

CITY OF DOVER

PLANNING TECHNICAL REVIEW COMMITTEE –AGENDA

Meeting Type: Regular Meeting
Meeting Location: Council Conference Room, City Hall, 288 Central Ave, Dover NH 03820
Meeting Date: **Thursday, September 21, 2023**
Meeting Time: **10:30 AM**

1. 10:30 AM - 11:15 AM: Site Review for TF Moran (Owners 256-264 Central Avenue, LLC), Assessor's Map 9, Lots 111 & 112, zoned Central Business District, located at 256 & 264 Central Avenue. (Proposal is to replace gravel parking with 10,595 sf of paved parking related to their renovation of the buildings). (SITE-2023-0013)



PLAN SNAPSHOT REPORT SITE-2023-0013 FOR CITY OF DOVER, N.H.

Plan Type: Site Plan - Major
Work Class: Alteration / Addition
Status: In Review
Valuation: \$0.00

Project:
District: None
Square Feet: 0.00
Assigned To: Blonigen, Rachel

App Date: 09/05/2023
Exp Date: 11/09/2023
Completed: NOT COMPLETED
Approval Expire Date:

Description: The project includes the redevelopment of an existing parking lot associated with 256 Central Avenue which is accessed via Kirkland Street and the addition of a walkway and greenspace at 264 Central Avenue.

Parcel: 09112-000000	Address: 264 Central Av Dover, NH	Zone:
09111-000000 Main	256 Central Av Dover, NH Main	

Engineer
Chris Rice
Home: (603) 431-2222

Applicant
Jason Cook
170 Commerce Way Suite 102
Suite 102
Portsmouth, NH 03801
Business: (603) 431-2222

Plan Custom Fields

Total	0	Total2	0	Total3	0
Total4	0	Total5	0	Total6	0
Total7	0	Total8	0	Total9	0
Street Classification Type	Municipal	Net Change in # Parking Spaces (+/-)	25	Water Service	Municipal
Recording Number		Sewer Service	Municipal	Total Acres (GIS)	0.689
Deed Book	5117	Total SQFT	30012.8	Deed Page	240
Deed Date		Proposed Property Use	The proposed use includes the redevelopment of of gravel parking lot to a paved parking lot with walkway access to the lot from Central Avenue. The existing building on-site is planned to be renovated.	Area of Parcel to be Developed (SQFT)	17766
Number of Parking Spaces Existing	0	Number of Parking Spaces Proposed	25	Type of Building to be Built	Existing Building to remain
Estimated Construction Value	150000.00	Refuse Removal	Private	Is there an existing Conservation Easement?	No
Existing Conservation Easement Details		TotalImpactFeeSDTOD	0.00	TotalImpactFeeTHTOD	0.00
TotalImpactFee23FTOD	0.00	TotalImpactFeeA4TOD	0.00	TotalImpactFeeMHTOD	0.00
TotalImpactFeeADUTO	0.00	TotalImpactFeeAONRT	0.00	TotalImpactFeeAR55TC	0.00
D		OD		D	
TotalImpactFeeAR62TC	0.00	Sub Total Residential	0.00	TotalImpactFeeRIRCT	0.00
D				D	
TotalImpactFeeOCSTO	0.00	TotalImpactFeeITWCT	0.00	TotalImpactFeeNHALT	0.00
D		D		D	
TotalImpactFeeOIUTOD	0.00	TotalImpactFeeAFAOT	0.00	Sub Total	0.00
		OD		Non-Residential	
Total of Impact Fees to be Assessed	0.00				

PLAN SNAPSHOT REPORT (SITE-2023-0013)

Attachment File Name	Added On	Added By	Attachment Group	Notes
Signature_Jason_Cook_9/5/2023.jpg	09/05/2023 14:35	Cook, Jason		Uploaded via CSS

Invoice No.	Fee	Fee Amount	Amount Paid
INV-00004936	Planning General Application Fee	\$200.00	\$0.00
Total for Invoice INV-00004936		\$200.00	\$0.00
Grand Total for Plan		\$200.00	\$0.00

Workflow Step / Action Name	Action Type	Start Date	End Date
Review v.1		09/05/2023 14:48	
Confirm application complete v.1	Generic Action		09/05/2023 14:48
Technical Review Committee Meeting Agenda v.1	Task	09/05/2023 14:48	
Land Use Plan Technical Review v.1	Receive Submittal		
Technical Review Committee Meeting v.1	Hold Meeting		
Planning Board v.1			
Planning Board Agenda v.1	Task		
Invoice for Notices v.1	Task		
Send Notices v.1	Task		
Planner Creates Staff Recommendations v.1	Plan Activity		
Distribute Planning Board Materials v.1	Task		
Planning Board Hearing v.1	Hold Hearing		
Planning Board Decision v.1	Plan Activity		
NOD Sent to Applicant v.1	Create Report		
Final Plan v.1			
Land Use Plan Final Review v.1	Receive Submittal		
Land Use Plan Stamped and Signed v.1	Generic Action		
Plans uploaded to Treneo v.1	Generic Action		
Recording v.1	Task		
Property Info Group v.1	Generic Action		
Building Official Notifies Address v.1	Generic Action		
Pre-Con Meeting v.1	Hold Meeting		
Create/Link to Records v.1			
Create / Link to Permit - Building Complex v.1	Create Sub Permit		
Create / Link to Permit - Site Work, Construction v.1	Create Sub Permit		



Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

**NEW
HAMPSHIRE
200**

August 31, 2023

Gina Cruikshank, Chairperson
Dover Planning Board
288 Central Avenue
Dover, New Hampshire 03820

**RE: Minor Site Plan Review
256 & 264 Central Avenue – 256-264 Central Avenue, LLC – Tax Map 9 Lots 111 & 112
Project #47262.01**

Dear Chairperson Cruikshank:

On behalf of our client, 256-264 Central Avenue, LLC, please find a Minor Site Plan Application submission relative to the above-referenced project. The following materials are included in this submission:

- **Check for Site Plan Review Fee Paid to “City/Town of Dover” (\$1,249.65)**
- **Site Review Application (including Affirmation & Checklist) (8 copies);**
- **Aerial Photo Plan (8 copies);**
- **Site Photos and Locus Plan (8 copies);**
- **Drainage Analysis Report (1 copy);**
- **Abutter’s List (1 copy); and**
- **Site Development Plans entitled “Site Development Plans, Tax Map 9 Lots 111 & 112, Site Improvement Plans, 256 & 264 Central Avenue, Dover, New Hampshire”, prepared by TFMoran, Inc., dated August, 2023 (8 copies at 22”x34).**

Project Description

The project includes the re-development of an existing parking lot associated with 256 Central Avenue which is accessed via Kirkland Street and the addition of a walkway and greenspace at 264 Central Avenue. The proposed project takes place on two different lots. The existing Tax Map 9 Lot 111 is approximately 0.522 acres and currently contains a restaurant and gravel parking lot. The existing Tax Map 9 Lot 112 is approximately 0.167 acres and currently contains a vacant building and alleyway. The site is within the Commercial Business District Zone and is adjacent to the intersection of Central Avenue and Kirkland Street.

The proposed project involves two separate phases. Phase one is to replace the existing compacted gravel parking lot with a paved parking lot. Associated improvements include but are not limited to access, grading, utilities, stormwater management system, lighting, and landscaping. The project proposes a total

TFMoran, Inc.
48 Constitution Drive, Bedford, NH 03110
T(603) 472-4488 www.tfmoran.com



TFMoran, Inc. Seacoast Division
170 Commerce Way–Suite 102, Portsmouth, NH 03801
T(603) 431-2222



Minor Site Plan Review

August 31, 2023

256 & 264 Central Avenue – 256-264 Central Avenue, LLC – Tax Map 9 Lots 111 & 112

Project #47262.01

parking lot footprint of 10,595 s.f. and approximately 17,766 s.f. of disturbance to facilitate the development.

The second phase of the project involves the renovation of the exiting buildings on site. The renovations will result in commercial space on the first floor of both 256 & 264 Central Ave, office space on the second floor of 264 Central Ave, and residential space, totaling 9 units, on the third and fourth floor of 264 Central Ave. There will be access to the commercial space from the parking lot through a paver walkway.

We appreciate your consideration of these matters and look forward to presenting this project to you in the near future.

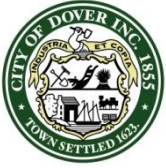
We respectfully request that we be placed on the upcoming agenda for the Technical Review Committee.

If you have any questions or concerns, please do not hesitate to contact us.

Respectfully,
TFMoran, Inc.

Christopher Rice,
Senior Project Manager

CRR/jkc



City of Dover, New Hampshire SITE REVIEW APPLICATION

[Revision Date: July 1, 2021]

Office Use Only	Project #:	SITE-2023-0013	Date Received:	09/05/2023
	Amount Paid:		Time Received:	

APPLICANT AND OWNER INFORMATION

Name of Applicant: 256-264 Central Avenue, LLC Telephone # _____

Address of Applicant: 96 Main Street, Newmarket, NH 03857

E-Mail Address: _____

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

Address of Property Owner: _____

PROPERTY INFORMATION

Address of Property: 256 & 264 Central Avenue, Dover, NH 03839

Assessor's Map # 9 Lot(s) # 111 & 112

Zoning District(s) Central Business District Overlay District(s) General Sub-District

111: 22,747 111: 0.522

Size of Parcel: 112: 7,287 sq. ft. 112: 0.167 ac. Property Deed: Book 5117 Page: 240

Existing Use of Property: Commercial with Gravel Parking

SITE PLAN INFORMATION

Describe Proposed Use: Commercial with Paved Parking

Area of Parcel to be Developed: 17,766 sq. ft.

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

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

Number of Parking Spaces: Existing Not defined Proposed 25

Highway Access (check where applicable): ☒ City Street _____ State Highway _____

Number of Employees Total: _____ In Maximum Shift: _____

Disposition of Parcel:

Building Setbacks:

Building Footprint _____ sq. ft.

Front Yard _____ ft.

Total Building Area _____ sq. ft.

Rear Yard _____ ft.

Paved Area _____ sq. ft.

Side Yard: Right _____ ft. Left _____ ft.

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

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

TRANSFER OF DEVELOPMENT RIGHTS INFORMATION

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

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

Relief sought (Check All That Apply):

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

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

BUILDING INFORMATION

Type of Building to be Built: N/A

Height of Building: _____ 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.) Brenda Kolbow, TFMoran Inc.

Address 170 Commerce Way, Suite 102, Portsmouth, NH 03801 Telephone #: (603) 431-2222

Professional License #: _____ E-mail address: bkolbow@tfmoran.com

ENGINEER INFORMATION

Name of Engineer and Company (Licensed in N.H.) Jack McTigue, TFMoran Inc.

Address 170 Commerce Way, Suite 102, Portsmouth, NH 03801 Telephone #: (603) 431-2222

Professional License #: _____ E-mail address: jmctigue@tfmoran.com

ARCHITECT INFORMATION

Name of Architect and Company (Licensed in N.H.) N/A

Address _____ Telephone #: _____

Professional License #: _____ E-mail address: _____

LANDSCAPE ARCHITECT INFORMATION

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

Address _____ Telephone #: _____

Professional License #: _____ E-mail address: _____

SOIL SCIENTIST INFORMATION

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

Address _____ Telephone #: _____

Professional License #: _____ E-mail address: _____

CONSERVATION EASEMENT HOLDER

Name of Easement Holder: N/A 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.

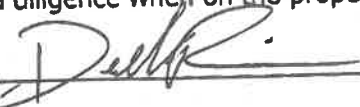
Signature of Property Owner:  Date: 9/5/23

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

Signature of Agent:  - Chris Rice Date: 9/5/23

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: 9/5/23

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: 9/5/23

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: 9/5/23

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



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: 256-264 Central Avenue, LLC File Number: _____

PROJECT TITLE: 256 & 264 Central Avenue Site Improvements

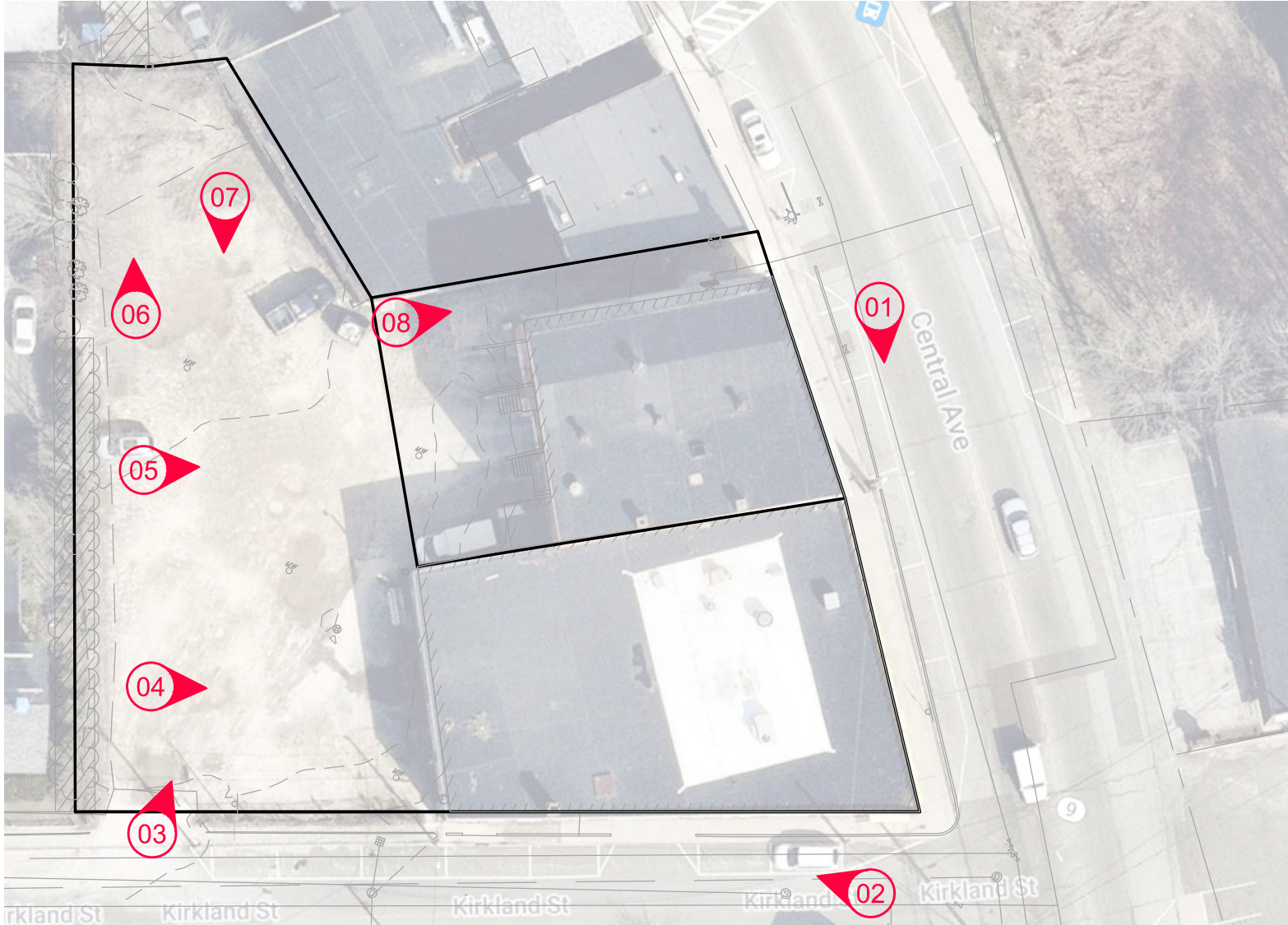
PROPERTY LOCATION: 256 & 264 Central Avenue Tax Map: 9 Lot: 111 & 112

	Where/How Provided	Reviewed
1. Completed and signed Application form	Attached Site Review Application	
2. Plan Review Fees are provided	Attached Check	
3. Electronic copy of the engineered/surveyed plan layout	Via email	
4. Electronic copy of supplementary materials and application	Via email	
5. Traffic Impact Assessment and Analysis (Standard or Advanced)	N/A	
6. Waiver requests to the Site Plan Review Regulations, with written justification	N/A	
7. Conditional Use Permit applications	N/A	
8. A colored rendering of the streetscape that will be created along the existing public right-of-way	N/A	
9. A colored architectural plan showing all sides of buildings	N/A	
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:	Attached Site Development Plans	
Location map at appropriate scale	Sheet S-01	
Proposed Project name and title and Planning File #	Sheet C-00	
Date, north arrow and scale	All sheets	
Names of all abutting property owners	Attached Abutters List	
Name and address of owners and/or applicants	Attached Site Review Application	
Signature & stamp of NH licensed land surveyor and/or engineer	N/A	
Zoning District boundaries, including any special or overlay districts	Sheet S-01	
Location of Conservation District areas	N/A	
Location, names and widths of existing and proposed streets, including pavement widths, grades, curbs and crosswalks	Sheet S-01	
Location and widths of existing & proposed easements & right of ways	Sheet S-01	
Location and width of existing and proposed access/egress ways	Sheet S-01	

	Explain How Provided	Reviewed
Depict pedestrian walkways and accessible access	Sheet C-02	
Existing and proposed property lines with dimensions and bearings tied into Dover's Geographic Information System coordinate system	Sheet S-01	
Existing and proposed topographic information at two foot intervals	Sheet S-01	
Existing and proposed buildings and structure locations	Sheet S-01	
Minimum building setbacks or build to lines on all lots	Sheet C-02	
Location and size of existing and proposed electric, telephone, gas cable and other underground utilities	Sheet S-01 & C-02	
Existing and proposed water lines and fire hydrants, including materials and capacity needed	Sheet S-01 & C-02	
Location and materials of sanitary sewage facilities within project site and projected additional peak hour sewer load	N/A	
Existing and proposed stormwater lines and facilities	Sheet S-01 & C-03	
Lighting plan depicting all existing and proposed exterior light fixtures and a lighting level analysis for parking lots	Sheet C-04	
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	Attached Aerial Plan	
Existing natural features and/or significant vegetation on property	N/A	
Depict existing contours up to 100 ft. beyond project limits	Sheet S-01	
Landscape plan depicting existing and proposed landscaping, prepared by a licensed Professional Landscape Architect	Sheet C-05	
Location of parking layout delineating spaces and arrangement; note addressing maximum required spaces	Sheet C-02	
Location, material and size of existing and proposed pavement area	Sheet S-01 & C-02	
Location of proposed fire lanes	N/A	
Specify finished floor elevations of buildings	N/A	
Location of solid waste disposal facilities (dumpster, pad and screening, etc.), including required screening	Sheet C-02	
Depict all service, storage, loading bays and utility areas	N/A	
All applicable Dover Common Site Plan notes	Sheet C-02	
11. Additional Information if appropriate		
Stormwater Management Plan depicting the existing & proposed storm drainage system and engineered drainage analysis	Sheet C-03	
Stormwater Management System Operation and Maintenance Plan	Attached Drainage Analysis	
Letter to Serve from Public and Private Utilities	N/A	
Erosion and Sedimentation Control Plan	Sheet C-03	
Landscape Operation and Maintenance Plan	Sheet C-05	
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	Sheet C-03	
Location of proposed drive-in facilities	N/A	
Provide additional exhibits/technical data determined appropriate by the Planning Board or its staff as required	N/A	

REVIEWED BY: _____ DATE _____ TRC DATE _____

Aug 31, 2023 - 2:21pm
F:\MSC Projects\47262 - Central Avenue - Dover\47262-01 256 & 264 Central Avenue, Dover, NH\Design\Exhibits\47262-01 Photo Locus.dwg



EXHIBIT

TAX MAP 9 LOTS 111 & 112
SITE PHOTO LOCUS PLAN
256 & 264 CENTRAL AVENUE
DOVER, NH
OWNED BY & PREPARED FOR
256-264 CENTRAL AVENUE, LLC

SCALE: 1"=40'

AUGUST 31, 2023

					TFM	FILE	47262.01	DR	JKC	FB		EX-02
REV	DATE	DESCRIPTION	DR	CK				CK	CRR	CADFILE	47262-01 PHOTO LOCUS.DWG	



Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

Site Photos

256 & 264 Central Avenue

Dover, NH 03839

**Taken on
March 30, 2023**

See attached Site Photo Locus Plan for location of each photo.

Photo #1:



Photo #2:



Photo #3:



Photo #4:



Photo #5:



Photo #6:



Photo #7:



Photo #8:



DRAINAGE ANALYSIS REPORT

F O R

**256 & 264 Central
Avenue**

**Dover, New Hampshire
Strafford County**

Tax Map 9, Lots 111 & 112

**Owned by and Prepared for
256-264 Central Avenue, LLC**

August 31, 2023

Prepared By:



Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

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1.0 - SUMMARY & PROJECT DESCRIPTION

The project includes the re-development of an existing gravel parking lot and alleyway into a paved parking lot with a brick walkway at 256 & 264 Central Avenue in Dover, NH. The existing Tax Map 9 Lots 111 & 112 is approximately 0.689 acres and currently contains a gravel parking lot. The site is within the Central Business District Zone and General Sub-District and is adjacent to the intersection of Central Avenue and Kirkland Street.

The proposed project is to construct a parking lot with 25 parking stalls. Associated improvements include and are not limited to access, grading, utilities, stormwater management system, lighting, and landscaping. The project proposes a total of 23,041 SF of impervious area within the property lines and approximately 17,766 SF of disturbance to facilitate the development.

This analysis has been completed to verify the project will not pose adverse stormwater effects on-site and off-site. Compared to the pre-development conditions, the post-development stormwater management system has been designed to reduce peak runoff rates, increases within regulatory limits the runoff volume, reduces the risk of erosion and sedimentation, and improves stormwater runoff quality. In addition, Best Management Practices are employed to formulate a plan that assures stormwater quality both during and after construction. The following summarizes the findings from the study.

2.0 - CALCULATION METHODS

The design storms analyzed in this study are the 2-year, 10-year, 25-year, and 50-year 24-hour storm events. The software program, HydroCAD version 10.00¹ was utilized to calculate the peak runoff rates from these storm events. The program estimates the peak rates using the TR-20 method. A Type III storm pattern was used in the model. Rainfall frequencies for the analyzed region were also incorporated into the model. Rainfall frequencies from the higher of the Extreme Precipitation Rates from Cornell University's Northeast Regional Climate Center (see Appendix A) were used to determine the storm-event intensities, see Table 1. Design standards were taken from the New Hampshire Stormwater Manual, December 2008².

	24-HOUR RAINFALL RATES
Storm-Event (year)	Northeast Regional Climate Center Extreme Precipitation (in)
2	3.15
10	4.75
25	6.01
50	7.18

Table 1 – 24-Hour Rainfall Rates

Time of Concentration is the time it takes for water to flow from the hydraulically most remote point in the watershed (with the longest travel time) to the watershed outlet. This time is determined by calculating the time it takes runoff to travel this route under one of three

¹ HydroCAD version 10.00, HydroCAD Software Solutions LLC, Chocorua, NH, 2013.

² New Hampshire Stormwater Manual: Volume One - Stormwater and Antidegradation, December 2008; Volume Two - Post-Construction Best Management Practices Selection and Design, December 2008; Volume Three - Erosion and Sediment Controls During Construction, December 2008.

hydrologic conditions: sheet flow, shallow concentrated flow, or channel flow. Because the Intensity-Duration-Frequency (IDF) curve is steep with short TC's, estimating the actual intensity is subject to error and overestimates actual runoff. Due to this, the TC's are adjusted to a minimum of 6 minutes.

3.0 – EXISTING SITE CONDITIONS

The soils within the proposed area of disturbance are identified in accordance with the NRCS Web Soil Survey (see Appendix B for details and soil locations). The Site-Specific Soil Survey identifies the soils within the disturbed project area as primarily Buxton silt loam. This soil is classified as moderately well drained.

Three test pits and infiltration tests were conducted. In nearly all test pit locations, fill material was discovered. Infiltration tests were determined per Ksat testing using a Compact Constant Head Permeameter (Amoozemeter) per Env-Wq 1504.14(d). The highest Estimated Seasonal High-Water Table (ESWT) observed were: unobserved at Test Pit #1 (dug to 52"), elevation 53.60' at Test Pit 2, and elevation 54.05 at Test Pit #3.

