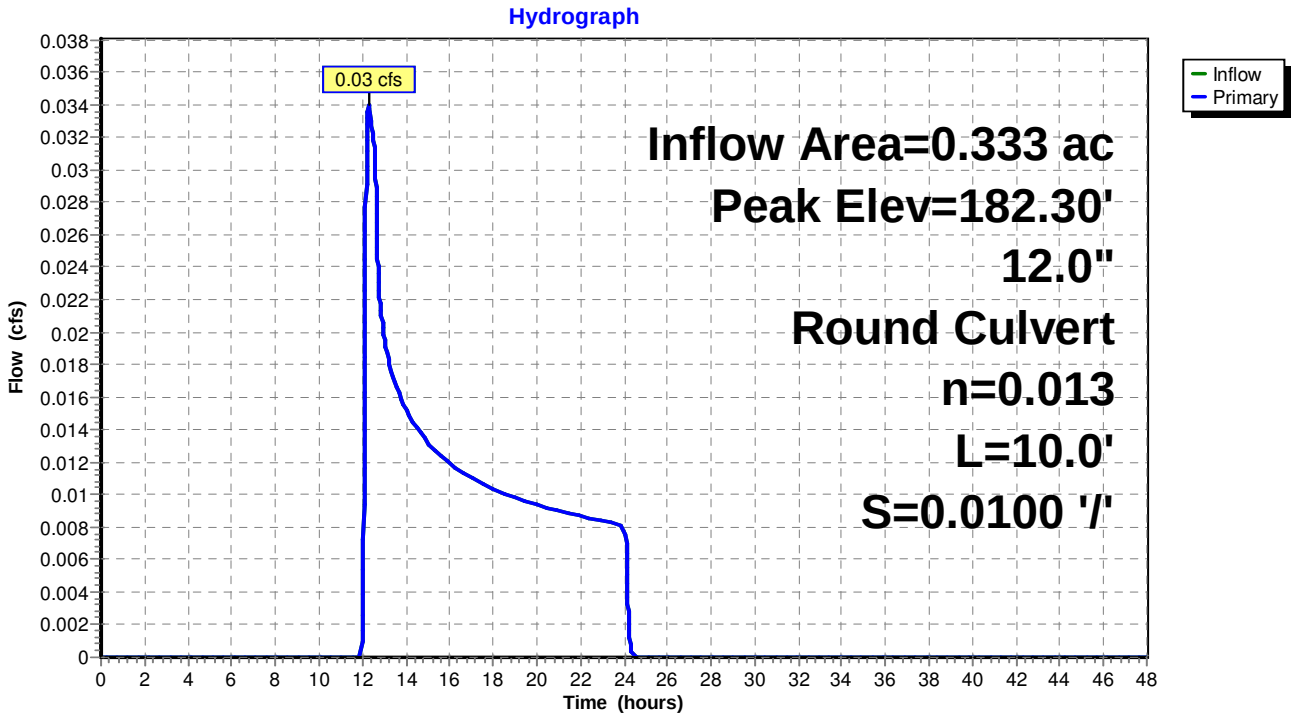
Inflow Area = 0.333 ac, 13.94% Impervious, Inflow Depth = 0.44" for 10-yr event
Inflow = 0.03 cfs @ 12.28 hrs, Volume= 0.012 af
Outflow = 0.03 cfs @ 12.28 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.0 min
Primary = 0.03 cfs @ 12.28 hrs, Volume= 0.012 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 182.30' @ 12.28 hrs
Flood Elev= 183.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	182.20'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 182.20' / 182.10' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.03 cfs @ 12.28 hrs HW=182.30' TW=182.11' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.03 cfs @ 1.34 fps)

Pond PP1: PP1



Summary for Pond PRD1: PRD1

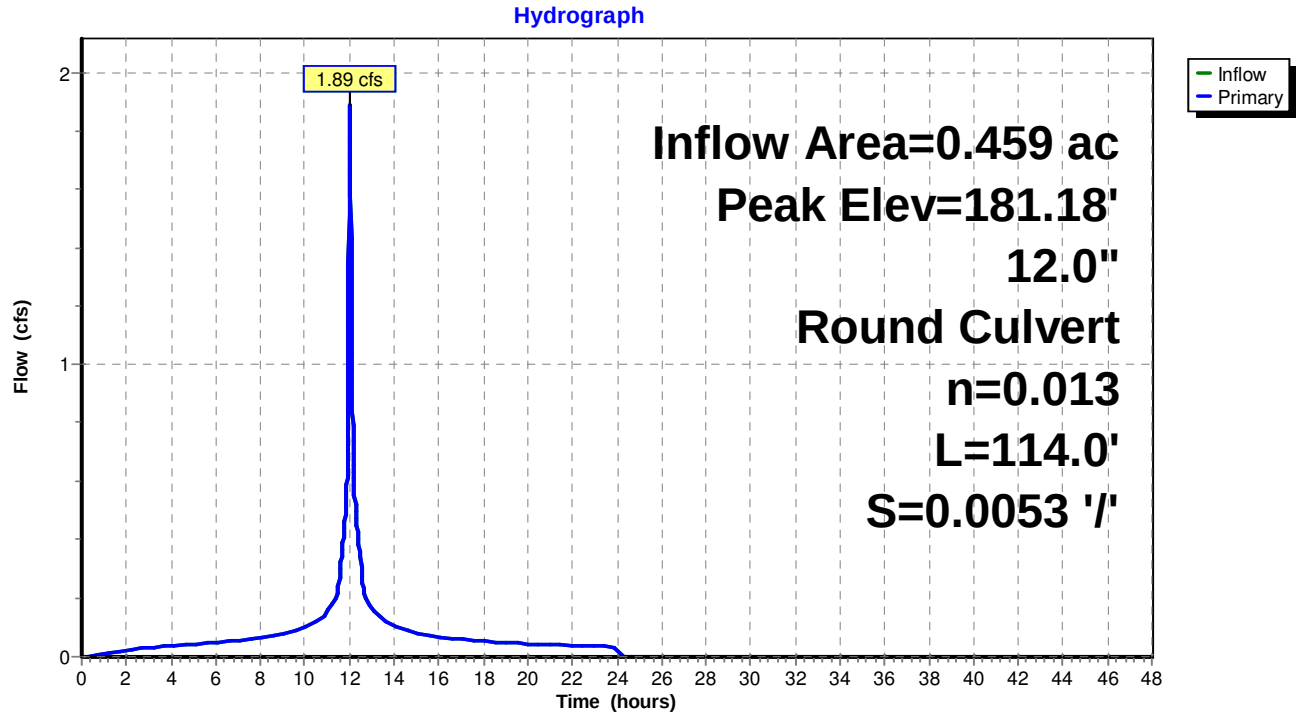
Inflow Area = 0.459 ac,100.00% Impervious, Inflow Depth = 4.47" for 10-yr event
Inflow = 1.89 cfs @ 12.03 hrs, Volume= 0.171 af
Outflow = 1.89 cfs @ 12.03 hrs, Volume= 0.171 af, Atten= 0%, Lag= 0.0 min
Primary = 1.89 cfs @ 12.03 hrs, Volume= 0.171 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 181.18' @ 12.03 hrs
Flood Elev= 182.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	180.30'	**12.0" Round Culvert** L= 114.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 180.30' / 179.70' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.89 cfs @ 12.03 hrs HW=181.18' TW=179.99' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.89 cfs @ 3.45 fps)

Pond PRD1: PRD1

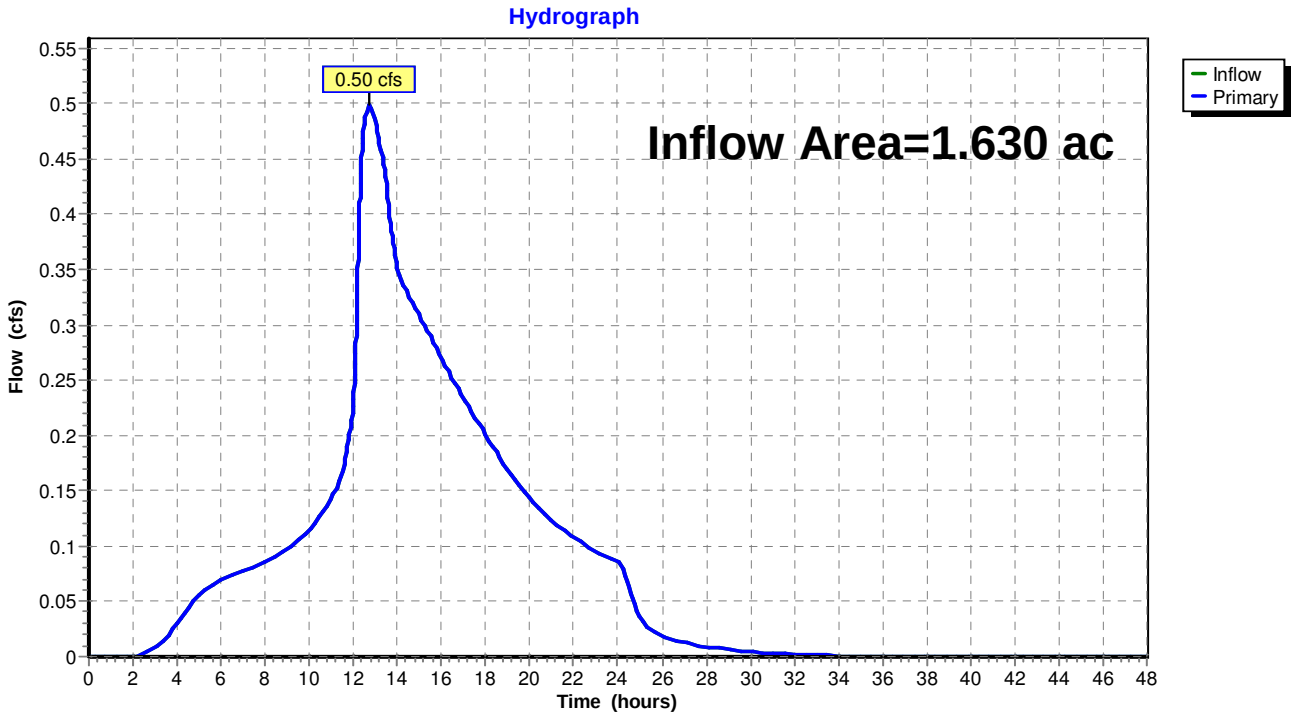


Summary for Link A: A

Inflow Area = 1.630 ac, 51.50% Impervious, Inflow Depth > 2.21" for 10-yr event
Inflow = 0.50 cfs @ 12.71 hrs, Volume= 0.301 af
Primary = 0.50 cfs @ 12.71 hrs, Volume= 0.301 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link A: A

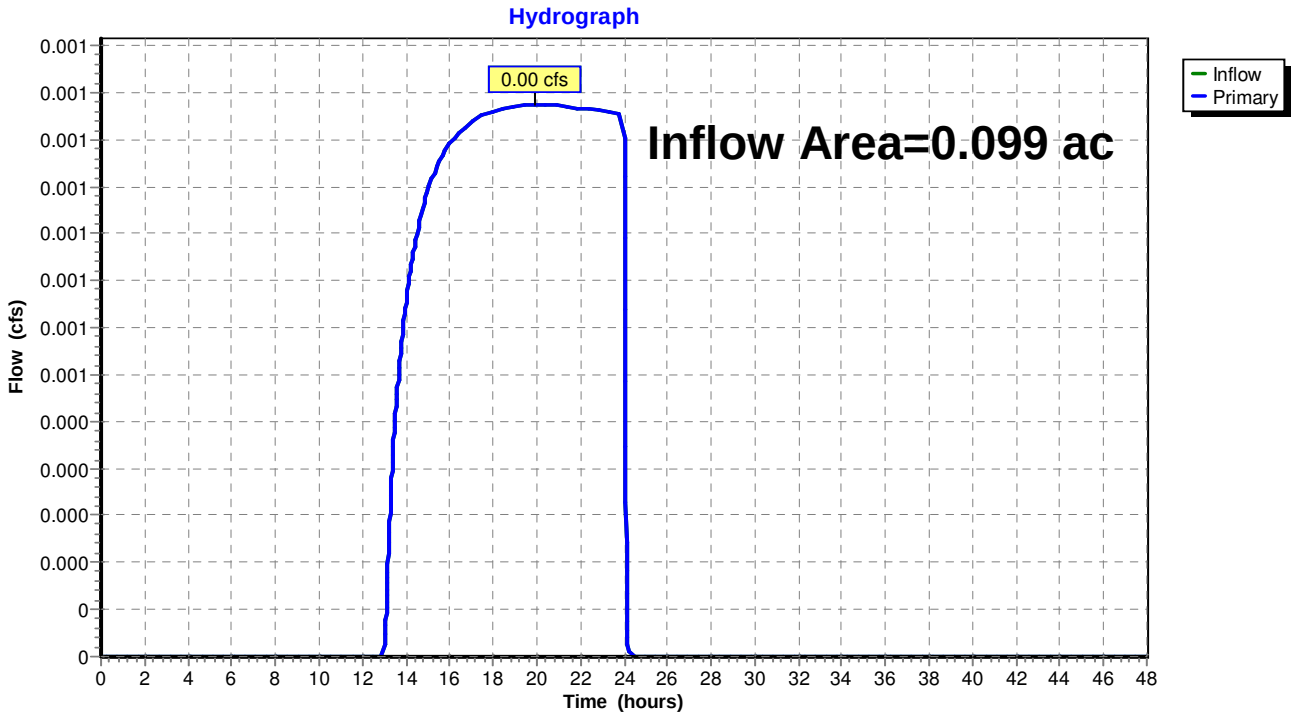


Summary for Link B: B

Inflow Area = 0.099 ac, 0.00% Impervious, Inflow Depth = 0.12" for 10-yr event
Inflow = 0.00 cfs @ 19.94 hrs, Volume= 0.001 af
Primary = 0.00 cfs @ 19.94 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link B: B

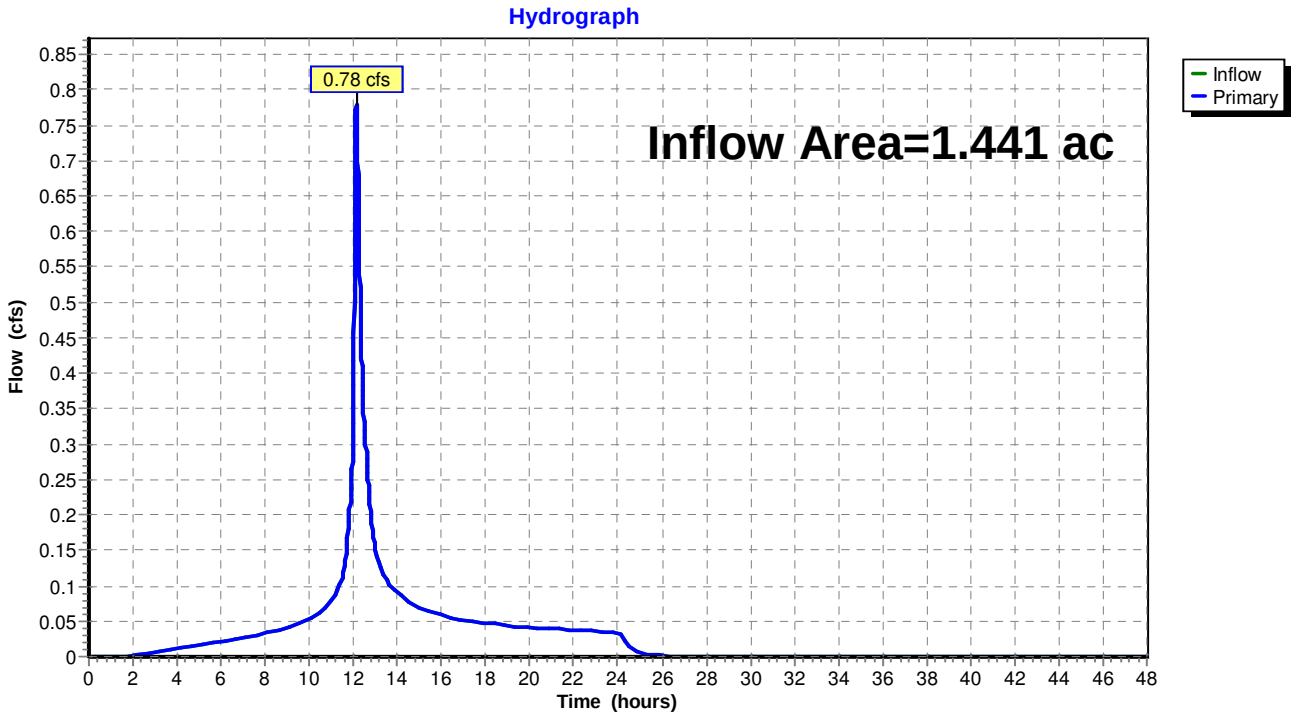


Summary for Link C: C

Inflow Area = 1.441 ac, 22.34% Impervious, Inflow Depth = 0.96" for 10-yr event
Inflow = 0.78 cfs @ 12.13 hrs, Volume= 0.115 af
Primary = 0.78 cfs @ 12.13 hrs, Volume= 0.115 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link C: C

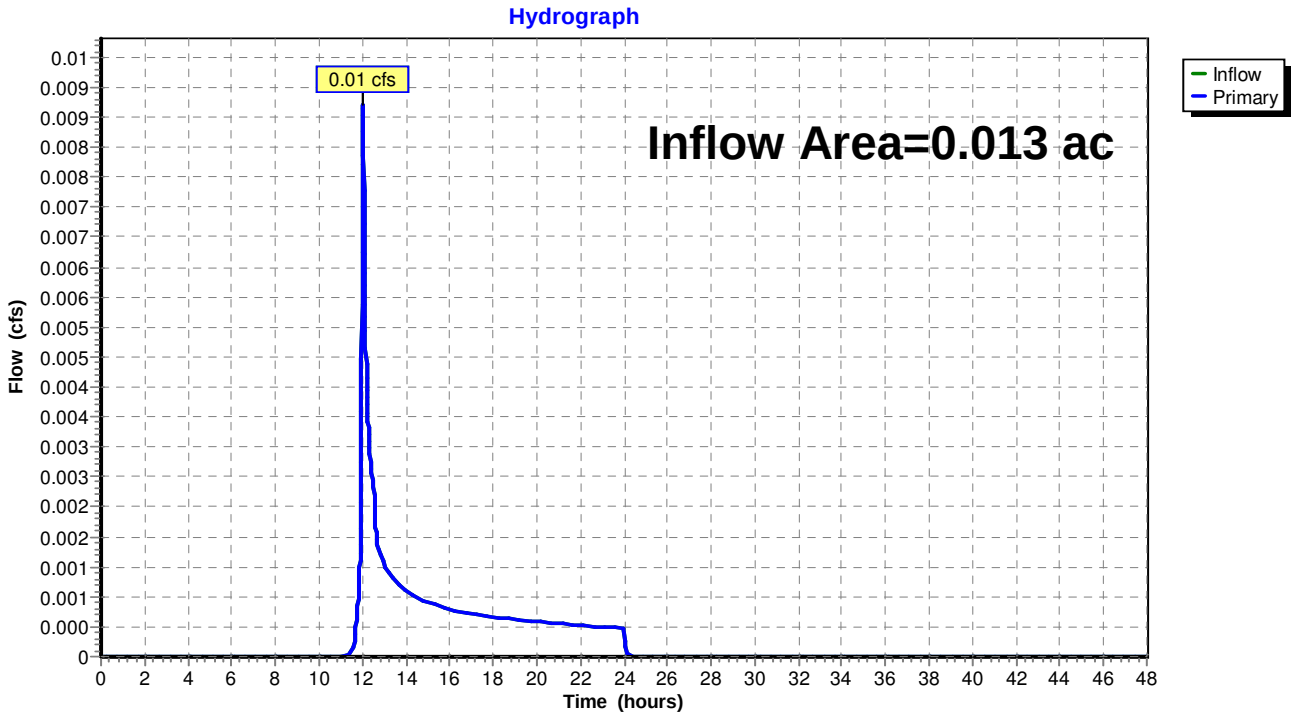


Summary for Link D: D

Inflow Area = 0.013 ac, 31.30% Impervious, Inflow Depth = 0.90" for 10-yr event
Inflow = 0.01 cfs @ 12.04 hrs, Volume= 0.001 af
Primary = 0.01 cfs @ 12.04 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link D: D



A – 2

NODE LISTING – 25-YR

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: 1 Runoff Area=14,393 sf 100.00% Impervious Runoff Depth=5.72"
Tc=5.0 min CN=98 Runoff=1.61 cfs 0.158 af

Subcatchment 2: 2 Runoff Area=20,000 sf 100.00% Impervious Runoff Depth=5.72"
Tc=5.0 min CN=98 Runoff=2.23 cfs 0.219 af

Subcatchment 3: 3 Runoff Area=4,051 sf 0.00% Impervious Runoff Depth=0.43"
Tc=5.0 min CN=39 Runoff=0.01 cfs 0.003 af

Subcatchment 4: 4 Runoff Area=32,578 sf 6.70% Impervious Runoff Depth=0.38"
Flow Length=320' Tc=13.9 min CN=38 Runoff=0.04 cfs 0.024 af

Subcatchment 5: 5 Runoff Area=4,309 sf 0.00% Impervious Runoff Depth=0.38"
Tc=5.0 min CN=38 Runoff=0.01 cfs 0.003 af

Subcatchment 6: 6 Runoff Area=14,489 sf 13.94% Impervious Runoff Depth=0.92"
Flow Length=187' Tc=11.4 min CN=47 Runoff=0.14 cfs 0.025 af

Subcatchment 7: 7 Runoff Area=115 sf 100.00% Impervious Runoff Depth=5.72"
Tc=5.0 min CN=98 Runoff=0.01 cfs 0.001 af

Subcatchment 8: 8 Runoff Area=2,674 sf 95.59% Impervious Runoff Depth=5.37"
Tc=5.0 min CN=95 Runoff=0.29 cfs 0.027 af

Subcatchment 9: 9 Runoff Area=4,754 sf 96.17% Impervious Runoff Depth=5.49"
Tc=5.0 min CN=96 Runoff=0.52 cfs 0.050 af

Subcatchment 10: 10 Runoff Area=5,022 sf 94.78% Impervious Runoff Depth=5.37"
Tc=5.0 min CN=95 Runoff=0.55 cfs 0.052 af

Subcatchment 11: 11 Runoff Area=5,706 sf 0.00% Impervious Runoff Depth=0.43"
Tc=5.0 min CN=39 Runoff=0.01 cfs 0.005 af

Subcatchment 12: 12 Runoff Area=30,004 sf 0.00% Impervious Runoff Depth=0.16"
Flow Length=415' Slope=0.0370 '/' Tc=16.1 min CN=33 Runoff=0.01 cfs 0.009 af

Subcatchment 13: 13 Runoff Area=575 sf 31.30% Impervious Runoff Depth=1.57"
Tc=5.0 min CN=56 Runoff=0.02 cfs 0.002 af

Reach R1: R1 Avg. Flow Depth=0.20' Max Vel=0.24 fps Inflow=0.63 cfs 0.378 af
n=0.100 L=146.0' S=0.0038 '/' Capacity=4.38 cfs Outflow=0.62 cfs 0.378 af

Reach R2: R2 Avg. Flow Depth=0.13' Max Vel=0.74 fps Inflow=1.11 cfs 0.160 af
n=0.100 L=171.0' S=0.0629 '/' Capacity=17.90 cfs Outflow=1.02 cfs 0.160 af

Reach TS1: TS1 Avg. Flow Depth=0.44' Max Vel=0.44 fps Inflow=1.44 cfs 0.160 af
n=0.120 L=160.0' S=0.0050 '/' Capacity=21.05 cfs Outflow=1.11 cfs 0.160 af

Pond BIO1: BIO1 Peak Elev=178.12' Storage=5,221 cf Inflow=3.84 cfs 0.380 af
Outflow=0.63 cfs 0.378 af

Pond PCB1: PCB1 Peak Elev=180.11' Inflow=3.84 cfs 0.376 af
15.0" Round Culvert n=0.013 L=13.0' S=0.0192 '/' Outflow=3.84 cfs 0.376 af

Pond PCB2: PCB2 Peak Elev=182.23' Inflow=0.14 cfs 0.027 af
12.0" Round Culvert n=0.013 L=26.0' S=0.0058 '/' Outflow=0.14 cfs 0.027 af

Pond PCB3: PCB3 Peak Elev=182.16' Inflow=0.37 cfs 0.054 af
12.0" Round Culvert n=0.013 L=60.0' S=0.0050 '/' Outflow=0.37 cfs 0.054 af

Pond PCB4: PCB4 Peak Elev=181.93' Inflow=1.44 cfs 0.156 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0300 '/' Outflow=1.44 cfs 0.156 af

Pond PCB5: PCB5 Peak Elev=182.56' Inflow=0.55 cfs 0.052 af
12.0" Round Culvert n=0.013 L=137.0' S=0.0047 '/' Outflow=0.55 cfs 0.052 af

Pond PP1: PP1 Peak Elev=182.40' Inflow=0.14 cfs 0.025 af
12.0" Round Culvert n=0.013 L=10.0' S=0.0100 '/' Outflow=0.14 cfs 0.025 af

Pond PRD1: PRD1 Peak Elev=181.29' Inflow=2.23 cfs 0.219 af
12.0" Round Culvert n=0.013 L=114.0' S=0.0053 '/' Outflow=2.23 cfs 0.219 af

Link A: A Inflow=0.66 cfs 0.401 af
Primary=0.66 cfs 0.401 af

Link B: B Inflow=0.01 cfs 0.003 af
Primary=0.01 cfs 0.003 af

Link C: C Inflow=1.02 cfs 0.170 af
Primary=1.02 cfs 0.170 af

Link D: D Inflow=0.02 cfs 0.002 af
Primary=0.02 cfs 0.002 af

Total Runoff Area = 3.183 ac Runoff Volume = 0.578 af Average Runoff Depth = 2.18"
63.38% Pervious = 2.018 ac 36.62% Impervious = 1.166 ac

A – 2

NODE LISTING – 50-YR

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: 1 Runoff Area=14,393 sf 100.00% Impervious Runoff Depth=6.87"
Tc=5.0 min CN=98 Runoff=1.85 cfs 0.189 af

Subcatchment 2: 2 Runoff Area=20,000 sf 100.00% Impervious Runoff Depth=6.87"
Tc=5.0 min CN=98 Runoff=2.56 cfs 0.263 af

Subcatchment 3: 3 Runoff Area=4,051 sf 0.00% Impervious Runoff Depth=0.81"
Tc=5.0 min CN=39 Runoff=0.03 cfs 0.006 af

Subcatchment 4: 4 Runoff Area=32,578 sf 6.70% Impervious Runoff Depth=0.73"
Flow Length=320' Tc=13.9 min CN=38 Runoff=0.13 cfs 0.046 af

Subcatchment 5: 5 Runoff Area=4,309 sf 0.00% Impervious Runoff Depth=0.73"
Tc=5.0 min CN=38 Runoff=0.02 cfs 0.006 af

Subcatchment 6: 6 Runoff Area=14,489 sf 13.94% Impervious Runoff Depth=1.46"
Flow Length=187' Tc=11.4 min CN=47 Runoff=0.26 cfs 0.040 af

Subcatchment 7: 7 Runoff Area=115 sf 100.00% Impervious Runoff Depth=6.87"
Tc=5.0 min CN=98 Runoff=0.01 cfs 0.002 af

Subcatchment 8: 8 Runoff Area=2,674 sf 95.59% Impervious Runoff Depth=6.52"
Tc=5.0 min CN=95 Runoff=0.34 cfs 0.033 af

Subcatchment 9: 9 Runoff Area=4,754 sf 96.17% Impervious Runoff Depth=6.63"
Tc=5.0 min CN=96 Runoff=0.60 cfs 0.060 af

Subcatchment 10: 10 Runoff Area=5,022 sf 94.78% Impervious Runoff Depth=6.52"
Tc=5.0 min CN=95 Runoff=0.63 cfs 0.063 af

Subcatchment 11: 11 Runoff Area=5,706 sf 0.00% Impervious Runoff Depth=0.81"
Tc=5.0 min CN=39 Runoff=0.04 cfs 0.009 af

Subcatchment 12: 12 Runoff Area=30,004 sf 0.00% Impervious Runoff Depth=0.40"
Flow Length=415' Slope=0.0370 '/' Tc=16.1 min CN=33 Runoff=0.03 cfs 0.023 af

Subcatchment 13: 13 Runoff Area=575 sf 31.30% Impervious Runoff Depth=2.29"
Tc=5.0 min CN=56 Runoff=0.03 cfs 0.003 af

Reach R1: R1 Avg. Flow Depth=0.22' Max Vel=0.25 fps Inflow=0.73 cfs 0.456 af
n=0.100 L=146.0' S=0.0038 '/' Capacity=4.38 cfs Outflow=0.73 cfs 0.456 af

Reach R2: R2 Avg. Flow Depth=0.15' Max Vel=0.80 fps Inflow=1.41 cfs 0.207 af
n=0.100 L=171.0' S=0.0629 '/' Capacity=17.90 cfs Outflow=1.31 cfs 0.207 af

Reach TS1: TS1 Avg. Flow Depth=0.50' Max Vel=0.47 fps Inflow=1.78 cfs 0.207 af
n=0.120 L=160.0' S=0.0050 '/' Capacity=21.05 cfs Outflow=1.41 cfs 0.207 af

Pond BIO1: BIO1 Peak Elev=178.53' Storage=6,226 cf Inflow=4.43 cfs 0.458 af
Outflow=0.73 cfs 0.456 af

Pond PCB1: PCB1 Peak Elev=180.23' Inflow=4.41 cfs 0.452 af
15.0" Round Culvert n=0.013 L=13.0' S=0.0192 '/' Outflow=4.41 cfs 0.452 af

Pond PCB2: PCB2 Peak Elev=182.33' Inflow=0.27 cfs 0.042 af
12.0" Round Culvert n=0.013 L=26.0' S=0.0058 '/' Outflow=0.27 cfs 0.042 af

Pond PCB3: PCB3 Peak Elev=182.24' Inflow=0.52 cfs 0.075 af
12.0" Round Culvert n=0.013 L=60.0' S=0.0050 '/' Outflow=0.52 cfs 0.075 af

Pond PCB4: PCB4 Peak Elev=182.00' Inflow=1.75 cfs 0.198 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0300 '/' Outflow=1.75 cfs 0.198 af

Pond PCB5: PCB5 Peak Elev=182.60' Inflow=0.63 cfs 0.063 af
12.0" Round Culvert n=0.013 L=137.0' S=0.0047 '/' Outflow=0.63 cfs 0.063 af

