



CITY OF DOVER

PLANNING TECHNICAL REVIEW COMMITTEE –AGENDA

Meeting Type: Regular Meeting
Meeting Location: 1st Floor Conference Room – City Hall, Dover NH
Meeting Date: **Thursday, May 2, 2019**
Meeting Time: **10:30 am**

1. 10:30 AM - 11:15 AM: Site Review for 29 Littleworth Road LLC & Northern Pool & Spa, Assessor's Map G, Lot 6 , zoned I-4, and located at 29 Littleworth Road. (Proposal is to construct an 11,728 sq. ft. office and warehouse. Other improvements include access and parking areas, stormwater treatment and an on-site wastewater disposal field).
[Previously heard on March 28, 2019] (P18-26)
2. 11:15 AM - 12:00 PM: Site Review for RDL LLC, Assessor's Map 31, Lot 47, zoned CBD-Residential, and located at 20-22 Fifth Street. (Conditionally approved Conditional Use Permit approved by the Planning Board on March 13, 2019 to allow psychiatric office on the first floor of an existing residential duplex, with a condition to meet with the TRC to review / approve the parking layout) (P19-15)



ATTAR

ENGINEERING, INC

CIVIL • STRUCTURAL • MARINE

Donna Benton
City Planner
City of Dover, N.H.
288 Central Avenue
Dover, N.H. 03820-4169

April 18, 2019
Project No.: C147-19

**RE: Site Plan Review – P19-26
29 Littleworth Road ((Map G-6, Lot 0-0))**

Dear Ms. Benton:

On behalf of 29 Littleworth Rd, LLC and Peter Paul, I have enclosed a revised plan set and supporting information for the above referenced project. Plans and the Traffic Impact Assessment Report have been revised in response to comments received from the TRC meeting held on March 28, 2019 and also from staff comments.

The applicant is proposing to develop the 3.99-acre parcel with an 11,728 SF office and warehouse. Other improvements include access and parking areas, stormwater treatment and an on-site wastewater disposal field. The site is served by municipal water.

We look forward to discussing this project at the next available Technical Review Committee and Planning Board meetings. If any additional information is required, please contact me.

Thank you for your assistance.

Sincerely;

Kenneth A. Wood, PE
President

cc: 29 Littleworth, LLC (Peter Paul)

C147-19_Dover_Staff Review-App_Cover.doc

Encl's:

- 1) Site Plan Review Application
- 2) Site Plan Review Checklist
- 3) Property Deeds
- 4) Google Earth Imagery
- 5) Test Pit Logs
- 6) Traffic Impact Assessment Report
- 7) Stormwater Management Report
- 8) Street-Scape Rendering
- 9) Plan-Set



City of Dover, New Hampshire

SITE REVIEW APPLICATION

[Revision Date: April 02, 2018]

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

APPLICANT AND OWNER INFORMATION

Name of Applicant: 29 Littleworth Rd, LLC c/o Northern Pool & Spa Telephone # 207-439-6800

Address of Applicant: 291 Harold Dow Highway, Eliot, ME 03903

E-Mail Address: peter@northernpoolandspa.com

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

Address of Property Owner: _____

PROPERTY INFORMATION

Address of Property: 29 Littleworth Road, Dover, NH 03820

Assessor's Map # G-6 Lot(s) # 0-0

Zoning District(s) I-4, Assembly and Office Overlay District(s) _____

Size of Parcel: 173,804 sq. ft. 3.99 ac. Property Deed: Book 4538 Page: 0447

Existing Use of Property: Vacant land, former buildings were demolished.

SITE PLAN INFORMATION

Describe Proposed Use: Office and Warehouse

Area of Parcel to be Developed: 87,500 SF sq. ft.

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

Number of Parking Spaces: Existing 0 Proposed 22

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

Number of Employees Total: 20 In Maximum Shift: 20

Disposition of Parcel:

Building Setbacks:

Building Footprint 11,728 sq. ft.

Front Yard 75' ft.

Total Building Area 0 sq. ft.

Rear Yard 75' ft.

Paved Area 0 sq. ft.

Side Yard: Right 75 ft. Left 75 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? _____

BUILDING INFORMATION

Type of Building to be Built: Office and Warehouse
Height of Building: 34' Finished Floor Elevation: 107.5'
Number of Seats (where applicable) N/A
Estimated value of construction: \$420,000 Refuse removal: Public/Private (circle one)

WAIVER REQUESTS

Site Review Regulations section(s) to be waived: _____
Justification for waiver request(s) (*attach additional sheets as needed*): _____

SURVEYOR INFORMATION

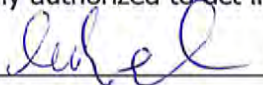
Name of Surveyor and Company (Licensed in N.H.) Christian Wilber
Address River Road, Eliot, ME 03903 Telephone #: (207) 451-3940
Professional License #: NH 00847 E-mail address: chriswilberpls@gmail.com

ENGINEER INFORMATION

Name of Engineer and Company (Licensed in N.H.) Kenneth A. Wood, P.E./ Attar Engineering, INC
Address 1284 State Road, Eliot, ME 03903 Telephone #: 207-439-6023
Professional License #: 6917 E-mail address: ken@attarengineering.com

SIGNATURES

I/We hereby submit this application to the City of Dover Planning Board and attest that to the best of my knowledge all of the information on this application form and in the accompanying application materials and documentation is true and accurate. 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: 3-4-2019
Signature of Applicant (*if different from owner*): CAME Date: _____

Signature of Agent: Amal DE. Date: 3/4/2019
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: Amal Date: 3-4-2019

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: Amal Date: 3-4-2019

Signature of Applicant (if different from owner): SAME 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: Amal Date: 3-4-2019

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

PLANNING BOARD ESTIMATED FEE SCHEDULE

This is only provided to give you an estimate of the application fees. *After you submit an application, staff will invoice you a total.* All fees must be paid two weeks before the Planning Board meeting. **If the Fee has not been paid, the item will not be placed upon the agenda.**

A. TOTAL FEE paid by cash or check made payable to "City of Dover"

1. Application fee for the following:

- SUBDIVISION \$150.00 x # _____ new lots created = \$ _____
- LOT LINE ADJUSTMENT \$200.00 (if more than two lots involved, add \$100.00 per lot) = _____
- SITE REVIEW – TRANSFER OF DEVELOPMENT RIGHTS Application fee \$150.00 = \$ _____
- SITE REVIEW - RESIDENTIAL \$100.00 x # _____ per dwelling unit = \$ _____
- SITE REVIEW – NON-RESIDENTIAL (not to exceed \$10,000)
New construction \$.15 sq. ft. x # 11,728 sq. ft. = \$ 1759.20
Additions (new floor space) \$.10 per sq. ft. x # _____ sq. ft. = \$ _____
- IMPERVIOUS PAVED AREA (for new development) OR IMPERVIOUS PARKING LOT ADDITIONS (not to exceed \$10,000) \$.07 sq. ft. x # 52,316 = \$ 3662.12
- MOTEL/HOTEL \$35.00 x # _____ per lodging unit = \$ _____
- CHANGE OF USE (not to exceed \$5,000)
Existing floor space \$.10 per sq. ft. x # _____ sq. ft. = \$ _____
- CONDITIONAL USE PERMIT \$150.00 x # _____ per application = \$ _____
- GRAVEL PIT/ EXCAVATIONS - Application fee \$50.00 & Permit fee \$75.00 = \$ _____
- EXTENSIONS OF/AMENDMENTS TO/WAIVERS FOR AN APPROVED PLAN (\$150.00 minimum) \$50.00 x # _____ per hour of review = \$ _____
- REQUEST FOR REZONING \$150.00 = \$ _____
- DRIVEWAY WAIVER – \$100.00 application fee = _____
Letter of rejection from Engineering Department, diagram & letter from owner \$ _____

B. Abutter Notification/Mailing Labels - this office will create and print the abutter list and provide labels in triplicate for each abutter. The applicant/owner will need to provide to this office the engineer, architect, land surveyor or soil scientist whose professional seal appears on the plan with names and addresses for notices. You will be notified with the amount due, once this has been completed.

1. Applicant & Owner, engineer, architect, land surveyor or soil scientist
Certified letters fee # _____ of x \$8.00 = _____
2. Certified letters fee: # of abutters _____ X \$8.00 = \$ _____
3. First Class Mail fee (for individual owner of units within a condominium or other collective form of ownership): # of abutters _____ X \$1.00 = \$ _____
4. Creating/Printing Abutter Labels in triplicate per sheet _____ x \$10.00 = \$ _____

C. Foster's newspaper public notice fee \$ 80.00

(Revised October 2, 2018)

TOTAL FEE \$ 5421.32

CITY OF DOVER SITE REVIEW LIST OF ABUTTERS

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

Owner:

TAX MAP	LOT #	PROPERTY OWNER	MAILING ADDRESS
G-6	0-0	29 Littleworth Rd LLC	291 Harold Dow Highway, Eliot, ME 03903

Applicant (if different from owner):

APPLICANT NAME	APPLICANT COMPANY	MAILING ADDRESS
	Same	

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	MAILING ADDRESS
Kenneth A. Wood, P.E.	Attar Engineering, INC	1284 State Road, Eliot, ME 03903

Conservation Easement Holder:

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	MAILING ADDRESS
		None	

List of Abutters

Project: 29 Littleworth Rd.

Location: Dover, NH Map G-6, Lot 0-0

Map	Lot	Property Owner	Mailing Address
G-4	0-0	16 Industrial Park, LLC	273 Corporate Drive, Ste 150 Portsmouth, NH 03801
G-4	A-1	Bearings, INC C/O PT Counselors	P.O. Box 3075 McKinney, TX 75070
G-4	G-2	Littleworth Industrial Park Properties LLC	PO Box 118 Dover, NH 03821-0018
G-6	B-0	Willis E. Hutchings	184 W High Street Somersworth, NH 03878
G-6	D-0	Hadley S. & Shane A.	4 Cottage Lane Rollinsford, NH 03869
G-6	C-0	Storemaster Funding, LLC C/O Pace Industries	67 Faulkner Street No. Billerica, MA 01862
H-28	0-0	Richard W. Kay	45 Littleworth Road Dover, NH 03820
H-28	1-0	Richard W. Kay	45 Littleworth Road Dover, NH 03820
H-31	0-0	Ruth K Sousane Nancy K Quinian	30 Littleworth Road Dover, NH 03820
H-65	A-0	Iron Horse Park	High Street N. Billerica, MA 01862
		City of Dover	288 Central Ave Dover, NH 03820



City of Dover, New Hampshire SITE PLAN REVIEW SUBMISSION CHECKLIST

[Revision Date: June 25, 2018]

This site plan review checklist, as required by Chapter 149-6-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.

Fees will be invoiced and are due along with fifteen (15), folded, copies of the plan set and materials, including response to TRC comments, will be due 3 weeks 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: 29 Littleworth, LLC File Number: _____

PROJECT TITLE: 29 Littleworth Rd Site Plan

PROPERTY LOCATION: 29 Littleworth Rd Tax Map: G-6 Lot: 0-0

	Explain How Provided	Reviewed
1. Completed and signed Application form	X	
2. Electronic copy of the engineered/surveyed plan layout	X	
3. Electronic copy of supplementary materials and application	X	
4. Traffic Impact Assessment and Analysis (Standard or Advanced)	X	
5. Waiver requests to the Site Plan Review Regulations, with written justification		
6. Conditional Use Permit applications		
7. A colored rendering of the streetscape that will be created along the existing public right-of-way	X	
8. A colored architectural plan showing all sides of buildings	X	
9. List of all professional agents to be notified for Planning Board	X	
10. Letter to Serve from Public and Private Utilities	Forthcoming	
11. Eight folded copies of site plan w/scale of not less than 1"=50' or 1"=100' for larger site plans, for TRC. Plans shall contain the following items as appropriate:	X	
Location map at appropriate scale	X	
Proposed Project name and title and Planning File #	X	
Date, north arrow and scale	X	
Names of all abutting property owners	X	
Name and address of owners and/or applicants	X	
Signature & stamp of NH licensed land surveyor and/or engineer	X	
Zoning District boundaries, including any special or overlay districts	X	
Location of Conservation District areas	N/A	
Location, names and widths of existing and proposed streets, including pavement widths, grades, curbs and crosswalks	X	
Location and widths of existing & proposed easements & right of ways	X	
Depict pedestrian walkways and accessible access	X	
Location and width of existing and proposed access/egress ways	X	
Existing and proposed property lines with dimensions and bearings tied into Dover's Geographic Information System coordinate system	N/A	
	Explain How Provided	Reviewed

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

REVIEWED BY: _____ DATE _____ TRC DATE _____

Return to:
 Atlas-Heritage Title, LLC
 903 Central Avenue, #5
 Dover, NH 03820

FIDUCIARY DEED

KNOW ALL MEN BY THESE PRESENTS: That Jeffrey McLaughlin, Executor of Estate of Douglas S. Rogers, of 29 Littleworth Road, Dover, NH 03820, pursuant to the power conferred by the Strafford County Probate Court and every other power, for Two Hundred Forty-Three Thousand and 00/100 (\$243,000.00) paid grant(s) to Peter Paul, with a mailing address of P.O. Box 694, Dover, NH 03820, with Fiduciary Covenants:

The premises described on Exhibit A, attached hereto.

I/We, the grantor(s) herein hereby release all rights of homestead, if any, in the above described premises.

Executed this 20th day of December, 2017.

Jeffrey J. McLaughlin, Executor
 Jeffrey McLaughlin, Executor of the Estate of Douglas S. Rogers

State of New Hampshire
 County of Strafford

December 20, 2017

This instrument was acknowledged before me on December 20, 2017, by Jeffrey McLaughlin, Executor of Estate of Douglas S. Rogers.

William R. Dunn
 Notary Public
 Commission expiration:



Exhibit A

A certain tract of land, with the buildings thereon, situate in Dover, County of Strafford and State of New Hampshire on the easterly side of the Littleworth Road, bounded and described as follows:

Beginning at a marker on the easterly side of the Littleworth Road at land of the Boston and Maine Railroad, thence running N 65° 54' E by said Boston and Maine Railroad land, a distance of 400 feet, more or less, to a marker at land of the S.E.N.H. Industrial Park, thence running N 28° 28' W by said Industrial Park a distance of 438.2 feet, to a marker, thence running S 61° 50' W a distance of 400.00 feet to a marker on the Easterly side of said Littleworth Road, thence running S 28° 28' E by said Littleworth Road a distance of 410 feet, more or less, to the point of beginning.

Being shown on an unrecorded plan entitled "S.E.N.H. Industrial Park, Rogers Land, Dover, N.H., dated October 1966, prepared by G.L. Davis and Associates."

Subject, also, to the easement granted to the Public Service Co. of New Hampshire by deed dated August 28, 1968 and recorded in said Registry at Book 850, Page 186.

Meaning and intending to describe and convey the premises conveyed to Grantor(s) by deed dated 06/27/1972 and recorded in the Strafford Registry of Deeds, Volume 986, Page 124.

Return to:

EDoc # 0019217 Dec 27, 2017 10:46 AM
Book 4538 Page 0447 Page 1 of 2
Register of Deeds, Strafford County



WARRANTY DEED

KNOW ALL MEN BY THESE PRESENTS, that I, Peter Paul, with a mailing address of P. O. Box 694, Dover, NH 03820, for consideration paid, grants to 29 Littleworth Road, LLC, with a mailing address of P.O. Box 694, Dover, NH 03820, with Warranty Covenants:

A certain tract of land, with the buildings thereon, situate in Dover, County of Strafford and State of New Hampshire on the easterly side of the Littleworth Road, bounded and described as follows:

Beginning at a marker on the easterly side of the Littleworth Road at land of the Boston and Maine Railroad, thence running N 65° 54' E by said Boston and Maine Railroad land, a distance of 400 feet, more or less, to a marker at land of the S.E.N.H. Industrial Park, thence running N 28° 28' W by said Industrial Park a distance of 438.2 feet, to a marker, thence running S 61° 50' W a distance of 400.00 feet to a marker on the Easterly side of said Littleworth Road, thence running S 28° 28' E by said Littleworth Road a distance of 410 feet, more or less, to the point of beginning.

Being shown on an unrecorded plan entitled "S.E.N.H. Industrial Park, Rogers Land, Dover, N.H., dated October 1966, prepared by G.L. Davis and Associates."

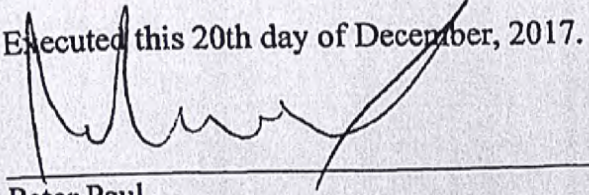
Subject, also, to the easement granted to the Public Service Co. of New Hampshire by deed dated August 28, 1968 and recorded in said Registry at Book 850, Page 186.

Meaning and intending to describe and convey the premises conveyed to Grantor by deed of near or even date to be recorded herewith.

This is not homestead property.

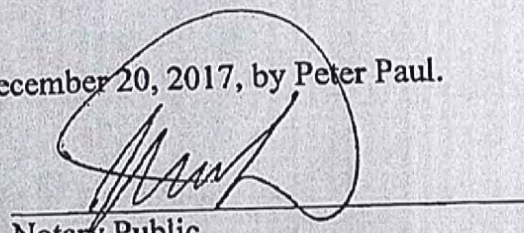
This is a non-contractual transfer and is not subject to New Hampshire Transfer Tax Stamps. The said Peter Paul is the sole member of the limited liability company.

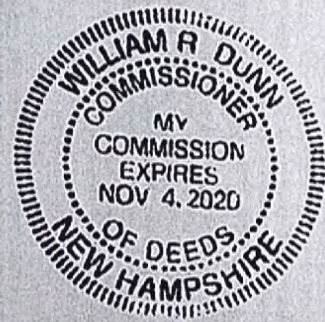
Executed this 20th day of December, 2017.


Peter Paul

State of New Hampshire
County of Strafford

This instrument was acknowledged before me on December 20, 2017, by Peter Paul.


Notary Public
Commission expiration:



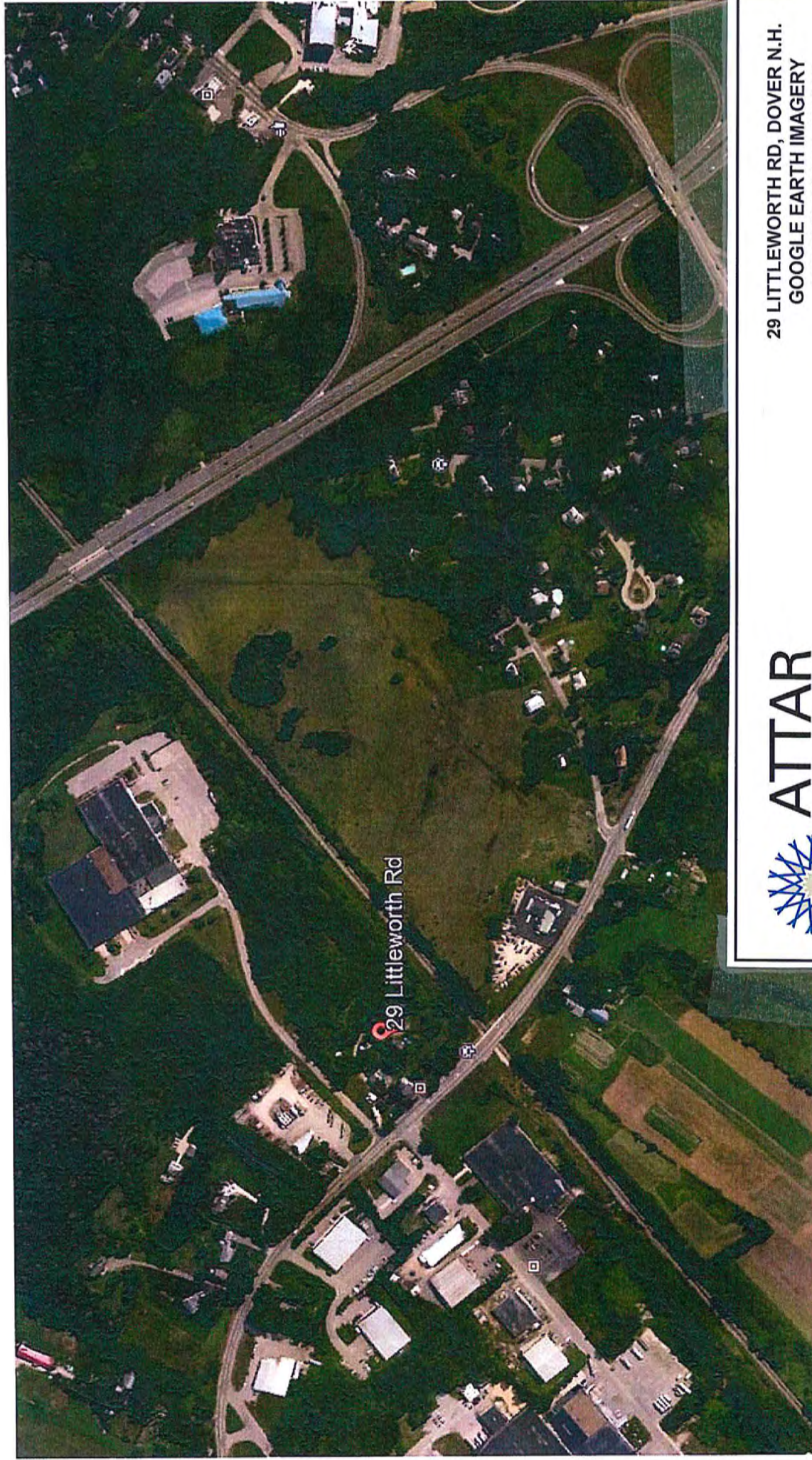


29 LITTLEWORTH RD, DOVER N.H.
ROAD CROSS-SECTION
APPROX. SCALE: NONE
PROJECT NO. C147-18



ATTAR
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29 Littleworth Rd



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29 LITTLEWORTH RD, DOVER N.H.
GOOGLE EARTH IMAGERY
APPROX. SCALE: NONE
PROJECT NO. C147-18



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29 LITTLEWORTH RD, DOVER N.H.
DRIVEWAY SEPERATION
APPROX. SCALE: NONE
PROJECT NO. C147-18

Michael Cuomo, Soil Scientist
6 York Pond Road, York, Maine 03909
207 363 4532
mcuomosoil@gmail.com

TEST PIT DATA

Client: Attar Engineering, Inc.
Location: 29 Littleworth Road, Dover, NH
Date: 3 January 2018

Test Pit: ONE

<u>Depth</u>	<u>Description</u>
0-12"	10YR 3/3 very fine sandy loam, granular, friable.
12-22"	10YR 5/6 very fine sandy loam, blocky, friable.
22-31"	2.5Y 5/4 silt loam, massive, friable, with redox.
31-51"	5Y 4/4 silt loam, massive, firm, with redox.

Depth to Seasonal High Water Table: 22"
Depth to Bedrock: none observed
Observed Water: none
Estimated percolation rate: 16 min./inch

Test Pit Number: TWO

<u>Depth</u>	<u>Description</u>
0-12"	10YR 3/3 very fine sandy loam, granular, friable.
12-22"	10YR 5/4 very fine sandy loam, blocky, friable.
22-30"	2.5Y 5/6 silt loam, massive, friable, with redox.
30-58"	5Y 6/4 silt loam, massive, firm, with redox.

Depth to Seasonal High Water Table: 22"
Depth to Bedrock: none observed
Observed Water: none
Estimated percolation rate: 16 min./inch

Test Pit Number: THREE

<u>Depth</u>	<u>Description</u>
0-7"	10YR 3/3 fine sandy loam, granular, friable.
7-33"	10YR 5/6 fine sandy loam, blocky, friable.
33-48"	2.5Y 6/6 gravelly loamy sand, blocky, firm, with redox.
48-56"	2.5Y 4/4 stony fine sandy loam, blocky, firm with redox.

Depth to Seasonal High Water Table: 33"
Depth to Bedrock: none observed
Observed Water: none
Estimated percolation rate: 6 min./inch



NEW HAMPSHIRE
Designer
of
Subsurface Disposal
Systems

Michael R. Cuomo
No. 788
Water Supply & Pollution Control

Test Pit Number: FOUR

<u>Depth</u>	<u>Description</u>
0-12"	10YR 3/2 very fine sandy loam, granular, friable.
12-15"	10YR 5/4 very fine sandy loam, blocky, friable.
15-21"	2.5Y 6/4 silt loam, blocky, friable, with redox.
21-48"	5Y 4/4 silt loam, massive, firm, with redox.
48-61"	2.5Y 4/4 stony fine sandy loam, massive, firm, with redox.

Depth to Seasonal High Water Table: 15"

Depth to Bedrock: none observed

Observed Water: none

Estimated percolation rate: 16 min./inch

Test Pit Number: FIVE

<u>Depth</u>	<u>Description</u>
0-8"	10YR 2/2 very fine sandy loam, granular, friable.
8-12"	10YR 5/4 very fine sandy loam, blocky, friable.
12-16"	2.5Y 5/4 very fine sandy loam, blocky, friable, with redox.
16-32"	2.5Y 6/4 silt loam, blocky, firm, with redox.
32-60"	2.5Y 5/6 stony fine sandy loam, massive, firm, with redox.

Depth to Seasonal High Water Table: 12"

Depth to Bedrock: none observed

Observed Water: none

Estimated percolation rate: 16 min./inch

Test Pit Number: SIX

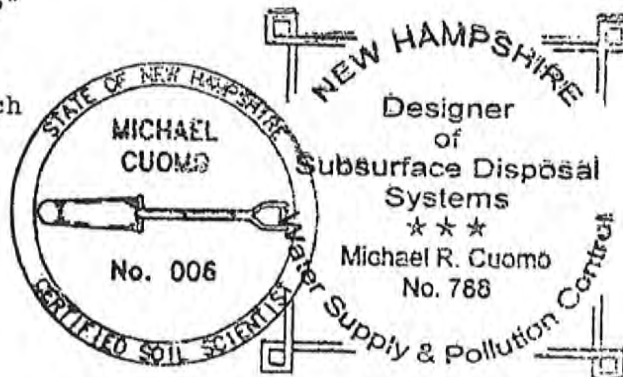
<u>Depth</u>	<u>Description</u>
0-7"	10YR 3/3 gravelly fine sandy loam, granular, friable.
7-15"	10YR 5/4 gravelly fine sandy loam, blocky, friable.
15-56"	2.5Y 5/4 gravelly fine sandy loam, blocky, firm, with redox.

Depth to Seasonal High Water Table: 15"

Depth to Bedrock: none observed

Observed Water: none

Estimated percolation rate: 6 min./inch

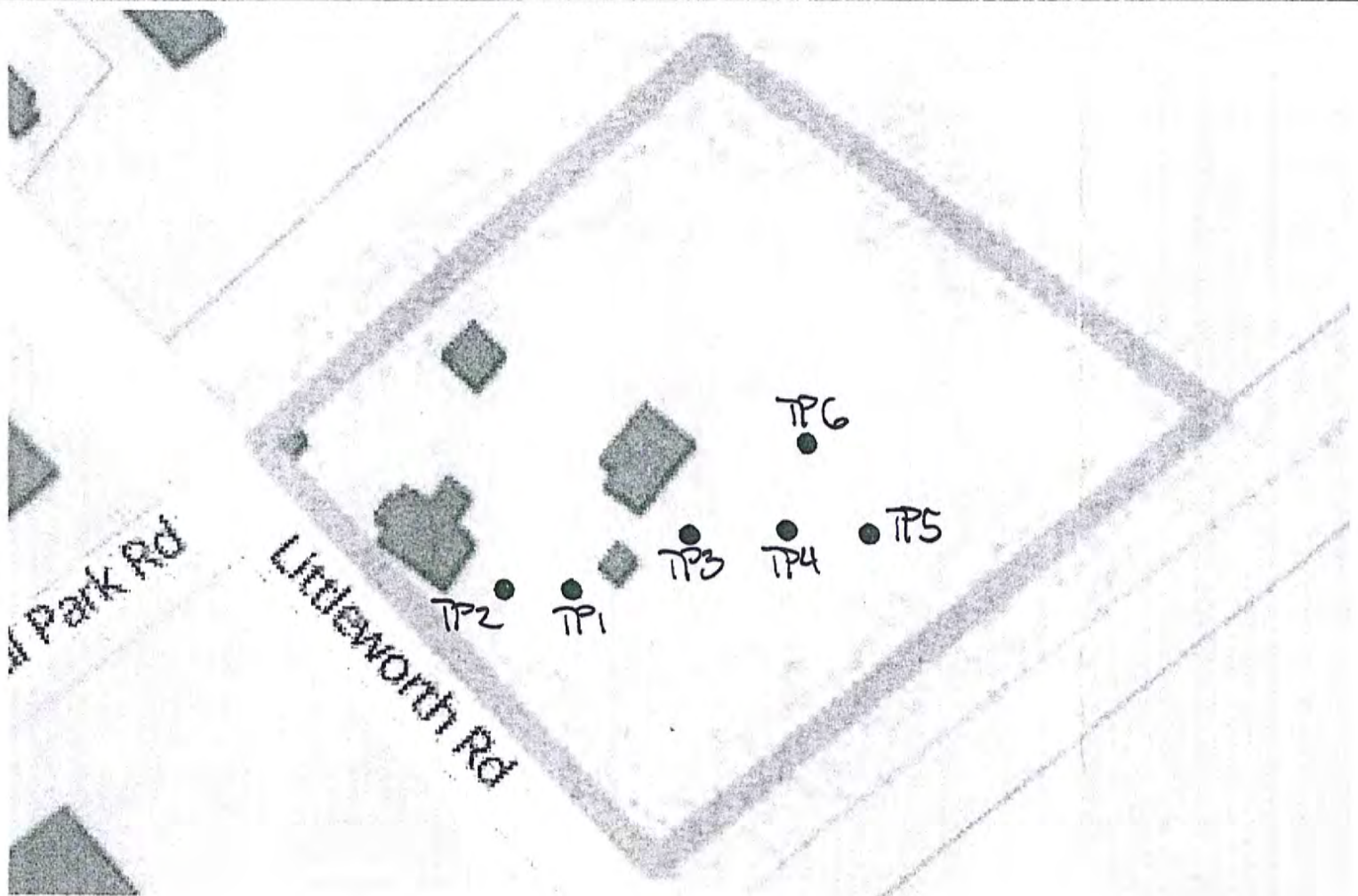


Michael Cuomo, Soil Scientist
6 York Pond Road, York, Maine 03909
207 363 4532
mcuomosoil@gmail.com

29 Littleworth Road, Dover, NH

Rough sketch of approximate test pit locations.

3 January 2018





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TRAFFIC IMPACT ASSESSMENT REPORT COMMERCIAL DEVELOPMENT – 29 LITTLEWORTH ROAD DOVER, NEW HAMPSHIRE

April 18, 2019

Scope – This report provides a Standard Analysis for the development of 29 Littleworth Road, Dover, New Hampshire. Proposed improvements, consisting of a 11,728 SF building (1,728 SF office and 10,000 SF warehouse area) are shown on the "Site Plan, Northern Pool and Spa, Inc., 29 Littleworth Rd, Dover, NH" prepared by Attar Engineering, Inc.

- 1) Description of the Site: The 4-acre site is located in the Assembly and Office (I-4 Zoning District. The site is bounded by Littleworth Road, Route 9), to the west, the access drive to Pace Industries to the north, the Pace Industries parcel to the east and B & M Railroad to the south. The proposed entrance is in the same location as a former entrance to a farm and farmstand. Topography is gently sloping towards the rear (east) of the parcel with a difference in elevation of 20' over more than 400'.
- 2) Description of Roadways: Littleworth Road, Route 9 is a two-lane improved state highway, approximately 47 feet wide (two travel lanes, a left-hand (northbound) center turning lane and two breakdown lanes). Additionally there is a 5' wide raised asphalt sidewalk with granite curb located on the east side of Littleworth Road. The existing driveway curb cut also has sidewalk curb ramps on both the northern and southern sides (see photograph attached). Posted speed limit is 35 MPH. the closest intersections are Industrial Park Road, across from the northern sideline and Old Littleworth Road approximately 800' to the south.
- 3) Sight Distance: Sight Distance is 640' looking north and 455' looking south. The proposed driveway is in a similar location as the former access drive; Chapter 149-14-H requires a minimum driveway spacing of 310' in the I-4 District from public street intersections in the 35 MPH posted speed limit area but 149-14-H (2) allows "Existing driveways that do not meet the above standards may be retained." Locating the driveway 310' from the intersection with Industrial Park Road is not possible as the driveway would be located adjacent to the railroad bridge and guardrail at the southern sideline (see photograph attached). Sight distance is satisfactory for both the posted speed limit (35 MPH) and the observed vehicular speed of 40 MPH to 45 MPH.
- 4) Trip Generation: Trip Generation was estimated using the Institute of Traffic Engineers (ITE) Trip Generation Manual, 10th Edition. The "Light Industry" Land Use was used for the Commercial/Industrial Use; this provided a conservative trip generation rate (6.97 daily trips and 0.99 peak hour trips(when compared to warehouse or wholesale uses). The following Selected Land Uses were used in the analysis and, as noted, 95 daily (one-way trip ends) are expected;

Trip Generation from Development - Average Daily Trips

Land Use	Units	Gen Rate	No. Units	Daily Trips	Source
Office (Genl)	1,000 SF	11.01	1.73	19	ITE 710
Comm/Ind	1,000 SF	6.97	10	70	ITE 110
Townhouse	Dwelling	5.86	1	6	ITE 230
Total Daily Trips:				95	

Conversely 15 Peak Hour trips are expected;

Trip Generation from Development - Peak Hourly (AM (7-9 and PM (4-6)

Land Use	Units	Trips	No. of Units	Peak Trips
Office	1,000 SF	1.37	1.73	4
Comm/Ind	1,000 SF	0.99	10	10
Townhouse	Each	0.54	1	1
Total Trips:				15

- 5) Trip Distribution: Average Annual Daily Vehicle Trips (AADT) on Route 9, Littleworth Road have averaged from 8,000 trips (2011) to 10,000 trips (2008), Source; State of New Hampshire, Department of Transportation, Bureau of Traffic. Growth Rate ranges from -7% (2011) to 12% (2017) with the most recent year, 2018, showing a 2% growth rate. Trips are generally split between eastbound and westbound; for 2018 AADT was 10,859 trips with 5444 eastbound and 5415 westbound. Assuming an even split eastbound and westbound for trips generated by the development additional traffic results in an additional 0.14%. No traffic mitigation is anticipated; there are no capacity concerns and adequate sight distance is provided in both directions at the entrance.
- 6) Certifications: Kenneth A. Wood, P.E. (N.H. P.E. # 6917) has been licensed to practice in the State of New Hampshire since 1987; in addition he is licensed to practice engineering in Maine and Massachusetts. He is also licensed as a State of New Hampshire Natural Scientist and he holds a National Council of Engineering Examiners (NCEE) certificate. He formed Attar Engineering, Inc. in April, 1988; the firm practices civil structural and marine engineering and has accomplished many commercial, residential and industrial projects including traffic related items.

Sincerely;



Kenneth A. Wood, P.E.
President



29 LITTLEWORTH RD

Property

Address

29 LITTLEWORTH RD

ID

G0006-000000

Property Information

No results found

City Council

No results found

Voting Information

No results found

Ownership

Name

29 LITTLEWORTH ROAD
LLC, C/O NORTHERN POOL
& SPA

Address

291 HAROD DOW HIGHWAY
ELIOT, ME 03903

Valuation

Total

\$143,300

Buildings

\$0

Q Search

Selection

Themes

Markup



Littleworth Rd

Littleworth Rd

Old Littleworth Rd

Littleworth Rd

Beverly Ln



ATTAR
ENGINEERING, INC

CIVIL • STRUCTURAL • MARINE

29 LITTLEWORTH RD, DOVER N.H.
LOCATION MAP
APPROX. SCALE: NONE
PROJECT NO. C147-18



29 LITTLEWORTH RD, DOVER N.H.
SOUTHERN SIDELINE
APPROX. SCALE: NONE
PROJECT NO. C147-18



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☒ TCDS Locations

ALL

Location ID

TMC

Old Littleworth Park Rd

Location

Location ID: 82125086
Located On: Littleworth Rd
Direction: 2-WAY
AADT: 10859 (2018)
EB Count: 5444 (2018)
WB Count: 5415 (2018)

[View Detail in a New Search](#)

82125086



Franklin



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29 LITTLEWORTH RD, DOVER N.H.
DAILY TRAFFIC VOLUME
APPROX. SCALE: NONE
PROJECT NO. C147-18

Map

+

-

Littleworth Rd

Locate

TCDS

Clear Located

☒

Select by Polygon

☐

Select Using Buffer

☐

TCDS Locations

☒

ALL

Location ID

▼

Tools

General

Google

TCDS

TMC

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29 LITTLEWORTH RD, DOVER N.H.

DAILY TRAFFIC VOLUME

APPROX. SCALE: NONE

PROJECT NO. C147-18



Transportation Data Management System

List View

All DIRs

Record	1	of 1	Goto Record	go
Location ID	82125086		MPO ID	
Type	SPOT		HPMS ID	
On NHS	No		On HPMS	No
LRS ID	S0000009__		LRS Loc Pt.	
SF Group	04		Route Type	
AF Group	04		Route	NH 9
GF Group	E		Active	Yes
Class Dist Grp	Default		Category	3
Seas Class Grp	Default			
WIM Group	Default			
QC Group	Default			
Funct'l Class	Minor Arterial		Milepost	
Located On	Littleworth Rd			
Loc On Alias	NH 9 (LITTLEWORTH RD) WEST OF B&M RR BRIDGE			
	PR	MP	PT	
More Detail				
STATION DATA				

Directions: 2-WAY EB WB

AADT

Year	AADT	DHV-30	K %	D %	PA	BC	Src
2018	10,859 ³		9	55	10,012 (92%)	847 (8%)	Grown from 2017
2017	10,646	969	9	55	9,878 (93%)	768 (7%)	
2016	9,486 ³				8,652 (91%)	834 (9%)	Grown from 2015
2015	9,300 ²						
2011	8,000						

1-5 of 12

Travel Demand Model										
Model Year	Model AADT	AM PHV	AM PPV	MD PHV	MD PPV	PM PHV	PM PPV	NT PHV	NT PPV	

VOLUME COUNT			
	Date	Int	Total
	Thu 7/27/2017	60	11,812
	Wed 7/26/2017	60	12,246
	Tue 7/25/2017	60	12,019
	Mon 7/24/2017	60	10,893
	Thu 7/16/2015	60	10,835
	Wed 7/15/2015	60	10,752
	Tue 7/14/2015	60	10,691

VOLUME TREND	
Year	Annual Growth
2018	2%
2017	12%
2016	2%
2015	4%
2011	-7%
2008	0%

	Thu 6/30/2011	60	9,614
	Wed 6/29/2011	60	9,451
	Tue 6/28/2011	60	9,358
<< < > >> 1-10 of 39 To Date			

2005	1%
2002	4%
1999	0%
1996	-2%

|<<| <| >| >>| 1-10 of 11

SPEED				
	Date	Int	Pace	85th Total
No Data				

CLASSIFICATION			
	Date	Int	Total
No Data			

WEIGH-IN-MOTION				
	Date	Axles	Avg GVW	Total
No Data				

PER VEHICLE				
	Date	Axles	85th Total	Total
No Data				

GAP			
	Date	Int	Total
No Data			

PARTIAL COUNT

Date Int 24-Hr Total

NOTES/FILES			
	Note	Date	

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION
BUREAU OF TRAFFIC

Bureau of Planning, Traffic Section, Traffic Reports 18-Feb-16

STAT.	TYPE	LOCATION	FC	2008	2009	2010	2011	2012	2013	2014	2015
Town: DOVER											
125065	82	FOURTH ST OVER COCHECO RIVER (EB-WB) (81125140-81125141)	19	*	*	*	*	4400	*	*	2500
125066	82	NH 9/NH 108 (CENTRAL AVE) SB AT COCHECO RIVER BRIDGE	16	12000	*	*	12000	*	*	10000	*
125067	82	NH 9/NH 108 (WASHINGTON ST) EB AT COCHECO RIVER BRIDGE	16	14000	*	*	13000	*	*	11000	*
125068	82	WASHINGTON ST EAST OF HIGHLAND ST (EB-WB) (81125134-81125135)	17	*	*	6000	*	*	5600	*	*
125069	82	SIXTH ST WEST OF GLENWOOD AVE	17	*	*	8400	*	*	8500	*	*
125070	82	TOLEND RD BY SPAULDING TPK BRIDGE	17	*	*	3800	*	*	3700	*	*
125071	62	SPAULDING TPK/NH 16 BETWEEN EXITS 8-9 (SB-NB) (61125071-61125072)	12	*	*	43300	*	*	43500	*	*
125075	82	BELLAMY RD BY BELLAMY RIVER BRIDGE	16	*	*	4600	*	*	5000	*	*
125077	82	NH 108 (DURHAM RD) NORTH OF BACK RIVER RD (SB-NB) (81125202-81125203)	16	*	*	18000	*	*	15000	*	*
125078	82	OAK ST EAST OF CENTRAL AVE	16	*	*	8200	*	*	8000	*	*
125079	82	DOVER POINT RD SOUTH OF HOMESTEAD LANE	16	12000	*	*	13000	*	*	11000	*
125083	82	LONG HILL RD WEST OF OLD ROCHESTER RD (EB-WB) (81125144-81125145)	19	1400	*	*	1800	*	*	1900	*
125084	82	SIXTH ST WEST OF CHESTNUT ST	17	*	*	7100	*	*	6700	*	*
125085	82	TOLEND RD WEST OF WASHINGTON ST	17	5000	*	*	2800	*	*	5600	*
125086	82	NH 9 (LITTLEWORTH RD) WEST OF B&M RR BRIDGE	16	10000	*	*	8000	*	*	*	9300
125087	82	NH 155 (KNOX MARSH RD) SOUTH OF NH 9	16	14000	*	*	13000	*	*	15000	*



LITTLEWORTH ROAD – OFFICE/WAREHOUSE 29 LITTLEWORTH ROAD, DOVER, NH STORMWATER MANAGEMENT STUDY

Project No.: C147-19

April 15, 2019

◆ Scope

This stormwater management plan has been prepared for a pool construction and retail/office space development located at 29 Littleworth Road in Dover, NH. The entire parcel contains approximately 3.99 acres; the development will include a single building containing a pool construction area, office space, storefront and a small manager's apartment. The project requires a Site Plan Review and must meet the Stormwater Management requirements for the City of Dover. The project will create approximately 2.1 acres of developed area and approximately 1.2 acres of impervious area.

◆ Site and Watershed Description

The project site is located in the Lower Cocheco River Subwatershed. A 7½ minute series U.S.G.S. map of the project area is attached.

The current lot contains meadow areas, woodlands and wetlands. The mapped wetlands are on the western portion of the site. There is a buffer area that extends from the wetland boundary 50' westerly into the property. The existing vegetation shall remain in this area and no grading or other disturbance is proposed for this portion of the site.

The site is not located in a flood zone.

◆ Soils/Hydrologic Soil Groups

Soil types and their respective Hydrologic Soil Groups (HSG) were determined from the USDA NRCS Web Soil Survey. On site soil types consist of Buxton Silt Loam (Bz), Charlton Fine Sandy Loam (Cf), Hollis-Charlton Fine Sandy Loams (Hc), Suffield Silt Loam (Sf) and Sutton Fine Sandy Loam (Sn). Hydrologic Soil Groups (HSG's) range from "B" to "D" for these soil types.