4.0 - PRE-DEVELOPMENT CONDITIONS

The pre-development condition is characterized by four subcatchments composing one watershed, which flows towards the municipal stormwater system, which ultimately discharges to the Piscataqua River. Pre-development subcatchment areas are depicted on the attached plan entitled "Pre-Development Drainage Map," Sheet D-01 in Appendix H.

Stormwater runoff from the site primarily flows over the compacted gravel, across abutting properties and to the existing municipal stormwater drainage system (POI-1, POI-2, & POI-3) and to the municipal sewer system (POI-4).

In the pre-development condition, the total impervious area is 26,056 SF over a total drainage analysis area of 30,031 SF.

5.0 - POST-DEVELOPMENT CONDITIONS

The post-development condition is characterized by one watershed divided into four subcatchment areas. Post-development subcatchment areas are depicted on the attached plan entitled "Post-Development Drainage Map," sheet D-02 in Appendix H.

In the post-development condition, the total impervious area is 23,499 SF over a total drainage analysis area of 30,031 SF. Impervious area from the project consists of a 9,140 SF footprint parking lot, a 12,260 SF footprint building and associated improvements. Two BMPs are proposed to treat and mitigate the stormwater runoff from the impact of the new impervious area from the proposed development.

Three test pits and infiltration tests were conducted. In nearly all test pit locations, fill material was discovered. Infiltration tests were determined per default published Ksat values for the design infiltration rates per Env-Wq 1504.14(c) and/or Ksat testing using a Compact Constant Head Permeameter (Amoozemeter) per Env-Wq 1504.14(d).

Table 2 summarizes the pre- and post-development peak runoff rates for the 2-year, 10-year, 25-year, and 50-year 24-hour Type III storm events for all discharge. Table 3 summarizes the

pre- and post-development peak runoff volumes for the 2-year 24-hour Type III storm events for all discharge.

TABLE 2 – SURFACE WATER PEAK RUNOFF RATE COMPARISON (CF)					
POINT OF INTEREST		DESIGN STORM			
		2-year	10-year	25-year	50-year
POI-1	Pre	0.3	0.34	0.6	0.7
	Post	0.1	0.1	0.2	0.3
POI-2	Pre	0.4	0.6	0.8	0.9
	Post	0.0	0.1	0.1	0.1
POI-3	Pre	0.4	0.7	0.9	1.0
	Post	0.5	1.0	1.4	1.7
POI-4	Pre	0.8	1.3	1.6	1.9
	Post	0.8	1.3	1.6	1.9

Table 2 - Pre and Post- Development Peak Runoff Rate Comparison

TABLE 3 – SURFACE WATER PEAK RUNOFF VOLUME COMPARISON (CF)		
POINT OF INTEREST		DESIGN STORM
		2-year
POI-1	Pre	818
	Post	188
POI-2	Pre	1,309
	Post	96
POI-3	Pre	1,480
	Post	1,379
POI-4	Pre	2,979
	Post	2,981

Table 3 - Pre and Post- Development Peak Runoff Volume Comparison

The proposed project reduces peak rates of runoff compared to existing conditions for all storm events, in accordance Dover stormwater regulations. Additionally, per NHDES, the 2-year 24-hour storm does not result in an increased peak flow rate and reduces or increases volume within the limits of Env-Wq 1507.05(b)(1) from the pre-development to post-development condition. There will be no adverse effects on the abutting properties from the proposed stormwater management system.

Appendices D and F summarizes all 24-hour storm events for pre- and post-development drainage calculations using HydroCAD analysis. Appendices E and G provide a full summary of the 10-year, 24-hour storm for the pre- and post-development drainage calculations using HydroCAD analysis.

There were two warning messages for the 10-year storm event related to the proposed BMP's:

- [80] Warning: Pond ST Exceeded Pond DMH03 by 0.03' @ 12.15 hrs (0.3 cfs 88 cf)
- [80] Warning: Pond ST Exceeded Pond DMH05 by 0.03' @ 12.10 hrs (0.4 cfs 217 cf)

Warning 80 occurs due stormwater staging in the Subsurface Infiltration Basins, causing some adjacent stormwater drainage systems to also stage stormwater. The exceeded catch basins and manholes are located where inverts into the basins are similar to the bottom of the chambers.

Catch basin and manhole inverts were adjusted to minimize the severity of this occurrence. Catch basin and manholes have been designed to maintain slopes of at least 0.5%, and 0.1' drop between inlet and outlet. For all analyzed storm events, stormwater contained in catch basins and manholes do not overflow structure rims.

6.0 – REGULATORY COMPLIANCE

The project meets the stricter of the stormwater standards identified in the New Hampshire Department of Environmental Services (DES) Env-Wq 1500 Alteration of Terrain Regulations and Dover stormwater management regulations.

7.0 – BEST MANAGEMENT PRACTICES

Best Management Practices will be developed in accordance with the New Hampshire Stormwater Manual, Volumes Two and Three, December 2008³ to formulate a plan that assures stormwater quality both during and after construction. The intent of the outlined measures is to minimize erosion and sedimentation during construction, stabilize and protect the site from erosion after construction is complete and mitigate any adverse impacts to stormwater quality resulting from development. Best Management Practices for this project include:

- Temporary practices to be implemented during construction.
- Permanent practices to be implemented after construction.

7.1 – TEMPORARY PRACTICES

1. Erosion, sediment, and stormwater detention measures must be installed as directed by the engineer.
2. All disturbed areas, as well as loam stockpiles, shall be seeded and contained by a silt barrier.
3. Silt barriers must be installed prior to any construction commencing. All erosion control devices including silt barriers and storm drain inlet filters shall be inspected at least once per week and following any rainfall. All necessary maintenance shall be completed within twenty-four (24) hours.
4. Any silt barriers found to be failing must be replaced immediately. Sediment is to be removed from behind the silt fence if found to be one-third the height of the silt barrier or greater.

³ New Hampshire Stormwater Manual: Volume One - Stormwater and Antidegradation, December 2008; Volume Two - Post-Construction Best Management Practices Selection and Design, December 2008; Volume Three - Erosion and Sediment Controls During Construction, December 2008.

5. Any area of the site, which has been disturbed and where construction activity will not occur for more than twenty-one (21) days, shall be temporarily stabilized by mulching and seeding.
6. No construction materials shall be buried on-site.
7. After all areas have been stabilized, temporary practices are to be removed, and the area they are removed from must be smoothed and revegetated.
8. Areas must be temporarily stabilized within 14 days of disturbance or seeded and mulched within 3 days of final stabilization.
9. After November 15th, incomplete driveways or parking areas must be protected with a minimum of 3" of crushed gravel, meeting the standards of NHDOT item 304.3.
10. An area shall be considered stable if one of the following has occurred:
 - a) Base course gravels are installed in areas to be paved.
 - b) A minimum of 85% vegetated growth has been established.
 - c) A minimum of 3" of non-erosive material such as stone or rip rap has been installed.
 - d) Erosion control blankets have been properly installed.

7.2 – PERMANENT PRACTICES

The objectives for developing permanent Best Management Practices for this site include the following:

1. Maintain existing runoff flow characteristics.
 - a) Drainage is structured to minimize any offsite increase in runoff
2. Treatment BMP's are established to ensure the water quality.
3. Maintenance schedules are set to safeguard the long term working of the stormwater BMP's.

8.0 – CONCLUSION

The proposed stormwater management system will treat, infiltrate, and mitigate the runoff generated from the proposed development and provide protection of groundwater and surface waters as required through the Alteration of Terrain Bureau and Dover stormwater management regulations. The project has been designed in accordance with NHDES and Dover regulations. There is little change in the flow characteristics of the site. The proposed project has been designed to pose no adverse effects on surrounding properties.

Respectfully,
TFMoran, Inc. Seacoast Division

Christopher Rice
Senior Project Manager

APPENDIX A – EXTREME PRECIPITATION RATES

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Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Metadata for Point	
Smoothing	Yes
State	
Location	
Latitude	43.193 degrees North
Longitude	70.874 degrees West
Elevation	10 feet
Date/Time	Mon Jun 26 2023 16:44:43 GMT-0400 (Eastern Daylight Time)

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	2.00	2.60	2.87	1yr	2.31	2.76	3.16	3.89	4.45	1yr
2yr	0.32	0.49	0.61	0.81	1.01	1.29	2yr	0.88	1.17	1.50	1.92	2.45	3.15	3.51	2yr	2.79	3.38	3.87	4.61	5.24	2yr
5yr	0.37	0.57	0.72	0.96	1.23	1.58	5yr	1.06	1.44	1.85	2.39	3.08	3.98	4.50	5yr	3.53	4.33	4.95	5.82	6.57	5yr
10yr	0.40	0.64	0.80	1.09	1.42	1.85	10yr	1.23	1.69	2.18	2.83	3.66	4.75	5.43	10yr	4.21	5.22	5.96	6.94	7.81	10yr
25yr	0.46	0.74	0.94	1.30	1.72	2.27	25yr	1.49	2.09	2.70	3.53	4.61	6.01	6.96	25yr	5.32	6.70	7.63	8.78	9.80	25yr
50yr	0.52	0.83	1.06	1.49	2.00	2.67	50yr	1.73	2.46	3.18	4.19	5.49	7.18	8.41	50yr	6.35	8.09	9.21	10.49	11.65	50yr
100yr	0.58	0.94	1.21	1.71	2.33	3.13	100yr	2.01	2.89	3.75	4.96	6.53	8.58	10.16	100yr	7.59	9.77	11.11	12.54	13.86	100yr
200yr	0.64	1.05	1.36	1.96	2.71	3.68	200yr	2.34	3.40	4.44	5.90	7.80	10.26	12.28	200yr	9.08	11.81	13.40	14.99	16.48	200yr
500yr	0.76	1.25	1.63	2.36	3.31	4.55	500yr	2.86	4.22	5.51	7.38	9.82	12.99	15.78	500yr	11.50	15.18	17.19	19.00	20.75	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	1.26	1.58	2.14	2.45	1yr	1.90	2.36	2.88	3.36	4.03	1yr
2yr	0.31	0.49	0.60	0.81	1.00	1.18	2yr	0.86	1.16	1.36	1.83	2.35	3.04	3.40	2yr	2.69	3.27	3.75	4.47	5.05	2yr
5yr	0.35	0.54	0.67	0.91	1.16	1.40	5yr	1.00	1.37	1.61	2.15	2.77	3.71	4.13	5yr	3.29	3.97	4.62	5.41	6.11	5yr
10yr	0.38	0.59	0.73	1.02	1.32	1.60	10yr	1.14	1.56	1.81	2.44	3.12	4.27	4.78	10yr	3.78	4.60	5.32	6.24	7.01	10yr
25yr	0.44	0.66	0.83	1.18	1.55	1.91	25yr	1.34	1.87	2.11	2.83	3.64	4.92	5.78	25yr	4.36	5.56	6.49	7.54	8.41	25yr
50yr	0.48	0.73	0.91	1.31	1.76	2.19	50yr	1.52	2.14	2.35	3.19	4.09	5.61	6.67	50yr	4.97	6.41	7.53	8.69	9.64	50yr
100yr	0.54	0.81	1.01	1.47	2.01	2.51	100yr	1.73	2.45	2.63	3.56	4.56	6.38	7.68	100yr	5.65	7.38	8.73	10.03	11.04	100yr
200yr	0.59	0.89	1.13	1.64	2.29	2.87	200yr	1.97	2.80	2.93	3.99	5.09	7.26	8.84	200yr	6.42	8.50	10.12	11.57	12.66	200yr
500yr	0.69	1.03	1.33	1.93	2.74	3.45	500yr	2.36	3.37	3.40	4.61	5.89	8.57	10.64	500yr	7.58	10.23	12.29	13.99	15.12	500yr

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.43	0.53	0.71	0.87	1.08	1yr	0.75	1.05	1.24	1.74	2.21	2.88	3.10	1yr	2.55	2.98	3.44	4.23	4.82	1yr
2yr	0.33	0.51	0.62	0.85	1.04	1.25	2yr	0.90	1.22	1.47	1.95	2.51	3.30	3.64	2yr	2.92	3.50	4.01	4.76	5.46	2yr
5yr	0.39	0.61	0.75	1.03	1.31	1.58	5yr	1.13	1.55	1.86	2.50	3.20	4.25	4.87	5yr	3.76	4.68	5.29	6.25	7.01	5yr
10yr	0.46	0.70	0.87	1.22	1.57	1.92	10yr	1.36	1.88	2.24	3.05	3.86	5.22	6.08	10yr	4.62	5.85	6.69	7.67	8.55	10yr
25yr	0.56	0.85	1.05	1.50	1.98	2.48	25yr	1.71	2.43	2.88	3.97	4.97	7.09	8.18	25yr	6.28	7.86	8.97	10.10	11.15	25yr
50yr	0.64	0.98	1.22	1.75	2.36	3.00	50yr	2.04	2.93	3.50	4.83	6.03	8.76	10.25	50yr	7.75	9.86	11.22	12.42	13.63	50yr
100yr	0.75	1.13	1.42	2.05	2.81	3.63	100yr	2.43	3.54	4.24	5.92	7.34	10.83	12.86	100yr	9.58	12.36	14.02	15.31	16.68	100yr
200yr	0.87	1.31	1.66	2.40	3.35	4.40	200yr	2.89	4.30	5.16	7.24	8.92	13.42	16.14	200yr	11.88	15.52	17.55	18.85	20.43	200yr
500yr	1.07	1.58	2.04	2.96	4.21	5.65	500yr	3.64	5.52	6.67	9.47	11.57	17.84	21.80	500yr	15.79	20.96	23.63	24.86	26.74	500yr

APPENDIX B – SITE-SPECIFIC SOIL SURVEY & NRCS WEB SOIL REPORT

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United States
Department of
Agriculture

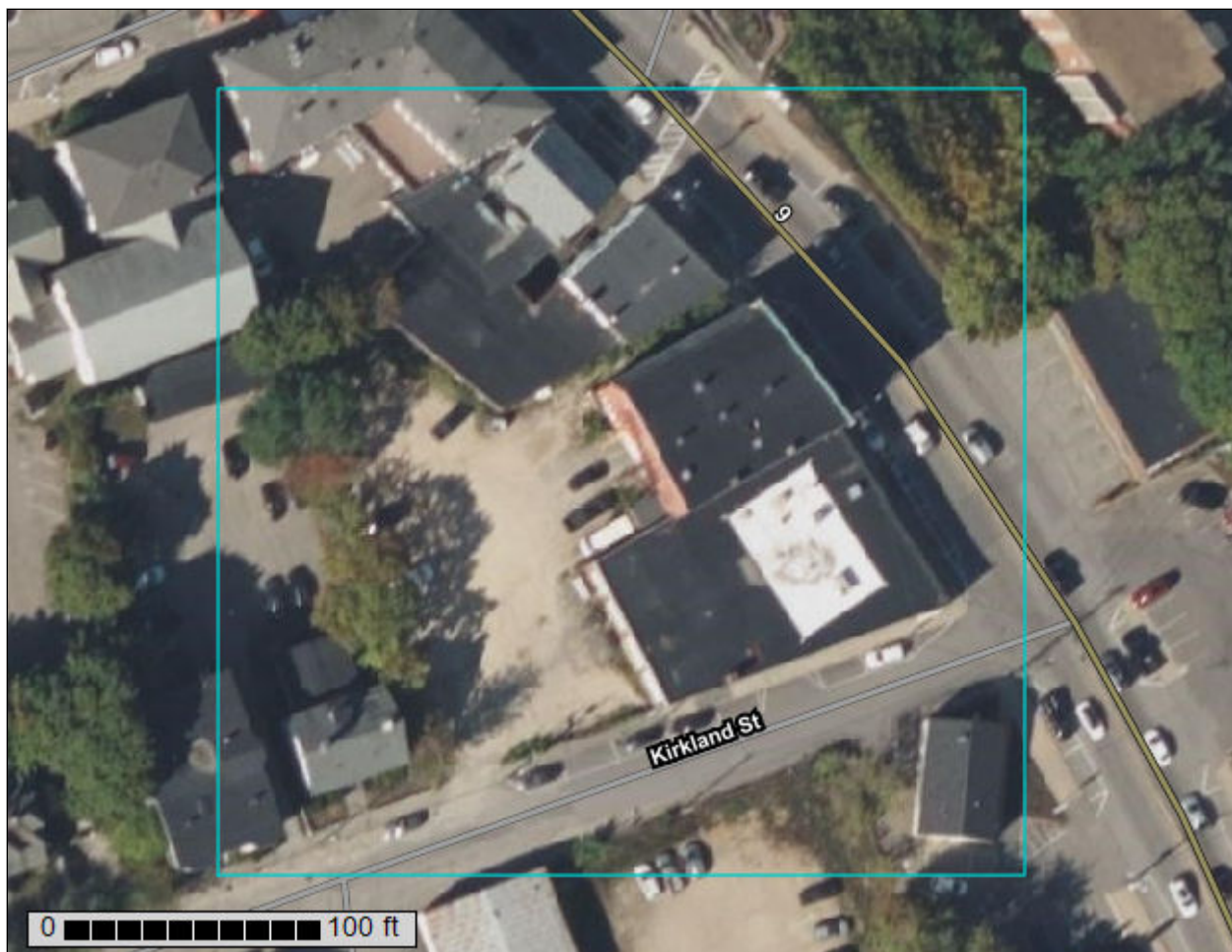
NRCS

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

256 & 264 Central Avenue Dover,
NH



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

Custom Soil Resource Report

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



Custom Soil Resource Report

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 23, Sep 9, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 19, 2020—Sep 20, 2020

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	2.2	99.5%
SfC	Suffield silt loam, 8 to 15 percent slopes	0.0	0.5%
Totals for Area of Interest		2.2	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 supply, 0 to 60 inches: 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

SfC—Suffield silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9d8v

Elevation: 0 to 250 feet

Mean annual precipitation: 36 to 71 inches

Mean annual air temperature: 39 to 55 degrees F

Frost-free period: 140 to 240 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Suffield and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Suffield

Typical profile

H1 - 0 to 19 inches: silt loam

H2 - 19 to 28 inches: silt loam

H3 - 28 to 41 inches: silty clay

Properties and qualities

Slope: 8 to 15 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 7.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: C

Ecological site: F144AY017NH - Well Drained Lake Plain

Hydric soil rating: No

Minor Components

Not named

Percent of map unit: 9 percent

Hydric soil rating: No

Buxton

Percent of map unit: 5 percent

Hydric soil rating: No

Custom Soil Resource Report

Rock outcrop

Percent of map unit: 1 percent

Hydric soil rating: No

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Custom Soil Resource Report

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United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

APPENDIX C – TEST PIT LOGS & INFILTRATION **TEST DATA**

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Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

Test Pit Logs

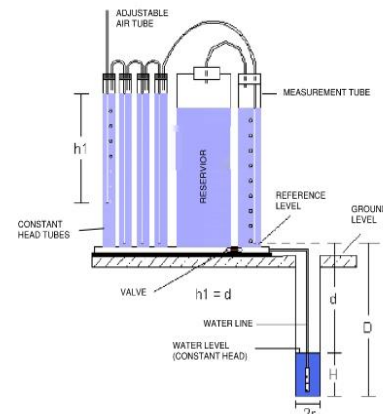
PROJECT NAME:	256 & 264 Central Avenue, Dover NH	ENGINEER:	Corey Colwell
PROJECT NUMBER:	47262.01	DATE OF TESTING:	6/14/2023
PROJECT LOCATION:	264 Central Avenue, Dover NH	EXCAVATOR:	Sea Glass Property Maintenance
TEST PIT 1			
DEPTH	SOIL CONDITIONS	Data	
0-8"	Silty Gravel - Blocky	ESHWT Not observed	
8-10"	Asphalt		
10-52"	Fill, Dark Silty Sand	Bottom of Pit 52"	
		Redox Not observed	
TEST PIT 2			
DEPTH	SOIL CONDITIONS	Data	
0-3"	Silty Gravel - Blocky	ESHWT 42"	
3-6"	Sandy Gravel - compacted/firm		
6-10"	Crushed Asphalt	Bottom of Pit 56"	
10-42"	Fill - Sandy gravel		
42-56"	Dark Sandy Silt/Clay	Redox 42"	
TEST PIT 3			
DEPTH	SOIL CONDITIONS	Data	
0-3"	Silty Gravel - Blocky	ESHWT 42"	
3-13"	Sandy Gravel - Compacted - Firm		
13-33"	Dark Sand Fill with Ash	Bottom of Pit 63"	
33-63"	Dark Sandy Silty Fill with Coal and Ash		
		Redox Not Observed	



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Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

PROJECT NAME:	256 & 264 Central Avenue, Dover NH	ENGINEER:	Jason Cook
PROJECT NUMBER:	47262.01	DATE OF TESTING:	6/14/2023
PROJECT LOCATION:	264 Central Avenue, Dover NH		

Amoozometer Field Data Sheet	Test Pit 1	Ksat (Average) = 0.402		
SETUP CALCULATIONS		Test 1	Test 2	Test 3
D - REF LINE OF A-METER TO HOLE BOTTOM (cm)		94.0	92.7	95.3
H - DEPTH OF H2O IN HOLE (cm)		20.3	19.1	21.6
d - TOP OF WATER TO OUTFLOW LENGTH (cm)		73.7	73.7	73.7
AUGER DIAMETER (cm)		5.0	5.0	5.0
AREA OF AUGER HOLE (cm ²)		19.6	19.6	19.6
DEPTH TO IMPERVIOUS LAYER/SHWT, "s" (cm)		132.08	132.08	132.08
GLOVER SOLUTION A OR B		A	A	A
SOIL DESCRIPTION AT TEST 1 DEPTH:	Fill, Dark Silty Sand			
SOIL HORIZON AT TEST 1 DEPTH:				
SOIL DESCRIPTION AT TEST 2 DEPTH:	Fill, Dark Silty Sand			
SOIL HORIZON AT TEST 2 DEPTH:				
SOIL DESCRIPTION AT TEST 3 DEPTH:	Fill, Dark Silty Sand			
SOIL HORIZON AT TEST 3 DEPTH:				
ONE OR BOTH CHAMBERS USED:		1	1	1



READING (Δ)	TIME INTERVAL (sec)	COEFFICIENT A or B	COEFFICIENT A or B 1/cm	CONVERSION FACTOR cm ³	OUTFLOW cm ³ /s	SATURATED HYDRAULIC CONDUCTIVITY (Ksat) cm/sec	SATURATED HYDRAULIC CONDUCTIVITY (Ksat) in/hr	COMMENTS
0.1	40	A	0.000754	20.0	0.05	3.77E-05	0.05340596	
0.1	40	A	0.000754	20.0	0.05	3.77E-05	0.05340596	
0.1	40	A	0.000754	20.0	0.05	3.77E-05	0.05340596	
0.1	40	A	0.000754	20.0	0.05	3.77E-05	0.05340596	
0.2	40	A	0.000754	20.0	0.1	7.54E-05	0.10681193	

Average Ksat (3 consecutive readings w/same outflow per time): 0.053406

READING (Δ)	TIME INTERVAL (sec)	COEFFICIENT A or B	COEFFICIENT A or B 1/cm	CONVERSION FACTOR cm ³	OUTFLOW cm ³ /s	SATURATED HYDRAULIC CONDUCTIVITY (Ksat) cm/sec	SATURATED HYDRAULIC CONDUCTIVITY (Ksat) in/hr	COMMENTS
0.2	40	A	0.000815	20.0	0.1	8.15E-05	0.11553036	
0.6	40	A	0.000815	20.0	0.3	0.000245	0.34659108	
0.5	40	A	0.000815	20.0	0.25	0.000204	0.2888259	
0.5	40	A	0.000815	20.0	0.25	0.000204	0.2888259	
0.7	40	A	0.000815	20.0	0.35	0.000285	0.40435626	
0.7	40	A	0.000815	20.0	0.35	0.000285	0.40435626	
0.7	40	A	0.000815	20.0	0.35	0.000285	0.40435626	