Pond PP1: PP1 Peak Elev=182.49' Inflow=0.26 cfs 0.040 af
12.0" Round Culvert n=0.013 L=10.0' S=0.0100 '/' Outflow=0.26 cfs 0.040 af

Pond PRD1: PRD1 Peak Elev=181.42' Inflow=2.56 cfs 0.263 af
12.0" Round Culvert n=0.013 L=114.0' S=0.0053 '/' Outflow=2.56 cfs 0.263 af

Link A: A Inflow=0.83 cfs 0.502 af
Primary=0.83 cfs 0.502 af

Link B: B Inflow=0.02 cfs 0.006 af
Primary=0.02 cfs 0.006 af

Link C: C Inflow=1.31 cfs 0.230 af
Primary=1.31 cfs 0.230 af

Link D: D Inflow=0.03 cfs 0.003 af
Primary=0.03 cfs 0.003 af

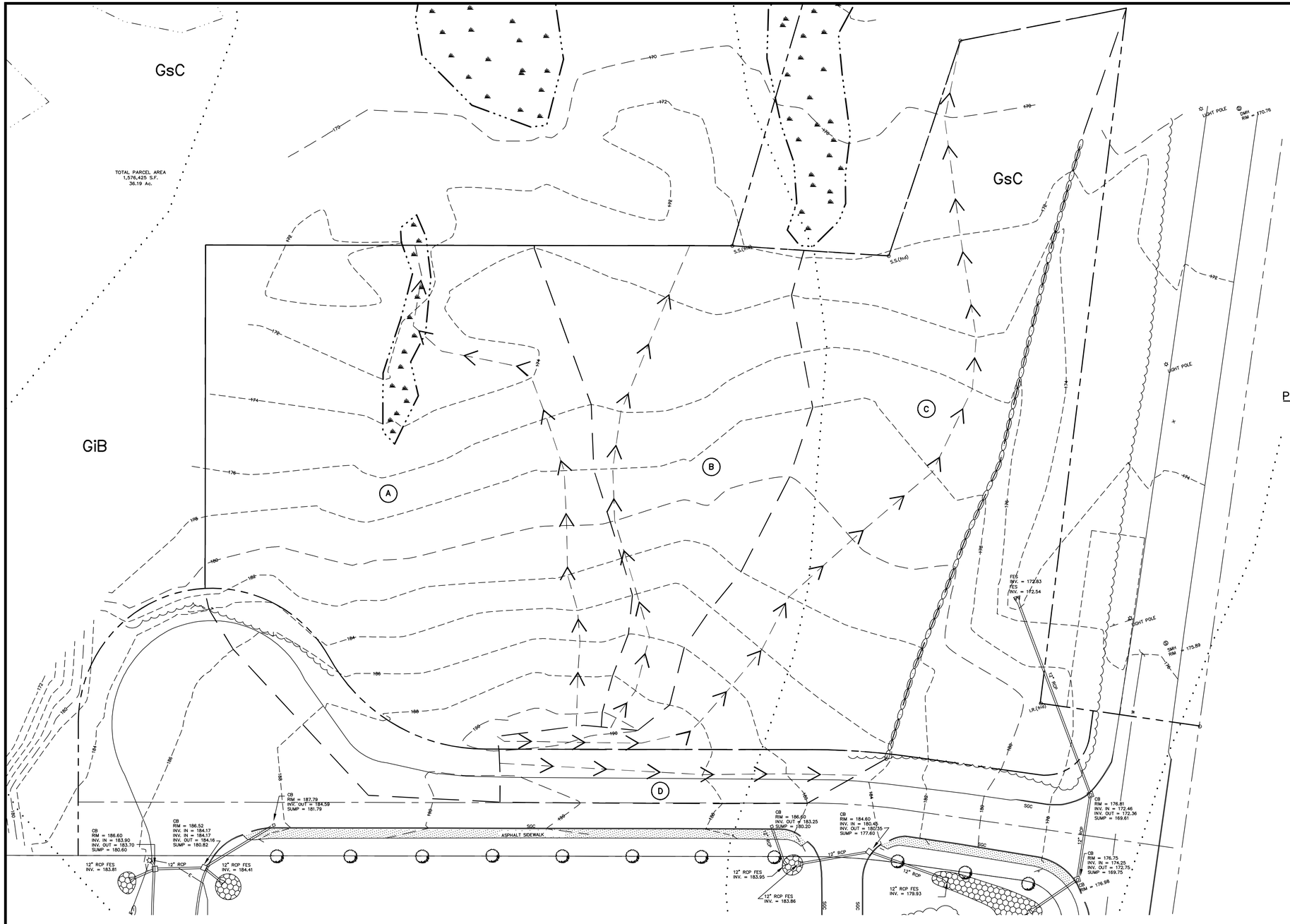
Total Runoff Area = 3.183 ac Runoff Volume = 0.743 af Average Runoff Depth = 2.80"
63.38% Pervious = 2.018 ac 36.62% Impervious = 1.166 ac

APPENDIX B

WATERSHED PLANS

B – 1

PRE-DEVELOPED CONDITIONS



PRE-DEVELOPMENT WATERSHED CHARACTERISTICS

SUBCATCHMENT DESIGNATION	AREA (ACRES)	LONGEST FLOW PATH (FEET)	Tc (MIN)
A	1.40	320	11.3
B	0.57	287	11.0
C	1.08	560	14.6
D	0.14	200	11.2

LEGEND:

- EX 2' CONTOUR
- EX 10' CONTOUR
- EDGE OF PAVEMENT
- EXISTING TREELINE
- WEB SOIL SURVEY BOUNDARY
- ScB — WEB SOIL SURVEY SOIL DESIGNATION
- EDGE OF WETLAND
- SUBCATCHMENT BOUNDARY
- LONGEST FLOW PATH WITH DIRECTION OF FLOW
- (A) — SUBCATCHMENT DESIGNATION

SOILS DATA

SOIL INFORMATION PROVIDED FROM NRCS WEB SOIL SURVEY (WSS) MAPPING TOOL AT HTTP://WEBSOILSURVEY.NRCS.USDA.GOV AND REFERENCES THE STRAFFORD COUNTY, NH SOIL SURVEY AREA, VERSION 20, MAY 29, 2020.

HYDROLOGIC DRAINAGE CLASS A:
- GIB – GLOUCESTER FINE SANDY LOAM, 3 – 8 PERCENT SLOPES
- GSC – GLOUCESTER VERY STONY FINE SANDY LOAM, 8 – 15 PERCENT SLOPES

HYDROLOGIC DRAINAGE CLASS C/D:
- BZB – BUXTON SILT LOAM, 3 – 8 PERCENT SLOPES

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

PLANNING FILE NO.: P21_

CIVILWORKS NEW ENGLAND
CIVIL & WATERFRONT ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

DATE: 8-4-21
SCALE: 1"=30'
DRAWN BY: JRG
DESIGN BY: JRG
APPROVED BY:JH
PROJECT NO: 21041
FILE: DRN

PRE-DEVELOPMENT WATERSHED PLAN

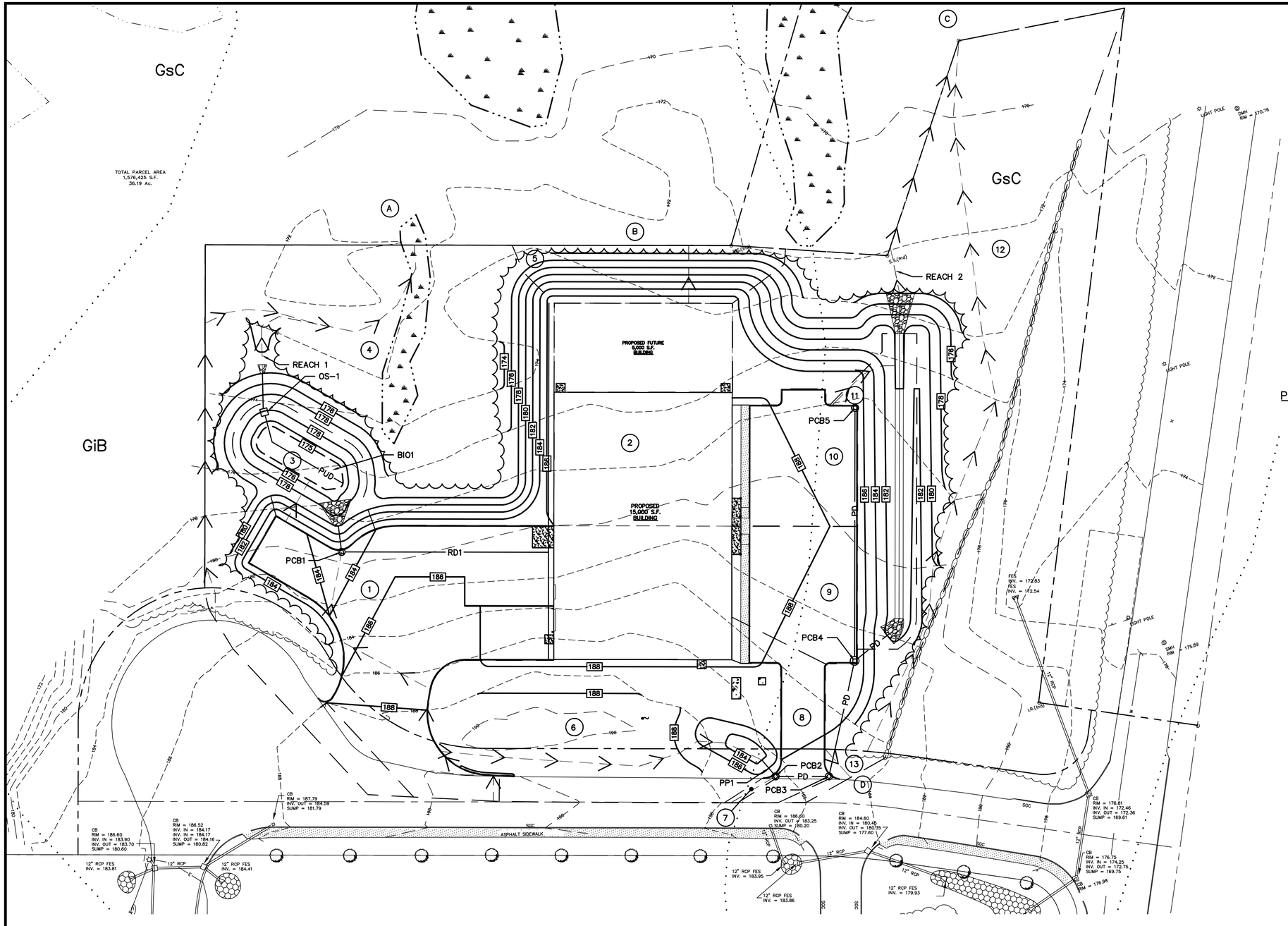
AMERICAN DURAFILM CO. INC.
55 BOYNTON ROAD
P.O. BOX 6770
HOLLISTON, MA 01746

MANUFACTURING/COMMERICAL BUILDING
INNOVATION WAY
DOVER, NH

WS-1

B – 2

POST-DEVELOPED CONDITIONS



PRE-DEVELOPMENT WATERSHED CHARACTERISTICS

SUBCATCHMENT DESIGNATION	AREA (ACRES)	LONGEST FLOW PATH (FEET)	Tc (MIN)
1	0.33	TR-55 MIN.	5.0
2	0.46	TR-55 MIN.	5.0
3	0.09	TR-55 MIN.	5.0
4	0.75	320	13.9
5	0.10	TR-55 MIN.	5.0
6	0.33	187	11.4
7	0.00	TR-55 MIN.	5.0
8	0.06	TR-55 MIN.	5.0
9	0.11	TR-55 MIN.	5.0
10	0.11	TR-55 MIN.	5.0
11	0.13	TR-55 MIN.	5.0
12	0.69	415	16.1
13	0.01	TR-55 MIN.	5.0

LEGEND:

- EX 2' CONTOUR
- EX 10' CONTOUR
- 182 PROPOSED CONTOUR
- EDGE OF PAVEMENT
- PROPOSED EDGE OF PAVEMENT
- EXISTING TREELINE
- PROPOSED TREELINE
- WEB SOIL SURVEY BOUNDARY
- ScB WEB SOIL SURVEY SOIL DESIGNATION
- EDGE OF WETLAND
- SUBCATCHMENT BOUNDARY
- LONGEST FLOW PATH WITH DIRECTION OF FLOW
- (A) SUBCATCHMENT DESIGNATION

SOILS DATA

SOIL INFORMATION PROVIDED FROM NRCS WEB SOIL SURVEY (WSS) MAPPING TOOL AT HTTP://WEBSOILSURVEY.NRCS.USDA.GOV AND REFERENCES THE STRAFFORD COUNTY, NH SOIL SURVEY AREA, VERSION 20, MAY 29, 2020.

HYDROLOGIC DRAINAGE CLASS A:
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- GSC – GLOUCESTER VERY STONY FINE SANDY LOAM, 8 – 15 PERCENT SLOPES

HYDROLOGIC DRAINAGE CLASS C/D:
- BZB – BUXTON SILT LOAM, 3 – 8 PERCENT SLOPES

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

PLANNING FILE NO.: P21_

NO.	REVISION	APP'D	DATE

DATE: 8-4-21
SCALE: 1"=30'
DRAWN BY: JRG
DESIGN BY: JRG
APPROVED BY:JH
PROJECT NO: 21041
FILE: DRN

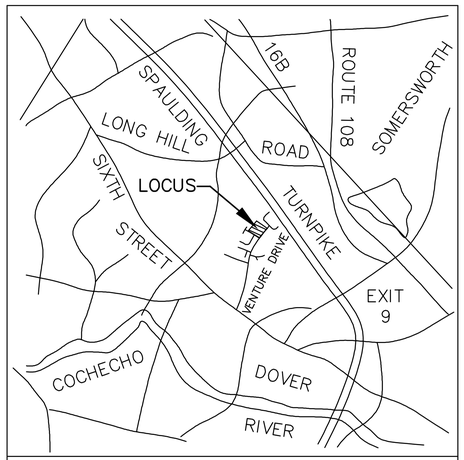
CIVILWORKS NEW ENGLAND
CIVIL & WATERFRONT ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

POST-DEVELOPMENT WATERSHED PLAN

AMERICAN DURAFILM CO. INC.
55 BOYNTON ROAD
P.O. BOX 6770
HOLLISTON, MA 01746

MANUFACTURING/COMMERICAL BUILDING
INNOVATION WAY
DOVER, NH

WS-2



LOCATION PLAN
(NO SCALE)

SITE PLAN
FOR
AMERICAN DURAFILM

TAX MAP D, LOT 11-1

INNOVATION WAY

DOVER, NH

AUGUST 6, 2021

OWNER

DOVER BUSINESS AND INDUSTRIAL DEVELOPMENT AUTHORITY
f/k/a DOVER INDUSTRIAL DEVELOPMENT AUTHORITY (D.I.D.A.)
288 CENTRAL AVENUE
DOVER, NH 03820

_____ _____
DATE

APPLICANT

AMERICAN DURAFILM CO. INC
55 BOYNTON ROAD
P.O. BOX 6770
HOLLISTON, MA 01746

_____ _____
DATE

SITE CIVIL ENGINEER

CIVILWORKS NEW ENGLAND
CIVIL & WATERFRONT ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

LAND SURVEYOR

MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND
P.O. BOX 681
24 CHESTNUT STREET
DOVER, NH 03820
(603) 742-0911

ARCHITECT

TW DESIGNS
254 DRAKE HILL ROAD
STRAFFORD, NH 03884

LANDSCAPE ARCHITECT

IRONWOOD DESIGN GROUP LLC
55 MAIN STREET #129
NEWMARKET, NH 03857
(603) 772-0590

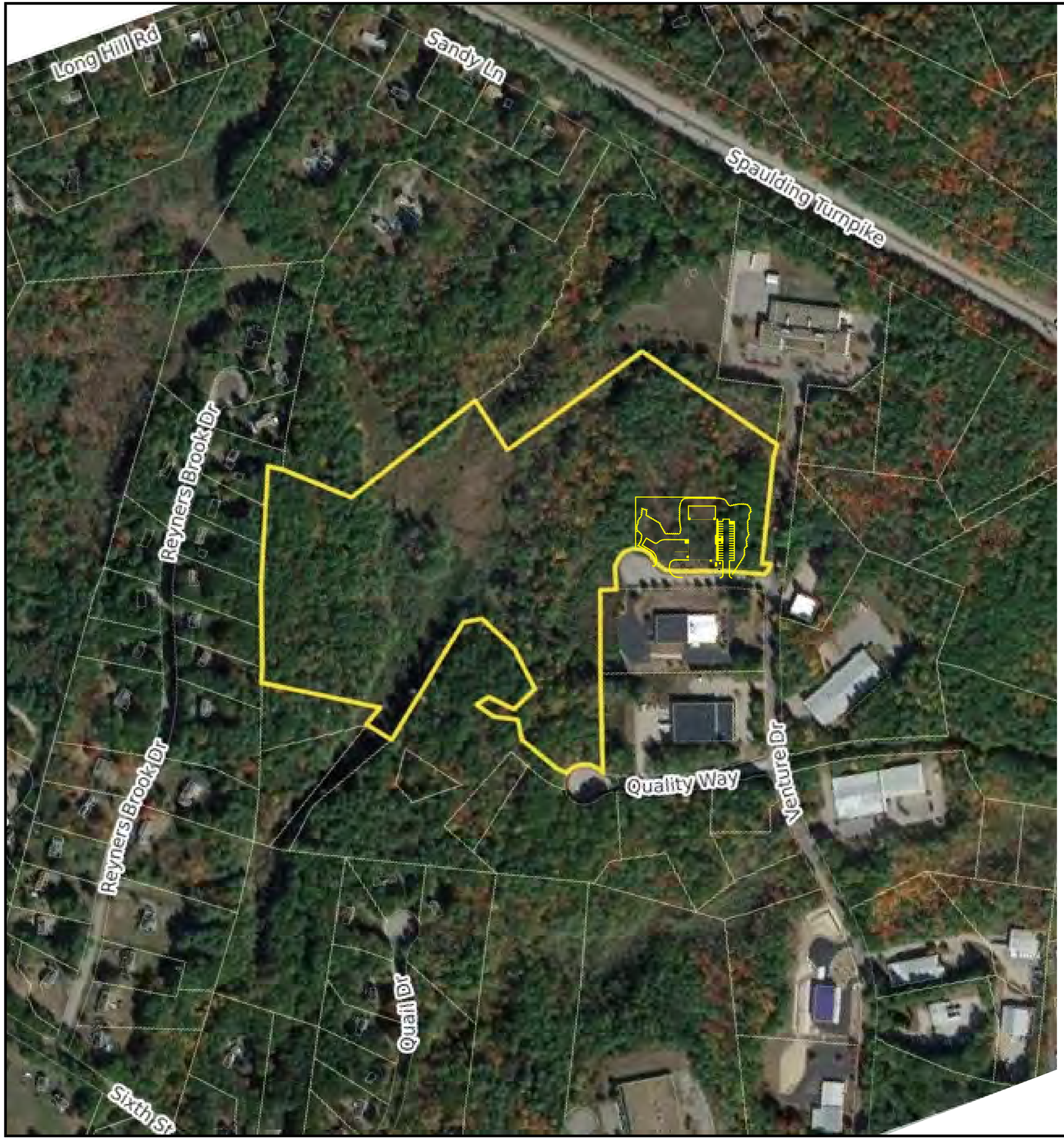
WETLAND SCIENTIST

DAMON E. BURT
FRAGGLE ROCK ENVIRONMENTAL
38 GARLAND ROAD
STRAFFORD, NH 03884
(603) 969-5574

SHEET INDEX

SHEET INDEX	SHEET
COVER SHEET	1
NEIGHBORHOOD PLAN	2
EXISTING CONDITIONS PLAN	3
NOTE SHEET	4
DEMOLITION PLAN	5
SITE PLAN	6
GRADING, DRAINAGE & EROSION CONTROL PLAN	7
UTILITY PLAN	8
EROSION CONTROL NOTES	9
DETAILS	10 - 14
LIGHTING PLAN	15
LIGHTING DETAILS	16
DOVER LADDER TRUCK MOVEMENT PLAN	17
ARCHITECTURAL ELEVATIONS & FLOOR PLANS	-
STREET SCAPE PLAN	-
LANDSCAPE PLAN	-

PLANNING FILE NO.: P21-



ABUTTERS LIST
(WITHIN 200 FT)

TAX MAP	LOT NO.	NAME & ADDRESS
D 9-A	D 9-A	INDEX PACKING INC. 105 WHITE MOUNTAIN HIGH WAY MILTON, NH 03851
D 11-A	D 11-A	150 VENTURE DRIVE LLC 192 DOVER POINT ROAD DOVER, NH 03820
A 52-01	A 52-01	JOHNSTONE MARK E TRUSTEE, JOHNSTONE MARK E 2014 TRUST 51 SANDY LANE DOVER, NH 03820
A 47-026	A 47-026	HODGES GRAIG B & CAROLYN TRUSTEES, HODGES GRAIG AND CAROLYN REVOCABLE TRUST 31 REYNERS BROOK DRIVE DOVER, NH 03820
A 47-024	A 47-024	POOLE PETER W & KATHLEEN POOLE FAMILY TRUST 29 REYNERS BROOK DRIVE DOVER, NH 03820
A 47-022	A 47-022	CLAPPER YVONNE & CLAPPER WAYNE 27 REYNERS BROOK DRIVE DOVER, NH 03820
A 47-020	A 47-020	COVERT JOSEPH * CATHERINE TRUSTEES, COVERT JOSEPH AND CATHERINE REVOCABLE TRUST 25 REYNERS BROOK DRIVE DOVER, NH 03820
A 47-018	A 47-018	ENOS A & LINDA M CO-TRUSTEES, ENOS FAMILY REVOCABLE TRUST 23 RAYNERS BROOK DRIVE DOVER, NH 03820
A 47-016	A 47-016	ATORO TEMITAYO M & ATORO KATHRYN E 21 REYNERS BROOKS DRIVE DOVER, NH 03820
D 11-009SND	D 11-009SND	HEINE USA 10 INNOVATION WAY DOVER, NH 03820
D 11-008SN3	D 11-008SN3	DOVER BUSINESS & IND DEV AUTHORITY, F/K/A DOVER IND DEV AUTHORITY 288 CENTRAL AVE DOVER, NH 03820
D 11-008SN2	D 11-008SN2	DOVER BUSINESS & IND DEV AUTHORITY, F/K/A DOVER IND DEV AUTHORITY 288 CENTRAL AVE DOVER, NH 03820
D 11-008	D 11-008	DOVER BUSINESS & IND DEV AUTHORITY, F/K/A DOVER IND DEV AUTHORITY 288 CENTRAL AVE DOVER, NH 03820
D 11-007	D 11-007	DOVER BUSINESS & IND DEV AUTHORITY, F/K/A DOVER IND DEV AUTHORITY 288 CENTRAL AVE DOVER, NH 03820
D 11-004	D 11-004	QUALITY WAY LLC 1 QUALITY WAY ENTERPRISE PARK DOVER, NH 03820
D 11-009	D 11-009	HEINE USA 10 INNOVATION WAY DOVER, NH 03820
D 11	D 11	APW PROPERTIES LLC 9 CAPITOL STREET CONCORD, NH 03301
D 9-A01SND	D 9-A01SND	INDEX PACKAGING IND 1055 WHITE MOUNTAIN HIGHWAY MILTON, NH 03851
D 9-A00SND	D 9-A00SND	INDEX PACKAGING INC. 1055 WHITE MOUNTAIN HIGHWAY MILTON, NH 03851

K / 26 — TAX MAP / LOT NUMBER

MAGNETIC

GRAPHIC SCALE

200 0 100 200 400 800

(IN FEET)

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

PLANNING FILE NO.: P21_

CIVILWORKS NEW ENGLAND
CIVIL & WATERFRONT ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

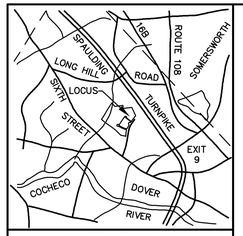
DATE: 8-6-21
SCALE: 1"=200'
DRAWN BY: SRD
DESIGN BY: JRG
APPROVED BY:JH
PROJECT NO:21041
FILE: SITE

NEIGHBORHOOD PLAN

AMERICAN DURAFILM CO. INC.
55 BOYNTON ROAD
P.O. BOX 6770
HOLLISTON, MA 01746

MANUFACTURING/COMMERICAL BUILDING
INNOVATION WAY
DOVER, NH

2



LOCATION PLAN
(NO SCALE)

LEGEND

I.R. ◉ – IRON ROD
I.P. ◉ – IRON PIPE
D.H. ◉ – DRILL HOLE
S.S. ◉ – STEEL STAKE
– STONE WALL
– EDGE OF WET
f/k/a – FORMERLY KNOWN AS

REFERENCE PLANS:

1.) SUBDIVISION OF LAND PREPARED FOR DOVER INDUSTRIAL DEVELOPMENT AUTHORITY, TAX MAP H, LOT No. 11–1, VENTURE DRIVE, DOVER, STRAFFORD COUNTY, NEW HAMPSHIRE. SCALE: 1" = 100'; DATED: FEBRUARY 28, 2005; BY THIS OFFICE. RECORDED S.C.R.D. PLAN 79–87.

2.) SUBDIVISION PLAN – DOVER INDUSTRIAL DEVELOPMENT AUTHORITY – SIXTH STREET / LONG HILL ROAD EXT., DOVER, NEW HAMPSHIRE. SCALE: 1" = 100'; DATED: JANUARY 17, 1992; BY: TERRASCAN. RECORDED S.C.R.D. PLAN 41–91 + 41–92.

3.) SUBDIVISION OF LAND PREPARED FOR DOVER INDUSTRIAL DEVELOPMENT AUTHORITY, VENTURE DRIVE, DOVER, NEW HAMPSHIRE. SCALE: 1" = 100'; DATED: AUGUST 4, 1994, REVISED THROUGH 10–20–94; BY THIS OFFICE. RECORDED S.C.R.D. PLAN 45–32.

4.) AMENDED SUBDIVISION AND LOT LINE ADJUSTMENT PLAN PREPARED FOR GEORGE J. FOSTER & Co., INC. AND DOVER BUSINESS AND INDUSTRIAL DEVELOPMENT AUTHORITY, TAX MAP D, LOT Nos. 9A & 11–1, VENTURE DRIVE AND QUALITY WAY, DOVER, STRAFFORD COUNTY, NEW HAMPSHIRE. SCALE: 1" = 100'; DATED: FEBRUARY 14, 2006, REVISED THROUGH 5/3/06; BY THIS OFFICE. RECORDED S.C.R.D. PLANS 85–99 & 85–100.

5.) LOT LINE ADJUSTMENT AND SUBDIVISION PLAN OF LAND PREPARED FOR GEORGE J. FOSTER & CO., INC. AND DOVER BUSINESS AND INDUSTRIAL DEVELOPMENT AUTHORITY, TAX MAP D, LOT Nos. 9A & 11–1, VENTURE DRIVE AND QUALITY WAY, DOVER, STRAFFORD COUNTY, NEW HAMPSHIRE; SCALE: 1" = 100'; DATED: JUNE 12, 2006; BY: McENEANEY SURVEY ASSOCIATES, INC., RECORDED S.C.R.D. PLAN 86–73.

D / 11–1

TOTAL PARCEL AREA
1,576,425 S.F.
36.19 Ac.

5r

REMAINING AREA
637,943 S.F.
14.65 Ac.

Dr
39,283 S.F.
0.90 Ac.

D / 9A

D / 11

D / 11–9

NH STATE PLANE NAD 83 – GPS OBS.

S83°07'09"E 94.90'

N36°23'11"E 127.09'

S34°14'22"W 212.17'

S68°18'50"E 87.90'

50' WETLAND BUFFER

50' WETLAND BUFFER

BUILDING SETBACK LINE

EDGE OF PAVEMENT

C1 C2 C3 C4

N71°54'43"W 183.50'

S63°56'55"E 72.54'

N18°05'17"E 75.00'

N71°54'43"W 60.49'

N – 265283.99
E – 1185678.55

N – 265185.29
E – 1186244.89

L1 L2

S25°03'37"W 392.81'

INNOVATION WAY
{PUBLIC; 60' WIDE R.O.W.}

VENTURE DRIVE
{PUBLIC; 60' WIDE R.O.W.}

PRIVATE DRIVE

LIMIT OF PUBLIC R.O.W.

ASPHALT SIDEWALK
SGC

CB
RIM = 186.60
INV. IN = 183.90
INV. OUT = 183.70
SUMP = 180.60

CB
RIM = 186.52
INV. IN = 184.17
INV. OUT = 184.17
SUMP = 181.79

CB
RIM = 187.79
INV. OUT = 184.59
SUMP = 181.79

CB
RIM = 186.60
INV. IN = 183.25
SUMP = 180.20

CB
RIM = 186.60
INV. IN = 180.45
INV. OUT = 180.35
SUMP = 177.60

CB
RIM = 176.81
INV. IN = 172.46
INV. OUT = 172.36
SUMP = 169.61

CB
RIM = 176.81
INV. IN = 174.25
INV. OUT = 172.75
SUMP = 169.75

12" RCP

12" RCP FES
INV. = 183.95

12" RCP FES
INV. = 183.86

FES INV.
15" RCP = 172.23

SMH
RIM = 175.89

No.	Central Angle	Radius	Arc Length	Chord Length	Chord Bearing
C1	90°00'00"	25.00'	39.27'	35.36'	N71°03'05"E
C2	7°57'48"	400.00'	55.59'	55.55'	N67°55'49"W
C3	60°56'27"	100.00'	106.36'	101.42'	S41°26'30"E
C4	150°56'27"	75.00'	197.58'	145.20'	N86°26'30"W

No.	Bearing	Distance
L1	N63°56'56"W	30.00'
L2	S26°03'04"W	14.77'

NOTES:

1.) OWNERS OF RECORD:
DOVER BUSINESS AND INDUSTRIAL DEVELOPMENT AUTHORITY
f/k/a DOVER INDUSTRIAL DEVELOPMENT AUTHORITY (D.I.D.A.)
288 CENTRAL AVENUE
DOVER, NEW HAMPSHIRE 03820
S.C.R.D. VOL. 1559 / 394
TITLE REF. SEE SCRD 1738 / 130, 1027 / 790, 773 / 481

2.) D / 11–1 – DENOTES TAX MAP AND PARCEL NUMBER.