◆ Methodology

The stormwater quantity analysis will be conducted using the HydroCAD Stormwater Modeling System by Applied Microcomputer Systems. The analysis determines the "Existing Condition" and "Developed Condition" stormwater flows. Both cases are analyzed for the 2, 10, 25 and 50-year, 24-hour frequency storm events. The Existing Condition analyzes the site as it currently exists and the Developed Condition models the site with the proposed improvements described above.

◆ Water Quantity Analysis

Existing Condition

The site itself is divided into two subcatchments for analysis. Runoff flows from the west to the eastern side of the property. The two analysis points are at the eastern property line in the upper and lower portions of the wetlands respectively.

Developed Condition

The Developed Condition analysis consists of 6 subcatchments. Other features such as ponds (Bioretention cell) and catch basins were added to account for on-site routing and

detention of stormwater. One Bioretention cell is proposed to provide both stormwater detention and treatment. Calculations are provided to show the required Volume control and treatment required by the City of Dover and the NHDES. All Developed Condition flows were routed to the Analysis Points described above.

Changes in Stormwater Flows

Tables showing Existing Condition peak flows, Developed Condition peak flows and the change in peak flow from Existing Condition to Developed Condition are presented on a separate page.

The analysis indicates a decrease in peak flow at all analysis points (AP's 1 & 2) for all storm events (2, 10, 25 and 50-year).

With the exception of the downhill grading located in subcatchment 60, all of the developed area runoff is routed to the Bioretention cell (1P).

Runoff from the Bioretention cell shall be routed through outlet structures, pipes and level spreaders prior to discharge to undisturbed, on-site areas.

The full runoff volume of the 10 year storm does not cause the Bioretention cell to overtop.

◆ **Water Quality**

In accordance with the City of Dover the pre and post development conditions were analyzed for water quality requirements using the "Simple Method" described in the NHDES Stormwater Manual Volume 1. The spreadsheet provided by NHDES was used and the results are provided as part of this report.

Runoff from developed areas on the site will receive treatment in the Bioretention cell prior to being discharged. Approximately 90.0 % of the Total Suspended Solids (TSS), 64.1 % of the Total Nitrogen (TN) and 61.5 % of the Total Phosphorus (TP) are treated. This exceeds the required 80% of TSS, 50% of TN and 50% of TP standard provided by the City of Dover. Treatment calculations and Bioretention cell sizing calculations in accordance with the NHDES Stormwater Manual Volumes 1 and 2 are included in this report.

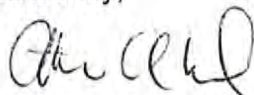
◆ **Erosion and Sedimentation Control**

All of the proposed Erosion and Sedimentation Control Measures and details are noted on Sheet 5.1 of the plan set.

◆ **Summary**

The use of the Bioretention cell to attenuate peak flows will result in no increase in peak runoff quantity from the proposed development. No adverse effects are anticipated on any downstream properties or drainage structures for the analyzed storm events. Runoff quality is also addressed by the use of the Bioretention cell.

Sincerely;

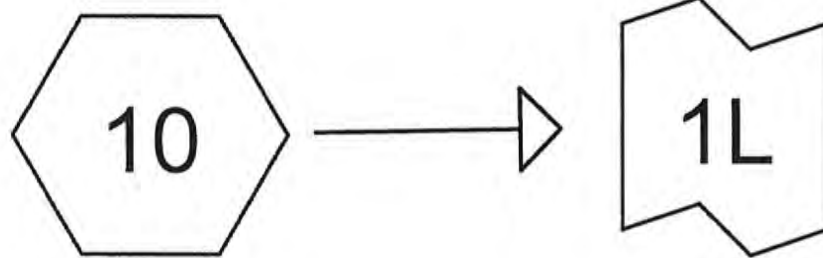


Kenneth A. Wood, P.E.
President

C147-19 SW Littleworth Road.doc

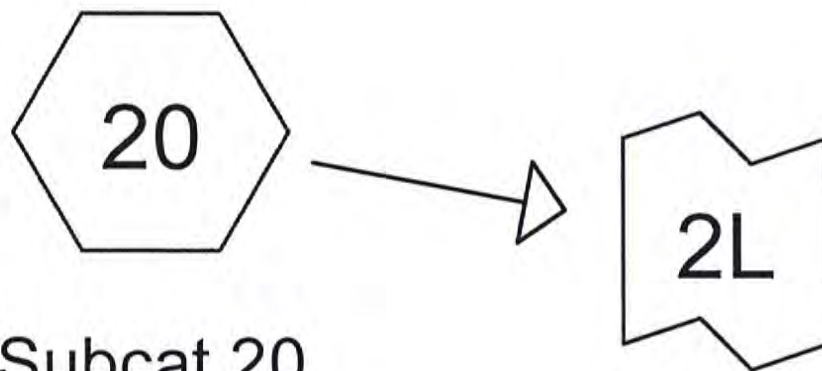


EXISTING CONDITION CALCULATIONS



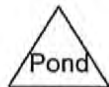
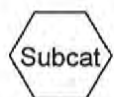
Subcat 10

AP1



Subcat 20

AP2



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Page 2

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
41,208	58	Meadow, non-grazed, HSG B (10, 20)
15,943	71	Meadow, non-grazed, HSG C (10, 20)
83,330	78	Meadow, non-grazed, HSG D (10, 20)
1,350	98	Paved roads w/curbs & sewers, HSG B (10, 20)
915	98	Paved roads w/curbs & sewers, HSG D (10)
19,254	70	Woods, Good, HSG C (10, 20)
22,825	77	Woods, Good, HSG D (10, 20)
184,825	72	TOTAL AREA

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Page 3

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
42,558	HSG B	10, 20
35,196	HSG C	10, 20
107,070	HSG D	10, 20
0	Other	
184,825		TOTAL AREA

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Page 4

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover
0	41,208	15,943	83,330	0	140,481	Meadow, non-grazed
0	1,350	0	915	0	2,265	Paved roads w/curbs & sewers
0	0	19,254	22,825	0	42,079	Woods, Good
0	42,558	35,196	107,070	0	184,825	TOTAL AREA

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NRCC 24-hr D 50-Year Rainfall=7.16"

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Page 5

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 10: Subcat 10Runoff Area=1.439 ac 3.34% Impervious Runoff Depth>3.65"
Flow Length=416' Tc=15.7 min CN=73 Runoff=4.60 cfs 19,078 cf**Subcatchment 20: Subcat 20**Runoff Area=2.804 ac 0.14% Impervious Runoff Depth>3.55"
Flow Length=409' Tc=17.4 min CN=72 Runoff=8.37 cfs 36,099 cf**Link 1L: AP1**Inflow=4.60 cfs 19,078 cf
Primary=4.60 cfs 19,078 cf**Link 2L: AP2**Inflow=8.37 cfs 36,099 cf
Primary=8.37 cfs 36,099 cfTotal Runoff Area = 184,825 sf Runoff Volume = 55,177 cf Average Runoff Depth = 3.58"
98.77% Pervious = 182,560 sf 1.23% Impervious = 2,265 sf

Summary for Subcatchment 10: Subcat 10

Runoff = 4.60 cfs @ 12.24 hrs, Volume= 19,078 cf, Depth> 3.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 50-Year Rainfall=7.16"

Area (ac)	CN	Description
0.307	58	Meadow, non-grazed, HSG B
0.143	71	Meadow, non-grazed, HSG C
0.441	78	Meadow, non-grazed, HSG D
0.027	98	Paved roads w/curbs & sewers, HSG B
0.021	98	Paved roads w/curbs & sewers, HSG D
0.126	70	Woods, Good, HSG C
0.374	77	Woods, Good, HSG D
1.439	73	Weighted Average
1.391		96.66% Pervious Area
0.048		3.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	100	0.0628	0.26		Sheet Flow, Grass: Short n= 0.150 P2= 3.05"
1.7	179	0.0630	1.76		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
7.6	137	0.0145	0.30		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
15.7	416	Total			

Summary for Subcatchment 20: Subcat 20

Runoff = 8.37 cfs @ 12.26 hrs, Volume= 36,099 cf, Depth> 3.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 50-Year Rainfall=7.16"

Area (ac)	CN	Description
0.639	58	Meadow, non-grazed, HSG B
0.223	71	Meadow, non-grazed, HSG C
1.472	78	Meadow, non-grazed, HSG D
0.004	98	Paved roads w/curbs & sewers, HSG B
0.316	70	Woods, Good, HSG C
0.150	77	Woods, Good, HSG D
2.804	72	Weighted Average
2.800		99.86% Pervious Area
0.004		0.14% Impervious Area

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NRCC 24-hr D 50-Year Rainfall=7.16"

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Page 7

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	100	0.0350	0.14		Sheet Flow, Grass: Dense n= 0.240 P2= 3.05"
1.8	183	0.0570	1.67		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
3.9	126	0.0470	0.54		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
17.4	409	Total			

Summary for Link 1L: AP1

Inflow Area = 62,683 sf, 3.34% Impervious, Inflow Depth > 3.65" for 50-Year event
 Inflow = 4.60 cfs @ 12.24 hrs, Volume= 19,078 cf
 Primary = 4.60 cfs @ 12.24 hrs, Volume= 19,078 cf, Atten= 0%, Lag= 0.0 min

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

Summary for Link 2L: AP2

Inflow Area = 122,142 sf, 0.14% Impervious, Inflow Depth > 3.55" for 50-Year event
 Inflow = 8.37 cfs @ 12.26 hrs, Volume= 36,099 cf
 Primary = 8.37 cfs @ 12.26 hrs, Volume= 36,099 cf, Atten= 0%, Lag= 0.0 min

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

Littleworth EXT

NRCC 24-hr D 2-Year Rainfall=3.14"

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Page 2

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 10: Subcat 10Runoff Area=1.439 ac 3.34% Impervious Runoff Depth>0.81"
Flow Length=416' Tc=15.7 min CN=73 Runoff=1.00 cfs 4,240 cf**Subcatchment 20: Subcat 20**Runoff Area=2.804 ac 0.14% Impervious Runoff Depth>0.76"
Flow Length=409' Tc=17.4 min CN=72 Runoff=1.74 cfs 7,766 cf**Link 1L: AP1**Inflow=1.00 cfs 4,240 cf
Primary=1.00 cfs 4,240 cf**Link 2L: AP2**Inflow=1.74 cfs 7,766 cf
Primary=1.74 cfs 7,766 cf**Total Runoff Area = 184,825 sf Runoff Volume = 12,006 cf Average Runoff Depth = 0.78"**
98.77% Pervious = 182,560 sf 1.23% Impervious = 2,265 sf

Littleworth EXT

NRCC 24-hr D 10-Year Rainfall=4.74"

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Page 4

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 10: Subcat 10Runoff Area=1.439 ac 3.34% Impervious Runoff Depth>1.83"
Flow Length=416' Tc=15.7 min CN=73 Runoff=2.33 cfs 9,571 cf**Subcatchment 20: Subcat 20**Runoff Area=2.804 ac 0.14% Impervious Runoff Depth>1.76"
Flow Length=409' Tc=17.4 min CN=72 Runoff=4.17 cfs 17,879 cf**Link 1L: AP1**Inflow=2.33 cfs 9,571 cf
Primary=2.33 cfs 9,571 cf**Link 2L: AP2**Inflow=4.17 cfs 17,879 cf
Primary=4.17 cfs 17,879 cfTotal Runoff Area = 184,825 sf Runoff Volume = 27,450 cf Average Runoff Depth = 1.78"
98.77% Pervious = 182,560 sf 1.23% Impervious = 2,265 sf

Littleworth EXT

NRCC 24-hr D 25-Year Rainfall=5.99"

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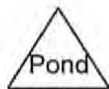
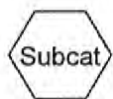
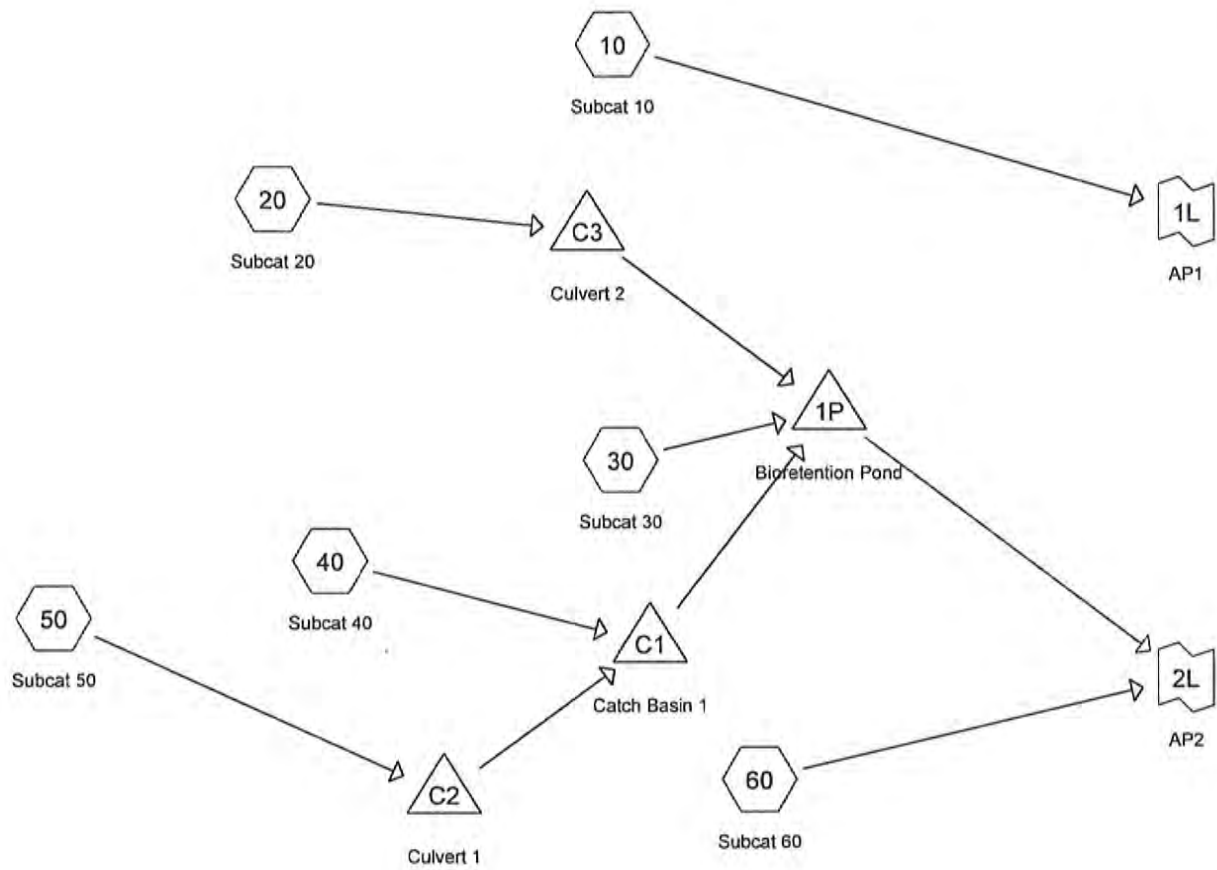
Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 10: Subcat 10Runoff Area=1.439 ac 3.34% Impervious Runoff Depth>2.74"
Flow Length=416' Tc=15.7 min CN=73 Runoff=3.48 cfs 14,332 cf**Subcatchment 20: Subcat 20**Runoff Area=2.804 ac 0.14% Impervious Runoff Depth>2.65"
Flow Length=409' Tc=17.4 min CN=72 Runoff=6.29 cfs 26,985 cf**Link 1L: AP1**Inflow=3.48 cfs 14,332 cf
Primary=3.48 cfs 14,332 cf**Link 2L: AP2**Inflow=6.29 cfs 26,985 cf
Primary=6.29 cfs 26,985 cf**Total Runoff Area = 184,825 sf Runoff Volume = 41,317 cf Average Runoff Depth = 2.68"**
98.77% Pervious = 182,560 sf 1.23% Impervious = 2,265 sf

DEVELOPED CONDITION CALCULATIONS



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Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
28,310	58	Meadow, non-grazed, HSG B (10, 20, 40, 50, 60)
15,597	71	Meadow, non-grazed, HSG C (10, 30, 60)
49,547	78	Meadow, non-grazed, HSG D (10, 20, 30, 40, 50, 60)
8,973	98	Paved parking, HSG B (20, 40)
19,994	98	Paved parking, HSG D (20, 30, 40)
5,097	98	Paved roads w/curbs & sewers, HSG B (10, 20, 40)
6,490	98	Paved roads w/curbs & sewers, HSG D (10, 20, 30)
11,761	98	Roofs, HSG D (30, 40)
19,596	70	Woods, Good, HSG C (10, 60)
19,312	77	Woods, Good, HSG D (10, 60)
184,677	79	TOTAL AREA

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Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover
0	28,310	15,597	49,547	0	93,453	Meadow, non-grazed
0	8,973	0	19,994	0	28,967	Paved parking
0	5,097	0	6,490	0	11,587	Paved roads w/curbs & sewers
0	0	0	11,761	0	11,761	Roofs
0	0	19,596	19,312	0	38,908	Woods, Good
0	42,380	35,193	107,105	0	184,677	TOTAL AREA

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NRCC 24-hr D 50-Year Rainfall=7.16"

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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 Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 10: Subcat 10Runoff Area=1.215 ac 3.95% Impervious Runoff Depth>4.06"
Flow Length=395' Tc=10.5 min CN=73 Runoff=4.52 cfs 17,912 cf**Subcatchment 20: Subcat 20**Runoff Area=0.290 ac 73.45% Impervious Runoff Depth>6.10"
Flow Length=230' Tc=1.8 min CN=91 Runoff=2.02 cfs 6,417 cf**Subcatchment 30: Subcat 30**Runoff Area=0.496 ac 50.60% Impervious Runoff Depth>5.75"
Flow Length=90' Tc=0.7 min CN=88 Runoff=3.29 cfs 10,351 cf**Subcatchment 40: Subcat 40**Runoff Area=0.692 ac 99.57% Impervious Runoff Depth>6.92"
Flow Length=367' Tc=2.0 min CN=98 Runoff=5.04 cfs 17,383 cf**Subcatchment 50: Subcat 50**Runoff Area=12,200 sf 0.00% Impervious Runoff Depth>2.52"
Flow Length=284' Tc=3.5 min CN=58 Runoff=0.83 cfs 2,558 cf**Subcatchment 60: Subcat 60**Runoff Area=55,170 sf 0.00% Impervious Runoff Depth>4.07"
Flow Length=367' Tc=5.1 min CN=73 Runoff=5.66 cfs 18,706 cf**Pond 1P: (new Pond)**Peak Elev=99.01' Storage=13,680 cf Inflow=10.65 cfs 35,542 cf
Primary=2.19 cfs 26,774 cf Secondary=0.04 cfs 12 cf Outflow=2.23 cfs 26,786 cf**Pond C1: Culvert 1**Peak Elev=100.15' Storage=15 cf Inflow=5.82 cfs 19,914 cf
15.0" Round Culvert n=0.013 L=95.3' S=0.0058 ' / Outflow=5.77 cfs 18,798 cf**Pond C2: Culvert 1**Peak Elev=101.46' Storage=32 cf Inflow=0.83 cfs 2,558 cf
12.0" Round Culvert n=0.013 L=135.0' S=0.0198 ' / Outflow=0.83 cfs 2,532 cf**Pond C3: Culvert 1**Peak Elev=101.79' Storage=36 cf Inflow=2.02 cfs 6,417 cf
12.0" Round Culvert n=0.013 L=62.0' S=0.0373 ' / Outflow=2.02 cfs 6,392 cf**Link 1L: AP1**Inflow=4.52 cfs 17,912 cf
Primary=4.52 cfs 17,912 cf**Link 2L: AP2**Inflow=6.49 cfs 45,492 cf
Primary=6.49 cfs 45,492 cf**Total Runoff Area = 184,677 sf Runoff Volume = 73,326 cf Average Runoff Depth = 4.76"**
71.67% Pervious = 132,362 sf 28.33% Impervious = 52,316 sf

Summary for Subcatchment 10: Subcat 10

Runoff = 4.52 cfs @ 12.18 hrs, Volume= 17,912 cf, Depth> 4.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 50-Year Rainfall=7.16"

Area (ac)	CN	Description
0.237	58	Meadow, non-grazed, HSG B
0.140	71	Meadow, non-grazed, HSG C
0.277	78	Meadow, non-grazed, HSG D
0.027	98	Paved roads w/curbs & sewers, HSG B
0.021	98	Paved roads w/curbs & sewers, HSG D
0.139	70	Woods, Good, HSG C
0.374	77	Woods, Good, HSG D
1.215	73	Weighted Average
1.167		96.05% Pervious Area
0.048		3.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	24	0.0200	1.01		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.05"
2.7	35	0.0625	0.21		Sheet Flow, Grass: Short n= 0.150 P2= 3.05"
2.5	259	0.0617	1.74		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
4.9	77	0.0110	0.26		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
10.5	395	Total			

Summary for Subcatchment 20: Subcat 20

Runoff = 2.02 cfs @ 12.08 hrs, Volume= 6,417 cf, Depth> 6.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 50-Year Rainfall=7.16"

Area (ac)	CN	Description
0.031	58	Meadow, non-grazed, HSG B
0.046	78	Meadow, non-grazed, HSG D
0.003	98	Paved parking, HSG B
0.024	98	Paved parking, HSG D
0.074	98	Paved roads w/curbs & sewers, HSG B
0.112	98	Paved roads w/curbs & sewers, HSG D
0.290	91	Weighted Average
0.077		26.55% Pervious Area
0.213		73.45% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	50	0.0370	1.50		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.05"
0.5	115	0.0349	3.79		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.7	65	0.0520	1.60		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.8	230	Total			

Summary for Subcatchment 30: Subcat 30

Runoff = 3.29 cfs @ 12.06 hrs, Volume= 10,351 cf, Depth> 5.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 50-Year Rainfall=7.16"

Area (ac)	CN	Description
0.035	71	Meadow, non-grazed, HSG C
0.210	78	Meadow, non-grazed, HSG D
0.107	98	Paved parking, HSG D
0.016	98	Paved roads w/curbs & sewers, HSG D
0.128	98	Roofs, HSG D
0.496	88	Weighted Average
0.245		49.40% Pervious Area
0.251		50.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	50	0.0500	1.69		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.05"
0.2	40	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.7	90	Total			

Summary for Subcatchment 40: Subcat 40

Runoff = 5.04 cfs @ 12.08 hrs, Volume= 17,383 cf, Depth> 6.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 50-Year Rainfall=7.16"

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Area (ac)	CN	Description
0.001	58	Meadow, non-grazed, HSG B
0.002	78	Meadow, non-grazed, HSG D
0.203	98	Paved parking, HSG B
0.328	98	Paved parking, HSG D
0.016	98	Paved roads w/curbs & sewers, HSG B
0.142	98	Roofs, HSG D
0.692	98	Weighted Average
0.003		0.43% Pervious Area
0.689		99.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	50	0.0425	1.58		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.05"
1.5	317	0.0315	3.60		Shallow Concentrated Flow, Paved Kv= 20.3 fps
2.0	367	Total			

Summary for Subcatchment 50: Subcat 50

Runoff = 0.83 cfs @ 12.10 hrs, Volume= 2,558 cf, Depth> 2.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 50-Year Rainfall=7.16"

Area (sf)	CN	Description
12,132	58	Meadow, non-grazed, HSG B
68	78	Meadow, non-grazed, HSG D
12,200	58	Weighted Average
12,200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	50	0.0425	1.58		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.05"
3.0	234	0.0341	1.29		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
3.5	284	Total			

Summary for Subcatchment 60: Subcat 60

Runoff = 5.66 cfs @ 12.12 hrs, Volume= 18,706 cf, Depth> 4.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 50-Year Rainfall=7.16"

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NRCC 24-hr D 50-Year Rainfall=7.16"

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Area (sf)	CN	Description
4,460	58	Meadow, non-grazed, HSG B
7,974	71	Meadow, non-grazed, HSG C
26,174	78	Meadow, non-grazed, HSG D
13,541	70	Woods, Good, HSG C
3,021	77	Woods, Good, HSG D
55,170	73	Weighted Average
55,170		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	29	0.4130	0.30		Sheet Flow, Grass: Dense n= 0.240 P2= 3.05"
3.5	338	0.0540	1.63		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
5.1	367	Total			

Summary for Pond 1P: (new Pond)

Inflow Area = 76,582 sf, 65.58% Impervious, Inflow Depth > 5.57" for 50-Year event
 Inflow = 10.65 cfs @ 12.07 hrs, Volume= 35,542 cf
 Outflow = 2.23 cfs @ 12.32 hrs, Volume= 26,786 cf, Atten= 79%, Lag= 14.6 min
 Primary = 2.19 cfs @ 12.32 hrs, Volume= 26,774 cf
 Secondary = 0.04 cfs @ 12.31 hrs, Volume= 12 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 99.01' @ 12.32 hrs Surf.Area= 5,678 sf Storage= 13,680 cf

Plug-Flow detention time= 195.1 min calculated for 26,730 cf (75% of inflow)
 Center-of-Mass det. time= 88.5 min (857.3 - 768.8)

Volume	Invert	Avail.Storage	Storage Description
#1	96.00'	19,684 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.00	3,402	0	0
98.00	4,928	8,330	8,330
99.00	5,671	5,300	13,630
100.00	6,438	6,055	19,684

Device	Routing	Invert	Outlet Devices
#1	Primary	93.53'	12.0" Round Culvert L= 52.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 93.53' / 93.03' S= 0.0096 ' /' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	93.73'	6.0" Round Culvert L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 93.73' / 93.63' S= 0.0033 ' /' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	96.00'	2.400 in/hr Exfiltration over Surface area

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#4	Device 1	98.40'	8.0" Vert. Orifice/Grate C= 0.600
#5	Device 1	98.80'	12.0" Horiz. Orifice/Grate C= 0.600
			Limited to weir flow at low heads
#6	Secondary	99.00'	10.0' long x 6.0' breadth Broad-Crested Rectangular Weir
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
			2.50 3.00 3.50 4.00 4.50 5.00 5.50
			Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65
			2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=2.17 cfs @ 12.32 hrs HW=99.01' (Free Discharge)

- 1=Culvert (Passes 2.17 cfs of 7.94 cfs potential flow)
- 2=Culvert (Passes 0.32 cfs of 1.30 cfs potential flow)
- 3=Exfiltration (Exfiltration Controls 0.32 cfs)
- 4=Orifice/Grate (Orifice Controls 0.89 cfs @ 2.65 fps)
- 5=Orifice/Grate (Weir Controls 0.97 cfs @ 1.49 fps)

Secondary OutFlow Max=0.02 cfs @ 12.31 hrs HW=99.01' (Free Discharge)

- 6=Broad-Crested Rectangular Weir (Weir Controls 0.02 cfs @ 0.20 fps)

Summary for Pond C1: Culvert 1

Inflow Area = 42,344 sf, 70.88% Impervious, Inflow Depth > 5.64" for 50-Year event
 Inflow = 5.82 cfs @ 12.08 hrs, Volume= 19,914 cf
 Outflow = 5.77 cfs @ 12.08 hrs, Volume= 18,798 cf, Atten= 1%, Lag= 0.0 min
 Primary = 5.77 cfs @ 12.08 hrs, Volume= 18,798 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 100.15' @ 12.08 hrs Surf.Area= 13 sf Storage= 15 cf

Plug-Flow detention time= 26.3 min calculated for 18,759 cf (94% of inflow)
 Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	99.00'	39 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
99.00	13	0	0
100.00	13	13	13
102.00	13	26	39

Device	Routing	Invert	Outlet Devices
#1	Primary	98.20'	15.0" Round Culvert L= 95.3' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 98.20' / 97.65' S= 0.0058 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=5.39 cfs @ 12.08 hrs HW=100.02' (Free Discharge)

- 1=Culvert (Barrel Controls 5.39 cfs @ 4.39 fps)

Summary for Pond C2: Culvert 1

Inflow Area = 12,200 sf, 0.00% Impervious, Inflow Depth > 2.52" for 50-Year event
 Inflow = 0.83 cfs @ 12.10 hrs, Volume= 2,558 cf
 Outflow = 0.83 cfs @ 12.10 hrs, Volume= 2,532 cf, Atten= 0%, Lag= 0.1 min
 Primary = 0.83 cfs @ 12.10 hrs, Volume= 2,532 cf

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

Peak Elev= 101.46' @ 12.10 hrs Surf.Area= 13 sf Storage= 32 cf

Plug-Flow detention time= 8.6 min calculated for 2,526 cf (99% of inflow)

Center-of-Mass det. time= 2.9 min (888.7 - 885.8)

Volume	Invert	Avail.Storage	Storage Description
#1	99.00'	39 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
99.00	13	0	0
100.00	13	13	13
102.00	13	26	39

Device	Routing	Invert	Outlet Devices
#1	Primary	101.00'	12.0" Round Culvert L= 135.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.00' / 98.33' S= 0.0198 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.82 cfs @ 12.10 hrs HW=101.46' (Free Discharge)

↑1=Culvert (Inlet Controls 0.82 cfs @ 2.31 fps)

Summary for Pond C3: Culvert 1

Inflow Area = 12,632 sf, 73.45% Impervious, Inflow Depth > 6.10" for 50-Year event
 Inflow = 2.02 cfs @ 12.08 hrs, Volume= 6,417 cf
 Outflow = 2.02 cfs @ 12.08 hrs, Volume= 6,392 cf, Atten= 0%, Lag= 0.0 min
 Primary = 2.02 cfs @ 12.08 hrs, Volume= 6,392 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2

Peak Elev= 101.79' @ 12.08 hrs Surf.Area= 13 sf Storage= 36 cf

Plug-Flow detention time= 5.1 min calculated for 6,379 cf (99% of inflow)

Center-of-Mass det. time= 2.7 min (783.0 - 780.3)

Volume	Invert	Avail.Storage	Storage Description
#1	99.00'	39 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
99.00	13	0	0
100.00	13	13	13
102.00	13	26	39

Device	Routing	Invert	Outlet Devices
#1	Primary	101.00'	12.0" Round Culvert L= 62.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.00' / 98.69' S= 0.0373 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.88 cfs @ 12.08 hrs HW=101.76' (Free Discharge)

↑1=Culvert (Inlet Controls 1.88 cfs @ 2.96 fps)

Summary for Link 1L: AP1

Inflow Area = 52,925 sf, 3.95% Impervious, Inflow Depth > 4.06" for 50-Year event
Inflow = 4.52 cfs @ 12.18 hrs, Volume= 17,912 cf
Primary = 4.52 cfs @ 12.18 hrs, Volume= 17,912 cf, Atten= 0%, Lag= 0.0 min

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

Summary for Link 2L: AP2

Inflow Area = 131,752 sf, 38.12% Impervious, Inflow Depth > 4.14" for 50-Year event
Inflow = 6.49 cfs @ 12.13 hrs, Volume= 45,492 cf
Primary = 6.49 cfs @ 12.13 hrs, Volume= 45,492 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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NRCC 24-hr D 2-Year Rainfall=3.14"

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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 Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 10: Subcat 10Runoff Area=1.215 ac 3.95% Impervious Runoff Depth>0.94"
Flow Length=395' Tc=10.5 min CN=73 Runoff=1.00 cfs 4,149 cf**Subcatchment 20: Subcat 20**Runoff Area=0.290 ac 73.45% Impervious Runoff Depth>2.20"
Flow Length=230' Tc=1.8 min CN=91 Runoff=0.78 cfs 2,318 cf**Subcatchment 30: Subcat 30**Runoff Area=0.496 ac 50.60% Impervious Runoff Depth>1.94"
Flow Length=90' Tc=0.7 min CN=88 Runoff=1.18 cfs 3,499 cf**Subcatchment 40: Subcat 40**Runoff Area=0.692 ac 99.57% Impervious Runoff Depth>2.91"
Flow Length=367' Tc=2.0 min CN=98 Runoff=2.19 cfs 7,303 cf**Subcatchment 50: Subcat 50**Runoff Area=12,200 sf 0.00% Impervious Runoff Depth>0.32"
Flow Length=284' Tc=3.5 min CN=58 Runoff=0.05 cfs 325 cf**Subcatchment 60: Subcat 60**Runoff Area=55,170 sf 0.00% Impervious Runoff Depth>0.94"
Flow Length=367' Tc=5.1 min CN=73 Runoff=1.26 cfs 4,336 cf**Pond 1P: (new Pond)**Peak Elev=97.30' Storage=5,079 cf Inflow=4.02 cfs 13,393 cf
Primary=0.24 cfs 12,637 cf Secondary=0.00 cfs 0 cf Outflow=0.24 cfs 12,637 cf**Pond C1: Culvert 1**Peak Elev=99.03' Storage=0 cf Inflow=2.19 cfs 7,602 cf
15.0" Round Culvert n=0.013 L=95.3' S=0.0058 ' /' Outflow=2.19 cfs 7,602 cf**Pond C2: Culvert 1**Peak Elev=101.09' Storage=27 cf Inflow=0.05 cfs 325 cf
12.0" Round Culvert n=0.013 L=135.0' S=0.0198 ' /' Outflow=0.03 cfs 299 cf**Pond C3: Culvert 1**Peak Elev=101.45' Storage=32 cf Inflow=0.78 cfs 2,318 cf
12.0" Round Culvert n=0.013 L=62.0' S=0.0373 ' /' Outflow=0.78 cfs 2,293 cf**Link 1L: AP1**Inflow=1.00 cfs 4,149 cf
Primary=1.00 cfs 4,149 cf**Link 2L: AP2**Inflow=1.49 cfs 16,973 cf
Primary=1.49 cfs 16,973 cf**Total Runoff Area = 184,677 sf Runoff Volume = 21,929 cf Average Runoff Depth = 1.42"**
71.67% Pervious = 132,362 sf 28.33% Impervious = 52,316 sf

Littleworth PRP

Prepared by Hewlett-Packard Company

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NRCC 24-hr D 10-Year Rainfall=4.74"

Printed 3/5/2019

Page 2

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 Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 10: Subcat 10Runoff Area=1.215 ac 3.95% Impervious Runoff Depth>2.07"
Flow Length=395' Tc=10.5 min CN=73 Runoff=2.30 cfs 9,135 cf**Subcatchment 20: Subcat 20**Runoff Area=0.290 ac 73.45% Impervious Runoff Depth>3.73"
Flow Length=230' Tc=1.8 min CN=91 Runoff=1.28 cfs 3,926 cf**Subcatchment 30: Subcat 30**Runoff Area=0.496 ac 50.60% Impervious Runoff Depth>3.42"
Flow Length=90' Tc=0.7 min CN=88 Runoff=2.02 cfs 6,162 cf**Subcatchment 40: Subcat 40**Runoff Area=0.692 ac 99.57% Impervious Runoff Depth>4.50"
Flow Length=367' Tc=2.0 min CN=98 Runoff=3.33 cfs 11,311 cf**Subcatchment 50: Subcat 50**Runoff Area=12,200 sf 0.00% Impervious Runoff Depth>1.03"
Flow Length=284' Tc=3.5 min CN=58 Runoff=0.30 cfs 1,045 cf**Subcatchment 60: Subcat 60**Runoff Area=55,170 sf 0.00% Impervious Runoff Depth>2.08"
Flow Length=367' Tc=5.1 min CN=73 Runoff=2.89 cfs 9,543 cf**Pond 1P: (new Pond)**Peak Elev=98.32' Storage=9,952 cf Inflow=6.66 cfs 22,040 cf
Primary=0.29 cfs 16,118 cf Secondary=0.00 cfs 0 cf Outflow=0.29 cfs 16,118 cf**Pond C1: Culvert 1**Peak Elev=99.32' Storage=4 cf Inflow=3.60 cfs 12,330 cf
15.0" Round Culvert n=0.013 L=95.3' S=0.0058 ' /' Outflow=3.59 cfs 11,975 cf**Pond C2: Culvert 1**Peak Elev=101.27' Storage=29 cf Inflow=0.30 cfs 1,045 cf
12.0" Round Culvert n=0.013 L=135.0' S=0.0198 ' /' Outflow=0.29 cfs 1,018 cf**Pond C3: Culvert 1**Peak Elev=101.60' Storage=34 cf Inflow=1.28 cfs 3,926 cf
12.0" Round Culvert n=0.013 L=62.0' S=0.0373 ' /' Outflow=1.28 cfs 3,902 cf**Link 1L: AP1**Inflow=2.30 cfs 9,135 cf
Primary=2.30 cfs 9,135 cf**Link 2L: AP2**Inflow=3.15 cfs 25,660 cf
Primary=3.15 cfs 25,660 cf**Total Runoff Area = 184,677 sf Runoff Volume = 41,122 cf Average Runoff Depth = 2.67"**
71.67% Pervious = 132,362 sf 28.33% Impervious = 52,316 sf

Littleworth PRP

Prepared by Hewlett-Packard Company

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NRCC 24-hr D 25-Year Rainfall=5.99"

Printed 3/5/2019

Page 3

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 Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 10: Subcat 10Runoff Area=1.215 ac 3.95% Impervious Runoff Depth>3.07"
Flow Length=395' Tc=10.5 min CN=73 Runoff=3.43 cfs 13,542 cf**Subcatchment 20: Subcat 20**Runoff Area=0.290 ac 73.45% Impervious Runoff Depth>4.95"
Flow Length=230' Tc=1.8 min CN=91 Runoff=1.67 cfs 5,208 cf**Subcatchment 30: Subcat 30**Runoff Area=0.496 ac 50.60% Impervious Runoff Depth>4.62"
Flow Length=90' Tc=0.7 min CN=88 Runoff=2.68 cfs 8,311 cf**Subcatchment 40: Subcat 40**Runoff Area=0.692 ac 99.57% Impervious Runoff Depth>5.75"
Flow Length=367' Tc=2.0 min CN=98 Runoff=4.21 cfs 14,447 cf**Subcatchment 50: Subcat 50**Runoff Area=12,200 sf 0.00% Impervious Runoff Depth>1.75"
Flow Length=284' Tc=3.5 min CN=58 Runoff=0.56 cfs 1,778 cf**Subcatchment 60: Subcat 60**Runoff Area=55,170 sf 0.00% Impervious Runoff Depth>3.08"
Flow Length=367' Tc=5.1 min CN=73 Runoff=4.29 cfs 14,144 cf**Pond 1P: (new Pond)**Peak Elev=98.80' Storage=12,512 cf Inflow=8.74 cfs 29,588 cf
Primary=0.78 cfs 21,574 cf Secondary=0.00 cfs 0 cf Outflow=0.78 cfs 21,574 cf**Pond C1: Culvert 1**Peak Elev=99.60' Storage=8 cf Inflow=4.74 cfs 16,198 cf
15.0" Round Culvert n=0.013 L=95.3' S=0.0058 ' / Outflow=4.72 cfs 16,093 cf**Pond C2: Culvert 1**Peak Elev=101.37' Storage=31 cf Inflow=0.56 cfs 1,778 cf
12.0" Round Culvert n=0.013 L=135.0' S=0.0198 ' / Outflow=0.56 cfs 1,751 cf**Pond C3: Culvert 1**Peak Elev=101.70' Storage=35 cf Inflow=1.67 cfs 5,208 cf
12.0" Round Culvert n=0.013 L=62.0' S=0.0373 ' / Outflow=1.66 cfs 5,183 cf**Link 1L: AP1**Inflow=3.43 cfs 13,542 cf
Primary=3.43 cfs 13,542 cf**Link 2L: AP2**Inflow=4.58 cfs 35,718 cf
Primary=4.58 cfs 35,718 cfTotal Runoff Area = 184,677 sf Runoff Volume = 57,430 cf Average Runoff Depth = 3.73"
71.67% Pervious = 132,362 sf 28.33% Impervious = 52,316 sf

BMP CALCULATIONS

TABLE 1 - QUANTITY CALCULATIONS

STORM EVENT

EXISTING		<u>2</u>	<u>10</u>	<u>25</u>	<u>50</u>
AP 1	AP 1	1.00	2.33	3.48	4.6
	AP 2	1.74	4.17	6.29	8.37

DEVELOPED	AP 1	1	2.3	3.43	4.52
	AP 2	1.49	3.15	4.58	6.49

CHANGE	AP 1	0.00	-0.03	-0.05	-0.08
	AP 2	-0.25	-1.02	-1.71	-1.88
TOTAL		-0.25	-1.05	-1.76	-1.96

OVERALL SUMMARY

Date (MM/DD/YYYY):

3/5/2019

Project Name:

Littleworth Road

Town/City:

Dover, NH

Impacted Surface Waters:

N/A

Applicant:

Peter Paul

DES File #:

?

TOTAL PRE-DEVELOPMENT (PRE-DEV) AREA (ACRES) =	0.00
TOTAL PRE-DEV EFFECTIVE IMPERVIOUS AREA (ACRES) =	0.00
TOTAL PRE-DEV PERCENT EFFECTIVE IMPERVIOUS (%) =	
TOTAL POST DEVELOPMENT (POST-DEV) AREA (ACRES) =	1.22
TOTAL POST-DEV EFFECTIVE IMPERVIOUS AREA (ACRES) =	0.28
TOTAL POST-DEV PERCENT EFFECTIVE IMPERVIOUS (%) =	23.0%
TOTAL POST-DEV AREA THAT IS FERTILIZED ANNUALLY (ACRES) =	0.00
TOTAL POST-DEV PERCENT OF AREA THAT IS FERTILIZED ANNUALLY (%) =	0.0%

	TSS (LBS/YR)	TP (LBS/YR)	TN (LBS/YR)
PRE DEVELOPMENT LOADS (NO BMPS)	0.0	0.0	0.0
PRE DEVELOPMENT LOADS (WITH BMPS)	0.0	0.0	0.0
PRE DEVELOPMENT LOAD REDUCTION DUE TO BMPS	0.0	0.0	0.0
PROPOSED PERCENT REDUCTION IN FERTILIZER APPLICATION RATE	NA	0.0%	0.0%
POST DEVELOPMENT LOADS (NO BMPS)	390.1	1.3	3.9
POST DEVELOPMENT LOADS (WITH BMPS)	39.0	0.4	1.4
POST DEVELOPMENT LOAD REDUCTION DUE TO BMPS	351.1	0.8	2.5
POST DEVELOPMENT - PRE DEVELOPMENT (SHOULD BE 0 OR NEGATIVE)	39.0	0.4	1.4
% DIFFERENCE FROM PRE DEVELOPMENT LOADS (SHOULD BE 0 OR NEGATIVE)			
TOTAL REMOVAL EFFICIENCY NEEDED TO MEET PRE-DEVELOPMENT LOAD	100.0%	100.0%	100.0%

OPERATION AND MAINTENANCE PROGRAM



ATTAR

ENGINEERING, INC

CIVIL STRUCTURAL MARINE

**29 LITTLEWORTH ROAD – OFFICE/WAREHOUSE
DOVER, NH**

OPERATION AND MAINTENANCE PROGRAM STORMWATER MANAGEMENT BMP's

This project contains specific Best Management Practices (BMP's) for the conveyance, storage, and treatment of stormwater and the prevention of erosion. These BMP's consist of swales, a bioretention cell, catchbasins and culverts. All components should be inspected quarterly, and after every significant rain event of 1" in any 24-hour period. Additional inspection intervals are specified for certain BMP's, specifically, underdrained soil filters.

The party responsible for implementing this Operation and Maintenance Program (O & M Program) shall be the property owner or owner's representative.