Average Ksat (3 consecutive readings w/same outflow per time): 0.404356

READING (Δ)	TIME INTERVAL (sec)	COEFFICIENT A or B	COEFFICIENT A or B 1/cm	CONVERSION FACTOR cm ³	OUTFLOW cm ³ /s	SATURATED HYDRAULIC CONDUCTIVITY (Ksat) cm/sec	SATURATED HYDRAULIC CONDUCTIVITY (Ksat) in/hr	COMMENTS
1.5	40	A	0.000674	20.0	0.75	0.000506	0.71668219	
2.2	40	A	0.000674	20.0	1.1	0.000742	1.05113388	
0.7	40	A	0.000674	20.0	0.35	0.000236	0.33445169	
1.5	40	A	0.000674	20.0	0.75	0.000506	0.71668219	
1.5	40	A	0.000674	20.0	0.75	0.000506	0.71668219	
1.7	40	A	0.000674	20.0	0.85	0.000573	0.81223981	

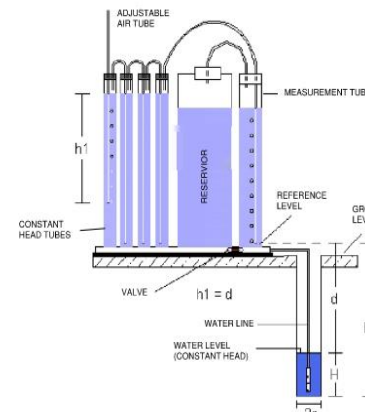
Average Ksat (3 consecutive readings w/same outflow per time): 0.748535



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Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

PROJECT NAME:	256 & 264 Central Avenue, Dover NH	ENGINEER:	Jason Cook
PROJECT NUMBER:	47262.01	DATE OF TESTING:	6/14/2023
PROJECT LOCATION:	264 Central Avenue, Dover NH		

Amoozemeter Field Data Sheet	Test Pit 2	Ksat (Average) = 3.50		
SETUP CALCULATIONS		Test 1	Test 2	Test 3
D- REF LINE OF A-METER TO HOLE BOTTOM (cm)		94.0	95.3	95.3
H - DEPTH OF H2O IN HOLE (cm)		20.3	21.6	21.6
d - TOP OF WATER TO OUTFLOW LENGTH (cm)		73.7	73.7	73.7
AUGER DIAMETER (cm)		5.0	5.0	5.0
AREA OF AUGER HOLE (cm ²)		19.6	19.6	19.6
DEPTH TO IMPERVIOUS LAYER/SHWT, "s" (cm)		106.68	106.68	106.68
GLOVER SOLUTION A OR B		A	A	A
SOIL DESCRIPTION AT TEST 1 DEPTH:	Fill, Sandy gravel			
SOIL HORIZON AT TEST 1 DEPTH:				
SOIL DESCRIPTION AT TEST 2 DEPTH:	Fill, Sandy gravel			
SOIL HORIZON AT TEST 2 DEPTH:				
SOIL DESCRIPTION AT TEST 3 DEPTH:	Fill, Sandy gravel			
SOIL HORIZON AT TEST 3 DEPTH:				
ONE OR BOTH CHAMBERS USED:		1	1	1



READING (Δ)	TIME INTERVAL (sec)	COEFFICIENT A or B	COEFFICIENT A or B 1/cm	CONVERSION FACTOR cm ³	OUTFLOW cm ³ /s	SATURATED HYDRAULIC CONDUCTIVITY (Ksat) cm/sec	SATURATED HYDRAULIC CONDUCTIVITY (Ksat) in/hr	COMMENTS
5.4	40	A	0.000754	20.0	2.7	0.002035	2.8839221	
0.7	40	A	0.000754	20.0	0.35	0.000264	0.37384175	
1.4	40	A	0.000754	20.0	0.7	0.000528	0.74768351	
0.4	40	A	0.000754	20.0	0.2	0.000151	0.21362386	
0.4	40	A	0.000754	20.0	0.2	0.000151	0.21362386	
0.4	40	A	0.000754	20.0	0.2	0.000151	0.21362386	

Average Ksat (3 consecutive readings w/same outflow per time: 0.213624

READING (Δ)	TIME INTERVAL (sec)	COEFFICIENT A or B	COEFFICIENT A or B 1/cm	CONVERSION FACTOR cm ³	OUTFLOW cm ³ /s	SATURATED HYDRAULIC CONDUCTIVITY (Ksat) cm/sec	SATURATED HYDRAULIC CONDUCTIVITY (Ksat) in/hr	COMMENTS
7	20	A	0.000674	20.0	7	0.004719	6.68903376	
4.7	20	A	0.000674	20.0	4.7	0.003169	4.49120838	
4.9	20	A	0.000674	20.0	4.9	0.003304	4.68232363	
4.8	20	A	0.000674	20.0	4.8	0.003236	4.586766	

Average Ksat (3 consecutive readings w/same outflow per time: 4.586766

READING (Δ)	TIME INTERVAL (sec)	COEFFICIENT A or B	COEFFICIENT A or B 1/cm	CONVERSION FACTOR cm ³	OUTFLOW cm ³ /s	SATURATED HYDRAULIC CONDUCTIVITY (Ksat) cm/sec	SATURATED HYDRAULIC CONDUCTIVITY (Ksat) in/hr	COMMENTS
6.5	20	A	0.000674	20.0	6.5	0.004382	6.21124563	
2.5	10	A	0.000674	20.0	5	0.003371	4.77788126	
3.2	10	A	0.000674	20.0	6.4	0.004315	6.11568801	
1.8	10	A	0.000674	20.0	3.6	0.002427	3.4400745	

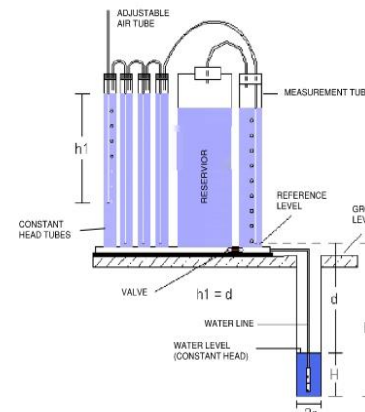
Average Ksat (3 consecutive readings w/same outflow per time: 5.701605



Civil Engineers
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PROJECT NAME:	256 & 264 Central Avenue, Dover NH	ENGINEER:	Jason Cook
PROJECT NUMBER:	47262.01	DATE OF TESTING:	6/14/2023
PROJECT LOCATION:	264 Central Avenue, Dover NH		

Amoozemeter Field Data Sheet	Test Pit 3	Ksat (Average) = 1.91		
SETUP CALCULATIONS		Test 1	Test 2	Test 3
D- REF LINE OF A-METER TO HOLE BOTTOM (cm)		67.3	66.0	66.0
H - DEPTH OF H2O IN HOLE (cm)		19.1	17.8	17.8
d - TOP OF WATER TO OUTFLOW LENGTH (cm)		48.3	48.3	48.3
AUGER DIAMETER (cm)		5.0	5.0	5.0
AREA OF AUGER HOLE (cm ²)		19.6	19.6	19.6
DEPTH TO IMPERVIOUS LAYER/SHWT, "s" (cm)		106.68	106.68	106.68
GLOVER SOLUTION A OR B		A	A	A
SOIL DESCRIPTION AT TEST 1 DEPTH:	Dark Sand Fill w/ Ash			
SOIL HORIZON AT TEST 1 DEPTH:				
SOIL DESCRIPTION AT TEST 2 DEPTH:	Dark Sand Fill w/ Ash			
SOIL HORIZON AT TEST 2 DEPTH:				
SOIL DESCRIPTION AT TEST 3 DEPTH:	Dark Sand Fill w/ Ash			
SOIL HORIZON AT TEST 3 DEPTH:				
ONE OR BOTH CHAMBERS USED:		1	1	1



READING (Δ)	TIME INTERVAL (sec)	COEFFICIENT A or B	COEFFICIENT A or B 1/cm	CONVERSION FACTOR cm ³	OUTFLOW cm ³ /s	SATURATED HYDRAULIC CONDUCTIVITY (Ksat) cm/sec	SATURATED HYDRAULIC CONDUCTIVITY (Ksat) in/hr	COMMENTS
1.1	20	A	0.000815	20.0	1.1	0.000897	1.27083397	
1.1	20	A	0.000815	20.0	1.1	0.000897	1.27083397	
1.3	20	A	0.000815	20.0	1.3	0.00106	1.50189469	
1.3	20	A	0.000815	20.0	1.3	0.00106	1.50189469	
1.3	20	A	0.000815	20.0	1.3	0.00106	1.50189469	
1.4	20	A	0.000815	20.0	1.4	0.001141	1.61742505	
1.2	20	A	0.000815	20.0	1.2	0.000978	1.38636433	

Average Ksat (3 consecutive readings w/same outflow per time: 1.501895

READING (Δ)	TIME INTERVAL (sec)	COEFFICIENT A or B	COEFFICIENT A or B 1/cm	CONVERSION FACTOR cm ³	OUTFLOW cm ³ /s	SATURATED HYDRAULIC CONDUCTIVITY (Ksat) cm/sec	SATURATED HYDRAULIC CONDUCTIVITY (Ksat) in/hr	COMMENTS
1.9	20	A	0.000924	20.0	1.9	0.001755	2.48709915	
1.1	20	A	0.000924	20.0	1.1	0.001016	1.43989951	
1.4	20	A	0.000924	20.0	1.4	0.001293	1.83259938	
1.4	20	A	0.000924	20.0	1.4	0.001293	1.83259938	
1.5	20	A	0.000924	20.0	1.5	0.001385	1.96349933	
1.5	20	A	0.000924	20.0	1.5	0.001385	1.96349933	
1.5	20	A	0.000924	20.0	1.5	0.001385	1.96349933	

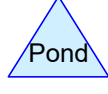
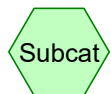
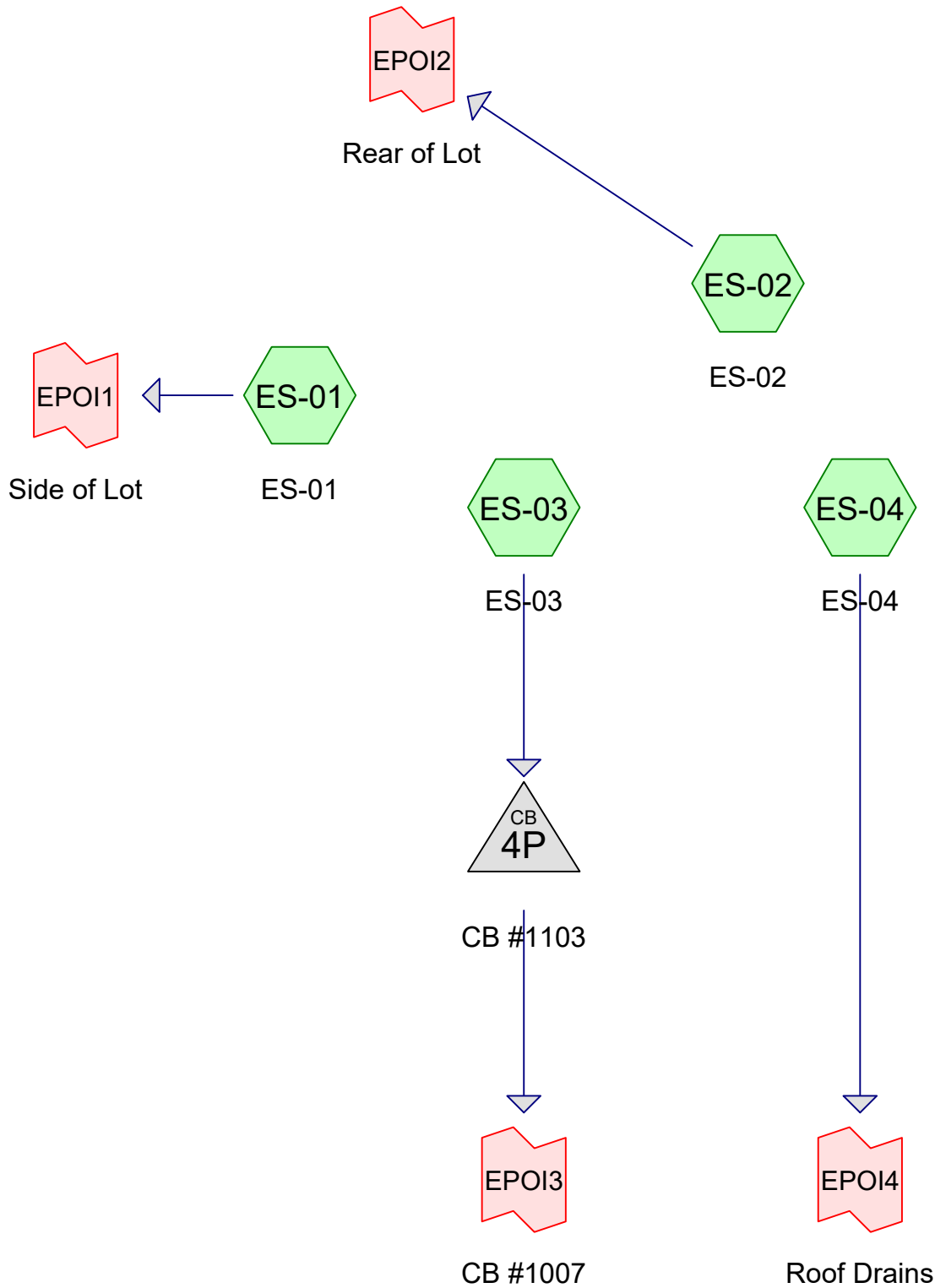
Average Ksat (3 consecutive readings w/same outflow per time: 1.963499

READING (Δ)	TIME INTERVAL (sec)	COEFFICIENT A or B	COEFFICIENT A or B 1/cm	CONVERSION FACTOR cm ³	OUTFLOW cm ³ /s	SATURATED HYDRAULIC CONDUCTIVITY (Ksat) cm/sec	SATURATED HYDRAULIC CONDUCTIVITY (Ksat) in/hr	COMMENTS
1.4	20	A	0.000924	20.0	1.4	0.001293	1.83259938	
1.5	20	A	0.000924	20.0	1.5	0.001385	1.96349933	
1.7	20	A	0.000924	20.0	1.7	0.00157	2.22529924	
1.8	20	A	0.000924	20.0	1.8	0.001662	2.3561992	
1.7	20	A	0.000924	20.0	1.7	0.00157	2.22529924	
1	20	A	0.000924	20.0	1	0.000924	1.30899955	
1.5	20	A	0.000924	20.0	1.5	0.001385	1.96349933	

Average Ksat (3 consecutive readings w/same outflow per time: 2.268933

APPENDIX D – PRE-DEVELOPMENT CALCULATIONS

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47262-00 Site Drainage

Prepared by {enter your company name here}

Printed 8/30/2023

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Page 2

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
3,367	86	<50% Grass cover, Poor, HSG C (ES-01, ES-02, ES-03)
11,812	96	Gravel surface, HSG C (ES-01, ES-02, ES-03)
1,462	98	Paved parking, HSG C (ES-03)
12,260	98	Roofs, HSG C (ES-04)
528	98	Unconnected pavement, HSG B (ES-02)
602	70	Woods, Good, HSG C (ES-01, ES-03)
30,031	95	TOTAL AREA

47262-00 Site Drainage

Prepared by {enter your company name here}

Printed 8/30/2023

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Page 3

Soil Listing (selected nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
528	HSG B	ES-02
29,503	HSG C	ES-01, ES-02, ES-03, ES-04
0	HSG D	
0	Other	
30,031		TOTAL AREA

47262-00 Site Drainage

Prepared by {enter your company name here}

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Pre-Development Calculations
Type III 24-hr 2-yr Rainfall=3.15"

Printed 8/30/2023

Page 4

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentES-01: ES-01

Runoff Area=4,630 sf 0.00% Impervious Runoff Depth>2.12"
Flow Length=143' Tc=6.2 min CN=90 Runoff=0.3 cfs 818 cf

SubcatchmentES-02: ES-02

Runoff Area=6,560 sf 8.05% Impervious Runoff Depth>2.40"
Flow Length=202' Tc=8.3 min UI Adjusted CN=93 Runoff=0.4 cfs 1,309 cf

SubcatchmentES-03: ES-03

Runoff Area=6,581 sf 22.22% Impervious Runoff Depth>2.70"
Flow Length=81' Slope=0.0430 '/' Tc=6.0 min CN=96 Runoff=0.4 cfs 1,480 cf

SubcatchmentES-04: ES-04

Runoff Area=12,260 sf 100.00% Impervious Runoff Depth>2.92"
Tc=6.0 min CN=98 Runoff=0.8 cfs 2,979 cf

Pond 4P: CB #1103

Peak Elev=55.99' Inflow=0.4 cfs 1,480 cf
6.0" Round Culvert n=0.013 L=54.0' S=0.0150 '/' Outflow=0.4 cfs 1,480 cf

Link EPOI1: Side of Lot

Inflow=0.3 cfs 818 cf
Primary=0.3 cfs 818 cf

Link EPOI2: Rear of Lot

Inflow=0.4 cfs 1,309 cf
Primary=0.4 cfs 1,309 cf

Link EPOI3: CB #1007

Inflow=0.4 cfs 1,480 cf
Primary=0.4 cfs 1,480 cf

Link EPOI4: Roof Drains

Inflow=0.8 cfs 2,979 cf
Primary=0.8 cfs 2,979 cf

Total Runoff Area = 30,031 sf Runoff Volume = 6,586 cf Average Runoff Depth = 2.63"
52.55% Pervious = 15,781 sf 47.45% Impervious = 14,250 sf

47262-00 Site Drainage

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Pre-Development Calculations
Type III 24-hr 25-yr Rainfall=6.01"

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentES-01: ES-01

Runoff Area=4,630 sf 0.00% Impervious Runoff Depth>4.85"
Flow Length=143' Tc=6.2 min CN=90 Runoff=0.6 cfs 1,872 cf

SubcatchmentES-02: ES-02

Runoff Area=6,560 sf 8.05% Impervious Runoff Depth>5.19"
Flow Length=202' Tc=8.3 min UI Adjusted CN=93 Runoff=0.8 cfs 2,836 cf

SubcatchmentES-03: ES-03

Runoff Area=6,581 sf 22.22% Impervious Runoff Depth>5.53"
Flow Length=81' Slope=0.0430 '/' Tc=6.0 min CN=96 Runoff=0.9 cfs 3,035 cf

SubcatchmentES-04: ES-04

Runoff Area=12,260 sf 100.00% Impervious Runoff Depth>5.77"
Tc=6.0 min CN=98 Runoff=1.6 cfs 5,893 cf

Pond 4P: CB #1103

Peak Elev=56.93' Inflow=0.9 cfs 3,035 cf
6.0" Round Culvert n=0.013 L=54.0' S=0.0150 '/' Outflow=0.9 cfs 3,035 cf

Link EPOI1: Side of Lot

Inflow=0.6 cfs 1,872 cf
Primary=0.6 cfs 1,872 cf

Link EPOI2: Rear of Lot

Inflow=0.8 cfs 2,836 cf
Primary=0.8 cfs 2,836 cf

Link EPOI3: CB #1007

Inflow=0.9 cfs 3,035 cf
Primary=0.9 cfs 3,035 cf

Link EPOI4: Roof Drains

Inflow=1.6 cfs 5,893 cf
Primary=1.6 cfs 5,893 cf

Total Runoff Area = 30,031 sf Runoff Volume = 13,636 cf Average Runoff Depth = 5.45"
52.55% Pervious = 15,781 sf 47.45% Impervious = 14,250 sf

47262-00 Site Drainage

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Pre-Development Calculations
Type III 24-hr 50-yr Rainfall=7.18"

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentES-01: ES-01

Runoff Area=4,630 sf 0.00% Impervious Runoff Depth>6.00"
Flow Length=143' Tc=6.2 min CN=90 Runoff=0.7 cfs 2,313 cf

SubcatchmentES-02: ES-02

Runoff Area=6,560 sf 8.05% Impervious Runoff Depth>6.34"
Flow Length=202' Tc=8.3 min UI Adjusted CN=93 Runoff=0.9 cfs 3,468 cf

SubcatchmentES-03: ES-03

Runoff Area=6,581 sf 22.22% Impervious Runoff Depth>6.70"
Flow Length=81' Slope=0.0430 '/' Tc=6.0 min CN=96 Runoff=1.0 cfs 3,674 cf

SubcatchmentES-04: ES-04

Runoff Area=12,260 sf 100.00% Impervious Runoff Depth>6.94"
Tc=6.0 min CN=98 Runoff=1.9 cfs 7,087 cf

Pond 4P: CB #1103

Peak Elev=57.68' Inflow=1.0 cfs 3,674 cf
6.0" Round Culvert n=0.013 L=54.0' S=0.0150 '/' Outflow=1.0 cfs 3,674 cf

Link EPOI1: Side of Lot

Inflow=0.7 cfs 2,313 cf
Primary=0.7 cfs 2,313 cf

Link EPOI2: Rear of Lot

Inflow=0.9 cfs 3,468 cf
Primary=0.9 cfs 3,468 cf

Link EPOI3: CB #1007

Inflow=1.0 cfs 3,674 cf
Primary=1.0 cfs 3,674 cf

Link EPOI4: Roof Drains

Inflow=1.9 cfs 7,087 cf
Primary=1.9 cfs 7,087 cf

Total Runoff Area = 30,031 sf Runoff Volume = 16,542 cf Average Runoff Depth = 6.61"
52.55% Pervious = 15,781 sf 47.45% Impervious = 14,250 sf

APPENDIX E – PRE-DEVELOPMENT CALCULATIONS (10-YEAR STORM EVENT)

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Type III 24-hr 10-yr Rainfall=4.75"

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Summary for Subcatchment ES-01: ES-01

Runoff = 0.4 cfs @ 12.09 hrs, Volume= 1,402 cf, Depth> 3.63"
 Routed to Link EPOI1 : Side of Lot

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-yr Rainfall=4.75"

Area (sf)	CN	Description
0	98	Paved parking, HSG C
459	70	Woods, Good, HSG C
2,649	96	Gravel surface, HSG C
1,522	86	<50% Grass cover, Poor, HSG C
4,630	90	Weighted Average
4,630		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	6	0.0100	0.03		Sheet Flow, Sheet Flow 1
					Woods: Light underbrush n= 0.400 P2= 3.15"
1.4	6	0.0100	0.07		Sheet Flow, Sheet Flow 2
					Grass: Short n= 0.150 P2= 3.15"
1.3	88	0.0140	1.15		Sheet Flow, Sheet Flow 3
					Smooth surfaces n= 0.011 P2= 3.15"
0.4	33	0.0060	1.25		Shallow Concentrated Flow, Shallow Concentrated Flow 1
					Unpaved Kv= 16.1 fps
0.1	10	0.0150	1.22		Shallow Concentrated Flow, Shallow Concentrated Flow 2
					Nearly Bare & Untilled Kv= 10.0 fps
6.2	143	Total			

Summary for Subcatchment ES-02: ES-02

Runoff = 0.6 cfs @ 12.11 hrs, Volume= 2,159 cf, Depth> 3.95"
 Routed to Link EPOI2 : Rear of Lot

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-yr Rainfall=4.75"

Area (sf)	CN	Adj	Description
4,308	96		Gravel surface, HSG C
1,724	86		<50% Grass cover, Poor, HSG C
528	98		Unconnected pavement, HSG B
6,560	94	93	Weighted Average, UI Adjusted
6,032			91.95% Pervious Area
528			8.05% Impervious Area
528			100.00% Unconnected

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.99		Sheet Flow, Sheet Flow 1 Smooth surfaces n= 0.011 P2= 3.15"
6.9	80	0.0312	0.19		Sheet Flow, Sheet Flow 2 Grass: Short n= 0.150 P2= 3.15"
0.8	75	0.0106	1.66		Shallow Concentrated Flow, Shallow Concentrated Flow 1 Unpaved Kv= 16.1 fps
0.3	27	0.0278	1.67		Shallow Concentrated Flow, Shallow Concentrated Flow 2 Nearly Bare & Untilled Kv= 10.0 fps
8.3	202	Total			

Summary for Subcatchment ES-03: ES-03

Runoff = 0.7 cfs @ 12.09 hrs, Volume= 2,348 cf, Depth> 4.28"
 Routed to Pond 4P : CB #1103

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-yr Rainfall=4.75"