3.) THE INTENT OF THIS PLAN IS TO DEPICT THE EXISTING CONDITIONS OF A PORTION OF TAX MAP D, LOT 11–1. SEE REFERENCE PLAN #5 FOR THE ENTIRE LOT.

4.) ZONING DISTRICT IS IT (INNOVATIVE TECHNOLOGY)
MINIMUM LOT SIZE = 2 ACRES
MINIMUM FRONTAGE = 200 FEET
BUILDING SETBACK REQUIREMENTS:
FRONT = 50 FEET
SIDE = 50 FEET
REAR = 50 FEET
MAXIMUM LOT COVERAGE = 33 PERCENT
MAXIMUM BUILDING HEIGHT = 55 FEET

REFERENCE IS MADE TO DOVER ZONING CHAPTER 170, WITH REGARDS TO ZONING OVERLAY DISTRICTS AND ORDINANCES.

5.) TRACTS LABELED AS H ARE "LOTS" AND "AREAS" AS SHOWN ON REFERENCE PLAN #2 & #5;
TRACTS LABELED AS 5r ARE "LOTS" AND "AREAS" AS SHOWN ON REFERENCE PLAN #2 & #5.

6.) REFERENCE IS MADE TO CONSERVATION EASEMENT DEED GRANTED TO THE CITY OF DOVER CONSERVATION COMMISSION S.C.R.D. VOL. 3323, PAGE 336; DATED APRIL 14, 2005 AND RECORDED JANUARY 24, 2006.

7.) VERTICAL DATUM IS USGS NAVD88. CONTOUR INTERVAL IS 2 FEET.

8.) WETLANDS WERE FLAGGED BY DAMON E. BURT, N.H.C.W.S. #163 OF FRAGGLE ROCK ENVIRONMENTAL SERVICES ON JANUARY 7, 2021 AND LOCATED BY THIS OFFICE.

NO.	DATE	DESCRIPTION	BY	CHK
		REVISIONS		

21–2334	EXIST.COND.	21–01	1–8
PROJECT NO	TYPE	FIELDBOOK & PAGES	

EXISTING CONDITIONS PLAN
PREPARED FOR
AMERICAN DURAFILM CO., INC.
A PORTION OF TAX MAP D, LOT No. 11–1
INNOVATION WAY & VENTURE DRIVE
CITY of DOVER
COUNTY of STRAFFORD
STATE of NEW HAMPSHIRE

DRAWN BY: KJF	FILE: MSA\2334\DWG\21–2334
SCALE: 1" = 30'	DATE: AUGUST 6, 2021

30 15 0 15 30 60 90 120

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

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

GENERAL NOTES:

1. OWNERS OF RECORD:

   DOVER BUSINESS AND INDUSTRIAL DEVELOPMENT AUTHORITY
   f/k/a DOVER INDUSTRIAL DEVELOPMENT AUTHORITY (D.I.D.A)
   288 CENTRAL AVENUE
   DOVER, NEW HAMPSHIRE
   S.C.R.D. VOL. 1559, PAGE 394

2. D/11-1 – DENOTES TAX MAP AND PARCEL NUMBER.
3. ZONING DISTRICT IS IT (INNOVATIVE TECHNOLOGY)
4. DIMENSIONAL REGULATIONS:

	REQUIRED	PROPOSED
MINIMUM LOT SIZE	= 2 ACRES	3.30 ACRES
MAXIMUM LOT COVERAGE	= 33 %	13.9%
MINIMUM FRONTAGE	= 200 FEET	556 FEET
MAXIMUM BUILDING HEIGHT	= 55 FEET	<50 FEET
BUILDING SETBACK REQUIREMENTS:		
FRONT	= 50 FEET	50 FEET
ABUT A STREET	= 50 FEET	50 FEET
SIDE SETBACK	= 50 FEET	174 FEET
REAR SETBACK	= 50 FEET	25 FEET

5. VERTICAL DATUM IS USGS NAVD88. CONTOUR INTERVAL 2 FEET.
6. SUBJECT PARCEL IS NOT LOCATED WITHIN A FEDERALLY DESIGNATED FLOOD HAZARD AREA, COMMUNITY PANEL 33017C0310E, EFFECTIVE DATE: SEPTEMBER 30, 2015.
7. TOPOGRAPHIC SURVEY PERFORMED BY MCENEANEY SURVEY ASSOCIATES ON JANUARY 25, 2021.
8. WETLANDS WERE FLAGGED BY DAMON E. BURT, N.H.C.W.S. #163 OF FRAGGLE ROCK ENVIRONMENTAL SERVICES ON JANUARY 7, 2021 AND LOCATED BY MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND.

DEMOLITION NOTES:

1. COORDINATE REMOVAL, RELOCATION, DISPOSAL OR SALVAGE OF UTILITIES WITH THE OWNER AND APPROPRIATE UTILITY COMPANY.
2. ANY EXISTING WORK OR PROPERTY DAMAGED OR DISRUPTED BY CONSTRUCTION/DEMOLITION ACTIVITIES SHALL BE REPLACED OR REPAIRED TO MATCH ORIGINAL EXISTING CONDITIONS BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
3. THE CONTRACTOR SHALL NOTIFY "DIG SAFE" PRIOR TO ANY DEMOLITION/ CONSTRUCTION ACTIVITIES. (811).
4. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING STRUCTURES, UTILITIES AND PAVEMENT ON THE SITE TO THE LIMITS SHOWN UNLESS SPECIFICALLY IDENTIFIED TO REMAIN.
5. IT IS THE CONTRACTORS RESPONSIBILITY TO FAMILIARIZE HIMSELF WITH THE CONDITIONS OF ALL OF THE PERMIT APPROVALS.
6. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS NOT ALREADY OBTAINED BY THE OWNER AND ARRANGE AND PAY FOR NECESSARY INSPECTIONS AND APPROVALS FROM THE AUTHORITIES HAVING JURISDICTION.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEMOLITION AND OFF-SITE DISPOSAL OF MATERIALS REQUIRED TO COMPLETE THE WORK, EXCEPT FOR WORK NOTED TO BE COMPLETED BY OTHERS.
8. THE LOCATION OF UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATION IS NOT GUARANTEED BY THE OWNER OR THE ENGINEER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES, ANTICIPATE CONFLICTS, REPAIR EXISTING UTILITIES AND RELOCATE EXISTING UTILITIES REQUIRED TO COMPLETE THE WORK.
9. ALL MATERIALS SCHEDULED TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE SPECIFIED. THE CONTRACTOR SHALL DISPOSE OF ALL MATERIALS OFF-SITE IN ACCORDANCE WITH ALL FEDERAL, STATE AND LOCAL REGULATIONS, ORDINANCES, AND CODES.
10. 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.

PERMIT SUMMARY:

1. THE FOLLOWING FEDERAL AND STATE PERMITS HAVE BEEN ISSUED FOR THE SUBJECT PROPERTY:
   N/A
2. LIST ANY VARIANCES OR SPECIAL EXCEPTIONS GRANTED BY THE ZONING BOARD OF ADJUSTMENT OR CONDITIONAL USE PERMITS GRANTED BY THE PLANNING BOARD FOR THE PROPOSED USE OR STRUCTURE, INCLUDING THE CASE NUMBER AND DATE OF DECISION AND ANY CONDITIONS.

WAIVERS GRANTED:

1. A WAIVER REQUEST FROM MINIMUM TREE CALIPER TO ALLOW FOR 3"-3.5" WHERE 3.5"-4" IS REQUIRED.
2. A WAIVER REQUEST FROM SECTION 153-14.C.(5)(B) TO ALLOW A 50' WIDE ENTRANCE/EXIT WHERE 24 FEET IS REQUIRED.
3. A WAIVER REQUEST TO ALLOW A 25' REAR BUILDING SETBACK WHERE 50' IS REQUIRED.

SITE NOTES CONT.:

1. PROPERTY LINE INFORMATION HAS BEEN OBTAINED FROM A PLAN REFERENCED AND PREPARED BY MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND (SEE EXISTING CONDITIONS PLAN IN THIS PLAN SET).
2. THE PURPOSE OF THIS PLAN IS TO DEPICT IMPROVEMENTS ASSOCIATED WITH A 20,000 S.F. COMMERCIAL BUILDING AND ASSOCIATED SITE IMPROVEMENTS.
3. EXTERIOR LIGHTING SHALL BE CUT-OFF TYPE FIXTURES PER CHAPTER 153-14-E AND SHALL PROVIDE LIGHTING DIRECTED ON-SITE ONLY.
4. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO APPLICABLE CITY AND STATE CODES.
5. ON-SITE SNOW STORAGE SHALL OCCUR ALONG THE EDGES OF PROPOSED PAVEMENT.
6. ALL CONSTRUCTION LAYOUT SHALL BE DONE BY A LICENSED SURVEYOR UNDER CONTRACT WITH THE CONTRACTOR.
7. SEE DETAILS FOR SIGN LEGENDS.
8. ALL PAVEMENT MARKINGS AND SIGNS SHALL CONFORM TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", THE "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS, AND THE AMERICAN WITH DISABILITIES ACT, LATEST EDITIONS.
9. THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE CONSTRUCTION PROCEDURES AND SEQUENCE TO ENSURE THE SAFETY OF THE FACILITIES AND THEIR COMPONENTS DURING DEMOLITION AND CONSTRUCTION UNLESS OTHERWISE DIRECTED BY THE OWNERS REPRESENTATIVE. THIS INCLUDES THE ADDITION OF NECESSARY SHORING, SHEETING, TEMPORARY BRACING, GUYS OR TIE-DOWNS. SUCH MATERIALS SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AT THE COMPLETION OF THE PROJECT.
10. METHODS OF DEMOLITION, CONSTRUCTION AND ERECTION ARE THE CONTRACTOR'S RESPONSIBILITY UNLESS OTHERWISE SPECIFIED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE AND MAINTAIN ENVIRONMENTAL CONTROLS AS REQUIRED BY FEDERAL, STATE AND MUNICIPAL REGULATIONS AND PERMITS. ENVIRONMENTAL CONTROLS SHALL INCLUDE BUT SHALL NOT BE LIMITED TO DUST CONTROL AND SILT BARRIERS.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE DONE TO STRUCTURES OR UTILITIES OR INJURIES TO THE PUBLIC DURING THE CONSTRUCTION PHASE CAUSED BY HIMSELF, HIS EMPLOYEES, HIS SUBCONTRACTORS OR EMPLOYEES OF SAME. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL TEMPORARY FACILITIES FOR THE PROTECTION OF THE WORK, WORKERS AND PUBLIC SAFETY.
12. BUILDING ADDRESSES TO BE ASSIGNED BY THE BUILDING OFFICIAL AT THE TIME OF ISSUANCE OF A BUILDING PERMIT.
13. THE SITE LAYOUT IS DESIGNED IN COMPLIANCE WITH APPLICABLE ACCESSIBILITY REGULATIONS AND NH RSA 155-A: 5. THE PROPOSED STRUCTURE WILL ALSO BE DESIGNED IN ACCORDANCE WITH APPLICABLE ACCESSIBILITY REGULATIONS.
14. THE SITE SHALL BE MAINTAINED TO PROVIDE ACCESSIBILITY IN ALL WEATHER CONDITIONS.
15. COMMERCIAL VEHICLE ROUTE DURING CONSTRUCTION SHALL CONFORM WITH DOVER CITY CODE OR BE COORDINATED WITH THE COMMUNITY SERVICES DIRECTOR.
16. THE SUBJECT PARCEL(S) IS (ARE) SERVED BY MUNICIPAL WATER AND SEWER.
17. 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 TO ANY EARTH DISTURBANCE ACTIVITY OCCURRING.
18. 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.
19. SITE CONSTRUCTION HOURS SHALL BE LIMITED TO MONDAY-SATURDAY 7 AM-6 PM, HOURS OF CONSTRUCTION MUST BE DOCUMENTED ON A SITE CONSTRUCTION SIGN ALONG WITH THE CONTACT INFORMATION FOR THE GENERAL CONTRACTOR AND THE SIGN SHALL NOTE THE THE ROADWAY IS PRIVATE. SAID SIGNAGE MUST BE LOCATED AND APPROVED BY THE CITY ENGINEER OR ASSISTANT CITY MANAGER.
20. 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.
21. ALL CONSTRUCTION SHALL CONFORM WITH THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION (NHDOT) "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.
22. ANY RETAINING WALL TALLER THAN FOUR FEET (4') REQUIRES ISSUANCE OF A BUILDING PERMIT FROM INSPECTION SERVICES.
23. ANY FENCE TALLER THAN SEVEN FEET (7') REQUIRES THE ISSUANCE OF A BUILDING PERMIT FROM INSPECTION SERVICES.
24. APPLICANT SHALL COMPLETE LAND USE DEVELOPMENT TRACKING FORM, MOST RECENTLY REVISED VERSION, UTILIZING THE ONLINE POLLUTION TRACKING AND ACCOUNTING PILOT PROJECT (PTAPP) PORTAL.
    HTTP://WWW.UNH.EDU/UNHSC/PTAPP.
25. A LETTER OF CREDIT FOR THE COST OF REVEGETATING ALL DISTURBED AREAS ON THE SITE SHALL BE SUBMITTED PRIOR TO ANY EARTH DISTURBING ACTIVITY OCCURS.
26. THE OWNER OF RECORD SHALL RECORD AT THE REGISTRY OF DEEDS DOCUMENTATION SUFFICIENT TO PROVIDE NOTICE TO ALL PERSONS/ENTITIES THAT MAY ACQUIRE ANY PROPERTY SUBJECT TO THE REQUIREMENTS AND RESPONSIBILITIES DESCRIBED IN THE APPROVED STORMWATER MANAGEMENT PLAN, THE NOTICE SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS FOR RECORDING CONTAINED IN RSA 477 AND 478. THE NOTICE NEED NOT SET FORTH THE REQUIREMENTS AT LENGTH, SO LONG AS IT IS SUFFICIENT TO PROVIDE NOTICE TO PROSPECTIVE PURCHASERS TO THE REQUIREMENTS FOR MAINTENANCE AND REPORTING.
27. FIRE DEPARTMENT ACCESS SHALL BE INSTALLED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF FIRE APPARATUS IN ALL WEATHER CONDITIONS AT ALL TIMES.
28. REFUSE PICKUP WILL BE BY PRIVATE CONTRACTOR AND WILL BE VIA DUMPSTER ON-SITE.
29. SNOW STORAGE WILL BE ACCORDING TO THE OPERATION AND MAINTENANCE PLAN AND WITHIN AREAS AS INDICATED.
30. ALL EXTERIOR DOORS ARE MANUAL AND OPENED FROM THE INTERIOR BY PANIC HARDWARE. ALL EXTERIOR DOORS SHALL COMPLY WITH ADA AND ALL LOCAL BUILDING CODE REQUIREMENTS.

UTILITY NOTES

1. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATIONS ARE NOT GUARANTEED BY THE OWNER OR ENGINEER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES, ANTICIPATE CONFLICTS, REPAIR EXISTING UTILITIES, AND RELOCATE EXISTING UTILITIES REQUIRED TO COMPLETE THE WORK AT NO ADDITIONAL COST TO THE OWNER.
2. SEE EXISTING CONDITIONS PLAN FOR BENCHMARK INFORMATION.
3. THE INSTALLATION OF ELECTRIC POWER, CABLE TELEVISION AND TELEPHONE LINES SHALL BE UNDERGROUND THROUGHOUT THE SITE FOR WHICH DEVELOPMENT IS PROPOSED. SITE PLANS SHALL SHOW ANY EASEMENTS FOR THESE SERVICES.
4. ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING CABLES.
5. THE SUBJECT PARCEL(S) IS (ARE) SERVED BY MUNICIPAL WATER AND SEWER.
6. SEE GRADING, DRAINAGE & EROSION CONTROL PLAN FOR PROPOSED GRADING AND EROSION CONTROL MEASURES.
7. ALL WATER MAIN INSTALLATIONS SHALL BE CLASS 52, DOUBLE CEMENT LINED DUCTILE IRON PIPE OR TYPE "K" COPPER, OR CITY APPROVED MATERIAL.
8. ALL WATER MAIN INSTALLATIONS SHALL BE PRESSURE TESTED AND CHLORINATED AFTER CONSTRUCTION PRIOR TO ACTIVATING THE SYSTEM. CONTRACTOR SHALL COORDINATE CHLORINATION AND TESTING WITH THE CITY OF DOVER WATER DEPARTMENT.
9. ALL GRAVITY SEWER PIPE SHALL BE PVC SDR 35 UNLESS OTHERWISE NOTED AND CONFORM TO THE REQUIREMENTS OF THE CITY OF DOVER SEWER DEPARTMENT STANDARDS.
10. EXISTING UTILITIES TO BE REMOVED SHALL BE CAPPED AT THE MAIN AND MEET THE CITY OF DOVER COMMUNITY SERVICES DEPARTMENT STANDARDS FOR CAPPING OF WATER AND SEWER SERVICES.
11. ALL ELECTRICAL MATERIAL WORKMANSHIP SHALL CONFORM TO THE NATIONAL ELECTRIC CODE, LATEST EDITION, AND ALL APPLICABLE STATE AND LOCAL CODES.
12. THE EXACT LOCATION OF NEW UTILITY SERVICES AND CONNECTIONS SHALL BE COORDINATED WITH THE BUILDING DRAWINGS AND THE UTILITY COMPANIES.
13. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
14. THE CONTRACTOR SHALL OBTAIN, PAY FOR, AND COMPLY WITH ALL REQUIRED PERMITS, ARRANGE FOR ALL INSPECTIONS, AND SUBMIT COPIES OF ACCEPTANCE CERTIFICATES TO THE OWNER PRIOR TO THE COMPLETION OF THIS PROJECT.
15. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANHOLES, BOXES, FITTINGS, CONNECTORS, COVER PLATES, AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THESE DRAWINGS TO RENDER INSTALLATION OF UTILITIES COMPLETE AND OPERATIONAL.
16. CONTRACTOR SHALL PROVIDE EXCAVATION, BEDDING, BACKFILL AND COMPACTION FOR NATURAL GAS SERVICES. COORDINATE WITH GAS COMPANY.
17. A 10-FOOT MINIMUM EDGE TO EDGE HORIZONTAL SEPARATION SHALL BE PROVIDED BETWEEN ALL WATER AND SANITARY SEWER LINES. AN 18-INCH MINIMUM OUTSIDE TO OUTSIDE VERTICAL SEPARATION SHALL BE PROVIDED AT ALL WATER/SANITARY SEWER CROSSINGS.
18. THE CONTRACTOR SHALL CONTACT "DIG-SAFE" 72 HOURS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL HAVE THE "DIG-SAFE" NUMBER ON SITE AT ALL TIMES.
19. SAWCUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCH FOR ALL PROPOSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN
20. GATE VALVES, FITTINGS, ETC. SHALL MEET THE REQUIREMENTS OF THE CITY OF DOVER.
21. COORDINATE TESTING OF SEWER CONSTRUCTION WITH THE CITY OF DOVER.
22. CONTRACTOR SHALL COORDINATE ALL ELECTRIC WORK INCLUDING BUT NOT LIMITED TO: CONDUIT CONSTRUCTION, MANHOLE CONSTRUCTION, UTILITY POLE CONSTRUCTION, OVERHEAD WIRE RELOCATION, AND TRANSFORMER CONSTRUCTION WITH POWER COMPANY.
23. CONTRACTOR SHALL PHASE UTILITY CONSTRUCTION, PARTICULARLY WATER MAIN AND GAS MAIN CONSTRUCTION AS TO MAINTAIN CONTINUOUS SERVICE TO ABUTTING PROPERTIES. CONTRACTOR SHALL COORDINATE TEMPORARY SERVICES TO ABUTTERS WITH THE UTILITY COMPANY AND AFFECTED ABUTTER.
24. SITE LIGHTING SPECIFICATIONS, CONDUIT LAYOUT AND CIRCUITRY FOR PROPOSED SITE LIGHTING AND SIGN ILLUMINATION SHALL BE PREPARED BY THE PROJECT ELECTRICAL ENGINEER.
25. APPROVED BACKFLOW PREVENTORS SHALL BE PROVIDED FOR BOTH FIRE AND DOMESTIC WATER LINES.
26. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM WITH APPLICABLE CITY AND STATE CODES.
27. A SECURITY ALARM SYSTEM SHALL BE INSTALLED AS REQUIRED BY CHAPTER 58, ARTICLE I, SECTION 58-2 OF THE CODE OF THE CITY OF DOVER.
28. THE PROPOSED STRUCTURE SHALL COMPLY WITH CHAPTER 81, ARTICLE IV, SECTION 81-27 AND THE STATE BUILDING CODES OF THE CODE OF THE CITY OF DOVER.
29. FINAL PLANS FOR TANK LOCATIONS, DISTRIBUTION SYSTEMS, AND CROSS SECTIONS ASSOCIATED WITH THE FUEL BAYS, SHALL BE PROVIDED TO THE CITY OF DOVER ENGINEER PRIOR TO CONSTRUCTION.
30. FIRE SUPPRESSION PLANS SHALL BE PROVIDED TO THE FIRE/INSPECTION DEPARTMENT PRIOR TO INSTALLATION.
31. THE STRUCTURE SHALL BE SERVED BY A SPRINKLER SYSTEM AS REQUIRED UNDER CHAPTER 81-30 OF THE CODE OF THE CITY OF DOVER AND THE ADOPTED STATE OF NEW HAMPSHIRE BUILDING & FIRE CODE.
32. 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.
33. FIRE DEPARTMENT CONNECTIONS SHALL BE LOCATED ON THE STREET SIDE OF THE BUILDING PER NFPA 13.
34. COORDINATE ALL UTILITY WORK WITH APPROPRIATE UTILITY COMPANY.
35. SEWAGE LOADING (PER ENV. – Wq 1008.03 TABLE 1008-1)
    OFFICE: 2500 S.F. X 5 GPD/100 S.F. = 125 GPD
    WAREHOUSES: 10 EMPLOYEES X 10 GPD/EMPLOYEE = 100 GPD
    TOTAL = 225 GPD

GRADING NOTES:

1. ALL ROAD DRAINAGE WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARDS FOR CONSTRUCTION OF THE CITY OF DOVER, N.H. AND "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION", LATEST EDITION. THE MORE STRINGENT SPECIFICATION SHALL APPLY.
2. CONTRACTOR SHALL RETAIN A GEOTECHNICAL ENGINEERING CONSULTANT APPROVED BY THE OWNER, TO CONDUCT COMPACTION TESTING AND FILL GRADATION MONITORING PER THE ABOVE REFERENCED "STANDARD SPECIFICATIONS".
3. SEE EROSION CONTROL NOTES & DETAIL SHEET FOR TEMPORARY AND PERMANENT EROSION CONTROL MEASURES.
4. ALL DRAINAGE PIPES SHALL BE HDPE OR APPROVED EQUAL UNLESS OTHERWISE NOTED.
5. ALL DISTURBED AREAS NOT OTHERWISE CALLED FOR SURFACE TREATMENT SHALL RECEIVE 6" OF HIGH QUALITY LOAM AND SHALL BE SEEDED WITH GRASS.
6. ALL SITEWORK CONSTRUCTION SHALL BE ADVANCED USING "BEST MANAGEMENT PRACTICES" SANCTIONED BY THE USDA SCS AND NHDES.
7. TEMPORARY CONSTRUCTION ENTRANCE SHALL BE INSTALLED, UTILIZED AND MAINTAINED UNTIL BASE MATERIALS ARE CONSTRUCTED.
8. CONTRACTOR SHALL PROVIDE A FINISH GRADED SURFACE FREE OF LOW SPOTS AND PONDING AREAS. CRITICAL AREAS INCLUDE BUILDING ENTRANCE AND UNDER RAISED STRUCTURES.
9. DENSITY REQUIREMENTS:

LOCATION	MINIMUM DENSITY
BELOW PAVED OR CONCRETE AREAS	95%
TRENCH BEDDING MATERIAL AND SAND BLANKET BACKFILL	95%
BELOW LOAM AND SEED AREA	90%

   *ALL PERCENTAGES SHALL BE OF THE MAXIMUM DRY DENSITY AT THE OPTIMUM MOISTURE CONTENT AS DETERMINED AND CONTROLLED IN ACCORDANCE WITH AASHTO STANDARD 180, METHOD C. FIELD DENSITY TESTS SHALL BE MADE IN ACCORDANCE WITH AASHTO STANDARD T-191, T-204, OR T-238 AND T-239.

10. SEE GENERAL EROSION CONTROL NOTES ON DETAIL SHEET.
11. PROVIDE INLET PROTECTION BARRIERS AROUND ALL EXISTING AND PROPOSED STORM DRAINAGE INLETS WITHIN THE WORK LIMITS AND AS SHOWN ON PLAN. MAINTAIN FOR THE DURATION OF THE PROJECT UNTIL PAVEMENT HAS BEEN INSTALLED AND UPSTREAM AREAS HAVE BEEN STABILIZED.
12. INSPECT SILT BARRIERS AFTER EACH RAIN STORM OF 1/4 INCH OR GREATER. REPAIR/MODIFY PROTECTION AS NECESSARY TO MAXIMIZE EFFICIENCY FILTER. REPLACE ALL FILTERS WHEN SEDIMENT IS 1/3 THE STRUCTURE HEIGHT.
13. A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) IS REQUIRED FOR THIS PROJECT. THE SWPPP MUST INCLUDE THE APPROPRIATE BEST MANAGEMENT PRACTICES (BMP'S) TO MINIMIZE THE DISCHARGE OF POLLUTANTS FROM THE SITE. PARTIES RESPONSIBLE FOR DEVELOPING THE SWPPP SHOULD REFER TO THE EPA NPDES CONSTRUCTION GENERAL PERMITS NOTICE OF INTENT FOR A COMPLETE OUTLINE OR REQUIRED ELEMENTS. THESE PLANS AND THE STORMWATER MANAGEMENT SYSTEM INSPECTION & MAINTENANCE PLAN PREPARED FOR THIS PROJECT MAY BE UTILIZED IN FULFILLING THE REQUIREMENTS.
14. ALL TREATMENT SWALES TO BE CONSTRUCTED SHALL HAVE SOD BOTTOMS.
15. LIMIT TREE CLEARING TO ONLY THE EXTENT NECESSARY FOR CONSTRUCTION.
16. PLACARDS SHALL BE INSTALLED ALONG THE EDGE OF WETLAND PRIOR TO CONSTRUCTION.