Swales

All swales should be inspected for accumulation of debris, which could adversely affect the function of this BMP. These areas should also be maintained to have gradual slopes, which prevent channeling of stormwater and erosion of the bottom and sides of the swales.

Catch Basins

All catch basin grates, sumps, and inlets/outlets should be inspected for accumulation of debris, which could adversely affect the function of this BMP. Additionally, the basin inverts shall be inspected for clogging and material soundness. Sumps shall always be clear to a depth of 1' below the outlet invert. Inlet structures shall be inspected and cleaned of debris at least twice annually, once in the spring following snow melt and once in the autumn after leaf fall.

Culverts

Culvert inlets and outlets should be inspected for debris, which could clog the BMP. Additionally, the placement of rip-rap should be inspected to ensure that all areas remain smooth and no areas exhibit erosion in the form of rills or gullies.

Snow Removal

Snow shall be stockpiled only in the approved snow storage areas. Plowing of snow into wetland areas, detention ponds, and/or bioretention cells is prohibited. Additionally, a mostly sand mix (reduced salt) shall be applied during winter months to prevent excessive salt from leaching into wetland areas. Excess sand shall be removed from the storage areas, all paved surfaces and adjacent areas each spring.

Bioretention Cell

The bioretention cell filter area is a very effective BMP, however, long term maintenance is essential to its operation. The cell should be inspected after every major storm event during the first year to ensure proper function and at least twice-annually, thereafter. The inspection should ensure that the filter drains within 24 - 48 hours. The top several inches of the filter layer should be replaced with fresh filter material, when water ponds for longer than 72 hours. Debris and sediment that builds up should be removed from

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the pre-treatment structure at least annually. Outlet structures shall be inspected and cleaned of debris at least twice annually, once in the spring following snow melt and once in the autumn after leaf fall. The height of grass shall be maintained at a maximum of 12"; mowing shall be limited to no more than two times during the growing season.

Seeding, Fertilizing and Mulching

All exposed soil materials and stockpiles must be either temporarily or permanently seeded, fertilized and mulched in accordance with plan specifications. This is one of the most important features of the Erosion Control Plan, which will provide both temporary and permanent stabilization. Eroded or damaged lawn areas must be repaired until a 75% effective growth of vegetation is established and permanently maintained.

Record Keeping (During Construction)

The construction inspector shall maintain documentation of all inspections as well as maintenance or corrective actions that were taken in response to the inspection. This documentation shall be maintained for at least three years after the site is permanently stabilized.

The scope of construction inspections shall include, but not be limited to, the inspection of the sediment and erosion control measures as well as material storage areas and all points at which vehicles access the site.

Record Keeping (Post Construction)

Routine maintenance and inspections will be accomplished by the future property owners of Lots 1 and 2 or a third party contracted by the respective owner. The inspector shall have knowledge of erosion and stormwater control, including the standards and conditions of the permit. All inspections accomplished in accordance with this program shall be documented on the attached Inspection & Maintenance Log. Copies of the Log shall be kept by the property owner or owner's representative, and be made available to the Department (Maine Department of Environmental Protection) or Town of Kittery, upon request.

All post-construction documentation, such as catch basin inspection and cleaning logs and Bioretention cell inspection and maintenance records, shall be maintained for at least five years.

Additional responsibilities to include, on or by July 1 of each year, providing a completed and signed certification to the Code Enforcement Officer in a form provided by the Town, certifying that the person has inspected the stormwater management facilities and that they are adequately maintained and functioning as intended by the stormwater management plan, or that they require maintenance or repair, describing any required maintenance and any deficiencies found during inspection of the stormwater management facilities and, if the stormwater management facilities require maintenance or repair of deficiencies in order to function as intended by the approved stormwater management plan, the person must provide a record of the required maintenance or deficiency and corrective action(s) taken.

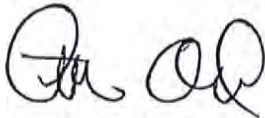
Re-certification (as noted in Appendix B. of Chapter 500 Stormwater Management)

Submit a certification of the following to the Department within three months of the expiration of each five-year interval from the date of issuance of the permit.

- (a) **Identification and repair of erosion problems.** All areas of the project site have been inspected for areas of erosion, and appropriate steps have been taken to permanently stabilize these areas.

- (b) **Inspection and repair of stormwater control system.** All aspects of the stormwater control system have been inspected for damage, wear, and malfunction, and appropriate steps have been taken to repair or replace the system, or portions of the system.
- (c) **Maintenance.** The erosion and stormwater maintenance plan for the site is being implemented as written, or modifications to the plan have been submitted to and approved by the Department, and the maintenance log is being maintained.

Municipalities with separate storm sewer systems regulated under the Maine Pollutant Discharge Elimination System (MPDES) Program may report on all regulated systems under their control as part of their required annual reporting in lieu of separate certification of each system. Municipalities not regulated by the MPDES Program, but that are responsible for maintenance of permitted stormwater systems, may report on multiple stormwater systems in one report.



INSPECTION & MAINTENANCE LOG

29 Littleworth Road – Dover, NH

[illegible]

1. "BMP" refers to which site feature is being maintained. For example; Catch Basin, Culvert, Swale, Underdrained Soil Filter (Bioretention cell) etc.
2. "Purpose" is the reason for the inspection. For example; "quarterly" or "after a significant rain event."
3. "Maintenance Done" means any maintenance required as a result of the inspection, such as trash removal or re-seeding of areas.

GRASSED UNDERDRAINED SOIL FILTER INSPECTION FORM

	For Inspector		For Maintenance Crew	
Component No. Component Name	Inspection Item and Inspection Item No.	Result	Preventative / Corrective Maintenance Actions	
Pretreatment (Forebay)	1	Scouring or erosion is present at inlet structure and/or riprap apron Y___ N___	Check the flow diversion device before the inlet pipe and whether the bypass flow channel is clogged Work Order # _____	
	2	Clogged pipes or excessive sediment in the forebay Y___ N___	Remove sediment or debris	
	3	Damaged outlet structure (e.g., cracking, subsidence, spalling, erosion, or deterioration) Y___ N___	Repair or replace the outlet structure Work Order # _____	

	For Inspector		For Maintenance Crew
Component No. Component Name	Inspection Item and Inspection Item No.	Result	Preventative / Corrective Maintenance Actions
Note:			
Filter Area	1	Standing water is present after the design drain time The observed drain time is approximately _____ hours.	Recheck to determine if there is standing water after 72 hours If standing water is present longer than 5 days, report to mosquito commission. Remove any sediment buildup Replace the sand layer (volume of replacement sand is specified in the Basin Configuration Targets in the Basic Design Information Section of this Manual) Work Order # _____
	2	Excessive sediment, silt, or trash accumulation on basin bed	Clean pretreatment system Remove silt, sediment, and trash

Component No. Component Name	For Inspector		For Maintenance Crew
	Inspection Item and Inspection Item No.	Result	Preventative / Corrective Maintenance Actions
	3 Erosion or channelization is present	Y___ N___	Check whether the flow bypass or diversion device is clogged Re-grade the infiltration bed Work Order # _____
	4 Animal burrows/rodents are present	Y___ N___	Pest control Work Order # _____
	5 Uneven bed	Y___ N___	Use light equipment to resurface the bed Work Order # _____
	6 Evidence of sinkholes or subsidence	Y___ N___	Monitor for sinkhole development
Note:			
Underdrain	1 Standing water is present after the design drain time	Y___ N___	Check whether the outlet is clogged Check whether the underdrain pipes are clogged or damaged Ventilate the underdrain pipes Work Order# _____
	2 Gravel present in the discharge pipe or outfall of the sand filter	Y___ N___	Check whether the filter fabric around the pipe is broken and repair if necessary Work Order# _____

Component No. Component Name	For Inspector		Result	For Maintenance Crew
		Inspection Item and Inspection Item No.		Preventative / Corrective Maintenance Actions
	3	Continuous discharge of water from the outfall when it has not rained within the past 72 hours and the bed is completely dry	Y___ N___	Check whether the seasonal high water table is above the bottom of the sand filter A retrofit may be required if the system is intercepting groundwater Work Order# _____
Note:				
Vegetation	1	Large spot(s) showing bare soil	Y___ N___	Vegetative cover must be maintained at 85%. Revegetate the entire basin if 50% or more vegetation has been lost Check Landscaping plan for guidance (if available) Work Order # _____

Component No. Component Name	For Inspector		For Maintenance Crew
	Inspection Item and Inspection Item No.	Result	Preventative / Corrective Maintenance Actions
	2	Overgrown vegetation	Y__ N__ Mow/trim the vegetation Work Order # _____
	3	Tree growth in the basin	Y__ N__ Clear, trim, or prune the trees according to the original Vegetation or Landscaping Plan Inspect to determine if the tree roots caused any structural damage Work Order # _____
Note:			

Component No. Component Name	For Inspector		For Maintenance Crew
	Inspection Item and Inspection Item No.	Result	Preventative / Corrective Maintenance Actions
Basin Embankment and Side Slopes	1	Signs of erosion, soil slide or bulges, seeps and wet spots, loss of vegetation, or erosion on the basin slope	Y___ N___ Check for excessive overland runoff flow through the embankment. Check for any sink hole development Direct the overland runoff to the forebay or pretreatment area Restabilize the bank Work Order # _____
	1	Trash or debris accumulation more than 20%	Y___ N___ Clean and remove Determine source of trash and address to reduce future maintenance costs or basin failure
Outlet	2	Trash rack is damaged or rusted greater than 50% Trash rack is bent, loose, or missing parts	Y___ N___ Repair or replace trash rack Work Order # _____
	3	Outlet components (e.g., orifice plates or weir plate) skewed, misaligned, or missing	Y___ N___ Repair or replace component Work Order # _____
	4	Discharge pipe apron is eroded or scoured	Y___ N___ Restabilize the discharge riprap apron Work Order # _____
	5	Standing water is present in the outlet structure longer than 72 hours	Y___ N___ Pump out the standing water Work Order # _____

Component No. Component Name	For Inspector		For Maintenance Crew
	Inspection Item and Inspection Item No.	Result	Preventative / Corrective Maintenance Actions
Note:			
Emergency Spillway	1	Trees or excessive vegetation present	Y__ N__ Remove trees and roots, and restore berms if necessary Work Order #_____
	2	Damaged structure	Y__ N__ Repair Work Order #_____
Miscellaneous (if applicable)	1	Fence: broken or eroded parts	Y__ N__ Repair or replace Work Order #_____
	2	Gate: missing gate or lock	Y__ N__ Repair or replace Work Order #_____
	3	Sign/plate: tiled, missing, or faded	Y__ N__ Repair or replace Work Order #_____
	4	Excessive or overgrown vegetation blocking access to the basin	Y__ N__ Clear, trim, or prune the vegetation to allow access for inspection and maintenance Work Order #_____

	For Inspector		For Maintenance Crew
Component No. Component Name	Inspection Item and Inspection Item No.	Result	Preventative / Corrective Maintenance Actions
Note:			

Follow Up Items (Component No. / Inspection Item No.):

Inspector Name

Signature

Date

Inspector: _____

Date: _____

CATCH BASIN INSPECTION FORM

Catch Basin I.D.		Final Discharge from Structure? Yes ☐ No ☐ If Yes, Discharge to Outfall No: _	
Catch Basin Label:	Stencil ☐ Ground Inset ☐ Sign ☐ None ☐ Other_		
Basin Material:	Concrete ☐ Corrugated metal ☐ Stone ☐ Brick ☐ Other: ☐	Catch Basin Condition:	Good ☐ Poor ☐ Fair ☐ Crumbling ☐
Pipe Material:	Concrete ☐ HDPE ☐ PVC ☐ Clay Tile ☐ Other: ☐	Pipe Measurements:	Inlet Dia. (in): d= _ Outlet Dia. (in): D= _
Required Maintenance/ Problems (check all that apply): ☐ Tree Work Required ☐ New Grate is Required ☐ Pipe is Blocked ☐ Frame Maintenance is Required ☐ Remove Accumulated Sediment ☐ Pipe Maintenance is Required ☐ Basin Undermined or Bypassed ☐ Cannot Remove Cover ☐ Ditch Work ☐ Corrosion at Structure ☐ Erosion Around Structure ☐ Remove Trash & Debris ☐ Need Cement Around Grate Other: _ _			
Catch Basin Grate Type :	Sediment Buildup Depth :	Description of Flow:	Street Name/ Structure Location:
Bar: ☐ Cascade: ☐ Other: _ Properly Aligned: Yes ☐ No ☐	0-6 (in): _ 6-12(in): _ 12-18 (in): _ 18-24 (in): _ 24 + (in): _	Heavy ☐ Moderate ☐ Slight ☐ Trickling ☐	
*If the outlet is submerged check yes and indicate approximate height of water above the outlet invert. h above invert (in):		Yes ☐	No ☐
☐ Flow ☐ Standing Water (check one or both)	Observations: Color: _____ Odor: _____	Circle those present:	
Weather Conditions :	Dry > 24 hours ☐ Wet ☐	Foam	Oil Sheen
Sample of Screenings Collected for Analysis? Yes ☐ No ☐		Sanitary Waste	Bacterial Sheen
Comments:		Orange Staining	Floatables
		Excessive sediment	Pet Waste
		Other: _	Optical Enhancers

artistic conception

Pool Studio















Long Term Operation and Maintenance Manual: 29 LITTLEWORTH ROAD

The owner shall be responsible for continued inspection and maintenance requirements

The project manager of the construction company responsible for installation will implement the required reporting, inspections, and maintenance activities.

Littleworth Maintenance plan

Installation of all new plants or replacement plants shall be planted during the growing season from April to October.

Plants shall be planted in accordance with the Landscape Notes on the planting plan.

All plants shall be watered 2x per week during the first growing season. Watering shall saturate the soil around the root ball. The proper use and regular refilling of 'Gator' bags is acceptable. Aged and organic compost mulch shall be used to a 2" depth shall be maintained around root ball. Do not stack mulch in mounds deeper than 2".

Planting beds shall be kept free of weeds on a biweekly schedule.

Bed edges shall be maintained to keep lawn mowers from damaging trees and shrubs.

Lawn areas shall be mowed on a weekly schedule.

Broken or dead limbs of all plant materials shall be removed close to trunk, but not damaging trunk of plant with clean sharp shears.

Severely injured, diseased, or dead plant material shall be replaced in kind in perpetuity.

Aged organic compost mulch is preferred, but an owner may use a low phosphorous and slow release nitrogen organic fertilizer as needed.

If ownership of a site is conveyed to a new property owner, the new owner shall be responsible for maintaining all landscaping in accordance with the approved final landscaping plan.

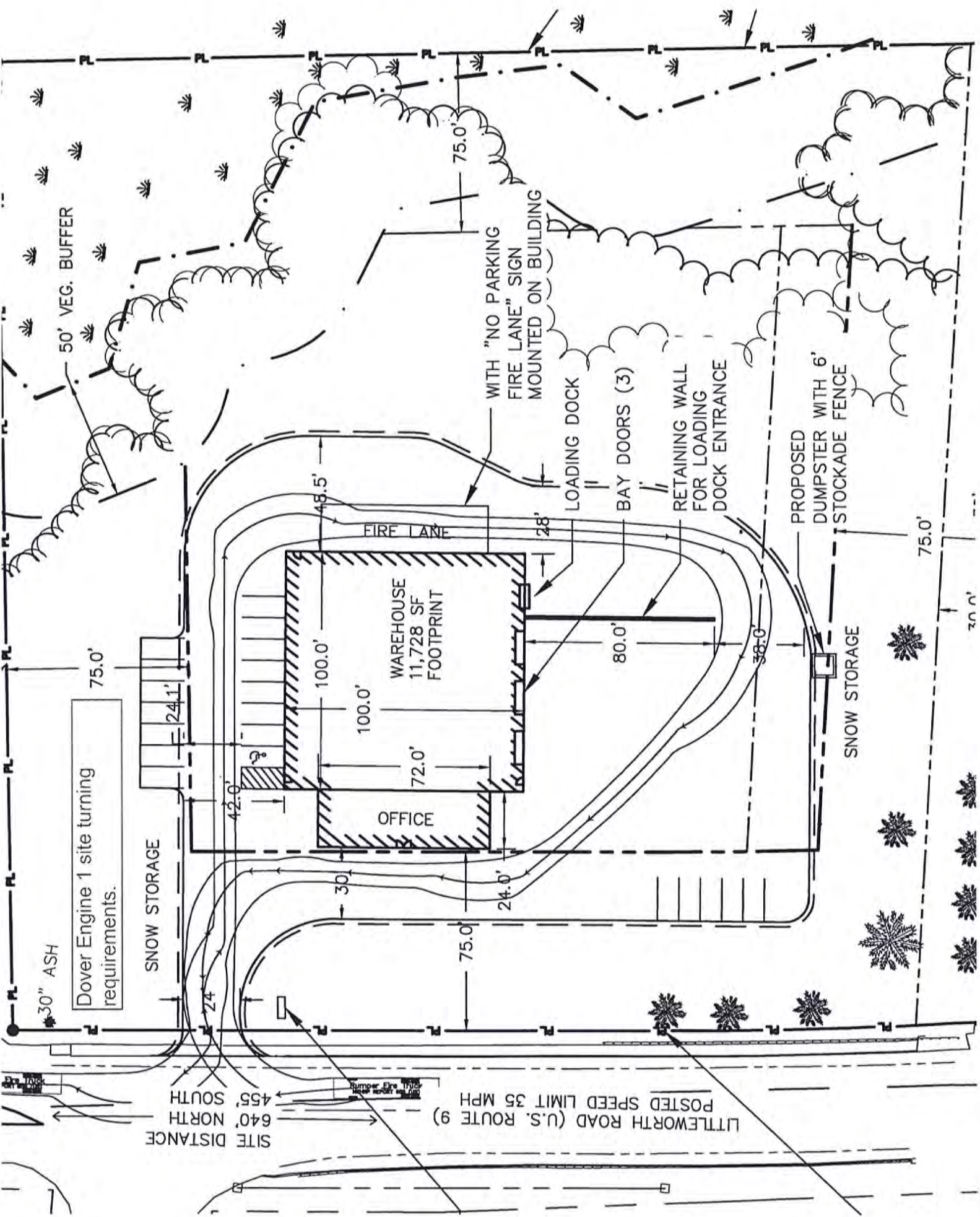
- (i) Snow and ice removal shall be performed by a contractor certified by the "Green SnoPro" program, or approved equivalent, following BEST MANAGEMENT PRACTICES for the application of deicing materials.
- a. Deicing log to track amount and type of deicing material applied.
- (ii) See Stormwater Runoff Plan by Attar Engineering for the locations of all STORMWATER practices to be inspected and maintained.
- (iii) Inspection and maintenance log to be submitted to the City of Dover Community Services Department on an annual basis. Documents shall be submitted no later than December 15th of each year.
- (iv) The owner of record shall record at the Registry of Deeds documentation sufficient to provide notice to all persons that may acquire any property subject to the requirements and responsibilities described in the approved STORMWATER Management Plan. The notice shall comply with the applicable requirements for recording contained in RSA 477 and 478. The notice need not set forth the requirements at length, so long as it is sufficient to provide notice to prospective purchasers to the requirements for maintenance and reporting.

Operation and Maintenance Manual Inspection Checklist

Project Name _29 LITTLEWORTH ROAD_____

Date _____

			MAINTENANCE A (EXCELLENT)	MAINTENANCE B (GOOD)	MAINTENANCE C (MODERATE)	MAINTENANCE D (LOW)
	ITEM	FREQUENCY				
AESTHETICS + HEALTH (VEGETATION)	PLANT HEALTH	MONTHLY	AT LEAST 90% OF PLANTED VEGETATION IS HEALTHY, DENSE, AND ATTRACTIVE	AT LEAST 75% OF PLANTED VEGETATION IS HEALTHY WITH A GENERALLY GOOD APPEARANCE	BETWEEN 40-75% OF PLANTED VEGETATION IS HEALTHY WITH A GENERALLY GOOD APPEARANCE	LESS THAN 40% OF PLANTED VEGETATION IS HEALTHY WITH A GENERALLY GOOD APPEARANCE
	WEEDING	BIWEEKLY	NO WEEDS ARE PRESENT	LESS THAN 10% OF VEGETATION ARE WEEDS	LESS THAN 25% OF VEGETATION ARE WEEDS	MORE THAN 25% OF VEGETATION ARE WEEDS
		MONTHLY	ZERO TOLERANCE FOR NOXIOUS WEEDS	GOAL OF ZERO TOLERANCES FOR NOXIOUS WEEDS	CONTROL NOXIOUS WEEDS	CONTROL NOXIOUS WEEDS
	EDGING	MONTHLY	CLEAN, DISTINCT EDGES	SLIGHTLY LOOSE EDGES	LOOSE EDGES	NO EDGES
	MULCH	EVERY OTHER MONTH	MULCH COVERS 100% OF PANTING BED TO 2" DEEP	MULCH COVERS AT LEAST 90% OF PANTING BED TO 2" DEEP	MULCH COVERS AT LEAST 60% OF PANTING BED TO 2" DEEP	MULCH COVERS LESS THAN 60% OF PANTING BED TO 2" DEEP
	LANDSCAPE BEDS	EVERY OTHER MONTH	NO BARE SPOTS	LESS THAN 10% BARE SPOTS	LESS THAN 40% BARE SPOTS	MORE THAN 40% BARE SPOTS
	LACK OF EROSION	EVERY OTHER MONTH	NO EVIDENCE OF EROSION	A FEW AREAS OF EROSION	SOME AREAS OF EROSION	SUBSTANTIAL EROSION
	MAINTENANCE + LAWN	BIWEEKLY	OWNER IS FULLY MAINTAINING	OWNER IS PROVIDING SOME MAINTENANCE	OWNER IS PROVIDING LOW LEVEL OF MAINTENANCE	NO MAINTENANCE



LITTLEWORTH ROAD (U.S. ROUTE 9)
POSTED SPEED LIMIT 35 MPH
SITE DISTANCE
640' NORTH
455' SOUTH

Dover Engine 1 site turning requirements.

WAREHOUSE
11,728 SF
FOOTPRINT

OFFICE

WITH "NO PARKING
FIRE LANE" SIGN
MOUNTED ON BUILDING

LOADING DOCK

BAY DOORS (3)

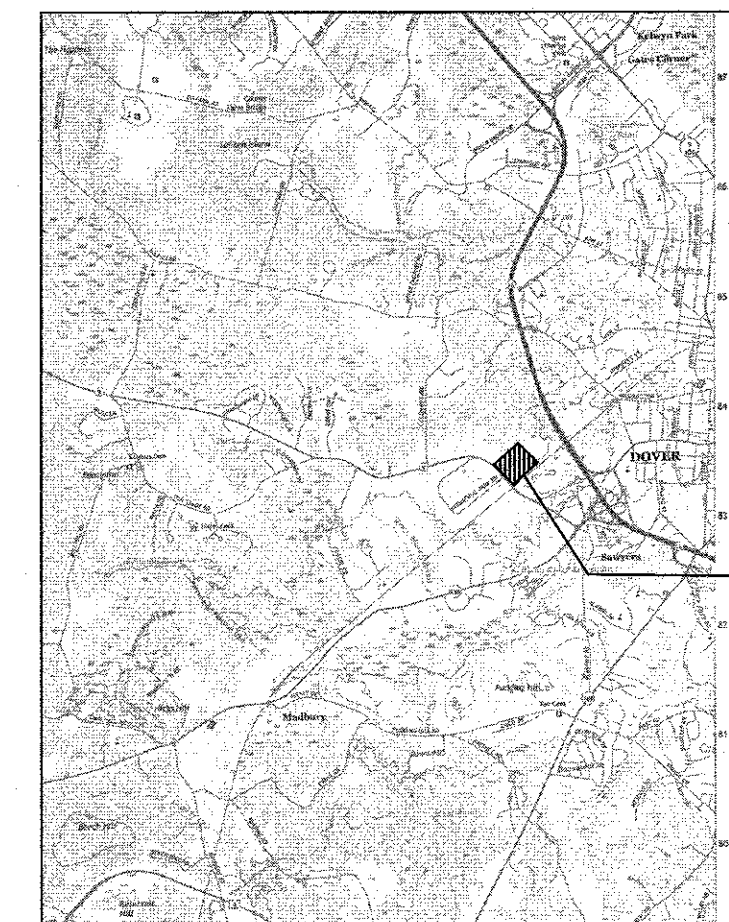
RETAINING WALL
FOR LOADING
DOCK ENTRANCE

PROPOSED
DUMPSTER WITH 6'
STOCKADE FENCE

SNOW STORAGE

50' VEG. BUFFER

30" ASH



LOCATION MAP NTS

GENERAL NOTES

- 1.) THE INTENT OF THIS SITE PLAN IS TO PROPOSE A NEW OFFICE AND WAREHOUSE FACILITY LOCATED AT 29 LITTLEWORTH ROAD IN DOVER, NH.
- 2.) CURRENT OWNER IS 29 LITTLEWORTH ROAD LLC, C/O NORTHERN POOL & SPA. 291 HAROLD DOW HIGHWAY, ELIOT, ME 03903.
- 3.) THE PARCEL IS 3.99 ACRES (173,843 SF), AND IS LOCATED IN THE ASSEMBLY AND OFFICE (I-4) DISTRICT. IT IS IDENTIFIED AS TAX ASSESSOR LOT G-6-0-0. SEE ALSO REFERENCE (1).

GROSS LOT AREA: 3.99- 0.35 (WETLANDS)= 3.63 AC.

*UNSUITABLE SOILS ARE WETLANDS, POORLY DRAINED AND VERY POORLY DRAINED SOILS.

- 4.) TITLE REFERENCE FOR THE PROJECT PARCEL IS THE STRAFFORD COUNTY REGISTRY OF DEEDS BOOK NO. 4537 PAGE NO. 151 AND BOOK BOOK NO. 4538 PAGE NO. 447.
- 5.) 30' WIDE UTILITY EASEMENT EXISTS AT THE SOUTHERN END OF THE PROPERTY (NOTED ON PLAN). THE WETLAND AND THE ASSOCIATED 50' BUFFER ON THE EASTERN EDGE OF THE PROPERTY IS ALSO NOTED.

6.) ZONING DISTRICT I-4			
	REQUIRED	PROVIDED	
MIN. LOT AREA	5 AC	3.99 AC	
MIN. STREET FRONTAGE	400'	407'	
MIN. FRONT SETBACK	75'	75'	
MIN. SIDE SETBACK	75'	75'	
MIN. REAR SETBACK	75'	75'	
MAX. BLDG. HEIGHT	40'	34'	
MAX. COVERAGE	33% = 57,355 S.F.	51,488 S.F.	

- 7.) ACCORDING TO THE FEDERAL EMERGENCY FLOOD MAPS PANEL 33017C0310E, EFFECTIVE DATE 9/30/2015, THE PROPERTY DOES NOT LIE WITHIN A FLOOD ZONE.

- 8.) WETLANDS WERE IDENTIFIED BY KENNETH A. WOOD, CWS(N.H. 00187), ATTAR ENGINEERING, INC., ON APRIL 26, 2018, AND MAPPED BY ATTAR ENGINEERING, INC.

9.) PARKING MAXIMUM			
UNIT TYPE	REQUIREMENT	SQUARE FEET	SPACES
RETAIL	1 SPACE/275 SF	1,728 SF	7
INDUSTRIAL	1 SPACE/800 SF	10,000 SF	13
TOTAL SPACES = 20 WITH 20 PROVIDED(1 ADA)			

- 10.) AS-BUILT PLANS OF THE SITE SHALL BE SUBMITTED ON A REPRODUCIBLE MYLAR MEDIUM AND IN A DIGITAL DXF FORMAT ON DISK TO THE CITY OF DOVER ENGINEER'S OFFICE UPON COMPLETION OF PROJECT. AS-BUILT PLANS SHALL BE PREPARED AND CERTIFIED CORRECT BY A L.L.S. OR P.E.

- 11.) EXTERIOR LIGHTING SHALL BE CUT-OFF TYPE FIXTURES PER CHAPTER 149-14-E AND SHALL PROVIDE LIGHTING DIRECTED ON-SITE ONLY.

- 12.) TOPOGRAPHY PROVIDED BY NEW HAMPSHIRE LIDAR (GRANIT). HORIZONTAL DATUM IS NAD83 NH STATEPLANE FEET.

- 13.) FIRE DEPARTMENT CONNECTION (FDC) SHALL BE LOCATED ON THE STREET SIDE OF THE BUILDING PER NFPA.

- 14.) ALL ON-SITE UTILITIES SHALL BE INSTALLED UNDERGROUND.

- 15.) THE SUBJECT PARCEL IS SERVED BY MUNICIPAL WATER AND A PRIVATE, ON-SITE WASTEWATER DISPOSAL SYSTEM.

- 16.) ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO APPLICABLE CITY AND STATE CODES.

INDEX OF SHEETS

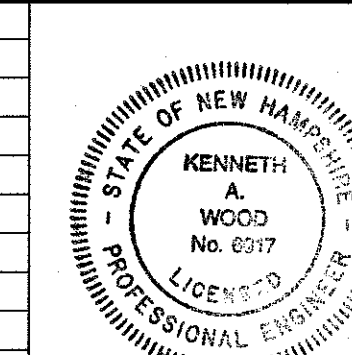
- 1.1 EXISTING CONDITIONS PLAN
- 1.2 SITE PLAN
- 2.1 GRADING AND UTILITY PLAN
- 3.1 ROAD PLAN AND PROFILE
- 4.1 SITE DETAILS
- 4.2 SITE DETAILS
- 4.3 SITE DETAILS
- 4.4 SITE DETAILS
- 6.1 LANDSCAPING PLAN
- 8.1 LIGHTING PLAN
- 8.2 NEIGHBORHOOD PLAN
- A01 ARCHITECTURAL ELEVATIONS
- A02 ARCHITECTURAL FLOOR PLANS

- 17.) BACKFLOW PREVENTORS SHALL BE PROVIDED FOR DOMESTIC WATER LINES.
- 18.) ALL EROSION CONTROL NOTES SHALL INCLUDE PROVISIONS FOR CONSTRUCTION SEQUENCING, TEMPORARY EROSION CONTROL MEASURES, AND PERMANENT STANDARDS SUCH AS LOAM SPREAD RATE FOR DISTURBED AREAS, RATES OF LIME, TYPE AND RATES FOR FERTILIZER, AND SEED AND MULCH MIXTURE WITH RATES OF APPLICATION.
- 19.) THE LIMITS OF CONSTRUCTION DISTURBANCE THAT ARE LOCATED IN OR WITHIN THE 50 FT. OF CONSERVATION AND WETLAND DISTRICTS SHALL BE STAKED, FLAGGED AND CLEARLY IDENTIFIED PRIOR TO THE COMMENCEMENT OF SITE WORK.
- 20.) ALL TREATMENT SWALES TO BE CONSTRUCTED SHALL HAVE SOD BOTTOMS.
- 21.) A LETTER OF CREDIT FOR THE COST OF REVEGETATING ALL DISTURBED AREAS ON THE SITE SHALL BE SUBMITTED PRIOR TO ANY EARTH DISTURBING ACTIVITY OCCURS.
- 22.) A PRE-CONSTRUCTION CONFERENCE WITH THE DEVELOPER, THE DESIGN ENGINEER, THE EARTHWORK CONTRACTOR AND THE CITY ENGINEER SHALL OCCUR PRIOR TO ANY EARTH DISTURBING ACTIVITY.
- 23.) BUILDING ADDRESSES SHALL BE ASSIGNED BY THE BUILDING OFFICIAL AT THE TIME OF ISSUANCE OF A BUILDING PERMIT.
- 24.) THE PROPOSED USE FOR THE SITE (STRUCTURE) IS OFFICE/WAREHOUSE.
- 25.) THE FOLLOWING FEDERAL AND STATE PERMITS ARE REQUIRED FOR THE SUBJECT PROPERTY: NHDOT DRIVEWAY PERMIT, NHDES ISDS PERMIT.
- 26.) NO VARIANCES OR SPECIAL EXCEPTIONS HAVE BEEN GRANTED AT THE TIME OF THIS PLAN SUBMISSION. PREVIOUS VARIANCES INCLUDE H67-18 AND Z97-14 (USED AUTOMOBILE SALES).
- 27.) SIGNAGE WILL BE POSTED REGARDING NOISE AND VISIBILITY WILL BE INSTALLED AND USED DURING ANY EARTHWORK, TO THE SATISFACTION OF THE CITY ENGINEER.
- 28.) WASTE REMOVAL TO BE PROVIDED BY DUMPSTER AND CONTRACTED HAULER.
- 29.) ACCESSIBLE ROUTE FROM PARKING SPACE TO ENTRANCE TO REMAIN FREE AND CLEAR OF OBSTRUCTION. ROUTE IS IN COMPLIANCE WITH N.H. RSA 155-A.5
- 30.) FREE STANDING SIGN SHALL NOT EXCEED 100 S.F., MAX HEIGHT OF 30' AND MEET SECTION 170-32, ARTICLE X OF ZONING, DOVER CODE.

REFERENCES

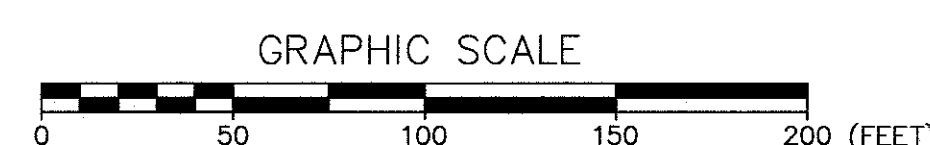
- 1.) "S.E.N.H. INDUSTRIAL PARK 1 ROGERS ROAD DOVER, N.H." OCTOBER 1966, PREPARED BY G.L. DAVIS AND ASSOCIATES.

MAP BLOCK NO. G-6-0-0



SITE PLAN 29 LITTLEWORTH RD DOVER, NH 03820	
FOR: 29 LITTLEWORTH ROAD LLC PO BOX 694 DOVER, NH 03820	
ATTAR ENGINEERING, INC. CIVIL • STRUCTURAL • MARINE 1284 STATE ROAD - ELIOT, MAINE 03903 PHONE: (207)439-6023 FAX: (207)439-2128	
SCALE: 1" = 50'	APPROVED BY: <i>[Signature]</i> DATE: 3/5/2019
PLANNING FILE NO: P19-26	JOB NO: C147-19
FILE: LITTLEWORTH BASE.DWG	SHEET: 1.2

TECHNICAL REVIEW COMMENTS		
NO.	DESCRIPTION	DATE
REVISIONS		
A		4/18/2019



[Signature]
PROPERTY OWNER SIGNATURE/DATE

H-28-1-0
BOOK 4454, PAGE 149
RICHARD W. KAY
45 LITTLEWORTH ROAD
DOVER, NH 03820
(25 LITTLEWORTH ROAD)

H-28-0-0
BOOK 4454, PAGE 148
RICHARD W. KAY
45 LITTLEWORTH ROAD
DOVER, NH 03820
(21 LITTLEWORTH ROAD)

B&M RAILROADS
H-65-A-0
IRON HORSE PARK, HIGH ST.
N. BILLERICA, MA 01862

G-6-C-0
BOOK 4116, PAGE 66
N/F STOREMASTER FUNDING, LLC
C/O PAGE INDUSTRIES
67 FAULKNER ST.
NORTH BILLERICA, MA 01862
(29-1/2 LITTLEWORTH ROAD)

G-6-D-0
BOOK 1911, PAGE 378
N/F HADLEY S. & SHANE A.
4 COTTAGE LANE
ROLLINSFORD, NH 03869
(33 LITTLEWORTH ROAD)

ZONE R-20

G-6-B-0
BOOK 1589, PAGE 686
WILLIS E. HUTCHINGS
184 W HIGH ST
SOMERSWORTH, NH 03878
(35 LITTLEWORTH ROAD)

G-4-A-1
BOOK 3522, PAGE 897
N/F BEARINGS, INC
C/O PT COUNSELORS
PO BOX 3075
MCKINNEY, TX 75070
(1 INDUSTRIAL PARK ROAD)

G-4-G-2
BOOK 3581, PAGE 972
LITTLEWORTH/INDUSTRIAL PARK PROPERTIES LLC
PO BOX 118
DOVER, NH 03821-0018
(36 LITTLEWORTH ROAD)

SIGN IN STONE OR MASONRY
PLANTER. SEE GENERAL NOTE 30.

S6°30'22"E
407.78

S7°40'49"E
437.57

N86°46'36"E
411.75

RAILROAD BED

ZONE I-4
ZONE R-20

ZONE I-2

LEGEND

PROPERTY LINE	---
PRP. PAVEMENT	=====
EXT. PAVEMENT	-----
PRP. GRAVEL	-----
ABUTTING PROP. LINE	-----
ZONING BOUNDARY	-----
SETBACK	-----
SOIL TYPE BOUNDARY	-----
WETLAND BOUNDARY	-----
WETLAND SETBACK	-----
PRP. BUILDING	

GENERAL NOTES

1. ALL PIPES, VALVES, FITTINGS, AND CONNECTIONS SHALL MEET CURRENT DOVER WATER DEPARTMENT STANDARDS.

2. ALL WATER SERVICES TO BE EQUIPPED WITH CURB STOPS

3. ALL STORM DRAINS TO BE ADS N-12 (PE) OR APPROVED EQUAL

4. A MINIMUM OF 5.0' OF COVER SHALL BE MAINTAINED OVER ALL WATER LINES

5. THE ELECTRICAL POWER COMPANY WILL PREPARE THE ELECTRICAL PLAN FOR CONSTRUCTION. ALL ELECTRICAL, TELEPHONE, AND CABLE SERVICES WILL BE UNDERGROUND.

6. NEW WATER LINES SHALL BE TESTED IN ACCORDANCE WITH DISTRICT REQUIREMENTS.

7. EACH E & S CELL REPRESENTS A LIMITED AREA TO BE CONSTRUCTED WITH ALL EROSION & SEDIMENT CONTROL MEASURES IN PLACE. ALL "CELLS" SHALL BE PROTECTED BY EROSION & SEDIMENT CONTROL BEST MANAGEMENT PRACTICES AS REQUIRED BY THE E & S PLAN. EROSION & SEDIMENT CONTROL SHALL BE MAINTAINED FOR EACH CELL THROUGH-OUT THE COMPLETION OF THE ENTIRE PROJECT. THE CELLS SHALL BE ESTABLISHED IN THERE NUMERICAL ORDER.

8. ELECTRICAL SERVICE TO BE COORDINATED WITH EVERSOURCE



STABILIZED CONSTRUCTION ENTRANCE

WATER SERVICE ENTRANCE(SEE DETAIL)
EXTEND EXISTING 1" WATER SERVICE.

PROVIDE CURB STOP

LEVEL
SPREADER
(SEE DETAIL)

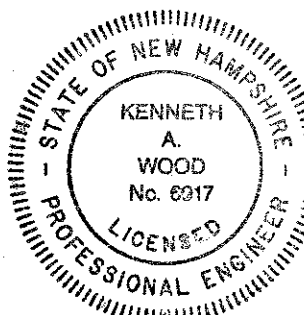
LEGEND

PROPERTY LINE	
LOT BOUNDARY	
PRP. PAVEMENT	
ABUTTING PROP. LINE	
SETBACK	
SOIL TYPE BOUNDARY	
WETLAND BOUNDARY	
WETLAND SETBACK	
EXT. ABUTTER LINE	
EXT. PAVEMENT	
PRP. GRAVEL	
EXT. OVERHEAD ELEC	
EXT. POWER POLE	
PRP. OVERHEAD ELEC	
PRP. CATCH BASIN	
PRP. WATER HYDRANT	
PRP. SILTATION FENCE	
PRP. BUILDING	



A	TECHNICAL REVIEW COMMENTS	4/18/2019
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A	TECHNICAL REVIEW COMMENTS	4/18/2019
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GRADING AND UTILITY PLAN

FOR: 29 LITTLEWORTH ROAD LLC

ATTAR ENGINEERING, INC

CIVIL ♦ STRUCTURAL ♦ MARINE

SCALE:

DATE:
15/12/2010

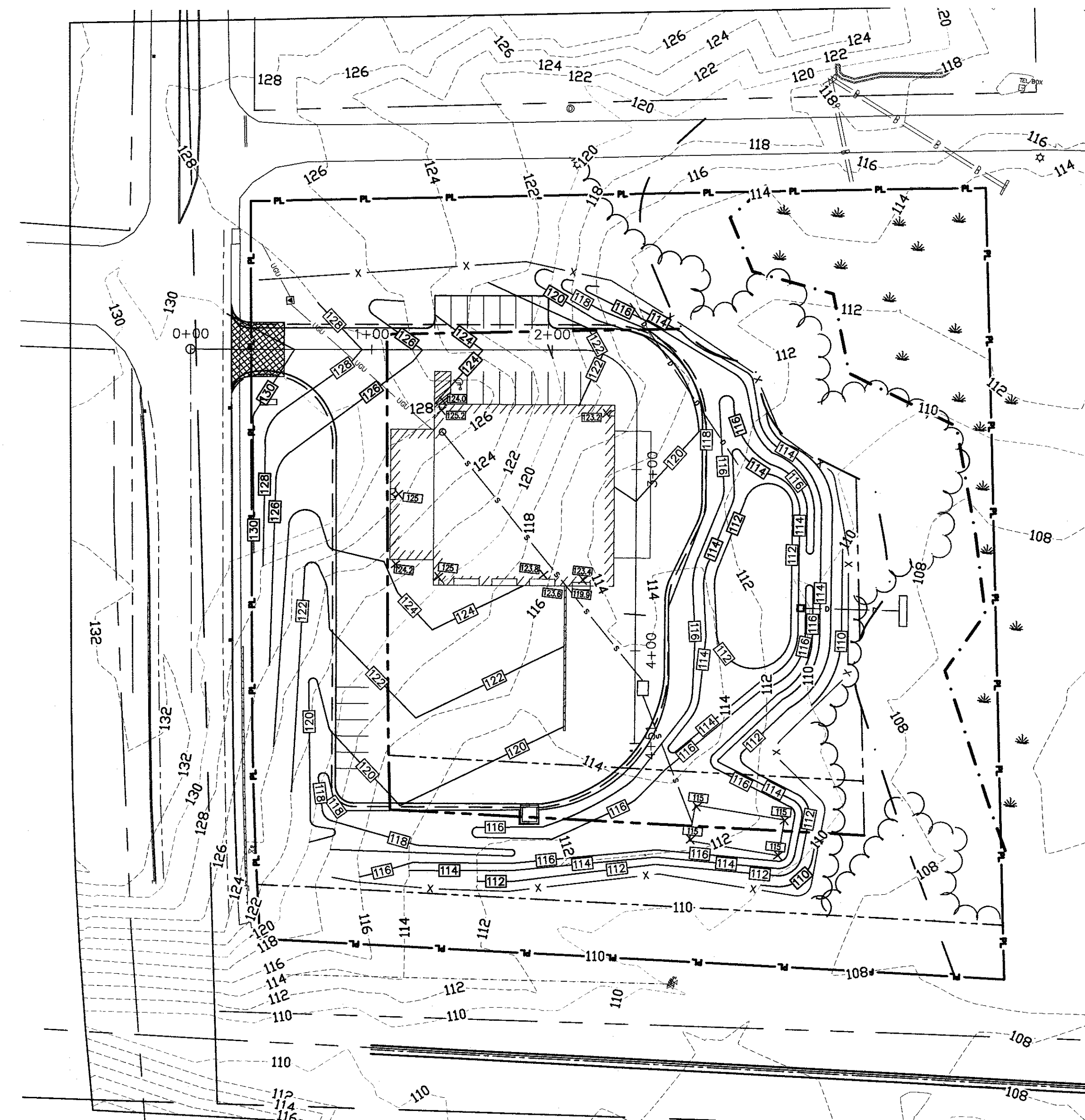
APPROVED BY:

Att. encl. 2

DRAWN BY:

BRN

VISION DATE

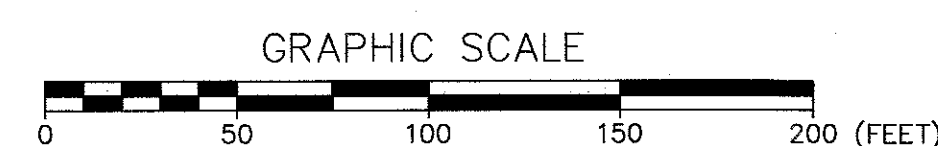
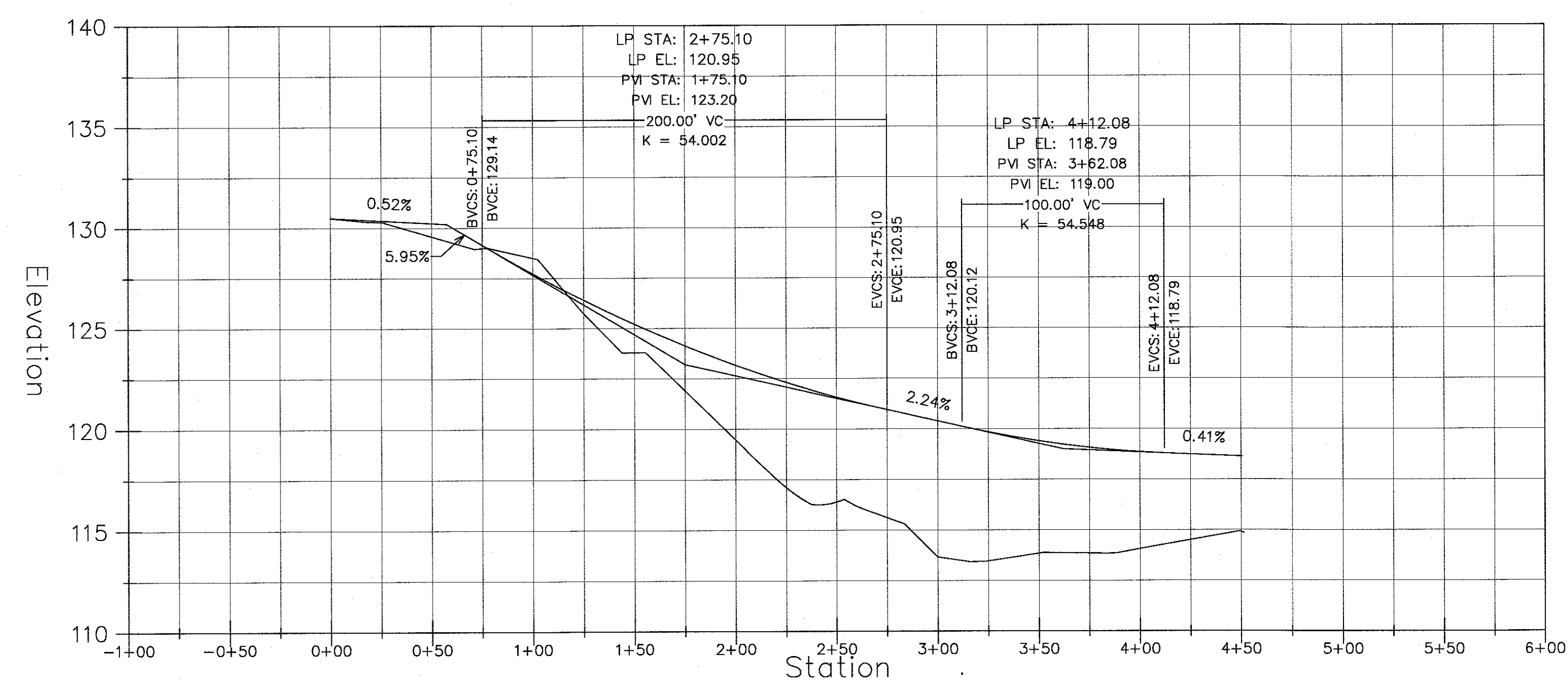


GENERAL NOTES

- 1.) THE TOTAL LENGTH OF THE ENTRANCE IS 451 FEET.