Area (sf)	CN	Description
1,462	98	Paved parking, HSG C
143	70	Woods, Good, HSG C
4,855	96	Gravel surface, HSG C
121	86	<50% Grass cover, Poor, HSG C
6,581	96	Weighted Average
5,119		77.78% Pervious Area
1,462		22.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	81	0.0430	1.78		Sheet Flow, Sheet Flow 1 Smooth surfaces n= 0.011 P2= 3.15"
5.2					Direct Entry, Direct Entry
6.0	81	Total			

Summary for Subcatchment ES-04: ES-04

Runoff = 1.3 cfs @ 12.09 hrs, Volume= 4,609 cf, Depth> 4.51"
 Routed to Link EPOI4 : Roof Drains

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-yr Rainfall=4.75"

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Area (sf)	CN	Description
12,260	98	Roofs, HSG C
0	98	Paved parking, HSG C
12,260	98	Weighted Average
12,260		100.00% Impervious Area

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

Summary for Pond 4P: CB #1103

Inflow Area = 6,581 sf, 22.22% Impervious, Inflow Depth > 4.28" for 10-yr event
 Inflow = 0.7 cfs @ 12.09 hrs, Volume= 2,348 cf
 Outflow = 0.7 cfs @ 12.09 hrs, Volume= 2,348 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.7 cfs @ 12.09 hrs, Volume= 2,348 cf
 Routed to Link EPOI3 : CB #1007

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 56.29' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	55.53'	6.0" Round Culvert L= 54.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 55.53' / 54.72' S= 0.0150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.7 cfs @ 12.09 hrs HW=56.26' TW=0.00' (Dynamic Tailwater)
 ↑ **1=Culvert** (Inlet Controls 0.7 cfs @ 3.34 fps)

Summary for Link EPOI1: Side of Lot

Inflow Area = 4,630 sf, 0.00% Impervious, Inflow Depth > 3.63" for 10-yr event
 Inflow = 0.4 cfs @ 12.09 hrs, Volume= 1,402 cf
 Primary = 0.4 cfs @ 12.09 hrs, Volume= 1,402 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link EPOI2: Rear of Lot

Inflow Area = 6,560 sf, 8.05% Impervious, Inflow Depth > 3.95" for 10-yr event
 Inflow = 0.6 cfs @ 12.11 hrs, Volume= 2,159 cf
 Primary = 0.6 cfs @ 12.11 hrs, Volume= 2,159 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

47262-00 Site Drainage*Type III 24-hr 10-yr Rainfall=4.75"*

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Summary for Link EPOI3: CB #1007

Inflow Area = 6,581 sf, 22.22% Impervious, Inflow Depth > 4.28" for 10-yr event
 Inflow = 0.7 cfs @ 12.09 hrs, Volume= 2,348 cf
 Primary = 0.7 cfs @ 12.09 hrs, Volume= 2,348 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

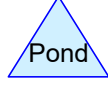
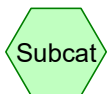
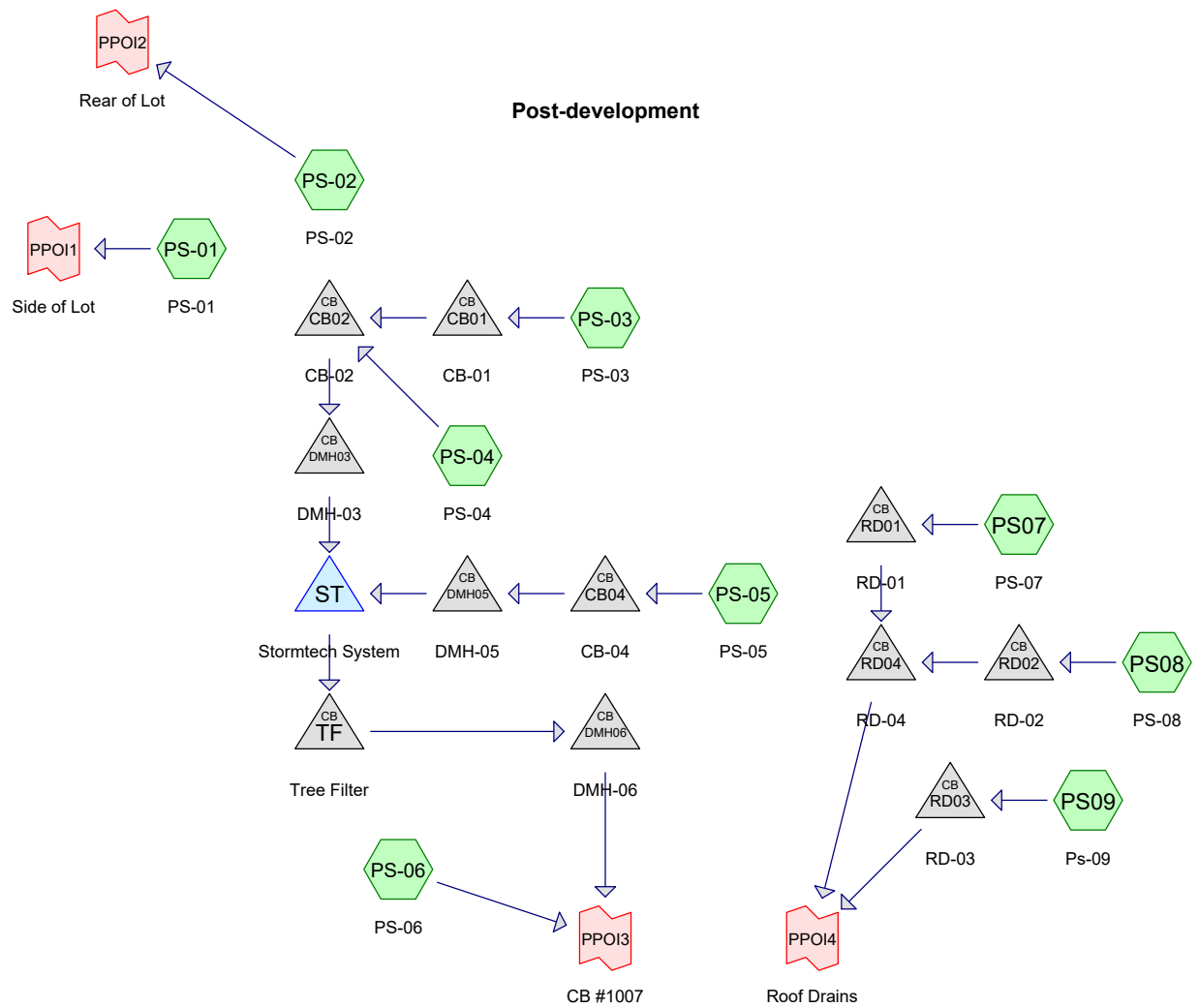
Summary for Link EPOI4: Roof Drains

Inflow Area = 12,260 sf, 100.00% Impervious, Inflow Depth > 4.51" for 10-yr event
 Inflow = 1.3 cfs @ 12.09 hrs, Volume= 4,609 cf
 Primary = 1.3 cfs @ 12.09 hrs, Volume= 4,609 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

APPENDIX F – POST-DEVELOPMENT CALCULATIONS

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Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
6,335	74	>75% Grass cover, Good, HSG C (PS-01, PS-02, PS-03, PS-04, PS-05, PS-06)
10,827	98	Paved parking, HSG C (PS-03, PS-04, PS-05)
12,270	98	Roofs, HSG C (PS07, PS08, PS09)
75	73	Woods, Fair, HSG C (PS-06)
524	70	Woods, Good, HSG C (PS-01)
30,031	92	TOTAL AREA

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Soil Listing (selected nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
30,031	HSG C	PS-01, PS-02, PS-03, PS-04, PS-05, PS-06, PS07, PS08, PS09
0	HSG D	
0	Other	
30,031		TOTAL AREA

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Post-Development Calculations
Type III 24-hr 2-yr Rainfall=3.15"

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPS-01: PS-01	Runoff Area=2,375 sf 0.00% Impervious Runoff Depth>0.95" Flow Length=11' Slope=0.0220 '/' Tc=6.0 min CN=73 Runoff=0.1 cfs 188 cf
SubcatchmentPS-02: PS-02	Runoff Area=1,147 sf 0.00% Impervious Runoff Depth>1.00" Flow Length=35' Slope=0.0214 '/' Tc=6.0 min CN=74 Runoff=0.0 cfs 96 cf
SubcatchmentPS-03: PS-03	Runoff Area=4,713 sf 77.62% Impervious Runoff Depth>2.40" Flow Length=170' Tc=6.0 min CN=93 Runoff=0.3 cfs 941 cf
SubcatchmentPS-04: PS-04	Runoff Area=3,746 sf 82.19% Impervious Runoff Depth>2.49" Flow Length=69' Tc=6.0 min CN=94 Runoff=0.2 cfs 778 cf
SubcatchmentPS-05: PS-05	Runoff Area=4,906 sf 83.37% Impervious Runoff Depth>2.49" Flow Length=26' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=0.3 cfs 1,019 cf
SubcatchmentPS-06: PS-06	Runoff Area=874 sf 0.00% Impervious Runoff Depth>1.00" Tc=6.0 min CN=74 Runoff=0.0 cfs 73 cf
SubcatchmentPS07: PS-07	Runoff Area=1,505 sf 100.00% Impervious Runoff Depth>2.92" Tc=6.0 min CN=98 Runoff=0.1 cfs 366 cf
SubcatchmentPS08: PS-08	Runoff Area=2,575 sf 100.00% Impervious Runoff Depth>2.92" Tc=6.0 min CN=98 Runoff=0.2 cfs 626 cf
SubcatchmentPS09: Ps-09	Runoff Area=8,190 sf 100.00% Impervious Runoff Depth>2.92" Tc=6.0 min CN=98 Runoff=0.6 cfs 1,990 cf
Pond CB01: CB-01	Peak Elev=56.20' Inflow=0.3 cfs 941 cf 6.0" Round Culvert n=0.013 L=30.0' S=0.0057 '/' Outflow=0.3 cfs 941 cf
Pond CB02: CB-02	Peak Elev=56.02' Inflow=0.5 cfs 1,719 cf 8.0" Round Culvert n=0.013 L=24.0' S=0.0058 '/' Outflow=0.5 cfs 1,719 cf
Pond CB04: CB-04	Peak Elev=55.96' Inflow=0.3 cfs 1,019 cf 8.0" Round Culvert n=0.013 L=21.0' S=0.0052 '/' Outflow=0.3 cfs 1,019 cf
Pond DMH03: DMH-03	Peak Elev=55.93' Inflow=0.5 cfs 1,719 cf 12.0" Round Culvert n=0.013 L=4.0' S=0.0000 '/' Outflow=0.5 cfs 1,719 cf
Pond DMH05: DMH-05	Peak Elev=55.92' Inflow=0.3 cfs 1,019 cf 12.0" Round Culvert n=0.013 L=4.0' S=0.0000 '/' Outflow=0.3 cfs 1,019 cf
Pond DMH06: DMH-06	Peak Elev=55.24' Inflow=0.5 cfs 1,306 cf 18.0" Round Culvert n=0.013 L=30.0' S=0.0050 '/' Outflow=0.5 cfs 1,306 cf
Pond RD01: RD-01	Peak Elev=55.90' Inflow=0.1 cfs 366 cf 6.0" Round Culvert n=0.013 L=79.0' S=0.0051 '/' Outflow=0.1 cfs 366 cf

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Post-Development Calculations
Type III 24-hr 2-yr Rainfall=3.15"

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Pond RD02: RD-02

Peak Elev=55.69' Inflow=0.2 cfs 626 cf
6.0" Round Culvert n=0.013 L=17.0' S=0.0053 '/' Outflow=0.2 cfs 626 cf

Pond RD03: RD-03

Peak Elev=55.55' Inflow=0.6 cfs 1,990 cf
8.0" Round Culvert n=0.013 L=14.0' S=0.0050 '/' Outflow=0.6 cfs 1,990 cf

Pond RD04: RD-04

Peak Elev=55.60' Inflow=0.3 cfs 991 cf
8.0" Round Culvert n=0.013 L=54.0' S=0.0050 '/' Outflow=0.3 cfs 991 cf

Pond ST: Stormtech System

Peak Elev=55.92' Storage=732 cf Inflow=0.8 cfs 2,739 cf
Discarded=0.0 cfs 1,362 cf Primary=0.5 cfs 1,306 cf Outflow=0.5 cfs 2,668 cf

Pond TF: Tree Filter

Peak Elev=55.56' Inflow=0.5 cfs 1,306 cf
18.0" Round Culvert n=0.013 L=45.0' S=0.0051 '/' Outflow=0.5 cfs 1,306 cf

Link PPOI1: Side of Lot

Inflow=0.1 cfs 188 cf
Primary=0.1 cfs 188 cf

Link PPOI2: Rear of Lot

Inflow=0.0 cfs 96 cf
Primary=0.0 cfs 96 cf

Link PPOI3: CB #1007

Inflow=0.5 cfs 1,379 cf
Primary=0.5 cfs 1,379 cf

Link PPOI4: Roof Drains

Inflow=0.8 cfs 2,981 cf
Primary=0.8 cfs 2,981 cf

Total Runoff Area = 30,031 sf Runoff Volume = 6,077 cf Average Runoff Depth = 2.43"
23.09% Pervious = 6,934 sf 76.91% Impervious = 23,097 sf

47262-00 Site Drainage

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Post-Development Calculations
Type III 24-hr 25-yr Rainfall=6.01"

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPS-01: PS-01	Runoff Area=2,375 sf 0.00% Impervious Runoff Depth>3.09" Flow Length=11' Slope=0.0220 '/' Tc=6.0 min CN=73 Runoff=0.2 cfs 612 cf
SubcatchmentPS-02: PS-02	Runoff Area=1,147 sf 0.00% Impervious Runoff Depth>3.19" Flow Length=35' Slope=0.0214 '/' Tc=6.0 min CN=74 Runoff=0.1 cfs 305 cf
SubcatchmentPS-03: PS-03	Runoff Area=4,713 sf 77.62% Impervious Runoff Depth>5.19" Flow Length=170' Tc=6.0 min CN=93 Runoff=0.6 cfs 2,038 cf
SubcatchmentPS-04: PS-04	Runoff Area=3,746 sf 82.19% Impervious Runoff Depth>5.30" Flow Length=69' Tc=6.0 min CN=94 Runoff=0.5 cfs 1,655 cf
SubcatchmentPS-05: PS-05	Runoff Area=4,906 sf 83.37% Impervious Runoff Depth>5.30" Flow Length=26' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=0.6 cfs 2,168 cf
SubcatchmentPS-06: PS-06	Runoff Area=874 sf 0.00% Impervious Runoff Depth>3.19" Tc=6.0 min CN=74 Runoff=0.1 cfs 232 cf
SubcatchmentPS07: PS-07	Runoff Area=1,505 sf 100.00% Impervious Runoff Depth>5.77" Tc=6.0 min CN=98 Runoff=0.2 cfs 723 cf
SubcatchmentPS08: PS-08	Runoff Area=2,575 sf 100.00% Impervious Runoff Depth>5.77" Tc=6.0 min CN=98 Runoff=0.3 cfs 1,238 cf
SubcatchmentPS09: Ps-09	Runoff Area=8,190 sf 100.00% Impervious Runoff Depth>5.77" Tc=6.0 min CN=98 Runoff=1.1 cfs 3,937 cf
Pond CB01: CB-01	Peak Elev=56.94' Inflow=0.6 cfs 2,038 cf 6.0" Round Culvert n=0.013 L=30.0' S=0.0057 '/' Outflow=0.6 cfs 2,038 cf
Pond CB02: CB-02	Peak Elev=56.67' Inflow=1.1 cfs 3,693 cf 8.0" Round Culvert n=0.013 L=24.0' S=0.0058 '/' Outflow=1.1 cfs 3,693 cf
Pond CB04: CB-04	Peak Elev=56.59' Inflow=0.6 cfs 2,168 cf 8.0" Round Culvert n=0.013 L=21.0' S=0.0052 '/' Outflow=0.6 cfs 2,168 cf
Pond DMH03: DMH-03	Peak Elev=56.58' Inflow=1.1 cfs 3,693 cf 12.0" Round Culvert n=0.013 L=4.0' S=0.0000 '/' Outflow=1.1 cfs 3,693 cf
Pond DMH05: DMH-05	Peak Elev=56.56' Inflow=0.6 cfs 2,168 cf 12.0" Round Culvert n=0.013 L=4.0' S=0.0000 '/' Outflow=0.6 cfs 2,168 cf
Pond DMH06: DMH-06	Peak Elev=55.49' Inflow=1.3 cfs 3,984 cf 18.0" Round Culvert n=0.013 L=30.0' S=0.0050 '/' Outflow=1.3 cfs 3,984 cf
Pond RD01: RD-01	Peak Elev=56.03' Inflow=0.2 cfs 723 cf 6.0" Round Culvert n=0.013 L=79.0' S=0.0051 '/' Outflow=0.2 cfs 723 cf

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Post-Development Calculations
Type III 24-hr 25-yr Rainfall=6.01"

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Pond RD02: RD-02

Peak Elev=55.89' Inflow=0.3 cfs 1,238 cf
6.0" Round Culvert n=0.013 L=17.0' S=0.0053 '/' Outflow=0.3 cfs 1,238 cf

Pond RD03: RD-03

Peak Elev=55.93' Inflow=1.1 cfs 3,937 cf
8.0" Round Culvert n=0.013 L=14.0' S=0.0050 '/' Outflow=1.1 cfs 3,937 cf

Pond RD04: RD-04

Peak Elev=55.76' Inflow=0.5 cfs 1,961 cf
8.0" Round Culvert n=0.013 L=54.0' S=0.0050 '/' Outflow=0.5 cfs 1,961 cf

Pond ST: Stormtech System

Peak Elev=56.55' Storage=1,047 cf Inflow=1.7 cfs 5,862 cf
Discarded=0.0 cfs 1,585 cf Primary=1.3 cfs 3,984 cf Outflow=1.4 cfs 5,569 cf

Pond TF: Tree Filter

Peak Elev=55.82' Inflow=1.3 cfs 3,984 cf
18.0" Round Culvert n=0.013 L=45.0' S=0.0051 '/' Outflow=1.3 cfs 3,984 cf

Link PPOI1: Side of Lot

Inflow=0.2 cfs 612 cf
Primary=0.2 cfs 612 cf

Link PPOI2: Rear of Lot

Inflow=0.1 cfs 305 cf
Primary=0.1 cfs 305 cf

Link PPOI3: CB #1007

Inflow=1.4 cfs 4,216 cf
Primary=1.4 cfs 4,216 cf

Link PPOI4: Roof Drains

Inflow=1.6 cfs 5,898 cf
Primary=1.6 cfs 5,898 cf

Total Runoff Area = 30,031 sf Runoff Volume = 12,909 cf Average Runoff Depth = 5.16"
23.09% Pervious = 6,934 sf 76.91% Impervious = 23,097 sf

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Type III 24-hr 50-yr Rainfall=7.18"

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPS-01: PS-01	Runoff Area=2,375 sf 0.00% Impervious Runoff Depth>4.09" Flow Length=11' Slope=0.0220 '/' Tc=6.0 min CN=73 Runoff=0.3 cfs 809 cf
SubcatchmentPS-02: PS-02	Runoff Area=1,147 sf 0.00% Impervious Runoff Depth>4.20" Flow Length=35' Slope=0.0214 '/' Tc=6.0 min CN=74 Runoff=0.1 cfs 401 cf
SubcatchmentPS-03: PS-03	Runoff Area=4,713 sf 77.62% Impervious Runoff Depth>6.35" Flow Length=170' Tc=6.0 min CN=93 Runoff=0.7 cfs 2,492 cf
SubcatchmentPS-04: PS-04	Runoff Area=3,746 sf 82.19% Impervious Runoff Depth>6.46" Flow Length=69' Tc=6.0 min CN=94 Runoff=0.6 cfs 2,017 cf
SubcatchmentPS-05: PS-05	Runoff Area=4,906 sf 83.37% Impervious Runoff Depth>6.46" Flow Length=26' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=0.8 cfs 2,642 cf
SubcatchmentPS-06: PS-06	Runoff Area=874 sf 0.00% Impervious Runoff Depth>4.20" Tc=6.0 min CN=74 Runoff=0.1 cfs 306 cf
SubcatchmentPS07: PS-07	Runoff Area=1,505 sf 100.00% Impervious Runoff Depth>6.94" Tc=6.0 min CN=98 Runoff=0.2 cfs 870 cf
SubcatchmentPS08: PS-08	Runoff Area=2,575 sf 100.00% Impervious Runoff Depth>6.94" Tc=6.0 min CN=98 Runoff=0.4 cfs 1,488 cf
SubcatchmentPS09: Ps-09	Runoff Area=8,190 sf 100.00% Impervious Runoff Depth>6.94" Tc=6.0 min CN=98 Runoff=1.3 cfs 4,734 cf
Pond CB01: CB-01	Peak Elev=57.47' Inflow=0.7 cfs 2,492 cf 6.0" Round Culvert n=0.013 L=30.0' S=0.0057 '/' Outflow=0.7 cfs 2,492 cf
Pond CB02: CB-02	Peak Elev=56.97' Inflow=1.3 cfs 4,510 cf 8.0" Round Culvert n=0.013 L=24.0' S=0.0058 '/' Outflow=1.3 cfs 4,510 cf
Pond CB04: CB-04	Peak Elev=56.85' Inflow=0.8 cfs 2,642 cf 8.0" Round Culvert n=0.013 L=21.0' S=0.0052 '/' Outflow=0.8 cfs 2,642 cf
Pond DMH03: DMH-03	Peak Elev=56.83' Inflow=1.3 cfs 4,510 cf 12.0" Round Culvert n=0.013 L=4.0' S=0.0000 '/' Outflow=1.3 cfs 4,510 cf
Pond DMH05: DMH-05	Peak Elev=56.80' Inflow=0.8 cfs 2,642 cf 12.0" Round Culvert n=0.013 L=4.0' S=0.0000 '/' Outflow=0.8 cfs 2,642 cf
Pond DMH06: DMH-06	Peak Elev=55.56' Inflow=1.6 cfs 5,174 cf 18.0" Round Culvert n=0.013 L=30.0' S=0.0050 '/' Outflow=1.6 cfs 5,174 cf
Pond RD01: RD-01	Peak Elev=56.09' Inflow=0.2 cfs 870 cf 6.0" Round Culvert n=0.013 L=79.0' S=0.0051 '/' Outflow=0.2 cfs 870 cf

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Type III 24-hr 50-yr Rainfall=7.18"

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Pond RD02: RD-02

Peak Elev=55.98' Inflow=0.4 cfs 1,488 cf
6.0" Round Culvert n=0.013 L=17.0' S=0.0053 '/' Outflow=0.4 cfs 1,488 cf

Pond RD03: RD-03

Peak Elev=56.08' Inflow=1.3 cfs 4,734 cf
8.0" Round Culvert n=0.013 L=14.0' S=0.0050 '/' Outflow=1.3 cfs 4,734 cf

Pond RD04: RD-04

Peak Elev=55.83' Inflow=0.6 cfs 2,358 cf
8.0" Round Culvert n=0.013 L=54.0' S=0.0050 '/' Outflow=0.6 cfs 2,358 cf

Pond ST: Stormtech System

Peak Elev=56.79' Storage=1,146 cf Inflow=2.1 cfs 7,152 cf
Discarded=0.0 cfs 1,650 cf Primary=1.6 cfs 5,174 cf Outflow=1.6 cfs 6,824 cf

Pond TF: Tree Filter

Peak Elev=55.90' Inflow=1.6 cfs 5,174 cf
18.0" Round Culvert n=0.013 L=45.0' S=0.0051 '/' Outflow=1.6 cfs 5,174 cf

Link PPOI1: Side of Lot

Inflow=0.3 cfs 809 cf
Primary=0.3 cfs 809 cf

Link PPOI2: Rear of Lot

Inflow=0.1 cfs 401 cf
Primary=0.1 cfs 401 cf

Link PPOI3: CB #1007

Inflow=1.7 cfs 5,480 cf
Primary=1.7 cfs 5,480 cf

Link PPOI4: Roof Drains

Inflow=1.9 cfs 7,093 cf
Primary=1.9 cfs 7,093 cf

Total Runoff Area = 30,031 sf Runoff Volume = 15,760 cf Average Runoff Depth = 6.30"
23.09% Pervious = 6,934 sf 76.91% Impervious = 23,097 sf