LEGEND

I.R. (set) o	– IRON ROD W/ I.D. CAP (SET)
⊙ I.P.	– IRON PIPE
□ G.B.	– GRANITE BOUND
⊙ I.R.	– IRON ROD
⊙ I.R.(fnd)	– IRON ROD (FOUND)
D.H.	– DRILL HOLE
S.F.	– SQUARE FEET
Ac.	– ACRE
(TYP.)	– TYPICAL
±	– MORE OR LESS
ø	– DIAMETER
S.C.R.D.	– STRAFFORD COUNTY REGISTRY OF DEEDS
UP	– UTILITY POLE
— · · — · · —	– EDGE OF WETLAND
O.A.	– OVERALL
TBR	– TO BE REMOVED
R.O.W.	– RIGHT OF WAY
DMH	– DRAIN MANHOLE
CB	– CATCH BASIN
SMH	– SEWER MANHOLE
HYD.	– FIRE HYDRANT
WV	– WATER GATE VALVE
	– TREE
GV	– GAS VALVE
5'R	– PROPOSED PAVEMENT RADIUS
PW	– PROPOSED WATER
PE	– PROPOSED ELECTRIC
PS	– PROPOSED SEWER
PD	– PROPOSED DRAINAGE
PG	– PROPOSED GAS
55	– PROPOSED FINISH GRADE
x 55	– PROPOSED SPOT GRADE

UTILITY CONTACTS

NATURAL GAS: – UNITIL CORPORATION
CONTACT: DAVID BEAULIEU
325 WEST ROAD
PORTSMOUTH, NH 03801
TEL: (603)-294-5144

WATER & SEWER: – CITY OF DOVER COMMUNITY SERVICES DEPARTMENT – PUBLIC WORKS & UTILITIES
CONTACT: BILL BOULANGER
271 MAST ROAD
DOVER, NH 03820
TEL: (603)-516-6450

ELECTRIC: – EVERSOURCE
CONTACT: PIERRE BOUGIE
4 OLD DOVER ROAD
ROCHESTER, NH 03867
TEL: (603)-332-4227

TELEPHONE: – FAIRPOINT COMMUNICATIONS, INC.
CONTACT: ED LANAGAN
HIGHWAY 33, BOX 307
1575 GREENLAND ROAD
GREENLAND, NH 03804
TEL (603)-528-7335

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY
PLANNING FILE NO.: P21_

NO.	REVISION	APP'D	DATE

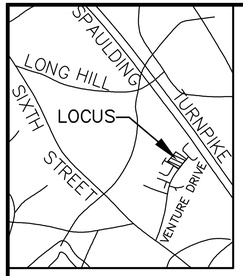
DATE: 8-6-21
SCALE: N/A
DRAWN BY: SRD
DESIGN BY: JRG
APPROVED BY:SJH
PROJECT NO:21041
FILE: SITE

CIVILWORKS NEW ENGLAND
CIVIL & WATERFRONT ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

AMERICAN DURAFILM CO. INC.
55 BOYNTON ROAD
P.O. BOX 6770
HOLLISTON, MA 01746

MANUFACTURING/COMMERICAL BUILDING
INNOVATION WAY
DOVER, NH

NOTE SHEET



D / 11-1

TOTAL PARCEL AREA
1,576,425 S.F.
36.19 Ac.
PROPOSED LOT AREA
143,577 S.F.
3.29 Ac

PROPOSED LOT LINE
PROPOSED LOT LINE
PROPOSED LOT LINE
PROPOSED TREELINE
PROPOSED TREELINE
PROPOSED TREELINE
LIMITS OF TREE REMOVAL
LIMITS OF TREE REMOVAL
TRRES TO BE REMOVED
10' WIDE UTILITY EASEMENT
S.S.(md)
S.S.(md)
I.R.(md)
EOP
EOP
EOP
EOP
SGC
SGC
SGC
SGC
ASPHALT SIDEWALK
INNOVATION WAY
VENTURE DRIVE

CB
RIM = 187.79
INV. OUT = 184.59
SUMP = 181.79

CB
RIM = 186.52
INV. IN = 184.17
INV. IN = 184.17
INV. OUT = 184.16
SUMP = 180.82

CB
RIM = 186.60
INV. IN = 183.90
INV. OUT = 183.70
SUMP = 180.60

CB
RIM = 186.60
INV. OUT = 183.25
SUMP = 180.20

CB
RIM = 184.60
INV. IN = 180.45
INV. OUT = 180.35
SUMP = 177.60

CB
RIM = 176.81
INV. IN = 172.
INV. OUT = 17
SUMP = 169.6

CB
RIM = 176.75
INV. IN = 174.25
INV. OUT = 172.7

12" RCP FES
INV. = 183.81
12" RCP
12" RCP FES
INV. = 184.41
12" RCP
12" RCP FES
INV. = 183.95
12" RCP FES
INV. = 183.86
12" RCP
12" RCP
12" RCP FES
INV. = 179.93
12" RCP
12" RCP
FES
INV. = 172.83
FES
INV. = 172.54

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

PLANNING FILE
NO.: P21_

NO.	REVISION	APP'D	DATE

DATE: 8-6-21
SCALE: 1"=20'
DRAWN BY: SRD
DESIGN BY: JRG
APPROVED BY:JH
PROJECT NO:21041
FILE: SITE

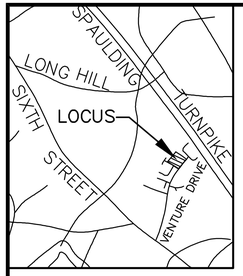
CIVILWORKS NEW ENGLAND
CIVIL & WATERFRONT ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

AMERICAN DURAFILM CO. INC.
55 BOYNTON ROAD
P.O. BOX 6770
HOLLISTON, MA 01746

MANUFACTURING/COMMERICAL BUILDING
INNOVATION WAY
DOVER, NH

DEMOLITION PLAN

5



D / 11-1

TOTAL PARCEL AREA
1,576,425 S.F.
36.19 Ac.
PROPOSED LOT AREA
143,577 S.F.
3.29 Ac

PROPOSED LOT LINE

PROPOSED 25' BUILDING SETBACK

PROPOSED TREELINE

S.S.(md)

PROPOSED OUTLET PROTECTION

BIO-RETENTION AREA

PROPOSED FUTURE 5,000 S.F. BUILDING ADDITION

PROPOSED 5'x5' CONCRETE PAD

PROPOSED BIKE RACK

END BCC

PROPOSED 5'WIDE CONCRETE SIDEWALK

PROPOSED 12'x12' CONCRETE PAD WITH PRIVACY FENCE FOR DUMPSTER

PROPOSED 15,000 S.F. BUILDING

PROPOSED R7-8 "HANDICAP PARKING" SIGN

PROPOSED PAINTED HANDICAP PARKING SYMBOL (TYP)

PROPOSED RAMP WITH TIP-DOWN CURB

PROPOSED CONCRETE PAD

PROPOSED PAINTED ISLAND

TS1

PROPOSED RETAINING WALL

PROPOSED BOLLARD

PROPOSED OVERHEAD DOOR

END SGC BEGIN BCC

BEGIN SGC

END SGC BEGIN VGC

PROPOSED CONCRETE PAD FOR GENERATOR

PROPOSED CONCRETE PAD FOR TRANSFORMER

PROPOSED FLAGPOLE

10' WIDE UTILITY EASEMENT

I.R.(fnd)

PROPOSED TREELINE

VENTURE DRIVE

INNOVATION WAY

ASPHALT SIDEWALK

EOP

SGC

BCC

VGC

PARKING CALCULATIONS

	MAX ALLOWED	PROPOSED
OFFICE 2,500 S.F. 1 SP/300 S.F.	= 8	8
INDUSTRIAL/MANUFACTURING 17,500 S.F. 1 SP/800 S.F.	= 22	22
TOTAL PARKING	30	30

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

PLANNING FILE NO.: P21_

NO.	REVISION	APP'D	DATE
FILE: SITE			
PROJECT NO: 21041			
APPROVED BY: JH			
DESIGN BY: JRG			
DRAWN BY: SRD			
SCALE: 1"=20'			
DATE: 8-6-21			

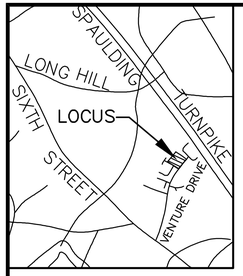
CIVILWORKS NEW ENGLAND
CIVIL & WATERFRONT ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

AMERICAN DURAFILM CO. INC.
55 BOYNTON ROAD
P.O. BOX 6770
HOLLISTON, MA 01746

MANUFACTURING/COMMERICAL BUILDING
INNOVATION WAY
DOVER, NH

SITE PLAN

6



PIPE CHART:

P1
15" HDPE
L=13.0'
S=0.0192

P2
12" HDPE
L=10.0'
S=0.0100

P3
12" HDPE
L=26.0'
S=0.0058

P4
12" HDPE
L=60.0'
S=0.0050

P5
12" HDPE
L=137.0'
S=0.0047

P6
15" HDPE
L=20.0'
S=0.0300

P7
12" HDPE
L=20.0'
S=0.0050

PUD
4" HDPE
L=60.0'
S=0.0000

RD1
12" HDPE
L=114.0'
S=0.0053

DRAINAGE CHART:

PCB1
RIM=183.70
INV.IN=179.70
INV.OUT=179.00

PCB2
RIM=186.30
INV.IN=182.10
INV.OUT=182.00

PCB3
RIM=185.00
INV.IN=181.85
INV.OUT=181.75

PCB4 (5' DIAMETER)
RIM=186.00
INV.IN=181.45
INV.OUT=181.35

PCB5
RIM=186.10
INV.OUT=182.10

D / 11-1

TOTAL PARCEL AREA
1,576,425 S.F.
36.19 Ac.
PROPOSED LOT AREA
143,577 S.F.
3.29 Ac

PROPOSED LOT LINE

PROPOSED OUTLET PROTECTION (SEE DETAIL)

FES-1

P7

OS-1

BIO-RETENTION POND 1 (BIO1)

BUFFER IMPACT A 3,906 S.F.

BUFFER IMPACT B 701 S.F.

PROPOSED SILTSOXX 12" SINGLE ROW

STABILIZE SLOPE WITH SC150BN (TYP)

PUD

FES-2

P1

PCB1

RD1

INV.:180.3

RD

PROPOSED FUTURE 5,000 S.F. BUILDING ADDITION

PROPOSED 15,000 S.F. BUILDING F.F.=189.5

BUFFER IMPACT C 2,669 S.F.

TC 188.6
BC 188.1

PCB5

TS1
L=160.0'
S=0.005
D=2.0'

P5

FES-3

PCB4

P6

P4

P3

PCB3

P2

PCB2

PROPOSED CONSTRUCTION ENTRANCE

INV.IN: 182.20

10' WIDE UTILITY EASEMENT

INNOVATION WAY

VENTURE DRIVE

ASPHALT SIDEWALK

SGC

EOP

CB
RIM = 186.60
INV. IN = 183.90
INV. OUT = 183.70
SUMP = 180.60

CB
RIM = 186.52
INV. IN = 184.17
INV. IN = 184.17
INV. OUT = 184.16
SUMP = 180.82

CB
RIM = 187.79
INV. OUT = 184.59
SUMP = 181.79

CB
RIM = 186.60
INV. OUT = 183.25
SUMP = 180.20

CB
RIM = 184.60
INV. IN = 180.45
INV. OUT = 180.35
SUMP = 177.60

CB
RIM = 176.81
INV. IN = 172.4
INV. OUT = 17
SUMP = 169.6

CB
RIM = 176.75
INV. IN = 174.25
INV. OUT = 172.7

12" RCP FES
INV. = 183.81

12" RCP

12" RCP FES
INV. = 184.41

12" RCP FES
INV. = 183.95

12" RCP FES
INV. = 183.86

12" RCP FES
INV. = 179.93

FES
INV. = 172.83
FES
INV. = 172.54

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)

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PLANNING FILE NO.: P21_

NO.	REVISION	APP'D	DATE

DATE: 8-6-21
SCALE: 1"=20'
DRAWN BY: SRD
DESIGN BY: JRG
APPROVED BY:JH
PROJECT NO:21041
FILE: SITE

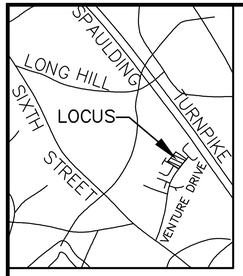
CIVILWORKS NEW ENGLAND
CIVIL & WATERFRONT ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

GRADING, DRAINAGE & EROSION CONTROL PLAN

MANUFACTURING/COMMERICAL BUILDING
INNOVATION WAY
DOVER, NH

AMERICAN DURAFILM CO. INC.
55 BOYNTON ROAD
P.O. BOX 6770
HOLLISTON, MA 01746

7



D / 11-1

TOTAL PARCEL AREA
1,576,425 S.F.
36.19 Ac.
PROPOSED LOT AREA
143,577 S.F.
3.29 Ac

PROPOSED LOT LINE
PROPOSED LOT LINE
PROPOSED LOT LINE
S.S.(md)
S.S.(md)
100'
50'
PROPOSED FUTURE
5,000 S.F.
BUILDING ADDITION
100'
BIO-RETENTION AREA
PUD
RD
150'
PROPOSED
15,000 S.F.
BUILDING
RD1
RD
TS1
PD
PROPOSED FIRE DEPARTMENT CONNECTION (FDC)
PROPOSED 1" DOMESTIC SERVICE
PROPOSED 6" WATER SERVICE
PROPOSED SEWER MANHOLE BY OTHERS
PE
PS
PW
PG
PE
PD
PD
I.R.(fnd)
PROPOSED SEWER MANHOLE BY OTHERS
PS
PE
PG
PW
10' WIDE UTILITY EASEMENT
EOP
EOP
EOP
PD
EOP
VENTURE DRIVE
SGC
INNOVATION WAY
SGC
ASPHALT SIDEWALK
SGC
SGC
SGC

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FILE: SITE

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CIVIL & WATERFRONT ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

UTILITY PLAN

AMERICAN DURAFILM CO. INC.
55 BOYNTON ROAD
P.O. BOX 6770
HOLLISTON, MA 01746

MANUFACTURING/COMMERICAL BUILDING
INNOVATION WAY
DOVER, NH

8

DESCRIPTION

1. THE INTENT OF THIS PLAN IS TO SHOW SITE IMPROVEMENTS ASSOCIATED WITH THE CONSTRUCTION OF A 20,000 S.F. BUILDING, DRAINAGE AND UTILITY IMPROVEMENTS, AND SITE ACCESS.

PROJECT NAME AND LOCATION

DURAFILM — LATITUDE N43° 13' 22"
INNOVATIONS WAY — LONGITUDE W70° 54' 28"
DOVER, NH

DISTURBED AREA

±86,900 S.F.

NOTES:

1. THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION, BUT IN NO CASE SHALL EXCEED 5 ACRES AT ANY TIME BEFORE DISTURBED AREAS ARE STABILIZED.
2. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.

SEQUENCE OF MAJOR ACTIVITIES

1. CONTRACTOR SHALL PREPARE THE SWPPP, FILE FOR AND OBTAIN THE NOI A MINIMUM OF 2 WEEKS PRIOR TO COMMENCEMENT OF SITE WORK.
2. PLACE TEMPORARY EROSION AND SEDIMENT CONTROL BMP'S PRIOR TO EARTH MOVING ACTIVITIES.
3. ALL EROSION CONTROL AND PERIMETER CONTROLS SHALL BE INSTALLED PRIOR TO COMMENCING EARTH MOVING OPERATIONS.
4. SELECTIVE DEMOLITION.
5. REGRADE SITE TO SUBGRADE.
6. TEMPORARY WATER DIVERSION (SWALES, BASINS) MUST BE USED AS NECCESSARY UNTIL AREAS ARE STABILIZED.
7. SWALES AND PONDS (AS APPLICABLE) SHALL BE CONSTRUCTED EARLY ON IN THE CONSTRUCTION SEQUENCE AND BEFORE ROUGH GRADING OF THE SITE AND ALL DITCHES AND SWALES SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
8. INSTALL DRAINAGE STRUCTURES AND CONTROLS.
9. INSTALL FOUNDATION FOOTINGS AND WALLS.
10. INSTALL UTILITIES.
11. PLACE GRAVELS AND FINE GRADE.
12. STABILIZE ROADWAYS WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
13. ALL CUT AND FILL SLOPES SHALL BE LOAMED AND SEEDED (AS APPLICABLE) WITHIN 72 HOURS OF ACHIEVING FINISH GRADE.
14. ALL EROSION CONTROL MEASURES SHALL BE INSPECTED AT LEAST WEEKLY AND AFTER EVERY 1/2" OF RAINFALL.
15. IN ALL CASES THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION AND IN NO CASE SHALL EXCEED 5 ACRES AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED. ALL DISTURBED AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.
16. WHEN ALL SITE WORK IS COMPLETE AND ALL DISTURBED AREAS ARE STABILIZED REMOVE ALL TEMPORARY EROSION CONTROL MEASURES AND FILE THE EPA – N.O.T.

DEFINITIONS

AN AREA SHALL BE CONSIDERED STABLE OF ONE OF THE FOLLOWING HAS OCCURRED.

1. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED
2. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED
3. A MINIMUM OF 3" OF NON–EROSIVE MATERIAL SUCH AS STONE OR RIP–RAP HAS BEEN INSTALLED; OR
4. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED

INSTALLATION, MAINTENANCE, AND INSPECTION PROCEDURES OF EROSION AND SEDIMENT CONTROLS

A. SILT BARRIER

1. INSTALLATION
   a. USE SILT BARRIER AS PERIMETER CONTROLS, PARTICULARLY AT THE LOWER OR DOWN SLOPE EDGE OF A DISTURBED AREA.
   b. LEAVE SPACE FOR MAINTENANCE BETWEEN TOE AND SLOPE OF SILT BARRIER.
   c. TRENCH IN THE SILT BARRIER ON THE UPHILL SIDE (6 INCHES DEEP BY 6 INCHES WIDE).
   d. INSTALL STAKES ON THE DOWNHILL SIDE OF THE SILT BARRIER.
   e. CURVE THE END OF THE SILT BARRIER UP–GRADIENT TO HELP IT CONTAIN RUNOFF.
2. SEQUENCE OF INSTALLATION
   a. SEDIMENT BARRIERS SHALL BE INSTALLED PRIOR TO ANY SOIL DISTURBANCE OF THE CONTRIBUTING DRAINAGE AREA ABOVE THEM.
3. MAINTENANCE
   a. SILT BARRIERS SHOULD BE INSPECTED AND MAINTAINED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL.
   b. SILT BARRIERS HAVE A USEFUL LIFE OF ONE SEASON. ON LONGER CONSTRUCTION PROJECTS, SILT BARRIERS SHOULD BE REPLACED PERIODICALLY TO MAINTAIN EFFECTIVENESS.
   c. REMOVE SEDIMENT WHEN IT REACHES ONE–THIRD (1/3) THE HEIGHT OF THE SILT BARRIER.
   d. REPLACE THE SILT BARRIERS WHERE THEY ARE TORN, WORN, OR OTHERWISED DAMAGED AND MONITOR PERFORMANCE TO ENSURE EFFECTIVE PERFORMANCE.
   e. RETRENCH OR REPLACE ANY SILT BARRIER THAT IS NOT PROPERLY ANCHORED TO THE GROUND.
   f. IF THERE IS EVIDENCE OF END FLOW ON PROPERLY INSTALLED BARRIERS, EXTEND BARRIERS UPHILL OR CONSIDER REPLACING THEM WITH OTHER MEASURES, SUCH AS TEMPORARY DIVERSIONS AND SEDIMENT TRAPS.
   g. SILT BARRIERS SHOULD BE REPAIRED IMMEDIATELY IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THEM. IF THERE ARE SIGNS OF UNDERMINING AT THE CENTER OR THE EDGES OF THE BARRIER, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THEM, SILT BARRIERS SHOULD BE REPLACED WITH A TEMPORARY CHECK DAM.

B. MULCHING

1. TIMING
   a. APPLY MULCH PRIOR TO ANY STORM EVENT. IT WILL BE NECESSARY TO CLOSELY MONITOR WEATHER PREDICTIONS TO HAVE ADEQUATE WARNING OF SIGNIFICANT STORMS.
   b. IN OTHER AREAS, THE TIME PERIOD CAN RANGE FROM 14 TO 30 DAYS OF INACTIVITY ON A AREA. THE LENGTH OF TIME VARYING WITH SITE CONDITIONS. PROFESSIONAL JUDGEMENT 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.
   c. WITHIN 100 FEET OF RIVERS, STREAMS, WETLANDS, AND IN LAKE AND POND WATERSHEDS, THE TIME PERIOD OF WHICH MULCHING SHOULD TAKE OCCUR SHOULD BE NO GREATER THAN SEVEN (7) DAYS. THIS SEVEN DAY LIMIT SHOULD BE REDUCED FURTHER DURING WET WEATHER PERIODS.
2. APPLICATION RATE
   a. MULCH SHALL BE APPLIED AT A RATE OF BETWEEN 1.5 TO 2 TONS PER ACRE, OR 70 TO 90 POUNDS PER 1000 SQUARE FEET.
   b. GUIDELINES FOR WINTER MULCH APPLICATION. WHEN MULCH IS APPLIED TO PROVIDE PROTECTION OVER WINTER (PAST THE GROWING SEASON) IT SHALL BE AT A RATE OF 150–200 POUNDS OF HAY OR STRAW PER ACRE WITH ABOUT 4 INCHES IN DEPTH. A TACKIFIER MAY BE ADDED TO THE MULCH.
3. MAINTENANCE
   a. ALL MULCHES MUST BE INSPECTED PERIODICALLY, IN PARTICULAR AFTER RAINSTORMS. CHECK FOR SIGNS OF EROSION OR DISPLACEMENT OF THE MULCH. IF LESS THAN 90% OF THE SOIL SURFACE IS COVERED BY MULCH, ADDITIONAL MULCH SHALL BE IMMEDIATELY APPLIED.
   b. NETS MUST BE INSPECTED AFTER RAIN EVENTS FOR DISLOCATION OR FAILURE AND SHOULD BE REPAIRED AS NECCESSARY.
   c. INSPECTIONS SHOULD TAKE PLACE UNTIL THE SITE IS ESTABLISHED.
   d. EROSION CONTROL MULCH USED FOR TEMPORARY STABILIZATION SHOULD BE LEFT IN PLACE. VEGETATION ADDS STABILITY AND SHOULD BE PROMOTED.

C. TEMPORARY SEEDING

1. SEEDBED PREPARATION
   a. STONES AND TRASH SHOULD BE REMOVED SO AS NOT TO INTERFERE WITH THE SEEDING AREA.
   b. WHERE THE SOIL HAS BEEN COMPACTED BY CONSTRUCTION OPERATIONS, LOOSEN SOIL TO A DEPTH OF 2 INCHES BEFORE APPLYING FERTILIZER, LIME AND SEED.
   c. APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST RECOMMENDATIONS.
      i) APPLY FERTILIZER AT A RATE OF 600 POUNDS PER ACRE OR 13.8 POUNDS PER 1,000 SQUARE FEET OF LOW PHOSPHATE FERTILIZER OR EQUIVALENT.
      ii) APPLY LIMESTONE AT A RATE OF 3 TONS PER ACRE OR 138 POUNDS PER 1,000 SQUARE FEET.
2. SEEDING
   a. APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, DRILL, CULTIPACKER TYPE SEEDER OR HYDROSEEDER (SUMMARY INCLUDING SEED AND FERTILIZER) WITH A SEEDING DEPTH FROM A QUARTER (1/4) TO A HALF (1/2) INCH.
   b. SEEDING RATES MUST BE INCREASED BY 10% WHEN HYDROSEEDING.
   c. TEMPORARY SEEDING BETWEEN MAY 15TH AND AUGUST 15TH SHOULD BE COVERED WITH HAY OR STRAW MULCH, ACCORDING TO THE "TEMPORARY AND PERMANENT MULCHING" PRACTICE.
   d. VEGETATED GROWTH COVERING 85% OF THE DISTURBED AREA SHOULD BE ACHIEVED PRIOR TO OCTOBER 15TH.
3. MAINTENANCE
   a. TEMPORARY SEEDING SHALL BE INSPECTED PERIODICALLY. AT A MINIMUM, 85% 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 FABRICS, CHECK DAMS, ETC.).

D. PERMANENT SEEDING

1. BEDDING – STONES LARGER THAN 2 INCHES, TRASH, ROOTS, AND OTHER DEBRIS INTERFERRING WITH SEEDING AND FUTURE MAINTENANCE OF THE AREA SHOULD BE REMOVED. WHERE FEASIBLE, THE SOIL SHOULD BE TILLED TO A DEPTH OF 4" TO PREPARE A SEEDBED AND MIX FERTILIZER INTO THE SOIL.
2. FERTILIZER
   a. LIME AND FERTILIZER SHOULD BE WORKED INTO THE SOIL TO A DEPTH OF 4 INCHES USING A DISC, SPRING TOOTH HARROW, OR OTHER SUITABLE EQUIPMENT PRIOR TO OR AT THE SAME TIME OF SEEDING.
   b. FERTILIZER SHOULD BE RESTRICTED TO A LOW PHOSPHATE, SLOW RELEASE NITORGEN FERTILIZER WHEN APPLIED TO AREAS BETWEEN 25 FEET AND 250 FEET FROM A SURFACE WATER BODY. NO FERTILIZER EXCEPT LIMESTONE SHOULD BE APPLIED WITHIN 25 FEET OF THE SURFACE WATER.
   c. 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 @ 138 LBS. PER 1,000 S.F.
      LOW PHOSPHATE (N–P205–K20) FERTILIZER @ 13.8 LBS. PER 1,000 S.F.
3. SEED MIXTURE (RECOMMENDED)
   RATE:

TYPE	LBS. PER ACRE	LBS. PER 1,000 S.F.
TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
BIRDSFOOT TREFOIL	8	0.20
TOTAL	48	1.10

4. SEEDING
   a. SPRING SEEDING USUALLY GIVES THE BEST RESULTS FOR ALL SEED MIXES OR WITH LEGUMES. PERMANENT SEEDING SHOULD BE COMPLETED 45 DAYS PRIOR TO THE FIRST KILLING FROST.
   b. APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, DRILL, CULTIPACKER TYPE SEEDER OR HYDROSEEDER (SLURRY INCLUDING SEED AND FERTILIZER) WITH A SEEDING DEPTH FROM A QUARTER (1/4) TO A HALF (1/2) INCH.
   c. VEGETATED GROWTH COVERING AT LEAST 85% OF THE DISTURBED SHOULD BE ACHIEVED PRIOR TO OCTOBER 15TH. IF THIS CONDITION IS NOT ACHIEVED, IMPLEMENT TEMPORARY STABILIZATION MEASURES FOR OVERWINTER PROTECTION.
5. HYDROSEEDING
   a. LIME AND FERTILIZER MAY BE APPLIED SIMULTANEOUSLY WITH THE SEED. THE USE OF STRAW MULCH ON CRITICAL AREAS IS PREFERRED SINCE IT GRANTS BETTER SLOPE PROTECTION BY USING ADHESIVE MATERIALS.
   b. SLOPES MUST BE NO STEEPER THAN 2 TO 1 (2 FEET HORIZONTALLY TO 1 FOOT VERTICALLY).
   c. SEEDING RATES MUST BE INCREASED BY 10% WHEN HYDROSEEDING.
6. MAINTENANCE
   a. PERMANENT SEEDED AREAS SHOULD BE INSPECTED AT LEAST MONTHLY DURING THE COURSE OF CONSTRUCTION. INSPECTIONS, MAINTENANCE, AND CORRECTIVE ACTIONS SHOULD CONTINUE UNTIL THE OWNER ASSUMES PERMANENT OPERATION OF THE SITE.
   b. SEEDED AREAS SHOULD BE MOWED AS REQUIRED TO MAINTAIN A HEALTHY STAND OF VEGETATION, WITH MOWING HEIGHT AND FREQUENCY DEPENDENT ON TYPE OF GRASS COVER.
   c. BASED ON INSPECTION, AREAS SHOULD BE RESEEDED TO ACHIEVE FULL STABALIZATION OF EXPOSED SOILS.
   d. IF EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHOULD BE MADE AND AREAS RESEEDED. WITH OTHER TEMPORARY MEASURES USED TO PROVIDE EROSION PROTECTION DURING THE PERIOD OF VEGETATION ESTABLISHMENT.
   e. AT A MINIMUM, 85% OF THE SOIL SURFACE SHOULD BE COVERED BY VEGETATION.

E. STORM DRAIN INLET PROTECTION

1. SPECIFICATIONS
   a. THE MAXIMUM CONTRIBUTING DRAINAGE AREA TO THE BARRIER SHOULD BE LESS THAN ONE ACRE.
   b. ANY RESULTANT PONDING OF STORMWATER MUST NOT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT AREAS OR STRUCTURES.
2. INSTALLATION
   a. INSTALL INLET PROTECTION AS SOON AS STORM DRAIN INLETS ARE INSTALLED AND BEFORE LAND–DISTURBANCE ACTIVITIES BEGIN IN AREAS WITH EXISTING STORM DRAIN SYSTEMS.
   b. PROTECT ALL INLETS THAT COULD RECEIVE STORMWATER FROM YOUR CONSTRUCTION PROJECT.
   c. USE IN CONJUNCTION WITH OTHER EROSION PREVENTION AND SEDIMENT CONTROL BMPS.
   d. DESIGN YOUR INLET PROTECTION TO HANDLE THE VOLUME OF WATER FROM THE AREA BEING DRAINED. ENSURE THAT THE DESIGN IS SIZED APPROPRIATELY.
3. MAINTENANCE
   a. INSPECT INLETS BARRIERS FREQUENTLY, BEFORE AND AFTER EACH RAINFALL EVENT AND REPAIR WHEN NECESSARY.
   b. SEDIMENT SHOULD BE REMOVED AND THE STORM DRAIN SEDIMENT BARRIER RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE BARRIER.
   c. REMOVED SEDIMENT SHOULD BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
   d. SWEEP STREETS, SIDEWALKS, AND OTHER PAVED AREAS REGULARLY.
   e. ALL CATCH BASINS AND STORM DRAIN INLETS MUST BE CLEANED AT THE END OF CONSTRUCTION AND AFTER THE SITE HAS BEEN FULLY STABILIZED

TIMING OF CONTROLS/MEASURES

AS INDICATED IN THE SEQUENCE OF MAJOR ACTIVITIES THE SILT BARRIERS SHALL BE INSTALLED PRIOR TO COMMENCING ANY CLEARING OR GRADING OF THE SITE. STRUCTURAL CONTROLS SHALL BE INSTALLED CONCURRENTLY WITH THE APPLICABLE ACTIVITY. AREAS WHERE CONSTRUCTION ACTIVITY TEMPORARILY CEASES FOR MORE THAN TWENTY ONE (21) DAYS WILL BE STABILIZED WITH A TEMPORARY SEED AND MULCH WITHIN FOURTEEN (14) DAYS OF THE LAST DISTURBANCE. ONCE CONSTRUCTION ACTIVITY CEASES PERMANENTLY IN AN AREA, SILT FENCES AND ANY EARTH/DIKES WILL BE REMOVED ONCE PERMANENT MEASURES ARE ESTABLISHED. ALL AREAS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISH GRADE.

WASTE DISPOSAL

a. WASTE MATERIALS
   ALL WASTE MATERIALS WILL BE COLLECTED AND STORED IN SECURELY LIDDED RECEPTACLES. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE WILL BE DEPOSITED IN A DUMPSTER. NO CONSTRUCTION WASTE MATERIALS WILL BE BURIED ON SITE. ALL PERSONEL WILL BE INSTRUCTED REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL BY THE SUPERINTENDENT.
b. HAZARDOUS WASTE
   ALL HAZARDOUS WASTE MATERIALS WILL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATION OR BY THE MANUFACTURER. SITE PERSONNEL WILL BE INSTRUCTED IN THESE PRACTICES BY THE SUPERINTENDENT.
c. SANITARY WASTE
   ALL SANITARY WASTE WILL BE COLLECTED FROM THE PORTABLE UNITS A MINIMUM OF ONCE PER WEEK BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR.

MAINTENACE OF STORMWATER MANAGEMENT FACILITIES

THE PROJECT PROPONENT IS RESPONSIBLE FOR THE MAINTENANCE OF ALL STORMWATER FACILITIES DURING CONSTRUCTION AND THE PORPERTY OWNER IS RESPONSIBLE AFTER CONSTRUCTION IS COMPLETE.

CATCH BASINS & STORMWATER TREATMENT STRUCTURES

1. CATCH BASINS & STORMWATER TREATMENT STRUCTURES SHOULD BE INSPECTED ON A MONTHLY BASIS AND/OR AFTER A MAJOR RAINFALL EVENT TO ASSURE THAT DEBRIS OR SEDIMENTS DO NOT REDUCE THE EFFECTIVENESS OF THE SYSTEM.

SPILL PREVENTION

A. MATERIAL MANAGEMENT PRACTICES
THE FOLLOWING ARE THE MATERIAL MANAGEMENT PRACTICES THAT WILL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL SANITARY EXPOSURE OF MATERIALS AND SUBSTANCES DURING CONSTRUCTION TO STORMWATER RUNOFF:
GOOD HOUSEKEEPING:
THE FOLLOWING GOOD HOUSEKEEPING PRACTICES THAT WILL BE FOLLOWED ON SITE DURING
1. THE CONSTRUCTION PROJECT:
   a. AN EFFORT WILL BE MADE TO STORE ONLY SUFFICIENT AMOUNTS OF PRODUCTS TO DO THE JOB.
   b. ALL MATERIALS STORED ON SITE WILL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR PROPER (ORIGINAL IF POSSIBLE) CONTAINERS AND, IF POSSIBLE, UNDER A ROOF OR OTHER ENCLOSURE.
   c. MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL WILL BE FOLLOWED.
   d. THE SITE SUPERINTENDENT WILL INSPECT DAILY TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS.
   e. SUBSTANCES WILL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER.
   f. WHENEVER POSSIBLE ALL OF A PRODUCT WILL BE USED UP BEFORE DISPOSING OF THE CONTAINER.
2. HAZARDOUS PRODUCTS:
   a. THE FOLLOWING PRACTICES WILL BE USED TO REDUCE THE RISKS ASSOCIATED WITH HAZARDOUS MATERIALS:
   b. PRODUCTS WILL BE KEPT IN THEIR ORIGINAL CONTAINERS UNLESS THEY ARE NOT RESEALABLE
   c. ORIGINAL LABELS AND MATERIAL SAFETY DATA WILL BE RETAINED FOR IMPORTANT PRODUCT INFORMATION.
   d. SURPLUS PRODUCT THAT MUST BE DISPOSED OF WILL BE DISCARDED ACCORDING TO THE MANUFACTURER'S RECOMMENDED METHODS OF DISPOSAL.