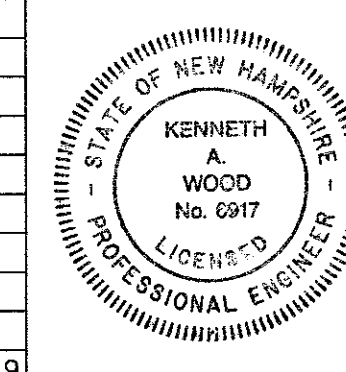
LEGEND

PROPERTY LINE	---
LOT BOUNDARY	---
PRP. PAVEMENT	---
ABUTTING PROP. LINE	---
SETBACK	---
SOIL TYPE BOUNDARY	---
WETLAND BOUNDARY	---
WETLAND SETBACK	---
EXT. ABUTTER LINE	---
EXT. PAVEMENT	---
PRP. GRAVEL	---
EXT. OVERHEAD ELEC	OHU
EXT. POWER POLE	OHU
PRP. OVERHEAD ELEC	OHU
PRP. CATCH BASIN	■
PRP. WATER HYDRANT	✱
PRP. SILTATION FENCE	---
PRP. BUILDING	■



MAP BLOCK NO. C-6-0-0

NO.	DESCRIPTION	DATE
A	TECHNICAL REVIEW COMMENTS	4/18/2019
REVISIONS		



ENTRANCE AND PROFILE 29 LITTLEWORTH RD DOVER, NH 03820		
FOR: 29 LITTLEWORTH ROAD LLC PO BOX 694 DOVER, NH 03820		
ATTAR ENGINEERING, INC. CIVIL ♦ STRUCTURAL ♦ MARINE 1284 STATE ROAD - ELIOT, MAINE 03903 PHONE: (207)439-6023 FAX: (207)439-2128		
SCALE: 1" = 50'	APPROVED BY: 	DRAWN BY: BRN
DATE: 3/5/2019	REVISION DATE: A : 4/18/2019	SHEET: 3.1
PLANNING FILE NO: P19-26 JOB NO: C147-19 FILE: LITTLEWORTH BASE.DWG		

EROSION & SEDIMENTATION CONTROL NOTES

1. SILTATION FENCE OR HAY BALE BARRIERS WILL BE INSTALLED DOWNSLOPE OF ALL STRIPPING OR CONSTRUCTION OPERATIONS. A DOUBLE SILT FENCE BARRIER SHALL BE INSTALLED DOWNSLOPE OF ANY SOIL MATERIAL STOCKPILES. SILT FENCES SHALL BE INSPECTED AFTER EACH RAIN EVENT AND DAILY DURING PROLONGED RAIN. SILT AND SOIL PARTICLES ACCUMULATING BEHIND THE FENCE SHALL BE REMOVED AFTER EACH SIGNIFICANT RAIN EVENT AND IN NO INSTANCE SHOULD ACCUMULATION EXCEED 1/2 THE HEIGHT OF THE FENCE. TORN OR DAMAGED AREAS SHALL BE REPAIRED.
2. TEMPORARY AND PERMANENT VEGETATION AND MULCHING IS AN INTEGRAL COMPONENT OF THE EROSION AND SEDIMENTATION CONTROL PLAN. ALL AREAS SHALL BE INSPECTED AND MAINTAINED UNTIL THE DESIRED VEGETATIVE COVER IS ESTABLISHED. THESE CONTROL MEASURES ARE ESSENTIAL TO EROSION PREVENTION AND ALSO REDUCE COSTLY REWORK OF GRADED AND SHAPED AREAS.
3. SEEDING, FERTILIZER AND LIME RATES AND TIME OF APPLICATION WILL BE DEPENDENT ON SOIL REQUIREMENTS. TEMPORARY VEGETATION SHALL BE MAINTAINED IN THESE AREAS UNTIL PERMANENT SEEDING IS APPLIED. ADDITIONALLY, EROSION AND SEDIMENTATION MEASURES SHALL BE MAINTAINED UNTIL PERMANENT VEGETATION IS ESTABLISHED.
4. ALL LAWN AREA, OUTER POND SIDE SLOPES AND SWALES SHALL BE PERMANENTLY SEEDED WITH THE FOLLOWING MIXTURE: 20 LB/ACRE CREEPING RED FESCUE, 2 LB/ACRE REDTOP AND 20 LB/ACRE TALL FESCUE FOR A TOTAL OF 42 LB/ACRE. FERTILIZER AND LIME RATES SHALL BE DEPENDENT ON SOIL TESTING. IN THE ABSENCE OF SOIL TESTS, FERTILIZE WITH 10-20-20 (N-P205-K2O1) AT 800 LB/ACRE AND LIME AT 3 TONS/ACRE. MULCH WITH HAY AT 70-90 LB/1000 S.F. 4" OF LOAM SHALL BE APPLIED PRIOR TO SEEDING.
5. POND BOTTOMS AND INNER POND SIDESLOPES SHALL BE PERMANENTLY SEEDED WITH THE FOLLOWING MIXTURE: 20 LB/ACRE CREEPING RED FESCUE, 8 LB/ACRE BIRDSFOOT TREFOIL AND 20 LB/ACRE TALL FESCUE FOR A TOTAL OF 48 LB/ACRE. SEE THE ABOVE NOTE FOR FERTILIZER, LIME AND MULCHING RATES.
6. TEMPORARY VEGETATION OF ALL DISTURBED AREAS, MATERIAL STOCKPILES AND OTHER SUCH AREAS SHALL BE ESTABLISHED BY SEEDING WITH EITHER WINTER RYE AT A RATE OF 112 LB/ACRE OR ANNUAL RYEGRASS AT A RATE OF 40 LB/ACRE. WINTER RYE SHALL BE USED FOR FALL SEEDING AND ANNUAL RYEGRASS FOR SHORT DURATION SEEDING. SEEDING SHALL BE ACCOMPLISHED BEFORE OCTOBER 1.
7. TEMPORARY SEEDING OF DISTURBED AREAS SHALL BE ACCOMPLISHED BEFORE OCTOBER 1. PERMANENT SEEDING SHALL BE ACCOMPLISHED BEFORE SEPTEMBER 15.
8. ALL SEEDED AREAS SHALL BE MULCHED WITH HAY AT A RATE OF 2 BALES (70-90 LB) PER 1000 S.F. OF SEEDED AREA.
9. SLOPES 2:1 OR STEEPER SHALL BE TREATED WITH POLYJUTE OPEN WEAVE GEOTEXTILE (OR EQUIVALENT) AFTER SEEDING. JUTE MATS SHALL BE ANCHORED PER MANUFACTURER'S SPECIFICATIONS.
10. EXCESSIVE DUST CAUSED BY CONSTRUCTION OPERATIONS SHALL BE CONTROLLED BY APPLICATION OF WATER OR CALCIUM CHLORIDE.
11. THE CONTRACTOR MAY OPT TO USE EROSION CONTROL MIX BERM AS A SEDIMENT BARRIER IN LIEU OF SILTATION FENCE OR HAY BALE BARRIERS WITH APPROVAL FROM THE INSPECTING ENGINEER.
12. MINIMIZE DISTURBED AREAS AND PROTECT NATURAL DOWNGRADIENT BUFFER AREAS TO THE EXTENT PRACTICABLE. CONTROL STORMWATER VOLUME AND VELOCITY WITHIN THE SITE TO MINIMIZE SOIL EROSION. MINIMIZE THE DISTURBANCE OF STEEP SLOPES. CONTROL STORMWATER DISCHARGES, INCLUDING BOTH PEAK FLOW RATES AND VOLUME, TO MINIMIZE EROSION AT OUTLETS. THE DISCHARGE MAY NOT RESULT IN EROSION OF ANY OPEN DRAINAGE CHANNELS, SWALES, STREAM CHANNELS OR STREAM BANKS, UPLAND, OR COASTAL OR FRESHWATER WETLANDS OFF THE PROJECT SITE.

EROSION & SED. CONTROL NOTES (CONT.)

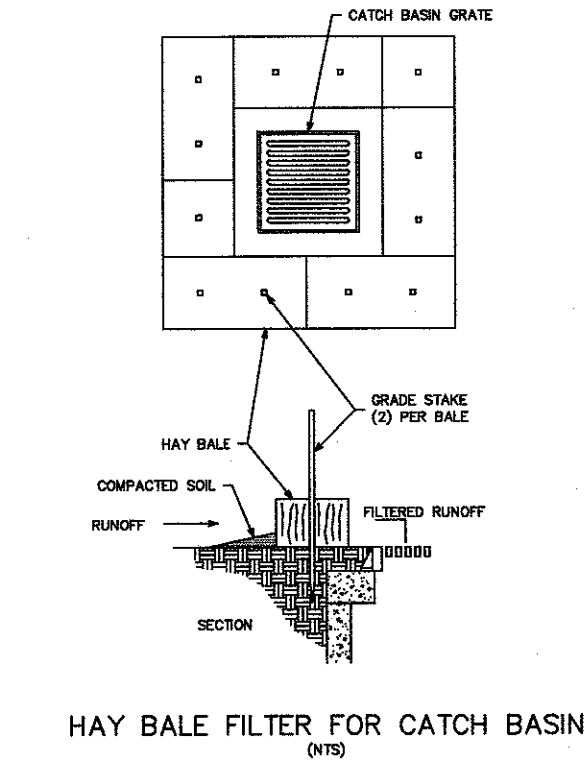
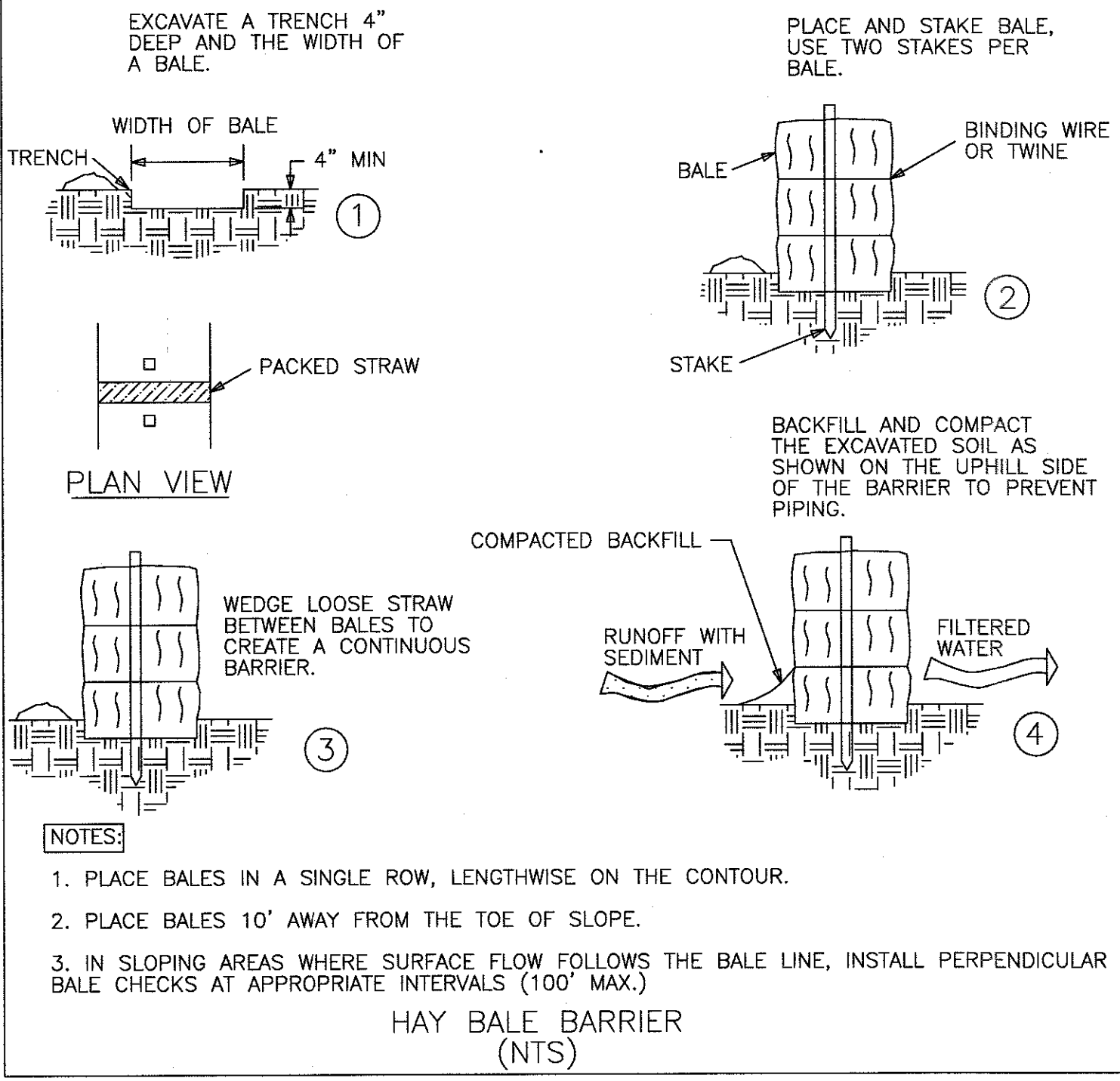
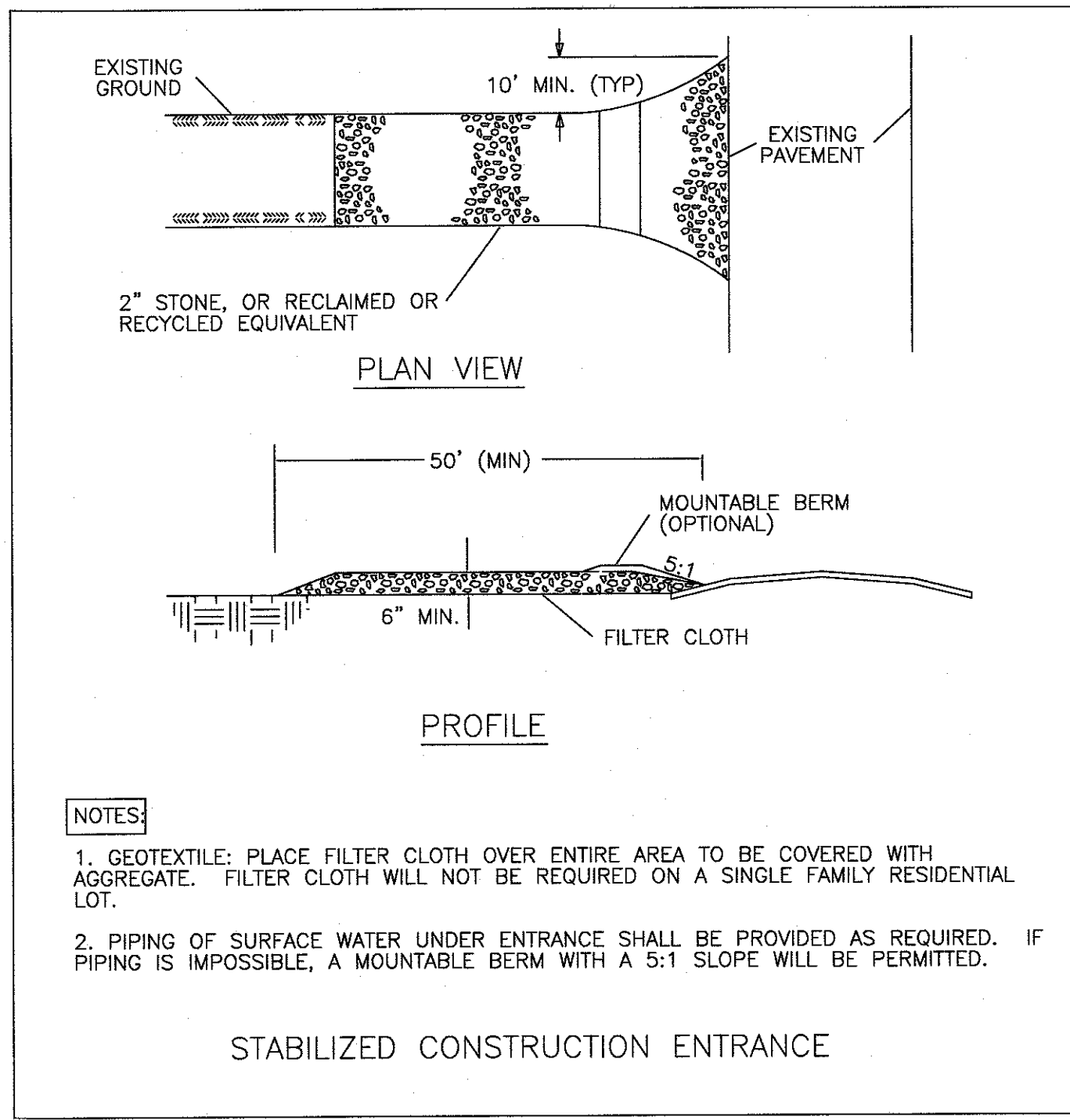
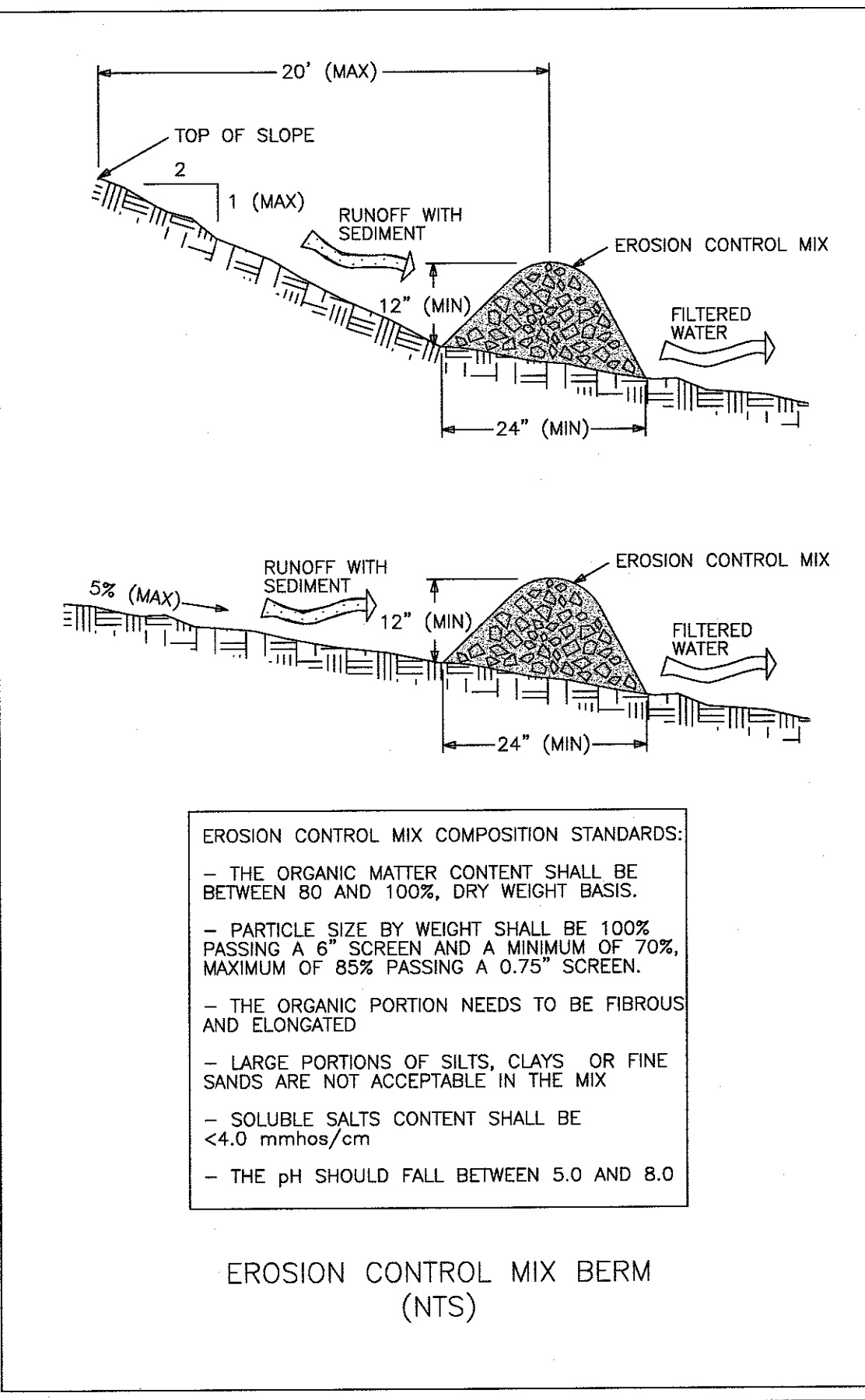
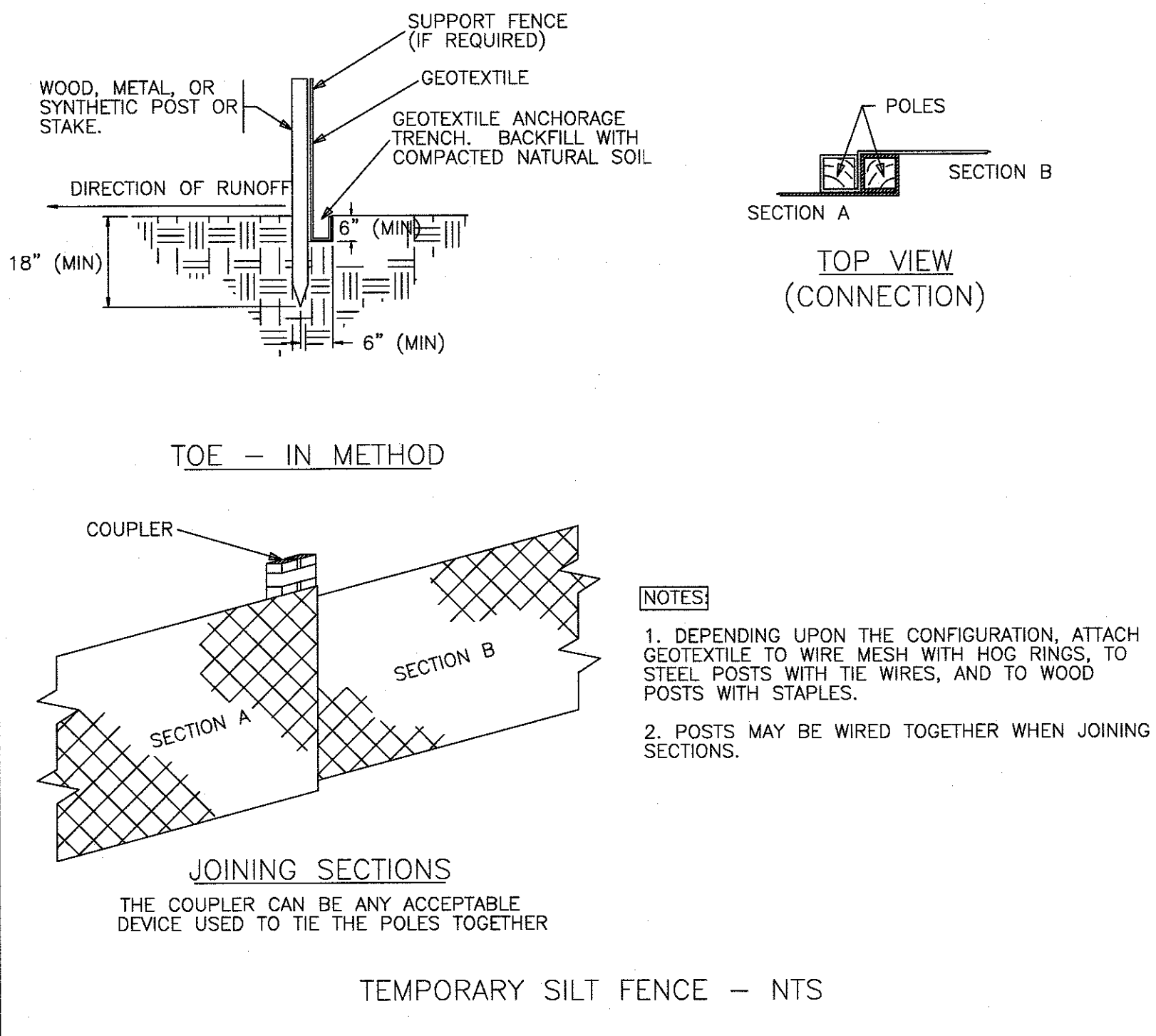
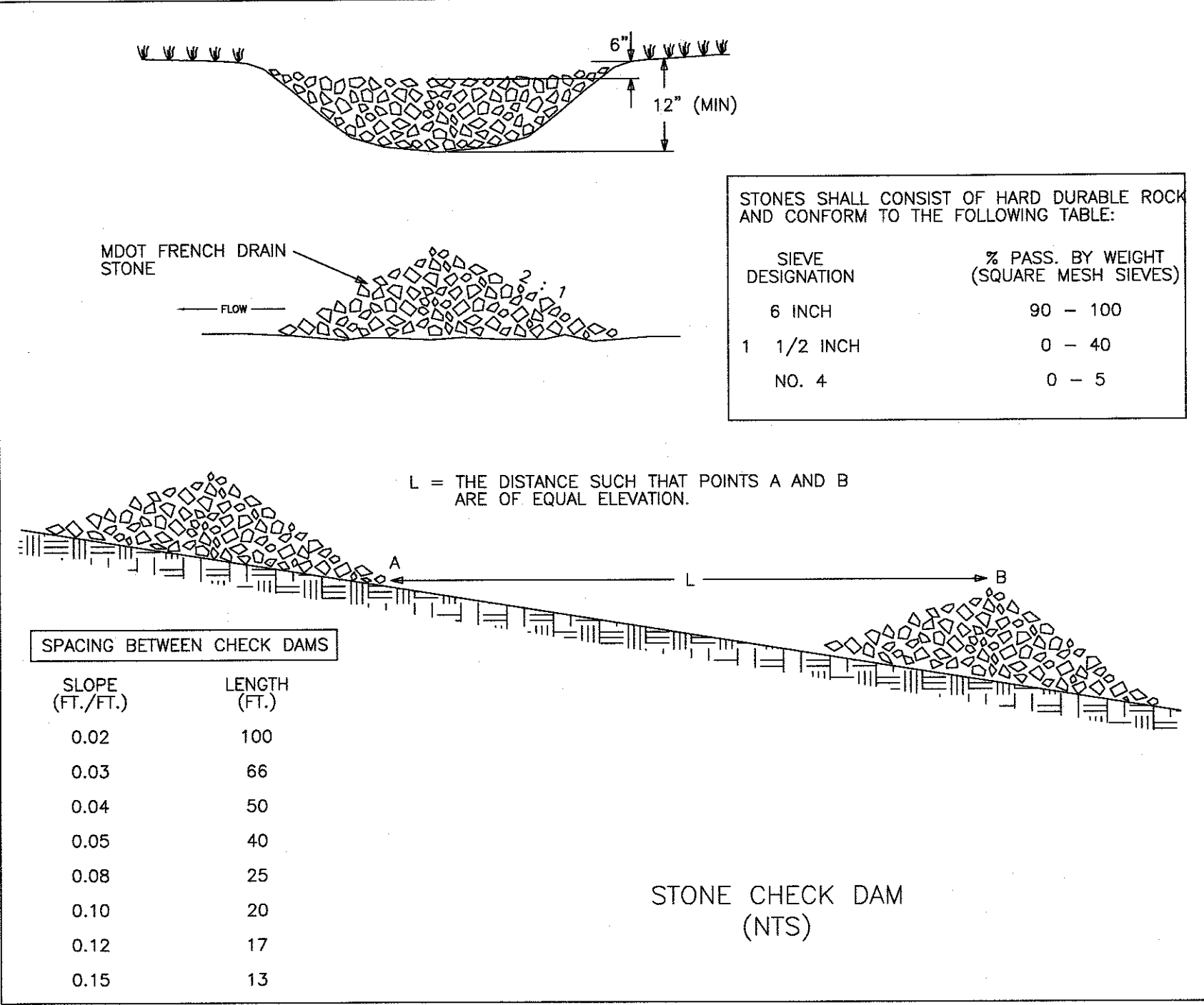
13. WHENEVER PRACTICABLE, NO DISTURBANCE ACTIVITIES SHOULD TAKE PLACE WITHIN 50 FEET OF ANY PROTECTED NATURAL RESOURCE. IF DISTURBANCE ACTIVITIES TAKE PLACE BETWEEN 30 FEET AND 50 FEET OF ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED. IF DISTURBANCE ACTIVITIES TAKE PLACE LESS THAN 30 FEET FROM ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED AND DISTURBED AREAS MUST BE TEMPORARILY OR PERMANENTLY STABILIZED WITHIN 7 DAYS.
14. PRIOR TO CONSTRUCTION, PROPERLY INSTALL SEDIMENT BARRIERS AT THE DOWNGRADIENT EDGE OF ANY AREA TO BE DISTURBED AND ADJACENT TO ANY DRAINAGE CHANNELS WITHIN THE DISTURBED AREA. SEDIMENT BARRIERS SHOULD BE INSTALLED DOWNGRADIENT OF SOIL OR SEDIMENT STOCKPILES AND STORMWATER PREVENTED FROM RUNNING ONTO THE STOCKPILE. MAINTAIN THE SEDIMENT BARRIERS BY REMOVING ACCUMULATED SEDIMENT, OR REMOVING AND REPLACING THE BARRIER, UNTIL THE DISTURBED AREA IS PERMANENTLY STABILIZED. WHERE A DISCHARGE TO A STORM DRAIN INLET OCCURS, IF THE STORM DRAIN CARRIES WATER DIRECTLY TO A SURFACE WATER AND YOU HAVE AUTHORITY TO ACCESS THE STORM DRAIN INLET, YOU MUST INSTALL AND MAINTAIN PROTECTION MEASURES THAT REMOVE SEDIMENT FROM THE DISCHARGE.
15. PRIOR TO CONSTRUCTION, PROPERLY INSTALL A STABILIZED CONSTRUCTION ENTRANCE (SCE) AT ALL POINTS OF EGRESS FROM THE SITE. THE SCE IS A STABILIZED PAD OF AGGREGATE, UNDERLAIN BY A GEOTEXTILE FILTER FABRIC, USED TO PREVENT TRAFFIC FROM TRACKING MATERIAL AWAY FROM THE SITE ONTO PUBLIC ROW'S. MAINTAIN THE SCE UNTIL ALL DISTURBED AREAS ARE STABILIZED.
16. WITHIN 7 DAYS OF THE CESSATION OF CONSTRUCTION ACTIVITIES IN AN AREA THAT WILL NOT BE WORKED FOR MORE THAN 7 DAYS, STABILIZE ANY EXPOSED SOIL WITH MULCH, OR OTHER NON-ERODIBLE COVER. STABILIZE AREAS WITHIN 75 FEET OF A WETLAND OR WATERBODY WITHIN 48 HOURS OF THE INITIAL DISTURBANCE OF THE SOIL OR PRIOR TO ANY STORM EVENT, WHICHEVER COMES FIRST.
17. REMOVE ANY TEMPORARY CONTROL MEASURES, SUCH AS SILTATION FENCE, WITHIN 30 DAYS AFTER PERMANENT STABILIZATION IS ATTAINED. REMOVE ANY ACCUMULATED SEDIMENTS AND STABILIZE.
18. IF THE AREA WILL NOT BE WORKED FOR MORE THAN ONE YEAR OR HAS BEEN BROUGHT TO FINAL GRADE, THEN PERMANENTLY STABILIZE THE AREA WITHIN 7 DAYS BY PLANTING VEGETATION, SEEDING, SOD, OR THROUGH THE USE OF PERMANENT MULCH, OR RIPRAP, OR ROAD SUB-BASE. IF USING VEGETATION FOR STABILIZATION, SELECT THE PROPER VEGETATION FOR THE LIGHT, MOISTURE, AND SOIL CONDITIONS; AMEND AREAS OF DISTURBED SUBSOILS WITH TOPSOIL, COMPOST, OR FERTILIZERS; PROTECT SEEDED AREAS WITH MULCH OR, IF NECESSARY, EROSION CONTROL BLANKETS; AND SCHEDULE SODDING, PLANTING, AND SEEDING SO TO AVOID DIE-OFF FROM SUMMER DROUGHT AND FALL FROSTS. NEWLY SEEDED OR SODDED AREAS MUST BE PROTECTED FROM VEHICLE TRAFFIC, EXCESSIVE PEDESTRIAN TRAFFIC, AND CONCENTRATED RUNOFF UNTIL THE VEGETATION IS WELL-ESTABLISHED WITH 90% COVER BY HEALTHY VEGETATION. IF NECESSARY, AREAS MUST BE REWORKED AND RESTABILIZED IF GERMINATION IS SPARSE, PLANT COVERAGE IS SPOTTY, OR TOPSOIL EROSION IS EVIDENT. ONE OR MORE OF THE FOLLOWING MAY APPLY TO A PARTICULAR SITE.
19. FOR SEEDED AREAS, PERMANENT STABILIZATION MEANS A 90% COVER OF THE DISTURBED AREA WITH MATURE, HEALTHY PLANTS WITH NO EVIDENCE OF WASHING OR RILLING OF THE TOPSOIL.
20. FOR SODDED AREAS, PERMANENT STABILIZATION MEANS THE COMPLETE BINDING OF THE SOD ROOTS INTO THE UNDERLYING SOIL WITH NO SLUMPING OF THE SOD OR DIE-OFF.
21. FOR MULCHED AREAS, PERMANENT MULCHING MEANS TOTAL COVERAGE OF THE EXPOSED AREA WITH AN APPROVED MULCH MATERIAL. EROSION CONTROL MIX MAY BE USED AS MULCH FOR PERMANENT STABILIZATION ACCORDING TO THE APPROVED APPLICATION RATES AND LIMITATIONS.
22. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATE HOUSEKEEPING PRACTICES DURING THE CONSTRUCTION OF THE PROJECT. THESE STANDARDS CAN BE FOUND IN THE FOLLOWING DOCUMENT: MDEP CHAPTER 500 (STORMWATER MANAGEMENT), APPENDIX C, HOUSEKEEPING. HOUSEKEEPING PRACTICES INCLUDE, BUT ARE NOT LIMITED TO, SPILL PREVENTION, GROUNDWATER PROTECTION, FUGITIVE SEDIMENT AND DUST, DEBRIS AND OTHER MATERIALS, EXCAVATION DEWATERING, AUTHORIZED NON-STORMWATER DISCHARGES AND UNAUTHORIZED NON-STORMWATER DISCHARGES.

WINTER CONSTRUCTION NOTES

- NOVEMBER 1 - APRIL 15
1. AN AREA SHALL BE CONSIDERED STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED WITH HAY AT A RATE OF 100 LB/1000 S.F. OR DORMANT SEEDED, MULCHED AND ADEQUATELY ANCHORED BY AN APPROVED ANCHORING TECHNIQUE. IN ALL CASES, MULCH SHALL BE APPLIED SO THAT THE SOIL SURFACE IS NOT VISIBLE THROUGH THE MULCH.
 2. FROM OCTOBER 15 TO APRIL 1, LOAM AND SEED WILL NOT BE REQUIRED. DURING PERIODS OF TEMPERATURES ABOVE FREEZING, DISTURBED AREAS SHALL BE FINE GRADED AND PROTECTED WITH MULCH OR TEMPORARILY SEEDED AND MULCHED UNTIL PERMANENT SEEDING CAN BE APPLIED. AFTER NOVEMBER 1, DISTURBED AREAS MAY BE LOAMED, FINE GRADED AND DORMANT SEEDED AT A RATE 200-300% HIGHER THAN THE SPECIFIED PERMANENT SEEDING RATE. IF CONSTRUCTION CONTINUES DURING FREEZING WEATHER, DISTURBED AREAS SHALL BE GRADED BEFORE FREEZING AND TEMPORARILY STABILIZED WITH MULCH. DISTURBED AREAS SHALL NOT BE LEFT OVER THE WINTER OR FOR ANY OTHER EXTENDED PERIOD OF TIME UNLESS STABILIZED WITH MULCH.
 3. FROM NOVEMBER 1 TO APRIL 15 ALL MULCH SHALL BE ANCHORED BY EITHER PEG LINE, MULCH NETTING, ASPHALT EMULSION CHEMICAL, TRACK OR WOOD CELLULOSE FIBER. MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL DRAINAGE WAYS WITH SLOPES GREATER THAN 3%, SLOPES EXPOSED TO DIRECT WINDS AND FOR SLOPES GREATER THAN 8%. MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL AREAS WITH SLOPES GREATER THAN 15%. AFTER OCTOBER 1, THE SAME APPLIES TO ALL SLOPES GREATER THAN 8%.
 4. SNOW SHALL BE REMOVED FROM AREAS OF SEEDING AND MULCHING PRIOR TO PLACEMENT.
 5. FOR WINTER STABILIZATION, HAY MULCH SHALL BE APPLIED AT TWICE THE STANDARD TEMPORARY STABILIZATION RATE. AT THE END OF EACH CONSTRUCTION DAY, AREAS THAT HAVE BEEN BROUGHT TO FINAL GRADE SHALL BE STABILIZED. MULCH SHALL NOT BE SPREAD ON TOP OF SNOW.
 6. ALL AREAS WITHIN 75 FEET OF A PROTECTED NATURAL RESOURCE SHALL BE PROTECTED WITH A DOUBLE ROW OF SEDIMENT BARRIERS.
 7. ALL VEGETATED DITCH LINES THAT HAVE NOT BEEN STABILIZED BY NOVEMBER 1, OR WILL BE WORKED DURING THE WINTER CONSTRUCTION PERIOD, SHALL BE STABILIZED WITH AN APPROPRIATE STONE LINING BACKED BY AN APPROPRIATE GRAVEL BED OR GEOTEXTILE UNLESS SPECIFICALLY RELEASED FROM THIS STANDARD BY THE MDEP.
 8. MULCH NETTING SHALL BE USED TO ANCHOR MULCH ON ALL SLOPES GREATER THAN 8% UNLESS EROSION CONTROL BLANKETS OR EROSION CONTROL MIX IS BEING USED ON SUCH SLOPES.