APPENDIX G – POST-DEVELOPMENT CALCULATIONS (10-YEAR STORM EVENT)

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Post-Development Calculations (10-year Storm Event)

Type III 24-hr 10-yr Rainfall=4.75"

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Summary for Subcatchment PS-01: PS-01

Runoff = 0.1 cfs @ 12.10 hrs, Volume= 412 cf, Depth> 2.08"
 Routed to Link PPOI1 : Side of Lot

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-yr Rainfall=4.75"

Area (sf)	CN	Description
524	70	Woods, Good, HSG C
1,851	74	>75% Grass cover, Good, HSG C
2,375	73	Weighted Average
2,375		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	11	0.0220	0.11		Sheet Flow, Sheet Flow 1
					Grass: Short n= 0.150 P2= 3.15"
4.4					Direct Entry, Direct Entry
6.0	11	Total			

Summary for Subcatchment PS-02: PS-02

Runoff = 0.1 cfs @ 12.10 hrs, Volume= 207 cf, Depth> 2.16"
 Routed to Link PPOI2 : Rear of Lot

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-yr Rainfall=4.75"

Area (sf)	CN	Description
1,147	74	>75% Grass cover, Good, HSG C
1,147		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	35	0.0214	0.14		Sheet Flow, Sheet Flow 1
					Grass: Short n= 0.150 P2= 3.15"
1.8					Direct Entry, Direct Entry
6.0	35	Total			

Summary for Subcatchment PS-03: PS-03

Runoff = 0.5 cfs @ 12.09 hrs, Volume= 1,551 cf, Depth> 3.95"
 Routed to Pond CB01 : CB-01

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-yr Rainfall=4.75"

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Area (sf)	CN	Description
3,658	98	Paved parking, HSG C
1,055	74	>75% Grass cover, Good, HSG C
4,713	93	Weighted Average
1,055		22.38% Pervious Area
3,658		77.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0280	1.56		Sheet Flow, Sheet Flow 1 Smooth surfaces n= 0.011 P2= 3.15"
0.5	70	0.0150	2.49		Shallow Concentrated Flow, Shallow Concentrated Flow 1 Paved Kv= 20.3 fps
4.4					Direct Entry, Direct Entry
6.0	170	Total			

Summary for Subcatchment PS-04: PS-04

Runoff = 0.4 cfs @ 12.09 hrs, Volume= 1,267 cf, Depth> 4.06"
Routed to Pond CB02 : CB-02

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.75"

Area (sf)	CN	Description
3,079	98	Paved parking, HSG C
667	74	>75% Grass cover, Good, HSG C
3,746	94	Weighted Average
667		17.81% Pervious Area
3,079		82.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	15	0.0667	0.19		Sheet Flow, Sheet Flow 1 Grass: Short n= 0.150 P2= 3.15"
0.1	6	0.1500	1.74		Sheet Flow, Sheet Flow 2 Smooth surfaces n= 0.011 P2= 3.15"
1.7	17	0.0440	0.16		Sheet Flow, Sheet Flow 3 Grass: Short n= 0.150 P2= 3.15"
0.5	31	0.0150	0.96		Sheet Flow, Sheet Flow 4 Smooth surfaces n= 0.011 P2= 3.15"
2.4					Direct Entry, Direct Entry
6.0	69	Total			

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Type III 24-hr 10-yr Rainfall=4.75"

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Summary for Subcatchment PS-05: PS-05

Runoff = 0.5 cfs @ 12.09 hrs, Volume= 1,659 cf, Depth> 4.06"
 Routed to Pond CB04 : CB-04

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-yr Rainfall=4.75"

Area (sf)	CN	Description
4,090	98	Paved parking, HSG C
0	70	Woods, Good, HSG C
816	74	>75% Grass cover, Good, HSG C
4,906	94	Weighted Average
816		16.63% Pervious Area
4,090		83.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	26	0.0100	0.10		Sheet Flow, Sheet Flow 1
					Grass: Short n= 0.150 P2= 3.15"
1.6					Direct Entry, Direct Entry
6.0	26	Total			

Summary for Subcatchment PS-06: PS-06

Runoff = 0.0 cfs @ 12.10 hrs, Volume= 158 cf, Depth> 2.16"
 Routed to Link PPOI3 : CB #1007

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-yr Rainfall=4.75"

Area (sf)	CN	Description
75	73	Woods, Fair, HSG C
799	74	>75% Grass cover, Good, HSG C
874	74	Weighted Average
874		100.00% Pervious Area

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

Summary for Subcatchment PS07: PS-07

Runoff = 0.2 cfs @ 12.09 hrs, Volume= 566 cf, Depth> 4.51"
 Routed to Pond RD01 : RD-01

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-yr Rainfall=4.75"

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Type III 24-hr 10-yr Rainfall=4.75"

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Area (sf)	CN	Description
1,505	98	Roofs, HSG C
1,505		100.00% Impervious Area

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

Summary for Subcatchment PS08: PS-08

Runoff = 0.3 cfs @ 12.09 hrs, Volume= 968 cf, Depth> 4.51"
 Routed to Pond RD02 : RD-02

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-yr Rainfall=4.75"

Area (sf)	CN	Description
2,575	98	Roofs, HSG C
2,575		100.00% Impervious Area

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

Summary for Subcatchment PS09: Ps-09

Runoff = 0.9 cfs @ 12.09 hrs, Volume= 3,079 cf, Depth> 4.51"
 Routed to Pond RD03 : RD-03

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-yr Rainfall=4.75"

Area (sf)	CN	Description
8,190	98	Roofs, HSG C
8,190		100.00% Impervious Area

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

Summary for Pond CB01: CB-01

Inflow Area = 4,713 sf, 77.62% Impervious, Inflow Depth > 3.95" for 10-yr event
 Inflow = 0.5 cfs @ 12.09 hrs, Volume= 1,551 cf
 Outflow = 0.5 cfs @ 12.09 hrs, Volume= 1,551 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.5 cfs @ 12.09 hrs, Volume= 1,551 cf
 Routed to Pond CB02 : CB-02

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

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Peak Elev= 56.52' @ 12.12 hrs

Flood Elev= 57.13'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.76'	6.0" Round Culvert L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 55.76' / 55.59' S= 0.0057 ' S= 0.0057 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.4 cfs @ 12.09 hrs HW=56.47' TW=56.24' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 0.4 cfs @ 1.93 fps)**Summary for Pond CB02: CB-02**

Inflow Area = 8,459 sf, 79.64% Impervious, Inflow Depth > 4.00" for 10-yr event
Inflow = 0.8 cfs @ 12.09 hrs, Volume= 2,818 cf
Outflow = 0.8 cfs @ 12.09 hrs, Volume= 2,818 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.8 cfs @ 12.09 hrs, Volume= 2,818 cf
Routed to Pond DMH03 : DMH-03

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Peak Elev= 56.36' @ 12.25 hrs

Flood Elev= 57.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.49'	8.0" Round Culvert L= 24.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 55.49' / 55.35' S= 0.0058 ' S= 0.0058 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.6 cfs @ 12.09 hrs HW=56.24' TW=56.08' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 0.6 cfs @ 2.02 fps)**Summary for Pond CB04: CB-04**

Inflow Area = 4,906 sf, 83.37% Impervious, Inflow Depth > 4.06" for 10-yr event
Inflow = 0.5 cfs @ 12.09 hrs, Volume= 1,659 cf
Outflow = 0.5 cfs @ 12.09 hrs, Volume= 1,659 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.5 cfs @ 12.09 hrs, Volume= 1,659 cf
Routed to Pond DMH05 : DMH-05

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Peak Elev= 56.31' @ 12.26 hrs

Flood Elev= 56.74'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.56'	8.0" Round Culvert L= 21.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 55.56' / 55.45' S= 0.0052 ' S= 0.0052 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

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Type III 24-hr 10-yr Rainfall=4.75"

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Primary OutFlow Max=0.3 cfs @ 12.09 hrs HW=56.10' TW=56.03' (Dynamic Tailwater)

↑**1=Culvert** (Outlet Controls 0.3 cfs @ 1.34 fps)

Summary for Pond DMH03: DMH-03

Inflow Area = 8,459 sf, 79.64% Impervious, Inflow Depth > 4.00" for 10-yr event
Inflow = 0.8 cfs @ 12.09 hrs, Volume= 2,818 cf
Outflow = 0.8 cfs @ 12.09 hrs, Volume= 2,818 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.8 cfs @ 12.09 hrs, Volume= 2,818 cf
Routed to Pond ST : Stormtech System

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Peak Elev= 56.30' @ 12.21 hrs

Flood Elev= 57.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.34'	12.0" Round Culvert L= 4.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 55.34' / 55.34' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.0 cfs @ 12.09 hrs HW=56.08' TW=56.15' (Dynamic Tailwater)

↑**1=Culvert** (Controls 0.0 cfs)

Summary for Pond DMH05: DMH-05

Inflow Area = 4,906 sf, 83.37% Impervious, Inflow Depth > 4.06" for 10-yr event
Inflow = 0.5 cfs @ 12.09 hrs, Volume= 1,659 cf
Outflow = 0.5 cfs @ 12.09 hrs, Volume= 1,659 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.5 cfs @ 12.09 hrs, Volume= 1,659 cf
Routed to Pond ST : Stormtech System

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Peak Elev= 56.29' @ 12.21 hrs

Flood Elev= 57.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.34'	12.0" Round Culvert L= 4.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 55.34' / 55.34' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.0 cfs @ 12.09 hrs HW=56.03' TW=56.15' (Dynamic Tailwater)

↑**1=Culvert** (Controls 0.0 cfs)

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Type III 24-hr 10-yr Rainfall=4.75"

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Summary for Pond DMH06: DMH-06

Inflow Area = 13,365 sf, 81.01% Impervious, Inflow Depth = 2.47" for 10-yr event
Inflow = 1.0 cfs @ 12.16 hrs, Volume= 2,756 cf
Outflow = 1.0 cfs @ 12.16 hrs, Volume= 2,756 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.0 cfs @ 12.16 hrs, Volume= 2,756 cf
Routed to Link PPOI3 : CB #1007

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Peak Elev= 55.39' @ 12.16 hrs

Flood Elev= 58.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	54.87'	18.0" Round Culvert L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 54.87' / 54.72' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.0 cfs @ 12.16 hrs HW=55.39' TW=0.00' (Dynamic Tailwater)

↑**1=Culvert** (Barrel Controls 1.0 cfs @ 2.64 fps)

Summary for Pond RD01: RD-01

Inflow Area = 1,505 sf, 100.00% Impervious, Inflow Depth > 4.51" for 10-yr event
Inflow = 0.2 cfs @ 12.09 hrs, Volume= 566 cf
Outflow = 0.2 cfs @ 12.09 hrs, Volume= 566 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.2 cfs @ 12.09 hrs, Volume= 566 cf
Routed to Pond RD04 : RD-04

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Peak Elev= 55.97' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	55.64'	6.0" Round Culvert L= 79.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 55.64' / 55.24' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.1 cfs @ 12.09 hrs HW=55.97' TW=55.69' (Dynamic Tailwater)

↑**1=Culvert** (Outlet Controls 0.1 cfs @ 1.51 fps)

Summary for Pond RD02: RD-02

Inflow Area = 2,575 sf, 100.00% Impervious, Inflow Depth > 4.51" for 10-yr event
Inflow = 0.3 cfs @ 12.09 hrs, Volume= 968 cf
Outflow = 0.3 cfs @ 12.09 hrs, Volume= 968 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.3 cfs @ 12.09 hrs, Volume= 968 cf
Routed to Pond RD04 : RD-04

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

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Peak Elev= 55.80' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	55.33'	6.0" Round Culvert L= 17.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 55.33' / 55.24' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.2 cfs @ 12.09 hrs HW=55.79' TW=55.69' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 0.2 cfs @ 1.58 fps)**Summary for Pond RD03: RD-03**

Inflow Area = 8,190 sf, 100.00% Impervious, Inflow Depth > 4.51" for 10-yr event
 Inflow = 0.9 cfs @ 12.09 hrs, Volume= 3,079 cf
 Outflow = 0.9 cfs @ 12.09 hrs, Volume= 3,079 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.9 cfs @ 12.09 hrs, Volume= 3,079 cf
 Routed to Link PPOI4 : Roof Drains

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Peak Elev= 55.73' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	55.00'	8.0" Round Culvert L= 14.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 55.00' / 54.93' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.8 cfs @ 12.09 hrs HW=55.71' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 0.8 cfs @ 2.77 fps)**Summary for Pond RD04: RD-04**

Inflow Area = 4,080 sf, 100.00% Impervious, Inflow Depth > 4.51" for 10-yr event
 Inflow = 0.4 cfs @ 12.09 hrs, Volume= 1,534 cf
 Outflow = 0.4 cfs @ 12.09 hrs, Volume= 1,534 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.4 cfs @ 12.09 hrs, Volume= 1,534 cf
 Routed to Link PPOI4 : Roof Drains

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Peak Elev= 55.69' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	55.24'	8.0" Round Culvert L= 54.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 55.24' / 54.97' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.4 cfs @ 12.09 hrs HW=55.69' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 0.4 cfs @ 2.36 fps)

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Post-Development Calculations (10-year Storm Event)

Type III 24-hr 10-yr Rainfall=4.75"

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Summary for Pond ST: Stormtech System

Inflow Area = 13,365 sf, 81.01% Impervious, Inflow Depth > 4.02" for 10-yr event
Inflow = 1.3 cfs @ 12.09 hrs, Volume= 4,478 cf
Outflow = 1.0 cfs @ 12.16 hrs, Volume= 4,256 cf, Atten= 26%, Lag= 4.4 min
Discarded = 0.0 cfs @ 8.70 hrs, Volume= 1,500 cf
Primary = 1.0 cfs @ 12.16 hrs, Volume= 2,756 cf
Routed to Pond TF : Tree Filter

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 56.29' @ 12.16 hrs Surf.Area= 1,028 sf Storage= 940 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 41.4 min (817.5 - 776.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	54.60'	761 cf	27.00'W x 38.07'L x 2.25'H Field A 2,313 cf Overall - 410 cf Embedded = 1,902 cf x 40.0% Voids
#2A	55.35'	410 cf	ADS_StormTech SC-160LP +Cap x 60 Inside #1 Effective Size= 18.0"W x 12.0"H => 0.96 sf x 7.12'L = 6.8 cf Overall Size= 25.0"W x 12.0"H x 7.56'L with 0.44' Overlap 60 Chambers in 12 Rows
1,171 cf			Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	55.34'	12.0" Round Culvert L= 39.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 55.34' / 55.34' S= 0.0000 ' S= 0.0000 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Discarded	54.60'	0.975 in/hr Exfiltration over Surface area
#3	Device 1	55.34'	8.0" Round Culvert L= 16.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 55.34' / 55.34' S= 0.0000 ' S= 0.0000 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Discarded OutFlow Max=0.0 cfs @ 8.70 hrs HW=54.62' (Free Discharge)

↑ **2=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=1.0 cfs @ 12.16 hrs HW=56.28' TW=55.71' (Dynamic Tailwater)

↑ **1=Culvert** (Passes 1.0 cfs of 1.5 cfs potential flow)

↑ **3=Culvert** (Barrel Controls 1.0 cfs @ 2.72 fps)

47262-00 Site Drainage

Type III 24-hr 10-yr Rainfall=4.75"

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Summary for Pond TF: Tree Filter

Inflow Area = 13,365 sf, 81.01% Impervious, Inflow Depth = 2.47" for 10-yr event
 Inflow = 1.0 cfs @ 12.16 hrs, Volume= 2,756 cf
 Outflow = 1.0 cfs @ 12.16 hrs, Volume= 2,756 cf, Atten= 0%, Lag= 0.0 min
 Primary = 1.0 cfs @ 12.16 hrs, Volume= 2,756 cf
 Routed to Pond DMH06 : DMH-06

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 55.71' @ 12.18 hrs
 Flood Elev= 57.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.20'	18.0" Round Culvert L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 55.20' / 54.97' S= 0.0051 ' S= 0.0051 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.9 cfs @ 12.16 hrs HW=55.71' TW=55.39' (Dynamic Tailwater)
 1=Culvert (Outlet Controls 0.9 cfs @ 2.58 fps)

Summary for Link PPOI1: Side of Lot

Inflow Area = 2,375 sf, 0.00% Impervious, Inflow Depth > 2.08" for 10-yr event
 Inflow = 0.1 cfs @ 12.10 hrs, Volume= 412 cf
 Primary = 0.1 cfs @ 12.10 hrs, Volume= 412 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link PPOI2: Rear of Lot

Inflow Area = 1,147 sf, 0.00% Impervious, Inflow Depth > 2.16" for 10-yr event
 Inflow = 0.1 cfs @ 12.10 hrs, Volume= 207 cf
 Primary = 0.1 cfs @ 12.10 hrs, Volume= 207 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link PPOI3: CB #1007

Inflow Area = 14,239 sf, 76.04% Impervious, Inflow Depth > 2.46" for 10-yr event
 Inflow = 1.0 cfs @ 12.16 hrs, Volume= 2,914 cf
 Primary = 1.0 cfs @ 12.16 hrs, Volume= 2,914 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

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Post-Development Calculations (10-year Storm Event)

Type III 24-hr 10-yr Rainfall=4.75"

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Summary for Link PPOI4: Roof Drains

Inflow Area = 12,270 sf, 100.00% Impervious, Inflow Depth > 4.51" for 10-yr event

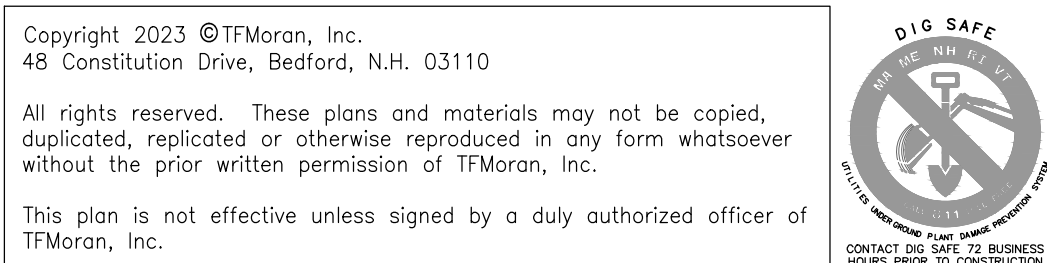
Inflow = 1.3 cfs @ 12.09 hrs, Volume= 4,612 cf

Primary = 1.3 cfs @ 12.09 hrs, Volume= 4,612 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

APPENDIX H – DRAINAGE MAPS

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SOIL PHASE LEGEND (PERCENT)					
A	B	C	D	E	F
0-3	3-8	8-15	15-25	25-50	50+

SOIL LEGEND (PER USDA NRCS WEB SOIL SURVEY)			
SYMBOL	DESCRIPTION	HYDROLOGIC SOIL GROUP	DRAINAGE CLASS
BzB	BUXTON SILT LOAM, 3% - 8% SLOPES	NONE	MODERATELY WELL DRAINED

TAX MAP 9 LOT 111 & 112
PRE-DEVELOPMENT DRAINAGE MAP
 256 & 264 CENTRAL AVE
 DOVER, NH

			Civil Engineers Structural Engineers Traffic Engineers Land Surveyors Landscape Architects Scientists	170 Commerce Way, Suite 102 Portsmouth, NH 03801 Phone (603) 431-2222 Fax (603) 431-0910 www.tfmoran.com	
47262.01	DR CK	XXX XXX	FB CADFILE	— 47262-01 PRE-DEW DRAINAGE	D—01

OWNER
MAP 9 LOT 111
256-264 CENTRAL AVENUE, LLC
96 MAIN STREET
NEWMARKET, NH 03857

MAP 9 LOT 112
256-264 CENTRAL AVENUE, LLC
96 MAIN STREET
NEWMARKET, NH 03857

256-264 CENTRAL AVENUE, LLC
96 MAIN STREET
NEWMARKET, NH 03857

PLANNING/ZONING DEPARTMENT
288 CENTRAL AVENUE
DOVER, NH 03820
(603) 516-6008
DONNA BENTON, AICP, DIRECTOR OF PLANNING
AND COMMUNITY DEVELOPMENT

PUBLIC WORKS

271 MAST ROAD
DOVER, NH 03820
(603) 516-6450

LIGHTING DESIGN
EXPOSURE LIGHTING
501 ISLINGTON STREET, UNIT 1A
PORTSMOUTH, NH 03801
(603) 601-8080
KEN SWEENEY, APPLICATIONS ENGINEER

AUGUST 31, 2023

SHEET	SHEET TITLE
C-00	COVER
C-01	NOTES & LEGEND
S-01	EXISTING CONDITIONS PLAN
C-02	SITE LAYOUT PLAN
C-03	GRADING AND DRAINAGE PLAN
C-04	LIGHTING PLAN
C-05	LANDSCAPE PLAN
C-06 TO C-08	DETAILS

	NUMBER	APPROVED	EXPIRES
DOVER PLANNING BOARD MINOR SITE PLAN REVIEW APPROVAL	-	-	-



HORIZONTAL SCALE 1"=500'

500 250 0 500

A horizontal scale bar with a central zero point. To the left of zero, there is a tick mark for 250 and another for 500. To the right of zero, there is a tick mark for 500. The segments between 0 and 250 on both sides are shaded black, while the segments between 250 and 500 are white.