B. PRODUCT SPECIFICATION PRACTICES
THE FOLLOWING PRODUCT SPECIFIC PRACTICES WILL BE FOLLOWED ON SITE:
1. PETROLEUM PRODUCTS:
   a. ALL ON SITE VEHICLES WILL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTATIVE MAINTENACE TO REDUCE LEAKAGE. PETROLEUM PRODUCTS WILL BE STORED IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED. ANY ASPHALT BASED SUBSTANCES USED ON SITE WILL BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
2. FERTILIZERS:
   a. FERTILIZERS USED WILL BE APPLIED ONLY IN THE MINIMUM AMOUNTS DIRECTED BY THE SPECIFICATIONS. ONCE APPLIED, FERTILIZER WILL BE WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORMWATER. STORAGE WILL BE IN A COVERED SHED OR ENCLOSED TRAILERS. THE CONTENTS OF ANY PARTIALLY USED BAGS OF FERTILZER WILL BE TRANSFERRED TO A SEALABLE PLASTIC BIN TO AVOID SPILLS.
3. PAINTS:
   a. ALL CONTAINERS WILL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE. EXCESS PAINT WILL NOT BE DISCHARGED TO THE STORM SEWER SYSTEM BUT WILL BE DISPOSED OF PROPERLY ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS OR STATE AND LOCAL REGULATIONS.
4. CONCRETE TRUCKS:
   a. CONCRETE TRUCKS WILL DISCHARGE AND WASH OUT SURPLUS CONCRETE OR DRUM WASH WATER IN A CONTAINED AREA ON SITE.

C. SPILL CONTROL PRACTICES
IN ADDITION TO GOOD HOUSEKEEPING AND MATERIAL MANAGEMENT PRACTICES DISCUSSED IN THE PREVIOUS SECTION THE FOLLOWING PRACTICES WILL BE FOLLOWED FOR SPILL PREVENTION AND CLEANUP:
   a. MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP WILL BE CLEARLY POSTED AND SITE PERSONNEL WILL BE MADE AWARE OF THE PROCEDURES AND THE LOCATION OF THE INFORMATION AND CLEANUP SUPPLIES.
   b. MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP WILL BE KEPT IN THE MATERIAL STORAGE AREA ON SITE. EQUIPMENT AND MATERIALS WILL INCLUDE BUT NOT BE LIMITED TO BROOMS, DUSTPANS, MOPS, RAGS, GLOVES, GOGGLES, KITTY LITTER, SAND, SAWDUST, AND PLASTIC OR METAL TRASH CONTAINERS SPECIFICALLY FOR THIS PURPOSE.
   c. ALL SPILLS WILL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY.
   d. THE SPILL AREA WILL BE KEPT WELL VENTILATED AND PERSONNEL WILL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH A HAZARDOUS SUBSTANCE.
   e. SPILLS OF TOXIC OR HAZARDOUS MATERIAL WILL BE REPORTED TO THE APPROPRIATE STATE OF LOCAL GOVERNMENT AGENCY, REGARDLESS OF THE SIZE.
   f. THE SPILL PREVENTION PLAN WILL BE ADJUSTED TO INCLUDE MEASURES TO PREVENT THIS TYPE OF SPILL FROM RECURRING AND HOW TO CLEANUP THE SPILL IF IT OCCURS. A DESCRIPTION OF THE SPILL, ITS CAUSE, AND THE CLEANUP MEASURES WILL BE INCLUDED.
   g. THE SITE SUPERINTENDENT RESPONSIBLE FOR DAY–TO–DAY SITE OPERATIONS WILL BE THE SPILL PREVENTION AND CLEANUP COORDINATOR.

THE PROJECT PROPONENT IS REQUIRED TO MANAGE CONSTRUCTION TO MEET THE REQUIREMENTS AND INTENT OF RSA 430:53 AND AGR 3800 RELATIVE TO CONTROLLING INVASIVE SPECIES AND CONTROLLING FUGITIVE DUST IN ACCORDANCE WITH ENV–A 1002.

AGR 3800 PROHIBITED INVASIVE PLANT SPECIES RULES

THE RULE, AGR 3800, STATES: NO PERSON SHALL COLLECT, TRANSPORT, IMPORT, EXPORT, MOVE, BUY SELL, DISTRIBUTE, PROPAGATE OR TRANSPLANT ANY LIVING AND VIABLE PORTION OF ANY PLANT SPECIES, WHICH INCLUDED ALL OF THEIR CULTIVARS AND VARIETIES, LISTED IN TABLE 3800.1, NEW HAMPSHIRE PROHIBITED INVASIVE SPECIES LIST'. A COMPLETE COPY OF THE RULES CAN BE ACCESSED ON THE INTERNET AT HTTP://AGRICULTURE.NH.GOV/TOPICS/PLANTS_INSECTS.HTM.

ENV–A 1002 FUGITIVE DUST; PRECAUTIONS TO PREVENT, ABATE, AND CONTROL FUGITIVE DUST.

a. ANY PERSON ENGAGED IN ANY ACTIVITY WITHIN THE STATE EMITS FUGITIVE DUST, OTHER THAT THOSE LISTED IN ENV–A 1002.02 (b), SHALL TAKE PRECAUTIONS THROUGHOUT THE DURATION OF THE ACTIVITY IN ORDER TO PREVENT, ABATE, AND CONTROL THE EMISSION OF FUGITIVE DUST.
b. PRECAUTIONS REQUIRED BY (a) ABOVE, SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:
   i) THE USE OF WATER OR HYDROPHILIC MATERIAL ON OPERATIONS OR SURFACES, OR BOTH;
   ii) THE APPLICATION OF ASPHALT, WATER, OR HYDROPHILIC MATERIAL, OR TARPS OR OTHER SUCH COVERS TO MATERIAL STOCKPILES;
   iii) THE USE OF HOODS, FANS, FABRIC FILTERS, OR OTHER DEVICES TO ENCLOSE AND VENT AREAS WHERE MATERIALS PRONE TO PRODUCING FUGITIVE DUST ARE HANDLED;
   iv) THE USE OF CONTAINMENT METHODS FOR SANDBLASTING OR SIMILAR OPERATIONS; AND
   v) THE USE OF VACUUMS OR OTHER SUCTION DEVICES TO COLLECT AIRBORNE PARTICULATE MATTER.

PER 153–10 F:

ALL SITE IMPROVEMENTS WHICH REQUIRE BLASTING OF LAND SHALL MEET THE FOLLOWING REQUIRMENTS PRIOR TO ANY BLASTING OCCURING.

1. THE APPLICANT SHALL PREPARE A PRE–BLAST SURVEY OF ALL STRUCTURES WITHIN FIVE HUNDRED (500) FEET OF THE EXTERNAL BOUNDARIES OF THE PROPOSED LOT TO BE DEVELOPED. THIS SURVEY, ALONG WITH A MONITORING PLAN, SHALL BE ON FILE WITH THE DOVER FIRE AND RESCUE. UPON RECOMMENDATIONS OF THE CHIEF, THE PLANNING BOARD MAY REQUIRE A PRE–BLAST SURVEY OF ALL STRUCTURES WITHIN ONE THOUSAND (1000) FEET.
2. THE APPLICANT SHALL HOLD A NEIGHBORHOOD MEETING TO REVIEW THE BLASTING PLAN AND MAY INVITE REPRESENTATIVES OF THE FIRE AND RESCUE AND THE BLASTING COMPANY IN ATTENDANCE, PRIOR TO ANY ON–SITE BLASTING. ABUTTERS WITHIN ONE THOUSAND (1000) FEET OF THE EXTERNAL BOUNDARY OF THE PROJECT PARCEL SHALL BE NOTIFIED BY THE CERTIFIED MAIL (PAID FOR BY THE APPLICANT) OF THE MEETING NO LESS THAN TEN (10) DAYS PRIOR TO THE MEETING AND NO MORE THAN FIFTEEN (15) DAYS PRIOR TO THE MEETING. THE NOTICE SHALL STATE THE TIME AND DATE OF THE BLASTING AND CONTAIN A MAP SHOWING THE BLASTING AREA, THE 1,000–FOOT–RADIUS AREA, AND THE 500–FOOT–RADIUS AREA.
3. PERMIT HOLDERS SHALL BE IN COMPLIANCE WITH NFPA 495, EXPLOSIVE MATERIALS CODE, IN ADDITION TO ALL OTHER ORDINANCES AND CODES SET FORTH IN THE CITY OF DOVER CODE, § 153–14A, STORMWATER MANAGEMENT, EROSION CONTROL AND FLOOD HAZARDS, OF THIS CHAPTER AND THE CITY OF DOVER FIRE PREVENTION CODE, WHICH SPECIFICALLY PROHIBITS THE OVERNIGHT STORAGE OF EXPLOSIVES OR BLASTING AGENTS. FURTHER, ALL STORAGE MAGAZINES SHALL BE LOCKED IN THE OPEN POSITION AT THE END OF THE DAY'S OPERATION FOR EASY INSPECTION BY CITY OFFICIALS.
4. BLASTING PERMITS MAY BE OBTAINED BY CALLING THE DOVER FIRE AND RESCUE DURING NORMAL BUSINESS HOURS. THE PERMITS ARE ONLY ACTIVE FOR THE DATES AND TIME SPECIFIED ON THE PERMIT.
5. PERMIT HOLDERS SHALL HOLD INSURANCE AGAINST CLAIMS FOR DAMAGES FOR PERSONAL INJURY AND PROPERTY WHICH MAY ARISE FROM THE PERFORMANCE OF THE WORK.
6. HOURS OF OPERATION FOR THE BLASTING SHALL BE NO EARLIER THAN 8:00AM AND NO LATER THAN 6:00PM, MONDAY THROUGH FRIDAY, EXCLUDING FEDERAL HOLIDAYS.

WINTER CONSTRUCTION NOTES

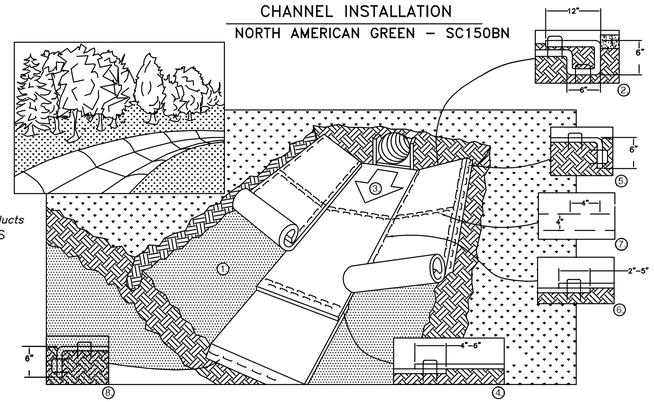
1. ALL PROPOSED POST–DEVELOPMENT VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE PLACEMENT 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.
2. ALL SLOPES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH SHALL BE STABILIZED WITH STONE OR EROSION CONTROL BLANKETS.
3. AFTER OCTOBER 15TH, INCOMPLETE ROAD SURFACES SHALL BE PROTECTED WITH A MINIMUM OF 3–INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 403.3, OR IF CONSTRUCTION IS TO CONTINUE THROUGH THE WINTER SEASON BE CLEARED OF ANY ACCUMULATED SNOW AFTER EACH STORM EVENT.

ENV–WQ 1510: BEST MANAGEMENT PRACTICES FOR BLASTING

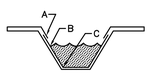
1) ALL ACTIVITIES ASSOCIATED WITH BLASTING NEED TO BE OPTIMIZED TO PREVENT THE RELEASE OF CHEMICALS ASSOCIATED WITH BLASTING ACTIVITIES TO THE ENVIRONMENT.
2) IF MORE THAN 5,000 CY OF ROCK REMOVAL IS REQUIRED DRINKING WATER WELLS MUST BE IDENTIFIED AND LOCATED WITHIN 2000 FEET OF THE PROPOSED BLASTING ACTIVITIES. DEVELOP A GROUNDWATER QUALITY SAMPLING PROGRAM TO MONITOR FOR NITRATE AND NITRITE EITHER IN THE DRINKING WATER SUPPLY WELLS OR IN OTHER WELLS THAT ARE REPRESENTATIVE OF THE DRINKING WATER SUPPLY WELLS IN THE AREA. THE PLAN MUST INCLUDE PRE AND POST BLAST WATER QUALITY MONITORING AND BE APPROVED BY NHDES PRIOR TO INITIATING BLASTING. THE GROUNDWATER SAMPLING PROGRAM MUST BE IMPLEMENTED ONCE APPROVED BY NHDES.
3) THE FOLLOWING BEST MANAGEMENT PROCEDURES FOR BLASTING SHALL BE COMPLIED WITH:
   (1) LOADING PRACTICES. THE FOLLOWING BOREHOLE 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 GROUND

CHANNEL INSTALLATION
NORTH AMERICAN GREEN – SC150BN

NORTH AMERICAN GREEN
EROSION CONTROL *Products Guaranteed* SOLUTIONS



1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE CHANNEL BY ANCHORING THE RECP's IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF RECP's EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP's 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 RECP's BACK OVER SEED AND COMPACTED SOIL. SECURE RECP's OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" ACROSS THE WIDTH OF THE RECP's.
3. ROLL CENTER RECP's IN DIRECTION OF WATER FLOW IN BOTTOM OF CHANNEL. RECP's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. PLACE CONSECUTIVE RECP's 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 RECP's.
5. FULL LENGTH EDGE OF RECP's AT TOP OF SIDE SLOPES MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN A 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
6. ADJACENT RECP's MUST BE OVERLAPPED APPROXIMATELY 2" – 5" (DEPENDING ON RECP's TYPE) AND STAPLED.
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 RECP's MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN A 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. NOTE: * IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY ANCHOR THE RECP's.



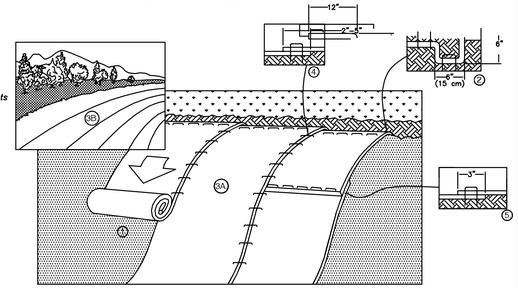
CRITICAL POINTS
A. OVERLAPS AND SEAMS
B. PROJECTED WATER LINE
C. CHANNEL BOTTOM/SIDE SLOPE VERTICES

NOTE:
* 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 RECP's.

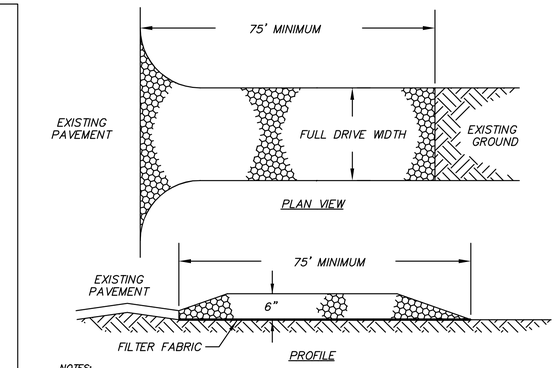
SLOPE INSTALLATION
NORTH AMERICAN GREEN – SC150BN

NORTH AMERICAN GREEN
EROSION CONTROL *Products Guaranteed* SOLUTIONS



1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
   NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECP's IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH WITH APPROXIMATELY 12" (30cm) OF RECP's EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP's WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30 CM) PORTION OF RECP's BACK OVER SEED AND COMPACTED SOIL. SECURE RECP's OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30 CM) APART ACROSS THE WIDTH OF THE RECP's.
3. ROLL THE RECP's (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. RECP's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM™, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. THE EDGES OF PARALLEL RECP's MUST BE STAPLED WITH APPROXIMATELY 2" – 5" (5 CM – 12.5 CM) OVERLAP DEPENDING ON RECP's TYPE.
5. CONSECUTIVE RECP's SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5 CM) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30 CM) APART ACROSS ENTIRE RECP's WIDTH.
   NOTE:
   *IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15 CM) MAY BE NECESSARY TO PROPERLY SECURE THE RECP's.

NOTE: THE USE OF WELDED PLASTIC OR BIODEGRADABLE PLASTIC NETTING OR THREAD IN EROSION CONTROL MATTING IS PROHIBITED. THE USE OF WILDLIFE FRIENDLY ORGANIC MATERIALS IS RECOMMENDED.

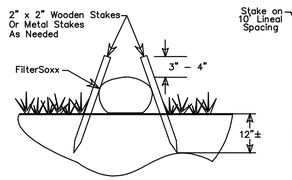


NOTES:
1. *SEE EROSION CONTROL NOTES BELOW FOR MATERIAL, INSTALLATION AND MAINTENANCE REQUIREMENTS.*
2. *TO BE INSTALLED AT EACH POINT OF EGRESS FROM THE WORK AREA.*

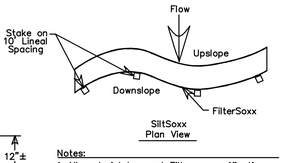
STABILIZED CONSTRUCTION ENTRANCE

1. SPECIFICATIONS
   A. AGGREGATE SIZE: USE THREE (3) INCHES STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
   B. AGGREGATE THICKNESS: NOT LESS THAN SIX (6) INCHES.
   C. WIDTH TEN (10) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH OF POINTS WHERE INGRESS OR EGRESS OCCURS.
   D. LENGTH: AS REQUIRED, BUT NOT LESS THAN SEVENTY-FIVE (75) FEET. PIPING OF SURFACE WATER UNDER ENTRANCE SHALL BE PROVIDED AS REQUIRED.
   E. GEOTEXTILE: TO BE PLACED OVER THE ENTIRE AREA TO BE COVERED WITH AGGREGATE.
   F. CRITERIA FOR GEOTEXTILE: THE FABRICS SHALL BE TREVIA SPUNBOND 1135, MIRAFI 600X OR EQUAL.
2. MAINTENANCE
   THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH AGGREGATE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING STORM DRAINS, DITCHES, OR WATERWAYS.

STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE



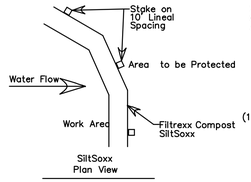
FilterSoxx Section
At Ends of Run Cross Stakes



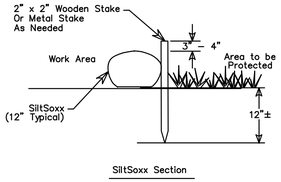
SiltSoxx Plan View

Notes:
1. All material to meet Filtrexx specifications
2. FilterSoxx compost/soil/rock/seed fill to meet application requirements.
3. Compost material to be dispersed on site, as determined by Engineer.

FilterSoxx Staking Details



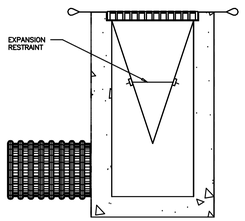
SiltSoxx Plan View



SiltSoxx Section

Notes:
1. All material to meet Filtrexx specifications
2. SiltSoxx compost/soil/rock/seed fill to meet application requirements.
3. SiltSoxx depicted is for minimum slopes. Greater slopes may require larger socks per the Engineer.
4. Compost material to be dispersed on site, as determined by Engineer.

SiltSoxx Details
NOT TO SCALE



INSTALLATION DETAIL

SILTSACK®
SPECIFICATIONS

NOTE: THE SILTSACK WILL BE MANUFACTURED FROM A WOVEN POLYPROPYLENE FABRIC THAT MEETS OR EXCEEDS THE FOLLOWING SPECIFICATIONS. AS SUPPLIED BY AH HARRIS OF PORTSMOUTH OR APPROVED EQUAL

REGULAR FLOW SILTSACK®
(FOR AREAS OF LOW TO MODERATE PRECIPITATION AND RUN-OFF)

PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	300 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20 %
PUNCTURE	ASTM D-4833	120 LBS
MULLEN BURST	ASTM D-3786	800 PSI
TRAPEZOID TEAR	ASTM D-4533	120 LBS
UV RESISTANCE	ASTM D-4355	80 %
APPARENT OPENING SIZE	ASTM D-4751	40 US SIEVE
FLOW RATE	ASTM D-4491	40 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	0.55 SEC -1

HI-FLOW SILTSACK®
(FOR AREAS OF MODERATE TO HEAVY PRECIPITATION AND RUN-OFF)

PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	265 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20 %
PUNCTURE	ASTM D-4833	135 LBS
MULLEN BURST	ASTM D-3786	420 PSI
TRAPEZOID TEAR	ASTM D-4533	45 LBS
UV RESISTANCE	ASTM D-4355	90 %
APPARENT OPENING SIZE	ASTM D-4751	20 US SIEVE
FLOW RATE	ASTM D-4491	200 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	1.5 SEC -1

OIL-ABSORBANT SILTSACK®
(FOR AREAS WHERE THERE IS A CONCERN FOR OIL RUN-OFF OR SPILLS)

DEPENDING ON YOUR PARTICULAR APPLICATION, THE SILTSACK® CAN BE MADE FROM EITHER ONE OF THE ABOVE FABRICS WITH AN OIL-ABSORBANT PILLOW INSERT OR, MADE COMPLETELY FROM AN OIL-ABSORBANT SILTSACK®, WITH A WOVEN PILLOW INSERT.

DETAIL OF INLET SEDIMENT CONTROL DEVICE

SEEKING REPORTS OF RARE TURTLES

The NH Fish & Game Department is collecting observations of four turtle species:

Blanding's turtle (state endangered)
- Large, dark/black domed shell with lighter speckles
- Distinct yellow throat/chin
- Aquatic but often moves on land

Wood turtle (special concern)
- Sculpted, pyramidal brownish shell
- Orange around neck and limbs
- River/stream turtle spending many months on land

Eastern box turtle (state endangered)
- Small terrestrial turtle with highly domed shell
- Irregular yellow or orange markings over brown/black base

Spotted turtle (state threatened)
- Small, mostly aquatic with black or dark brown with yellow spots.
- Fairly flat shell compared to Blanding's turtle

Report sightings to RAARP@wildlife.nh.gov or 603-271-2461 *Please report promptly, noting specific location and date – Photographs strongly encouraged*

NOTES:
1. *ALL OUTSIDE CONSTRUCTION PERSONNEL SHALL RECEIVE TRAINING IN THE IDENTIFICATION OF RARE TURTLE SPECIES AND MADE AWARE OF THEIR PROTECTED STATUS.*
2. *THE USE OF WELDED PLASTIC OR 'BIODEGRADABLE PLASTIC' NETTING OR THREAD IN EROSION CONTROL MATTING IS PROHIBITED*
3. *THE USE OF EROSION CONTROL BERM, WHITE FILTREXX DEGRADABLE WOVEN SILT SOCK, OR 'WILDLIFE FRIENDLY' WOVEN ORGANIC MATERIAL (E.G. COCO OR JUTE MATTING SUCH AS NORTH AMERICAN GREEN SC150BN OR EQUIVALENT) ARE ACCEPTABLE FOR USE*
4. *IF WOOD, SPOTTED, OR BLANDING'S TURTLES ARE FOUND LAYING EGGS IN THE WORK AREA, PLEASE CONTACT MELISSA DOPERALSKI AT 271-1738 or JOSH MEGYESY AT 271-1125 FOR FURTHER INSTRUCTIONS.*

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY
PLANNING FILE NO.: P21_

NO.	REVISION	APP'D	DATE

DATE: 8-6-21
SCALE: N/A
DRAWN BY: SRD
DESIGN BY: JRG
APPROVED BY: SJH
PROJECT NO: 21041
FILE: SITE

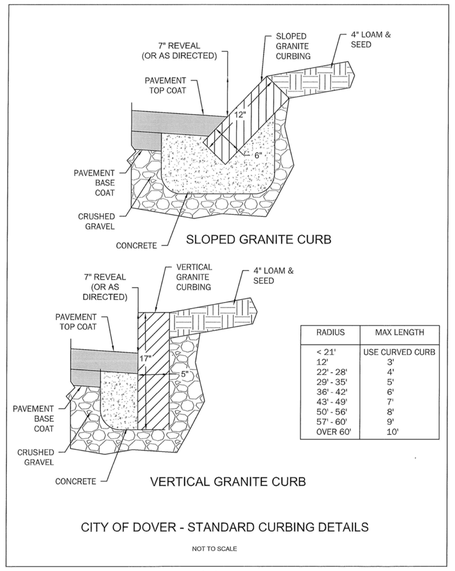
CIVILWORKS NEW ENGLAND
CIVIL & WATERSHED ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

AMERICAN DURAFILM CO. INC.
55 BOYNTON ROAD
P.O. BOX 6770
HOLLISTON, MA 01746

MANUFACTURING/COMMERICAL BUILDING
INNOVATION WAY
DOVER, NH

DETAILS

10

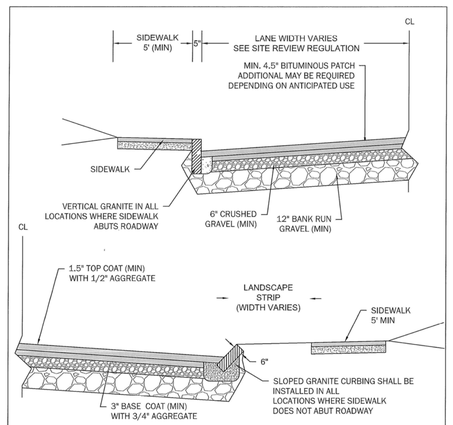


RADIUS	MAX LENGTH
< 21'	USE CURVED CURB
12'	3'
22' - 28'	4'
29' - 35'	5'
36' - 42'	6'
43' - 49'	7'
50' - 56'	8'
57' - 60'	9'
OVER 60'	10'

CITY OF DOVER - STANDARD CURBING DETAILS

NOT TO SCALE

Appendix B Page 6



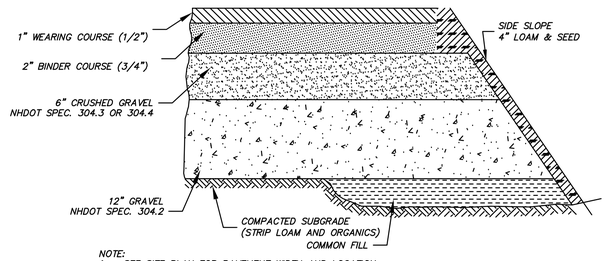
NOTES:

1. THIS DETAIL IS FOR GENERAL REVIEW PURPOSES ONLY, FINAL DESIGN SHALL BE BASED ON SPECIFIC SITE CONDITIONS.
2. SIDEWALK LOCATION SHALL BE AS APPROVED BY THE CITY OF DOVER.

CITY OF DOVER - PUBLIC ROADWAY CROSS SECTION

NOT TO SCALE

Appendix B Page 4

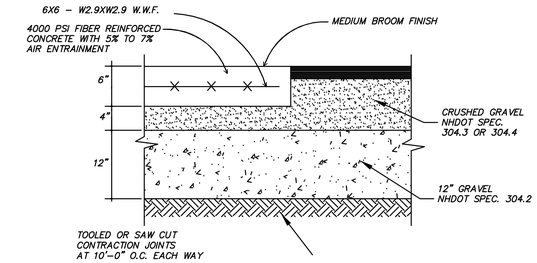


NOTE:

1. SEE SITE PLAN FOR PAVEMENT WIDTH AND LOCATION.
2. SEE GRADING, DRAINAGE AND EROSION CONTROL PLAN FOR PAVEMENT SLOPE AND CROSS-SLOPE.
3. GEOTEXTILE FABRIC MAYBE REQUIRED UNDER THE ROADWAY AND /OR THE PARKING AREAS AS REQUIRED BY THE ENGINEER BASED UPON SITE CONDITIONS.

TYPICAL PAVEMENT SECTION

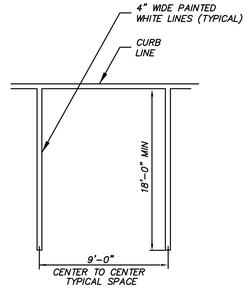
NOT TO SCALE



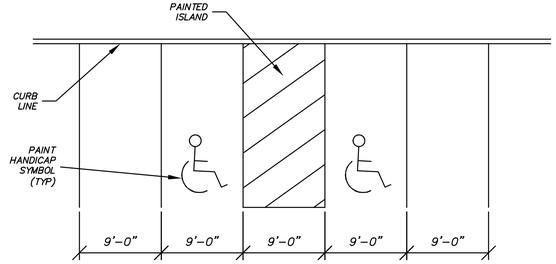
NOTE: PITCH CONCRETE PAD GRADING TO CENTER

DUMPSTER DETAIL

NOT TO SCALE



STANDARD PARKING STALL



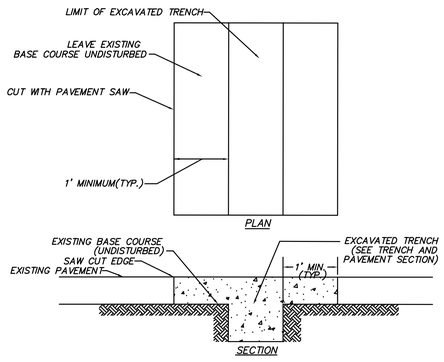
HANDICAP PARKING LAYOUT

NOT TO SCALE

NOTE: SYMBOL TO BE PAINTED IN ALL HANDICAPPED SPACES

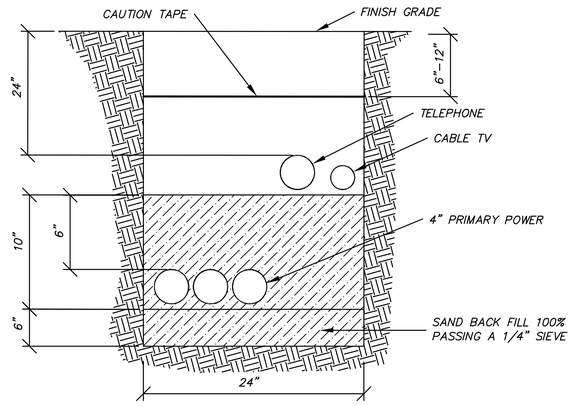
PAINTED HANDICAP SYMBOL

NOT TO SCALE



TRENCH PATCH

NOT TO SCALE



1. TELEPHONE CONDUIT SHALL BE 3" SCHEDULE 40 PVC, WITH STEEL SWEEPS AT RISER POLE, 90° BENDS AND AT BUILDING.
2. LEAVE PULL ROPE IN ALL CONDUITS FOR CABLE INSTALLATION.
3. FOR COMPLETE SPECIFICATIONS SEE "PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE CONSTRUCTION SPECIFICATIONS FOR UNDERGROUND CONDUIT SYSTEMS".
4. CONTRACTOR SHOULD VERIFY THE NUMBER & SIZE OF CONDUIT WITH THE APPROPRIATE UTILITIES.