E&S INSPECTION/MAINTENANCE DURING CONSTRUCTION

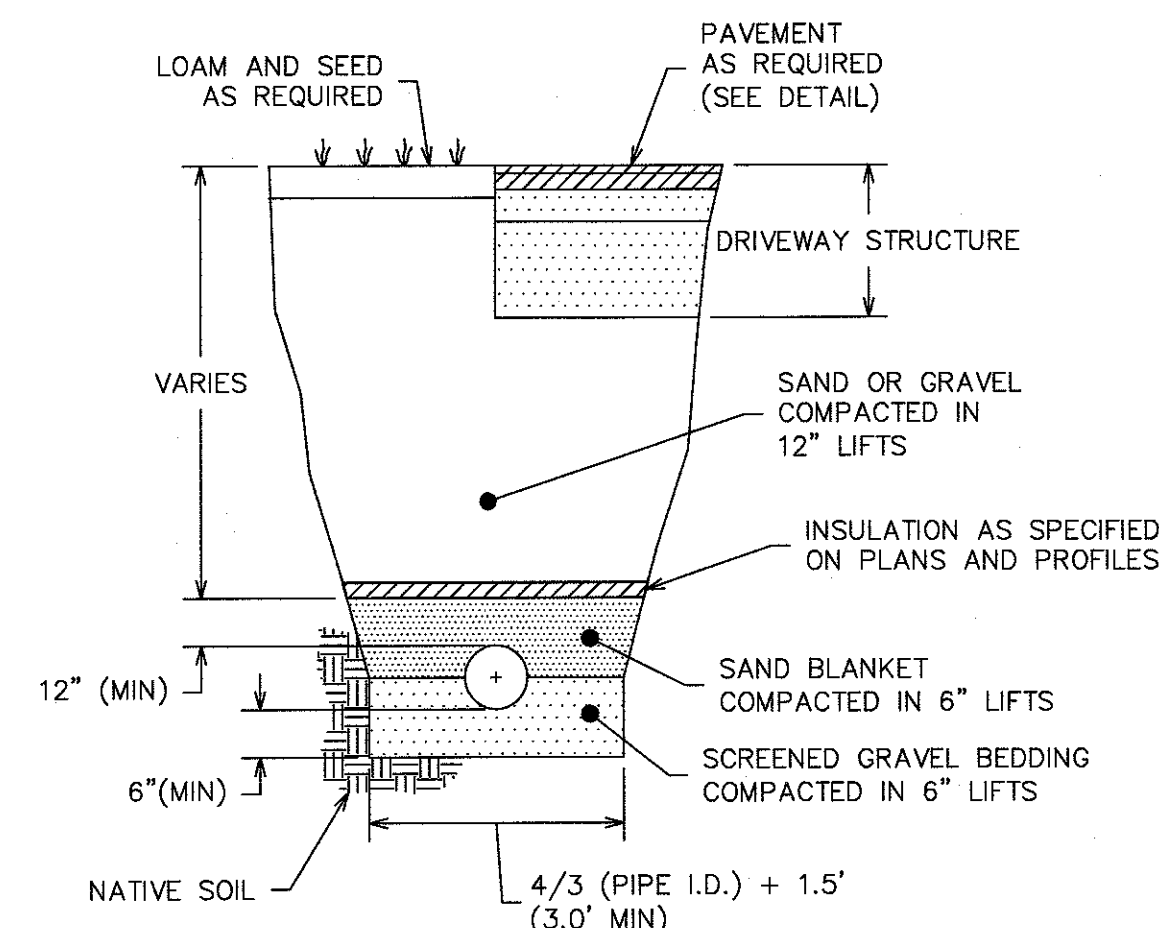
- A. **INSPECTION AND CORRECTIVE ACTION.** INSPECT DISTURBED AND IMPERVIOUS AREAS, EROSION CONTROL MEASURES, MATERIALS STORAGE AREAS THAT ARE EXPOSED TO PRECIPITATION, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE. INSPECT THESE AREAS AT LEAST ONCE A WEEK AS WELL AS BEFORE AND WITHIN 24 HOURS AFTER A STORM EVENT (RAINFALL), AND PRIOR TO COMPLETING PERMANENT STABILIZATION MEASURES. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT, SHALL CONDUCT THE INSPECTIONS.
- B. **MAINTENANCE.** IF BEST MANAGEMENT PRACTICES (BMPs) NEED TO BE REPAIRED, THE REPAIR WORK SHOULD BE INITIATED UPON DISCOVERY OF THE PROBLEM BUT NO LATER THAN THE END OF THE NEXT WORKDAY. IF ADDITIONAL BMPs OR SIGNIFICANT REPAIR OF BMPs ARE NECESSARY, IMPLEMENTATION MUST BE COMPLETED WITHIN 7 CALENDAR DAYS AND PRIOR TO ANY STORM EVENT (RAINFALL). ALL MEASURES MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION UNTIL AREAS ARE PERMANENTLY STABILIZED.
- C. **DOCUMENTATION.** KEEP A LOG (REPORT) SUMMARIZING THE INSPECTIONS AND ANY CORRECTIVE ACTION TAKEN. THE LOG MUST INCLUDE THE NAME(S) AND QUALIFICATIONS OF THE PERSON MAKING THE INSPECTIONS, THE DATE(S) OF THE INSPECTIONS, AND MAJOR OBSERVATIONS ABOUT THE OPERATION AND MAINTENANCE OF EROSION AND SEDIMENTATION CONTROLS, MATERIALS STORAGE AREAS, AND VEHICLES ACCESS POINTS TO THE PARCEL. MAJOR OBSERVATIONS MUST INCLUDE BMPs THAT NEED MAINTENANCE, BMPs THAT FAILED TO OPERATE AS DESIGNED OR PROVED INADEQUATE FOR A PARTICULAR LOCATION, AND LOCATION(S) WHERE ADDITIONAL BMPs ARE NEEDED. FOR EACH BMP REQUIRING MAINTENANCE, BMP NEEDING REPLACEMENT, AND LOCATION NEEDING ADDITIONAL BMPs, NOTE IN THE LOG THE CORRECTIVE ACTION TAKEN AND WHEN IT WAS TAKEN. THE LOG MUST BE MADE ACCESSIBLE TO DEPARTMENT STAFF AND A COPY MUST BE PROVIDED UPON REQUEST. THE PERMITTEE SHALL RETAIN A COPY OF THE LOG FOR A PERIOD OF AT LEAST THREE YEARS FROM THE COMPLETION OF PERMANENT STABILIZATION.



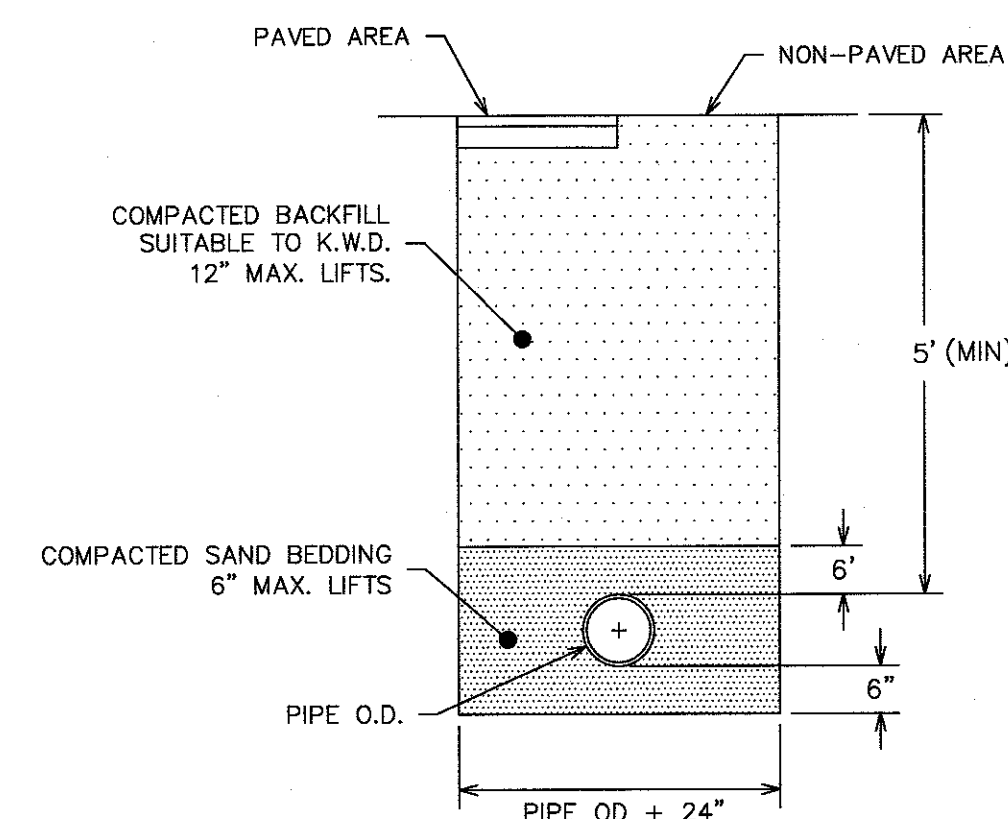
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DATE: 3/5/2019			REVISION DATE: -	-
JOB NO: C147-19			FILE: LITTLEWORTH DET.DWG	SHEET: 4.1

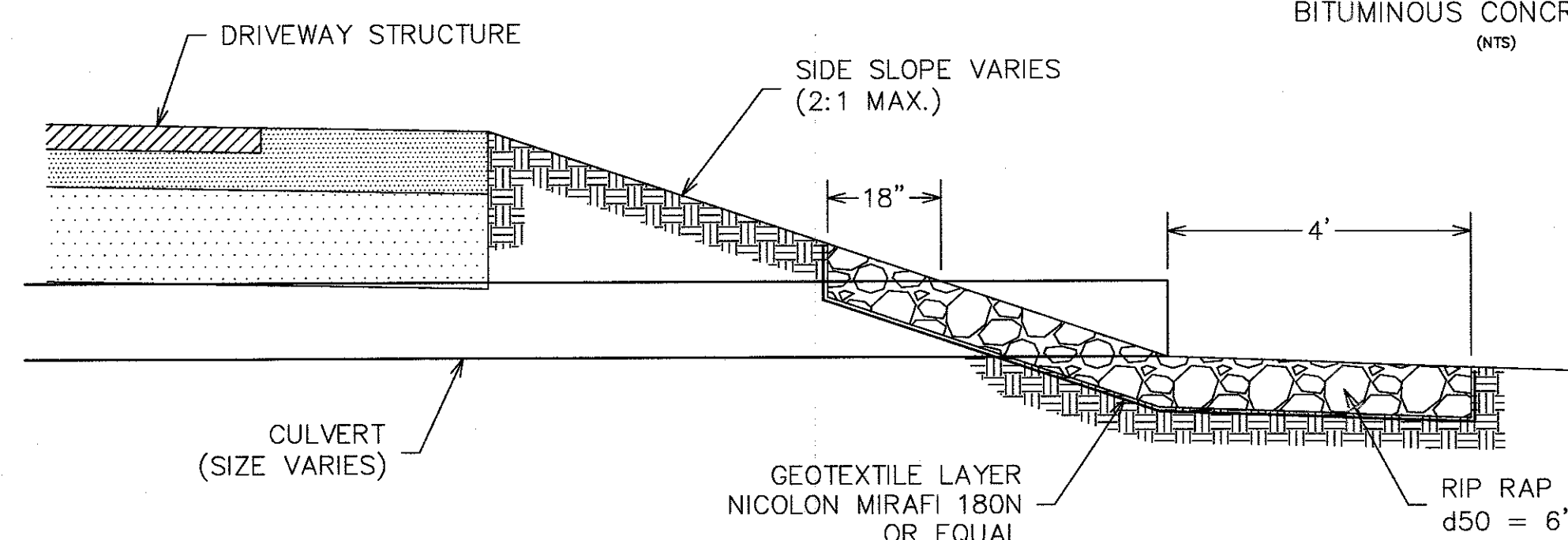
SITE DETAILS		
29 LITTLEWORTH RD		
DOVER, NH 03820		
FOR: 29 LITTLEWORTH ROAD LLC		
PO BOX 694		
DOVER, NH 03820		
ATTAR ENGINEERING, INC.		
CIVIL • STRUCTURAL • MARINE		
1284 STATE ROAD - ELIOT, MAINE 03903		
PHONE: (207)439-6023 FAX: (207)439-2128		
KENNETH A. WOOD No. 6217 LICENSED PROFESSIONAL ENGINEER		



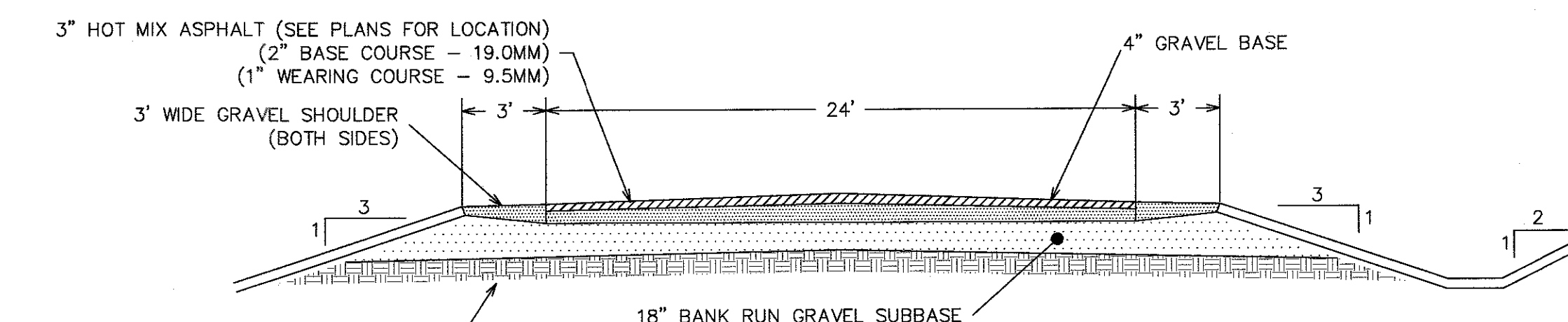
SEWER PIPE TRENCH DETAIL
SCALE: NTS
TRENCH TO BE SUPPORTED BY SLOPING BACK AT 2:1 OR OTHER ACCEPTABLE METHOD.



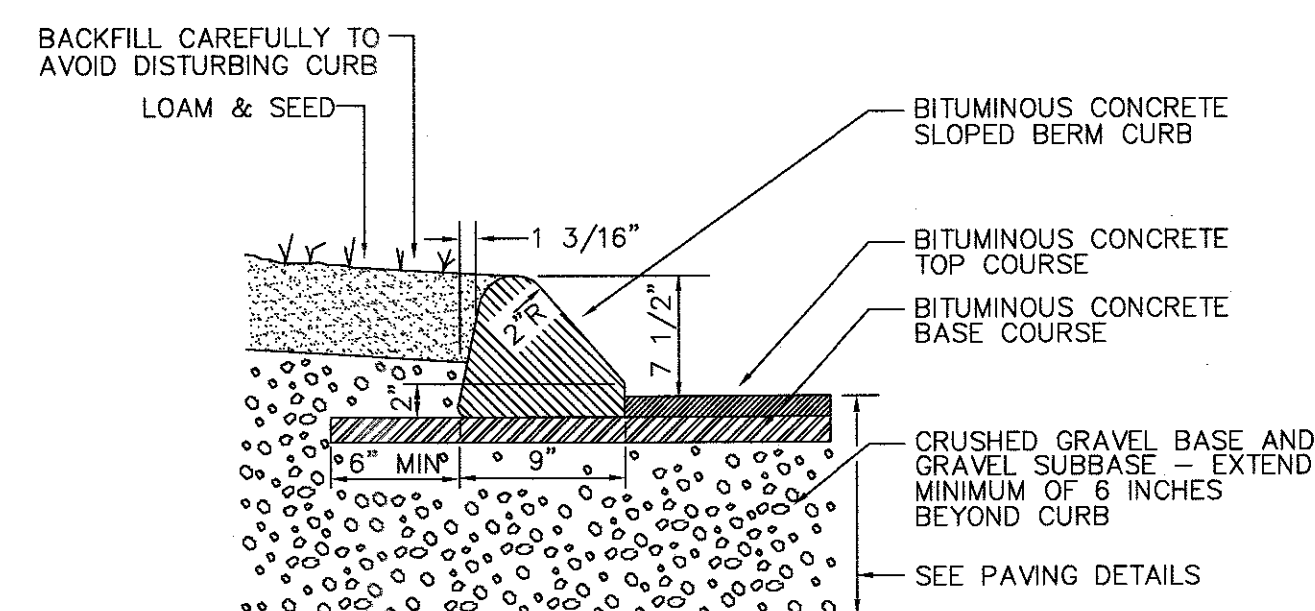
WATER LINE TRENCH DETAIL
(NTS)



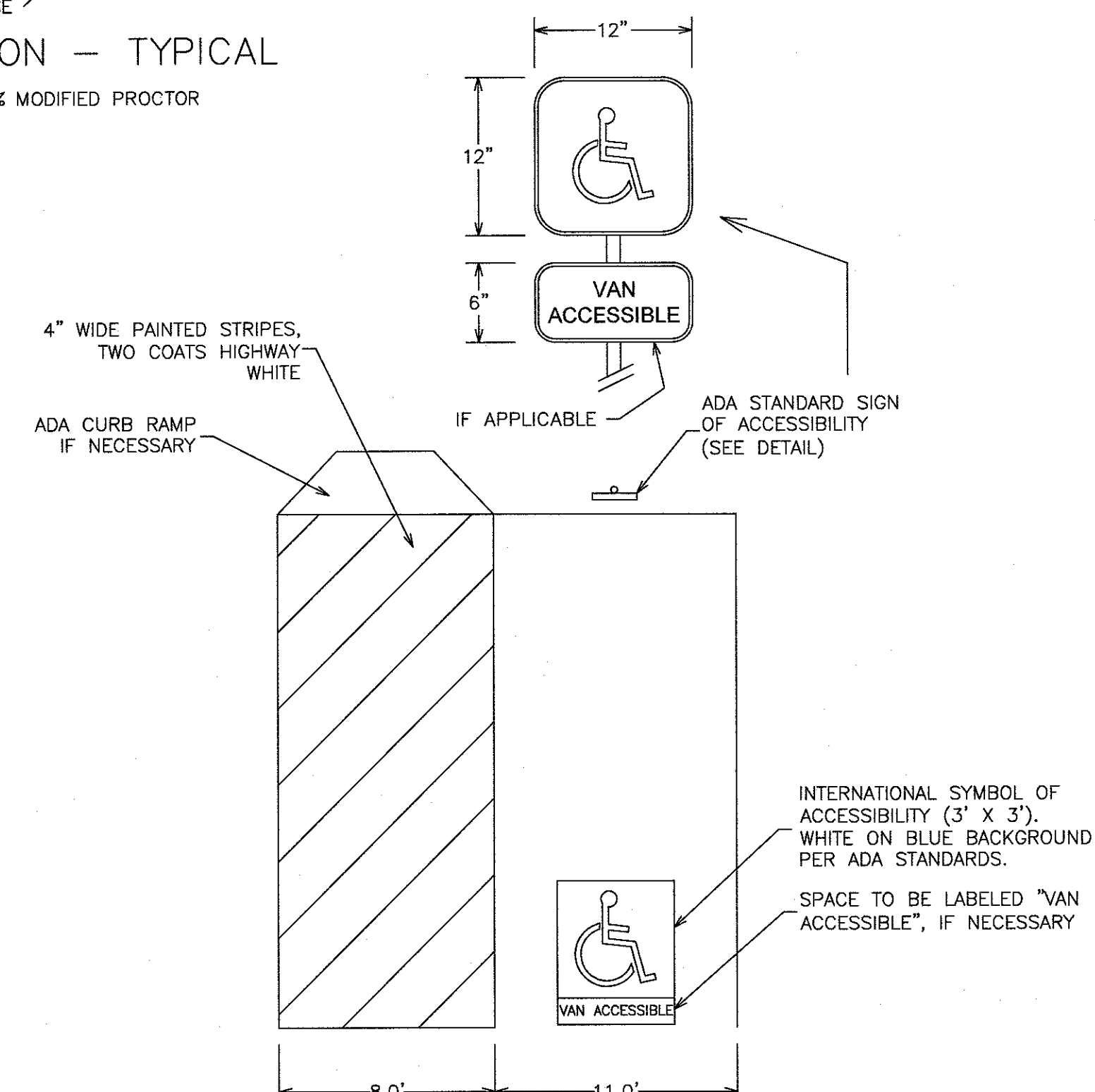
CULVERT INLET/OUTLET PROTECTION DETAIL
(NTS)



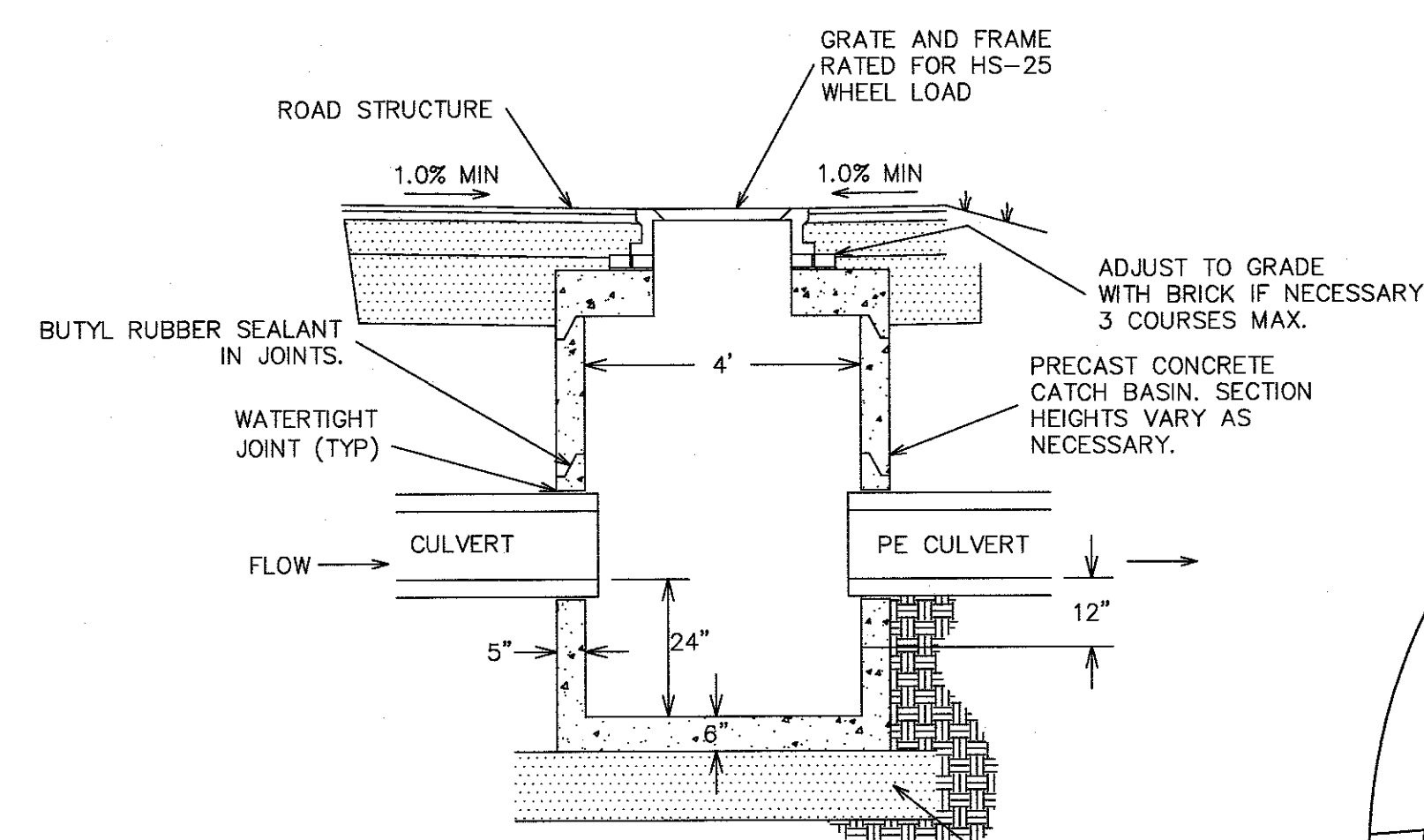
ENTRANCE CROSS SECTION - TYPICAL
SCALE: (NTS)
GRAVEL FILL TO BE COMPACTED TO 95% MODIFIED PROCTOR



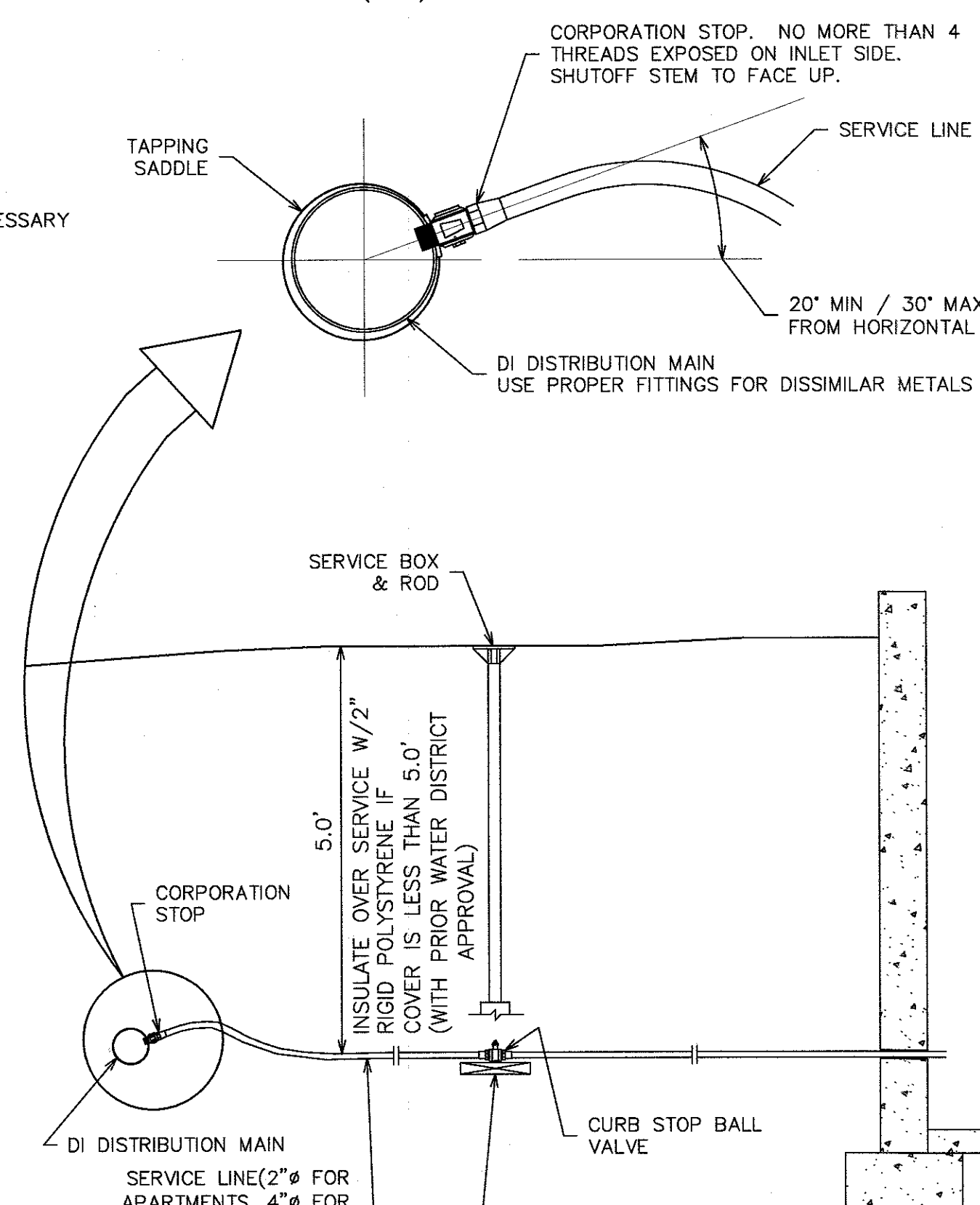
BITUMINOUS CONCRETE CURB
(NTS)



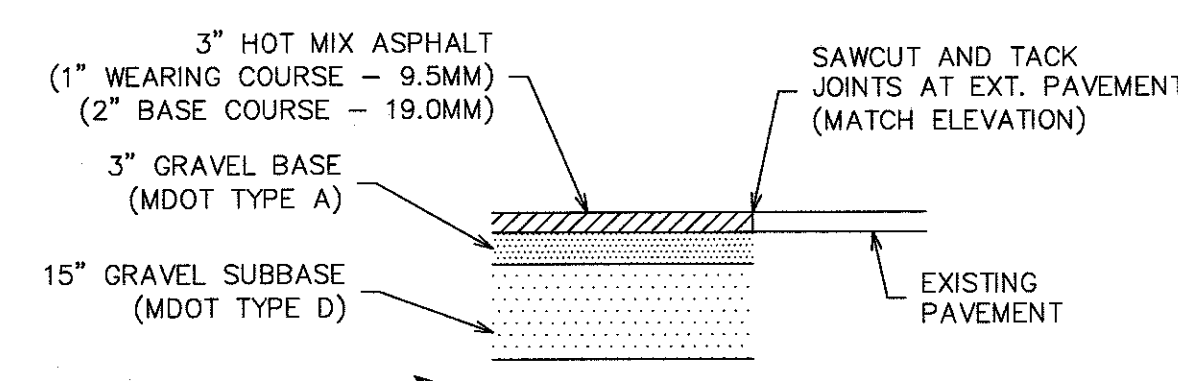
ACCESSIBLE PARKING SPACE DETAIL



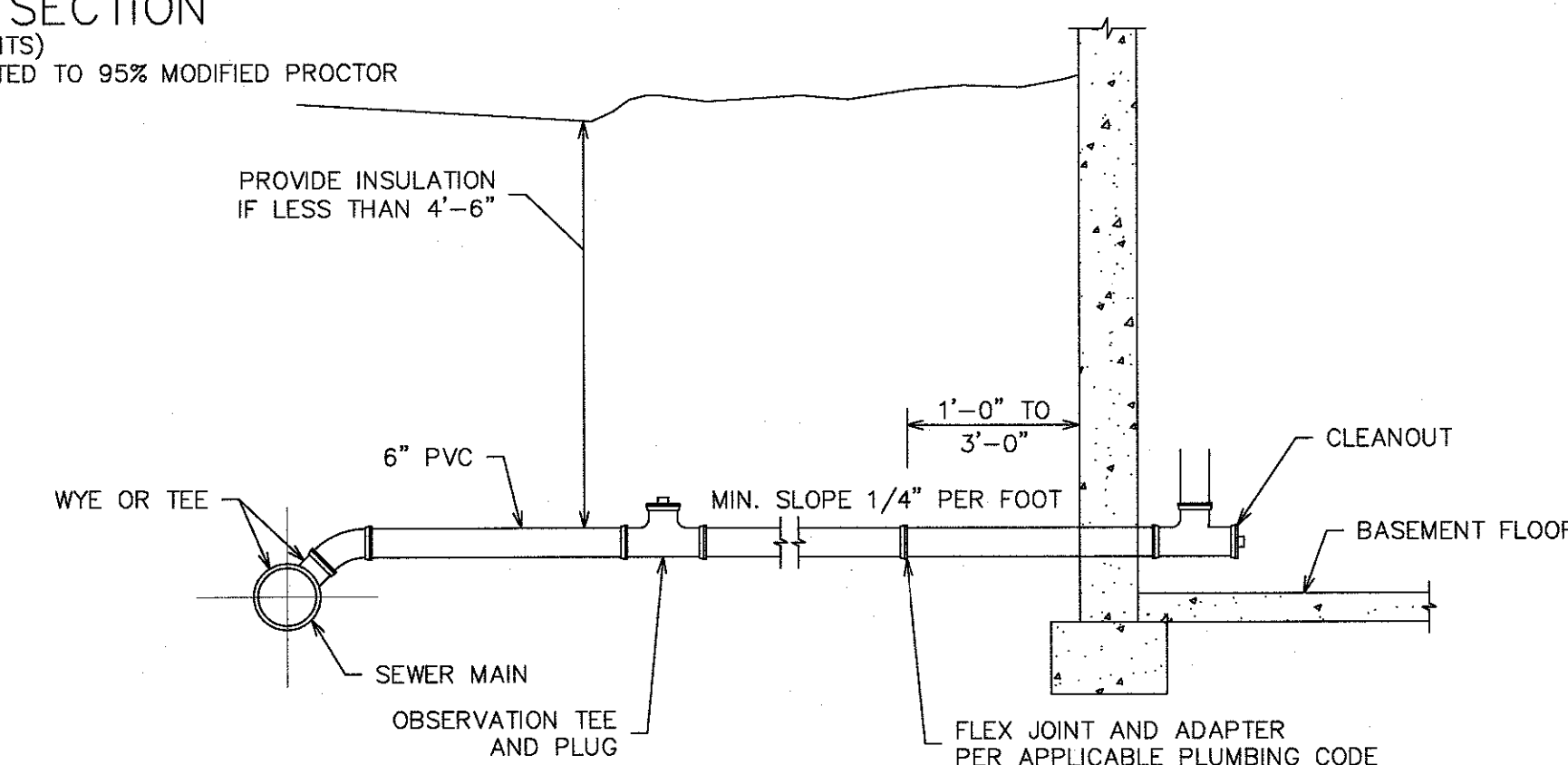
CATCH BASIN DETAIL
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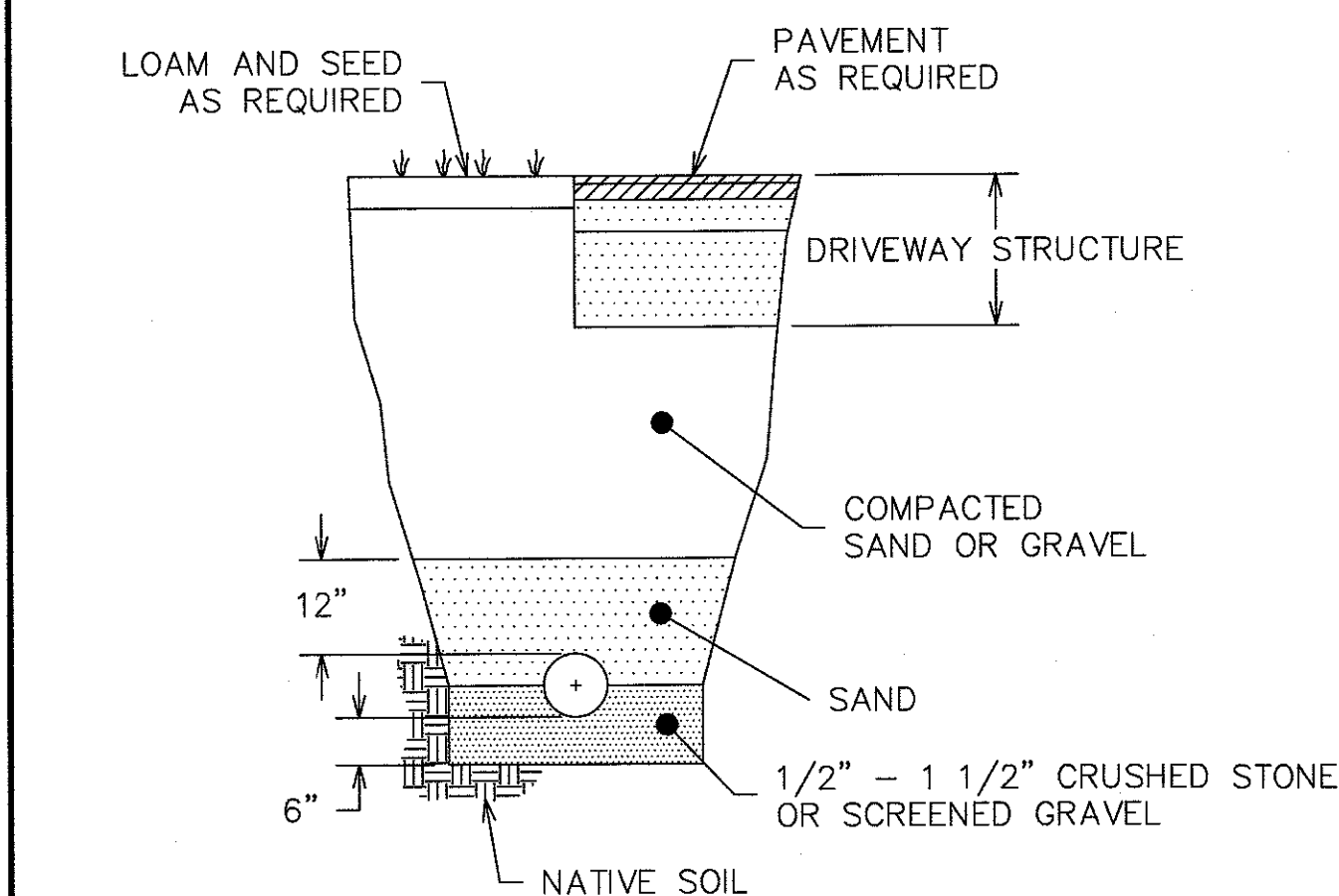
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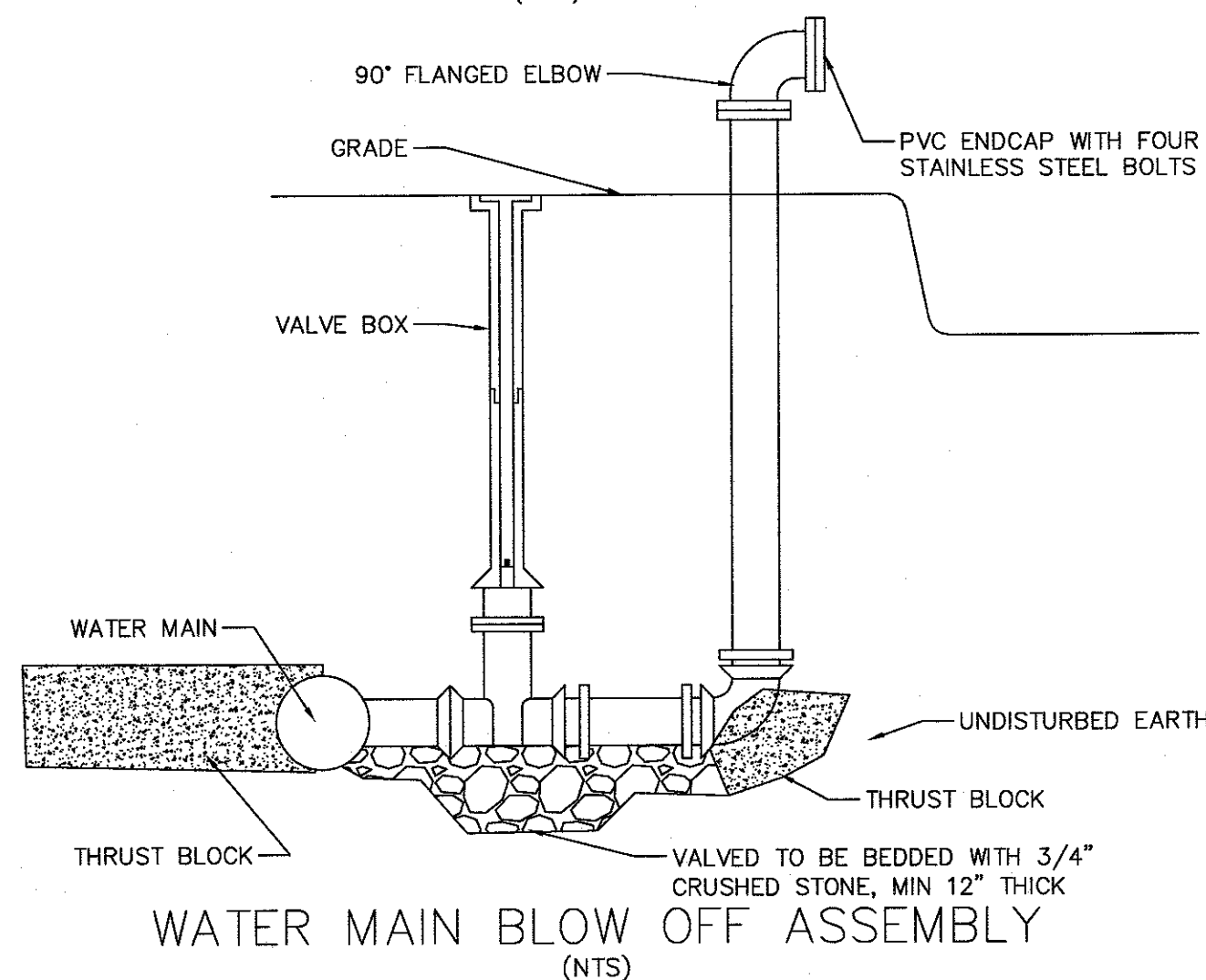
ASPHALT PARKING CROSS SECTION
(NTS)



TYPICAL SERVICE CONNECTION AND LATERAL DETAIL
SCALE: NTS
NOTE: SEWER MAY BE LOCATED BENEATH BASEMENT FLOOR

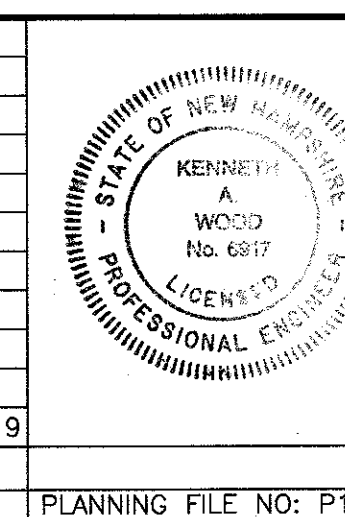


DRAINAGE PIPE TRENCH DETAIL
SCALE: NTS
TRENCH TO BE SUPPORTED BY SLOPING BACK AT 2:1 OR OTHER ACCEPTABLE METHOD.