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TAX MAP 9 LOT 111 & 112

256 & 264 CENTRAL AVE
DOVER, NH

OWNED BY & PREPARED FOR
256-264 CENTRAL AVENUE, LLC

AUGUST 31, 2023

Seacoast Division

TFM®

- Civil Engineers
- Structural Engineers
- Traffic Engineers
- Land Surveyors
- Landscape Architects
- Scientists

170 Commerce Way, Suite 102
Portsmouth, NH 03801
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		CK	CRR	CADFILE	47262-01 COVER	

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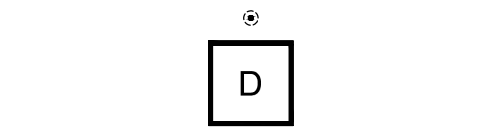
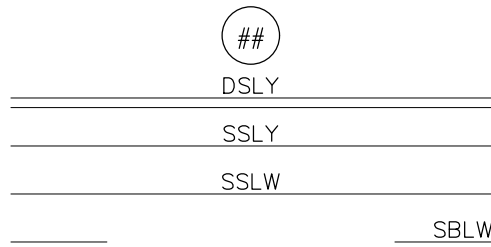
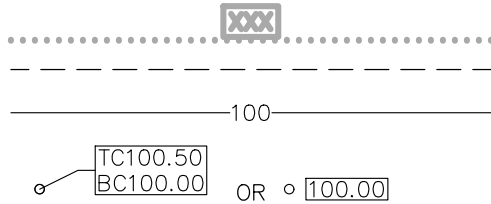
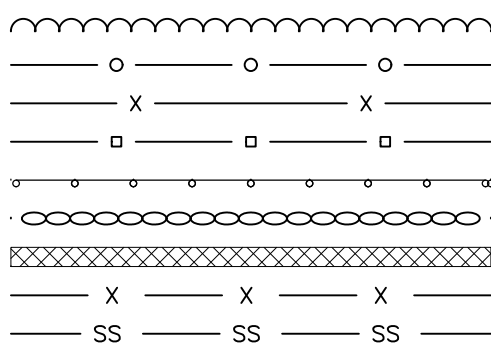
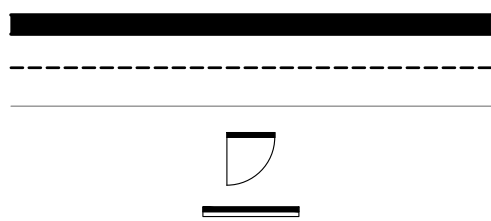
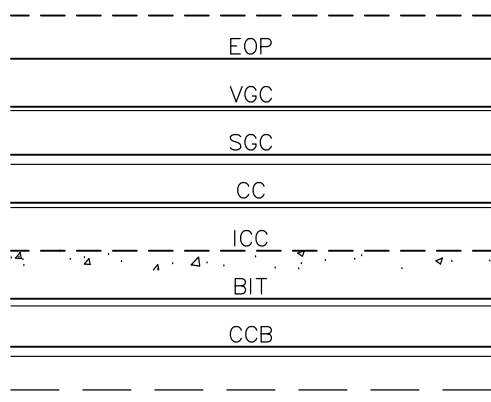
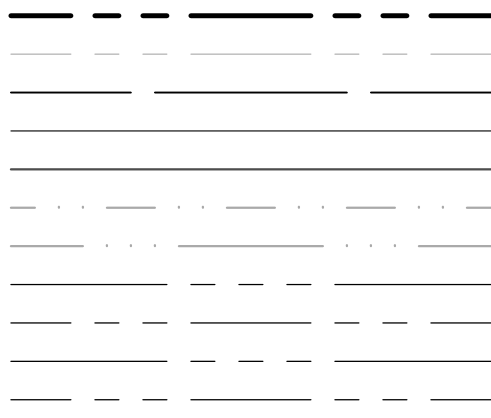
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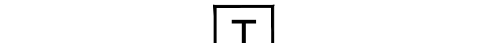
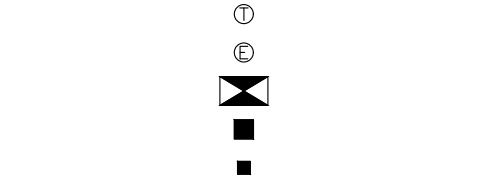
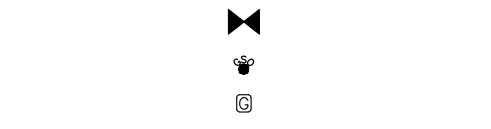
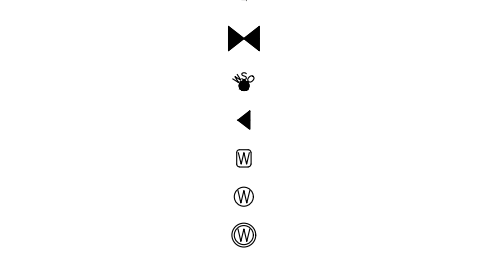
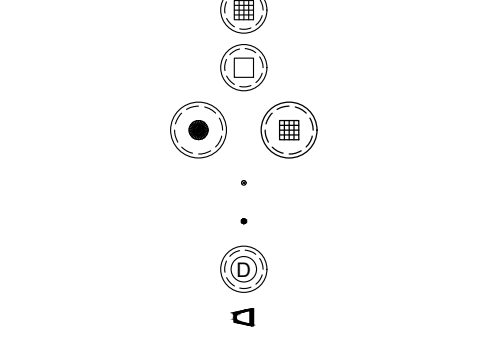
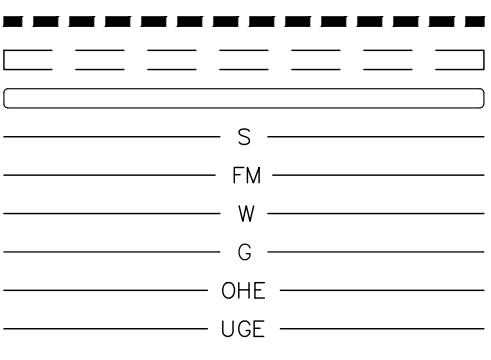
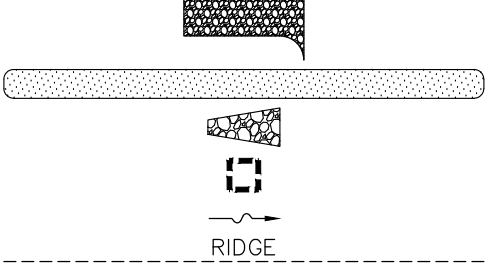
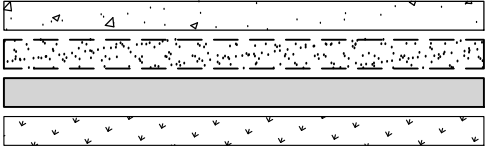
CONTACT DIS SAFE 72 BUSINESS

LEGEND

PROPOSED



PROPOSED



CONCRETE
GRAVEL
HEAVY DUTY PAVEMENT

CONSTRUCTION ENTRANCE
SNOW STORAGE
RIPRAP
INLET PROTECTION
FLOW ARROW
GRADE BREAK RIDGE

DRAIN LINE
DRAINAGE SWALE
STORMWATER BMP
SEWER LINE
SEWER FORCE MAIN LINE
WATER LINE
GAS LINE
OVERHEAD UTILITY LINE
UNDERGROUND UTILITY LINE

CATCH BASIN
DRAIN INLET
OUTLET CONTROL STRUCTURE
ROOF DRAIN
DRAIN CLEANOUT
DRAIN MANHOLE
FARED END SECTION

SEWER CLEAN OUT
SEWER MANHOLE
SEWER VENT

DRAIN/SEWER/WATER PLUG OR CAP

HYDRANT

FIRE DEPARTMENT CONNECTION
WATER GATE VALVE
WATER SHUTOFF
THRUST BLOCK
WATER METER
WATER MANHOLE
WELL

GAS GATE VALVE
GAS SHUT OFF
GAS METER

TELEPHONE MANHOLE
ELECTRIC MANHOLE
TRAFFIC CONTROL CABINET
ELECTRIC HANDHOLE
ELECTRIC PULL BOX
ELECTRIC METER
FLOOD LIGHT
LIGHT POLE
UTILITY POLE
GUY POLE

TRANSFORMER PAD

BORING LOCATION

TEST PIT LOCATION

INFILTRATION TEST LOCATION

MONITORING WELL

GENERAL NOTES

- THESE PLANS ARE PERMIT DRAWINGS ONLY AND HAVE NOT BEEN DETAILED FOR CONSTRUCTION OR BIDDING.
- THESE PLANS WERE PREPARED UNDER THE SUPERVISION OF A LICENSED PROFESSIONAL ENGINEER, TFMORAN, INC. ASSUMES NO LIABILITY AS A RESULT OF ANY CHANGES OR NON-CONFORMANCE WITH THESE PLANS EXCEPT UPON THE WRITTEN APPROVAL OF THE ENGINEER OF RECORD.
- ALL IMPROVEMENTS SHOWN ON THE SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THIS SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE DOVER PLANNING BOARD.
- ALL WORK SHALL CONFORM TO THE APPLICABLE REGULATIONS AND STANDARDS OF THE CITY OF DOVER, AND SHALL BE BUILT IN A WORKMANLIKE MANNER IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. ALL WORK TO CONFORM TO CITY OF DOVER DEPARTMENT OF PUBLIC WORKS STANDARD SPECIFICATIONS. ALL WORK WITHIN THE RIGHT-OF-WAY OF THE CITY AND/OR STATE SHALL COMPLY WITH APPLICABLE STANDARDS. COORDINATE ALL WORK WITHIN THE RIGHT-OF-WAY WITH APPROPRIATE CITY, COUNTY, AND/OR STATE AGENCY.
- THE SITE CONTRACTOR SHALL ENSURE THAT ALL WORK IS PERFORMED IN ACCORDANCE WITH APPLICABLE SECTIONS OF ENV-WQ 1500. THE SITE CONTRACTOR SHALL NOTIFY THE ENGINEER IN ADVANCE OF CONSTRUCTION OF EACH STORMWATER FACILITY TO COORDINATE REQUIRED INSPECTIONS. THE CONTRACTOR SHALL TAKE PROGRESS PHOTOS DURING CONSTRUCTION OF ALL STORMWATER DRAINAGE COMPONENTS AND SEND TO THE ENGINEER.
- SEE EXISTING CONDITIONS PLAN FOR THE HORIZONTAL AND VERTICAL DATUM.
- SEE EXISTING CONDITIONS PLAN FOR BENCHMARK INFORMATION. VERIFY TBM ELEVATIONS PRIOR TO CONSTRUCTION.
- CONTACT EASEMENT OWNERS PRIOR TO COMMENCING ANY WORK WITHIN THE EASEMENTS.
- PRIOR TO COMMENCING ANY SITE WORK, ALL LIMITS OF WORK SHALL BE CLEARLY MARKED IN THE FIELD.
- SITE WORK SHALL BE CONSTRUCTED FROM A COMPLETE SET OF PLANS, NOT ALL FEATURES ARE DETAILED ON EVERY PLAN. THE ENGINEER IS TO BE NOTIFIED OF ANY CONFLICT WITHIN THIS PLAN SET.
- TFMORAN, INC. ASSUMES NO LIABILITY FOR WORK PERFORMED WITHOUT AN ACCEPTABLE PROGRAM OF TESTING AND INSPECTION AS APPROVED BY THE ENGINEER OF RECORD.
- TEMPORARY FENCING SHALL BE PROVIDED AND COVERED WITH A FABRIC MATERIAL TO CONTROL DUST MITIGATION.
- ALL DEMOLITION SHALL INSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, WALKWAYS, AND ANY OTHER ADJACENT OPERATING FACILITIES. PRIOR WRITTEN PERMISSION FROM THE OWNER/DEVELOPER AND LOCAL PERMITTING AUTHORITY IS REQUIRED IF CLOSURE/OBSTRUCTIONS TO ROADS, STREET, WALKWAYS, AND OTHERS IS DEEMED NECESSARY. CONTRACTOR TO PROVIDE ALTERNATE ROUTES AROUND CLOSURES/OBSTRUCTIONS PER LOCAL/STATE/FEDERAL REGULATIONS.
- REFER TO ARCHITECTURAL PLANS FOR LAYOUT OF BUILDING FOUNDATIONS AND CONCRETE ELEMENTS WHICH ABUT THE BUILDING SUCH AS STAIRS, SIDEWALKS, LOADING DOCK RAMPS, PADS, AND COMPACTOR PADS. DO NOT USE SITE PLANS FOR LAYOUT OF FOUNDATIONS.
- IN THE EVENT OF A CONFLICT BETWEEN PLANS, SPECIFICATIONS, AND DETAILS, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY FOR CLARIFICATION.
- IF CONDITIONS AT THE SITE ARE DIFFERENT THAN SHOWN ON THE PLANS, THE ENGINEER SHALL BE NOTIFIED PRIOR TO PROCEEDING WITH THE AFFECTED WORK.
- CONTRACTOR'S GENERAL RESPONSIBILITIES:
 - BID AND PERFORM THE WORK IN ACCORDANCE WITH ALL LOCAL, STATE, AND NATIONAL CODES, SPECIFICATIONS, REGULATIONS, AND STANDARDS AND CONDITIONS OF ALL PROJECT-SPECIFIC PERMITS AND APPROVALS AS LISTED ON THE COVER SHEET TO THESE PLANS OR OTHERWISE REQUIRED.
 - NOTIFY ENGINEER IN WRITING OF ANY DISCREPANCIES OF PROPOSED LAYOUT AND/OR EXISTING FEATURES.
 - EMPLOY A LICENSED SURVEYOR TO DETERMINE ALL LINES AND GRADES AND LAYOUT OF SITE ELEMENTS AND BUILDINGS.
 - THE CONTRACTOR SHALL BE RESPONSIBLE TO BECOME FAMILIAR WITH THE SITE AND ALL SURROUNDING CONDITIONS. THE CONTRACTOR SHALL ADVISE THE APPROPRIATE AUTHORITY OF INTENTIONS AT LEAST 48 HOURS IN ADVANCE.
 - TAKE APPROPRIATE MEASURES TO REDUCE, TO THE FULLEST EXTENT POSSIBLE, NOISE, DUST, AND UNSIGHTLY DEBRIS. CONSTRUCTION ACTIVITIES SHALL BE CARRIED OUT DURING HOURS AS DETERMINED DURING THE PRE-CONSTRUCTION MEETING IN ACCORDANCE WITH THE APPLICABLE MUNICIPAL ORDINANCES AND REGULATIONS OF THE CITY OF DOVER, NEW HAMPSHIRE.
 - MAINTAIN EMERGENCY ACCESS TO ALL AREAS AFFECTED BY WORK AT ALL TIMES.
 - IN ACCORDANCE WITH RSA 430:53 AND AGR 3800, THE CONTRACTOR SHALL NOT TRANSPORT INVASIVE SPECIES OFF THE PROPERTY, AND SHALL DISPOSE OF INVASIVE SPECIES ON-SITE IN A LEGAL MANNER.
 - COORDINATE WITH ALL UTILITY COMPANIES AND CONTACT DIGSAFE (811 OR 888-344-7233) AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION.
 - PROTECT NEW AND EXISTING BURIED UTILITIES DURING INSTALLATION OF ALL SITE ELEMENTS. DAMAGED UTILITIES SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL COST TO THE OWNER.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION AND FOR CONDITIONS AT THE SITE. THESE PLANS, PREPARED BY TFMORAN, INC., DO NOT EXTEND TO OR INCLUDE SYSTEMS PERTAINING TO THE SAFETY OF THE CONSTRUCTION CONTRACTOR OR THEIR EMPLOYEES, AGENTS, OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE SEAL OF THE SURVEYOR OR ENGINEER HEREON DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEMS THAT MAY NOW OR HEREAFTER BE INCORPORATED INTO THESE PLANS. THE CONSTRUCTION CONTRACTOR SHALL PREPARE OR OBTAIN THE APPROPRIATE SAFETY SYSTEMS WHICH MAY BE REQUIRED BY THE US OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND/OR LOCAL REGULATIONS.
 - WRITTEN DIMENSIONS HAVE PRECEDENCE OVER SCALED DIMENSIONS. THE CONTRACTOR SHALL USE CAUTION WHEN SCALING REPRODUCED PLANS. IN CASE OF CONFLICT BETWEEN THIS PLAN SET AND ANY OTHER DRAWING AND/OR SPECIFICATION, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY FOR CLARIFICATIONS.
 - IF ANY DEVIATIONS FROM THE APPROVED PLANS AND SPECIFICATIONS HAVE BEEN MADE, THE SITE CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS STAMPED BY A LICENSED SURVEYOR OR QUALIFIED ENGINEER ALONG WITH A LETTER STAMPED BY A QUALIFIED ENGINEER DESCRIBING ALL SUCH DEVIATIONS, AND BEAR ALL COSTS FOR PREPARING AND FILING ANY NEW PERMITS OR PERMIT AMENDMENTS THAT MAY BE REQUIRED.
 - AT COMPLETION OF CONSTRUCTION, THE SITE CONTRACTOR SHALL PROVIDE A LETTER CERTIFYING THAT THE PROJECT WAS COMPLETED IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS, AND A LETTER STAMPED BY A QUALIFIED ENGINEER THAT THEY HAVE OBSERVED ALL UNDERGROUND DETENTION SYSTEMS, INFILTRATION SYSTEMS, OR FILTERING SYSTEMS PRIOR TO BACKFILL, AND THAT SUCH SYSTEMS CONFORM TO THE APPROVED PLANS AND SPECIFICATIONS.

GRADING & DRAINAGE NOTES

- THE CONTRACTOR SHALL ENSURE THAT ALL WORK IS PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF NHDES ENV-WQ 1500 AS APPLICABLE.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CHECK THE ACCURACY OF THE TOPOGRAPHY AND REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO ANY EARTHWORK BEING PERFORMED ON THE SITE. NO CLAIM FOR EXTRA WORK WILL BE CONSIDERED FOR PAYMENT AFTER EARTHWORK HAS COMMENCED.
- COORDINATE WITH ARCHITECTURAL PLANS FOR DETAILED GRADING AT BUILDING, AND SIZE AND LOCATION OF ALL BUILDING SERVICES.
- COORDINATE WITH MECHANICAL AND PLUMBING PLANS FOR ROOF DRAIN INFORMATION.
- LIMITS OF WORK ARE SHOWN AS APPROXIMATE. THE CONTRACTOR SHALL COORDINATE ALL WORK TO PROVIDE SMOOTH TRANSITIONS. THIS INCLUDES GRADING, PAVEMENT, CURBING, SIDEWALKS, AND ALIGNMENTS.
- THE CONTRACTOR SHALL PROVIDE A FINISH PAVEMENT SURFACE FREE OF LOW SPOTS AND PONDING AREAS. CRITICAL AREAS INCLUDE BUILDING ENTRANCE, RAMPS, AND LOADING AREAS.
- THE SITE SHALL BE GRADED SO ALL FINISHED PAVEMENT HAS POSITIVE DRAINAGE AND SHALL NOT POND WATER DEEPER THAN 1/4" FOR A PERIOD OF MORE THAN 15 MINUTES AFTER FLOODING.
- ALL ELEVATIONS SHOWN AT CURB ARE TO THE BOTTOM OF CURB UNLESS OTHERWISE NOTED. CURBS HAVE A 6" REVEAL UNLESS OTHERWISE NOTED.
- ALL SIDEWALK AND OTHER CURB REVEALS SHALL BE 6" WITH A TOLERANCE OF PLUS OR MINUS 3/8". WHERE SIDEWALK IS TO BE FLUSH, THE PAVEMENT REVEAL SHALL BE 1/4" WITH A TOLERANCE OF 1/8".
- THE FINISHED GRADE AT BOTTOM OF ALL ACCESSIBLE RAMPS SHALL BE FLUSH WITH PAVEMENT WITH A TOLERANCE OF PLUS OR MINUS 1/4".
- ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE PRIOR TO INSTALLATION OF FINISHED PAVEMENT.
- ROAD AND DRAINAGE CONSTRUCTION SHALL CONFORM TO THE TYPICAL SECTIONS AND DETAILS SHOWN ON THE PLANS AND SHALL MEET LOCAL STANDARDS AND THE REQUIREMENTS OF THE LATEST NHDOT STANDARD SPECIFICATIONS FOR ROADS AND BRIDGE CONSTRUCTION AND THE NHDOT STANDARD STRUCTURE DRAWINGS UNLESS OTHERWISE NOTED.
- STORMWATER DRAINAGE SYSTEM SHALL BE CONSTRUCTED TO LINE AND GRADE AS SHOWN ON THE PLANS. CONSTRUCTION METHODS SHALL CONFORM TO NHDOT STANDARD SPECIFICATIONS, SECTION 603. CATCH BASINS AND DRAIN MANHOLES SHALL CONFORM TO SECTION 604. ALL CATCH BASIN GRATES SHALL BE TYPE B AND CONFORM TO NHDOT STANDARDS AND SPECIFICATIONS UNLESS OTHERWISE NOTED.
- ALL EXCAVATIONS SHALL BE THOROUGHLY SECURED ON A DAILY BASIS BY THE CONTRACTOR AT THE COMPLETION OF CONSTRUCTION OPERATIONS IN THE IMMEDIATE AREA.
- ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED SHALL RECEIVE 6" LOAM, SEED, FERTILIZER, AND MULCH.
- DENSITY REQUIREMENTS:

MINIMUM DENSITY*	LOCATION
95%	BELOW PAVED OR CONCRETE AREAS
95%	TRENCH BEDDING MATERIAL AND SAND BLANKET BACKFILL
90%	BELOW LOAM AND SEED AREAS

*ALL PERCENTAGES OF COMPACTION SHALL BE OF THE MAXIMUM DRY DENSITY AT THE OPTIMUM MOISTURE CONTENT AS DETERMINED AND CONTROLLED IN ACCORDANCE WITH ASTM D-1557, METHOD C. FIELD DENSITY TESTS SHALL BE MADE IN ACCORDANCE WITH ASTM D-1556 OR ASTM D-6938.

UTILITY NOTES

- LENGTH OF PIPE IS FOR CONVENIENCE ONLY. ACTUAL PIPE LENGTH SHALL BE DETERMINED IN THE FIELD.
- ALL PROPOSED UTILITY WORK, INCLUDING MATERIAL, INSTALLATION, TERMINATION, EXCAVATION, BEDDING, BACKFILL, COMPACTION, TESTING, CONNECTIONS, AND CONSTRUCTION SHALL BE COORDINATED WITH AND COMPLETED IN ACCORDANCE WITH THE APPROPRIATE REQUIREMENTS, CODES, AND STANDARDS OF ALL CORRESPONDING UTILITY ENTITIES AND SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE, AND ELEVATION OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS, PRIOR TO THE START OF ANY CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION AND APPROPRIATE REMEDIAL ACTION BE AGREED TO BY THE ENGINEER BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTACT "DIGSAFE" (811) AT LEAST 72 HOURS BEFORE DIGGING.
- COORDINATE ALL WORK ADJACENT TO PROPOSED BUILDINGS WITH ARCHITECTURAL BUILDING DRAWINGS. CONFIRM UTILITY PENETRATIONS AND INVERT ELEVATIONS ARE COORDINATED PRIOR TO INSTALLATION.
- THE CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES OWNING UTILITIES, EITHER OVERHEAD OR UNDERGROUND, WITHIN THE CONSTRUCTION AREA AND SHALL COORDINATE AS NECESSARY WITH THE UTILITY COMPANIES OF SAID UTILITIES. THE PROTECTION OR RELOCATION OF UTILITIES IS ULTIMATELY THE RESPONSIBILITY OF THE CONTRACTOR.
- THE EXACT LOCATION OF NEW UTILITY CONNECTIONS SHALL BE DETERMINED BY THE CONTRACTOR IN COORDINATION WITH UTILITY COMPANY, COUNTY AGENCY, AND/OR PRIVATE UTILITY COMPANY.
- 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 THE UTILITY INSTALLATION COMPLETE AND OPERATIONAL.
- ALL UTILITY COMPANIES REQUIRE INDIVIDUAL CONDUITS. CONTRACTOR TO COORDINATE WITH TELEPHONE, CABLE, AND ELECTRIC COMPANIES REGARDING NUMBER, SIZE, AND TYPE OF CONDUITS REQUIRED PRIOR TO INSTALLATION OF ANY CONDUIT.
- SANITARY SEWER SHALL BE CONSTRUCTED TO THE STANDARDS AND SPECIFICATIONS AS SHOWN ON THESE PLANS. ALL SEWER MAINS AND FITTINGS SHALL BE PVC AND SHALL CONFORM TO ASTM F 679 (SDR 35 MINIMUM). FORCE MAINS AND FITTINGS SHALL CONFORM TO NH CODE OF ADMINISTRATIVE RULES ENV-WQ 700. ALL SEWER CONSTRUCTION SHALL BE IN ACCORDANCE WITH NH CODE OF ADMINISTRATIVE RULES ENV-WQ 700. SANITARY MANHOLES SHALL CONFORM TO NHDES WATER DIVISION WASTEWATER ENGINEERING BUREAU STANDARDS AND SPECIFICATIONS SHOWN HEREON.
- ON-SITE WATER DISTRIBUTION SHALL BE TO CITY OF DOVER STANDARDS AND SPECIFICATIONS. WATER MAINS SHALL HAVE A MINIMUM OF 9.5' COVER. WHERE WATER PIPES CROSS SEWER LINES A MINIMUM OF 18" VERTICAL SEPARATION BETWEEN THE TWO OUTSIDE PIPE WALLS SHALL BE OBSERVED. HORIZONTAL SEPARATION BETWEEN WATER AND SEWER SHALL BE 10' MINIMUM. WHERE A SANITARY LINE CROSSES A WATER LINE, SEWER LINE MUST BE CONSTRUCTED OF FORCE MAIN MATERIALS (PER ENV-WQ 704.08) FROM BUILDING OR MANHOLE TO MANHOLE, OR SUBSTITUTE RUBBER-GASKETED PRESSURE PIPE FOR THE SAME DISTANCE. WHEN SANITARY LINES PASS BELOW WATER LINES, LAY PIPE SO THAT NO JOINT IN THE SANITARY LINE WILL BE CLOSER THAN 6' HORIZONTALLY TO THE WATER LINE.
- THRUST BLOCKS SHALL BE PROVIDED AT ALL LOCATIONS WHERE WATER LINE CHANGES DIRECTIONS OR CONNECTS TO ANOTHER WATER LINE.
- THE GENERAL CONTRACTOR IS RESPONSIBLE FOR CONDUIT AND WIRING TO ALL SIGNS AND LIGHTS. CONDUIT TO BE A MINIMUM OF 24" BELOW FINISH GRADE.
- ALL PROPOSED UTILITIES SHALL BE UNDERGROUND. ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES.
- THE CONTRACTOR SHALL ARRANGE AND PAY FOR ALL INSPECTIONS, TESTING, AND RELATED SERVICES AND SUBMIT COPIES OF ACCEPTANCE TO THE OWNER, UNLESS OTHERWISE INDICATED.
- PROVIDE PERMANENT PAVEMENT REPAIR FOR ALL UTILITY TRENCHES IN EXISTING ROAD OR PAVEMENT TO REMAIN. SAW CUT TRENCH, PAVEMENT, AND GRANULAR BASE THICKNESS TO MATCH EXISTING PAVEMENT. OBTAIN ALL PERMITS REQUIRED FOR TRENCHING.
- UNLESS OTHERWISE SPECIFIED, ALL UNDERGROUND STRUCTURES, PIPES, CHAMBERS, ETC. SHALL BE COVERED WITH A MINIMUM OF 18" OF COMPACTED SOIL BEFORE EXPOSURE TO VEHICLE LOADS.
- THE PROPERTY WILL BE SERVICED BY THE FOLLOWING:

DRAINAGE	MUNICIPAL
SEWER	MUNICIPAL
WATER	MUNICIPAL
GAS	NOT AVAILABLE
ELECTRIC	EVERSOURCE
TELEPHONE	CONSOLIDATED COMMUNICATIONS
CABLE	COMCAST XFINITY

SITE DEVELOPMENT PLANS

TAX MAP 9 LOT 111 & 112

NOTES & LEGEND

256 & 264 CENTRAL AVE
DOVER, NH

OWNED BY & PREPARED FOR
256-264 CENTRAL AVENUE, LLC

1"=40' (11"X17")

SCALE: N720' (22"X34")

AUGUST 31, 2023

Seacoast Division



Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
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FILE	47262.01	DR	JKC	FB	-	C-01
		CK	CRK	CADFILE	47262-01 LEGEND	

ABAN ABANDON
AC ACRES
ADJ ADJUST
APPROX APPROXIMATE
BC BOTTOM OF CURB
BIT BITUMINOUS
BK/PG BOOK & PAGE
BLDG BUILDING
BMP BEST MANAGEMENT PRACTICE
BS BOTTOM OF SLOPE
BW BOTTOM OF WALL
CONC CONCRETE
COORD COORDINATE
DIA DIAMETER
ELEV ELEVATION

GENERAL

EP EDGE OF PAVEMENT
ESHWT ESTIMATED SEASONAL HIGH
WATER TABLE
EXIST EXISTING
FFE FINISHED FLOOR ELEVATION
FND FOUNDATION
HP HIGH POINT
INV INVERT ELEVATION
INF INFILTRATION TEST
L LENGTH
L LINEAR FEET
LSA LANDSCAPE AREA
MAX MAXIMUM
MIN MINIMUM
N/F NOW OR FORMERLY

NHFG NEW HAMPSHIRE FISH & GAME
NTS NOT TO SCALE
OC ON CENTER
PAVE PAVEMENT
PERF PERFORATED
PROP PROPOSED
R RADIUS
R&D REMOVE AND DISPOSE
R&R REMOVE AND RESET
REM REMOVE
RET RETAIN
RIM RIM ELEVATION
ROW RIGHT OF WAY
S SLOPE
SF SQUARE FEET
SIDEWALK
TBM TEMPORARY BENCHMARK
TC TOP OF CURB
TP TEST PIT
TW TOP OF WALL
TYP TYPICAL
UC UNDERGROUND
WCR ACCESSIBLE WHEELCHAIR RAMP
W/ WITH

UTILITIES

CB CATCH BASIN
CIP CAST IRON PIPE
CMP CORRUGATED METAL PIPE
CO CLEANOUT
COND CONDUIT
DCB DOUBLE CATCH BASIN
DIP DUCTILE IRON PIPE
DMH DRAIN MANHOLE
F&C FRAME AND COVER
F&G FRAME AND GRATE
FES FLARED END SECTION
GT GREASE TRAP
HDPE HIGH DENSITY POLYETHYLENE PIPE
HH HANDHOLE
HW HEADWALL
HYD HYDRANT
LP LIGHT POLE
OCS OUTLET CONTROL STRUCTURE
PVC POLYVINYL CHLORIDE PIPE
RCP REINFORCED CONCRETE PIPE
RD ROOF DRAIN
SEW MANHOLE
SOS SEDIMENT OIL SEPARATOR
TSV TAPPING SLEEVE, VALVE, AND BOX
UP UTILITY POLE



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Sep 01, 2023 - 3:22pm
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LEGEND:

MAP 9 LOT 111 & 112

ACP
A.G.
BK. PG.
CFD
DMH
EP
FF
GREG
INVERT
N/F
PVC
SCRD

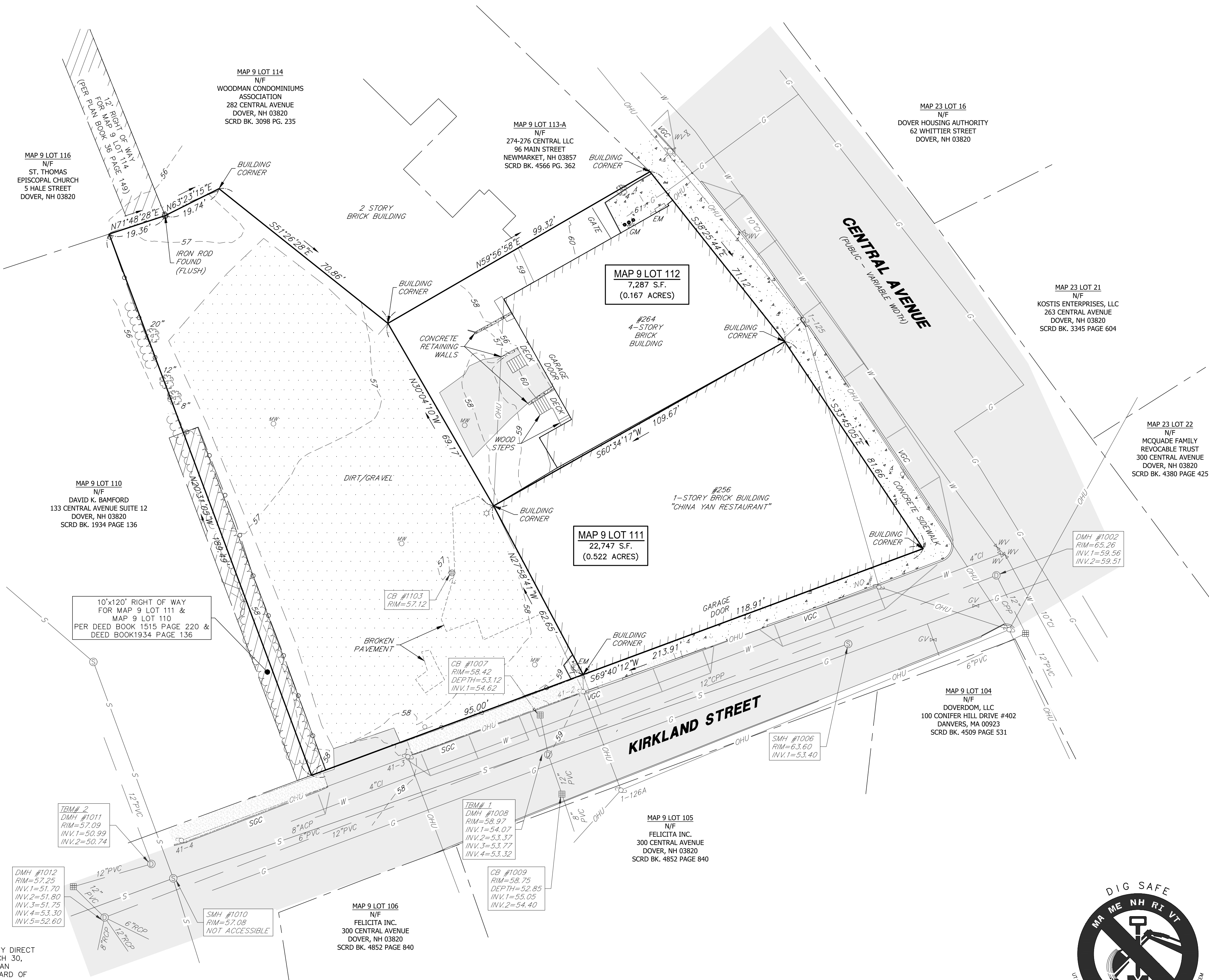
ASSESSORS MAP / LOT NUMBER
ASBESTOS CONCRETE PIPE
ABOVE GRADE
BOOK/PAGE
STRAFFORD COUNTY
REGISTRY OF DEEDS
CORRUGATED PLASTIC PIPE
DRAIN MANHOLE
EDGE OF PAVEMENT
FINISHED FLOOR
GAS REGULATOR

NOW OR FORMERLY
POLYVINYL CHLORIDE
STRAFFORD COUNTY
REGISTRY OF DEEDS
REINFORCED CONCRETE PIPE
SQUARE FEET
SEWER MANHOLE
TEMPORARY BENCHMARK
UTILITY POLE
VERTICAL GRANITE CURB
GM (GAS METER)
IRON PIPE/ROD FOUND
BOLLARD
EM (ELECTRIC METER)
LIGHT POLE
UTILITY POLE
ELECTRIC MANHOLE
CATCH BASIN
CB (CATCH BASIN ROUND)

DECIDUOUS TREE
SEWER MANHOLE
HYDRANT
MONITORING WELL

WATER GATE VALVE
SIGN
CHAIN LINK FENCE
OVERHEAD UTILITIES
APPROXIMATE ABUTTER LINE
BOUNDARY LINE
SETBACK LINE
TREE LINE
DRAIN LINE
SEWER LINE
GAS LINE
WATER LINE
EXISTING CONTOUR

ASPHALT
CONCRETE
GRAVEL
EASEMENT
PAVEMENT

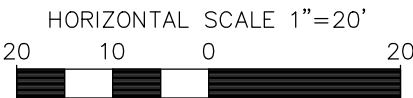


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Luminaire Schedule					
Symbol	Qty	Label	Arrangement	Description	[MANUFAC]
	4	S4	Single	MRS-LED-06L-SIL-FT-UNV-DIM-30-70CRI-IL-CXX / 4SQ B3 S11G 20 S GA 4BC (20' AFG)	LSI INDUSTRIES, INC.
	3	W1	Single	AWL CXX - 3000K / WALL MTD 9' AFG	LSI INDUSTRIES, INC.

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Seacoast Division

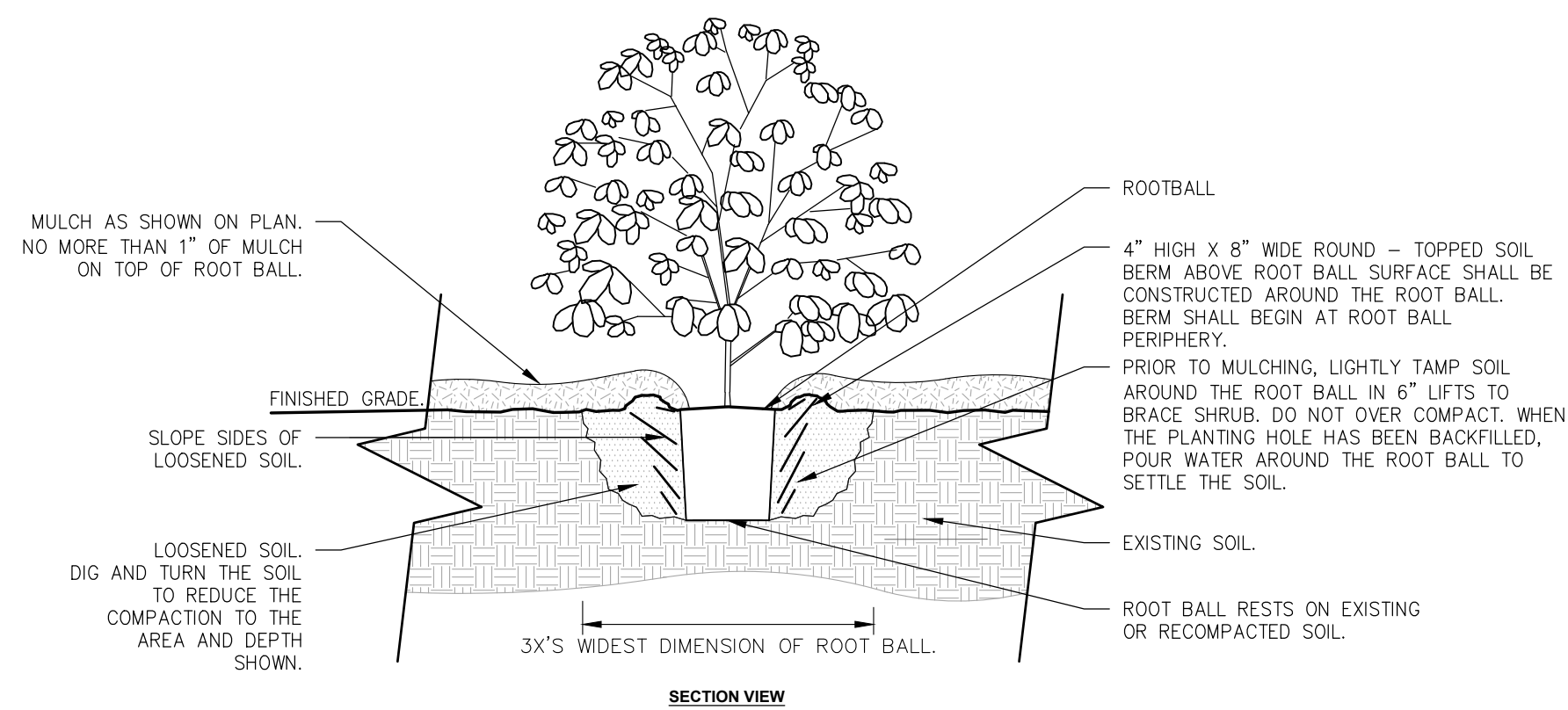
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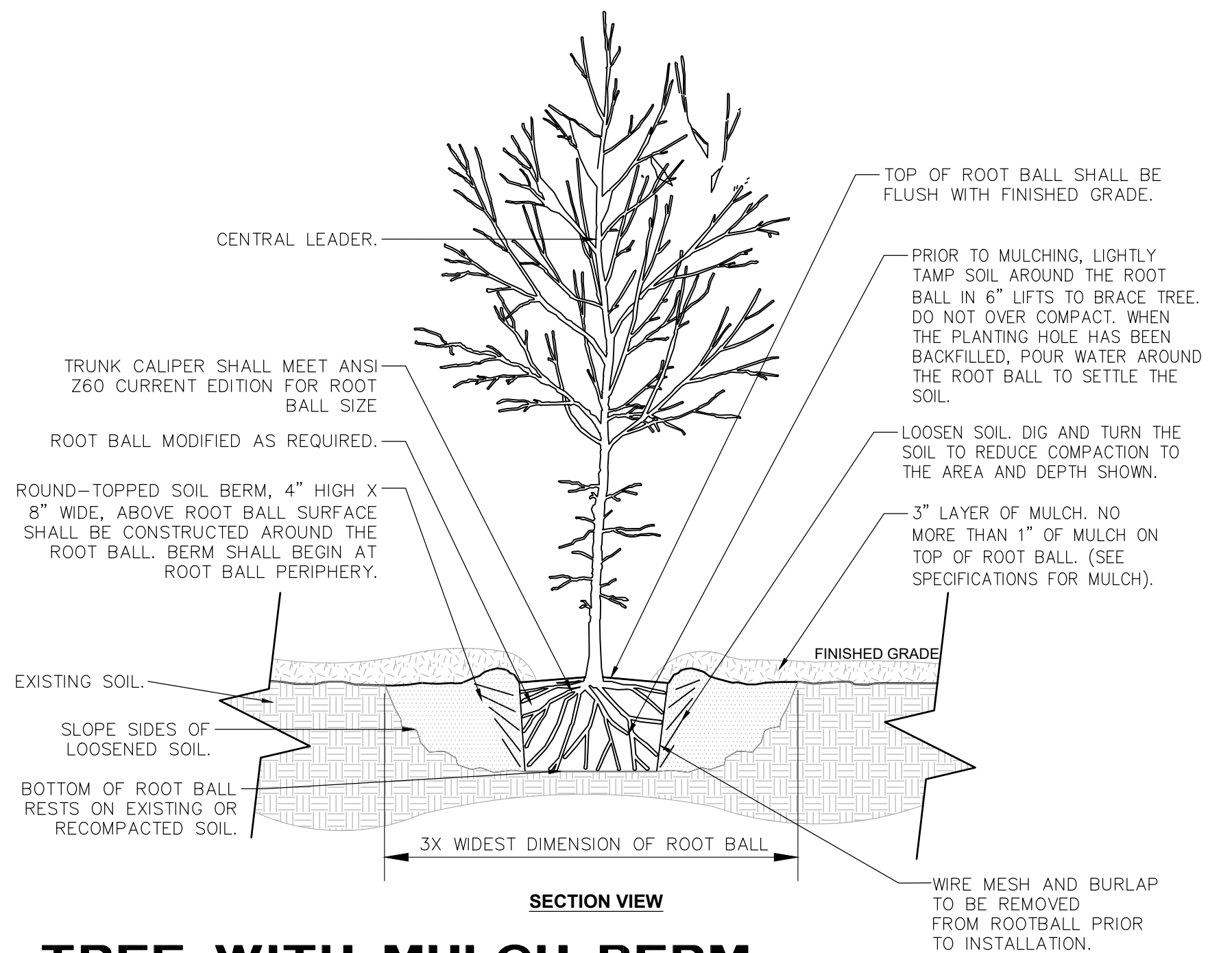
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		CK	CRR	CADFILE	47262-01 LIGHTING	

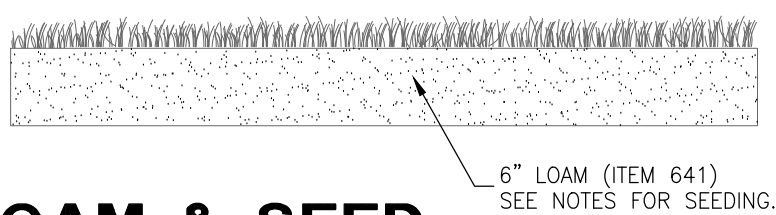
SHRUB PLANTING



TREE WITH MULCH BERM



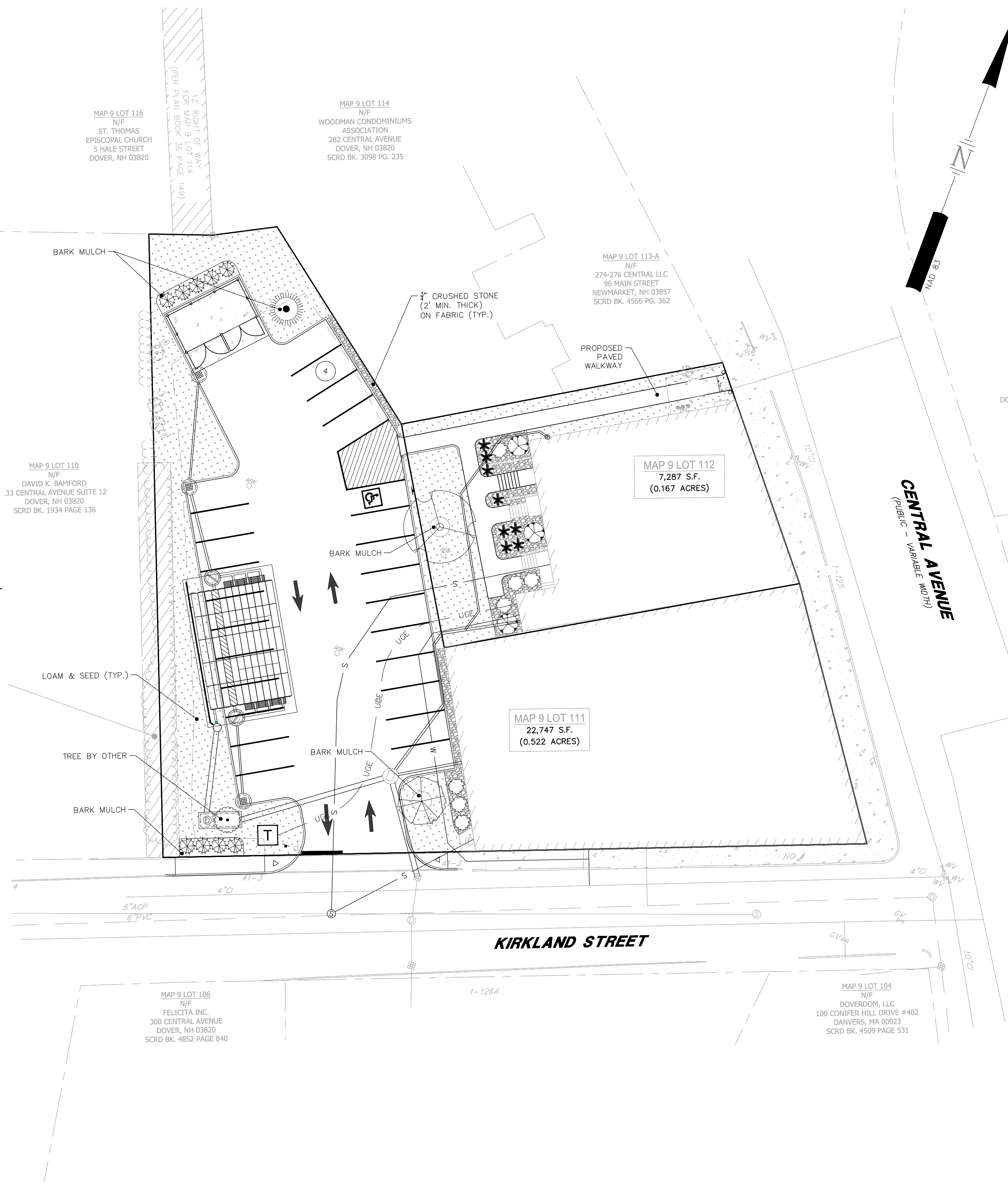
LOAM & SEED



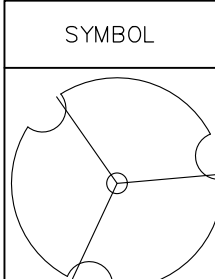
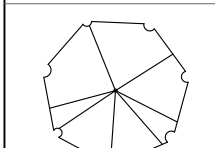
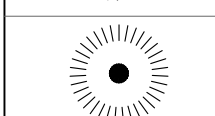
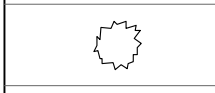
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LANDSCAPE LEGEND

SYMBOL	QTY	BOTANICAL NAME COMMON NAME	SIZE	REMARKS
	1	PLATANUS X ACREFOLIA 'BLOODGOOD' BLOODGOOD LONDON PLANETREE	2 1/2" TO 3" CAL.	B&B
	1	MALUS 'SNOWDRIFT' SNOWDRIFT FLOWERING CRABAPPLE	2" TO 2 1/2" CAL.	B&B
	1	PICEA PUNGENS BLUE SPRUCE	6' TO 7'	B&B
	7	JUNIPERUS C. 'SEAGREEN' SEAGREEN JUNIPER	3 GAL.	CONT.
	8	SPIRAEA X B. 'ANTHONY WATERER' ANTHONY WATERER SPIREA	3 GAL.	CONT.
	9	THUJA O. 'TECHNY' MISSION ARBORVITAE	4' TO 5'	B&B
	3	VIBURNUM DENTATUM ARROWWOOD VIBURNUM	3' TO 4'	B&B