UTILITY TRENCH

NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

PLANNING FILE NO.: P21_

NO.	REVISION	APP'D	DATE

DATE: 8-6-21
SCALE: N/A
DRAWN BY: SRD
DESIGN BY: JRG
APPROVED BY:SJH
PROJECT NO: 21044
FILE: SITE

CIVILWORKS NEW ENGLAND
CIVIL & WATERFRONT ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

DETAILS

MANUFACTURING/COMMERICAL BUILDING
INNOVATION WAY
DOVER, NH

AMERICAN DURAFILM CO. INC.
55 BOYNTON ROAD
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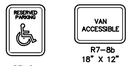
11



R7-8a
12" x 18"

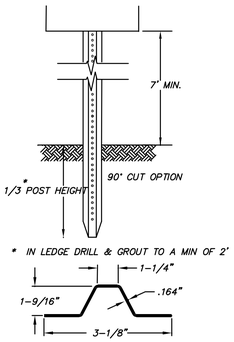
R7-8b
18" x 12"

6" RED LETTERS
WHITE BACK GROUND
FIRE SIGN
12" x 18"

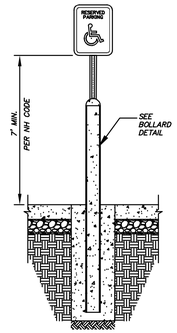
NOTE:
1. ALL SIGNS TO BE INSTALLED AS INDICATED IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.

LENGTH: AS REQUIRED
WEIGHT PER LINEAR FOOT: 2.50 LBS (MIN.)
HOLES: 3/8" DIAMETER, 1" C-C FULL LENGTH
STEEL: SHALL CONFORM TO ASTM A-499 (GRADE 60) OR ASTM A-576 (GRADE 1070 - 1080)
FINISH: SHALL BE PAINTED WITH TWO COATS OF AN APPROVED MEDIUM GREEN

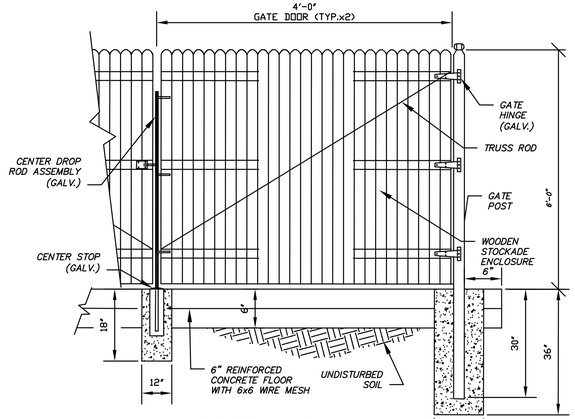
BAKED ON OR AIR DRIED, PAINT OF WEATHER RESISTANT QUALITY.
ALL FABRICATION SHALL BE COMPLETE BEFORE PAINTING.



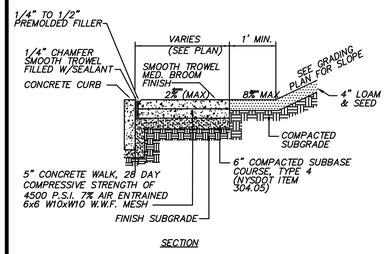
SIGN LEGEND & SIGN POST
NOT TO SCALE



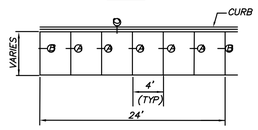
SIGN IN BOLLARD
NOT TO SCALE



STOCKADE DUMPSTER ENCLOSURE DETAIL
NOT TO SCALE

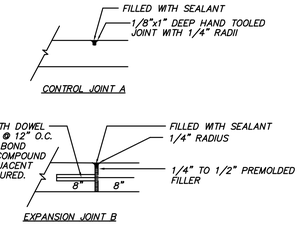


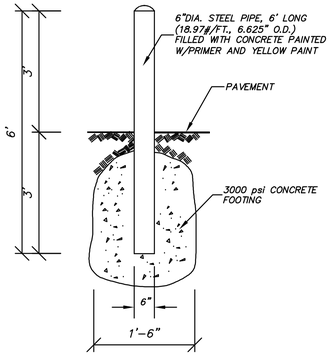
SECTION



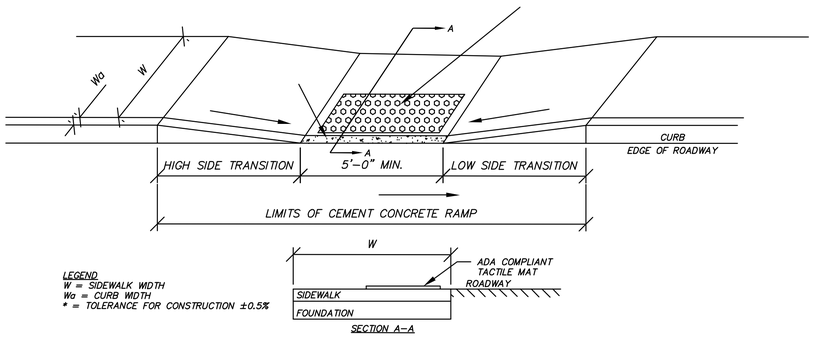
PLAN

CONCRETE SIDEWALK
NOT TO SCALE

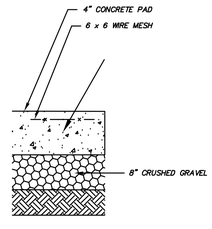




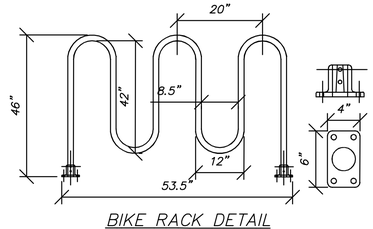
BOLLARD DETAIL
NOT TO SCALE



SIDEWALK APRON
NOT TO SCALE



BIKE RACK PAD DETAIL
NOT TO SCALE



BIKE RACK DETAIL
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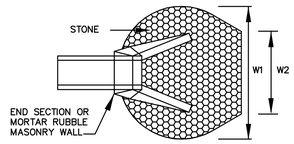
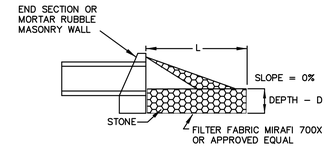
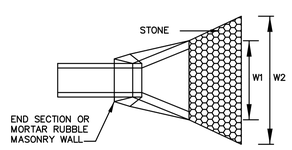


PLAN

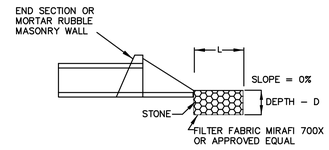


SECTION

STONE APRON OUTLET PROTECTION DETAIL
OUTLET TO DEFINED CHANNEL



PLAN



SECTION

STONE APRON OUTLET PROTECTION DETAIL
OUTLET TO FLAT AREA, NON DEFINED CHANNEL

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.

STONE GRADATION

% OF WEIGHT SMALLER THAN THE GIVEN SIZE	SIZE OF STONE
100	1.5 TO 2.0 D50
85	1.3 TO 1.8 D50
50	1.0 TO 1.5 D50
15	0.3 TO 0.5 D50

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.

OUTLET FROM	W1(ft)	W2(ft)	L(ft)	D (ft)	D50(IN)	CHANNEL TYPE
PCB1	4	18	14	1	6	UNDEFINED
PCB4	12	5	12	1	6	DEFINED
TS1	4.5	16	22	1	6	UNDEFINED
OS-1	2	5	5	1	6	UNDEFINED

RIP RAP OUTLET PROTECTION
NOT TO SCALE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

PLANNING FILE NO.: P21_

NO.	REVISION	APP'D	DATE

DATE: 8-6-21
SCALE: N/A
DRAWN BY: SRD
DESIGN BY: JRG
APPROVED BY:SJH
PROJECT NO:21044
FILE: SITE

CIVILWORKS NEW ENGLAND
CIVIL & WATERFRONT ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

DETAILS

MANUFACTURING/COMMERICAL BUILDING
INNOVATION WAY
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55 BOYNTON ROAD
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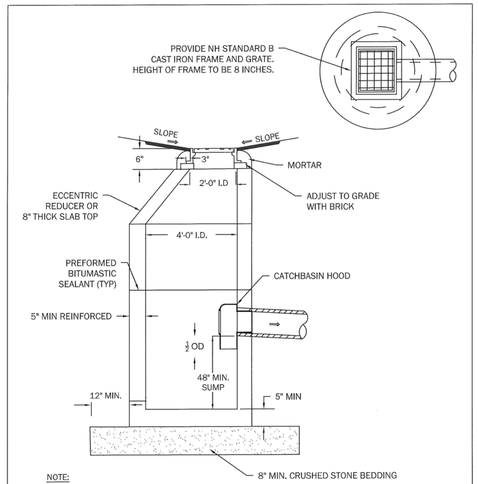
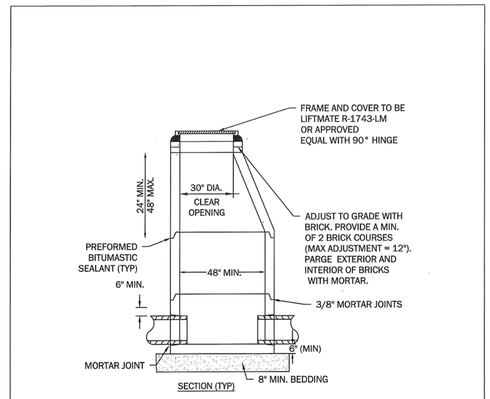
12



CITY OF DOVER - CATCHBASIN

NOT TO SCALE

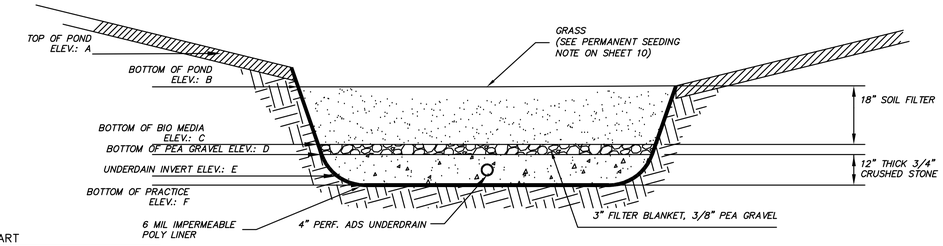


CITY OF DOVER - DRAIN MANHOLE

NOT TO SCALE

SPECIFICATIONS

1. All construction shall conform with the State of New Hampshire Department of Transportation (NHDOT), "Standard Specifications for Road and Bridge Construction"; hereinafter referred to as the "Standard Specifications".
2. Storm drains shall be ADS N12 or approved equal, and shall be jointed with neoprene "O" rings.
3. Catch basins and manholes shall be pre-cast reinforced concrete designed by an engineer registered in New Hampshire, and able to withstand loadings of 8 tons (H20 Loading).
4. Manholes shall have cast iron frames and covers with 30" inside diameter openings. A 3-inch (minimum) letter "D" for drain shall be plainly cast into the center of each cover.
5. Catch basins and manholes shall be adjusted to grade with courses of brick. Maximum adjustment to grade shall be 12 inches. Frames shall be set on a full bed of mortar, true to grade and concentric with the masonry. All voids between the top of the structure and the bottom flange of the frame shall be completely filled to make a watertight fit. A ring of mortar at least one inch thick and pitched to shed water away from the frame, shall be placed over and around the outside of the bottom flange. The mortar shall extend to the outer edge of the masonry all around its circumference and shall be finished smooth. No visible leakage will be permitted.
6. Invert channels of sewer manholes shall be formed smoothly to the largest pipe radius. Changes in grade shall be formed smoothly and evenly. The floor of the structure outside the channels shall be sloped towards the channels at approximately 1/2 inch per foot. The floor at the channel shall match the crown of the largest pipe.
7. Trench construction will conform with Section 603.3.1 of the Standard Specifications (1974).
8. Wood sheeting or a suitable trench box shall be used to support the trench as necessary. If wood sheeting is used, it shall be driven at a distance of 1 foot from the outside diameter of the pipe to a depth 6 inches below the invert of the pipe. Wood sheeting shall be cut off and left in place to an elevation not less than 1 foot above the top of the pipe, but not greater than 3 feet below the finished grade.
9. Bedding shall conform with Section 603.3.2 of the Standard Specifications (1974).
10. Backfill material will conform with Section 603.3.5 of the Standard Specifications (1974) and, in addition, shall exclude debris, pieces of pavement, organic matter, top soil, all wet or soft muck, peat or clay, all excavated ledge material, frozen material, all rocks over 6 inches in largest dimension, or any material which, as determined by the Engineer, will not provide sufficient support or maintain the completed construction in a stable condition. Backfill shall not be placed on frozen or previously frozen material.
11. All backfill and bedding compaction shall meet the requirements of AASHO T 99 Method C. Density shall be 95 percent. Compaction shall be 6 inch lifts for bedding and backfill to a plane 1 foot above the pipe and in 12 inch lifts thereafter by an approved mechanical compactor.
12. Should frozen material be encountered, it shall not be placed in the backfill nor shall backfill be placed upon frozen material. Previously frozen material shall be removed as required before new backfill is placed.
13. The Contractor shall be responsible for any damage to frames and grates during and from the time of removal from the existing structure to and during the time of resetting, and shall replace in kind any damaged frames or grates at no additional compensation.
14. All trenches will be covered and debris, including any rejected materials, shall be removed daily. Strict safety precautions shall be maintained at all times.
15. Location of utilities shown on the plans are approximate.
    a) The Contractor shall, 48 hours prior to construction, notify the utility companies and have all utilities in the vicinity of the construction marked in the field.
    b) After the utilities have been located and prior to construction, the Contractor with the Engineer, shall layout the proposed drainage system in the field and rectify any utility conflicts which may be found.
    c) Any conflicts with utilities found during construction by the Contractor shall be immediately brought to the attention of the Engineer and the Utility Company and properly rectified.
    d) The Contractor is responsible for the cost of repair for any utilities damaged during construction. The Contractor shall contact the Utility Company to repair any damages, however, the Contractor may make appropriate repairs with the Utility Company's permission.
16. Complete shop drawings for pipe, manholes, catch basins, frames, grates and covers shall be submitted in triplicate for approval by the Engineer prior to the start of construction. Each shop drawing shall be checked and initialized by the Contractor to indicate approval before it is submitted to the Engineer.
17. Shop drawings for flat concrete covers shall be stamped prior to submission for approval by a New Hampshire Registered Professional Engineer.
18. Brick masonry for setting frames and brick and mortar plugs shall conform to the Standard Specification Section 604.2.4.



BIORETENTION POND SYSTEM CHART

POND	POND ELEVATION					
	A	B	C	D	E	F
BIO1	179.10	175.0	173.50	173.25	172.58	172.25

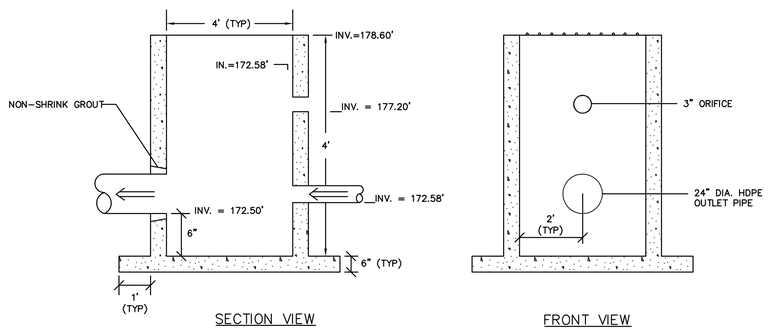
ACCEPTABLE PARTICLE SIZE DISTRIBUTION OF FINAL BIORETENTION SOIL MIX

MEDIA TYPE	SIEVE #	SIZE (in)	SIZE (mm)	% PASSING
COARSE SAND	4	0.187	4.76	100
MEDIUM SAND	10	0.079	2.00	95
FINE SAND	40	0.017	0.42	40–15
SILTS	200	0.003	0.075	10–20
CLAYS	<200	PAN	PAN	0–5

BIORETENTION SOIL MEDIA COMPONENTS:*

- AMOUNTS MIXED BY TOTAL VOLUME
- 60–85% – SAND (0.5 TO 2.0 mm) (SEE SPECS ABOVE)
- 15–25% – LOAM OR TOPSOIL
- 3–8% – ORGANIC MATTER
- 0–5% – WATER TREATMENT RESIDUALS OR IRON FILINGS**

*ALTERNATELY, USE MEDIA SPECIFIED IN THE ALTERATION OF TERRAIN RULES, Env-Wq 1508.07(k)
**THIS IS AN AMENDMENT USED FOR ENHANCED PHOSPHORUS ADSORPTION



SECTION VIEW

FRONT VIEW

NOTE:

1) ALL OUTLET STRUCTURES SHALL BE PRE CAST WITH A MINIMUM CONCRETE STRENGTH OF 4,000 PSI @ 28 DAYS.
2) THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR EACH STRUCTURE FOR REVIEW BY THE TOWN.
3) SUMPS SHALL NOT BE GREATER THAN 6 INCHES.

OUTLET STRUCTURE BIORETENTION BASIN 1 (OS-1) DETAIL

NOT TO SCALE

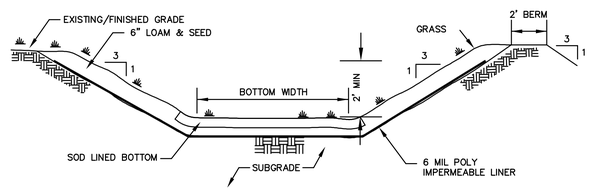
NOTES:

1. *DO NOT BEGIN CONSTRUCTION OF THE BIORETENTION AREA UNTIL LAWN AREA ON THE ENTIRE SITE AREA ESTABLISHED WITH AT LEAST 80 PERCENT TURF. FILTER ALL DRAIN INLETS IN THE SEDIMENT FOREBAYS TO PREVENT SILTATION INTO THE BIORETENTION AREA.*
2. *THE RAIN GARDEN SUBGRADE SHALL BE EXCAVATED TO THE DESIGN DEPTH PLUS TWO (2) INCHES. AT THAT DEPTH FOUR (4) INCHES OF COMPOST SHALL BE TILLED INTO THE EXISTING SOILS SUCH THAT THE SOILS ARE WELL MIXED.*
3. *DO NOT DRIVE CONSTRUCTION EQUIPMENT ON FILTER SUBGRADE NOR ON THE FILTER MATERIAL. INSTALL FILTER MATERIAL BY MEANS OF AN EXCAVATOR LOCATED ADJACENT TO THE FILTER AREA.*
4. *MATERIALS: CRUSHED STONE LAYER SHALL MEET NHDOT 304.4. STONE SHALL CONTAIN NO MORE THAN 5% FINES PASSING THE #200 SIEVE. TOPSOIL SHALL CONTAIN 15 TO 25% FINES PASSING THE #200 SIEVE. MULCH SHALL BE SHREDDED HARDWOOD, AGES IN A STOCKPILE OR STORED FOR AT LEAST 12 MONTH. NON-WOVEN GEOTEXTILE BE 4 TO 6 OZ. PER SQUARE YARD WITH A.O.S. OF #70 SIEVE OR LOWER, AND A MINIMUM FLOW RATE OF 125 GAL PER SQUARE FEET. UNDERDRAIN SHALL BE PERFORATED 6" PVC OR TRIPLE WALL PE PIPE.*
5. *REFER TO PERMANENT SEEDING NOTE ON SHEET 10 FOR GRASS SEED MIXES AND PLANTINGS. FERTILIZATION OF THE FILTER AREA SHALL BE AVOIDED UNLESS ABSOLUTELY NECESSARY TO ESTABLISH VEGETATION.*
6. *INITIAL ESTABLISHMENT: DURING THE FIRST 2-3 MONTHS OF ESTABLISHMENT WATER THE GRASS ON A WEEKLY BASIS (TO SUPPLEMENT RAINFALL FOR TOTAL OF 1 INCH PER WEEK).*
7. *ANNUAL MAINTENANCE: IN THE SPRING OF EACH YEAR, ANY DEAD VEGETATION SHALL BE REMOVED TO ALLOW FOR NEW GROWTH, AND ANY ACCUMULATED SEDIMENT (NORMALLY AT THE ENTRANCE TO THE GARDEN) SHALL ALSO BE REMOVED. DURING THE GROWING SEASON THE RAIN GARDEN SHALL BE WEEDED TWO (2) TIMES AND ADDITIONAL HARDWOOD MULCH SHALL BE ADDED AS NEEDED TO ASSIST IN WEED SUPPRESSION. TURF AT FILTER SHALL BE MOWED NO MORE THAN 3 TIMES PER GROWING SEASON. IF WATER PONDS ON THE SURFACE FOR MORE THAN 24 HOURS DURING THE FIRST YEAR OR 72 HOURS THEREAFTER, THE FILTER SURFACE SHALL BE AERATED WITH DEEP TINES OR THE SURFACE REPLACED.*
8. *GRASS SEED SHALL BE NATIVE NON-INVASIVE SPECIES, SEE LANDSCAPE ARCHITECT DRAWINGS.*

BIORETENTION SYSTEM DETAIL

(SEE GRADING PLAN FOR LOCATION)

NOT TO SCALE



GRASSED TREATMENT SWALE

NOTES:

1. *THE FOUNDATION AREA OF THE WATERWAY SHALL BE CLEARED AND GRUBBED OF ALL TREES, BRUSH, STUMPS, AND OTHER OBJECTIONABLE MATERIAL. MATERIALS REMOVED SHALL BE DISPOSED OF SO THEY WILL NOT INTERFERE WITH THE CONSTRUCTION OR PROPER FUNCTIONING OF THE WATERWAY.*
2. *THE WATERWAY SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE AND CROSS SECTION AS REQUIRED TO MEET THE DESIGN CRITERIA. THE WATERWAY SHALL BE FREE OF IRREGULARITIES WHICH WILL IMPEDE NORMAL FLOW.*
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 WATERWAY. EARTH REMOVED AND NOT NEEDED IN CONSTRUCTION SHALL BE SPREAD OR DISPOSED OF SO IT WILL NOT INTERFERE WITH THE FUNCTIONING OF THE WATERWAY.*
4. *CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER AS TO MINIMIZE EROSION AND AIR AND WATER POLLUTION. ALL APPROPRIATE STATE AND LOCAL LAWS AND REGULATIONS SHALL BE COMPLIED WITH FOR INSTALLATION.*
5. *VEGETATION SHALL BE ESTABLISHED IN THE SWALE PRIOR TO ALLOWING STORMWATER RUNOFF TO FLOW THROUGH THE SWALE.*
6. *MAINTENANCE OF THE VEGETATION IN THE GRASSED WATERWAY IS EXTREMELY IMPORTANT IN ORDER TO PREVENT RILLING, EROSION, AND FAILURE OF THE WATERWAY. MOWING SHOULD BE DONE FREQUENTLY ENOUGH TO CONTROL ENCROACHMENT OF WEEDS AND WOODY VEGETATION AND TO KEEP THE GRASSES IN A VIGOROUS CONDITION. THE VEGETATION SHOULD NOT BE MOWED TOO CLOSELY SO AS TO REDUCE THE EROSION RESISTANCE IN THE WATERWAY.*
7. *THE WATERWAY SHOULD BE INSPECTED PERIODICALLY AND AFTER EVERY MAJOR STORM TO DETERMINE THE CONDITION OF THE WATERWAY. RILLS AND DAMAGED AREAS SHOULD BE PROMPTLY REPAIRED AND REVEGETATED AS NECESSARY TO PREVENT FURTHER DETERIORATION.*
8. *PERIODIC APPLICATIONS OF LIME AND FERTILIZER MAY BE NEEDED TO MAINTAIN VIGOROUS GROWTH.*

GRASSED TREATMENT SWALE

NOT TO SCALE

STRUCTURE	WIDTH (Ft)	LENGTH (Ft)	SLOPE (Ft/Ft)
TS 1	4.5	160	0.005

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PLANNING FILE NO.: P21_

NO.	REVISION	APP'D	DATE

DATE: 8-6-21
SCALE: N/A
DRAWN BY: SRD
DESIGN BY: JRG
APPROVED BY:JH
PROJECT NO: 21041
FILE: SITE

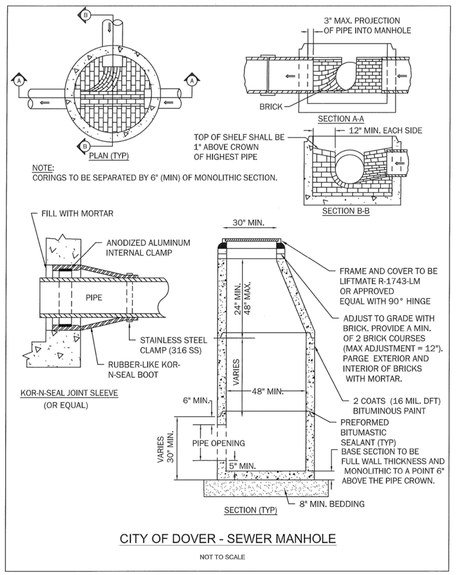
CIVILWORKS NEW ENGLAND
CIVIL & WATERFRONT ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

DETAILS

AMERICAN DURAFILM CO. INC.
55 BOYNTON ROAD
P.O. BOX 6770
HOLLISTON, MA 01746

MANUFACTURING/COMMERICAL BUILDING
INNOVATION WAY
DOVER, NH

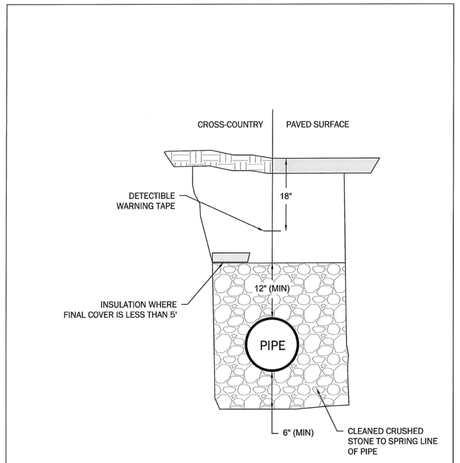
13



CITY OF DOVER - SEWER MANHOLE

NOT TO SCALE

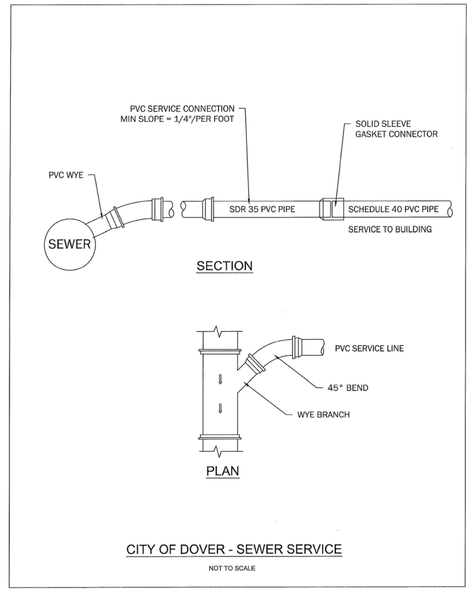
Appendix B Page 12



CITY OF DOVER- TYPICAL SEWER/DRAINLINE TRENCH

NOT TO SCALE

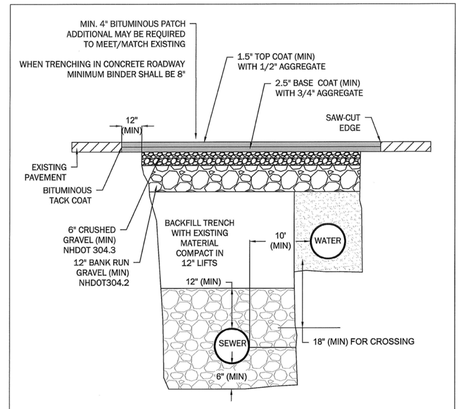
Appendix B Page 13



CITY OF DOVER - SEWER SERVICE

NOT TO SCALE

Appendix B Page 15



NOTES:

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

CITY OF DOVER - TYPICAL TRENCH DETAIL

NOT TO SCALE

Appendix B Page 3

NOTE:

1. ALL WATER LINES 4" OR GREATER SHALL BE DUCTILE IRON WITH AN 8 MIL POLYETHYLENE WRAP. CONTRACTOR MAY FORGO WRAPPING PIPE IF THE DUCTILE IRON PIPE IS ZINC-COATED, TEES AND OTHER CONNECTIONS WILL STILL NEED TO BE WRAPPED.

CITY OF DOVER - WATERLINE TRENCH

NOT TO SCALE

NOTE:

1. ALL WATER LINES 4" OR GREATER SHALL BE DUCTILE IRON WITH AN 8 MIL POLYETHYLENE WRAP. CONTRACTOR MAY FORGO WRAPPING PIPE IF THE DUCTILE IRON PIPE IS ZINC-COATED, TEES AND OTHER CONNECTIONS WILL STILL NEED TO BE WRAPPED.
2. WATER SERVICE LINES SHALL BE COPPER TUBING (TYPE K) BETWEEN MAIN AND CURB STOP.
3. SERVICE BETWEEN CURB STOP AND BUILDING MAY BE SDR 9 CTS (BLUE) PLASTIC POLYETHYLENE RATED FOR 250 psi.

CITY OF DOVER - WATER SERVICE CONNECTION

NOT TO SCALE

THRUST BLOCK SCHEDULE
MINIMUM BEARING AREA (SQUARE FEET)

	PIPE SIZE					
Nominal Dia. (in)	4	6	8	10	12	16
Tees, Caps, Plugs, & Tapping Sleeves	1.05	2.32	4.15	6.37	9.15	16.23
90 Degree Bends	1.48	3.29	5.86	9.01	12.93	22.96
45 Degree Bends	0.80	1.78	3.17	4.88	7.00	12.42
22-1/2 Degree Bends	0.41	0.91	1.62	2.49	3.57	6.33
11-1/4 Degree Bends	0.21	0.46	0.81	1.25	1.79	3.18
	System Pressure: 100 psi Safety Factor: 1.5 Soil Bearing Capacity: 2,000 psf					

THE MINIMUM BEARING AREAS SHOWN IN THE THRUST BLOCK SCHEDULE ARE BASED ON A SYSTEM PRESSURE OF 100 PSI. IF THE SYSTEM PRESSURE IS ABOVE 100 PSI, INCREASE THE NOTED AREAS PROPORTIONAL TO THE ACTUAL SYSTEM PRESSURE. FOR EXAMPLE, IF THE ACTUAL SYSTEM PRESSURE IS 160 PSI, MULTIPLY THE ABOVE VALUES BY 160%.