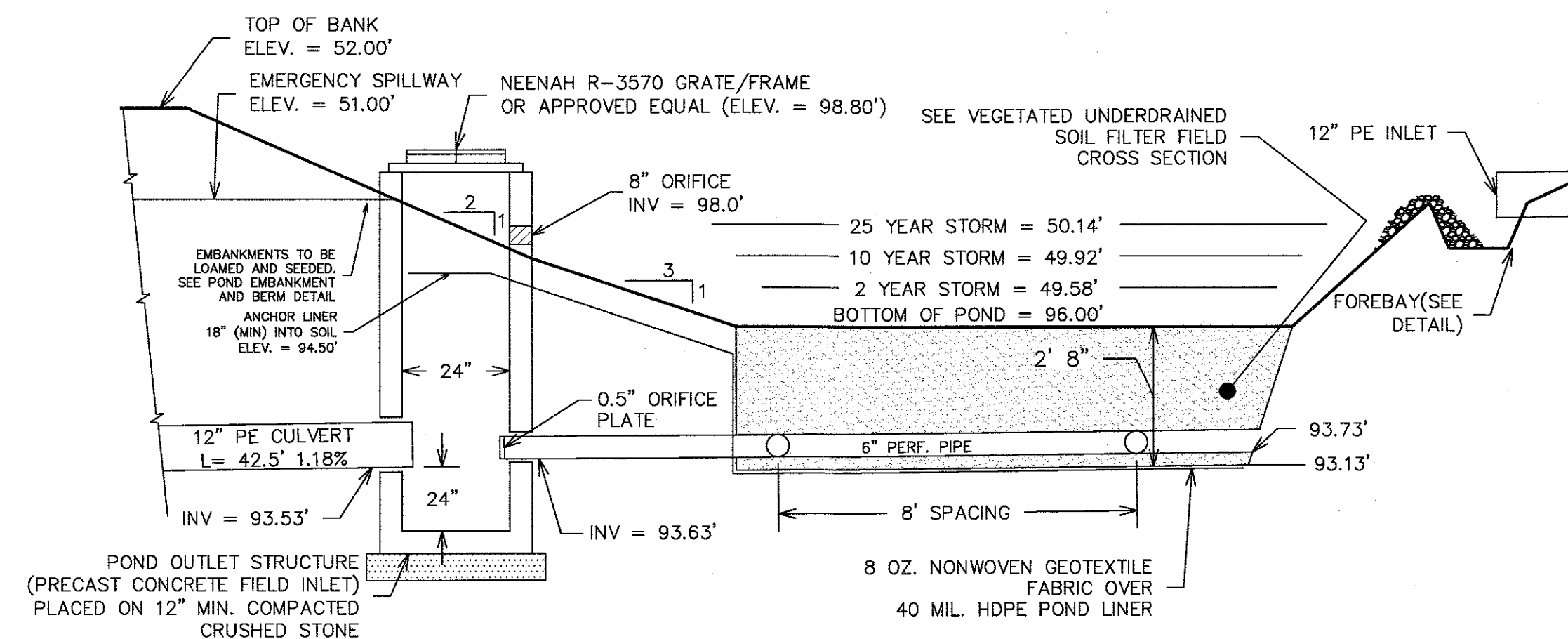


WATER MAIN BLOW OFF ASSEMBLY
(NTS)

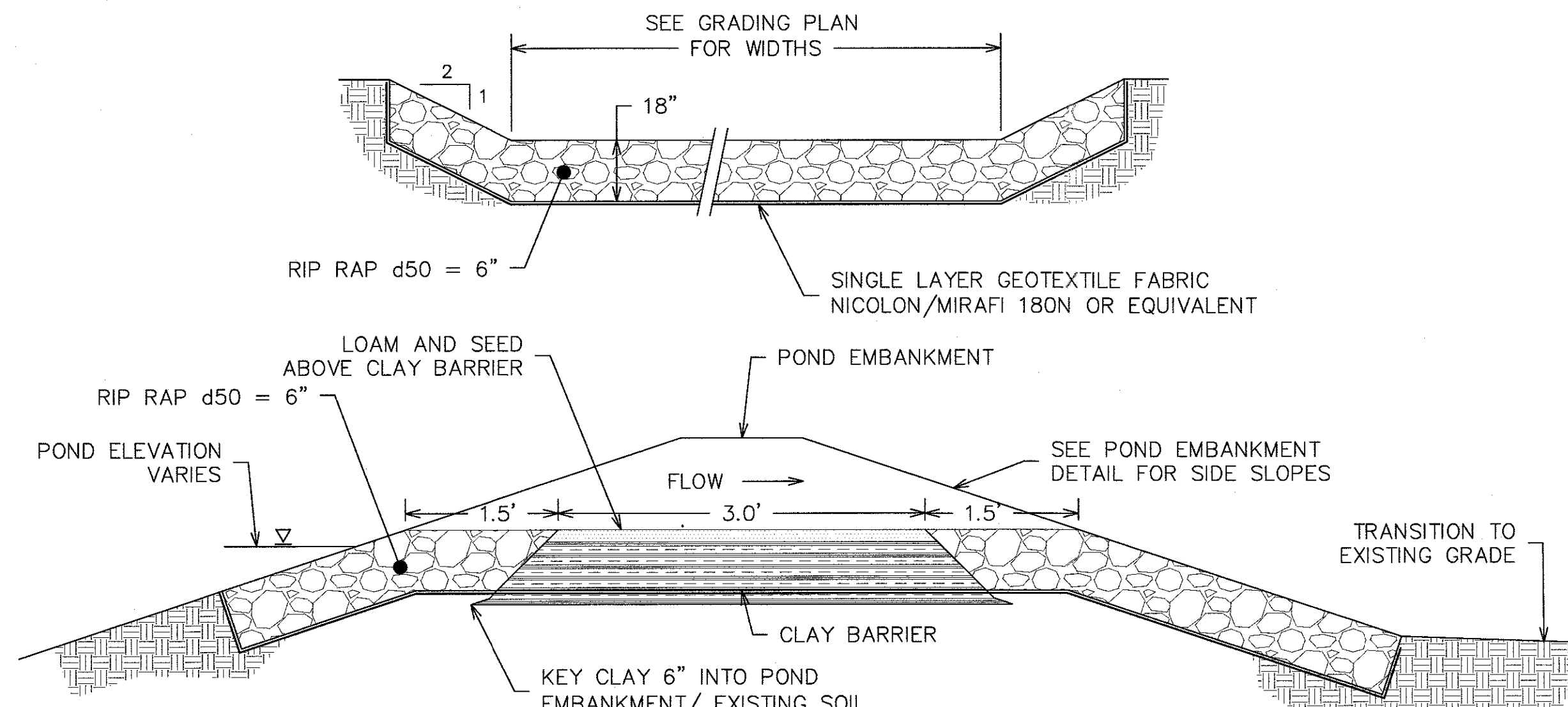
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	REVISIONS	



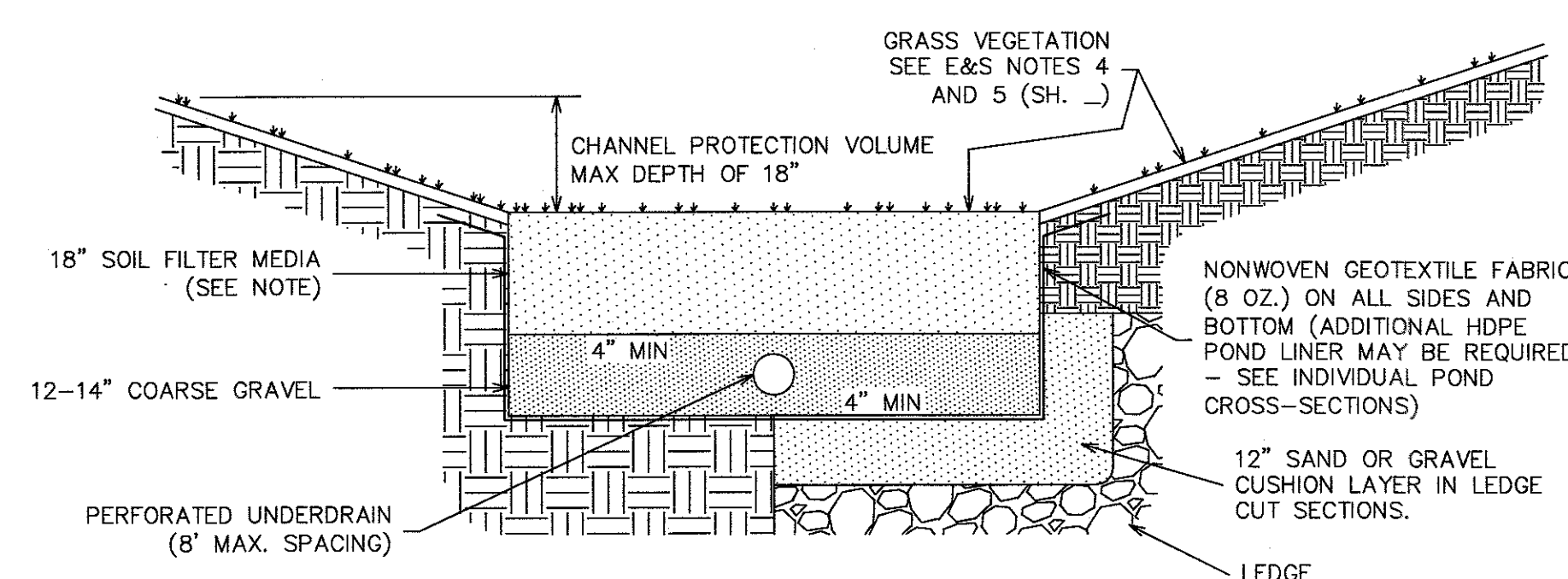
SITE DETAILS 29 LITTLEWORTH RD DOVER, NH 03820	
FOR: 29 LITTLEWORTH ROAD LLC PO BOX 694 DOVER, NH 03820	
ATTAR ENGINEERING, INC. CIVIL • STRUCTURAL • MARINE 1284 STATE ROAD - ELIOT, MAINE 03903 PHONE: (207)439-6023 FAX: (207)439-2128	
SCALE: 1" = 50' DATE: 3/5/2019	APPROVED BY: 4/18/2019
PLANNING FILE NO: P19-26 JOB NO: C147-19 FILE: LITTLEWORTH DET.DWG	DRAWN BY: BRN REVISION DATE: A : 4/18/2019 SHEET: 4.2



BIORETENTION(RAIN GARDEN) POND 1P



EMERGENCY SPILLWAY DETAIL



BIORETENTION CELL (RAIN GARDEN) CROSS SECTION

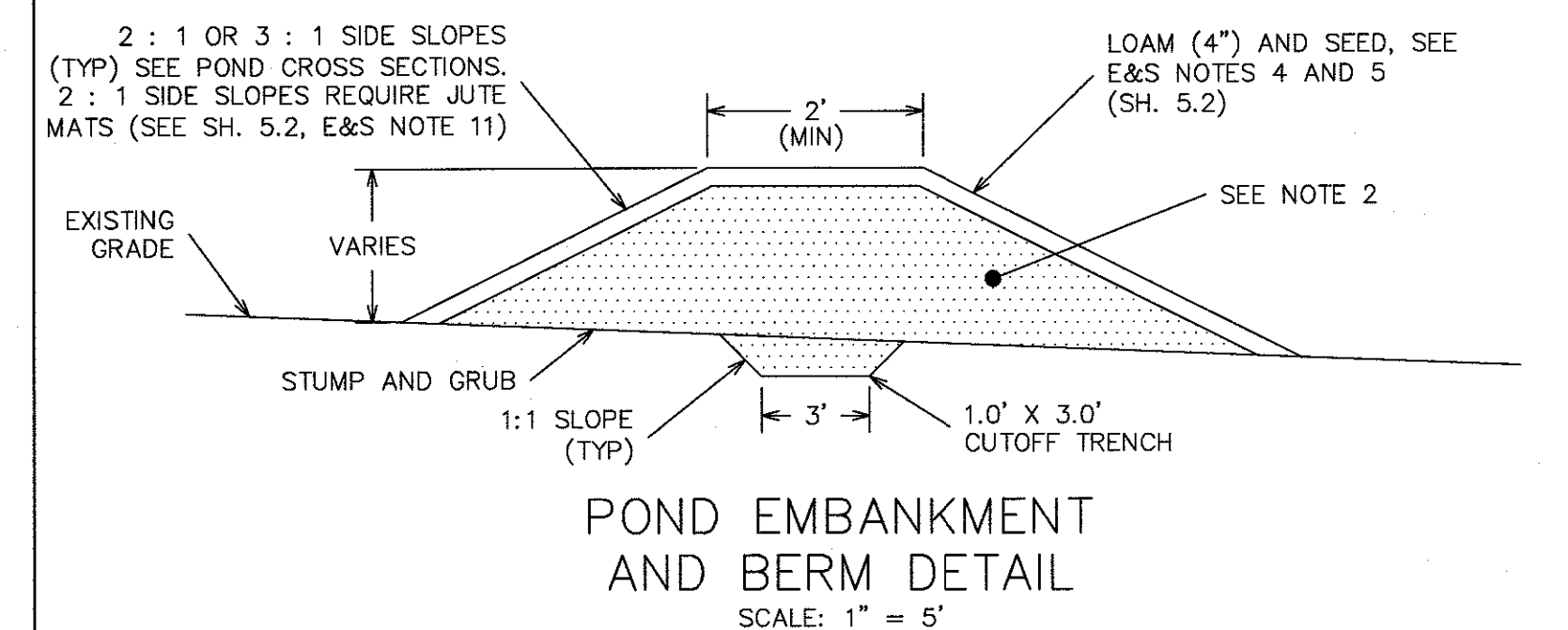
(NTS)

SOIL FILTER MEDIA NOTE:

THE SOIL FILTER MEDIA SHALL CONSIST OF A SILTY SAND OR SOIL MIXTURE COMBINED WITH 20% - 25% FINE SHREDDED BARK OR WOOD FIBER MULCH. THE MIXTURE MUST HAVE NO LESS THAN 8% PASSING THE 200 SIEVE, AND A CLAY CONTENT OF LESS THAN 2%. PRIOR TO CONSTRUCTION, THE CONTRACTOR MUST CHECK WITH THE NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES FOR UPDATED SOIL FILTER MEDIA SPECIFICATIONS.

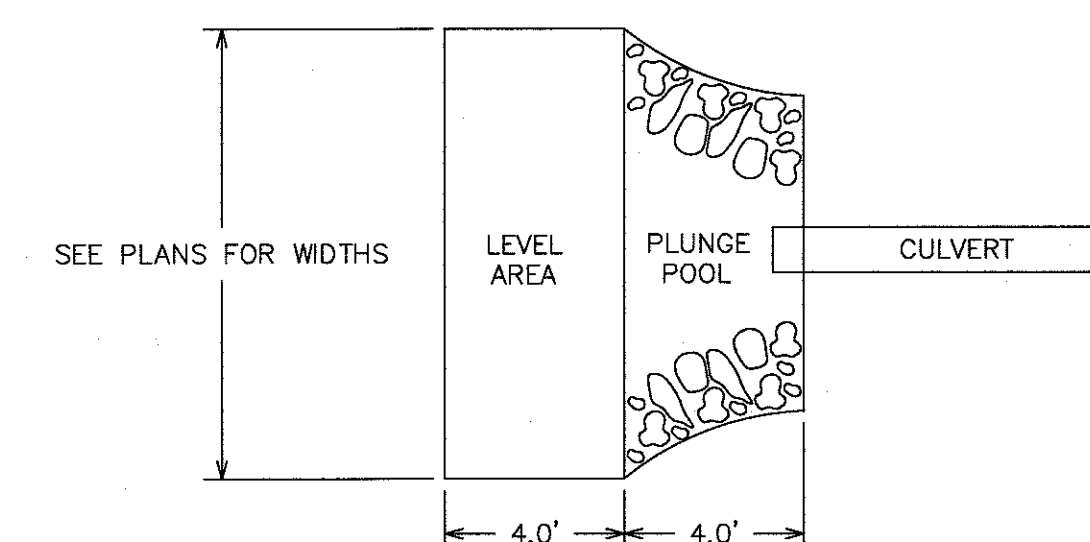
CONSTRUCTION OVERSIGHT REQUIRED:

- INSPECTION OF THE FILTER BASIN SHALL BE PROVIDED FOR EACH PHASE OF CONSTRUCTION BY THE DESIGN ENGINEER WITH REQUIRED REPORTING TO THE DEP. AT A MINIMUM, INSPECTIONS WILL OCCUR:
- AFTER PRELIMINARY CONSTRUCTION OF THE FILTER GRADES AND ONCE THE UNDERDRAIN PIPES ARE INSTALLED BUT NOT BACKFILLED;
 - AFTER THE DRAINAGE LAYER IS CONSTRUCTED AND PRIOR TO THE INSTALLATION OF THE FILTER MEDIA;
 - AFTER THE FILTER MEDIA HAS BEEN INSTALLED AND SEEDED;
 - AFTER ONE YEAR TO INSPECT HEALTH OF THE VEGETATION AND MAKE CORRECTIONS; AND
 - ALL MATERIAL USED FOR THE CONSTRUCTION OF THE FILTER BASIN WILL BE APPROVED BY THE DESIGN ENGINEER AFTER TESTS BY A CERTIFIED LABORATORY SHOW THAT THEY ARE PASSING DEP SPECIFICATIONS.
 - CONTRACTOR SHALL COORDINATE INSPECTION SCHEDULE WITH INSPECTING ENGINEER PRIOR TO CONSTRUCTION.
 - HEAVY VEHICLES AND EQUIPMENT ARE PROHIBITED FROM DRIVING OVER ANY INFILTRATION BASIN.
 - NO SNOW SHALL BE STORED WITHIN THE AREA OF ANY UNDERDRAINED SOIL FILTER.

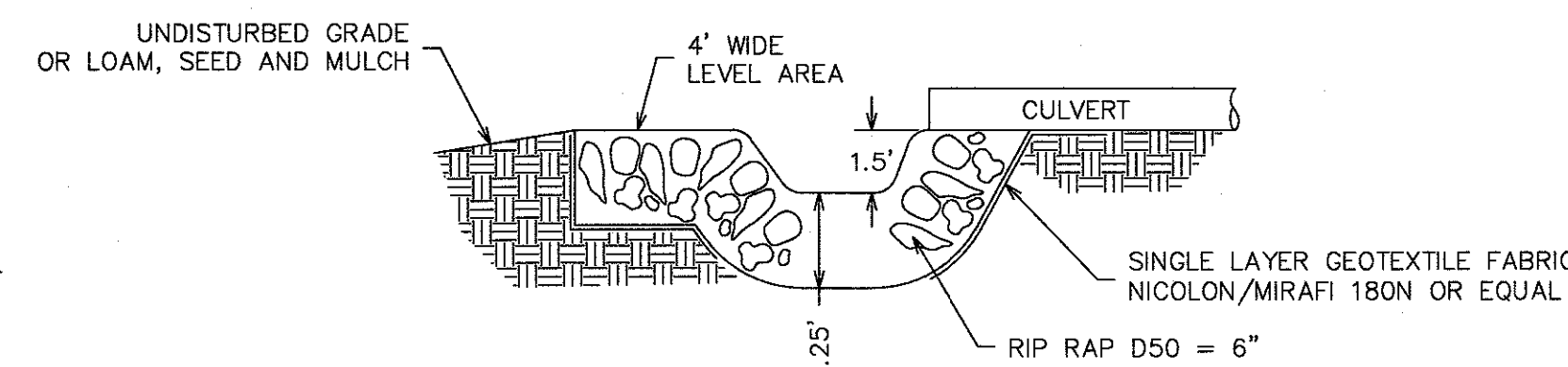


EMBANKMENT CONSTRUCTION NOTES

1. ALL ORGANIC MATERIAL, STUMPS, ROCKS AND BOULDERS SHALL BE REMOVED TO A MINIMUM DEPTH OF 24" BELOW SUBGRADE OF THE BASIN EMBANKMENT. ALL EXCAVATIONS BELOW THE BASIN EMBANKMENT SHALL HAVE A MINIMUM SLOPE OF 1H : 1V.
2. ALL BASIN EMBANKMENT FILL MATERIAL SHALL BE WELL GRADED BORROW WITH A MINIMUM OF 20% FINES CONTENT. EMBANKMENT FILL SHALL BE PLACED IN 12" (MAX.) LIFTS AND BE COMPACTED TO 95% MODIFIED PROCTOR. A CUTOFF TRENCH SHALL BE EXCAVATED AS SHOWN PRIOR TO CONSTRUCTION OF EMBANKMENT.
3. DETENTION BASIN AND ALL EXCAVATIONS SHALL BE KEPT FREE OF WATER DURING CONSTRUCTION.

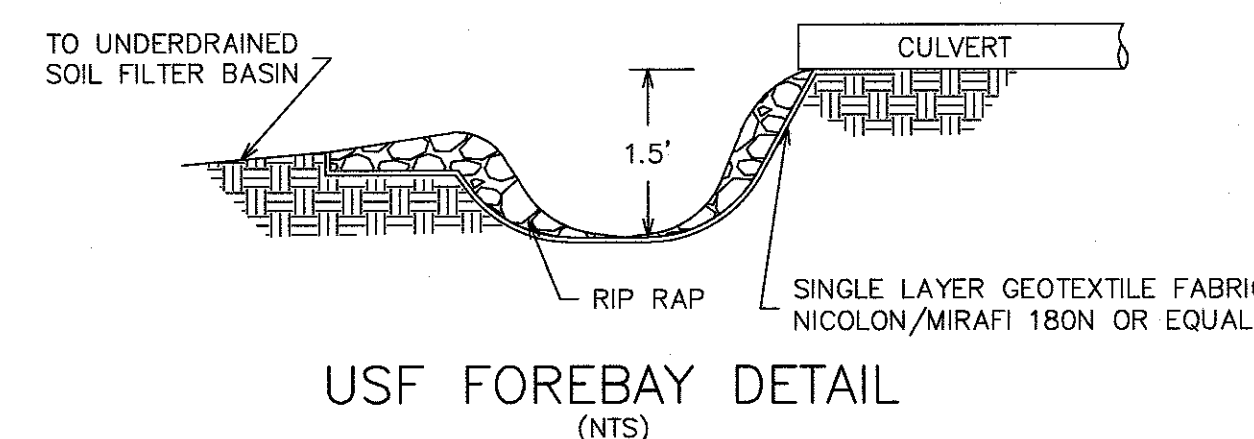


LEVEL SPREADER (NTS)

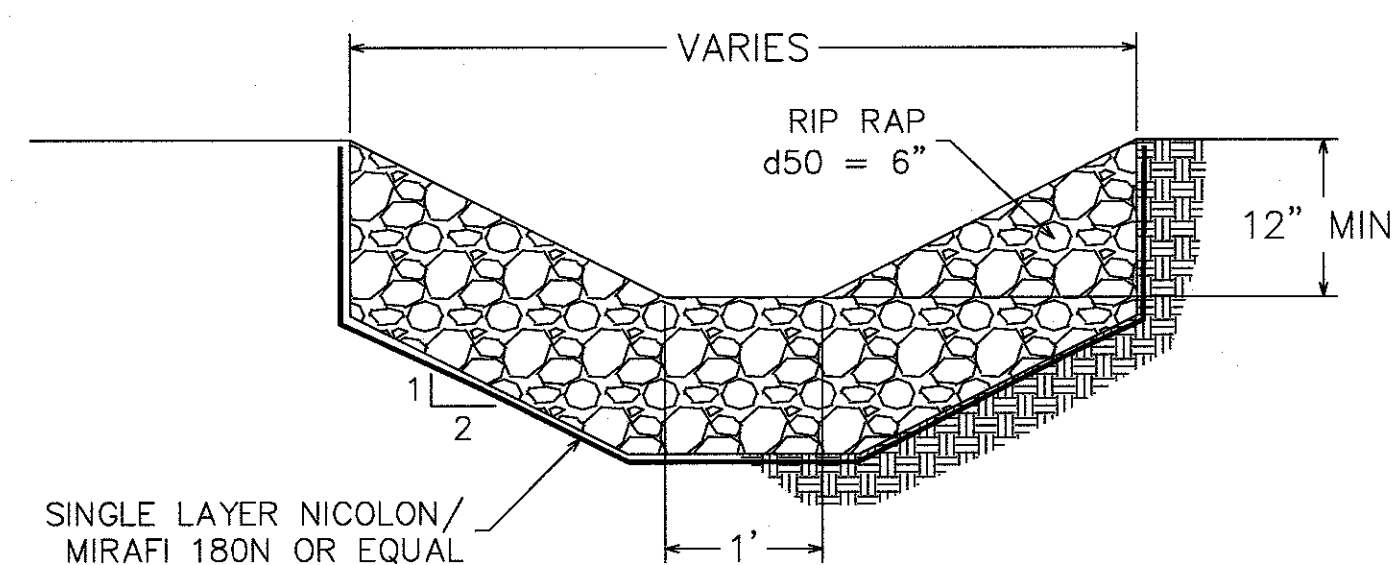


VEGETATED SWALE DETAIL (NTS)

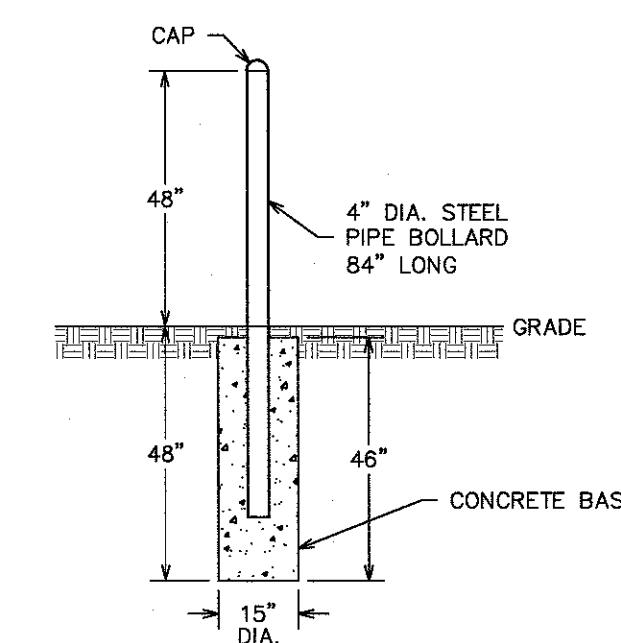
B (BOTTOM WIDTH) SHALL BE 2' FOR TYPE 1 SWALES AND 5' FOR TYPE 2 SWALES.



USF FOREBAY DETAIL (NTS)



RIP RAP SWALE DETAIL (NTS)

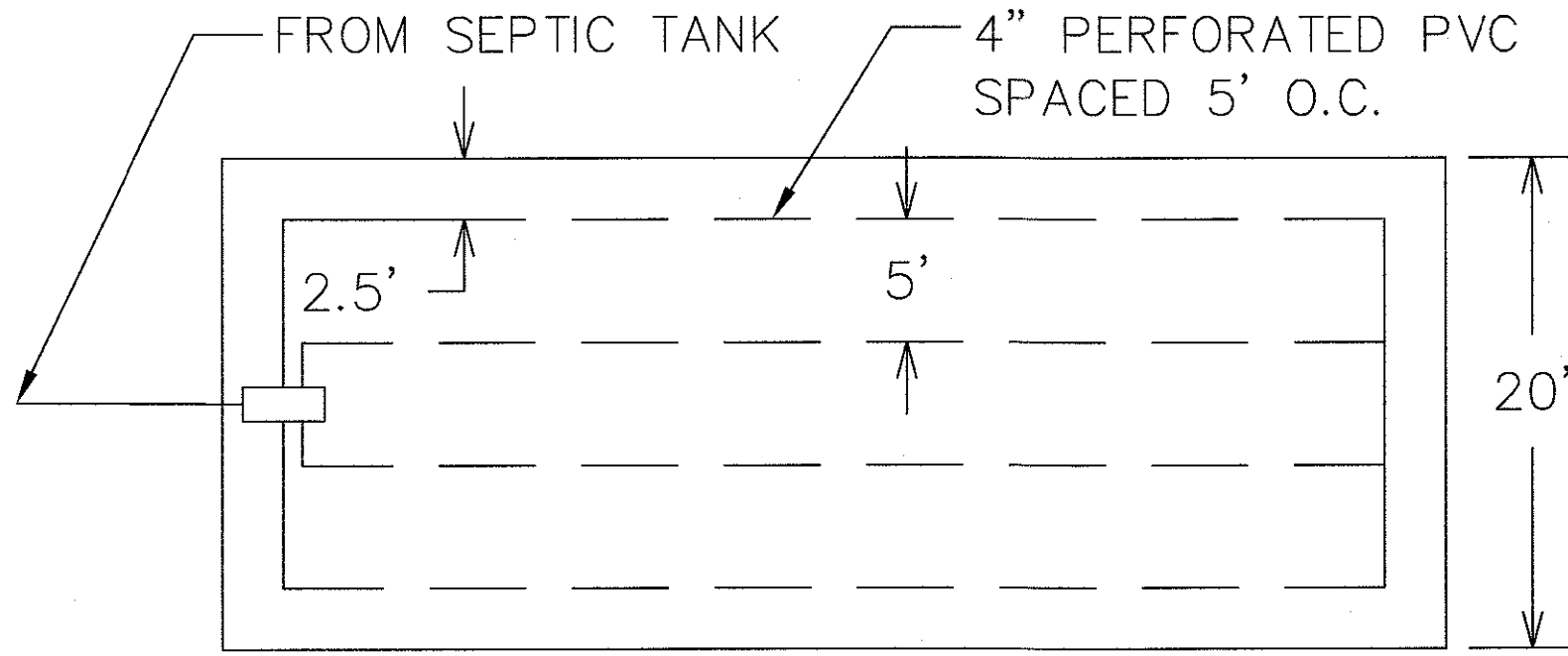


PROTECTIVE BOLLARD DETAIL (NTS)

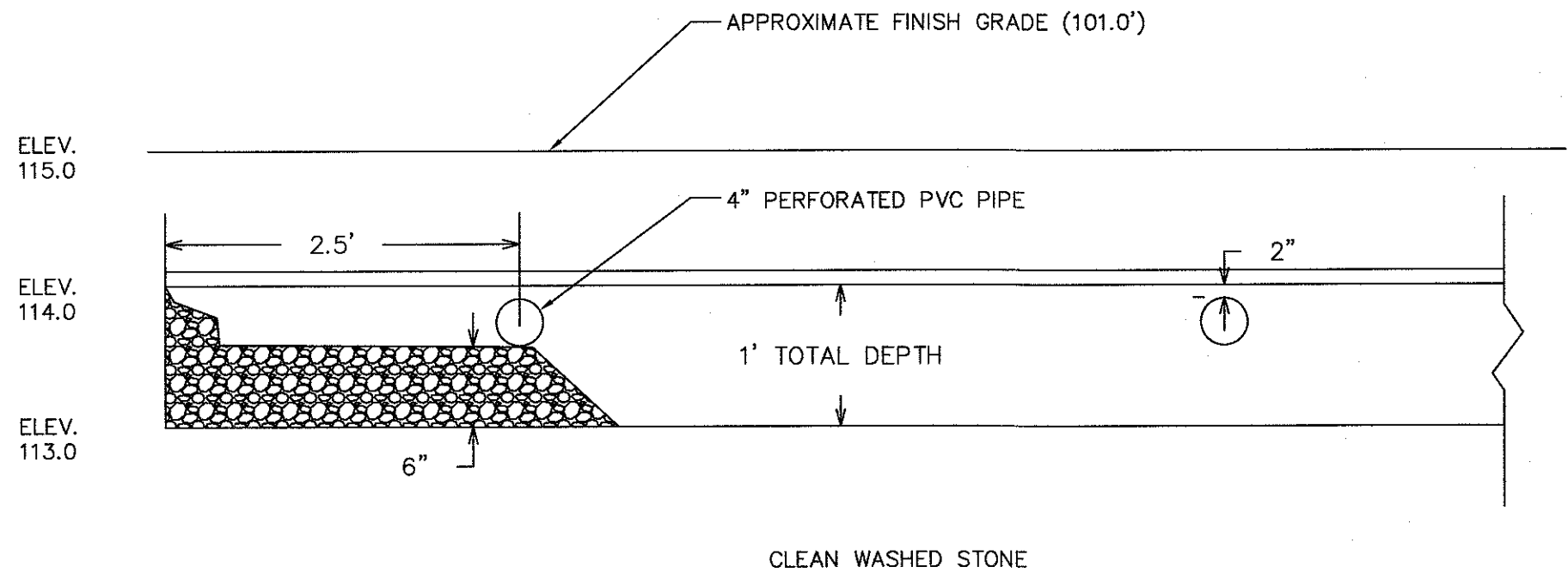
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			FOR: 29 LITTLEWORTH ROAD PO BOX 694 DOVER, NH 03820		
			ATTAR ENGINEERING, INC. CIVIL • STRUCTURAL • MARINE 1284 STATE ROAD - ELIOT, MAINE 03903 PHONE: (207)439-6023 FAX: (207)439-2128		
SCALE: 1" = 50' DATE: 3/5/2019		APPROVED BY: <i>[Signature]</i> 3/11/2019		DRAWN BY: BRN REVISION DATE: - : -	
NO. DESCRIPTION REVISIONS DATE		PLANNING FILE NO: P19-26		JOB NO: C147-19	
		FILE: LITTLEWORTH DET.DWG		SHEET: 4.3	

GENERAL NOTES

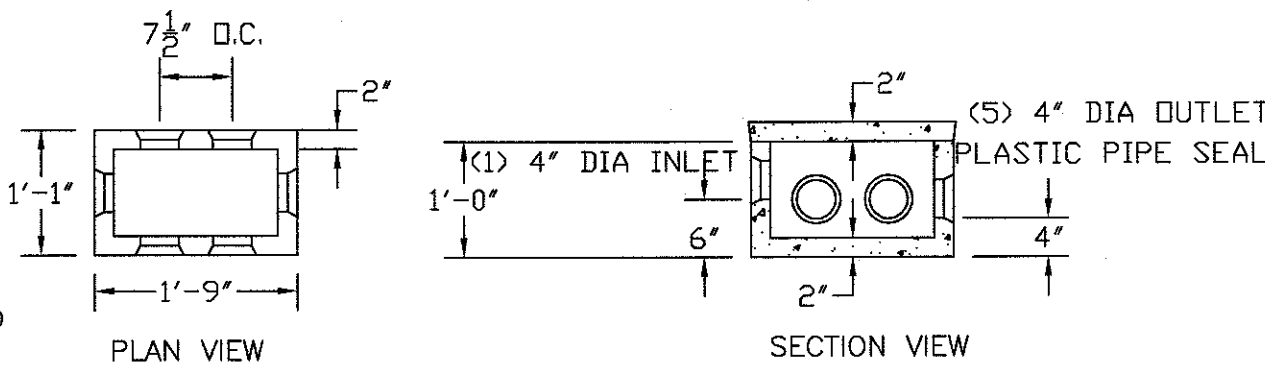
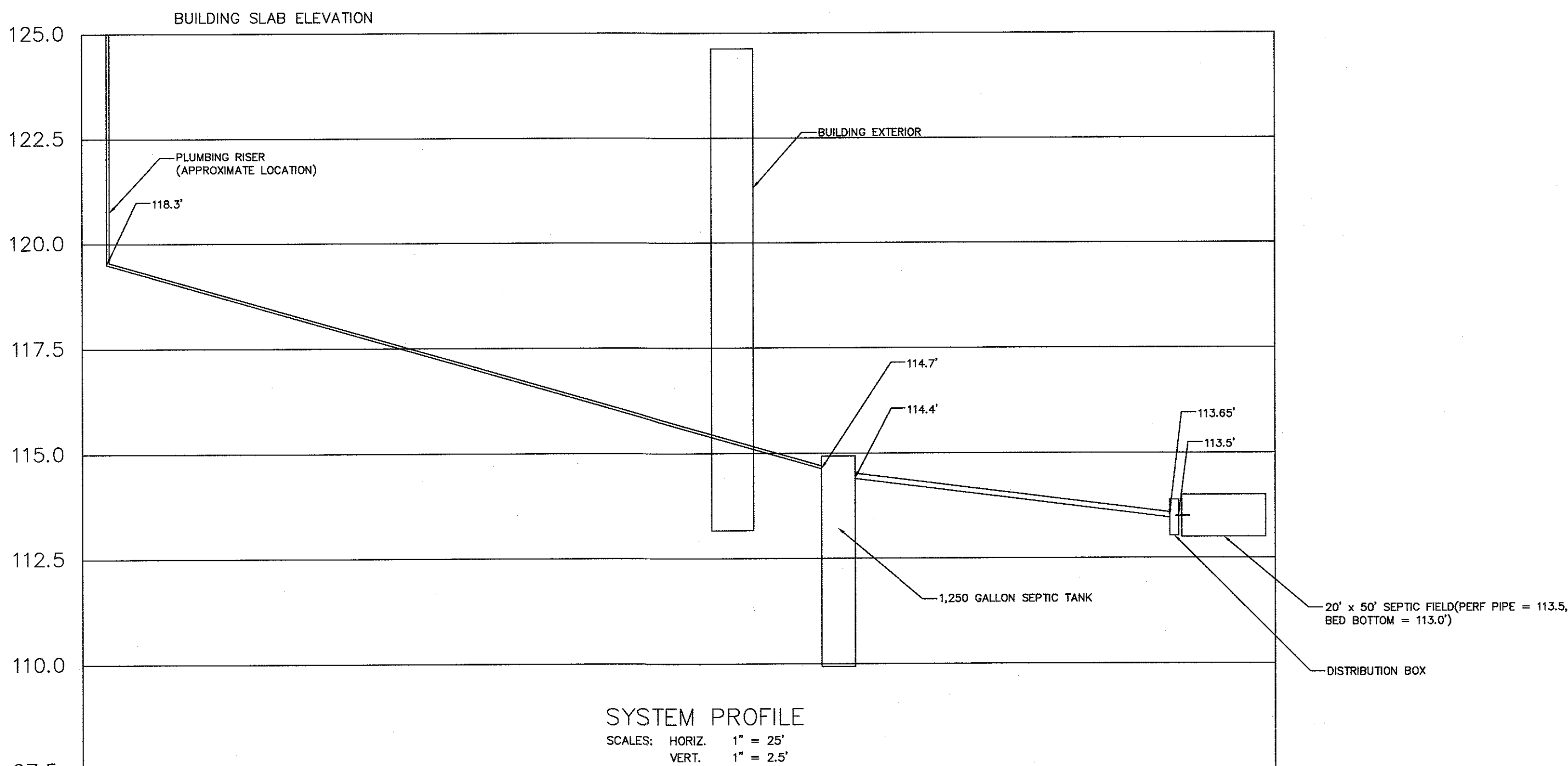
1. THE GENERAL CONTRACTOR IS TO BE RESPONSIBLE FOR HORIZONTAL AND VERTICAL CONTROL OF ALL SYSTEM COMPONENTS.
2. THIS PLAN IS TO SHOW THE DESIGN OF THE SUBSURFACE SEWAGE DISPOSAL SYSTEM ONLY.
3. SYSTEM IS DESIGNED ONLY TO ACCOMMODATE SANITARY SEWAGE ASSOCIATED WITH NORMAL COMMERCIAL/DOMESTIC USAGE.
4. THE SYSTEM IS NOT DESIGNED FOR GARBAGE GRINDERS / DISPOSALS.
5. THE SYSTEM SHALL BE VENTED THROUGH BUILDING PLUMBING AS REQUIRED BY BUILDING CODE AND AS SHOWN HEREON.
6. PROPERTY LINES AND BUILDING LOCATION ARE GRAPHIC ONLY, PROPERTY LINES HAVE NOT BEEN VERIFIED, AND NO REPRESENTATION OR CERTIFICATION AS TO THE ACCURACY OF THOSE SHOWN IS IMPLIED OR INTENDED.
7. APPLICABLE ZONING REGULATIONS SHALL BE CONFIRMED BY THE OWNER PRIOR TO CONSTRUCTION.
8. THE PLANS SHOWS ONLY THOSE FEATURES THAT WERE VISUALLY APPARENT ON DATE OF TOPOGRAPHY AND THE ABSENCE OF SUBSURFACE STRUCTURES, UTILITIES, ETC. IS NOT INTENDED ARE IMPLIED.
9. THE INSTALLER OF THIS SYSTEM MUST BE LICENSED BY THE STATE OF NEW HAMPSHIRE.
10. THERE ARE NO KNOWN EXISTING WELLS WITHIN 75 FEET OF THE PROPOSED SEWAGE DISPOSAL SYSTEM.
11. THESE PLANS AND SPECIFICATIONS ARE INTENDED TO BE EXPLANATORY OF THE WORK TO BE DONE AND OF EACH OTHER, BUT SHOULD ANY OMISSION, ERRORS OR DISCREPANCIES APPEAR, THEY SHALL BE SUBJECT TO CORRECTION AND INTERPRETATION BY THE DESIGN ENGINEER THEREBY DEFINING AND FULFILLING THE INTENT OF THE PLANS.
12. FINISHED SURFACE OF THE LEACHING AREA SHALL BE GRADED TO ASSURE WATER RUNOFF (2% MINIMUM SLOPE). SPREAD LOAM TO 6" MINIMUM THICKNESS.
13. ALL DISTURBED AREAS TO BE LOAMED, SEEDED, AND MAINTAINED TO PREVENT EROSION. SPREAD LOAM TO A 6" THICKNESS, MINIMUM.
14. THIS DISPOSAL SYSTEM MUST BE INSTALLED IN COMPLIANCE WITH CURRENT NHDES RULES, MOST CURRENT NHDES APPROVED VERSION OF MANUFACTURER'S DESIGN MANUAL, AS APPLICABLE, AND SPECIFICATIONS OF THIS PLAN. IT IS THE RESPONSIBILITY OF THE INSTALLER TO BE FAMILIAR WITH THE RULES, AS THEY CAN NOT BE REPRODUCED IN THEIR ENTIRETY ON THIS PLAN.
15. INSTALLER IS RESPONSIBLE FOR CLEARING EXCAVATION WITH DIG-SAFE BEFORE CONSTRUCTION. CALL 811 OF 1-800-DIGSAFE.
16. AMENDED PLANS FROM THE DESIGNER WILL BE REQUIRED PRIOR TO NHDES INSPECTION IF CHANGES HAVE BEEN MADE TO THE LOCATION OF SYSTEM COMPONENTS (EXCLUDING THE BED) OR PROPOSED STRUCTURE. IF THE BED IS NOT INSTALLED AT THE LOCATION SHOWN AND ELEVATION SHOWN, A NEW APPROVAL WILL BE REQUIRED.
17. TANK, D-BOX AND ALL PIPE CONNECTIONS MUST BE SEALED AND WATER TIGHT. TANK TO BE SEALED WITH JOINT SEALANT MEETING ASTM C990-09. CONNECTIONS BETWEEN TANK AND PIPES TO BE SEALED WITH A WATERTIGHT, FLEXIBLE JOINT CONNECTOR.
18. SEPTIC TANK MUST HAVE ACCESSIBLE BAFFLES ON INLET, OUTLET, AND BETWEEN COMPARTMENTS IF MULTI-COMPARTMENT TANK IS SPECIFIED. ACCESS TO ALL COMPARTMENTS REQUIRED. RISERS TO BE PROVIDED WHEN COVER EXCEEDS 12". SECURE COVER AND RISER TO FINISH GRADE IS REQUIRED OVER ACCESS TO EFFLUENT FILTER, IF SPECIFIED. ACCESS TO THE INTERIOR OF THE TANK SHALL CONFORM TO ENV-WQ 1010.05.
19. 4 INCH GRAVITY SEWER TO BE SDR 35 OR SCHEDULE 40 PVC, UNLESS OTHERWISE NOTED. WHERE GRAVITY SEWER IS LESS THAN 75' TO WELL, 4" GRAVITY SEWER TO BE SDR 26. FORCE MAINS TO BE SDR 26, SCHEDULE 40 PVC, OR POLYETHYLENE PIPE (POLY PIPE), 100-150 RATING.
20. DISTRIBUTION BOX MUST BE SET ON LEVEL STABLE SOIL BASE OR CONCRETE PAD. DISTRIBUTION BOX SHALL HAVE FLOW EQUALIZER OUTLET FITTINGS, UNLESS SYSTEM UTILIZES A PUMP. IF EFFLUENT IS PUMPED, THE DISTRIBUTION BOX MUST HAVE VELOCITY REDUCING BAFFLE OR T. T SHALL NOT RESTRICT AIR FLOW.
21. ALL TOPSOIL, ROOTS AND ORGANIC MATTER SHALL BE REMOVED FROM THE AREA TO BE FILLED, INCLUDING THE AREA UNDER THE 3: 1 SLOPE. DO NOT COMPACT OR SMEAR SUBSOIL WITH MACHINERY. SCARIFY WITH TEETH OF EXCAVATOR BEFORE PLACING FILL. SCARIFY PARALLEL WITH CONTOURS, WORKING FROM THE CENTER OUTWARD. SOIL MUST BE DRY PRIOR TO PREPARATION.
22. IF DISPOSAL AREA IS RAISED, SEPTIC SAND FILL TO BE PUSHED ONTO PREPARED SURFACE FROM THE SIDE. DO NOT ALLOW EQUIPMENT ON THE SCARIFIED SOIL SURFACE. CONTINUOUS GRADING AND SHAPING SHALL BE CARRIED OUT TO ASSURE UNIFORM DENSITY.
23. MATERIAL SPECIFICATIONS:
 - TOPSOIL: 6 INCH MINIMUM LOAM, SEEDED AND MULCHED TO PREVENT EROSION.
 - BACKFILL: CLEAN, PERMEABLE SAND FILL WITH NO STONES GREATER THAN 3 INCHES OR IN ACCORDANCE WITH CURRENT NHDES APPROVED VERSION OR MANUFACTURER'S DESIGN MANUAL, AS APPLICABLE.
 - CLEAN, WASHED SAND.
 - FILL TO RAISE EDA: CLEAN BANK RUN SAND, FREE OF HUMUS, DREDGING OR STONES GREATER THAN 6 INCHES.
24. LEACH LINES AND BED BOTTOM SHALL BE LEVEL PER NHDES ENV-WQ 1017.05(G) AND LEACH LINES SHALL BE INSTALLED PER ENV-WQ 1017.01.
25. DISPOSAL SYSTEMS MUST BE INSPECTED BY NHDES PRIOR TO BACKFILL. CITIES AND TOWNS HAVE INDEPENDENT INSPECTION REQUIREMENTS.
26. DO NOT ALLOW HEAVY WHEELED MACHINERY, VEHICULAR TRAFFIC, LIVESTOCK OR OTHER HEAVY OBJECTS ON ANY COMPONENT OF SYSTEM UNLESS THAT STRUCTURE IS DESIGNED TO WITHSTAND AN H-20 WHEEL LOAD.
27. IT IS THE OWNERS RESPONSIBILITY TO PROPERLY MAINTAIN THIS SYSTEM THROUGH REGULAR PUMPING OF THE SEPTIC TANK. THE OWNER MUST NOT EXCEED DESIGN CAPACITY AND MUST NOT DISPOSE OF INAPPROPRIATE OR PROHIBITED LIQUIDS OR SOLIDS IN THE SYSTEM. KEEP A COPY OF THIS PLAN AND RECORD THE LOCATION OF THE SEPTIC TANK AND PUMP CHAMBER (IF ANY) CLEAN OUT COVERS.
28. EFFLUENT DISPOSAL AREA MAY BE REBUILT IN PLACE, WITH REGULATORY APPROVAL, SHOULD FAILURE OCCUR.