LANDSCAPE NOTES

GENERAL

1. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE RULES, REGULATIONS, LAWS, AND ORDINANCES HAVING JURISDICTION OVER THIS PROJECT SITE.
2. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES AND NOTIFY OWNER'S REPRESENTATIVE OF CONFLICTS.
3. THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL QUANTITIES SHOWN ON PLANS BEFORE PRICING THE WORK. ANY DIFFERENCE IN QUANTITIES SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT FOR CLARIFICATION. LANDSCAPE QUANTITIES SHOWN ON THE PLAN SHALL SUPERCEDE QUANTITIES LISTED IN LANDSCAPE LEGEND.
4. THE CONTRACTOR SHALL CONTACT THE LANDSCAPE ARCHITECT PRIOR TO STARTING WORK AND VERIFY THAT THE PLANS IN THE CONTRACTOR'S POSSESSION ARE THE MOST CURRENT PLANS AVAILABLE AND ARE THE APPROVED PLAN SET FOR USE IN CONSTRUCTION.
5. ALL PLANT MATERIALS INSTALLED SHALL MEET OR EXCEED THE SPECIFICATIONS OF THE AMERICAN NURSERY AND LANDSCAPE ASSOCIATION (ANLA) (FORMERLY THE AMERICAN ASSOCIATION OF NURSERMEN) IN THE AMERICAN STANDARD FOR NURSERY STOCK (AS AMENDED) [ANSI Z60.1-1996].
6. ALL PLANTS SHALL BE FIRST CLASS AND SHALL BE REPRESENTATIVE OF THEIR NORMAL SPECIES AND/OR VARIETIES. ALL PLANTS MUST HAVE GOOD, HEALTHY, WELL-FORMED UPPER GROWTH AND A LARGE, FIBEROUS, COMPACT ROOT SYSTEM.
7. ALL PLANTS SHALL BE FREE FROM DISEASE AND INSECT PESTS AND SHALL COMPLY WITH ALL APPLICABLE STATE AND FEDERAL LAWS PERTAINING TO PLANT DISEASES AND INFESTATIONS.
8. ALL TREES SHALL BE BALLED AND BURLAPPED (B & B) UNLESS OTHERWISE NOTED OR APPROVED BY LANDSCAPE ARCHITECT.
9. IF APPLICABLE, THE CONTRACTOR SHALL HAVE ALL FALL TRANSPLANTING HAZARD PLANTS DUG IN THE SPRING AND STORED FOR FALL PLANTING.
10. ALL INVASIVE PLANT SPECIES FROM THE "NEW HAMPSHIRE PROHIBITED INVASIVE PLANT SPECIES LIST", TO BE REMOVED SHALL BE DONE SO IN ACCORDANCE WITH THE "INVASIVE SPECIES ACT, HB 1258-FN."
11. LOAM SHALL CONSIST OF LOOSE FRIABLE TOPSOIL WITH NO ADMIXTURE OF REFUSE OR MATERIAL TOXIC TO PLANT GROWTH. LOAM SHALL BE FREE FROM STONES, LUMPS, STUMPS, OR SIMILAR OBJECTS LARGER THAN TWO INCHES (2") IN GREATEST DIAMETER, SUBSOIL, ROOTS, AND WEEDS. THE MINIMUM AND MAXIMUM PH VALUE SHALL BE FROM 5.5 TO 7.0. LOAM SHALL CONTAIN A MINIMUM OF TWO PERCENT (2%) AND A MAXIMUM OF FIVE PERCENT (5%) ORGANIC MATTER AS DETERMINED BY LOSS BY IGNITION. SOIL TEXTURE SHALL BE SANDY CLAY LOAM OR SANDY LOAM WITH CLAY CONTENT BETWEEN 15 AND 25%, AND A COMBINED CLAY/SILT CONTENT OF NO MORE THAN 55%. NOT MORE THAN SIXTY-FIVE PERCENT (65%) SHALL PASS A NO. 200 SIEVE AS DETERMINED BY THE WASH TEST IN ACCORDANCE WITH ASTM D1140. IN NO INSTANCE SHALL MORE THAN 20% OF THAT MATERIAL PASSING THE #4 SIEVE CONSIST OF CLAY SIZE PARTICLES.
12. ACCEPTED SEED MIX TYPES ARE AS FOLLOWS:

PARK SEED MIX (NHD MIX TYPE 15) MIN. 120 LBS/ACRE:
33% CREEPING RED FESCUE (MIN. 40 LBS/ACRE)
42% PERENNIAL RYEGRASS (MIN. 50 LBS/ACRE)
21% KENTUCKY BLUEGRASS (MIN. 25 LBS/ACRE)
4% REDTOP (MIN. 5 LBS/ACRE)

TEMPORARY LAWN MIX: (MIN. 47 LBS/ACRE)
100% ANNUAL RYE

GUARANTEE

THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL LANDSCAPE WORK FOR A PERIOD OF ONE YEAR, BEGINNING AT THE START OF THE MAINTENANCE PERIOD.

SITE DEVELOPMENT PLANS

TAX MAP 9 LOT 111 & 112

LANDSCAPE PLAN

256 & 264 CENTRAL AVE

DOVER, NH

OWNED BY & PREPARED FOR
256-264 CENTRAL AVENUE, LLC

1"=40' (11"X17")

SCALE: 1"=20' (22"X34")

AUGUST 31, 2023

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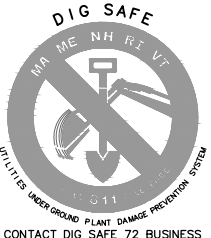
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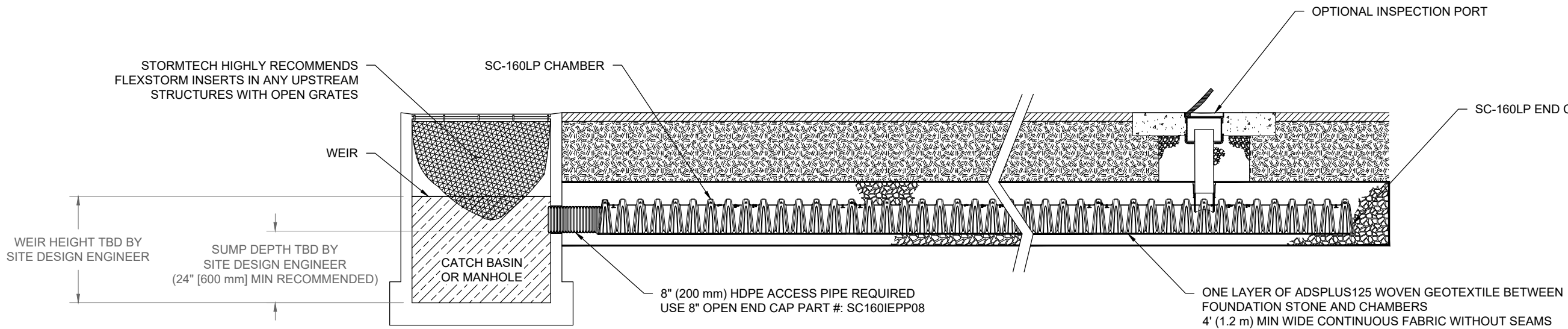
47262-01 LANDSCAPE

C-05

Aug 31, 2023 - 12:50pm
F:\MISC Projects\47262 - Central Avenue - Dover\47262-01 256 & 264 Central Avenue, Dover, NH\Design\PRODUCTION DRAWINGS\47262-01 Details.dwg



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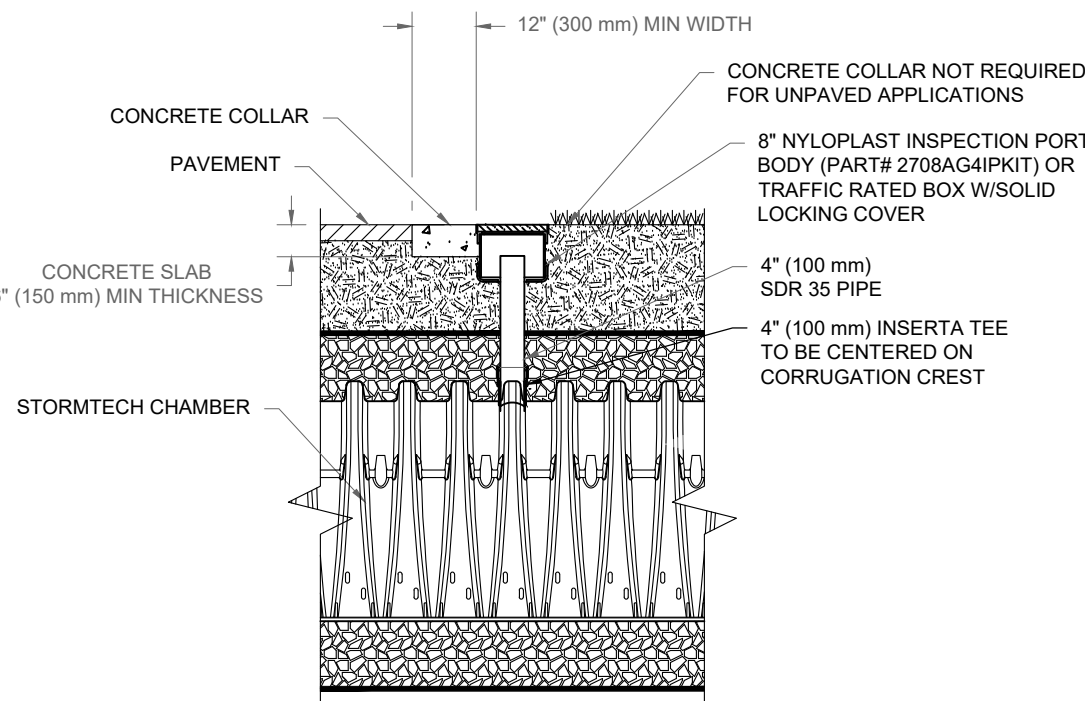
SC-160LP ISOLATOR ROW PLUS DETAIL
NTS

INSPECTION & MAINTENANCE

- STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
- A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
- A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
- A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
- A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
- A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS
- B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
- B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
- B.3. IF MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
- B.4. FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
- B.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED
- STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.
- STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

- INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
- CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

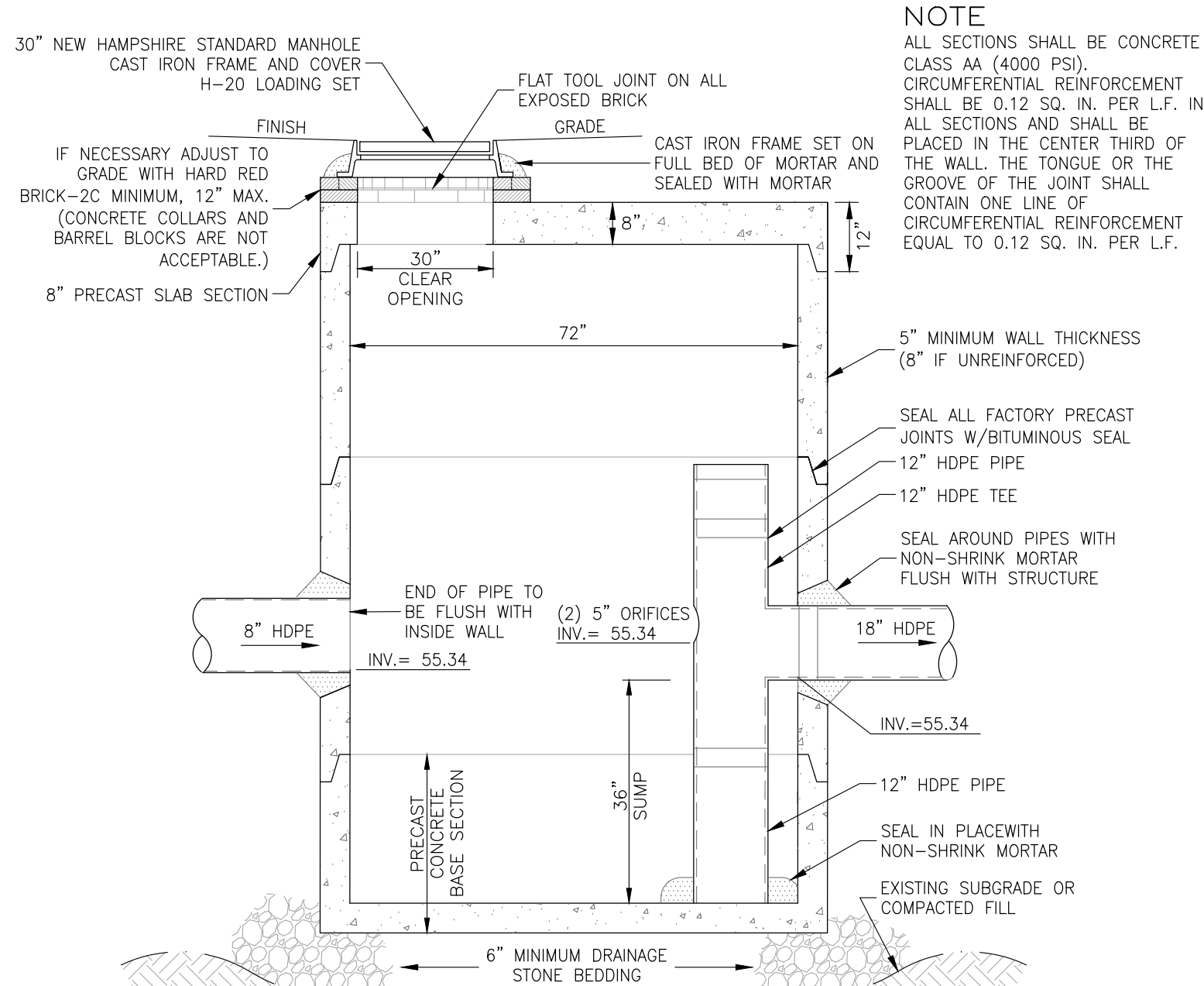


NOTE:
INSPECTION PORTS MAY BE CONNECTED THROUGH ANY CHAMBER CORRUGATION CREST.

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

SC-160 STORMTECH ISOLATOR ROW CROSS SECTION

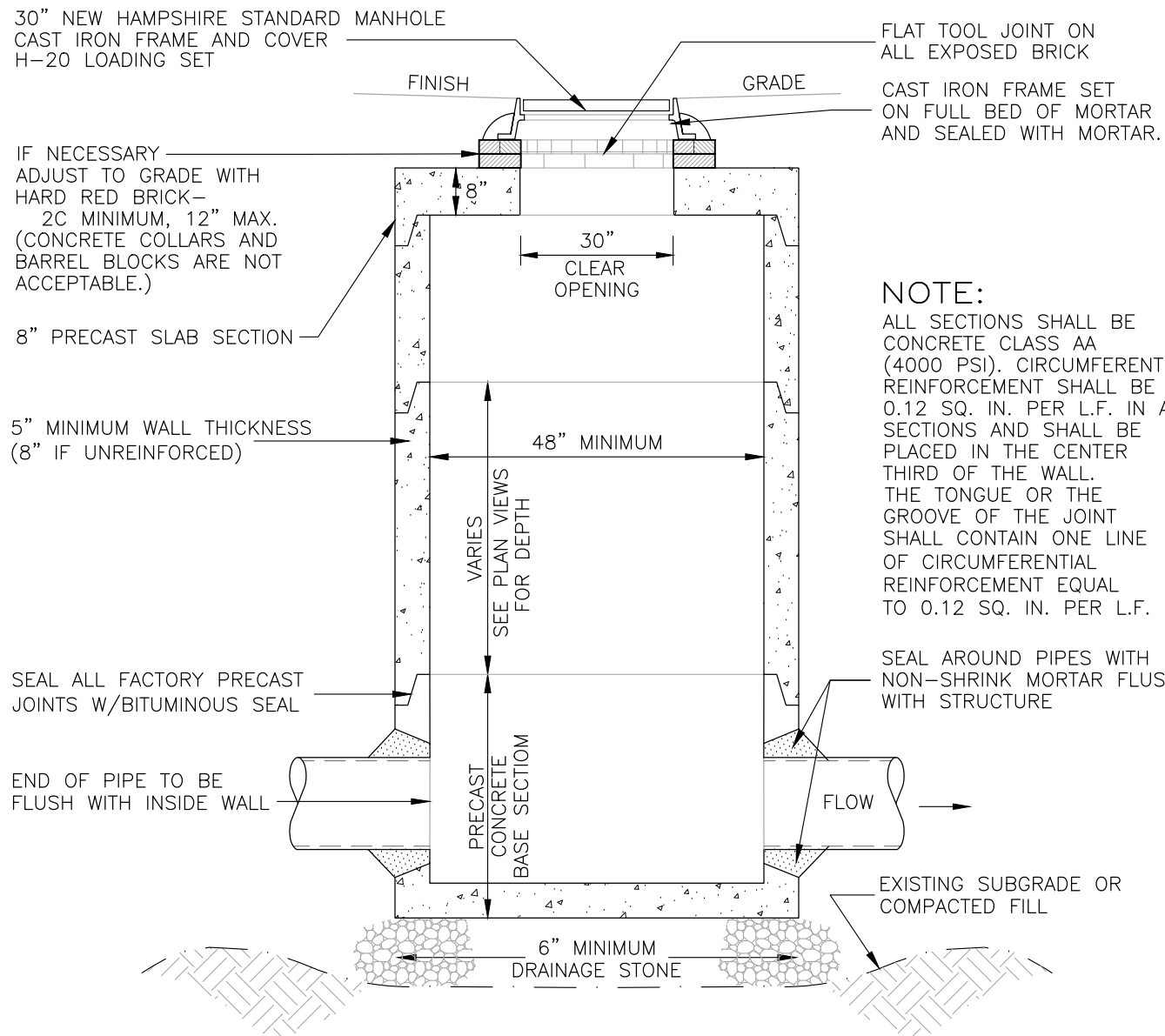
NOT TO SCALE



NOTE: ALL PRECAST SECTIONS SHALL CONFORM TO ASTM C-478

OUTLET STRUCTURE
FOR STORMTECH SYSTEM

NOT TO SCALE



NOTE: ALL PRECAST SECTIONS SHALL CONFORM TO ASTM C-478

DRAIN MANHOLE

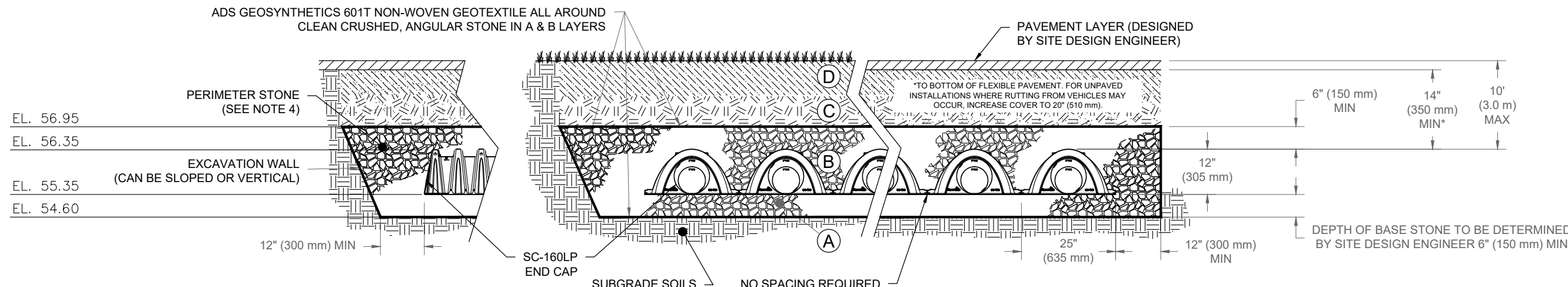
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NOT TO SCALE

ACCEPTABLE FILL MATERIALS: STORMTECH SC-160LP CHAMBER SYSTEMS

MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 14" (355 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	AASHTO M145 ¹ A-1, A-2.4, A-3 OR AASHTO M43 ¹ 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	AASHTO M43 ¹ 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	AASHTO M43 ¹ 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. ^{2,3}

- PLEASE NOTE:
- THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
 - STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
 - WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
 - ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.

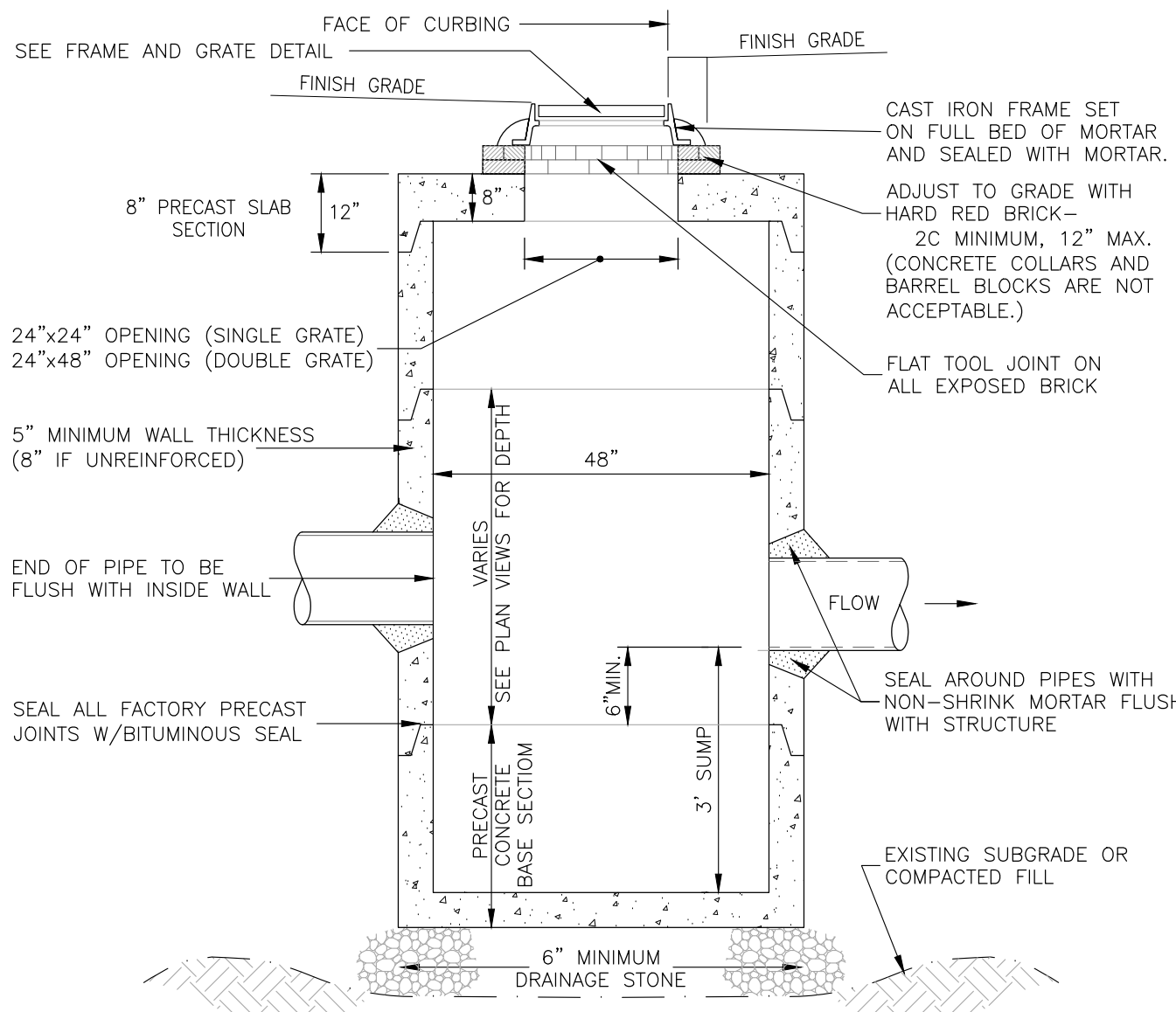


NOTES:

- CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL, STORMWATER COLLECTION CHAMBERS".
- CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
- THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
- PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
- REQUIREMENTS FOR HANDLING AND INSTALLATION:
 - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS
 - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 1.5"
 - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 400 LBS/FT². AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

SC-160 STORMTECH CROSS SECTION

NOT TO SCALE



NOTE: ALL PRECAST SECTIONS SHALL CONFORM TO ASTM C-478

CATCH BASIN

SLAB TOP

NOT TO SCALE

SITE DEVELOPMENT PLANS

TAX MAP 9 LOT 111 & 112

DETAILS

256 & 264 CENTRAL AVE
DOVER, NH

OWNED BY & PREPARED FOR
256-264 CENTRAL AVENUE, LLC

SCALE: NTS

AUGUST 31, 2023

Seacoast Division



Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

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