CITY OF DOVER - PRECAST CONCRETE THRUST BLOCK & ANCHOR

NOT TO SCALE

Appendix B Page 11

NOTES:

1. FIRE HYDRANT TO BE EDDY 2641.
2. HYDRANT TO BE PAINTED RED.
3. HYDRANT SHALL OPEN LEFT.

CITY OF DOVER - HYDRANT

NOT TO SCALE

Appendix B Page 10

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PLANNING FILE NO.: P21_

NO.	REVISION	APP'D	DATE

DATE: 8-6-21
SCALE: N/A
DRAWN BY: SRD
DESIGN BY: JRG
APPROVED BY:JH
PROJECT NO:21044
FILE: SITE

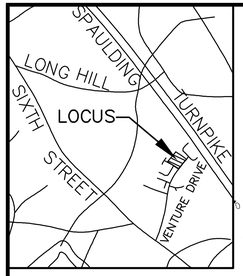
CIVILWORKS NEW ENGLAND
CIVIL & WATERFRONT ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

DETAILS

MANUFACTURING/COMMERICAL BUILDING
INNOVATION WAY
DOVER, NH

AMERICAN DURAFILM CO. INC.
55 BOYNTON ROAD
P.O. BOX 6770
HOLLISTON, MA 01746

14



D / 11-1

TOTAL PARCEL AREA
1,576,425 S.F.
36.19 Ac.
PROPOSED LOT AREA
143,577 S.F.
3.29 Ac.

PROPOSED LOT LINE
PROPOSED LOT LINE
PROPOSED LOT LINE

PROPOSED FUTURE
5,000 S.F.
BUILDING ADDITION

PROPOSED
15,000 S.F.
BUILDING

100'
100'
50'
150'
60'

EOP
EOP
EOP
EOP

PE
PC
PE
PC
PE
PC

VENTURE DRIVE
INNOVATION WAY

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)

Luminaire Schedule							
Symbol	Qty	Label	Arrangement	Description	Luminaire Lumens	Luminaire Watts	Total Watts
	1	S4	Single	GLEON-SA2C-740-U-T4FT/ SSS4A20SFN1 (20' AFG)	14559	113	113
	1	W3	Single	GWC-SA1A-740-U-SL4/ WALL MTD 10' AFG	4729	34	34
	1	W2	Single	ISS-SA1E-740-U-SL4 / WALL MTD 15' AFG	6916	58.2	58.2
	5	W1	Single	MERU-LED-ACEM-DB-PIR / WALL MTD 10' AFG	1581	16.4	82
	3	W	Single	ISS-SA1E-740-U-SL4 / WALL MTD 20' AFG	6916	58.2	174.6

StatArea_1
PARKING LOT AREA
Illuminance (Fc)
Average = 1.00
Maximum = 3.2
Minimum = 0.3
Avg/Min Ratio = 3.33
Max/Min Ratio = 10.67

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

PLANNING FILE NO.: P21_

NO.	REVISION	APP'D	DATE

DATE: 8-6-21
SCALE: 1"=20'
DRAWN BY: SRD
DESIGN BY: JRG
APPROVED BY:JH
PROJECT NO:21041
FILE: SITE

CIVILWORKS NEW ENGLAND
CIVIL & WATERFRONT ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

LIGHTING PLAN

AMERICAN DURAFILM CO. INC.
55 BOYNTON ROAD
P.O. BOX 6770
HOLLISTON, MA 01746

MANUFACTURING/COMMERICAL BUILDING
INNOVATION WAY
DOVER, NH

15

Project		Catalog #		Type	
Prepared by		Notes		Date	

McGraw-Edison

GLEON Galleon

Area / Site Luminaire

Typical Applications

Outdoor • Parking Lots • Walkways • Roadways • Building Areas

Interactive Menu

- Ordering Information page 2
- Mounting Details page 3
- Optical Distributions page 4
- Product Specifications page 4
- Energy and Performance Data page 4
- Control Options page 9

Product Certifications

Product Features

Lucoshen Technology · EnlightAir · Wireless · Light Adjustment™

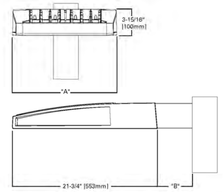
Connected Systems

- WaveLinx
- Enlighted

Quick Facts

- Lumen packages range from 4,200 - 80,800 (34W - 640W)
- Efficacy up to 156 lumens per watt

Dimensional Details



Number of Light Squares	"A" Width	"D" Standard Arm Length	"D" Extended Arm Length	"H" Quick Mount Arm Length	"H" Quick Mount Extended Arm Length
1-4	15-1/2"	7"	10"	10-5/8"	16-9/16"
5-6	21-5/8"	7"	10"	10-5/8"	16-9/16"
7-8	27-5/8"	7"	13"	10-5/8"	--
9-10	33-3/4"	7"	16"	--	--

NOTES:
For arm selection requirements and additional line art, see Mounting Details section.

Project		Catalog #		Type	
Prepared by		Notes		Date	

McGraw-Edison

GWC Galleon Wall

Wall Mount Luminaire

Typical Applications

Exterior Wall • Walkway

Interactive Menu

- Ordering Information page 2
- Product Specifications page 2
- Optical Configurations page 3
- Energy and Performance Data page 4
- Control Options page 6

Product Certifications

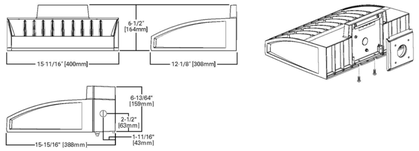
Connected Systems

- WaveLinx
- Enlighted

Quick Facts

- Choice of thirteen high-efficiency, patented AccuLED Optics™
- Downward and inverted wall mounting configurations
- Eight lumen packages from 3,215 up to 17,056
- Efficacies up to 154 lumens per watt

Dimensional Details



MERU Series

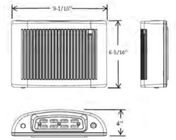
LED GENERAL & EMERGENCY LIGHTING

EZ SPEC

PROJECT:
FIXTURE TYPE:
LOCATION:
CONTACT/PHONE:

PRODUCT DESCRIPTION

The MERU Series is an architectural, low-profile outdoor light, offering "normally On" AC and emergency lighting with powerful LED illumination. The housing is fully sealed and gasketed, and has an IP65 rating. Designed for wall mounting with universal K/O pattern in back-plate for easy installation to most standard size junction boxes. Includes a single ½" NPT conduit entry in the top, center of the housing. Illumination provided by 8 high power LEDs which achieve 1,600 lumens in AC and 600 lumens in emergency. LED color at 4000K.



PRODUCT SPECIFICATIONS

CONSTRUCTION

Die cast aluminum housing with superior heat sink • Scratch resistant Polyester powder coat finish • UV resistant polycarbonate lens • Snap-fit housing and mounting plate are held together by four stainless steel clips • Universal mounting pattern molded into the back plate • 1/2" threaded top access for surface conduit installation • Silicone rubber seal with hollow center, shape adaptive design protects the electrical components • Junction box neoprene seal is attached to the back plate for a weather proof installation • Dark Bronze or White textured finish.

ELECTRICAL

Dual voltage 120/277VAC 60Hz input • Solid state charging and switching • Battery low voltage disconnect • AC power indicator and test switch at the bottom of the unit • Standard with Self Diagnostics to monitor proper operation.

LAMPS

Supplied with eight (8) LG SMD 4000K LED'S • L70 > 72,000hours • 17 Watts total (32 Watts with IH option) • 1600 Lumens in AC mode, 600 Lumens in Emergency mode • Full cut-off optics for Dark Sky compliance

BATTERY

Maintenance-free, long-life rechargeable NiCad battery will operate fixture for a minimum of 90 minutes in the event of a power outage • 24 hour recharge after 90 minute discharge.

CODE COMPLIANCE

UL924 • Listed for wet location applications (0˚C-50˚C) • Optional "IH" cold weather package for (-40˚C-50˚C) • IP65 Rated • NFPA 101 Life Safety Code compliant • NEC and OSHA compliant • DLC Listed • RoHS Compliant

WARRANTY

5-year warranty. Product specifications subject to change without notice.

ACEM Model (NiCad Battery Backup)

Integral photocell: Unit operates as a dusk to dawn luminaire and in the event of a power failure as an emergency light.
Remote Switched: The integral photocell can be defeated to allow remote switching for normal operation. In the event of a power failure unit operates as an emergency light.

INSTALLATION

MOUNTING

Suitable for indoor or outdoor wall mounting on junction box, or with surface conduit using the supplied 1/2" threaded top access • Mounting plate has molded universal mounting pattern for simple mounting over junction box.

ORDERING INFORMATION

model	operation mode	housing color	options
MERU-LED	ACEM = General & Emergency Lighting	DB = Dark Bronze	*Self-Diagnostics & Photocell (Included/Standards*
	AC = General Lighting	WH = White	IH = Internal Heater
		BK = Black	PIR = Passive Infra-Red Motion Sensor
Ordering Example: MERU-ACEM-DB		NK = Nickel	

Mule Lighting , Inc. 46 Baker Street Providence, RI 02905 800 556-7690 P 401 941-2929 F www.mulelighting.com

Steel Poles

SSS SQUARE
STRAIGHT STEEL

Catalog #		Type
Project		
Comments		Date
Prepared by		

FEATURES
- ASTM Grade steel base plate with ASTM A366 base cover
- Hand hole assembly 3" x 5" on 5" and 6" pole; and 2" x 4" on 4" pole
- 10'-39' mounting heights
- Drilled or tenon (specify)

DESIGN CONSIDERATIONS

Wind induced vibrations resulting from steady, unidirectional winds and other aerodynamic forces, as well as vibration and coefficient of height factors for non-grounded mounted installations (e.g., installations on bridges or buildings) are not included in this document. The information contained herein is for general guidance only and is not a replacement for professional judgement. Consult with a professional, and local and federal standards, before ordering to ensure product is appropriate for the intended purpose and installation location. Also, please review Eaton's Light Pole White Paper for risk factors and design considerations. Learn more.

Specifications and dimensions subject to change without notice. Consult your lighting representative at Eaton or visit www.eaton.com/lighting for available options, accessories and ordering information.

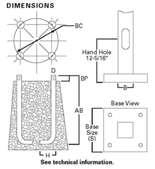
ORDERING INFORMATION

SAMPLE NUMBER: SSA5A20SFM1XG

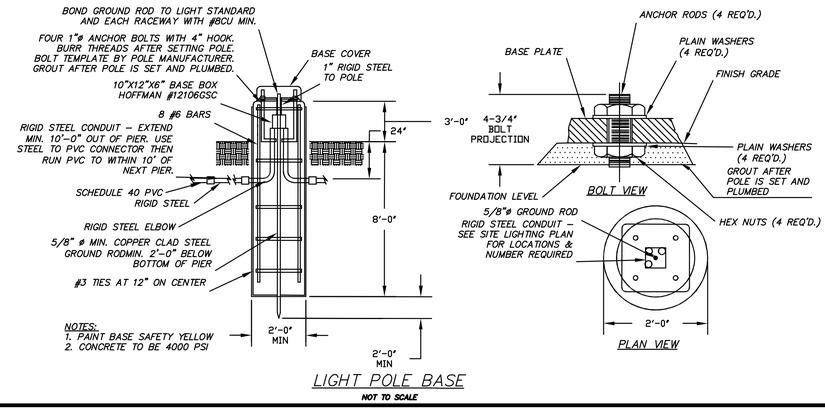
Product Family	Shaft Size (inches)[1]	Wall Thickness (inches)	Mounting Height (Feet)	Base Type	Finish	Mounting Type	Number and Location of Arms	Arm Lengths (Feet)	Options (Add as Suffix)
SSS=Square Straight Steel	**4**=4" **5**=5" **6**=6"	**A**=0.120" **M**=0.168" **X**=0.250"	**10**=10' **15**=15' **20**=20' **25**=25' **30**=30' **35**=35' **39**=39'	**S**=Square Steel Base	**F**=Dark Bronze **G**=Galvanized Steel **J**=Summit White **K**=Carbon Bronze **L**=Dark Platinum **R**=Hartford Green **S**=Silver **T**=Graphite Metallic **V**=Grey **W**=White **X**=Custom Color **Y**=Black	**2**=2-3/8" O.D. Tenon (4" Long) **3**=3-1/2" O.D. Tenon (5" Long) **4**=4" O.D. Tenon (6" Long) **9**=2" O.D. Tenon (4" Long) **6**=2-3/8" O.D. Tenon (6" Long) **7**=4" O.D. Tenon (10" Long) **A**=Type A Drilling **C**=Type C Drilling **E**=Type E Drilling **F**=Type F Drilling **G**=Type G Drilling **J**=Type J Drilling **K**=Type K Drilling **M**=Type M Drilling **N**=Type N Drilling **R**=Type R Drilling **S**=Standard Upsweep Arm **Z**=Type Z Drilling	**1**=Single **2**=2 at 180° **3**=Triple[3] **4**=4 at 90° **5**=2 at 90° **X**=None	**X**=None **2**=2' **3**=2.5' **4**=4' **6**=6' **8**=8'	**A**=1/2" Tapped Hub[4] **B**=3/4" Tapped Hub[4] **C**=Convenience Outlet[4] **E**=GFCI Convenience Outlet[4] **G**=Ground Lug **H**=Additional Hand Hole[4] **V**=Vibration Dampener

NOTES: 1. All shaft sizes nominal. **2.** Square poles are 3 at 90°, round poles are 3 at 120°. **3.** Tapped Hub is located 5' below the pole top and on the same side of pole as hand hole, unless specified otherwise. **4.** Outlet is located 4' above base and on same side of pole as hand hole, unless specified otherwise. Receptacle not included, provision only. **5.** Additional hand hole is located 12" below pole top and 90° from standard hand hole location, unless otherwise specified.

DIMENSIONS



See technical information.



NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

PLANNING FILE NO.: P21_

CIVILWORKS NEW ENGLAND
CIVIL & WATERFRONT ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

NO.	REVISION	APP'D	DATE

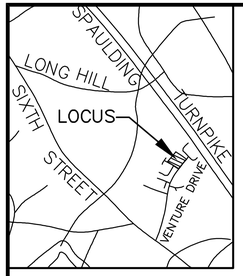
DATE: 8-6-21
SCALE: N/A
DRAWN BY: SRD
DESIGN BY: JRG
APPROVED BY:JH
PROJECT NO:21044
FILE: SITE

LIGHTING DETAILS

MANUFACTURING/COMMERICAL BUILDING
INNOVATION WAY
DOVER, NH

AMERICAN DURAFILM CO. INC.
55 BOYNTON ROAD
P.O. BOX 6770
HOLLISTON, MA 01746

16



D / 11-1

TOTAL PARCEL AREA
1,576,425 S.F.
36.19 Ac.
PROPOSED LOT AREA
143,577 S.F.
3.29 Ac

PROPOSED LOT LINE

PROPOSED LOT LINE

PROPOSED LOT LINE

100'

50'

PROPOSED FUTURE
5,000 S.F.
BUILDING ADDITION

100'

150'

PROPOSED
15,000 S.F.
BUILDING

EOP

EOP

EOP

EOP

45.50

8.50 20.00

Dover ldder	feet
Width	: 8.50
Track	: 8.50
Lock to Lock Time	: 6.0
Steering Angle	: 44.0

INNOVATION WAY

VENTURE DRIVE

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

PLANNING FILE NO.: P21_

NO.	REVISION	APP'D	DATE

DATE: 8-6-21
SCALE: 1"=20'
DRAWN BY: SRD
DESIGN BY: JRG
APPROVED BY:JH
PROJECT NO:21041
FILE: SITE

CIVILWORKS NEW ENGLAND
CIVIL & WATERFRONT ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

DOVER LADDER TRUCK MOVEMENT PLAN

MANUFACTURING/COMMERICAL BUILDING
INNOVATION WAY
DOVER, NH

AMERICAN DURAFILM CO. INC.
55 BOYNTON ROAD
P.O. BOX 6770
HOLLISTON, MA 01746

17

American Durafilm

Dover, NH

Planning Board Set

N.F.C.

T | W DESIGNS

254 Drake Hill Rd. Strafford, NH
TW-Designs.com | 603.664.2181

Revision Schedule

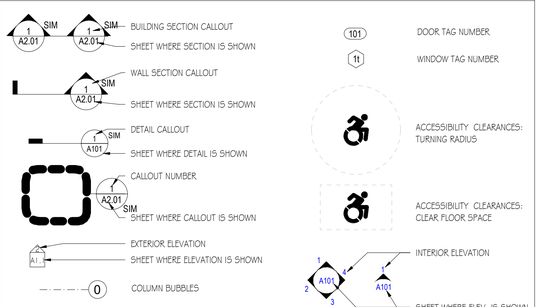
No.	Description	Date

MASTER ABBREVIATION KEY:

AB	ANCHOR BOLT
AC	AIR CONDITIONER
ACI	AMERICAN CONCRETE INSTITUTE
ACOUST	ACOUSTIC
AFF	ABOVE FINISH FLOOR
ALT	ALTERNATE
ALUM	ALUMINUM
ANCH	ANCHOR
ANOD	ANODIZED
ASTM	AMERICAN SOCIETY FOR TESTING MATERIALS
BD	BOARD
BIT	BITUMINOUS
BL	BUILDING LINE
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BM	BEAM
BOC	BOTTOM OF CURB
BOF	BOTTOM OF FOOTING ELEVATION
BOT	BOTTOM
BRG	BEARING
BRK	BRICK
BSMT	BASEMENT
BTW	BETWEEN
BUR	BUILT-UP ROOF
CAB	CABINET
CB	CATCH BASIN
CER	CERAMIC
CF	CUBIC FOOT
CI	CAST IRON
CJ	CONTROL JOINT
CL	CLOSET
CLCB	CURBLESS CATCH BASIN
CLG	CEILING
CM	CONTRACT MANAGER
CMU	CONCRETE MASONRY UNIT
CO	CLEAN OUT
COL	COLUMN
COMP	COMPACTED (COMPOSITION)
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUOUS
CONTR	CONTRACTOR
CORR	CORRUGATED
CP	CONTROL PANEL
CSG	CASING
CSMT	CASEMENT
CT	CERAMIC TILE
CTR	CENTER
CY	CUBIC YARD
DF	DRINKING FOUNTAIN
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DL	DEAD LOAD
DN	DOWN
DR	DOOR
DS	DOWNSPOUT
DSIC	DRIVE SIDE OF CURB
DTL	DETAIL
DWG	DRAWING
E	EAST
EJ	EXPANSION JOINT
EJC	EXPANSION JOINT COVER
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATOR
EQ	EQUAL
EQUIP	EQUIPMENT
ER	EMERGENCY ROOM
EST	ESTIMATE
EWC	ELECTRICAL WATER COOLER
EXH	EXHAUST
EXIST	EXISTING
EXP	EXPANSION
EXPD	EXPANDED
EXT	EXTERIOR
F/F	FACE OF FOUNDATION WALL
FA	FRESH AIR
FAP	FIRE ALARM PANEL
FD	FLOOR DRAIN
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FIN	FINISH
FL	FLOW LINE
FLR	FLOOR
FND	FOUNDATION
FOF	FACE OF FINISH
FOM	FACE OF MASONRY
FOS	FACE OF STUD
FR	FIRE RATED
FS	FULL SIZE
FT	FOOT
FTG	FOOTING
FUR	FURRED (FURRING)
FVC	FIRE VALVE CABINET
GA	GAUGE
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GEN	GENERAL
GL	GLASS
GLZ	GLAZING
GRD	GRADE
GYP	GYPSUM
H4V	HEATING & VENTILATING
HC	HANDICAP
HDWD	HARDWOOD
HGT	HEIGHT
HM	HOLLOW METAL
HP	HIGH POINT
HVAC	HEATING, VENTILATION, AIR CONDITIONING
HWH	HOT WATER HEATER
ID	INSIDE DIAMETER
IN	INCH
INSUL	INSULATION
INT	INTERIOR
INV	INVERT
JC	JANITORS CLOSET
JST	JOIST
JT	JOINT
LAM	LAMINATE
LAV	LAVATORY
MAS	MASONRY
MAT	MATERIAL
MAX	MAXIMUM
MECH	MECHANICAL
MEM	MEMBRANE
MEP	MECHANICAL, ELECTRICAL, PLUMBING
METTP	METAL TOILET PARTITION
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MO	MASONRY OPENING
MTL	METAL
MULL	MULLION
N	NORTH
NAT	NATURAL
NEC	NECESSARY
NIC	NOT IN CONTRACT
NOM	NOMINAL
NRC	NOISE REDUCTION COEFFICIENT
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OF/C	OUTSIDE FACE OF CONCRETE
OH	OVERHEAD
OPG	OPENING
OPP	OPPOSITE
OR	OPERATING ROOM
PBD	PARTICLE BOARD
PCF	POUNDS PER CUBIC FOOT
PL	PROPERTY LINE
PLAM	PLASTIC LAMINATE
PLAS	PLASTER
PLYWD	PLYWOOD
PNL	PANEL
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	PAINT
PTD	PAINTED
PTN	PARTITION
PVC	POLYVINYL CHLORIDE
QT	QUARRY TILE
R	RADIUS
R/A	RETURN AIR
RC	REINFORCED CONCRETE
RD	ROOF DRAIN
REF	REFERENCE
REFR	REFRIGERATOR
REINF	REINFORCE
REQD	REQUIRED
RGH	ROUGH
RL	RAIN LEADER
RM	ROOM
RO	ROUGH OPENING
ROW	RIGHT OF WAY
RQMT	REQUIREMENT
S	SOUTH
S-TRAP	SEDIMENT TRAP
SC	SOLID CORE
SCED	SCHEDULE
SD	STORM DRAIN
SF	SQUARE FOOT
SH	SHOWER
SHT	SHEET
SIM	SIMILAR
SL	SLIDING
SMR	SINGLE PLY MEMBRANE ROOF
SP/PT/FIN	SPECIAL PAINT FINISH
SPEC	SPECIFICATION
SPKR	SPEAKER
SQ	SQUARE
SS	STAINLESS STEEL
STA	STATION
STD	STANDARD
STL	STEEL
STOR	STORAGE
STRG	STRINGER
STRUCT	STRUCTURAL
SU	SITE UTILITY
SUSP	SUSPEND (SUSPENDED)
SYMM	SYMMETRICAL
SYS	SYSTEM
T	TREAD
TAG	TONGUE & GROOVED
T/FRM	TOP OF FRAME
T/SLB	TOP OF SLAB
TB	TACKBOARD
TEL	TELEPHONE
TEMP	TEMPORARY
TERR	TERRAZZO
THK	THICK
THLD	THRESHOLD
TOC	TOP OF CURB
TOF	TOP OF FOUNDATION
TOS	TOP OF SLAB
TOW	TOP OF WALL ELEVATION
TR	TO REMAIN
TYP	TYPICAL
UH	UNIT HEATER
UL	UNDERWRITERS LABORATORIES, INC.
UOD	UNDERSIDE OF DECK
UON	UNLESS OTHERWISE NOTED
UR	URINAL
UV	UNIT VENTILATOR
VAR	VARIES OR VARIABLE
VB	VINYL BASE
VCT	VINYL COMPOSITION TILE
VERT	VERTICAL
VEST	VESTIBULE
VIF	VERIFY IN FIELD
VNR	VENEER
VOL	VOLUME
W	WEST
W/	WITH
WC	WATER CLOSET
WD	WOOD
WDW	WINDOW
WGL	WIRE GLASS
WP	WEATHERPROOF (WATERPROOFING)
WWF	WELDED WIRE FABRIC

LOCUS MAP: (N.T.S.)

GRAPHIC SYMBOLS LEGEND



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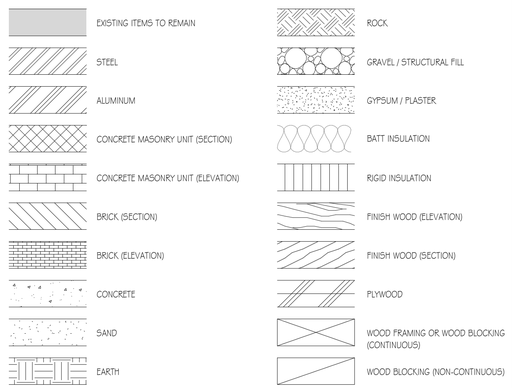

DRAWING SHEET INDEX:

Sheet	Sheet Name	Issued	Revision	Revision Date
PCS	*Project Cover Sheet*	*N.F.C.*		
A1.1	*Floor Plan*	*N.F.C.*		
A3.1	*Exterior Elevations*	*N.F.C.*		
R1.1	*Exterior Rendering*	*N.F.C.*		

GENERAL NOTES:

1. DO NOT SCALE DRAWING OR DIMENSIONS. FOR MISSING DIMENSIONS OR DIMENSIONS IN CONFLICT, CONTACT THE CONTRACTOR IMMEDIATELY BEFORE CONTINUING WITH WORK.
2. ANY DISCREPANCIES IN THESE PLANS WILL BE BROUGHT TO THE CONTRACTOR'S ATTENTION IN WRITING IMMEDIATELY
3. REFER TO MECHANICAL, ELECTRICAL, PLUMBING, AND FIRE PROTECTION DESIGN-BUILD PLANS AND SPECIFICATION FOR LOCATIONS OF ALL BLOCK OUTS, INSERTS, OPENINGS, CURBS, BASES, & PADS THAT ARE NOT DIMENSIONED OR SHOWN ON CONTRACTOR'S DWG'S. OR STRUCTURAL DWG'S.
4. STRUCTURAL STEEL, MECHANICAL, ELECTRICAL, PLUMBING, AND FIRE PROTECTION PLANS AND SPECIFICATION SHALL BE PROVIDED AND ARE THE RESPONSIBILITY OF THERE RESPECTIVE SUBCONTRACTORS IF NOT CARRIED IN ARCHITECTURAL SERVICES
5. ALL CONSTRUCTION SHALL CONFORM TO AND BE IN ACCORDANCE WITH THE REGULATOR REQUIREMENTS MANDATED BY ALL FEDERAL, STATE AND LOCAL AUTHORITIES HAVING JURISDICTION IN ACCORDANCE TO THE STATE IN WHICH THE WORK IS PERFORMED (STATE BUILDING CODE, STATE LIFE SAFETY & FIRE CODE ETC.)
6. THE CONTRACTOR SHALL REVIEW ALL DOCUMENTS AND VERIFY ALL DIMENSIONS AND FIELD CONDITIONS, AND SHALL CONFIRM WORK IS BUILDABLE AS SHOWN. ANY CONFLICTS OR OMISSIONS, ETC. SHALL BE IMMEDIATELY REPORTED IN WRITING TO THE ARCHITECT FOR CLARIFICATION
7. DIMENSIONS ARE FROM EXTERIOR FACE OF FOUNDATION, VENEER, OR WALL STUD AND TO CENTER OF ALL INTERIOR STUD WALLS OR FACE OF INTERIOR MASONRY. UNLESS NOTED OTHERWISE.
8. CLEAR DIMENSIONS ARE FROM FACE TO FACE OF WALL FINISH. UNLESS NOTED OTHERWISE
9. REFER TO MECHANICAL DRAWINGS / SPEC. FOR ALL SIZES AND LOCATIONS OF MECHANICAL DUCT WORK.
10. UNLESS OBVIOUSLY SHOWN OTHERWISE, DOOR LOCATIONS NOT DESIGNATED BY WRITTEN DIMENSION SHALL BE CENTERED IN THE WALL OR SHALL BE LOCATED FOUR (4) INCHES FROM FINISH WALL TO EDGE OF DOOR JAMB. PER PLAN.
11. PROVIDE METAL CORNER BEAD AT ALL OUTSIDE CORNERS OF PLASTERED OR DRYWALL SURFACES, UNLESS NOTED OTHERWISE.
12. PENETRATIONS OF ALL FIRE RATED ASSEMBLIES SHALL BE PROTECTED BY LIKE RATED CONSTRUCTION DAMPERS, SEALANTS, COLLARS, ETC., TYPICAL.
13. CONTRACTOR SHALL FURNISH, LOCATE AND INSTALL ALL ACCESS PANELS AS REQUIRED AFTER INSTALLATION OF MECHANICAL DUCTS, PLUMBING AND ELECTRICAL WORK, FIRE RATED AS REQUIRED.
14. FURNISH AND INSTALL SOLID BLOCKING BEHIND ALL WALL HUNG MILLWORK ITEMS, RAILS, FIXTURES,GRAB BARS, ETC. , WHERE INDICATED OR REQUIRED.
15. CONTRACTOR SHALL LAYOUT OR MARK, ALL EQUIPMENT, SYSTEMS AND MILLWORK ON THE FLOOR FOR ARCHITECT OR OWNER'S APPROVAL PRIOR TO BEGINNING CEILING / OVER HEAD WORK.
16. ALL SPRINKLER HEAD LOCATIONS, MAINS, BRANCHES AND RISER PIPE LOCATIONS MUST BE COORDINATED WITH THE DESIGN / BUILD CONTRACTOR PRIOR TO WORK.
17. FURNISH AND INSTALL FIRE EXTINGUISHERS IN TYPE, QUANTITY, AND LOCATION PER LOCAL FIRE DEPARTMENT. TYPICAL
18. CONTRACTOR SHALL VERIFY, COORDINATE LOCATION WITH THE ARCHITECT ANY SMOKE, CARBON MONOXIDE DETECTOR OR FIRE ALARM DEVICE AS REQUIRED BY THE LOCAL FIRE DEPARTMENT.
19. FURNISH & INSTALL FIRE DAMPERS WITH FUSIBLE LOUVER WHEREVER DUCT WORK PENETRATES ONE OR TWO HOUR CEILINGS OR WALLS. TYPICAL UNLESS NOTED OTHERWISE.
20. PROVIDE PLASTER AND GYPSUM WALL BOARD CONTROL JOINTS AT 30'-0" ON CENTER FROM FLOOR TO CEILING, OR AS NOTED ON THE CONSTRUCTION DOCUMENTS. VERIFY IN FEILD WITH ARCHITECT PRIOR TO WORK.

Architect of Record:

T | W Designs, LLC
254 Drake Hill Rd.
Strafford, NH 03884
603-664-2181

Civil Engineer:

Civil Works Inc.
181 Watson Rd. Dover, NH
603.749.0443

Structural Engineer:

To Be Determined

Electrical Engineer:

To Be Determined

Mechanical Engineer:

To Be Determined

Fire Protection Eng.:

To Be Determined

General Contractor:

Whitcher Builders, Inc.
254 Drake Hill Rd.
Strafford, NH 03884
603-664-5577

Project Info:

American Durafilm
55 Boynton Rd.
Holliston, MA
508.429.8000

Project Cover Sheet

SHEET NUMBER

PCS

15,000 s.f.

1 FIRST FLOOR
1/8" = 1'-0"

2 A3.1

TW DESIGNS LLC
254 DRAKE HILL RD. STRAFFORD, NH
P: 603.664.2181 | F: 603.664.9508

DESIGN | BUILD Architectural Document Set -
Prepared For Exclusive Use By :

WHITCHER BUILDERS

Space Legend

- Fabrication
- Toilet Room
- Flushing
- Mechanical
- Pulling
- Shipping & Receiving
- Business Core
- Vertical Towers

Space Schedule	
Name	Area
Vertical Towers	4358 SF
Fabrication	4507 SF
Mechanical	270 SF
Business Core	598 SF
Flushing	360 SF
Pulling	540 SF
Shipping & Receiving	1691 SF
Toilet Room	125 SF
Toilet Room	139 SF

No.	Description	Date

Revision Schedule

Project Info:

American Durafilm

Dover, NH

Sheet Status:

Latest Release:
Issued For: Planning Board Set
Org. Issue Date: N.F.C.

JOB NO:
DRAFTED: JMT
CHECKED: Checker
SCALE: 1/8" = 1'-0"

Sheet Title:

Floor Plan

PROJECT NORTH

True

Sheet Number:

A1.1

PLANNING BOARD SET
7/15/2021

Printed on: 7/15/2021

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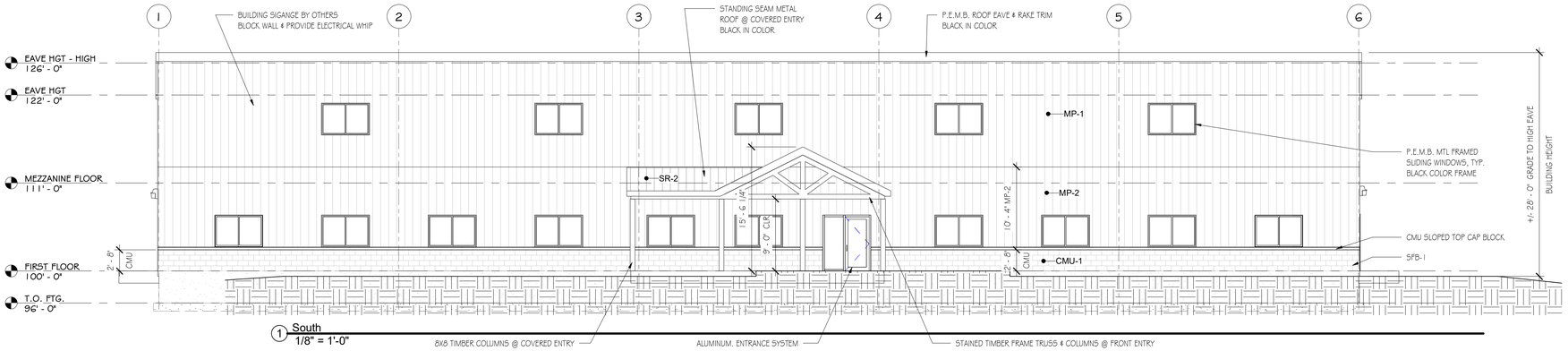
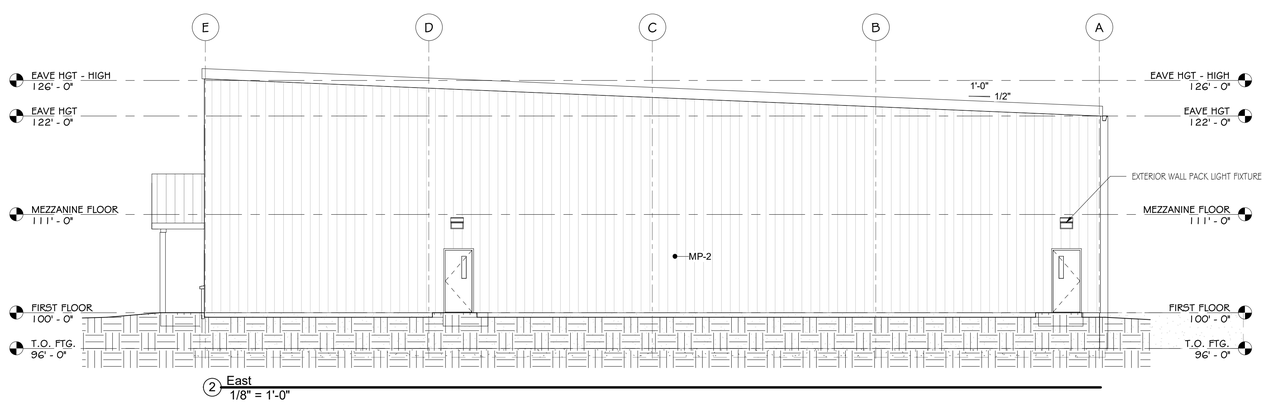
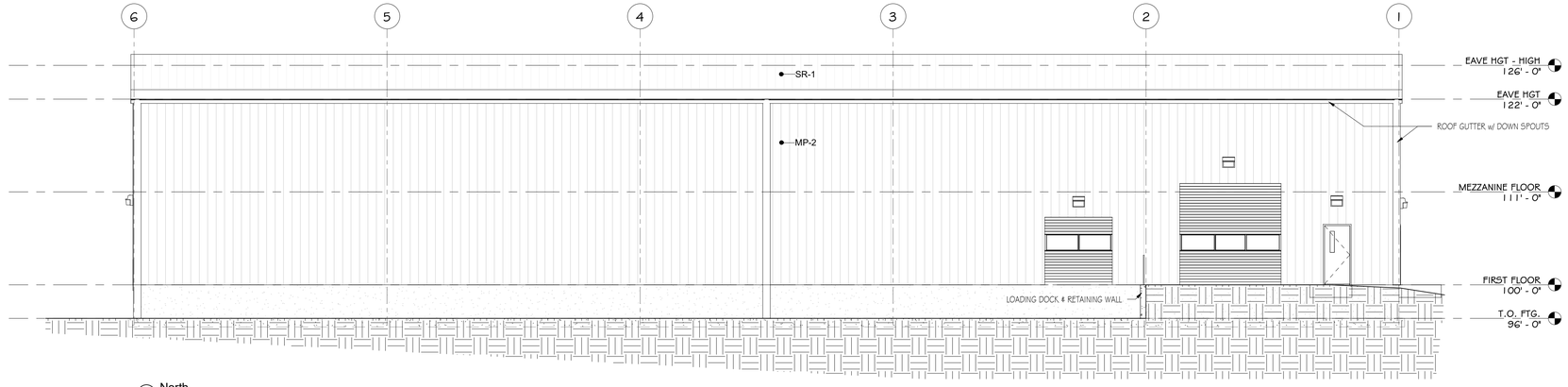


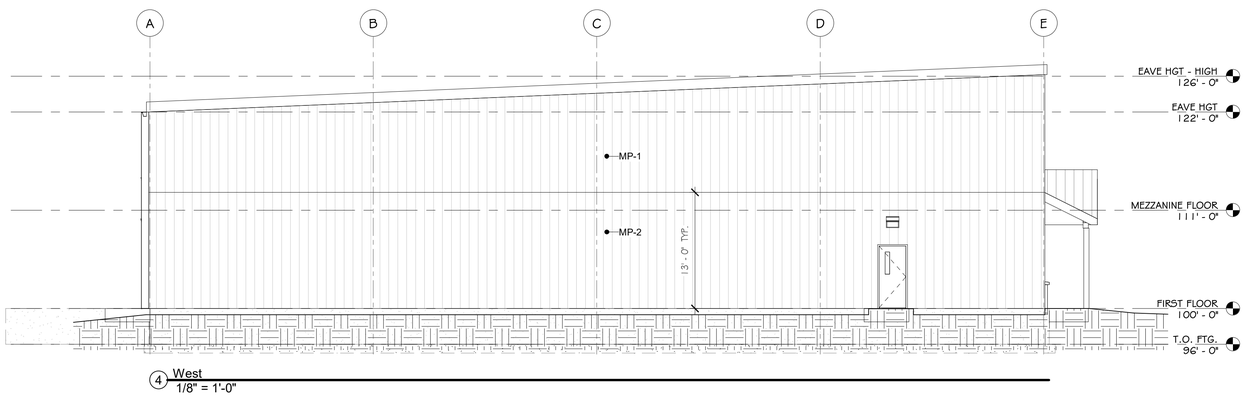
1 South
1/8" = 1'-0"



2 East
1/8" = 1'-0"



3 North
1/8" = 1'-0"



4 West
1/8" = 1'-0"

Exterior Finish Material Schedule				
Mark	Manufacturer	Model	Color	Comments
CMU-1	GENEST	ARCH. SPLIT FACE BLOCK	Charcoal (111)	Block Venner
MP-1	ATAS	BELVEDERE - GRAND R	Charcoal Grey (62)	Vertical Metal Panel
MP-2	ATAS	BELVEDERE - GRAND R	Dove Grey (13)	Vertical Metal Panel

Roof Panel Schedule				
Mark	Manufacturer	Model	Color	Comments
SR-1	ATAS	2 3/8" Feild-Lok Panel	Dove Grey (13)	Standing Seam Roof
SR-2	ATAS	2 3/8" Feild-Lok Panel	Black (02)	Standing Seam Roof

PLANNING BOARD SET
7/15/2021

T W DESIGNS LLC
254 DRAKE HILL RD. STRAFFORD, NH
P: 603.664.2181 | F: 603.664.9508

DESIGN | BUILD Architectural Document Set -
Prepared For Exclusive Use By :
WHITCHER BUILDERS

No. Description Date
Revision Schedule

Project Info:
American Durafilm

Dover, NH

Sheet Status:
Latest Release:
Issued For: Planning Board Set
Org. Issue Date: N.F.C.

JOB NO:
DRAFTED: Author
CHECKED: Checker

SCALE: 1/8" = 1'-0"

Sheet Title:
Exterior Elevations

Sheet Number:
A3.1

Printed on: 7/15/2021

T:\3 Projects\21023 American Durafilm\21023-A.rvt

TW DESIGNS

American Durafilm
Exterior Rendering

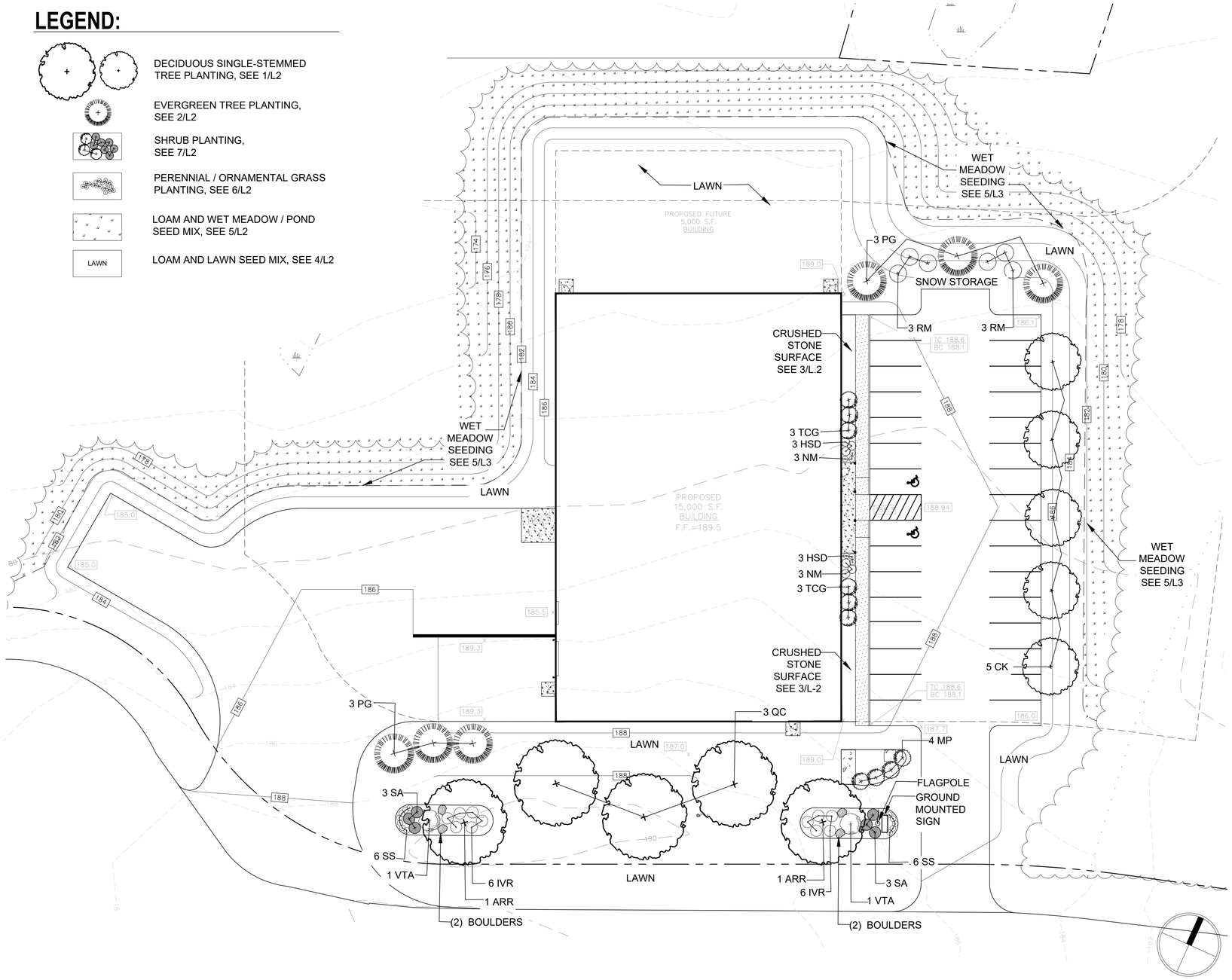
American DURAFILM

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.

LEGEND:

- DECIDUOUS SINGLE-STEMMED TREE PLANTING, SEE 1/L2
- EVERGREEN TREE PLANTING, SEE 2/L2
- SHRUB PLANTING, SEE 7/L2
- PERENNIAL / ORNAMENTAL GRASS PLANTING, SEE 6/L2
- LOAM AND WET MEADOW / POND SEED MIX, SEE 5/L2
- LAWN — LOAM AND LAWN SEED MIX, SEE 4/L2



PLANT SCHEDULE:

TREES				
ABR	BOTANICAL NAME	COMMON NAME	QTY	SIZE
M	ACER RUBRUM 'RED SUNSET'	RED SUNSET MAPLE	2	3" - 3.5" CAL
CK	CORNUS KOUSA	KOUSA DOGWOOD	2	3" - 3.5" CAL
PG	PICEA GLAUCA	BLUE SPRUCE	6	8' - 10'
QC	QUERCUS COCCINEA	SCARLET OAK	3	3" - 3.5" CAL

SHRUBS				
ABR	BOTANICAL NAME	COMMON NAME	QTY	SIZE
IVR	ILEX VETICILLATA 'RED SPRITE'	RED SPRITE WINTERBERRY	12	2'-2 1/2'
MP	MYRICA PENNSYLVANICA	NORTHERN BAYBERRY	4	3'-4'

SHRUBS cont.				
RM	RHODODENDRON MAXIMUM	ROSEBAY RHODODENDRON	6	2'-2 1/2'
SA	SPIREA ALBIFLORA	JAPANESE WHITE SPIREA	6	2'-2 1/2'
TCG	TAXUS CUPIDATA 'GREENWAVE'	GREEN WAVE YEW	6	2'-2 1/2'
VTA	VIBURNUM TRILOBUM 'ALFREDO'	ALFREDO AMERICAN CRANBERRY	2	2'-2 1/2'

PERENNIALS				
ABR	BOTANICAL NAME	COMMON NAME	QTY	SIZE
HSD	HEMEROCALLIS 'STELLA D'ORO'	YELLOW DWARF DAYLILLY	6	#2
NM	NEPETA MUSSINI	CATMINT	6	#2
SS	SALVIA SUPERBA 'BLUE HILL'	MEADOW SAGE	12	#2

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MANUFACTURING / COMMERCIAL BUILDING
INNOVATION WAY DOVER, NEW HAMPSHIRE

AMERICAN DURAFILM CO. INC.
HOLLISTON, MA 01746

SHEET TITLE

LANDSCAPE PLAN

REVISION LOG

REV#	DATE	DESCRIPTION

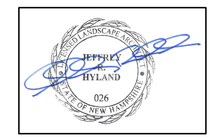
PROJECT NO.	21046.0
DESIGN BY	J. HYLAND / K.OSGOOD
DRAWN BY	J. HYLAND / K.OSGOOD
CHECKED BY	J. HYLAND
DATE	AUGUST 2021

SCALE

10' 0' 20' 40'

SCALE: 1"=20'-0"

SEAL



L1

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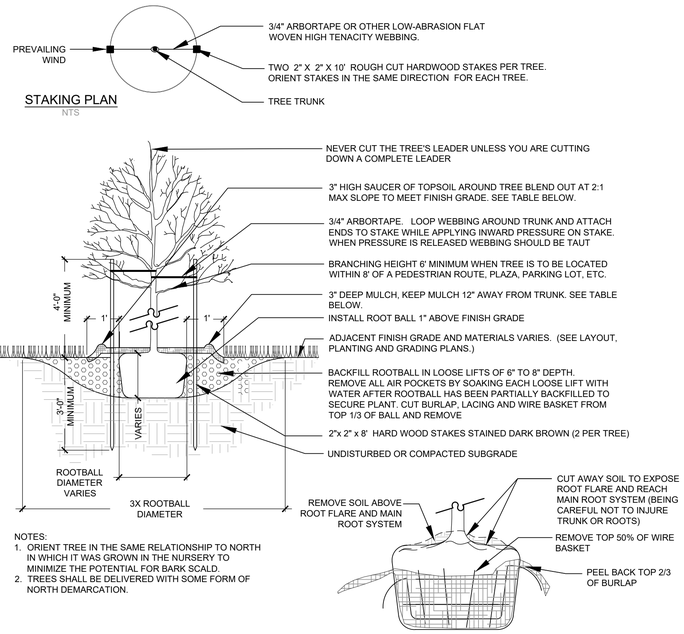


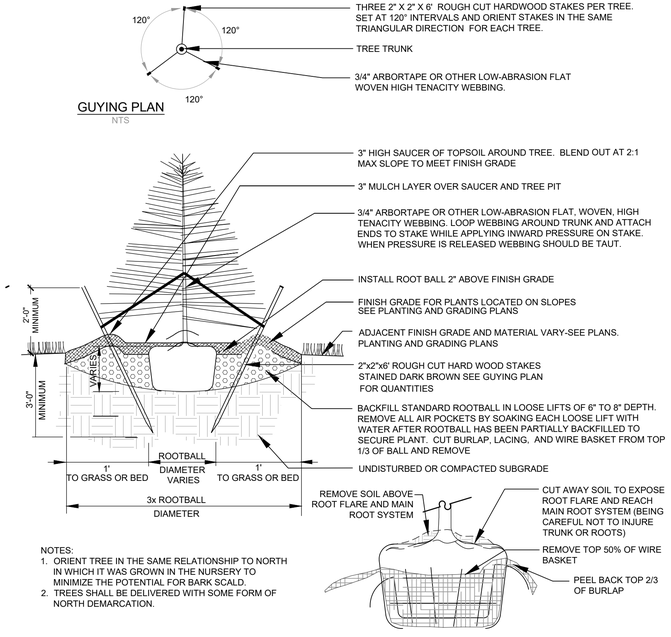
NOTES:
1. ORIENT TREE IN THE SAME RELATIONSHIP TO NORTH IN WHICH IT WAS GROWN IN THE NURSERY TO MINIMIZE THE POTENTIAL FOR BARK SCALD.
2. TREES SHALL BE DELIVERED WITH SOME FORM OF NORTH DEMARCATION.

Deciduous Single-Stemmed Tree Planting

Not to Scale

©IRONWOOD 2020

1 L2



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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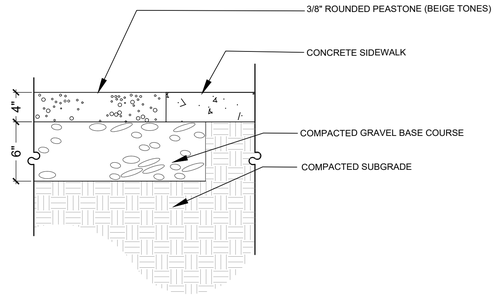
2 L2



Peastone Surface

Not to Scale

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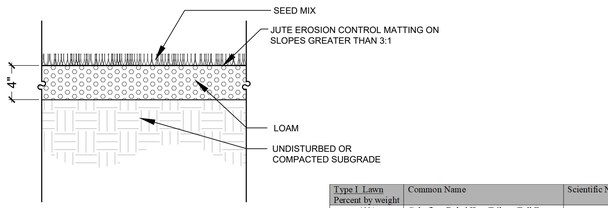
3 L2



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

Type I Lawn Percent by weight	Common Name	Scientific Name
40%	Celmfine, Rebel II or Tribute Tall Fescue	
15%	Palmer II Perennial Ryegrass	
10%	Jamestown Chewings Fescue	
10%	Reliant Hard Fescue	
10%	Bridsfoot Trefoil	*Arvenis* variety
5%	Switchgrass	
5%	White Clover	
5%	Redtop	*Streaker* variety

Apply at a rate of 265/lbs/acre

Loam and Lawn Seed Mix

Not to Scale

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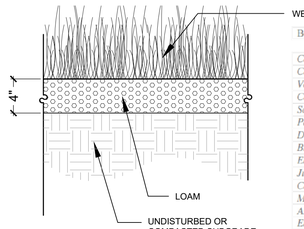
4 L2



NOTE:
1. LOAM ALL DISTURBED AREAS.
2. PRIOR TO SEEDING THE WET MEADOW SEED MIX PROPERLY PREPARE THE SEED BED.
3. INSTALL JUTE MATTING ON POND SIDE SLOPES GREATER THAN 3:1.

Botanical Name	Common Name
Carex lurida	Lurid Sedge
Carex scoparia	Blunt Broom Sedge
Verbena hastata	Blue Vervain
Carex lupulina	Hop Sedge
Scirpus atrovirens	Green Bulrush
Panicum rigidulum	Redtop Panic Grass
Deschampsia cespitosa	Tufted Hairgrass
Bidens aristosa	Tickseed Sunflower/Bur Marigold
Eleocharis palustris	Creeping Spike Rush
Juncus effusus	Soft Rush
Carex crinita	Fringed Sedge
Mimulus ringens	Square Stemmed Monkey Flower
Aster puniceus	Swamp Aster
Eupatorium perfoliatum	Boneset
Glyceria canadensis	Rattlesnake Grass
Asclepias incarnata	Swamp Milkweed
Helenium autumnale	Common Sneezeweed
Penthorum sedoides	Ditch Stonecrop

Apply at rate of 231bs/acre. New England Wildflower Mix available at New England Wetland Plants, Ma: www.newp.com . Approved equal may be substituted.

Loam and Wet Meadow / Pond Seed Mix

Not to Scale

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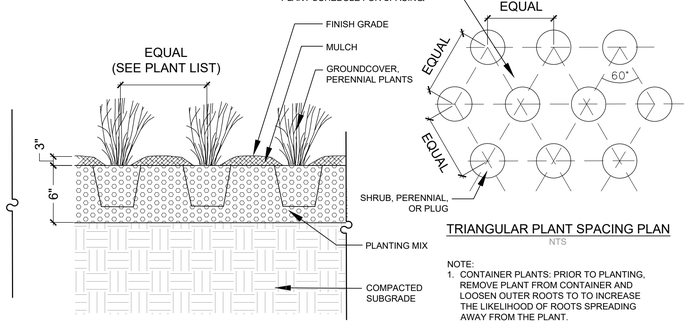
5 L2



TRIANGULAR PLANT SPACING PLAN
NTS

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 / Ornamental Grass Planting

Not to Scale

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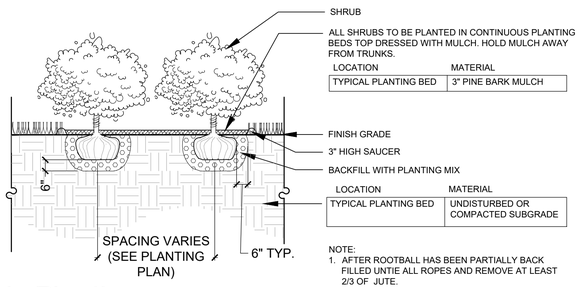
6 L2



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

Shrub Planting

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AMERICAN DURAFILM CO. INC.
HOLLISTON, MA 01746

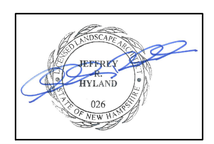
SHEET TITLE
LANDSCAPE DETAILS

REVISION LOG

REV#	DATE	DESCRIPTION
-	-	-

PROJECT NO.	21046.0
DESIGN BY	J. HYLAND / K.OSGOOD
DRAWN BY	J. HYLAND / K.OSGOOD
CHECKED BY	J. HYLAND
DATE	AUGUST 2021
SCALE	AS NOTED

SEAL



L2

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P21-49 & P21-50 **Venture Drive**

Property ID	Location	Owner 1	Owner 2	Owner Address 1	City	State	Zip
A0047-014000	19 REYNERS BROOK DR	YORK JENNIFER L TRUSTEE	YORK JENNIFER L REVOCABLE LIVING TRUST	19 REYNERS BROOK	DOVER	NH	03820
A0047-016000	21 REYNERS BROOK DR	ATORO TEMITAYO M &	ATORO KATHRYN E	21 REYNERS BROOK DR	DOVER	NH	03820
A0047-018000	23 REYNERS BROOK DR	ENOS DON A & LINDA M CO-TRUSTEES	ENOS FAMILY REVOCABLE TRUST	23 REYNERS BROOK	DOVER	NH	03820
A0047-020000	25 REYNERS BROOK DR	COVERT JOSEPH & CATHERINE TRUSTEES	COVERTJOSEPH AND CATHERINE REVOCABLE TRU	25 REYNERS BROOK	DOVER	NH	03820
A0047-022000	27 REYNERS BROOK DR	CLAPPER YVONNE &	CLAPPER WAYNE	27 REYNERS BROOK	DOVER	NH	03820
A0047-024000	29 REYNERS BROOK DR	POOLE PETER W & KATHLEEN E	POOLE FAMILY REV TRUST	29 REYNERS BROOK	DOVER	NH	03820
A0047-026000	31 REYNERS BROOK DR	HODGES CRAIG B & CAROLYN TRUSTEES	HODGES CRAIG AND CAROLYN REVOCABLE TRUST	31 REYNERS BROOK DR	DOVER	NH	03820
A0047-028000	33 REYNERS BROOK DR	LEFOLEY THOMAS & CAROL		33 REYNERS BROOK	DOVER	NH	03820
A0052-000001	51 SANDY LN	JOHNSTONE MARK E TRUSTEE	JOHNSTONE MARK E 2014 TRUST	51 SANDY LN	DOVER	NH	03820
D0009-A00000	150 VENTURE DR	INDEX PACKAGING INC		1055 WHITE MOUNTAIN HIGHWAY	MILTON	NH	03851
D0009-A00SND	VENTURE DR	INDEX PACKAGING INC		1055 WHITE MOUNTAIN HIGHWAY	MILTON	NH	03851
D0009-A01SND	VENTURE DR	INDEX PACKAGING INC		1055 WHITE MOUNTAIN HIGHWAY	MILTON	NH	03851
D0011-000000	127 VENTURE DR	APW PROPERTIES LLC		9 CAPITOL ST	CONCORD	NH	03301
D0011-003000	111 VENTURE DR	MERCHANDISE CENTRAL LLC		111 VENTURE DR	DOVER	NH	03820
D0011-004000	110 VENTURE DR	QUALITY WAY LLC		1 QUALITY WAY ENTERPRISE PARK	DOVER	NH	03820
D0011-006000	QUALITY WY	DOVER BUSINESS & IND DEV AUTHORITY	F/K/A DOVER IND DEV AUTHORITY	288 CENTRAL AV	DOVER	NH	03820
D0011-007000	QUALITY WY	DOVER BUSINESS & IND DEV AUTHORITY	F/K/A DOVER IND DEV AUTHORITY	288 CENTRAL AV	DOVER	NH	03820
D0011-007SN2	QUALITY WY	DOVER BUSINESS & IND DEV AUTHORITY	F/K/A DOVER IND DEV AUTHORITY	288 CENTRAL AV	DOVER	NH	03820
D0011-008000	QUALITY WY	DOVER BUSINESS & IND DEV AUTHORITY	F/K/A DOVER IND DEV AUTHORITY	288 CENTRAL AV	DOVER	NH	03820
D0011-008SN1	QUALITY WY	DOVER BUSINESS & IND DEV AUTHORITY	F/K/A DOVER IND DEV AUTHORITY	288 CENTRAL AV	DOVER	NH	03820
D0011-008SN2	QUALITY WY	DOVER BUSINESS & IND DEV AUTHORITY	F/K/A DOVER IND DEV AUTHORITY	288 CENTRAL AV	DOVER	NH	03820
D0011-008SN3	QUALITY WY	DOVER BUSINESS & IND DEV AUTHORITY	F/K/A DOVER IND DEV AUTHORITY	288 CENTRAL AV	DOVER	NH	03820
D0011-009000	10 INNOVATION WY	HEINE USA		10 INNOVATION WAY	DOVER	NH	03820
D0011-009SND	INNOVATION WY	HEINE USA		10 INNOVATION WAY	DOVER	NH	03820
D0011-A00000	SANDY LN	150 VENTURE DRIVE LLC		192 DOVER POINT RD	DOVER	NH	03820
D0011-001000	VENTURE DR	DOVER BUSINESS & IND DEV AUTHORITY		288 CENTRAL AVE	DOVER	NH	03820
		AMERICAN DURAFILM CO., INC.	MACK HENDRICK	55 BOYNTON ROAD	HOLLISTON	MA	01746
		CIVILWORKS NEW ENGLAND	STEPHAN J HAIGHT, P.E.	P.O. BOX 1166	DOVER	NH	03821
		MCENEANEY SURVEY ASSOCIATES	KEVIN MCENEANEY, LLS.	24 CHESTNUT STREET	DOVER	NH	03820

Property I	Location	Owner 1	Owner 2	Owner Ad	City	State	Zip

Total Valu	Land Valu	Building V	Deed Date	Last Sale	State Class