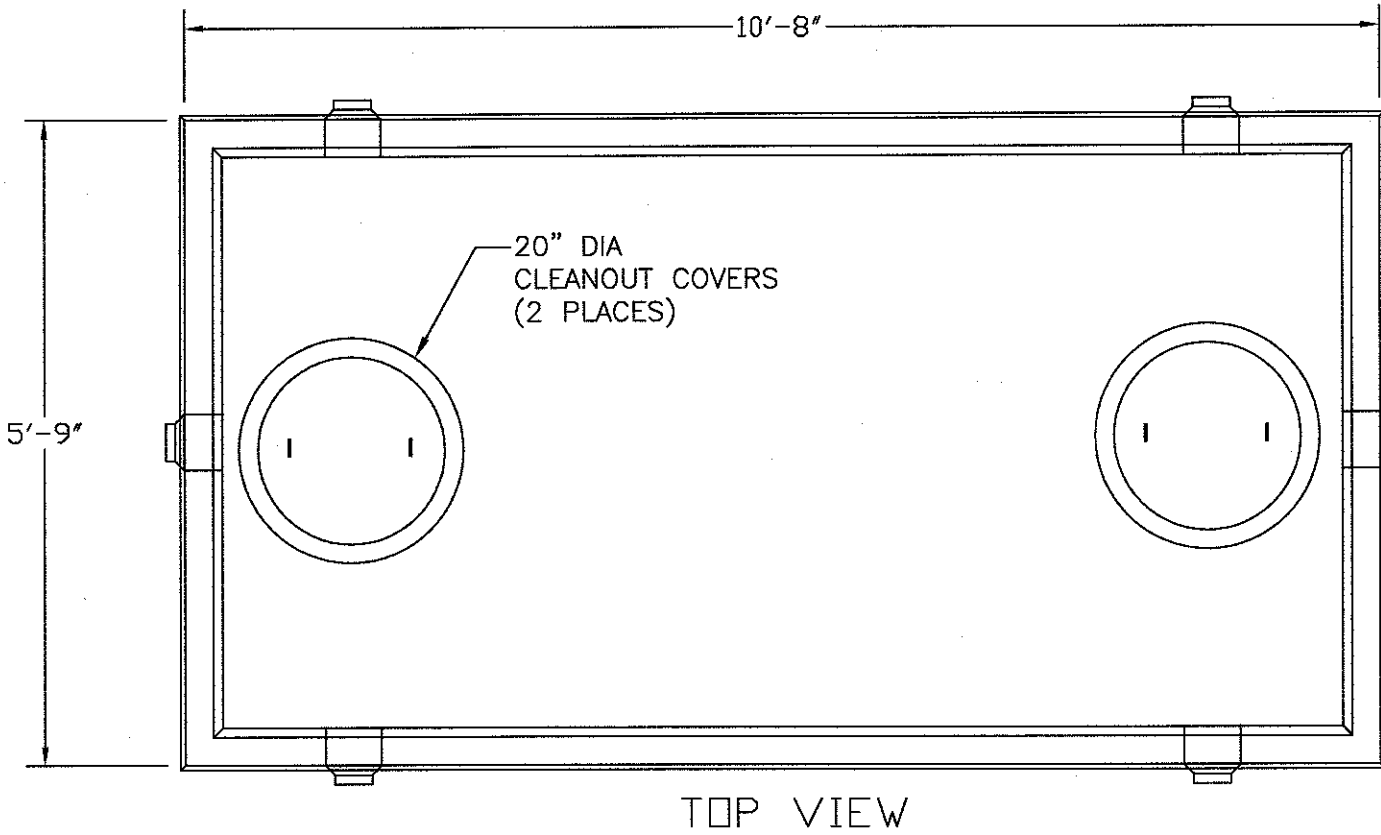
20' X 50' EFFLUENT DISPOSAL AREA DETAIL (NTS)



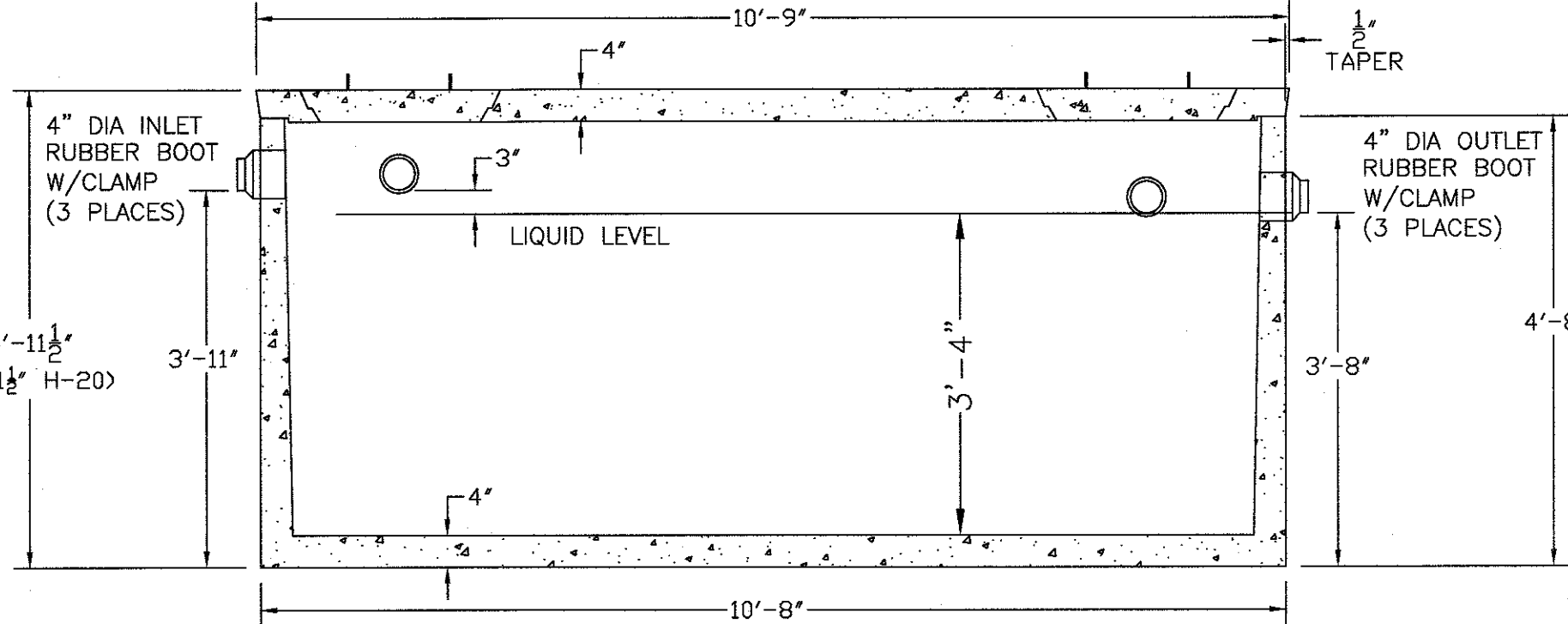
SEPTIC FIELD CROSS SECTION DETAIL (NTS)



DISTRIBUTION BOX DETAIL (NTS)



TOP VIEW



SECTION VIEW SEPTIC TANK DETAIL (NTS)

SEPTIC TANK NOTES:

1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. CONSTRUCTION OF SEPTIC TANK CONFORMS WITH NHDES ENV-WQ1000.
3. ALL REINFORCEMENT PER ASTM C1227.
4. TEES AND GAS BAFFLE SOLD SEPARATELY.
5. TONGUE & GROOVE JOINT SEALED WITH BUTYL RESIN.
6. IF COVER EXCEEDS 4 FEET, HEAVY DUTY TANK IS REQUIRED. ALSO AVAILABLE IN AASHTO HS-20 LOADING.

INVERT DATA

BUILDING SLAB	= 107.5'
SEPTIC TANK IN	= 100.5'
SEPTIC TANK OUT	= 100.25'
D-BOX IN	= 99.65'
D-BOX OUT	= 99.5'
STONE AND PIPE	= 99.5'
BOTTOM OF STONE AND PIPE EDA	= 99.0'
FINISH GRADE	= 101.0'

DESIGN DATA

LOT AREA = 173,805 S.F. (3.99 AC)

NOT TO SCALE	
EMPLOYEES/BEDROOMS	= 20 EMPLOYEES/ 1 BEDROOM
DESIGN FLOW:	= 10 GPD/EMPLOYEE + 225GPD/BEDROOM
DAILY FLOW:	= 425 GPD
SEPTIC TANK REQ'D	= 1,250 GAL
SEPTIC TANK USED	= 1,250 GAL
EFFLUENT AREA REQ'D	= (SEE
EFFLUENT AREA USED	= DESIGN CALCS)

SOIL LOGS

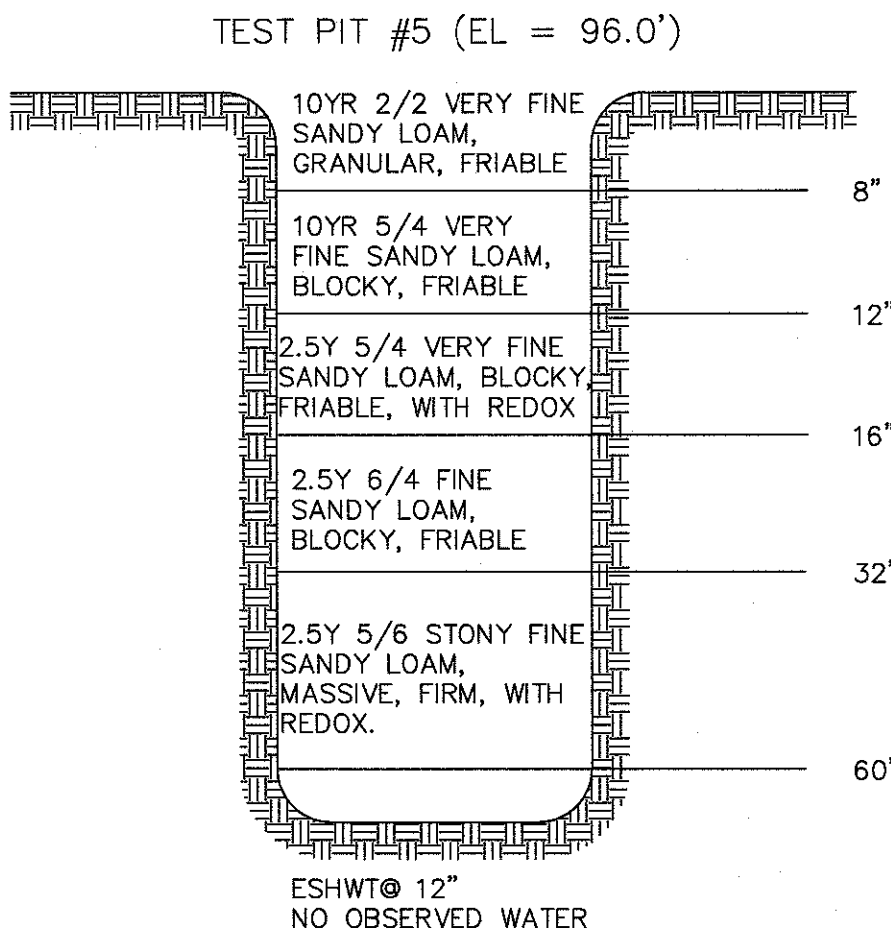
DATE OF TESTS	= 1/3/2018
PRESENT AT TESTS:	= MICHAEL CUOMO, C.S.S.
DESIGN PERCOLATION RATE:	= 2 MINUTES PER INCH
SOIL TYPE	= ELMWOOD

DESIGN CALCS

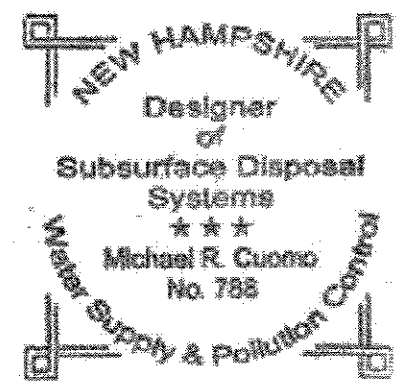
PER NHDES ENV-WQ-1000.(FOR NH),REQUIRED EFFLUENT DISPOSAL AREA (EDA) = 225SF/100 GPD = 956.20 SF WITH 1,000 SF PROVIDED. FIELD SIZE EQUAL TO 20' X 50'

DESIGN INTENT

BOTTOM OF EFFLUENT DISPOSAL AREA (EDA) SHALL BE AT ELEV 99.0' ALONG THE BACK SIDE. THIS PROVIDES A MINIMUM SEPARATION TO SHWT (EL = 95.0') OF 4'.

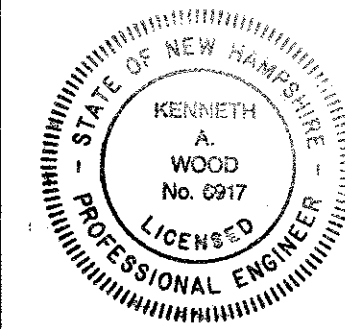


SOIL TEST PIT PROFILE (NTS)

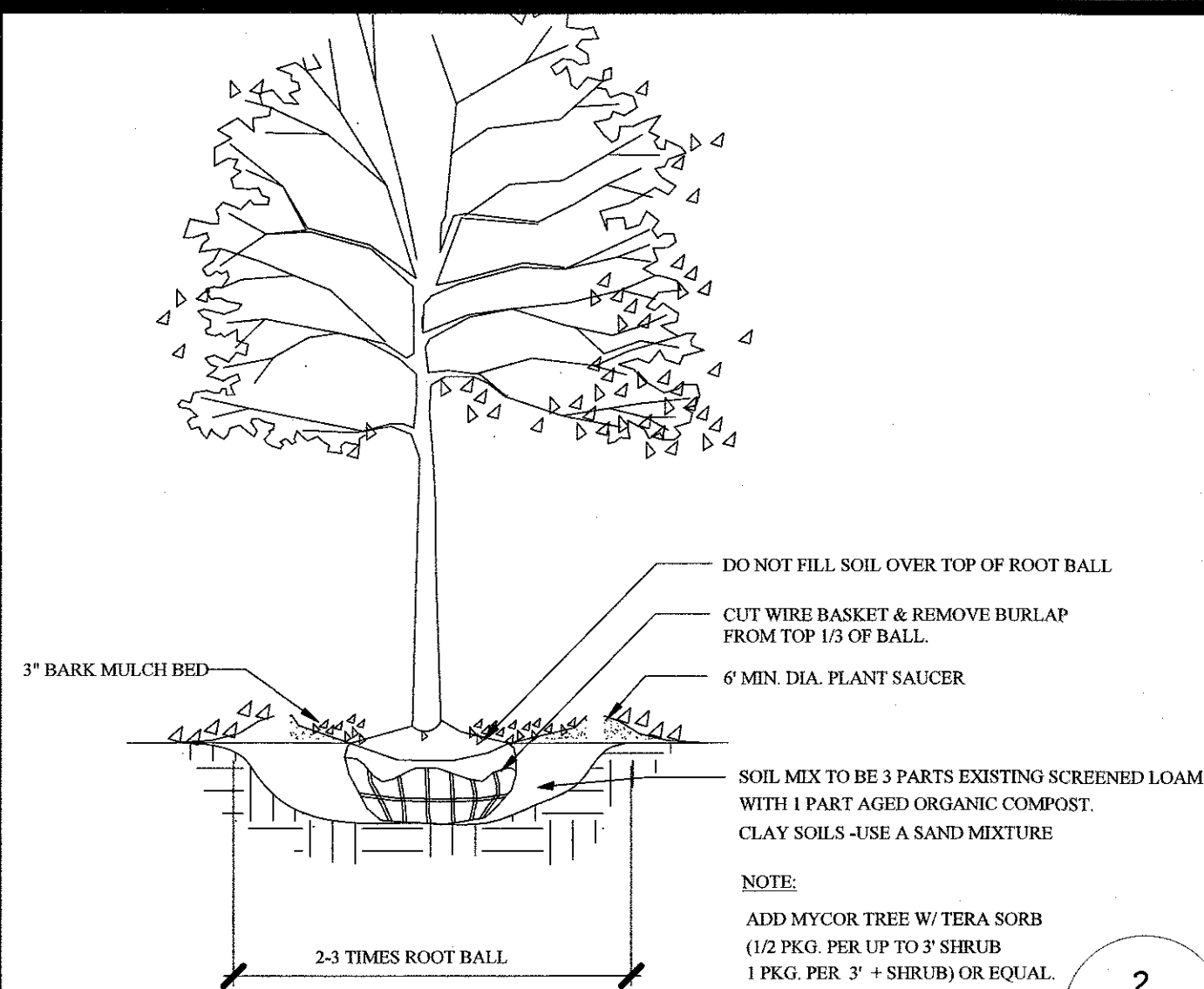


Michael Cuomo

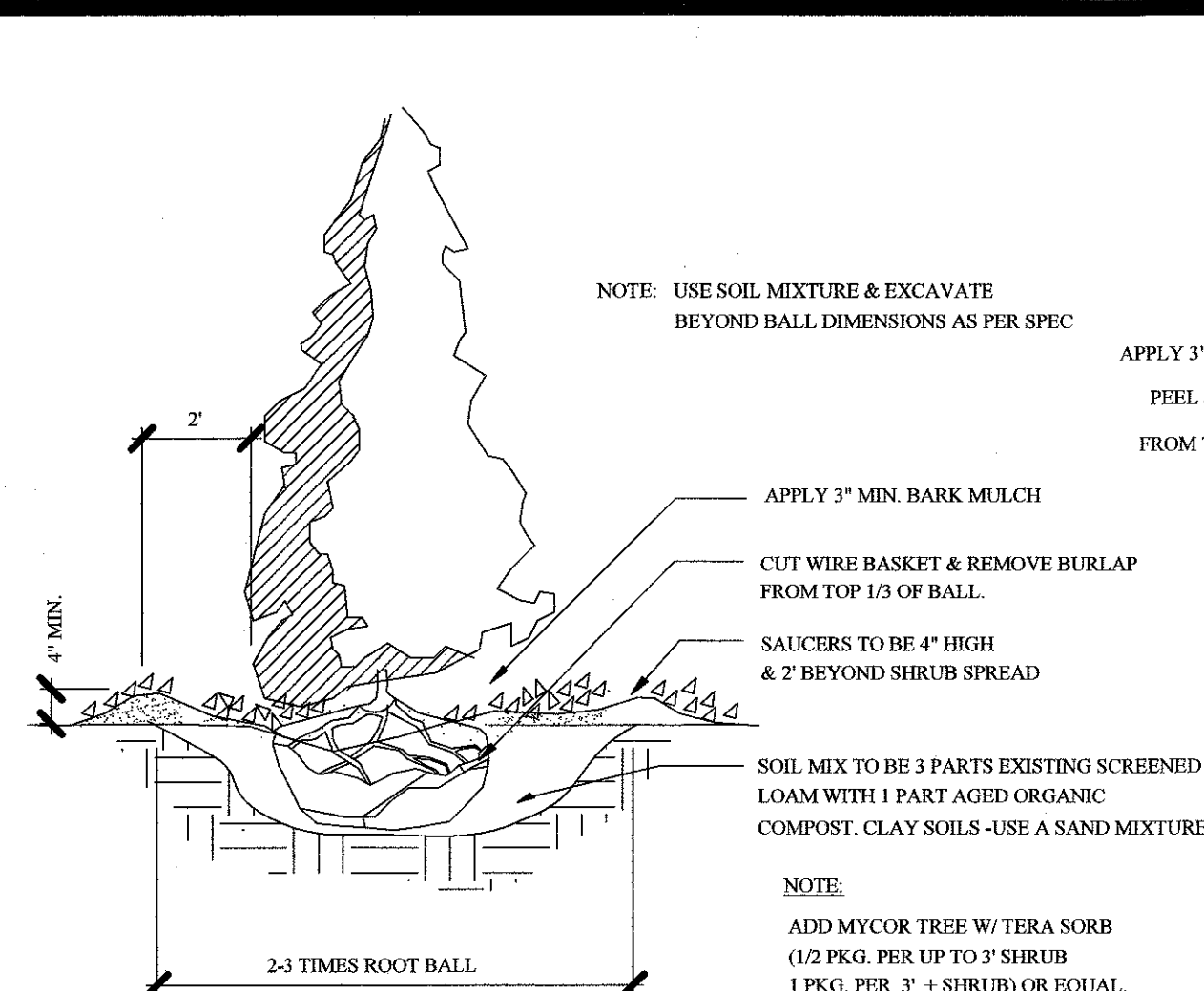
NO.	DESCRIPTION	DATE
A	TECHNICAL REVIEW COMMENTS	4/18/2019
NO.	REVISIONS	



SEPTIC DESIGN DETAILS 29 LITTLEWORTH RD DOVER, NH 03820		
FOR: 29 LITTLEWORTH ROAD LLC PO BOX 694 DOVER, NH 03820		
ATTAR ENGINEERING, INC. CIVIL • STRUCTURAL • MARINE 1284 STATE ROAD - ELIOT, MAINE 03903 PHONE: (207)439-6023 FAX: (207)439-2128		
SCALE: 1" = 50' DATE: 3/5/2019	APPROVED BY: <i>Michael R. Cuomo</i>	DRAWN BY: BRN REVISION DATE: A : 4/18/2019 SHEET: 4.4
PLANNING FILE NO: P19-26		JOB NO: C147-19



1
L-1
TREE PLANTING - 2"+ CAL.
SCALE: NTS



2
L-1
PYRAMIDAL EVERGREEN TREE PLANTING
SCALE: NTS

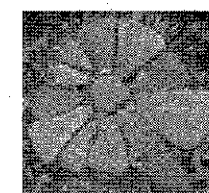
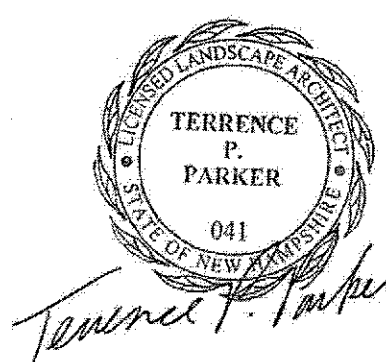
LANDSCAPE NOTES:

1. THE CONTRACTOR SHALL LOCATE AND VERIFY THE EXISTENCE OF ALL UTILITIES PRIOR TO STARTING WORK.
2. THE CONTRACTOR SHALL SUPPLY ALL PLANT MATERIALS IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTINGS SHOWN ON THE DRAWINGS.
3. ALL MATERIAL SHALL CONFORM TO THE GUIDELINES ESTABLISHED BY THE CURRENT AMERICAN STANDARD FOR NURSERY STOCK PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
4. ALL PLANT SUBSTITUTIONS MUST BE APPROVED BY THE LANDSCAPE ARCHITECT.
5. ALL PLANT MATERIALS SHALL BE EXACTLY AS SPECIFIED BY THE LANDSCAPE ARCHITECT. IF PLANT SPECIES CULTIVARS ARE FOUND TO VARY FROM THAT SPECIFIED AT ANY TIME DURING THE GUARANTEE PERIOD, THE LANDSCAPE ARCHITECT RESERVES THE RIGHT TO HAVE THE CONTRACTOR REPLACE THAT PLANT MATERIAL. THE LANDSCAPE ARCHITECT RESERVES THE RIGHT TO REJECT ANY PLANT DELIVERED TO THE SITE FOR AESTHETIC REASONS BEFORE PLANTING. THE LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR THE QUALITY FOR ALL THE PLANTS.
6. PLANTS SHALL BE SUBJECT TO INSPECTION AND APPROVAL AT THE PLACE OF GROWTH, UPON DELIVERY OR AT THE JOB SITE WHILE WORK IS ON-GOING TO CONFORMITY TO SPECIFIED QUALITY, SIZE AND VARIETY.
7. PLANTS FURNISHED IN CONTAINERS SHALL HAVE THE ROOTS WELL ESTABLISHED IN THE SOIL MASS AND SHALL HAVE AT LEAST ONE (1) GROWING SEASON. ROOT-BOUND PLANTS OR INADEQUATELY SIZED CONTAINERS TO SUPPORT THE PLANT MAY BE DEEMED UNACCEPTABLE.
8. NO PLANT SHALL BE PUT IN THE GROUND BEFORE GRADING HAS BEEN FINISHED AND APPROVED BY THE LANDSCAPE ARCHITECT.
9. ALL PLANTS SHALL BE INSTALLED AND DETAILED PER PROJECT SPECIFICATIONS.
10. ALL PLANTS SHALL BE WATERED THOROUGHLY TWICE DURING THE FIRST 24-HOUR PERIOD AFTER PLANTING. ALL PLANTS SHALL BE WATERED WEEKLY, OR MORE OFTEN IF NECESSARY, DURING THE FIRST GROWING SEASON.
11. ALL PLANTS SHALL BE GUARANTEED BY THE CONTRACTOR FOR NOT LESS THAN ONE FULL YEAR FROM THE TIME OF PROVISIONAL ACCEPTANCE. DURING THIS TIME, THE OWNER SHALL MAINTAIN ALL PLANT MATERIALS IN THE ABOVE MANNER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSPECT THE PLANTS TO ENSURE PROPER CARE. IF THE CONTRACTOR IS DISSATISFIED WITH THE CARE GIVEN, HE SHALL IMMEDIATELY, AND IN SUFFICIENT TIME TO PERMIT THE CONDITION TO BE RECTIFIED, NOTIFY THE LANDSCAPE ARCHITECT IN WRITING OR OTHERWISE FORFEIT HIS CLAIM. LANDSCAPE CONTRACTOR SHALL PRUNE PLANTINGS OF DEAD LIMBS OR TWIGS DURING THE FIRST YEAR OF GROWTH.
12. FINAL ACCEPTANCE BY THE LANDSCAPE ARCHITECT WILL BE MADE UPON THE CONTRACTOR'S REQUEST AFTER ALL CORRECTIVE WORK HAS BEEN COMPLETED.
13. LANDSCAPE CONTRACTOR SHOULD REPLACE DEAD PLANTINGS IMMEDIATELY UPON OWNER DIRECTION WITHIN THE WARRANTY PERIOD AND AGAIN AT THE END OF THE GUARANTEE PERIOD, THE CONTRACTOR SHALL HAVE REPLACED ANY PLANT MATERIAL THAT IS MISSING, NOT TRUE TO SIZE AS SPECIFIED, THAT HAVE DIED, THAT HAVE LOST THEIR NATURAL SHAPE DUE TO DEAD BRANCHES, EXCESSIVE PRUNING OR INADEQUATE OR IMPROPER CARE, OR THAT ARE, IN THE OPINION OF THE LANDSCAPE ARCHITECT, IN UNHEALTHY OR UNSIGHTLY CONDITION.
14. ALL LANDSCAPE AREAS TO BE GRASS COMMON TO REGION EXCEPT FOR INTERIOR LANDSCAPED ISLANDS OR WHERE OTHER PLANT MATERIAL IS CALLED FOR.
15. ALL TREES AND SHRUBS TO BE PLANTED IN MULCH BEDS WITH DEFINED AND CUT EDGES TO SEPARATE TURF GRASS AREAS.
16. FOR ANY LANDSCAPE AREA SO DESIGNATED TO REMAIN, WHETHER ON OR OFF-SITE, REMOVE WEEDS, ROCKS, CONSTRUCTION ITEMS, ETC., THEN APPLY GRASS SEED OR PINE BARK MULCH AS DEPICTED ON PLANS.
17. LANDSCAPE CONTRACTOR SHALL FEED AND PRUNE EX. TREES, ON OR JUST OFF SITE, THAT HAVE EXPERIENCED ROOT BASE INTRUSION OR DAMAGE DURING CONSTRUCTION IMMEDIATELY AND FOR THE DURATION OF THE WARRANTY PERIOD AT THE DIRECTION OF THE LANDSCAPE ARCHITECT.
18. EXISTING TREES TO REMAIN SHALL BE PROTECTED WITH TEMPORARY SNOW FENCING AT THE EDGE OF THE EX. TREE CANOPY THE CONTRACTOR SHALL NOT STORE VEHICLES OR MATERIALS WITHIN THE LANDSCAPED AREAS. ANY DAMAGE TO EXISTING TREES, SHRUBS OR LAWN SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
19. ALL MULCH AREAS SHALL RECEIVE A 2" LAYER OF SHREDDED PINE BARK MULCH.
20. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH PROJECT SPECIFICATIONS.

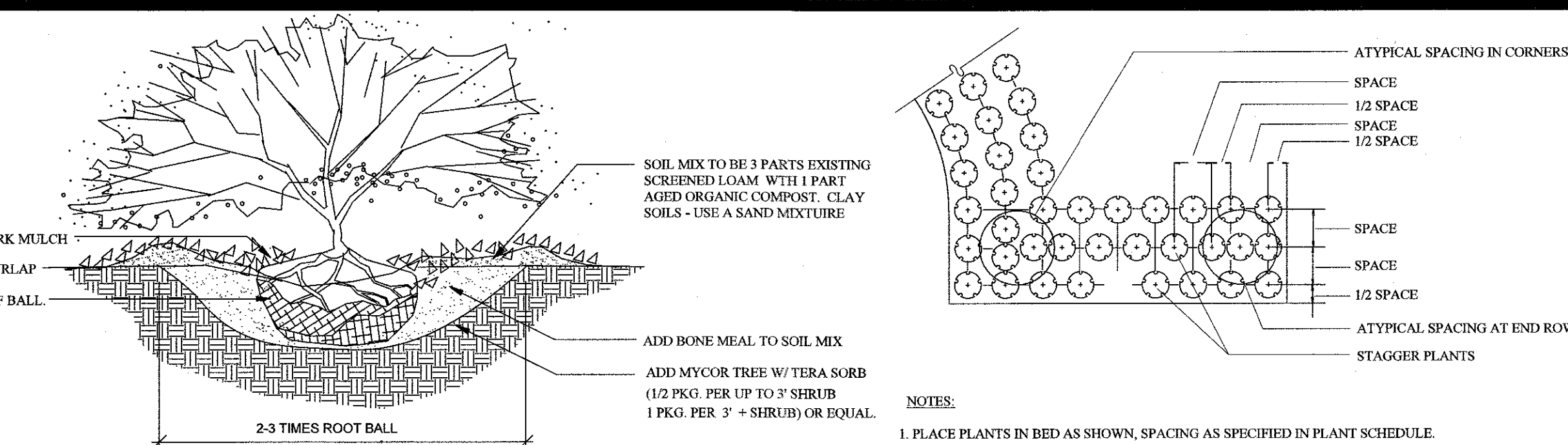
Littleworth Maintenance plan

Installation of all new plants or replacement plants shall be planted during the growing season from April to October.
Plants shall be planted in accordance with the Landscape Notes on the planting plan.
All plants shall be watered 2x per week during the first growing season. Watering shall saturate the soil around the root ball. The proper use and regular refilling of 'Gator' bags is acceptable.
Aged and organic compost mulch shall be used to a 2" depth shall be maintained around root ball. Do not stack mulch in mounds deeper than 2".
Planting beds shall be kept free of weeds on a biweekly schedule.
Bed edges shall be maintained to keep lawn mowers from damaging trees and shrubs.
Lawn areas shall be mowed on a weekly schedule.
Broken or dead limbs of all plant materials shall be removed close to trunk, but not damaging trunk of plant with clean sharp shears.
Severely injured, diseased, or dead plant material shall be replaced in kind in perpetuity.
Aged organic compost mulch is preferred, but an owner may use a low phosphorous and slow release nitrogen organic fertilizer as needed.
If ownership of a site is conveyed to a new property owner, the new owner shall be responsible for maintaining all landscaping in accordance with the approved final landscaping plan.

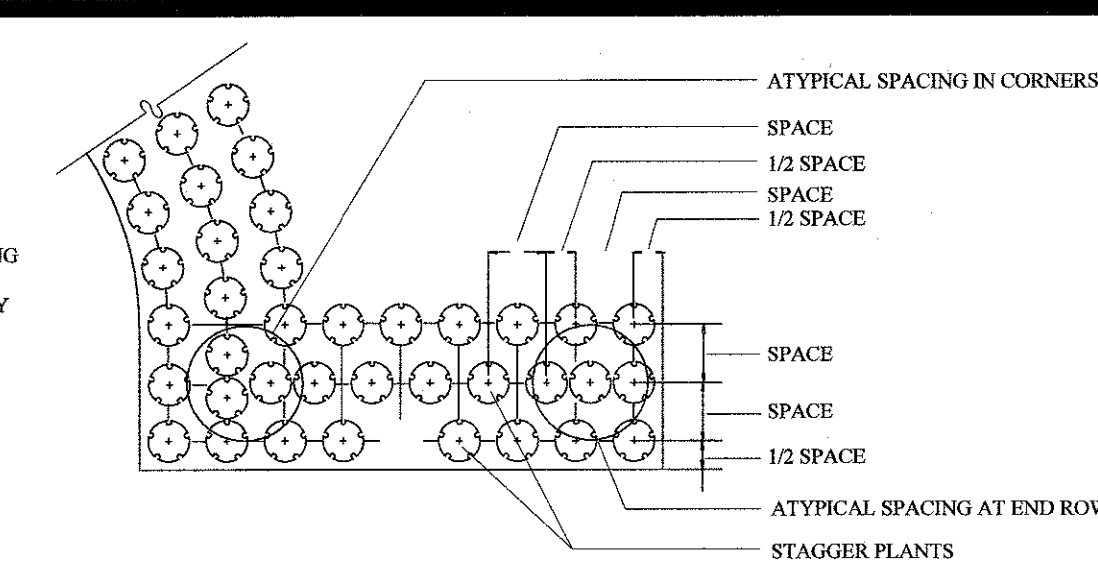
NOTE: ALL EX. TREES TO REMAIN SHALL BE PROTECTED DURING SITE CLEARING AND CONSTRUCTION THROUGH THE USE OF CONSTRUCTION FENCING.
No construction materials, equipment, vehicles, or temporary soil deposits shall be located within the dripline of existing trees. Before commencement of work, protective barriers shall be installed and maintained around each plant and/or groups of plants that are to remain on site until completion. Snow fence installed around the dripline of the tree canopy is an example of an acceptable barrier.



terra firma
landscape architecture
165 a court street | portsmouth, nh 03801
office 603.430.8388 | terrence@terrafirmalandscape.com

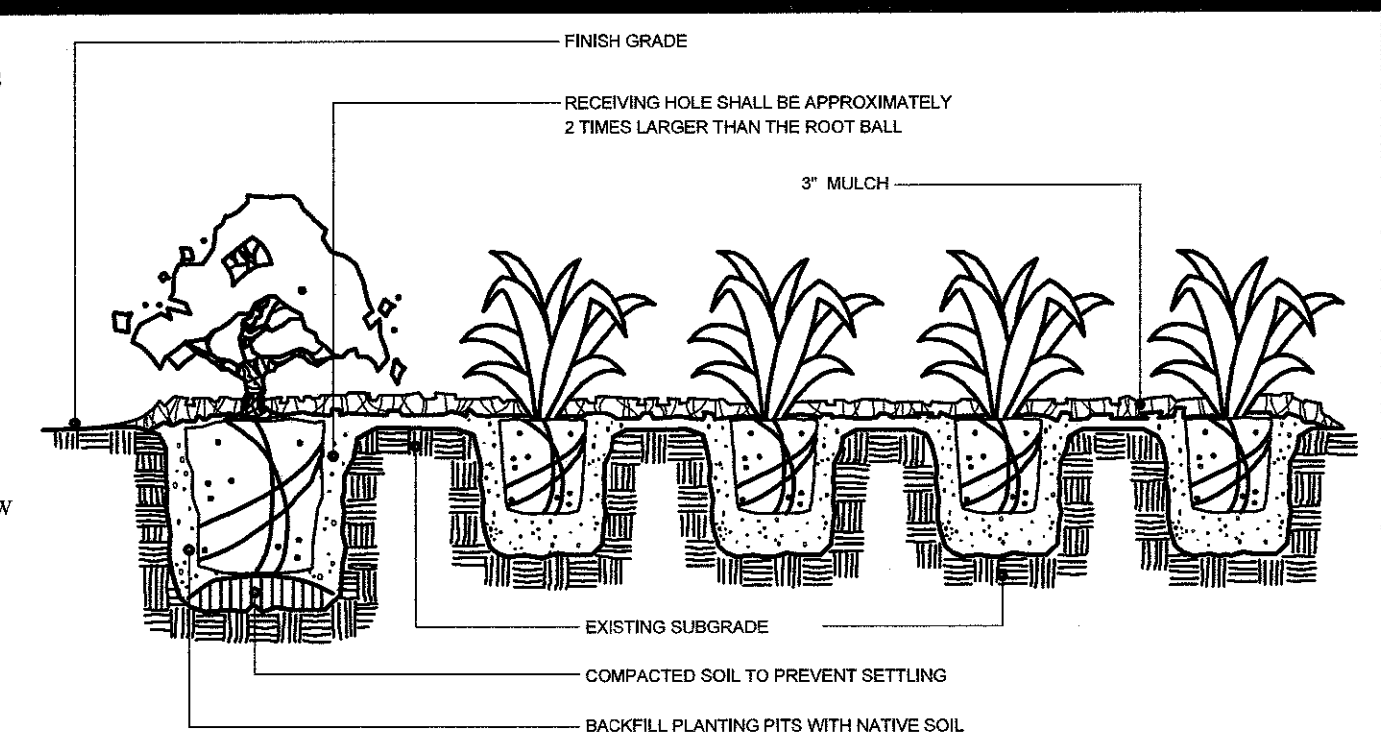


3
L-1
B&B SHRUB PLANTING
SCALE: NTS



- NOTES:
1. PLACE PLANTS IN BED AS SHOWN, SPACING AS SPECIFIED IN PLANT SCHEDULE.
 2. GROUND COVER SHALL BE TRIANGULAR SPACED IN ROWS PARALLEL TO STRAIGHT EDGES AND SHALL BE EVENLY SPACED IN ROWS PARALLEL TO CURVE EDGES.

4
L-1
GROUND COVER SPACING DETAIL
SCALE: NTS



5
L-1
SHRUB/GROUND COVER PLANTING DETAIL
SCALE: NTS

LEGEND

PROPERTY LINE	
LOT BOUNDARY	
PRP. PAVEMENT	
ABUTTING PROP. LINE	
SETBACK	
SOIL TYPE BOUNDARY	
WETLAND BOUNDARY	
WETLAND SETBACK	

Plant List				
ID	Qty	Latin Name	Common Name	Scheduled Size
AS	6	Acer saccharum 'Bonfire'	Bonfire Sugar Maple	2.5-3" CAL.
CR	52	Cornus racemosa	Gray Dogwood	24" MINIMUM HT
GL	2	Gleditsia triacanthos inermis 'Halka'	Halka Thornless Honeylocust	2.5-3" CAL.
IGS	32	Ilex glabra 'Shamrock'	Inkberry	24" MIN
LL	3	Larix laricina	American Larch	2.5-3" CAL.
MP	18	Myrica pensylvanica	Northern Bayberry	24" MINIMUM HT
PG	3	Picea glauca	White Spruce	8-10' HT
QR	3	Quercus rubra	Red Oak	2.5-3" CAL.

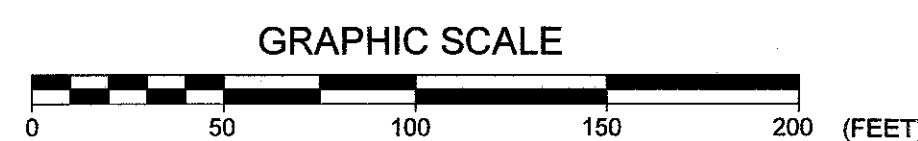
INDEX OF SHEETS

- 1.1 EXISTING CONDITIONS PLAN
- 1.2 SITE PLAN
- 2.1 GRADING AND UTILITY PLAN
- 3.1 ROAD PLAN AND PROFILE
- 4.1 SITE DETAILS
- 4.2 SITE DETAILS
- 4.3 SITE DETAILS
- 4.4 SITE DETAILS
- 6.1 LANDSCAPING PLAN
- 8.1 LIGHTING PLAN

REFERENCES

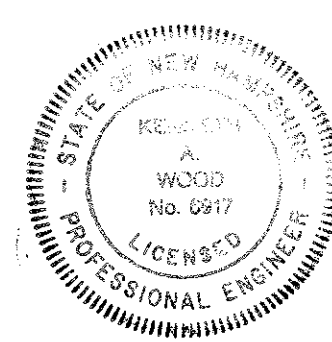
- 1.) "S.E.N.H. INDUSTRIAL PARK 1 ROGERS ROAD DOVER, N.H." DONE OCTOBER 1966, PREPARED BY G.L. DAVIS AND ASSOCIATES.

SIGNATURE	DATE
CHAIR	



NO.	DESCRIPTION	DATE
A	TECHNICAL REVIEW COMMENTS	4/18/2019
NO.	DESCRIPTION	DATE
	REVISIONS	

MAP BLOCK NO. G-6-0-0



LANDSCAPE PLAN
29 LITTLEWORTH RD
DOVER, NH 03820

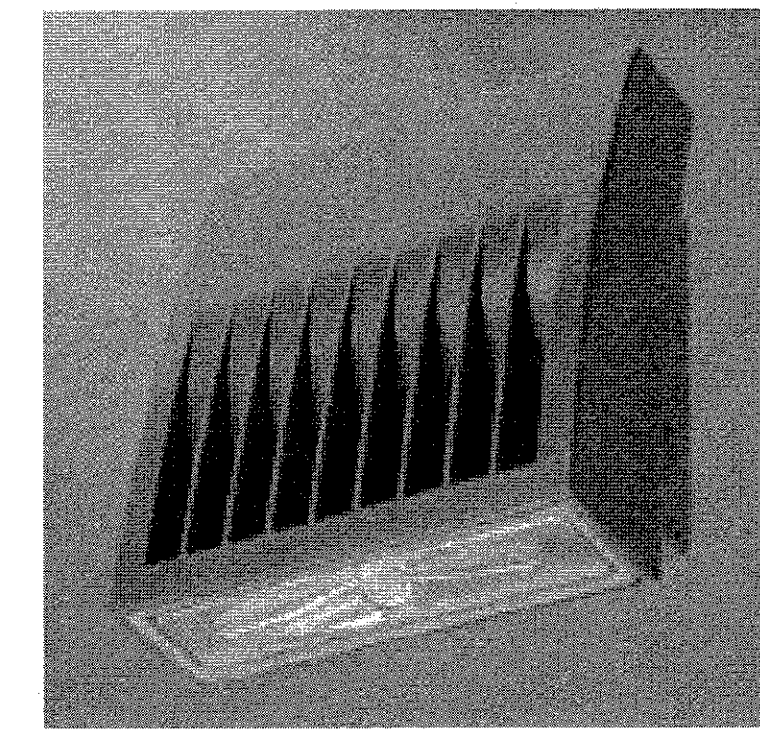
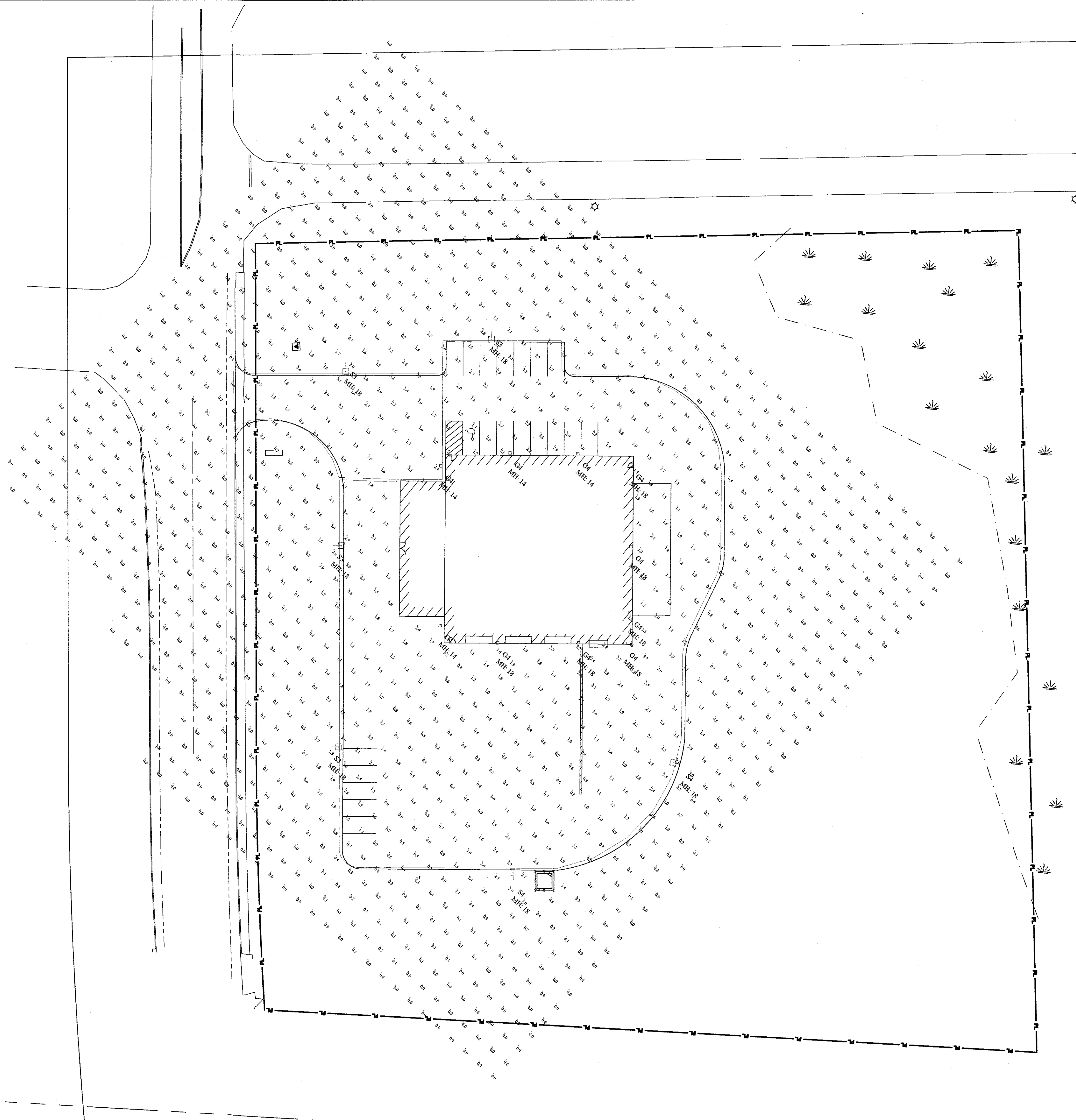
FOR: 29 LITTLEWORTH ROAD LLC
PO BOX 694
DOVER, NH 03820

ATTAR ENGINEERING, INC.

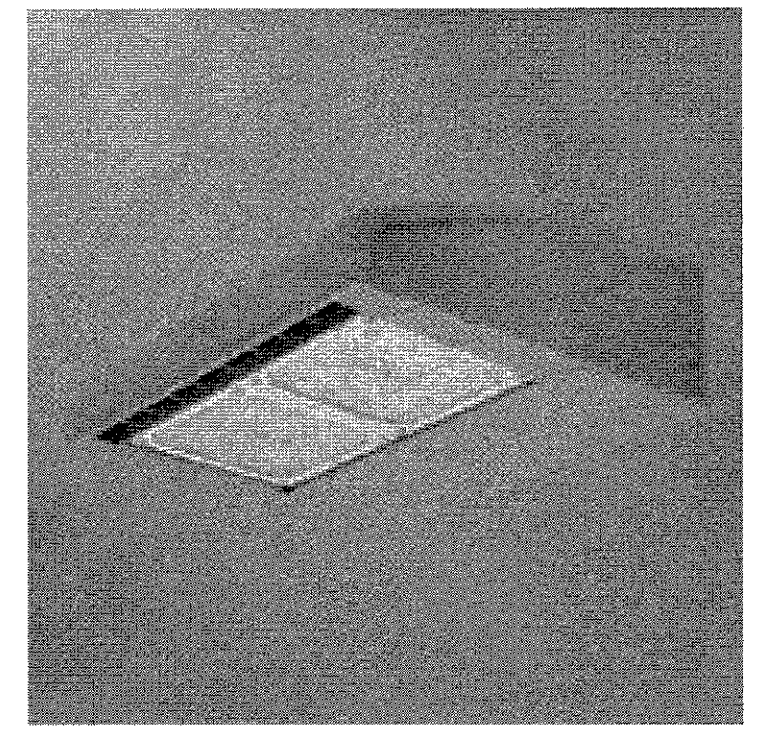
CIVIL • STRUCTURAL • MARINE
1284 STATE ROAD - ELIOT, MAINE 03903
PHONE: (207)439-6023 FAX: (207)439-2128

SCALE: 1" = 50'	APPROVED BY: 	DRAWN BY: BRN
DATE: 3/5/2019		REVISION DATE: A: 4/18/2019

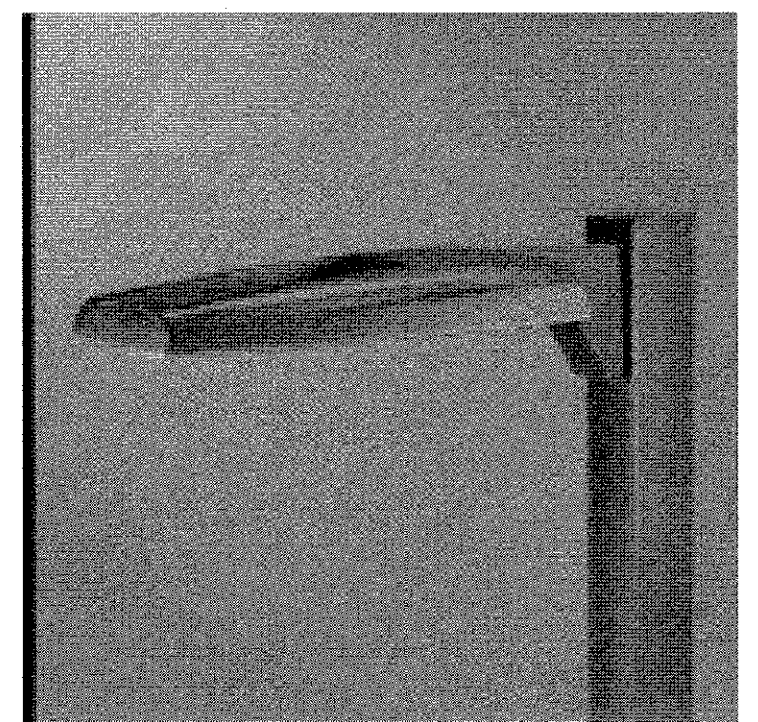
PLANNING FILE NO: P19-25 JOB NO: C 142-12 19-04-17 - LITTLEWORTH BASE.D SHEET: 6.1



TYPE W1 - XT03-W



TYPE G4/G2



TYPE PFPRV

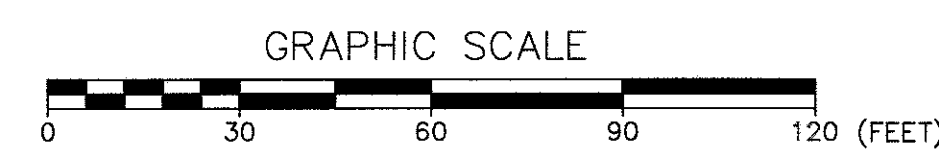
Luminaire Schedule			
Qty	Symbol	Label	Description
10		G4	EATON - MCGRAW-HILL (FORMER COOPER LIGHTING)
4		S3	EATON - LUMARK (FORMER COOPER LIGHTING)
2		S4	EATON - LUMARK (FORMER COOPER LIGHTING)

Drive Entry To Building Front

Illuminance (Fc)
Average = 1.78
Maximum = 3.6
Minimum = 0.4
Avg/Min Ratio = 4.45
Max/Min Ratio = 9.00

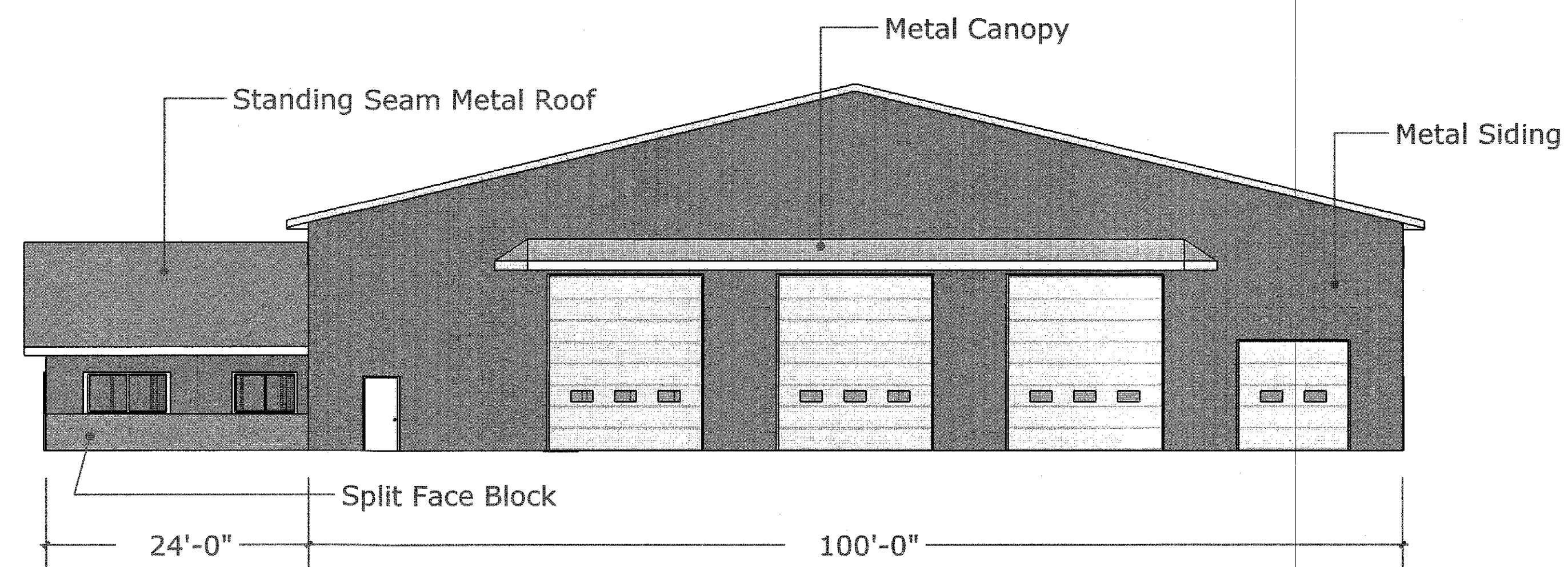
Parking Lot

Illuminance (Fc)
Average = 1.46
Maximum = 3.5
Minimum = 0.3
Avg/Min Ratio = 4.87
Max/Min Ratio = 11.67



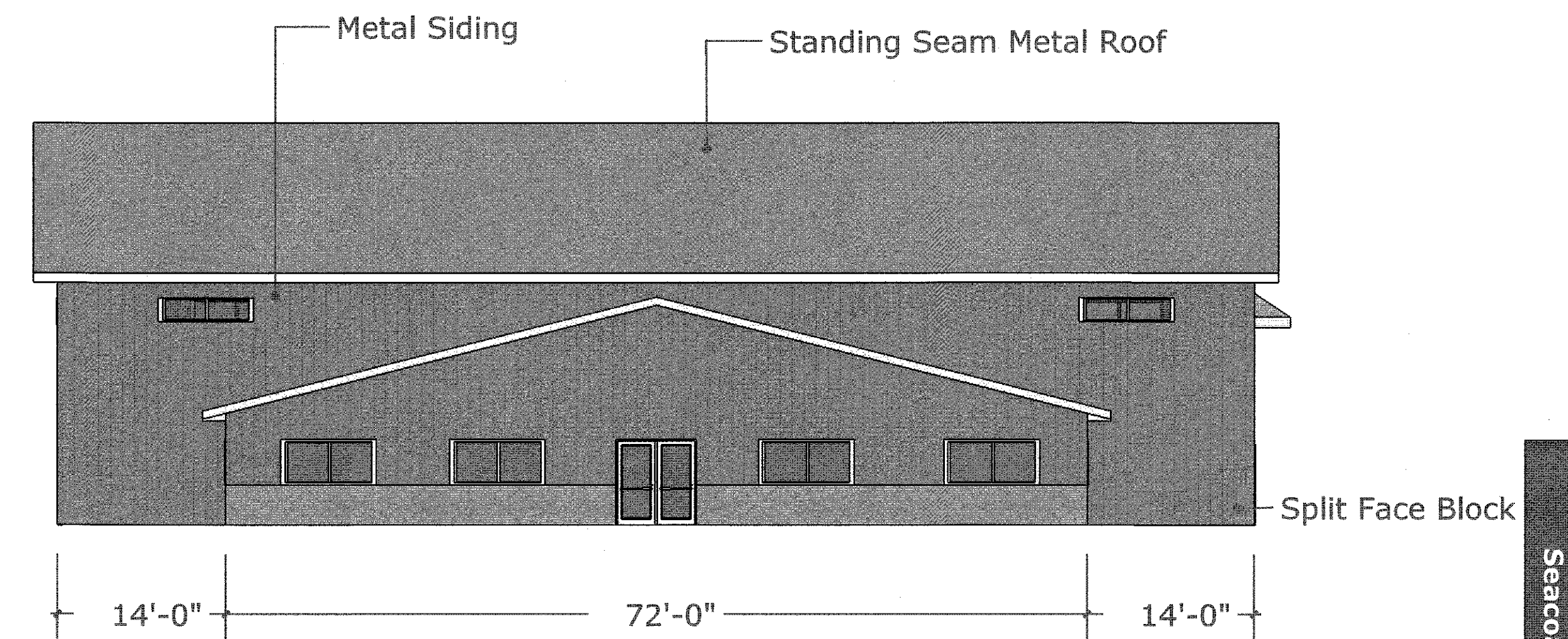
MAP BLOCK NO. G-6-0-0

		LIGHTING PLAN 29 LITTLEWORTH RD DOVER, NH 03820	
		FOR: 29 LITTLEWORTH ROAD LLC PO BOX 694 ELIOT, ME 03903	
		ATTAR ENGINEERING, INC. CIVIL • STRUCTURAL • MARINE 1284 STATE ROAD - ELIOT, MAINE 03903 PHONE: (207)439-6023 FAX: (207)439-2128	
		SCALE: 1" = 30'	APPROVED BY:
		DATE: 3/5/2019	DRAWN BY: BRN
		PLANNING FILE NO: P19-26	REVISION DATE: A : 4/18/2019
		JOB NO: C147-19	SHEET: 8.1



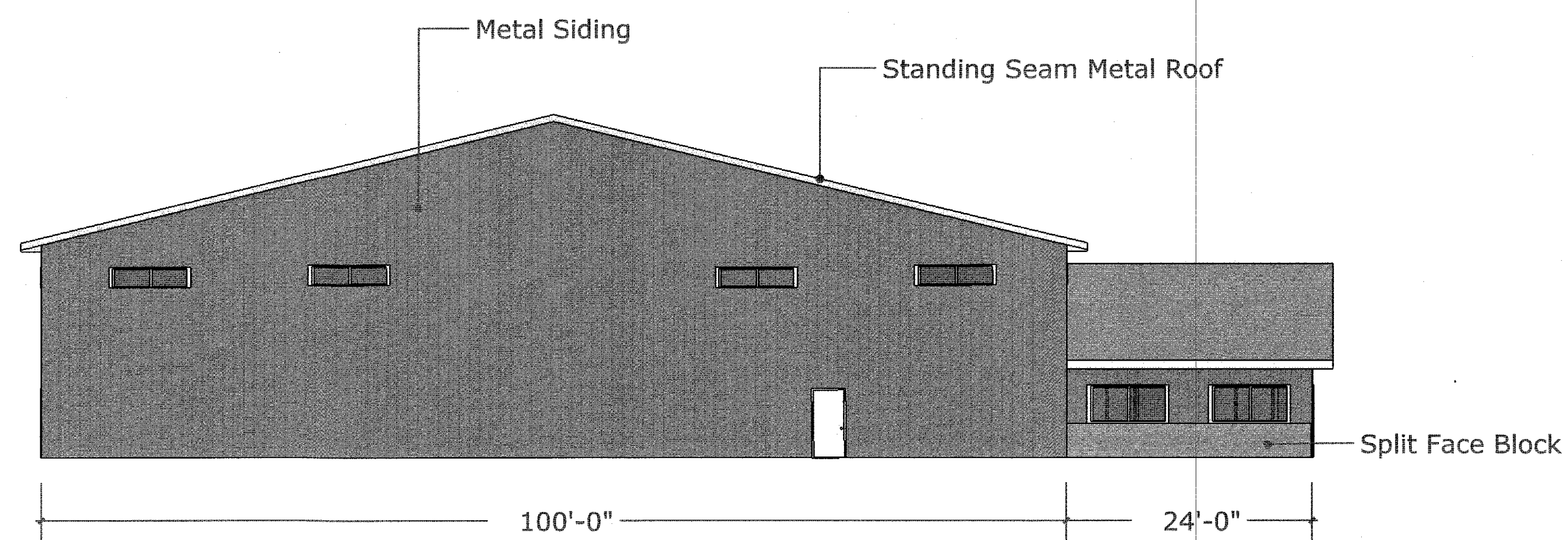
Elevation A

A
01



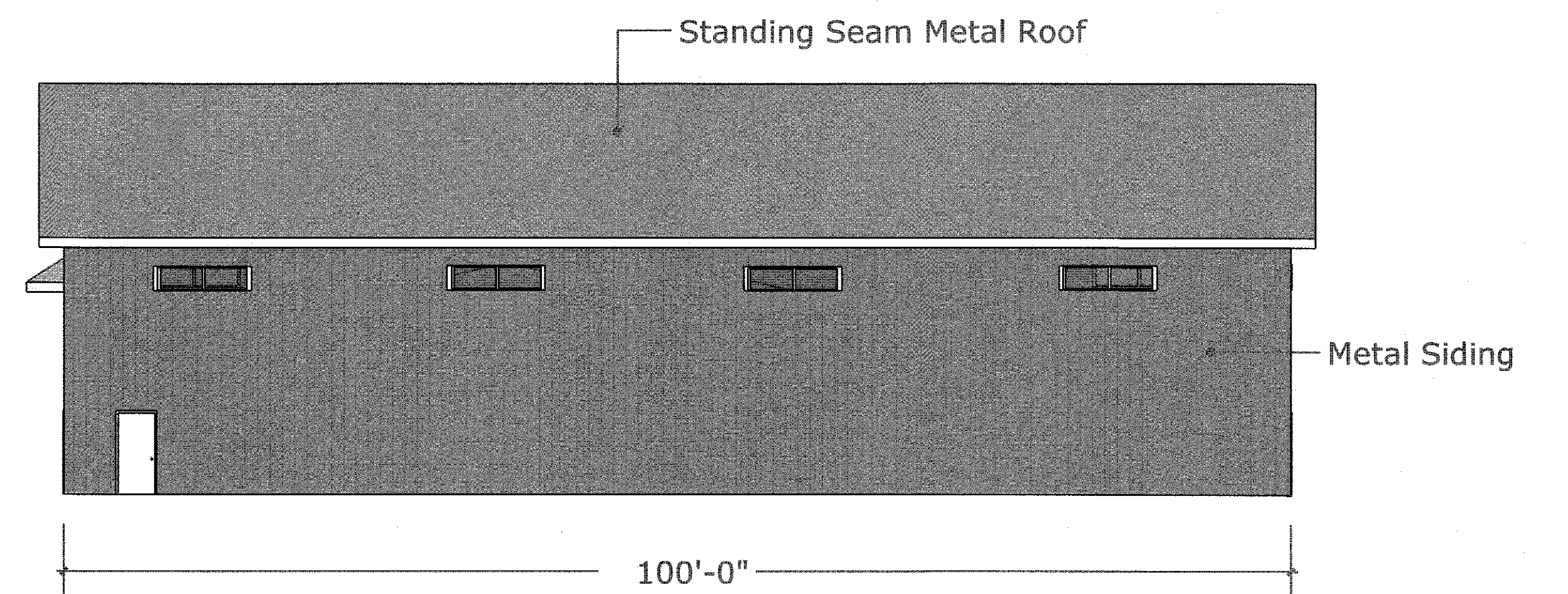
Elevation B

A
02



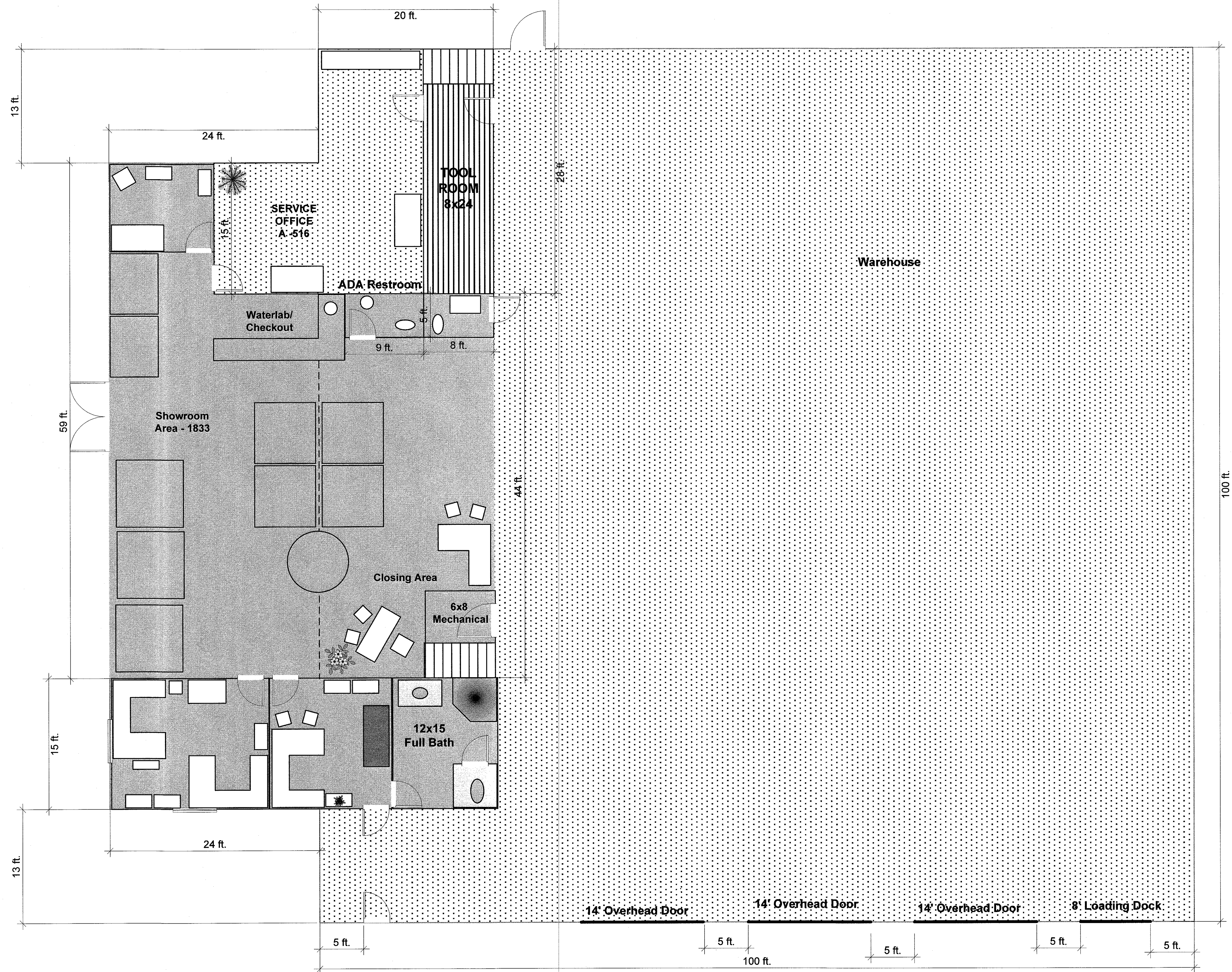
Elevation C

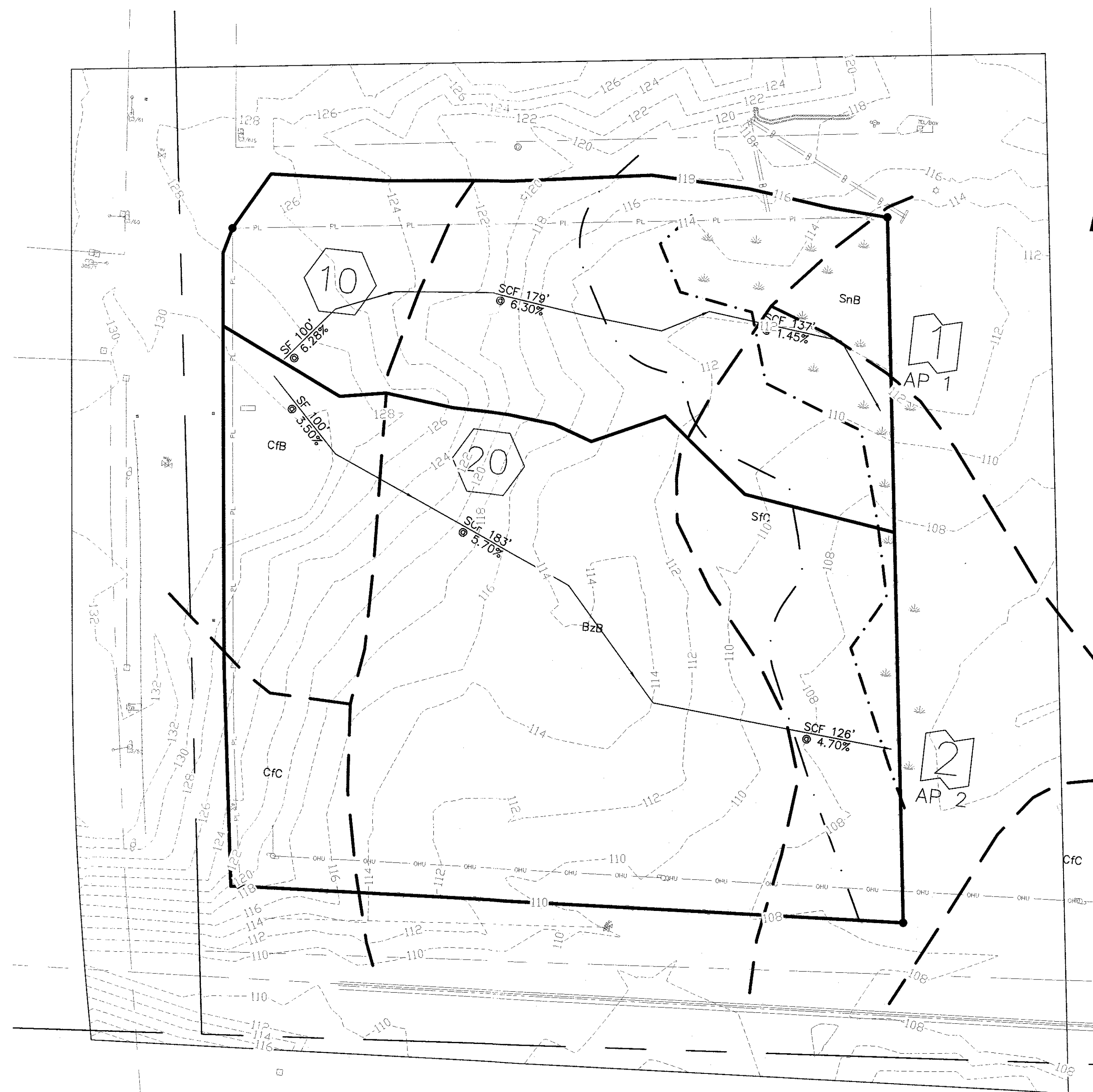
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03



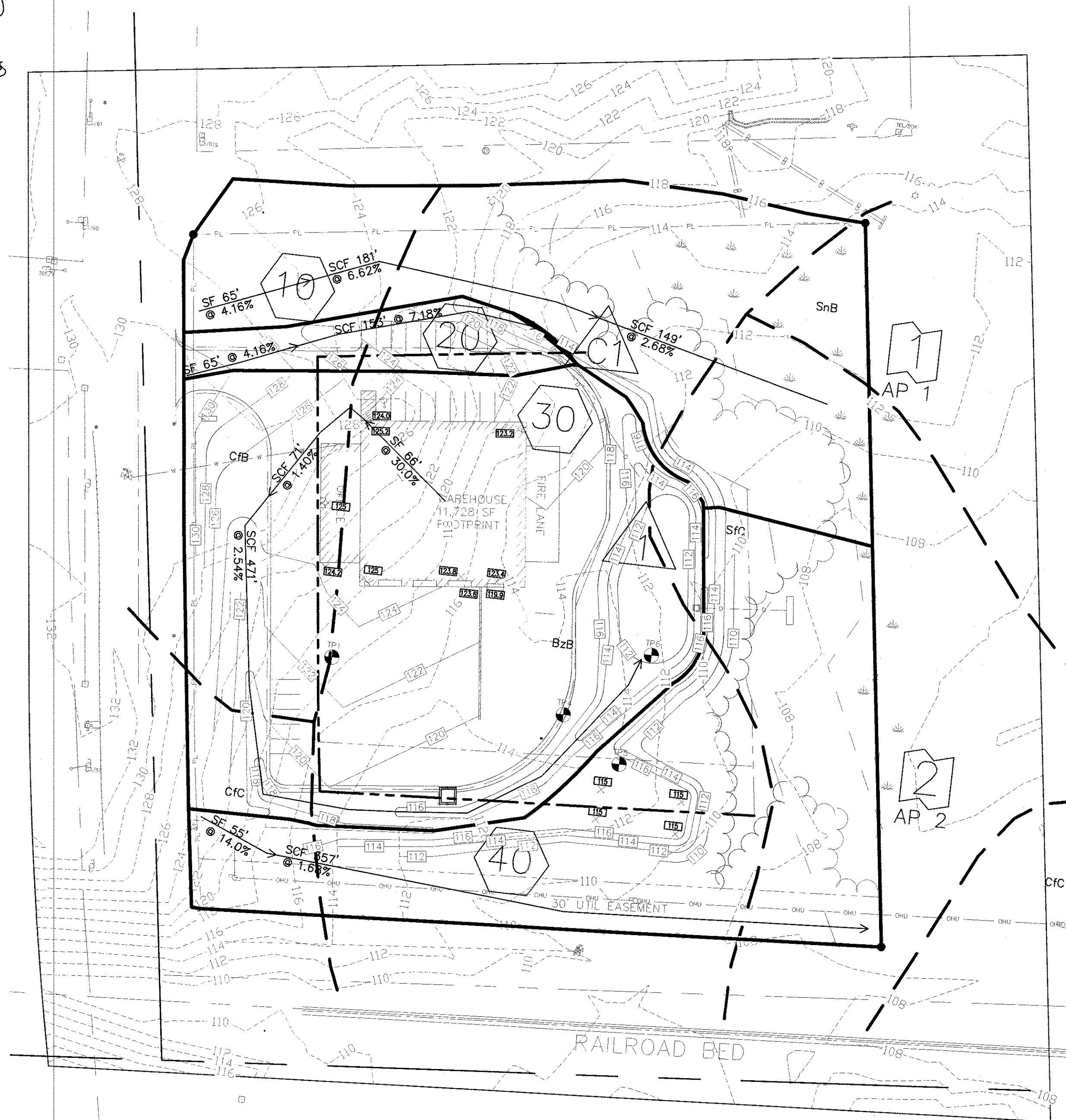
Elevation D

A
04





EXISTING STORMWATER DRAINAGE PLAN



PROPOSED STORMWATER DRAINAGE PLAN

GENERAL NOTES

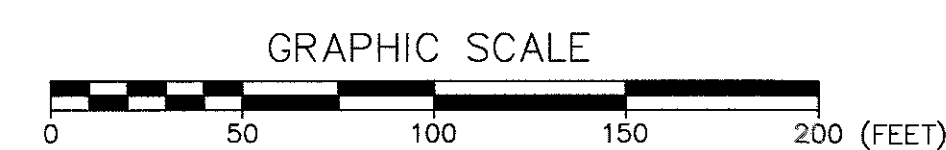
- 1.) ACCORDING TO THE TEST PITS (SHOWN ON PLAN) SOILS WITHIN THE DEVELOPED AREAS CONSISTS OF ELMWOOD, PAXTON AND WOODBRIDGE - ALL ARE HYDROLOGIC SOIL GROUP "C".

REFERENCES

- 1.) SOIL DATA APPROXIMATED FROM THE USDA NRCS WEB SOIL SURVEY.
- 2.) TEST PIT DATA PREPARED BY MICHAEL CUOMO FOR ATTAR ENGINEERING, INC. ON JANUARY 3, 2018.

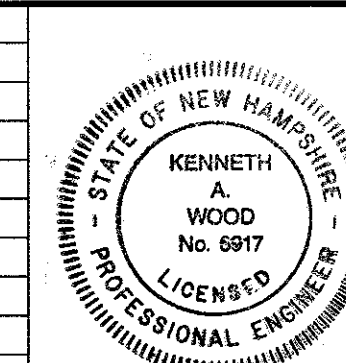
LEGEND	
PROPERTY LINE	— — — — —
LOT BOUNDARY	— — — — —
PRP. PAVEMENT	— — — — —
ABUTTING PROP. LINE	— — — — —
SETBACK	— — — — —
SOIL TYPE BOUNDARY	— — — — —
WETLAND BOUNDARY	— — — — —
WETLAND SETBACK	— — — — —
SUBCATCHMENT BNDY	— — — — —
PRP SUBCATCH BNDY	— — — — —

SYMBOL	SOIL SERIES	HYDROLOGIC SOIL GROUP
BzB	BUXTON SILT LOAM, 3% TO 8% SLOPE	C/D
CFB	CHARLTON FINE SANDY LOAM, 3% TO 8% SLOPE	B
CFC	CHARLTON FINE SANDY LOAM, 8% TO 15% SLOPE	B
HcC	HOLLIS-CHARLTON FINE SANDY LOAMS, 8% TO 15% SLOPE	D
SfC	SUFFIELD SILT LOAM, 8% TO 15% SLOPE	C
SnB	SUTTON FINE SANDY LOAM, 3% TO 8% SLOPE	B/D



NO.	DESCRIPTION	DATE
A	TECHNICAL REVIEW COMMENTS	4/18/2019
	REVISIONS	

MAP BLOCK NO. G-6-0-0



STORMWATER RUNOFF PLAN 29 LITTLEWORTH RD DOVER, NH 03820	
FOR:	29 LITTLEWORTH ROAD LLC PO BOX 694 ELIOT, ME 03903
ATTAR ENGINEERING, INC. CIVIL ♦ STRUCTURAL ♦ MARINE 1284 STATE ROAD - ELIOT, MAINE 03903 PHONE: (207)439-8023 FAX: (207)439-2128	
SCALE: 1" = 50'	APPROVED BY: <i>[Signature]</i>
DATE: 3/5/2019	DRAWN BY: BRN
PLANNING FILE NO: P19-26	REVISION DATE: A : 4/18/2019
JOB NO: C147-19	SHEET: 1 OF 1



City of Dover, New Hampshire SITE REVIEW APPLICATION

RECEIVED
Planning Office

[Revision Date: April 02, 2018]

APR 04 2019

Office Use Only

Project #:

P19-15

Date Received:

Dover, New Hampshire

Amount Paid:

Time Received:

APPLICANT AND OWNER INFORMATION

Name of Applicant: RDL LLC Telephone # 603-617-4797

Address of Applicant: 20-22 Fifth ST Dover NH

E-Mail Address: northcasttms@gmail.com

Name of Property Owner (if different from applicant): Richard Naimyk
David Schmidt Telephone # 603-617-4797
Lisa Roseberry

Address of Property Owner: _____

PROPERTY INFORMATION

Address of Property: 20-22 Fifth ST Dover NH

Assessor's Map # 31 Lot(s) # 47

Zoning District(s) CBD - Residential Overlay District(s) _____

Size of Parcel: _____ sq. ft. _____ ac. Property Deed: Book _____ Page: _____

Existing Use of Property: Residential

SITE PLAN INFORMATION

Describe Proposed Use: Commercial/Residential Psychiatric Office

Area of Parcel to be Developed: NONE outside all interior sq. ft.

If Multi-family Residential, Specify Number of Units & Buildings Proposed: 4

Number of Parking Spaces: Existing 8 Proposed NONE NO change

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

Number of Employees Total: 1 In Maximum Shift: 1

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? _____

City Sewer? ☒ Yes ☐ No

How far is city sewer from the property? _____

BUILDING INFORMATIONType of Building to be Built: Existing

Height of Building: _____ Finished Floor Elevation: _____

Number of Seats (where applicable) 3 in waiting room

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 INFORMATIONName of Surveyor and Company (Licensed in N.H.) NONE

Address _____ Telephone #: _____

Professional License #: _____ E-mail address: _____

ENGINEER INFORMATIONName of Engineer and Company (Licensed in N.H.) NONE

Address _____ Telephone #: _____

Professional License #: _____ E-mail address: _____

SIGNATURES

I/We hereby submit this application to the City of Dover Planning Board and attest that to the best of my knowledge all of the information on this application form and in the accompanying application materials and documentation is true and accurate. 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: [Signature] Date: 3/28/19

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

Signature of Agent: _____ Date: _____

AUTHORIZATION TO ENTER SUBJECT PROPERTY

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

Signature of Property Owner:  Date: 3/28/19**AUTHORIZATION TO COMPLETE THE PROJECT ON SUBJECT PROPERTY**

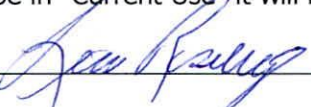
I, and my successors, hereby the City of Dover or its assigns to enter my property for the purpose of completing the site work as required by the approved plan should the letter or credit or other surety be called. It is understood that these individuals must use all reasonable care, courtesy, and diligence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

Signature of Property Owner:  Date: 3/28/19

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: 3/28/19

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

Barn

27 feet

1 space

1 space

1 space



1 space

21 ft

Handicapped



space

This is existing we propose no change

House



47 ft



1 space

1 space

1 space



100 ft paved



20-22 Fifth ST

Street

3 STATION DR		MAP/LOT: 31103-001D00		ZONING: RM-U*		LIVING UNITS: 1		CLASS: R - 102		CARD # 1 OF 1	
CURRENT OWNER/ADDRESS		LAND DATA:						NBHD ID: 700.00			
BARDWELL BRIAN H & LORI J TRUSTEES		TYPE	SIZE	INFLUENCE FACTORS		%	LAND VALUE	- ASSESSMENT INFORMATION -			
BARDWELL FAMILY REVOCABLE TRUST								PRIOR		CURRENT	
40 HAYES RD								LAND	52,000	52,000	
BARRINGTON								BUILDING	131,400	131,400	
NH 03825								TOTAL	183,400	183,400	
DEED BOOK: 4306								- PROPERTY VISIT HISTORY -			
DEED PAGE: 78		TOT. ACRE		TOTAL LAND VALUE:			52,000	20040518	JG	ENTRY GAINED	
DEED DATE: 20150706								20030509	CC	VAC/OB&Y	
								20030513	WC	ENTRY & SIGN	
										APP. REVIEW	

Sale info not verified by assessor's office

SALES DATA:				PERMIT DATA:				ADDITION DATA:							
Date	Type	Price	Valid	Date	#	Amount	Purpose	PCT	Lower Level	First Floor	Second Floor	Third Floor	Area	Value	
20110620	LAND + BLDG	65,000	99	20021118	0636	337,000	6-UNIT CONDO	100	A B C D E F G H	Wood Deck	Frm Overhang		15	800	
20150501	LAND + BLDG		44									Frm Overhang		150	3000
														15	800
															00
															00
															00
															00
															00
DWELLING DATA:															
Style:	CONDOMINIUM			House Color: NATURAL											
Story Ht.	2.00														
Attic:	NONE														
Walls:	ALUM/VINYL														
Bedrooms:	2			COST APPROACH COMPUTATIONS											

COST APPROACH COMPUTATIONS			
Base Price	121,960		
Plumbing	3020		
Additions	4,600		
Unfin. Area			
Basement	-6,430		
Attic			
Heat/AC Adj.	4,880		
FBLA			
Rec Rm			
Fireplace			
Bsmt. Gar.			
SUBTOTAL	128,030		
Grade Factor	1.08		
C & D Factor			
TOTAL RCN	138,270		
% Good	0.95		
Market Adj.			
Ecnom Obslcn			
Functn Obslcn			
Nbhd/Style Adj.	1.00		
Under Constcn %			
TOTAL RCNLD	131,400		

OUTBUILDING DATA			
Type	Qty	Yr	Size1 Size2 Grd Cnd MA
Value			

VALUE FLAG:COST VALUE

NOTES:
BLDG 1, 6-UNIT CONDO

OUTBUILDING TOTAL:

