



**TOWN GRAY**  
**PLANNING BOARD**  
**AGENDA • JUNE 10, 2021**

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**Planning Board  
Regular Meeting**

**Online Via Microsoft Teams  
Link Posted to [graymaine.org](http://graymaine.org) Day of Meeting**

**7:00 PM**

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**I. MEETING COMMENCES**

Roll Call

**II. MINUTES APPROVAL**

May 13, 2021 Planning Board Minutes

**III. INFORMATION EXCHANGE**

Site Plan Review Committee from 5-27-21 for Jess & Nic's approved.

Site Plan Review Committee from 6-10-21 for 97 Shaker Road update.

Ralph Vance Land Development Subdivision application near 164 Shaker Road withdrawn.

**IV. NEW BUSINESS**

a. Dynamic Energy Solar Energy System:

A request for a pre-application conference by Gray Yarmouth Solar LLC for a 33+/- acre solar energy system on a 102+/- acre parcel accessed at the end of Hillcrest Drive (near 51 Yarmouth Rd) owned by Sawyer & Dunn families on Tax Map 36, lot 33-1 in a Rural Residential & Agricultural Zoning District.

b. Light Manufacturing on Frost Road:

A request by Marc Keites for a pre-application conference for a 2,000 square foot building for light manufacturing use at 30+/- Frost Road on Tax Map 43, lot 24-19-1 in a Business Development-1 Zoning District.

**V. PUBLIC HEARINGS**

a. Stillwater Pines Final Subdivision Plan Review:

A request by Birchpoint Properties, LLC & A.H. Grover, Inc., for Final Plan Review for Phase 1 of proposed subdivision (Stillwater Pines) consisting of 13 open space lots on 68+/- acres on Woodcock Drive off Yarmouth Road as shown on Tax Map 44, lot 32-112. The subject parcel is in a Town Council adopted Contract Zoning Agreement, formerly a Medium Density Zoning District.

b. Long Hill Road 3-lot Minor Subdivision:

A request by Stefan Winslow for a proposed 3-lot subdivision at 101 Long Hill Road, as shown on Tax Map 59, lot 42-2 in a Rural Residential and Agricultural Zoning District.

**VI. ADJOURNMENT**

*\* The Town of Gray is an equal opportunity employer and complies with all applicable equal access to public accommodations law. If you are planning to attend a Town Council or Town committee or board meeting and need assistance with a physical disability, please contact the Town Manager's office at least 48 hours in advance of the meeting to have the Town assist you. 657-3339. TTY 657-3931.*



**Town of Gray**  
**Planning Board Minutes**  
**May 13, 2021**

**Regular Meeting**

**Henry Pennell Municipal Complex**

**7:00 PM**

24 Main Street, Gray, ME 04039

**I. MEETING COMMENCED AT 7:00pm**

This meeting was held online.

Attendee Name	Title	Status	Arrived
Don Hutchings	Chair	Present	
Dan Cobb	Vice Chair	Present	
Peter Gellerson	Board Member	Present	
Charlie Abrams	Board Member	Present	
Joseph Caminiti	Board Member	Absent	
Catherine Caswell	Alternate	Absent	
Andrew Watson	Alternate	Present	
Doug Webster	Community Development	Present	

**Motion to appoint Andrew Watson as a voting member for this meeting.**

<b>RESULT:</b>	<b>APPROVED [UNANIMOUS]</b>
<b>MOVER:</b>	Peter Gellerson, Board Member
<b>SECONDER:</b>	Dan Cobb, Vice Chair
<b>AYES:</b>	Hutchings, Cobb, Gellerson, Abrams

**II. MINUTES APPROVAL**

1. Planning Board Minutes - Regular Meeting – April 8, 2021

**Motion to approve the Planning Board Minutes of April 8, 2021**

<b>RESULT:</b>	<b>APPROVED [4-0]</b>
<b>MOVER:</b>	Peter Gellerson, Board Member
<b>SECONDER:</b>	Charlie Abrams, Board Member
<b>AYES:</b>	Hutchings, Gellerson, Abrams, Watson
<b>ABSTAIN:</b>	Cobb

No edits were requested. Dan Cobb abstained since he was not at the last meeting.

### III. INFORMATION EXCHANGE

#### a. Gray Plaza Site Amendment

A request by Wayne Pollard for a proposed Amendment to Site Plan for the addition of an enclosed outdoor patio area at Jess N Nic's, located in Gray Plaza, currently owned by EAC LLC, Tax Map 43, lot 404-171-003 in a Village Center Zoning District.

Doug Webster clarified this is for a 30x30 concrete patio to be fenced in behind the plaza, not in front of the building. Access to the patio area will only be from inside the building.

All board members were in agreement with the project moving forward to staff review committee. Mr. Webster will run it by Public Works and the Fire Chief. Peter Gellerson said lighting would be a consideration. Andrew Watson requested clarification on emergency exits. Mr. Webster agreed that emergency egress from the kitchen and from the fenced area were good suggestions.

### IV. PUBLIC HEARINGS

#### a. Shoreland Zoning Ordinance Amendments

Public Hearing to receive Public comment for proposed amendments to Chapter 403-Shorland Zoning to include adjusting and/or adding the following in accordance with updated State requirements: definitions, uses table, vegetative buffers, expansions to non-conforming structures, and administrative provisions including Code Enforcement Officer authority for certain disability variances.

The public hearing was opened by Chair Hutchings. Doug Webster explained this went to the Town Council for a first reading on May 4<sup>th</sup> and goes back to the council for a second reading and adoption decision on May 18<sup>th</sup>. There will be a 30 day wait after adoption before it goes into effect.

Dan Cobb had questions about the amendments and felt some sections were overly restrictive. He felt the height restrictions could be an unfair burden on people and gave examples of situations. Mr. Webster said the state legislature adopted height limits, but he will inquire if those are from the statute or if those are guidelines for which we may have leeway.

Wayne Wood spoke to the board in reference to the 30' expansion issue.

There were no other public comments and Chair Hutchings closed the public hearing at 7:30 p.m.

#### b. Proposed Sign Ordinance Amendments

Public Hearing to receive Public comment for proposed changes to Chapter 406 Sign Ordinance to include adding the following: definitions, brightness standards, multi-tenant properties in the village districts, electronic gas price signage, and standards for banners.

Doug Webster explained this ordinance has been worked on for a very long time. The main impetus for this work was the gas price signs and multi-tenant signs in town. They also added information about banners, brightness standards, etc.

There were no board comments or public comments. Chair Hutchings closed the public hearing at 7:34 p.m.

c. Proposed Village Districts Development Moratorium

Public Hearing to receive Public Comment on a proposed moratorium on all development proposals involving Single-Family, including Accessory Apartments, and Two-Family development in the Village Center and Village Center Proper Zoning Districts to remain in for one hundred and eighty (180) days from the date of applicability of this ordinance for the express purpose of drafting an amendment or amendments to Town ordinance for the above-described development projects.

Doug Webster explained this will give the town time to work on standards, including aesthetic standards, and to work with suggestions of the new Comprehensive Plan.

Chair Hutchings opened the public hearing.

Wayne Wood expressed his displeasure with this.

There were no other public comments, so the public hearing was closed by Chair Hutchings at 7:42 p.m.

d. Stillwater Pines Final Subdivision Plan Review

A request by Birch Point Properties, LLC & A.H. Grover, Inc. for Final Plan Review for Phase I of a proposed subdivision (Stillwater Pines) consisting of 13 open space subdivision lots on 68 +/- acres on Woodcock Drive off Yarmouth Road as shown on Tax Map 44, Lot 32-112. The subject parcel is in a Town Council adopted Contract Zoning Agreement, formerly in a Medium Density Zoning District.

Doug Webster stated a memo was received from Gorrill-Palmer, dated May 11<sup>th</sup>, with substantive comments regarding the stormwater plans. Mr. Webster has worked with Charlie Burnham, representative of the applicant, on these issues. Mr. Webster asked the board if they were willing to consider final approval or have a special meeting.

Dan Cobb was not in favor of providing final approval with conditions. He said the applicant should address the concerns to the satisfaction of the town engineer. He suggested the board work on other matters to keep this application moving forward and the applicant could come back to the next regularly scheduled Planning Board meeting.

Peter Gellerson was not in favor of final approval. He also pointed out the plans are still stamped as preliminary, there is no cross section of the new roadway, and he didn't see reference to the tennis court issue in the paperwork.

Councilor Dan Maguire clarified this part of the application doesn't include the CZA part of the project; this application applies to road standards, trail access, etc. Chair Hutchings suggested that part of the acceptance of this plan should be a requirement that it be developed to take care of the tennis court issue. Mr. Maguire explained it calls for loaming/seeding of that space but not requirements of a field, lighting, etc.; it is unclear what that space will look like in the future but that falls under the CZA which is not part of this application.

Andrew Watson said he is not comfortable with final approval due to the engineer's stormwater findings. He would like to see information on possible solutions.

Don Hutchings had questions about the road and sidewalks. Charlie Burnham clarified they will have hot top but there will not be curbs on sidewalks in the old section. Mr. Maguire explained a reason the CZA came about was due to current road standards which would have reduced frontage in the old section of roadway.

Charlie Burnham said they are working on stormwater suggestions and he showed an updated plan. He also said they want to start clearing lots. They have an erosion control escrow and performance bond. They have highly motivated buyers.

Doug Webster said the CZA deal is done; now this is in subdivision mode. He spoke to Will Haskell, of Gorrill-Palmer, about the clearing of the lots. It was determined there should be a viable stormwater plan before there is clearing of individual lots. Mr. Webster could not find that an erosion and sedimentation bond was posted yet for this project. He stated if the town gave the green light for clearing of one or more of these lots and then find out there is a non-disturbance buffer concern, that would be an issue for everyone. He suggested the board require the bond be posted and have closure from Gorrill-Palmer before granting final approval.

There were no public comments. Chair Hutchings closed the public hearing at 8:08 p.m.

Fire Chief Elkanich had a suggestion to move the proposed fire hydrant to the other side of the road to accommodate tail swing of fire vehicles. Mr. Burnham will get an updated plan to the chief. Chair Hutchings confirmed he wants to know the Fire Chief is comfortable with the plan.

Dan Cobb suggested this matter be tabled.

**MOTION: The Planning Board tables the Stillwater Pines Final Subdivision Plan Review.**

<b>RESULT:</b>	<b>TABLED [UNANIMOUS]</b>
<b>MOVER:</b>	Dan Cobb, Vice Chair
<b>SECONDER:</b>	Charlie Abrams, Board Member
<b>AYES:</b>	Hutchings, Gellerson, Cobb, Abrams, Watson

e. Shaker Road Subdivision Amendment

A request by Ralph Vance Land Development, for Final Plan Review for an Amendment to a previously approved subdivision (Earle F & Nancy C. Wilson Subdivision 8-9-1984) to create one additional lot and allow for the construction of two duplexes near 164 Shaker Road, as shown on Tax Map 20, Lot 45-15 in a Rural, Residential & Agricultural Zoning District.

Doug Webster said since the site walk, there have been discussions about what is needed for fire protection in the subdivision. He said there were four substantive aspects the board should discuss: 1) Fire protection, 2) Buffering/screening to Adler Road properties, 3) Possible screening to Shaker Road, and 4) If a road standard waiver should be considered.

His greatest concern was regarding fire protection. He explained the current ordinance requires a fire hydrant within 500 ft. of all primary structures in a subdivision. He explained NFPA allows for 600 ft. Mr. Webster explained Fire Chief Elkanich would like to see a hydrant in the subdivision, but applicant is reluctant to do this. He also said Fire Chief Elkanich, based on the NFPA standard of 600 ft, would be willing to sign off utilizing the existing hydrant across the street on Shaker Road if all parties involved, including the Planning Board, understand that both lanes of Shaker Road would need to be closed if there is a fire event in the subdivision.

Mr. Webster received legal advice that if 600 ft vs. 500 ft., which is in the ordinance, is considered, the Planning Board would need to approve a formal ordinance waiver.

Chief Elkanich spoke and said there isn't a good detour if they need to shut down Shaker Road and we don't earn anything by doing what the applicant wants. He could approve using the NFPA 600 ft. standard if the Planning Board wishes to go that way. He said Rt. 26 (Shaker Road) wouldn't have to be shut down if there was a hydrant in the subdivision.

The board expressed their opinions. Dan Cobb said he is not a fan of waivers and is not a fan of shutting down Rt. 26. He said if the Fire Chief was in favor, he could consider the waiver. Peter Gellerson didn't want to create a waiver. Andrew Watson did not want Rt. 26 blocked and if there is a way to prevent this, it should be done. Don Hutchings agreed.

Mr. Webster explained if there is not support to grant a waiver, applicant would need to either sprinkle one or more of buildings, put cistern in, or put in a hydrant.

Wayne Wood spoke as the applicant's representative. He said he has 33 years of experience on the fire department and recalled a time when there was a fire incident which closed down Rt. 26. He felt traffic could be simply re-routed through Adler/Tim's Run/Spruce. He said the ordinance has not been brought up to date with NFPA standards.

Fire Chief Elkanich respectfully disagreed with some comments made by Mr. Wood. If a fire event was in the subdivision and there was a hydrant in the subdivision, they could still have two lanes of traffic on Rt. 26. He would like the ordinance to have the latest NFPA language. He would not be opposed to the Planning Board saying yes to using the Rt. 26 hydrant. He said Mr. Wood's suggested detour would probably work but was unsure if there would be room for tractor trailer trucks to turn on those roads.

Charlie Abrams said he could go with the waiver if the Chief was ok with it.

Wayne Wood asked to have the matter tabled.

**MOTION: The Planning Board tables the Shaker Road Subdivision Amendment.**

<b>RESULT:</b>	<b>TABLED [UNANIMOUS]</b>
<b>MOVER:</b>	Dan Cobb, Vice Chair
<b>SECONDER:</b>	Charlie Abrams, Board Member
<b>AYES:</b>	Hutchings, Gellerson, Cobb, Abrams, Watson

**V. NEW BUSINESS**

**a. Portland Road Self Storage Development**

A request by Beth Cureton for Pre-Application Conference for a proposed self-storage facility on 3.85 +/- acres located on properties currently owned by the Estate of Dorothy Wood and David & Terri Welch at approximately 119 Portland Road, as shown on Tax Map 59, Lot 31- 10 & 31-14 in the Commercial and Resource Protection (Shoreland) Zoning districts. This project is subject to Site Plan & Conditional Use Review and Shoreland Zoning.

Doug Webster said a quick site walk happened a week ago. This plan is for seven buildings, new impervious areas, and a stormwater pond. He had questions regarding buffering which he put in the planner's memo for board review.

Jeff Amos, of Terradyne, explained the project and requested input from the Planning Board members. He said the site will be fenced with black chain link. Fire/rescue will have the access code to the gate. There will be interior lighting. He explained there will not be a rental office, so there is no need for water/septic service.

A keypad will be used for customers to have access to their storage units. The applicant explained that each customer will have their own code so they can determine who is on the property at all times. They plan to have operating hours but acknowledged customers could have 24-hour access.

Peter Gellerson inquired about fire protection and Mr. Webster will check on requirements. It was explained by the applicant that customers will not be allowed to store flammable materials and buildings are metal, although some contents such as couches/clothing could be flammable.

Chief Elkanich asked if there will be power to each unit and also if they will allow vehicles to be stored. The applicant said there will be an outdoor area for storing boats, etc. It was explained there will not be power to each unit other than lighting.

Board members agreed a site walk is not necessary. Mr. Cobb would like to see renderings of the buildings including landscaping.

Mr. Webster inquired what other elements the board will want addressed prior to final approval and suggested the board should weigh in on the color of the buildings. Mr. Watson requested more details about fire safety and Mr. Cobb referred to the planner’s memo as items to be addressed prior to final approval.

**b. Long Hill Road 3-lot Subdivision Sketch Plan**

A request by Stefan Winslow for Sketch Plan for a proposed 3-lot subdivision located at 101 Long Hill Road, as shown on Tax Map 59, Lot 42-2 in a Rural, Residential & Agricultural Zoning District.

Stephan Winslow explained the project. The parcel is 7.5 acres. The plan is to remove one structure and break the property into 3 new lots. Doug Webster did a quick site walk with Will Haskell of Gorrill-Palmer who had suggestions for stormwater and possible stormwater easements. Applicant plans to install sprinklers in buildings. Mr. Webster asked board members if they agreed with the initial stormwater suggestions and if they wanted a site walk. Board members were fine with the plan, said applicants should work with Mr. Webster, and did not request a site walk.

**VI. ADJOURNMENT**

**Motion to Adjourn at 9:03 p.m.**

<b>RESULT:</b>	<b>APPROVED [UNANIMOUS]</b>
<b>MOVER:</b>	Charlie Abrams, Board Member
<b>SECONDER:</b>	Dan Cobb, Vice Chair
<b>AYES:</b>	Hutchings, Gellerson, Cobb, Abrams, Watson

Town of Gray, Maine  
Attn: Doug Webster  
Henry Pennell Municipal Complex  
24 Main Street  
Gray, ME 04039

4/30/2021

#### Members of the Planning Board:

Gray Yarmouth Road Solar LLC (the “Applicant”), a wholly owned project company affiliate of Dynamic Energy Solutions, LLC (“Dynamic”), is pleased to submit the following materials for a Pre-application Conference for an approximately 33-acre single-axis tracker photovoltaic (PV) solar facility (the “Project”) on a property located at 51 Yarmouth Road (the “Property”) in the Town of Gray in Cumberland County, Maine (the “Town”).

Dynamic first approached the Town in November 2020 to discuss the Project and was informed that the Town had recently created a Commercial Solar Energy Systems Overlay District (“CSESOD”) subject to certain special zoning standards in the Town’s Zoning Ordinance. At that time, the Property was not included in the CSESOD, and therefore, commercial solar was not a permitted use. Dynamic asked the Town to consider expanding the CSESOD to include the Property. Over the next five months, the Town Council, Ordinance Committee, and Community Development Office crafted changes to the ordinance to expand the overlay district and undertook comprehensive changes to the accompanying CSESOD zoning standards (Section 402.8.10) with input from Dynamic. On April 20, 2020 the Town Council approved the ordinance changes necessary for Dynamic’s project to advance to Planning Board Site Plan Review as a Major Development.

According to the Town’s Zoning Ordinance, all Major Developments undergoing Site Plan Review must schedule a Pre-application Conference with the Planning Board prior to submitting a full application. The following Narrative, Site Inventory Plan, and Conceptual Site Development Plan are intended to satisfy the requirements in Section 402.10.8.B of the Gray Zoning Ordinance for a Pre-application Conference submittal.

Dynamic looks forward to attending the next available Pre-application Conference with the Planning Board.

#### **Site Narrative**

The proposed 4.999-MWac Gray Yarmouth Road Solar project is an approximately 33-acre single-axis tracker photovoltaic (PV) solar facility on a property located at 51 Yarmouth Road in the Town of Gray in Cumberland County, Maine. The Property is a single lot zoned Rural

Residential and Agricultural (RRA) and assigned Tax Parcel ID 036-033-001-000 and consists of approximately 103 acres. The Property will become part of the CSEOD once the ordinance changes approved by Town Council on April 20, 2021 go into effect. The property currently consists of a field and thinned forest. The Project will be situated on the front portion of the Property in a mostly cleared area that was formerly a blueberry field.

The proposed solar facility consists of an array of over 16,000 PV modules, appurtenant electrical equipment, perimeter fencing, and an access road. A new gravel road will be constructed at the northern end of Hillcrest Drive to access the Project. The development will not create a significant amount of new traffic. The project will not use water, nor will it generate wastewater. The facility will be unmanned and will only be visited for maintenance or repair purposes. These visits are expected not to occur more than once a month. The sight distance at the Hillcrest Drive and Yarmouth Road intersection is estimated to be more than 500 feet to the west and more than 1,000 feet to the east. The Project will interconnect to Central Maine Power's 12.47 kV distribution circuit on Yarmouth Road by way of Hillcrest Drive. Construction is planned to commence in late 2021 or early 2022 and is expected to be completed in a single phase over 5-10 months. Minimal, if any, grading will be required. The Project has been designed such that it will have no impacts to wetlands or natural resources. The project is expected to have a commercial operations date in early-mid 2022, subject to Central Maine Power's timing to interconnect.

The overall topography of the site is generally flat and drains to the northeast. A USDA soils map is included as an enclosure. The ground slopes from 0 to 10 percent in the development area, which will not be significantly altered after development. The existing field will be converted to grassed surface meadow. The land cover will be maintained to the standards of Maine Department of Environmental Protection meadow buffers. In summary, they will be mowed no more than twice per year and will have motorized vehicle traffic limited to maintenance of the panels and project equipment. The direction of all storm water will continue along existing flow paths with similar ground cover. The portions of the property outside the fenced limits of the solar array will not be disturbed except for vegetation management immediately abutting the project area to avoid shading of the panels.

The Applicant intends to comply with the Town's Zoning Ordinance, including the newly adopted CSEOD standards, and does not anticipate requesting waivers from the Town. In addition to Site Plan approval from the Town, the Project will require a Maine Department of Environmental Protection (MDEP) Site Location of Development Act (SLODA) permit because the development area is larger than 20 acres. Because there are no wetland or protected natural resources impacts anticipated, no MDEP Natural Resources Protection Act (NRPA) permit will be required. The Applicant will consult with Maine Department of Transportation (MDOT) as to whether the new gravel road at the northern end of Hillcrest Road will require a MDOT permit.

**Site Photographs**

**Photo 1: Northern End of Hillcrest Drive**



**Photo 2: Field Project Area**



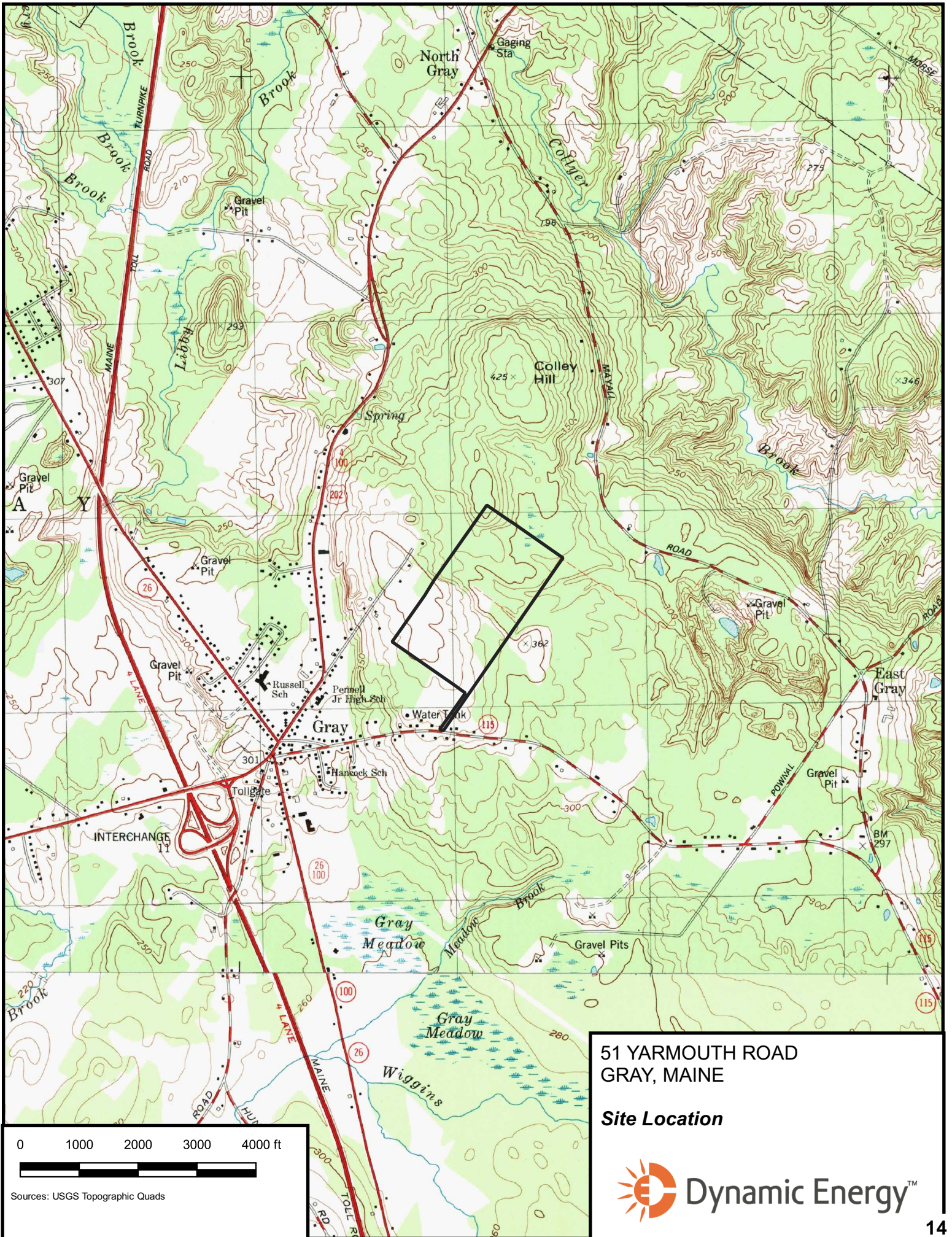
**Photo 3: Pennell Lane**



### **Enclosures**

- **Initial Site Inventory Plan**
  - **Site Location Map**
  - **V101 Existing Site Plan**
  - **USDA NRCS Soils Map (From 1974 Cumberland County Map)**
  - **Town of Gray Zoning Map**
- **Conceptual Site Development Plan**
  - **Site Layout**

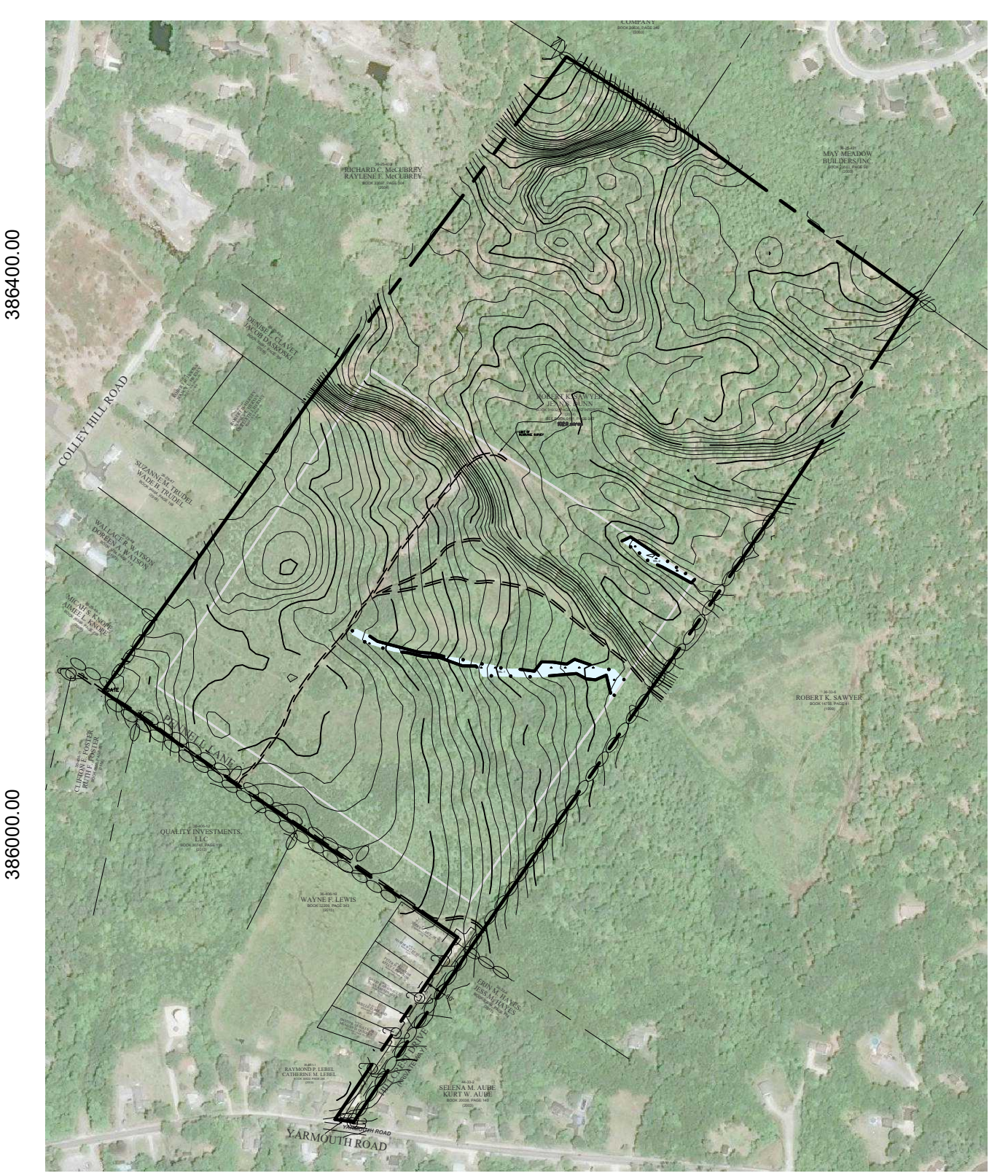
# Initial Site Inventory Plan



51 YARMOUTH ROAD  
 GRAY, MAINE

**Site Location**





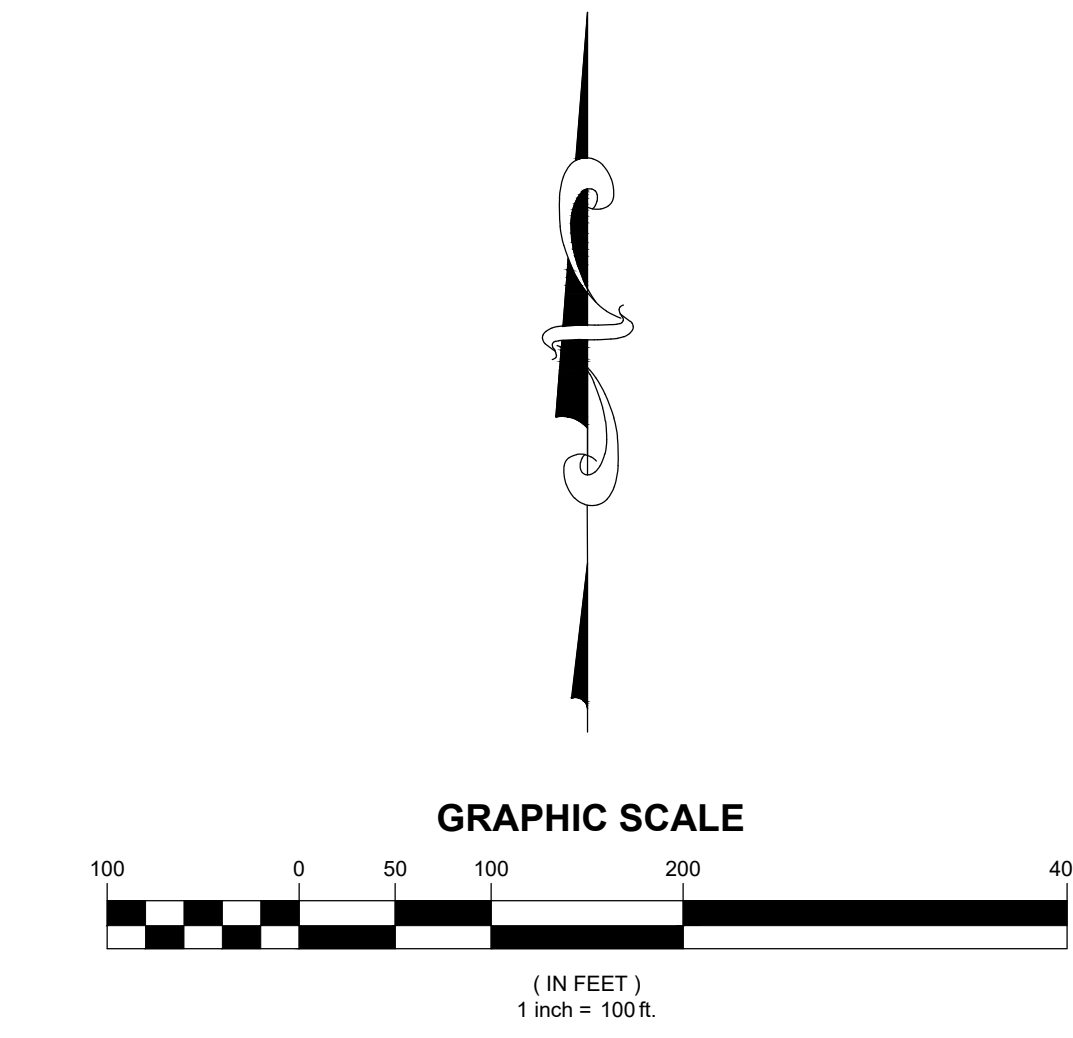
**OVERALL SITE PLAN**  
SCALE: 1"=100'

- LEGEND:**
- PROPERTY LINE
  - WETLAND BOUNDARY
  - MAJOR FOOT CONTOUR
  - MINOR FOOT CONTOUR
  - RESOURCE SURVEY LIMIT
  - TREELINE
  - WETLAND

- RESOURCE NOTES:**
- NATURAL RESOURCE FIELD SURVEY WAS COMPLETED BY CES INC. IN OCTOBER OF 2020.
  - WETLANDS WERE IDENTIFIED AND DELINEATED IN ACCORDANCE WITH 1987 CORPS OF ENGINEERS WETLAND DELINEATION MANUAL AND THE 2012 NORTHCENTRAL AND NORTHEAST REGIONAL SUPPLEMENT (VERSION 2.0). POTENTIAL VERNAL POOL FIELD SURVEYS WERE COMPLETED IN ACCORDANCE WITH STATE AND FEDERAL REGULATIONS AND DEFINITIONS, AND THE MAWS VERNAL POOL SURVEY PROTOCOL. STREAMS WERE IDENTIFIED IN ACCORDANCE WITH STATE AND FEDERAL DEFINITIONS.
  - SITE FEATURES WERE LOCATED USING A SUB-METER CAPABLE TRIMBLE GPS. DATA WAS POST-PROCESSED ACCORDING TO MANUFACTURER'S RECOMMENDED POST-PROCESSING SETTINGS USING CORS REFERENCE STATIONS. UNDER CERTAIN CONDITIONS, THE POSITIONAL ERROR OF THE GPS DATA MAY EXCEED SUB-METER.

- SOURCE:**
- 2' CONTOURS CREATED FROM USGS 1/3 ARC SECOND (APPROX. 10 METER) RESOLUTION DIGITAL ELEVATION MODEL UPDATED 11/04/2016 AND PUBLISHED ON 05/09/2019.
  - AERIAL IMAGERY BY BING MAPS, COURTESY OF MICROSOFT CORPORATION / AUTODESK.
  - ALTANSPS LAND TITLE SURVEY PLAN FOR DYNAMIC ENERGY SOLUTIONS, YARMOUTH ROAD, GRAY, CUMBERLAND COUNTY, MAINE, PREPARED BY CES, INC. AND DATED JANUARY 26, 2021.

- NOTES**
- PLAN ORIENTED TO MAINE STATE PLANE, NAD83, WEST ZONE, U.S. SURVEY FOOT.



ISSUE STATUS	DATE	DRAWN BY	CHECKED BY

**NOT FOR CONSTRUCTION**

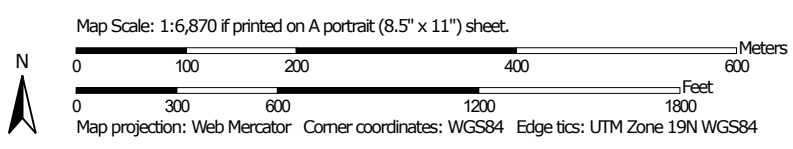
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DATE	2020.11.16
DRAWN BY	BLO
DESIGNED BY	
COR NUMBER	12921 016
SHEET NUMBER	<b>V101</b>

PT1021 DYNAMIC ENERGY 01614 YARMOUTH ROAD GRAY ME 384800.00 DRAWN: BLO/AC/CS/CAD DRAWINGSDIV/01614/BLA/11/16/2020

Soil Map—Cumberland County and Part of Oxford County, Maine  
(51 Yarmouth Road, Gray, Maine)




Soil Map may not be valid at this scale.




## MAP LEGEND

### Area of Interest (AOI)

 Area of Interest (AOI)

### Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

### Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

### Water Features



Streams and Canals

### Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

### Background



Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

**Warning:** Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
Web Soil Survey URL:  
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cumberland County and Part of Oxford County, Maine  
Survey Area Data: Version 17, Jun 5, 2020

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

Date(s) aerial images were photographed: Jun 7, 2019—Jul 2, 2019

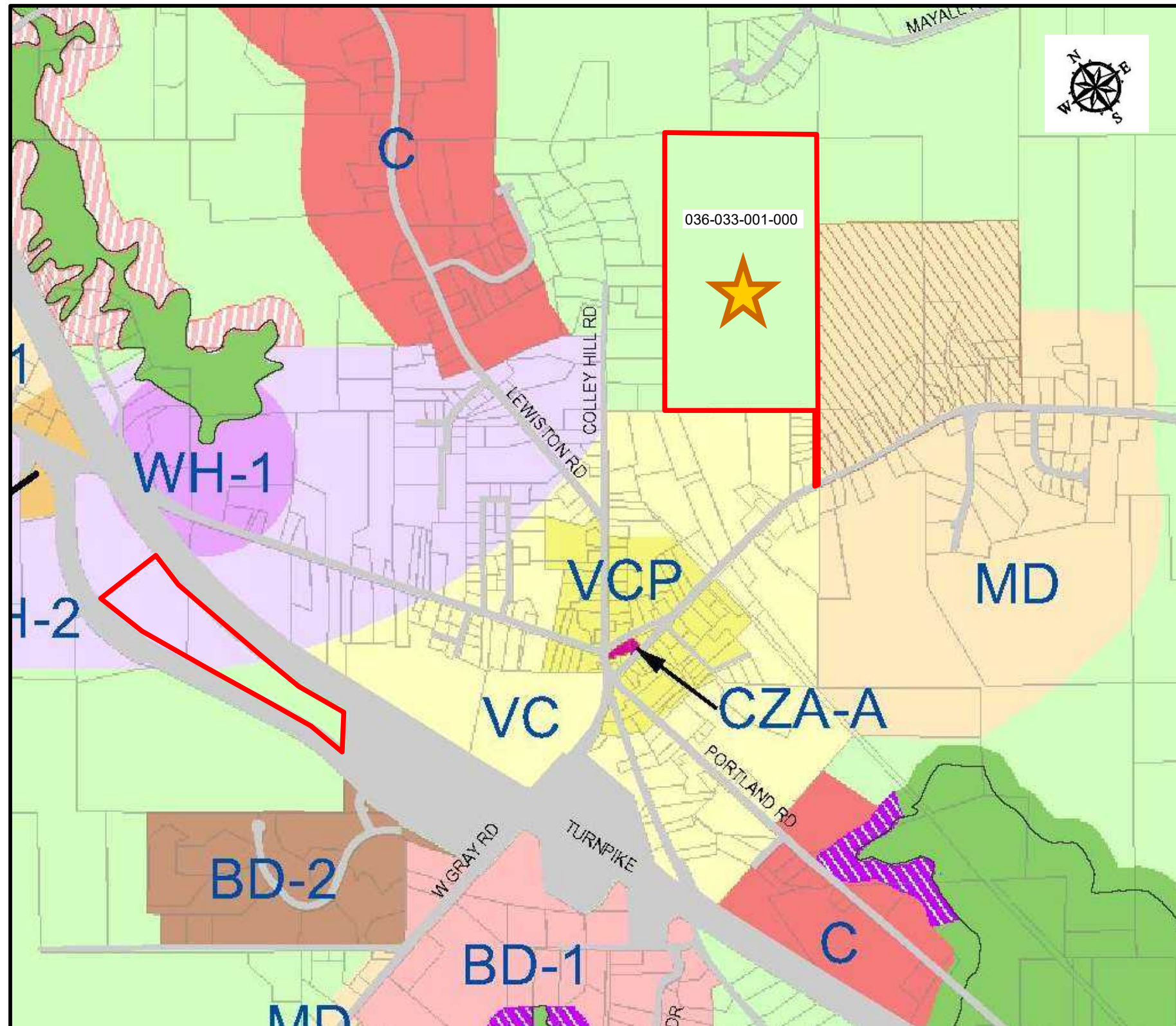
The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
HhB	Hermon sandy loam, 0 to 8 percent slopes, very stony	0.9	0.9%
HkC	Hermon sandy loam, 8 to 20 percent slopes, extremely stony	8.8	8.6%
HsC	Lyman-Abram complex, 8 to 15 percent slopes, very rocky	0.4	0.4%
PbB	Paxton fine sandy loam, 3 to 8 percent slopes	25.1	24.5%
PfB	Paxton very stony fine sandy loam, 3 to 8 percent slopes	11.7	11.4%
PfC	Paxton very stony fine sandy loam, 8 to 15 percent slopes	37.4	36.4%
WrB	Woodbridge fine sandy loam, 0 to 8 percent slopes	5.7	5.5%
WsB	Woodbridge very stony fine sandy loam, 0 to 8 percent slopes	12.7	12.4%
<b>Totals for Area of Interest</b>		<b>102.6</b>	<b>100.0%</b>

# Town of Gray, Maine Zoning Map

April, 2016




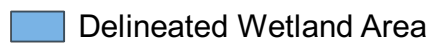

## Legend

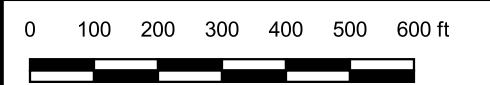
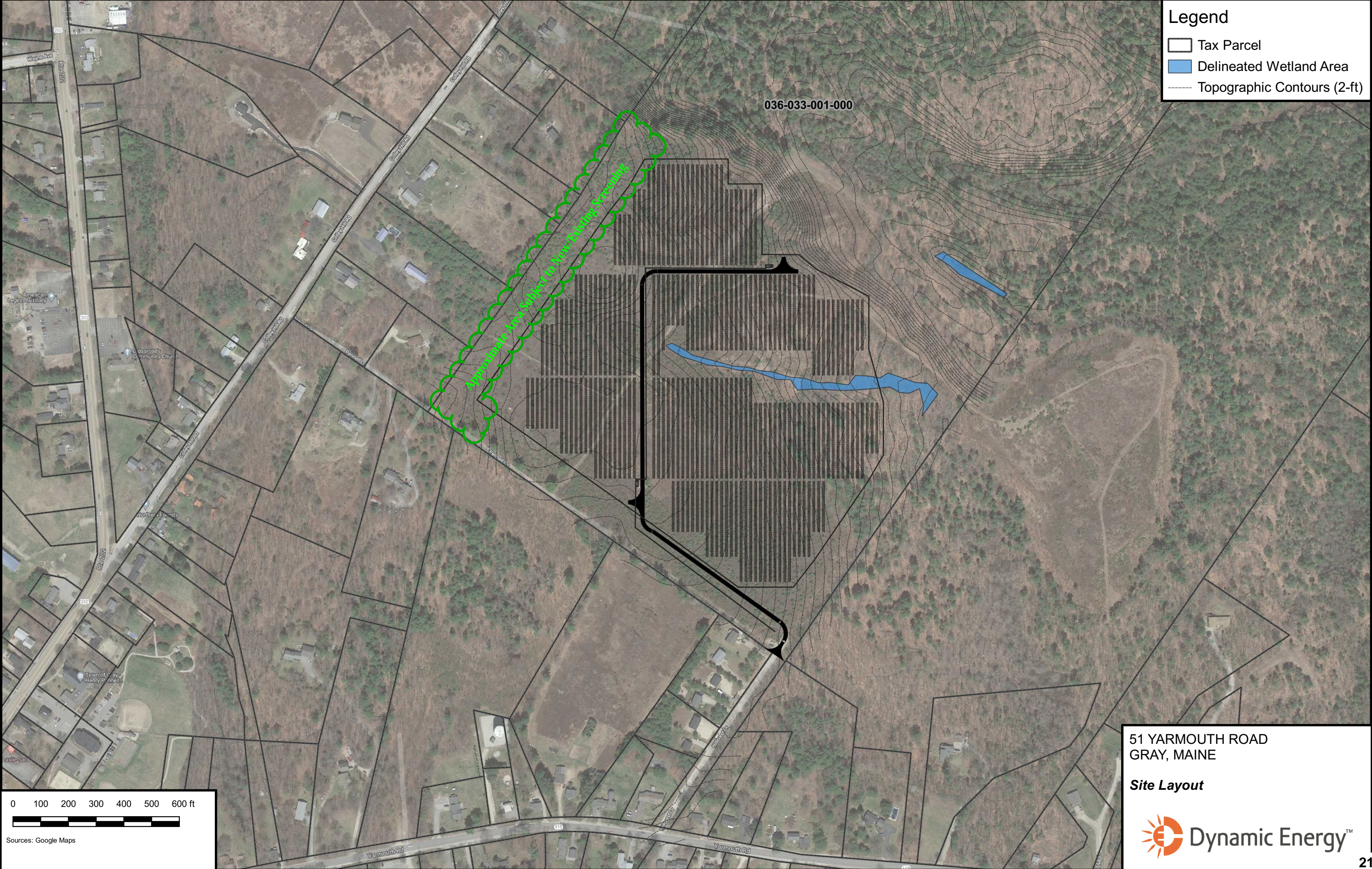
- Mobile Home Park Overlay
- MaineDEP Restrictions & Standards
- Approximate Wetland Edge
- Tax Parcels (2015)
- Shoreland Zoning Districts**
  - Resource Protection
  - Limited Commercial
  - Limited Residential
  - Stream Protection
- Zoning Districts**
  - Business Development-1
  - Business Development-2
  - Business Transitional-1
  - Business Transitional-2
  - Commercial
  - Contract Zone "A"
  - Contract Zone "B"
  - Village Center
  - Village Center Proper
  - Wellhead Protection-1
  - Wellhead Protection-2
  - Medium Density
  - Rural Residential and Agricultural
  - Lake
  - Water

= Commercial Solar Energy Overlay District Map

# Conceptual Site Development Plan

Legend

-  Tax Parcel
-  Delineated Wetland Area
-  Topographic Contours (2-ft)

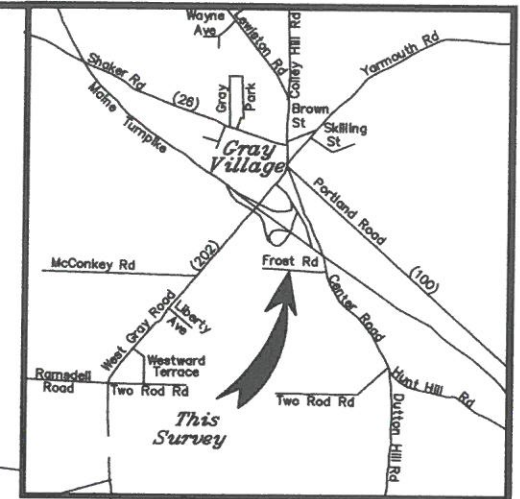
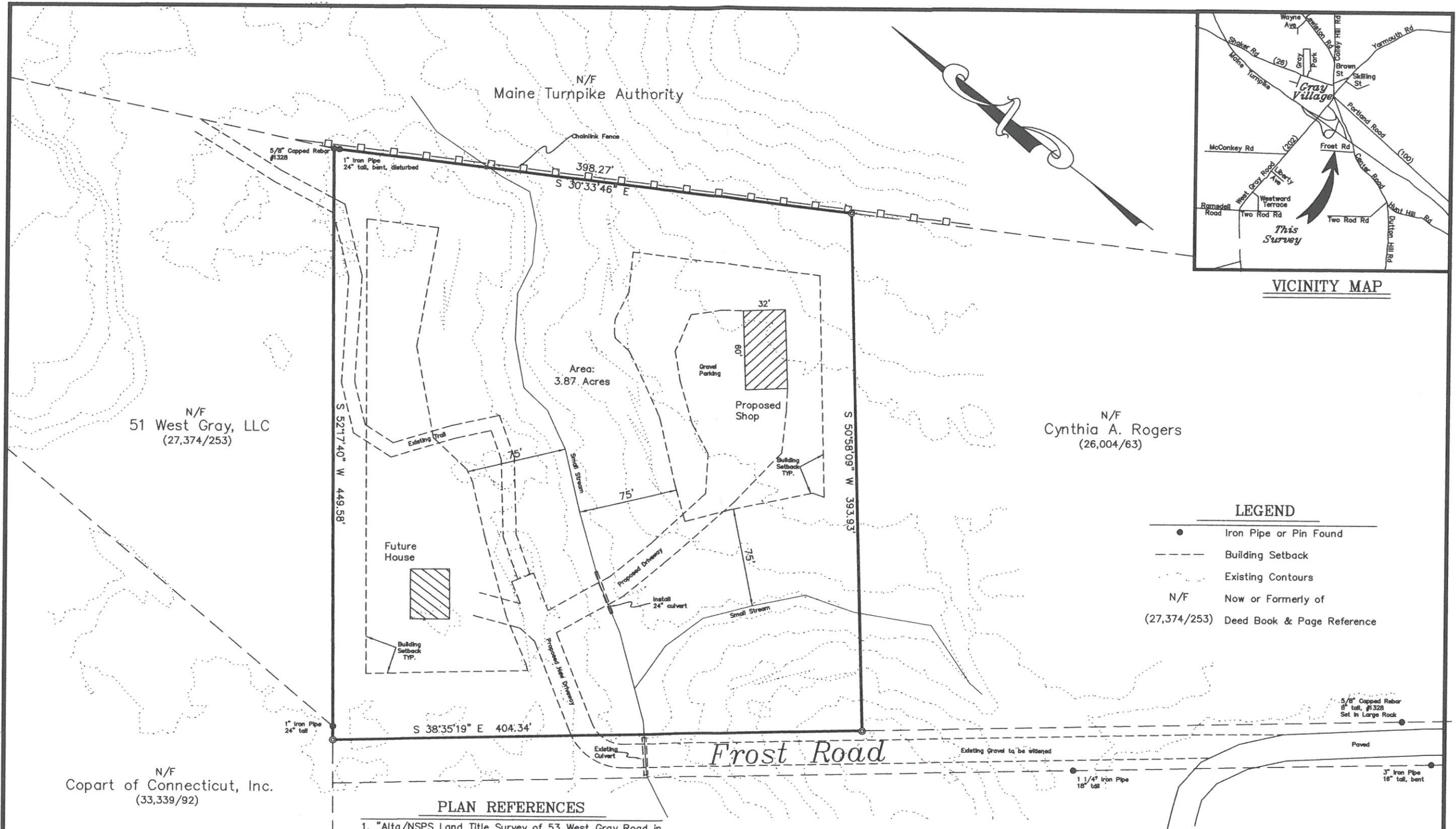


Sources: Google Maps

51 YARMOUTH ROAD  
GRAY, MAINE

Site Layout





VICINITY MAP

LEGEND

- Iron Pipe or Pin Found
- Building Setback
- Existing Contours
- N/F Now or Formerly of
- (27,374/253) Deed Book & Page Reference

PLAN REFERENCES

1. "Alta/NSPS Land Title Survey of 53 West Gray Road in Gray, Maine for Partner Assessment Corporation" dated July 2016 by Wayne T. Wood & Co.
2. "Plan of Land on West Gray Road ~ Gray, Maine for Maine Turnpike Authority" dated September 2014 by Wayne T. Wood & Co.
3. "Plan of Land on Frost Road ~ Gray, Maine for Maine Turnpike Authority" dated May 2013 by Wayne T. Wood & Co.
4. "Standard Boundary Survey on Frost Road ~ Gray, Maine for Kevin Kimball" dated January 1991 by Wayne T. Wood & Co.
5. "Site Plan of Kimball's Garage on Frost Road ~ Gray, Maine for Kevin Kimball" dated March 2002 by Wayne T. Wood & Co.

NOTES

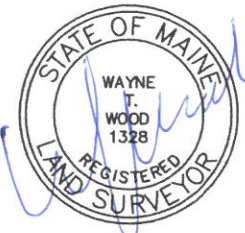
1. Owner of record is Cynthia A. Rogers by a deed recorded in the Cumberland County Registry of Deeds in Book 32,039 on Page 199.
2. All bearings are referenced to Magnetic North of the Year 1991 as per the plan in Plan Reference #1 and are calculated from angles of an actual on the ground survey.
3. The subject parcel is shown on the Town of Gray, Maine Tax Map #43 as Lot #24-19-1 and is situated in the Business Development 1 Zone (BD-1) with the following bulk and space requirements: Area: 80,000 sq.ft. with 200' frontage and the following minimum setbacks: Front/Rear 50' and Side 25'.



N/F  
Copart of Connecticut, Inc.  
(33,339/92)

N/F  
51 West Gray, LLC  
(27,374/253)

N/F  
Cynthia A. Rogers  
(26,004/63)



**Site Plan**  
on  
Frost Road  
Gray, Maine  
for  
Marc Keites  
P. O. Box 284 ~ Gray, ME 04039

**WAYNE T. WOOD & CO.**

Gray, Maine 04039  
(207) 657-3330

Drwn. By: WtW/ KIW	Date: May 2021
Check By: WtW	Job No. 219102
Scale: 1" = 50'	Bk.No. 137



**PLANNING BOARD/STAFF REVIEW COMMITTEE APPLICATION  
TOWN OF GRAY MAINE**

PROPERTY TO BE DEVELOPED			
Property Location/Address	FROST RD	Property Map/Lot	43-24.19.1
Zoning District	BD-1	Lot Acreage	3.87
Owner Name	Mark Keites	Tax Sheet	43
Owner Address	30 Yarmouth Rd Gray	Owner Phone	207-671-6796

APPLICANT			
Name (IF different than owner)		Contact Phone Number	ppp-f@hotmail.com
Mailing Address		Alternate Phone Number	
Mailing City/State/Zip		Fax Number	
Email Address			

AGENT/CONSULTANT			
Name	Wayne T. Wood	Contact Phone Number	657-3330
Mailing Address	30 Wood Drive	Alternate Phone Number	
Mailing City/State/Zip	Gray, Me 04039	Fax Number	
Email Address			

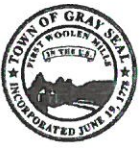
**PROJECT**

The undersigned requests that the Town of Gray Planning Board consider the following application for:

<input type="checkbox"/> <b>Subdivision</b> Sketch Plan Review Preliminary Plan Review (Major) Final Plan Review (Major) Minor	<input type="checkbox"/> <b>Other (specify)</b> Conditional Use Amendment Extension Workshop Contract Zone Request
<input checked="" type="checkbox"/> <b>Site Plan Review</b> Pre-Application Conference <u>Minor</u> Major	
<input type="checkbox"/> <b>Shoreland Zoning Permit</b>	

**Project Description / Comments:** I Mark Keites am the owner of Precision Process Piping Inc. My main SCOPE of work is serving the Food and Beverage Industry. My Shop will be used for my Business location and for welding and fabrication of custom work for my customers. Most of my work is done on site of my customers but on occasion I will bring projects home to my shop to build and return the finished project to my customers. I am open to the public but have very little foot traffic, so 99% of my business is commercial

Applicant Signature	Date 5-10-21
---------------------	--------------



# SITE PLAN REVIEW CHECKLIST TOWN OF GRAY MAINE

**For Office Use Only**  
Date Received: \_\_\_\_\_  
Received by: \_\_\_\_\_

## APPLICANT/PROJECT

Name	Date
------	------

This checklist has been prepared to assist applicants in developing their applications. It should be used as a guide in assembling the information necessary for a complete application. The checklist, however, does not substitute for the requirements of Article 10 of the Zoning Ordinance. The Planning Board will also use the checklist to ensure your application is complete. Indicate if the information has been submitted or if a waiver is requested. If you feel that information is not applicable to your project, please indicate in the second column. The perimeter survey, subdivision plan and engineering plans may be contained on the same drawing. Detailed engineering drawings such as road profiles, drainage swales and erosion/sedimentation plans, however, may best be presented on a separate sheet or sheets. **This checklist does not address the standards that the site plan must meet.**

## SITE PLAN REVIEW SUBMISSION REQUIREMENTS

	Submitted by Applicant	Not Applicable	Applicant Request to be Waived	Reviewed by Planner/Engineer	Waived by Planning Board
<b>402.10.10.A SITE INVENTORY PLAN</b>					
A.1 Owner name(s), address(es), phone number(s)	X				
A.2 Consultant name(s) & address(es)	X				
A.3 Evidence of right, title, or interest in property <i>3 full size</i>					
A.4 Fourteen <del>14</del> <sup>13</sup> copies of accurate scale inventory plan showing:					
a. The name of the development, north arrow, date and scale.	X	X			
b. The boundaries of the parcel and existing zoning.	X				
c. The relationship of the site to the surrounding area .	X				
d. The topography of the site at an appropriate contour interval depending on the nature of the use and character of the site.			X		
e. The major natural features of the site and within five hundred (500) feet of the site, including wetlands, streams, ponds, floodplains, groundwater aquifers, significant wildlife habitats and fisheries or other important natural features (if none, so state).			X		
f. Existing buildings, structures, or other improvements on the site (if none, so state).	<i>none</i>				
g. Existing restrictions or easements on the site (if none, so state).	<i>none</i>				
h. The location and size of existing utilities or improvements servicing the site (if none, so state).	<i>none</i>				
i. Mapping of all wetlands and/or potential vernal pools on site regardless of size.			X		
j. A Class B high intensity soil survey if any portion of the site is located in a resource protection district or has wetlands covering more than ten (10%) percent of the site.			X		
k. A Class D medium intensity soil survey if vernal pools and/or significant wetlands are not present.			X		

**402.10.10.B SITE ANALYSIS PLAN**

<b>B.1</b> Fourteen (14) copies of a site analysis plan identifying:				
a. Portions of the site that are unsuitable for development or use;	X			
b. Portions of the site that are unsuitable for on- site sewage disposal;	X			
c. Areas of the site that have environmental limitations that must be addressed in the development plan;	X			
d. Areas that may be subject to off-site conflicts or concerns; and which areas are well suited to the proposed use.		X		
<b>B.2</b> Fourteen (14) copies of site description narrative				
<b>B.3</b> Submission requirement waiver requests, if any				

**402.10.10.C APPLICATION SUBMISSION REQUIREMENTS**

<b>C.1</b> Signed/Executed Application	X			
<b>C.2</b> Evidence of payment of the application fee and technical review escrow.				
<b>C.3</b> Fourteen (14) copies of written materials and maps/drawings				
<b>C.4</b> Report/Maps/Drawings: General Information				
a. Owner contact information	X			
b. Setback, yard, and buffer locations	X			
c. Abutter contact information	X			
d. Map: general site location	X			
e. Contiguous property boundaries	X			
f. Map/Lot Number	X			
g. Deed/proof of ownership/interest in property				
h. Plan preparer name, registration #, seal	X			
i. Evidence of technical & financial means				
<b>C.5</b> Reports/Maps/Drawings: Existing Conditions				
a. Zoning Classification	X			
b. Property lines bearings & length	X			
c. Location of utilities (water, sewer, electric, etc.)	X			
d. Street name(s), location(s), width(s)	X			
e. Building location(s), dimensions, and photo(s)	X			
f. Driveway location(s), dimensions	X			
g. Location of intersecting roads/driveways	X			
h. Location of important or unique natural site features		X		
i. Direction of surface water drainage	X			
j. Sign location(s), front view(s), dimensions		X		
k. Easement location, dimensions, documents	X			

I. Fire hydrant or fire protection water supply location		X			
<b>C.6 Reports/Maps/Drawings: Proposed Development</b>					
a. Water/Sewage estimated demands/provisions		X			
b. Direction of proposed surface water drainage	X				
c. Solid waste disposal provisions		X			
d. Driveway/parking plans/provisions	X				
e. Proposed landscaping & buffering		X			
f. Proposed building/building expansion plans	X				
g. Proposed sign plans		X			
h. Proposed exterior lighting	X				
i. Location of utilities & fire protection systems		X			
j. General description of proposed use/activity	X				
k. Traffic estimates		X			
l. Stormwater, erosion & sedimentation control, and water quality management provisions	X				
<b>C.7 Reports/Maps/Drawings: Site Plan</b>	X				
<b>402.10.10.D ADDITIONAL REQUIREMENTS FOR MAJOR DEVELOPMENTS</b>					
<b>D.1</b> Proposed development narrative	X				
<b>D.2</b> Grading plan		X			
<b>D.3</b> Stormwater drainage & erosion control program		X			
<b>D.4</b> Groundwater impact analysis		X			
<b>D.5</b> Plan preparer name/registration number/seal	X				
<b>D.6</b> Utility plan		X			
<b>D.7</b> Planting schedule		X			
<b>D.8</b> Traffic impact analysis		X			
<b>D.9</b> Gray Water District statement of supply adequacy		X			
<b>D.10</b> Estimated cost of development/proof of financial capacity		X			
<b>402.10.10.E WAIVER OF SUBMISSION REQUIREMENTS [WRITE IN WAIVER REQUESTS]</b>					

DECLARATION OF ROADWAY USE, OPEN SPACE, COMMON ELEMENTS,  
PROTECTIVE COVENANTS AND RESTRICTIONS AFFECTING PROPERTY OF BIRCH  
POINT PROPERTIES, LLC AND A.H. GROVER, INC. REFERRED TO AS "STILLWATER  
PINES SUBDIVISION" IN THE TOWN OF GRAY, COUNTY OF CUMBERLAND AND  
STATE OF MAINE

THIS DECLARATION dated this \_\_th day of \_\_\_\_\_, 2021, by Birch Point Properties, LLC, a Maine limited liability company, and A.H. Grover, Inc., a Maine business corporation, both of Gray, in the County of Cumberland and State of Maine, hereinafter referred to as the Declarants.

WITNESSETH:

WHEREAS, the Declarants own a certain parcel of land containing 67+/- acres as shown on a Plan of "Stillwater Pines" Subdivision, recorded at the Cumberland County Registry of Deeds in Plan Book \_\_\_\_\_, Page \_\_\_\_\_, being the premises conveyed to Declarants by the deed recorded at the Cumberland County Registry of Deeds in Book 36348, Page 165 (the "Subdivision"); and

WHEREAS, the Declarants, being about to sell and convey lots located in the Subdivision, desire to assure to their purchasers and their several heirs and assigns owning such lots, the use, benefit and enjoyment of the roadway, open space, and other common interests; and

WHEREAS, for the more efficient protection of the community and control thereof by the inhabitants, the Declarants have deemed it desirable to provide an agency or instrumentality to which shall be delegated and assigned the powers of owning and maintaining the roadway and protecting other common interests, and collecting and disbursing the charges associated therewith; and

WHEREAS, there has been formed under the Laws of the State of Maine, a corporation not for pecuniary profit, named "Stillwater Pines Homeowners Association", for the purpose among others of exercising the functions aforesaid; and

WHEREAS, it is the desire and intent of the Declarants that membership in and control of said Association shall ultimately be vested in the lot owners of the "Stillwater Pines" Subdivision as existing:

NOW, THEREFORE, IN CONSIDERATION OF THE PREMISES, the Declarants hereby covenant and agree with the purchasers of lots within the Subdivision and with Stillwater Pines Homeowners Association which is made a party hereto, that the property of Declarants as described above shall be held and shall be conveyed subject to the following covenants and restrictions which shall run with the land:

1. The numbered lots depicted on said Plan shall be used only for single family residential purposes and shall not be further subdivided. No mobile homes shall be placed or maintained on said lots. Modular homes may be permitted only with the advance written consent of Declarants, their successors and assigns. All residences shall have a minimum foundation of 1450 square feet (one story) or 1250 square feet (two story), along with a garage and a~~with~~ paved driveway.

2. There shall be no construction in the areas of wetlands, wetland buffers, forested buffers, wetland drainage runs or wet areas as shown on the said Plan. Forested buffers as shown on said Plan shall be kept in a natural vegetative state with only dead or diseased trees or trees that pose a safety hazard that may be removed in keeping with Maine Department of Environmental Protection regulations, Chapter 500.

3. The Declarants, their successors and assigns, shall have the right to refuse approval of any plans for building on the Subdivision lots in order to protect the value of all lots in the development. All buildings shall have the roof and outside finish completed within one year after construction is begun.

4. No garbage, trash, junk automobiles or other vehicles which do not pass the State of Maine motor vehicle inspection laws shall be kept, maintained or allowed on the lots herein described, other than ordinary and customary garbage or trash generated by single family residential use at all times properly contained for sight and smell and vehicles being repaired or restored outside of view from adjacent homes or roadways.

5. The Declarants have organized a not-for-profit corporation to be known as "Stillwater Pines Homeowners Association" (the "Homeowners Association"). The initial members of the Homeowners Association shall be the owners of the lots in Phase 1 of the Subdivision. At the completion of Phase 2 of the Subdivision, the owners of the lots in Phase 2 shall become additional members of the Homeowners Association. At the completion of Phase 3 of the

Subdivision, the owners of the lots in Phase 3 shall become additional members of the Homeowners Association. In the case of joint or common ownership of any lot, the owners of such lot, collectively, shall be entitled to one vote. Declarants shall convey the fee ownership of Woodcock Road, a/k/a Woodcock Drive, including the travel lane and shoulders, the paved sidewalk, the esplanade, and the turnaround, all as shown on said Plan, to the Homeowners Association. Said conveyance to the Homeowners Association shall be subject to an access easement granted to the Town of Gray in perpetuity over the entire length of Woodcock Road, a/k/a Woodcock Drive, to serve the Town-owned property depicted on said Plan, including the parking area and the playing field, which easement shall include the right to maintain, improve and utilize utility connections to the property to be deeded to the Town.

6. Woodcock Road, a/k/a Woodcock Drive, shall be constructed by the Declarants or their successors or assigns at their expense prior to conveyance of the fee to the Homeowners Association. Thereafter, Woodcock Road, a/k/a Woodcock Drive, shall be maintained by the Homeowners Association unless accepted by the Town of Gray. Declarants' sole obligation regarding construction of Woodcock Road, a/k/a Woodcock Drive, shall be to comply with the road standards set forth in the Contract Zoning Agreement between the Declarants and the Town of Gray, as the same may be amended. Declarants, their successors and assigns, shall have no obligation regarding construction of the roadway to the Homeowners Association or individual lot owners who, by acceptance of their deeds from Declarants, shall be deemed to have released Declarants from all claims relating to the construction and maintenance of said roadway.

7. The Homeowners Association shall be responsible for the maintenance of the road, sidewalk, esplanade, turnaround, and open space. The Declarants or the Homeowners Association may offer to the Town a public easement for winter maintenance, subject to the requirements and conditions of Sections 2.2 and 2.4 of the Town of Gray Street Ordinance, as may be amended, and as modified by the Contract Zoning Agreement. Said winter maintenance shall not include maintenance, including plowing and sanding, of the sidewalks.

8. After construction and transfer to the Homeowners Association, all expenses relating to Woodcock Road, a/k/a Woodcock Drive, including without limitation plowing, upkeep and liability insurance shall be paid by the lot owners and shall be assessed in advance pro rata for each lot on November 1st of each succeeding year. The obligation to pay such assessment shall

be an obligation running with the land of each lot owner and each lot owner by the acceptance of their deed agrees for himself, his heirs and assigns, to pay such assessment within 30 days of receipt of a statement therefore. If payment is not so made when due, the Homeowners Association shall be entitled to a lien on the respective lot and may commence collection and be entitled to reasonable attorneys fees and costs associated with collection.

9. Trails. The trail system located within the designated open space on the Property shall be maintained by the Homeowners Association.

10. The Homeowners Association shall be responsible for maintaining all storm water facilities located within the Subdivision, including without limitation the two underdrain soil filters. Said maintenance shall be in conformance with the applicable maintenance plan and all applicable statutes, regulations, and ordinances.

11. The Homeowners Association shall be responsible for maintaining the "15' Sight Distance Easement" described in an Easement Deed dated June 16, 2020, and recorded in the Cumberland County Registry of Deeds in Book 37126, Page 185, and for maintaining clear lines of sight across said 15' Sight Distance Easement.

12. All expenses relating to the maintenance obligations of the Homeowners Association hereunder shall be paid by the lot owners and shall be assessed in advance pro rata for each lot on November 1st of each succeeding year. The obligation to pay such assessment shall be an obligation running with the land of each lot owner and each lot owner by the acceptance of their deed agrees for himself, his heirs and assigns, to pay such assessment within 30 days of receipt of a statement therefore. If payment is not so made when due, the Homeowners Association shall be entitled to a lien on the respective lot and may commence collection and be entitled to reasonable attorneys fees and costs associated with collection.

~~13.~~ The provisions of the Contract Zoning Agreement between the Declarants and the Town of Gray, as the same may be amended, are hereby incorporated herein. To the extent of any conflict between this Agreement and said Contract Zoning Agreement, as amended, the Contract Zoning Agreement, as amended, shall govern.

~~14.~~ This Agreement is binding on the Declarants, the Homeowners Association, and the future lot owners within the Subdivision. Modifications and amendments to this Declaration may be made by the written consent of a majority of the lot owners of record at any time with the

owners of each lot jointly entitled to one vote for such purposes; provided, however, that Paragraph 10 of this Agreement shall not be subject to modification, amendment, or deletion without the written consent of the Town of Gray.

IN WITNESS WHEREOF, Birch Point Properties, LLC and A.H. Grover, Inc. have hereunto set their hands and seals the day and year first above written.

Signed, Sealed and Delivered in the presence of:

Birch Point Properties, LLC

\_\_\_\_\_  
Witness

By: \_\_\_\_\_  
Allen W. Hamilton, its Member

A.H. Grover, Inc.

\_\_\_\_\_  
Witness

By: \_\_\_\_\_  
Benjamin Grover, its Vice President

Stillwater Pines Homeowners Association joins in this Declaration for the purposes of accepting the benefits conferred, and obligations imposed, upon it hereunder.

Signed, Sealed and Delivered in the presence of:

Stillwater Pines Homeowners Association

\_\_\_\_\_  
Witness

By: \_\_\_\_\_  
Allen W. Hamilton, its President

STATE OF MAINE  
CUMBERLAND, SS.

\_\_\_\_\_, 2021

Personally appeared before me the above named Allen W. Hamilton in his capacity as Member of Birch Point Properties, LLC, and acknowledged the foregoing instrument to be his free act and deed in his said capacity and the free act and deed of said limited liability company.

Before me,

\_\_\_\_\_  
Notary Public/Attorney-at-Law  
Print Name:  
My Commission Expires:

STATE OF MAINE  
CUMBERLAND, SS.

\_\_\_\_\_, 2021

Personally appeared before me the above named Benjamin Grover in his capacity as Vice President of A.H. Grover, Inc., and acknowledged the foregoing instrument to be his free act and deed in his said capacity and the free act and deed of said corporation.

Before me,

\_\_\_\_\_  
Notary Public/Attorney-at-Law  
Print Name:  
My Commission Expires:

STATE OF MAINE  
CUMBERLAND, SS.

\_\_\_\_\_, 2021

Personally appeared before me the above named Allen W. Hamilton in his capacity as President of Stillwater Pines Homeowners Association and acknowledged the foregoing instrument to be his free act and deed in his said capacity and the free act and deed of said corporation.

Before me,

\_\_\_\_\_

Notary Public/Attorney-at-Law

Print Name:

My Commission Expires:

# STILLWATER PINES SUBDIVISION

**TOWN OF GRAY, MAINE  
MAJOR SUBDIVISION APPLICATION  
COMMENT RESPONSE LETTER**

**PREPARED FOR:  
A.H. GROVER**

**PREPARED BY:  
ATLANTIC RESOURCE CONSULTANTS  
541 US ROUTE ONE, SUITE 21  
FREEPORT, MAINE 04032  
207.869.9050**

**June 2021**



## TABLE OF CONTENTS

Comment Responses

Attachment A – HOA Documents

Attachment B – Site Distance Memo

Attachment C – Stormwater Management Plan

Attachment D – Plan Set

1. A signed and sealed subdivision plan was not submitted as requested.

**Subdivision Plan is still pending.**

2. The plan set was not signed and sealed as requested.

**Plans have been signed and stamped.**

3. The stormwater management report was not signed and sealed as requested.

**Stormwater Management Report has been signed and stamped.**

4. The document submitted for the homeowners association titled "Declaration of Roadway Use, Open Space, Common Elements, Protective Covenants and Restrictions Affecting Property of Birch Point Properties LLC and A.H. Grover Inc. Referred to as Stillwater Pines Subdivision in the Town of Gray, County of Cumberland, and State of Maine", does not require maintenance of the stormwater facilities. Revise the document to add language that requires the homeowner association to maintain the stormwater facilities including the two underdrained soil filters in conformance with the maintenance plan included in the stormwater management report. Attach the maintenance requirements to the declaration as an appendix.

**The updated HOA Documents are included as Attachment A.**

5. The Applicant does not want to provide a ground survey at the location of the proposed underdrained soil filters. Based on our experience, we continue to recommend field survey in these areas. In lieu of this, a condition of approval should be included that requires the contractor shall stake and mark out the locations of the underdrained filters in the field and provide the Town Engineer at least one week's notice to make a site visit and verify that the location and elevations align with the proposed design. Construction of the filters shall not begin until the Town Engineer has confirmed that it appears there are no substantial discrepancies between the field locations/elevations and the design plans.
6. The Design Engineer has added sight distance labels at the intersection of Woodcock Drive and Route 115 on Sheet C103. We assume these labels are intended to show the available sight distance. The posted speed limit at this location is 45 mph and the town-required sight distance is 425 feet. It is not clear to us that the required sight distance of 425 feet can be achieved looking to the left when exiting Woodcock Drive, unless significant tree clearing is completed. Also note that there is a 15 foot wide sight distance easement on the Wetmore lot located just to the northwest of Woodcock Drive (shown on C103). It does not appear that the trees in this easement have been cleared. We recommend that a surveyor be retained by the Applicant to confirm the available sight distance in **both** directions from Woodcock Drive and that mitigation measures be proposed if the available sight distance does not meet the requirements. If clearing is required, there needs to be a maintenance requirement that maintains the cleared area in the future.

**The trees were cleared back at the beginning of the project and the site distances taken at the time. The easement has been cleared again and maintenance requirements have been added to the HOA. Wayne Wood was retained to confirm the site distances in both directions and his memo is included as Attachment B.**

7. Water connection information to the existing main, and a watermain profile from Route 115 to the proposed subdivision roadway should be provided.

**A note dictating the connection to the existing watermain has been included and a profile has been added to C-103.**

8. The water main depth has not been dimensioned on the plans as requested.

**The watermain was included on the profile plans. A label has been included.**

9. No subdivision plan was provided and monuments are not called out within the current plan set. Graphically show monuments at the required locations on the plans. Add a symbol to the plan legend for the monuments shown. Call out the correct monument materials on the plans as requested in previous comments for the project.

**The monuments are included on the Subdivision Plan.**

10. Add length, size, invert at inlet, and invert at outlet for the cross culvert shown between stations 7+00 and 8+00.

**The cross culvert has been labeled as requested.**

11. Add stormdrain size for all stormdrains connected to catch basins as requested previously.

**All stormdrains have been labeled with pipe type and inverts.**

12. Add inverts at the outlet end of the stormdrains as requested previously.

**Inverts have been added to all outlets.**

13. The stormdrain slope from catch basins 1, 4, and 5 is listed as 0%. Revise stormdrains to provide a slope towards the outlet of greater than 0%.

**All stormdrains have been given a positive slope greater than 0%.**

14. Although note 2 of the Bioretention and Underdrained Filter Notes on sheet C304 has been revised to call out a 30 mil liner, the model designation of the liner still lists a 24 mil liner. Revise the model designation from BTL-24 to BTL-30.

**Notes have been updated as requested.**

15. The Bioretention and Underdrained Filter Notes, Note 2 on Sheet C305 needs to be revised to call out a 30 mil liner and the model designation needs to be revised to BTL-30.

**Notes have been updated as requested.**

16. Provide a seeding plan for the sedimentation and erosion control plan and plan sheet C300 that lists the seed type and application rates for temporary and permanent seeding for the project.

**A seeding plan was included on C-300 for both temporary and permanent seeding.**

17. The Town of Gray Zoning Ordinance Section 401.13.12 states that Lot development shall comply with MDEP Chapter 500 Basic and General Standards. The stormwater report submitted for this project states that the Linear Project exception has been applied to this project and the provided treatment is 81% of the impervious area and 82% of the developed area. In order to comply with Chapter 500 general standards for the Lots, 95% of the impervious area and 80% of the developed area of the Lots needs to be treated. The Linear exception is appropriate for the roadway. Treatment for the assumed 6,000 sf of impervious and 12,000 sf of developed area needs to be provided for the lot development in accordance with the standard General Standards. Provide calculations that show the appropriate quantity of

treatment for the roadway as well as the appropriate quantity of treatment for the Lot development accounting for 6,000 sf of impervious area and 12,000 sf of developed area for each lot.

**Forested buffers have been added down slope of all the lots. The updated Stormwater Report has been included.**

**ATTACHMENT A**  
**(Pending)**

**ATTACHMENT B**  
**(Pending)**

## ATTACHMENT C

**STORMWATER MANAGEMENT REPORT  
STILLWATER PINES SUBDIVISION  
GRAY, MAINE  
JUNE 2021**

## **INTRODUCTION**

The project is a 13-lot open space residential subdivision. The project is located off the end of Woodcock Drive in Gray. The property is approximately 67 acres, with a few patches of forested wetlands and a stream that runs along the southeastern corner.

This report discusses the Site's hydrological conditions and quantifies the stormwater runoff generated in the existing and proposed conditions.

## **DATA COLLECTION AND ASSUMPTIONS**

Site Data was gathered from field observations as well as AutoCAD files and drawings. Site contour information was provided by a combination of field survey in the project area and GIS contours outside of the project area. Soils information, vernal pool assessment, BMP test pits and wetlands delineation was provided by Mark Hampton. Calculations were performed to create a HydroCAD stormwater model, which is based on the United States Department of Agriculture's (USDA) Technical Release 20 (TR-20) and Technical Release 55 (TR-55) hydraulic programs.

Curve numbers (CN's) assigned to differing land cover and soil types were taken from tables within the HydroCAD software, which are from the SCS TR-55 manual, revised 1986. 24-hour rainfall depths were taken from the 'Stormwater Management for Maine: Volume III BMP's Technical Design Manual, January 2006'. Time of concentrations were calculated with the HydroCAD software using the TR-55 methodologies including direct entry.

## **EXISTING SITE CONDITIONS**

The existing site is predominantly wooded with on-site soils of primarily Paxtons and Woodbridge. The Medium Intensity Soil Survey (see Attachment 5), as provided by the NRCS. Test pits were performed on-site by Mark Hampton, which revealed well-draining sandy soils in all locations (see Attachment 5).

The site generally drains to the south, with slopes ranging from shallow (0 to 4 percent) and medium (slopes of 5 to 20%). The site is bisected by a USGS stream (Pleasant River).

The entire property drains to the large wetland that runs along Route 100 in Gray, which will be represented by Analysis Point #1.

**PROPOSED SITE CONDITIONS**

The proposed improvements will include rebuilding approximately 1,300 feet of Woodcock Drive and an additional 1,000 feet of new road.

The improvements don't trigger any Maine Department of Environmental Protection permits, but the project is still being designed to Chapter 500 standards.

All points of analysis have been retained from the pre development conditions.

In order to achieve stormwater quantity and quality mitigation, two Underdrained Soil Filters (UDSF) have been designed to both attenuate and treat stormwater run-off. Each lot will be treated by a fifty (50') foot forested buffer. The developed area is C soils and are less than 8% slopes. The 50' forested buffers are located along the edges of the buildable envelopes to further ensure they are never cleared. Beyond the forested buffers are wetlands, which will provide additional treatment for any runoff prior to entering any streams or channelized flow paths.

**WATER QUANTITY & QUALITY**

Water Quality and Quantity mitigation will be achieved through the installation of the aforementioned stormwater BMP. The soil filters intercepts the vast majority of stormwater from the developed areas. A summary comparison of stormwater peak flows can be found below:

POA	2 YR -PRE (cfs)	2 YR - POST (cfs)	10 YR - PRE (cfs)	10 YR – POST (cfs)	25 YR – PRE (cfs)	25 YR – POST (cfs)
#1	53.38	42.68	118.40	103.31	176.13	158.73

The peak flows are decreased for the 2 year, 10-year and 25-year storms.

Stormwater quality mitigation is achieved through the use of the underdrained soil filter BMP. A summary of stormwater treatment percentages can be found as Attachment D. **Total project treatment results in the treatment 81% of impervious area and 82% of total developed area for the linear portion of the project. Each lot is treated using Forested Buffers resulting in 100% treatment of the lots. The provided treatment meets the Basic and General Standards set forth by the Maine DEP.**

All construction will be in accordance with the most current Maine Erosion and Sedimentation Control Best Management Practices. These measures include temporary

and permanent seeding, sediment barriers, and stabilized construction entrance. These measures are described on the enclosed Drawing C-300, "Erosion & Sedimentation Control Notes & Details."

## **CONCLUSIONS**

This project will use long-term and short-term erosion control measures that will mitigate environmental impacts from stormwater. This project will not have any significant adverse impacts on downstream properties as a result of stormwater.

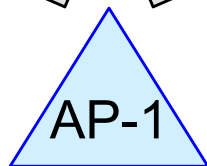
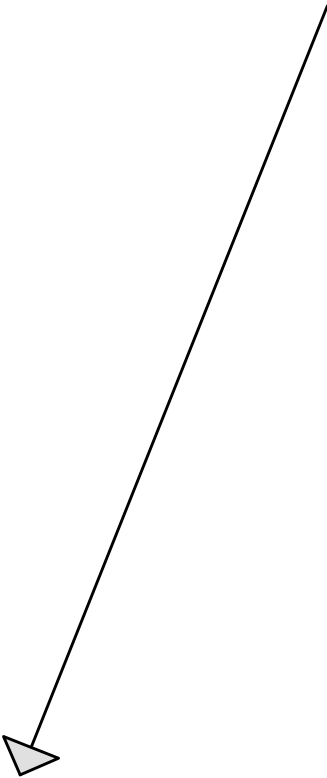
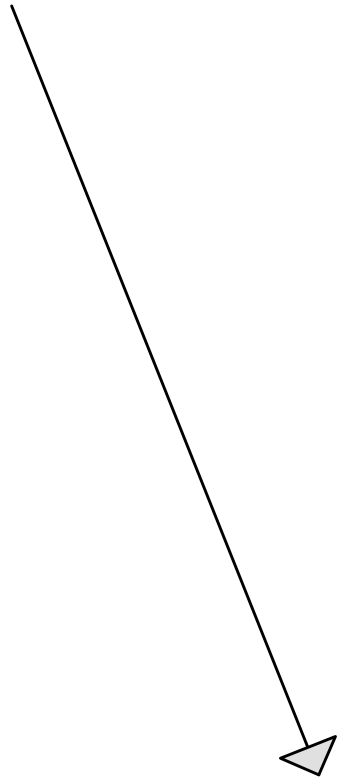
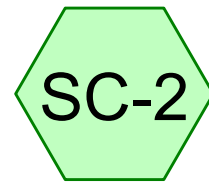
## **ATTACHMENTS**

- Attachment A – Pre and Post Development Hydrologic Calculations
- Attachment B – Stormwater Quality Sizing Calculations
- Attachment C – Stormwater Treatment Summary
- Attachment D – Stormwater Maintenance Plan
- Attachment E – Pre and Post Development Watershed Maps

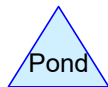
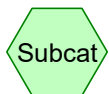
## **ATLANTIC RESOURCE CONSULTANTS**

Charles E. Burnham, PE

**Attachment A – Pre and Post Development Hydrologic Calculations**



Wetland



**Routing Diagram for Pre Developed**  
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### Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
35.416	79	1 acre lots, 20% imp, HSG C (SC-1, SC-2)
11.076	80	1/2 acre lots, 25% imp, HSG C (SC-2)
1.993	98	Impervious (SC-1, SC-2)
61.309	73	Woods, Fair, HSG C (SC-1)
49.823	70	Woods, Good, HSG C (SC-2)
<b>159.617</b>	<b>74</b>	<b>TOTAL AREA</b>

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Type III 24-hr 2-Year Rainfall=3.10"

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**Summary for Subcatchment SC-1:**

Runoff = 30.08 cfs @ 12.79 hrs, Volume= 5.524 af, Depth= 0.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
290,981	79	1 acre lots, 20% imp, HSG C
2,670,615	73	Woods, Fair, HSG C
* 8,272	98	Impervious
2,969,868	74	Weighted Average
2,903,400		97.76% Pervious Area
66,468		2.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0200	0.08		<b>Sheet Flow, A-B</b>
					Woods: Light underbrush n= 0.400 P2= 3.30"
33.1	1,803	0.0330	0.91		<b>Shallow Concentrated Flow, B-C</b>
					Woodland Kv= 5.0 fps
0.8	1,202	0.0400	25.65	5,770.86	<b>Channel Flow, C-D</b>
					Area= 225.0 sf Perim= 71.0' r= 3.17'
					n= 0.025 Earth, clean & winding
55.0	3,105	Total			

**Summary for Subcatchment SC-2:**

Runoff = 30.48 cfs @ 13.32 hrs, Volume= 7.824 af, Depth= 1.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
482,464	80	1/2 acre lots, 25% imp, HSG C
1,251,755	79	1 acre lots, 20% imp, HSG C
2,170,288	70	Woods, Good, HSG C
* 78,561	98	Impervious
3,983,068	75	Weighted Average
3,533,540		88.71% Pervious Area
449,528		11.29% Impervious Area

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Type III 24-hr 2-Year Rainfall=3.10"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0200	0.08		<b>Sheet Flow, A-B</b> Woods: Light underbrush n= 0.400 P2= 3.30"
71.2	3,238	0.0230	0.76		<b>Shallow Concentrated Flow, B-C</b> Woodland Kv= 5.0 fps
2.0	2,635	0.0080	21.68	30,899.48	<b>Channel Flow, C-D</b> Area= 1,425.0 sf Perim= 173.0' r= 8.24' n= 0.025
94.3	5,973	Total			

**Summary for Pond AP-1: Wetland**

Inflow Area = 159.617 ac, 7.42% Impervious, Inflow Depth = 1.00" for 2-Year event  
 Inflow = 53.38 cfs @ 13.01 hrs, Volume= 13.348 af  
 Primary = 53.38 cfs @ 13.01 hrs, Volume= 13.348 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs

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Type III 24-hr 10-Year Rainfall=4.60"

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**Summary for Subcatchment SC-1:**

Runoff = 67.08 cfs @ 12.77 hrs, Volume= 11.645 af, Depth= 2.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
290,981	79	1 acre lots, 20% imp, HSG C
2,670,615	73	Woods, Fair, HSG C
* 8,272	98	Impervious
2,969,868	74	Weighted Average
2,903,400		97.76% Pervious Area
66,468		2.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0200	0.08		<b>Sheet Flow, A-B</b>
					Woods: Light underbrush n= 0.400 P2= 3.30"
33.1	1,803	0.0330	0.91		<b>Shallow Concentrated Flow, B-C</b>
					Woodland Kv= 5.0 fps
0.8	1,202	0.0400	25.65	5,770.86	<b>Channel Flow, C-D</b>
					Area= 225.0 sf Perim= 71.0' r= 3.17'
					n= 0.025 Earth, clean & winding
55.0	3,105	Total			

**Summary for Subcatchment SC-2:**

Runoff = 66.64 cfs @ 13.30 hrs, Volume= 16.223 af, Depth= 2.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
482,464	80	1/2 acre lots, 25% imp, HSG C
1,251,755	79	1 acre lots, 20% imp, HSG C
2,170,288	70	Woods, Good, HSG C
* 78,561	98	Impervious
3,983,068	75	Weighted Average
3,533,540		88.71% Pervious Area
449,528		11.29% Impervious Area

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Type III 24-hr 10-Year Rainfall=4.60"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0200	0.08		<b>Sheet Flow, A-B</b> Woods: Light underbrush n= 0.400 P2= 3.30"
71.2	3,238	0.0230	0.76		<b>Shallow Concentrated Flow, B-C</b> Woodland Kv= 5.0 fps
2.0	2,635	0.0080	21.68	30,899.48	<b>Channel Flow, C-D</b> Area= 1,425.0 sf Perim= 173.0' r= 8.24' n= 0.025
94.3	5,973	Total			

**Summary for Pond AP-1: Wetland**

Inflow Area = 159.617 ac, 7.42% Impervious, Inflow Depth = 2.10" for 10-Year event  
 Inflow = 118.40 cfs @ 12.97 hrs, Volume= 27.868 af  
 Primary = 118.40 cfs @ 12.97 hrs, Volume= 27.868 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs

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Type III 24-hr 25-Year Rainfall=5.80"

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**Summary for Subcatchment SC-1:**

Runoff = 99.80 cfs @ 12.77 hrs, Volume= 17.144 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
290,981	79	1 acre lots, 20% imp, HSG C
2,670,615	73	Woods, Fair, HSG C
* 8,272	98	Impervious
2,969,868	74	Weighted Average
2,903,400		97.76% Pervious Area
66,468		2.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0200	0.08		<b>Sheet Flow, A-B</b>
					Woods: Light underbrush n= 0.400 P2= 3.30"
33.1	1,803	0.0330	0.91		<b>Shallow Concentrated Flow, B-C</b>
					Woodland Kv= 5.0 fps
0.8	1,202	0.0400	25.65	5,770.86	<b>Channel Flow, C-D</b>
					Area= 225.0 sf Perim= 71.0' r= 3.17'
					n= 0.025 Earth, clean & winding
55.0	3,105	Total			

**Summary for Subcatchment SC-2:**

Runoff = 98.45 cfs @ 13.30 hrs, Volume= 23.716 af, Depth= 3.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
482,464	80	1/2 acre lots, 25% imp, HSG C
1,251,755	79	1 acre lots, 20% imp, HSG C
2,170,288	70	Woods, Good, HSG C
* 78,561	98	Impervious
3,983,068	75	Weighted Average
3,533,540		88.71% Pervious Area
449,528		11.29% Impervious Area

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Type III 24-hr 25-Year Rainfall=5.80"

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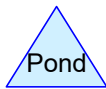
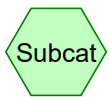
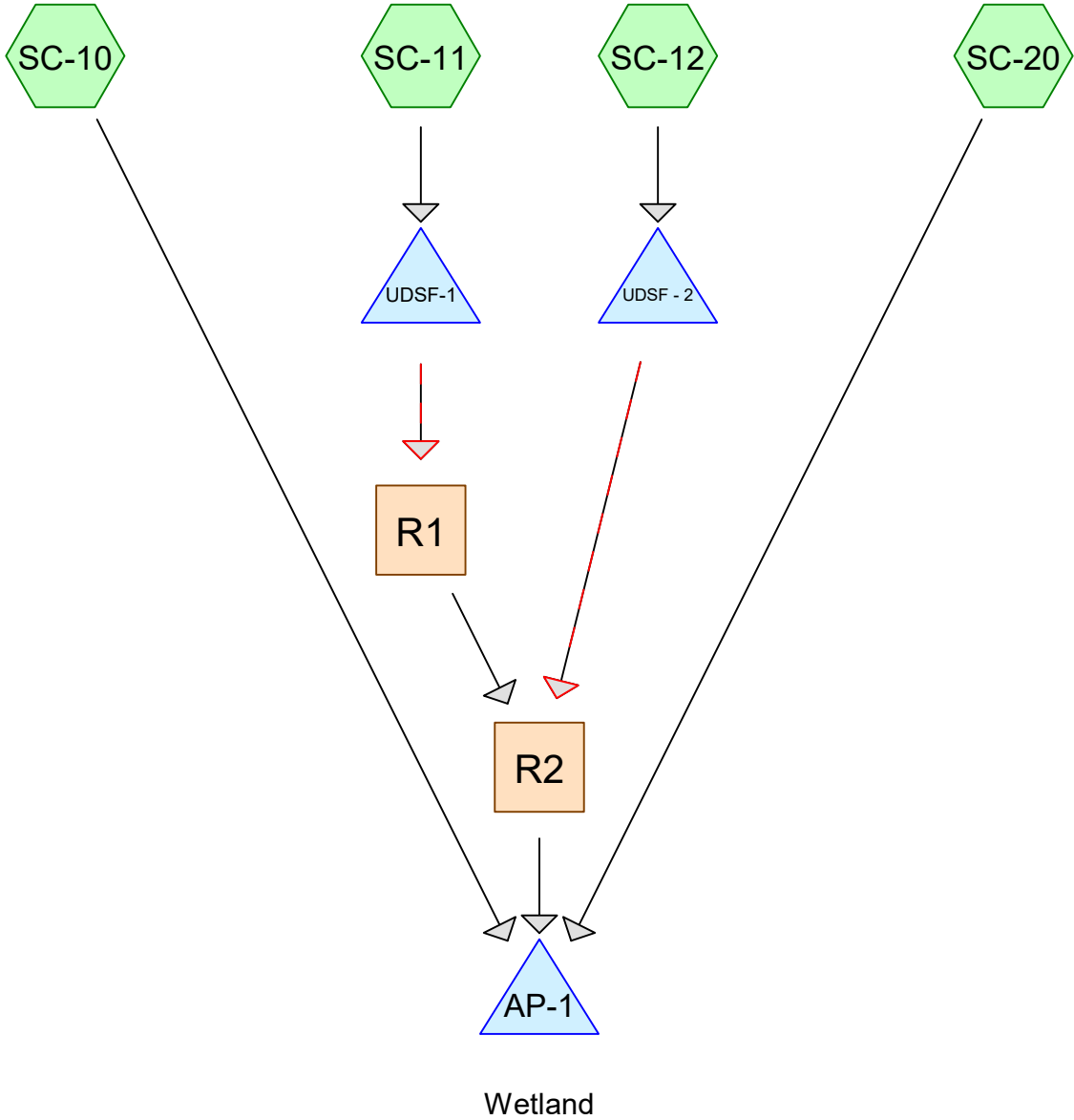
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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0200	0.08		<b>Sheet Flow, A-B</b> Woods: Light underbrush n= 0.400 P2= 3.30"
71.2	3,238	0.0230	0.76		<b>Shallow Concentrated Flow, B-C</b> Woodland Kv= 5.0 fps
2.0	2,635	0.0080	21.68	30,899.48	<b>Channel Flow, C-D</b> Area= 1,425.0 sf Perim= 173.0' r= 8.24' n= 0.025
94.3	5,973	Total			

**Summary for Pond AP-1: Wetland**

Inflow Area = 159.617 ac, 7.42% Impervious, Inflow Depth = 3.07" for 25-Year event  
 Inflow = 176.13 cfs @ 12.93 hrs, Volume= 40.859 af  
 Primary = 176.13 cfs @ 12.93 hrs, Volume= 40.859 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs



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### Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
12.460	79	1 acre lots, 20% imp, HSG C (SC-10, SC-20)
11.076	80	1/2 acre lots, 25% imp, HSG C (SC-20)
0.276	74	>75% Grass cover, Good, HSG C (SC-12)
2.681	98	Impervious (SC-10, SC-11, SC-12, SC-20)
0.710	73	Woods, Fair, HSG C (SC-11)
132.415	70	Woods, Good, HSG C (SC-10, SC-20)
<b>159.617</b>	<b>72</b>	<b>TOTAL AREA</b>

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Type III 24-hr 2-Year Rainfall=3.10"

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**Summary for Subcatchment SC-10:**

Runoff = 23.97 cfs @ 12.83 hrs, Volume= 4.602 af, Depth= 0.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
290,987	79	1 acre lots, 20% imp, HSG C
2,633,076	70	Woods, Good, HSG C
* 14,357	98	Impervious
2,938,420	71	Weighted Average
2,865,866		97.53% Pervious Area
72,554		2.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0200	0.08		<b>Sheet Flow, A-B</b>
					Woods: Light underbrush n= 0.400 P2= 3.30"
33.1	1,803	0.0330	0.91		<b>Shallow Concentrated Flow, B-C</b>
					Woodland Kv= 5.0 fps
0.8	1,202	0.0400	25.65	5,770.86	<b>Channel Flow, C-D</b>
					Area= 225.0 sf Perim= 71.0' r= 3.17'
					n= 0.025 Earth, clean & winding
55.0	3,105	Total			

**Summary for Subcatchment SC-11:**

Runoff = 1.77 cfs @ 12.08 hrs, Volume= 0.123 af, Depth= 1.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
30,919	73	Woods, Fair, HSG C
* 15,262	98	Impervious
46,181	81	Weighted Average
30,919		66.95% Pervious Area
15,262		33.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry, 5 Minute Minimum</b>

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Type III 24-hr 2-Year Rainfall=3.10"

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**Summary for Subcatchment SC-12:**

Runoff = 0.92 cfs @ 12.08 hrs, Volume= 0.063 af, Depth= 1.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
12,024	74	>75% Grass cover, Good, HSG C
* 8,609	98	Impervious
20,633	84	Weighted Average
12,024		58.28% Pervious Area
8,609		41.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry, 5 Minute Minumum</b>

**Summary for Subcatchment SC-20:**

Runoff = 24.48 cfs @ 13.32 hrs, Volume= 6.557 af, Depth= 0.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
482,464	80	1/2 acre lots, 25% imp, HSG C
251,755	79	1 acre lots, 20% imp, HSG C
3,134,916	70	Woods, Good, HSG C
* 78,561	98	Impervious
3,947,696	72	Weighted Average
3,698,168		93.68% Pervious Area
249,528		6.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0200	0.08		<b>Sheet Flow, A-B</b> Woods: Light underbrush n= 0.400 P2= 3.30"
71.2	3,238	0.0230	0.76		<b>Shallow Concentrated Flow, B-C</b> Woodland Kv= 5.0 fps
2.0	2,635	0.0080	21.68	30,899.48	<b>Channel Flow, C-D</b> Area= 1,425.0 sf Perim= 173.0' r= 8.24' n= 0.025
94.3	5,973	Total			

**Developed**

Type III 24-hr 2-Year Rainfall=3.10"

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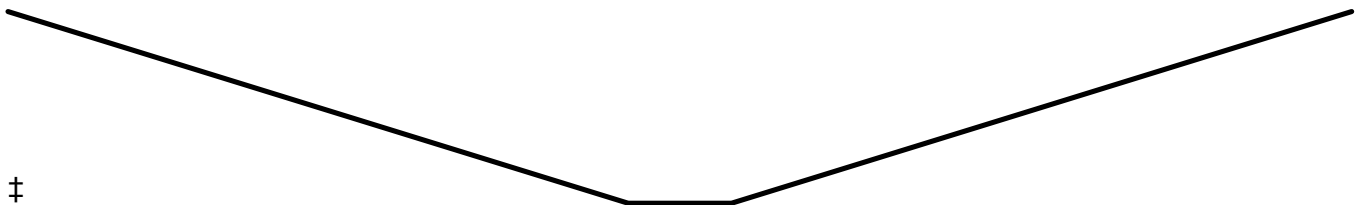
**Summary for Reach R1:**

Inflow Area = 1.060 ac, 33.05% Impervious, Inflow Depth > 1.30" for 2-Year event  
Inflow = 0.05 cfs @ 17.24 hrs, Volume= 0.115 af  
Outflow = 0.05 cfs @ 17.46 hrs, Volume= 0.114 af, Atten= 0%, Lag= 12.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Max. Velocity= 0.92 fps, Min. Travel Time= 6.5 min  
Avg. Velocity = 0.92 fps, Avg. Travel Time= 6.5 min

Peak Storage= 20 cf @ 17.35 hrs  
Average Depth at Peak Storage= 0.01'  
Bank-Full Depth= 10.00' Flow Area= 700.0 sf, Capacity= 9,473.79 cfs

10.00' x 10.00' deep channel, n= 0.025  
Side Slope Z-value= 6.0 '/' Top Width= 130.00'  
Length= 358.0' Slope= 0.0056 '/'  
Inlet Invert= 44.00', Outlet Invert= 42.00'



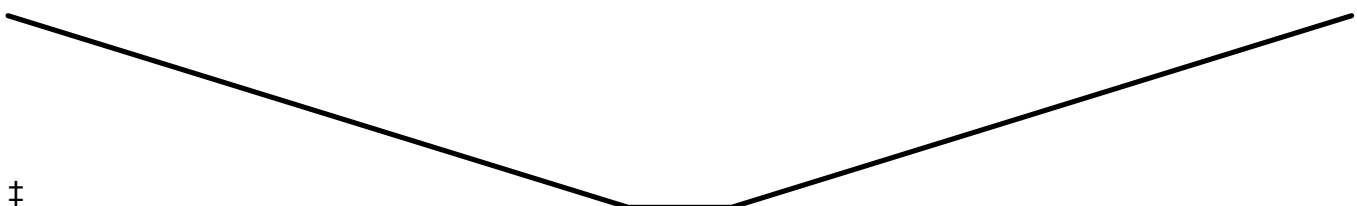
**Summary for Reach R2:**

Inflow Area = 1.534 ac, 35.73% Impervious, Inflow Depth > 1.38" for 2-Year event  
Inflow = 0.09 cfs @ 16.53 hrs, Volume= 0.177 af  
Outflow = 0.09 cfs @ 16.80 hrs, Volume= 0.176 af, Atten= 0%, Lag= 16.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Max. Velocity= 2.34 fps, Min. Travel Time= 7.9 min  
Avg. Velocity = 2.34 fps, Avg. Travel Time= 7.9 min

Peak Storage= 41 cf @ 16.67 hrs  
Average Depth at Peak Storage= 0.00'  
Bank-Full Depth= 10.00' Flow Area= 700.0 sf, Capacity= 24,028.82 cfs

10.00' x 10.00' deep channel, n= 0.025  
Side Slope Z-value= 6.0 '/' Top Width= 130.00'  
Length= 1,113.0' Slope= 0.0359 '/'  
Inlet Invert= 40.00', Outlet Invert= 0.00'



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Type III 24-hr 2-Year Rainfall=3.10"

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**Summary for Pond AP-1: Wetland**

Inflow Area = 159.617 ac, 4.98% Impervious, Inflow Depth > 0.85" for 2-Year event  
Inflow = 42.68 cfs @ 13.02 hrs, Volume= 11.335 af  
Primary = 42.68 cfs @ 13.02 hrs, Volume= 11.335 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs

**Summary for Pond UDSF - 2:**

Inflow Area = 0.474 ac, 41.72% Impervious, Inflow Depth = 1.60" for 2-Year event  
Inflow = 0.92 cfs @ 12.08 hrs, Volume= 0.063 af  
Outflow = 0.04 cfs @ 15.69 hrs, Volume= 0.063 af, Atten= 96%, Lag= 216.6 min  
Primary = 0.04 cfs @ 15.69 hrs, Volume= 0.063 af  
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Peak Elev= 44.41' @ 15.69 hrs Surf.Area= 1,640 sf Storage= 1,641 cf

Plug-Flow detention time= 503.2 min calculated for 0.063 af (100% of inflow)  
Center-of-Mass det. time= 500.4 min ( 1,330.5 - 830.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	43.00'	4,915 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
43.00	603	0	0
44.00	1,426	1,015	1,015
46.00	2,474	3,900	4,915

Device	Routing	Invert	Outlet Devices
#1	Primary	43.00'	<b>1.5" Round Culvert</b> L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 43.00' / 40.00' S= 0.0500 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.01 sf
#2	Secondary	45.00'	<b>4.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

**Primary OutFlow** Max=0.04 cfs @ 15.69 hrs HW=44.41' (Free Discharge)  
↑1=Culvert (Barrel Controls 0.04 cfs @ 2.94 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=43.00' (Free Discharge)  
↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

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Type III 24-hr 2-Year Rainfall=3.10"

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**Summary for Pond UDSF-1:**

Inflow Area = 1.060 ac, 33.05% Impervious, Inflow Depth = 1.39" for 2-Year event  
 Inflow = 1.77 cfs @ 12.08 hrs, Volume= 0.123 af  
 Outflow = 0.05 cfs @ 17.24 hrs, Volume= 0.115 af, Atten= 97%, Lag= 309.7 min  
 Primary = 0.05 cfs @ 17.24 hrs, Volume= 0.115 af  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
 Peak Elev= 48.88' @ 17.24 hrs Surf.Area= 3,174 sf Storage= 3,400 cf

Plug-Flow detention time= 689.4 min calculated for 0.115 af (93% of inflow)  
 Center-of-Mass det. time= 654.7 min ( 1,494.9 - 840.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	47.00'	9,893 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
47.00	1,215	0	0
48.00	1,486	1,351	1,351
50.00	5,325	6,811	8,162
50.27	7,500	1,731	9,893

Device	Routing	Invert	Outlet Devices
#1	Primary	46.00'	<b>1.4" Round Culvert</b> L= 20.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 46.00' / 44.33' S= 0.0835 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.01 sf
#2	Secondary	49.00'	<b>6.0' long x 4.0' breadth Broad-Crested Rectangular Weir</b> 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) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

**Primary OutFlow** Max=0.05 cfs @ 17.24 hrs HW=48.88' (Free Discharge)

↑**1=Culvert** (Barrel Controls 0.05 cfs @ 4.70 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=47.00' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

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Type III 24-hr 10-Year Rainfall=4.60"

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**Summary for Subcatchment SC-10:**

Runoff = 58.09 cfs @ 12.78 hrs, Volume= 10.226 af, Depth= 1.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
290,987	79	1 acre lots, 20% imp, HSG C
2,633,076	70	Woods, Good, HSG C
* 14,357	98	Impervious
2,938,420	71	Weighted Average
2,865,866		97.53% Pervious Area
72,554		2.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0200	0.08		<b>Sheet Flow, A-B</b>
					Woods: Light underbrush n= 0.400 P2= 3.30"
33.1	1,803	0.0330	0.91		<b>Shallow Concentrated Flow, B-C</b>
					Woodland Kv= 5.0 fps
0.8	1,202	0.0400	25.65	5,770.86	<b>Channel Flow, C-D</b>
					Area= 225.0 sf Perim= 71.0' r= 3.17'
					n= 0.025 Earth, clean & winding
55.0	3,105	Total			

**Summary for Subcatchment SC-11:**

Runoff = 3.39 cfs @ 12.08 hrs, Volume= 0.233 af, Depth= 2.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
30,919	73	Woods, Fair, HSG C
* 15,262	98	Impervious
46,181	81	Weighted Average
30,919		66.95% Pervious Area
15,262		33.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry, 5 Minute Minimum</b>

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Type III 24-hr 10-Year Rainfall=4.60"

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**Summary for Subcatchment SC-12:**

Runoff = 1.66 cfs @ 12.07 hrs, Volume= 0.115 af, Depth= 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
12,024	74	>75% Grass cover, Good, HSG C
* 8,609	98	Impervious
20,633	84	Weighted Average
12,024		58.28% Pervious Area
8,609		41.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry, 5 Minute Minimum</b>

**Summary for Subcatchment SC-20:**

Runoff = 57.96 cfs @ 13.31 hrs, Volume= 14.308 af, Depth= 1.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
482,464	80	1/2 acre lots, 25% imp, HSG C
251,755	79	1 acre lots, 20% imp, HSG C
3,134,916	70	Woods, Good, HSG C
* 78,561	98	Impervious
3,947,696	72	Weighted Average
3,698,168		93.68% Pervious Area
249,528		6.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0200	0.08		<b>Sheet Flow, A-B</b> Woods: Light underbrush n= 0.400 P2= 3.30"
71.2	3,238	0.0230	0.76		<b>Shallow Concentrated Flow, B-C</b> Woodland Kv= 5.0 fps
2.0	2,635	0.0080	21.68	30,899.48	<b>Channel Flow, C-D</b> Area= 1,425.0 sf Perim= 173.0' r= 8.24' n= 0.025
94.3	5,973	Total			

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Type III 24-hr 10-Year Rainfall=4.60"

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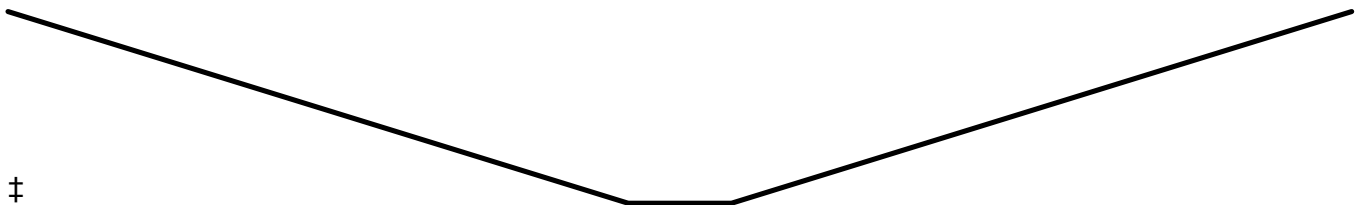
**Summary for Reach R1:**

Inflow Area = 1.060 ac, 33.05% Impervious, Inflow Depth > 2.38" for 10-Year event  
Inflow = 0.95 cfs @ 12.43 hrs, Volume= 0.210 af  
Outflow = 0.83 cfs @ 12.65 hrs, Volume= 0.209 af, Atten= 13%, Lag= 13.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Max. Velocity= 0.92 fps, Min. Travel Time= 6.5 min  
Avg. Velocity = 0.92 fps, Avg. Travel Time= 6.5 min

Peak Storage= 321 cf @ 12.54 hrs  
Average Depth at Peak Storage= 0.08'  
Bank-Full Depth= 10.00' Flow Area= 700.0 sf, Capacity= 9,473.79 cfs

10.00' x 10.00' deep channel, n= 0.025  
Side Slope Z-value= 6.0 '/' Top Width= 130.00'  
Length= 358.0' Slope= 0.0056 '/'  
Inlet Invert= 44.00', Outlet Invert= 42.00'



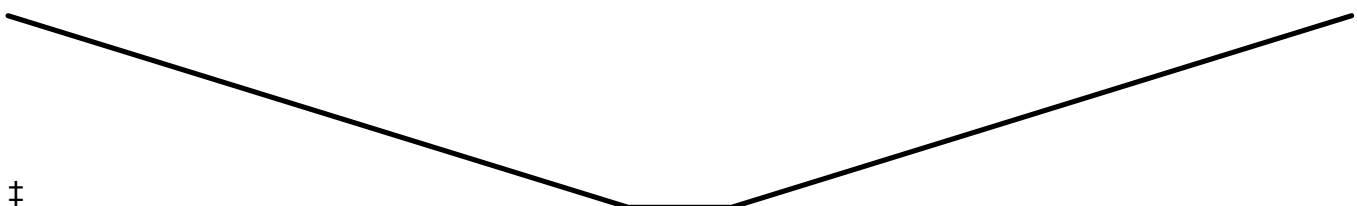
**Summary for Reach R2:**

Inflow Area = 1.534 ac, 35.73% Impervious, Inflow Depth > 2.47" for 10-Year event  
Inflow = 0.86 cfs @ 12.65 hrs, Volume= 0.316 af  
Outflow = 0.77 cfs @ 12.96 hrs, Volume= 0.314 af, Atten= 11%, Lag= 18.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Max. Velocity= 2.34 fps, Min. Travel Time= 7.9 min  
Avg. Velocity = 2.34 fps, Avg. Travel Time= 7.9 min

Peak Storage= 367 cf @ 12.83 hrs  
Average Depth at Peak Storage= 0.03'  
Bank-Full Depth= 10.00' Flow Area= 700.0 sf, Capacity= 24,028.82 cfs

10.00' x 10.00' deep channel, n= 0.025  
Side Slope Z-value= 6.0 '/' Top Width= 130.00'  
Length= 1,113.0' Slope= 0.0359 '/'  
Inlet Invert= 40.00', Outlet Invert= 0.00'



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Type III 24-hr 10-Year Rainfall=4.60"

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**Summary for Pond AP-1: Wetland**

Inflow Area = 159.617 ac, 4.98% Impervious, Inflow Depth > 1.87" for 10-Year event  
Inflow = 103.31 cfs @ 12.99 hrs, Volume= 24.848 af  
Primary = 103.31 cfs @ 12.99 hrs, Volume= 24.848 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs

**Summary for Pond UDSF - 2:**

Inflow Area = 0.474 ac, 41.72% Impervious, Inflow Depth = 2.91" for 10-Year event  
Inflow = 1.66 cfs @ 12.07 hrs, Volume= 0.115 af  
Outflow = 0.14 cfs @ 13.09 hrs, Volume= 0.106 af, Atten= 92%, Lag= 61.2 min  
Primary = 0.04 cfs @ 13.09 hrs, Volume= 0.090 af  
Secondary = 0.10 cfs @ 13.09 hrs, Volume= 0.017 af

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Peak Elev= 45.05' @ 13.09 hrs Surf.Area= 1,975 sf Storage= 2,795 cf

Plug-Flow detention time= 610.2 min calculated for 0.106 af (92% of inflow)  
Center-of-Mass det. time= 571.4 min ( 1,384.3 - 813.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	43.00'	4,915 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
43.00	603	0	0
44.00	1,426	1,015	1,015
46.00	2,474	3,900	4,915

Device	Routing	Invert	Outlet Devices
#1	Primary	43.00'	<b>1.5" Round Culvert</b> L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 43.00' / 40.00' S= 0.0500 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.01 sf
#2	Secondary	45.00'	<b>4.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

**Primary OutFlow** Max=0.04 cfs @ 13.09 hrs HW=45.05' (Free Discharge)  
↑1=Culvert (Barrel Controls 0.04 cfs @ 3.15 fps)

**Secondary OutFlow** Max=0.10 cfs @ 13.09 hrs HW=45.05' (Free Discharge)  
↑2=Broad-Crested Rectangular Weir (Weir Controls 0.10 cfs @ 0.51 fps)

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Type III 24-hr 10-Year Rainfall=4.60"

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**Summary for Pond UDSF-1:**

Inflow Area = 1.060 ac, 33.05% Impervious, Inflow Depth = 2.63" for 10-Year event  
 Inflow = 3.39 cfs @ 12.08 hrs, Volume= 0.233 af  
 Outflow = 0.95 cfs @ 12.43 hrs, Volume= 0.210 af, Atten= 72%, Lag= 21.3 min  
 Primary = 0.05 cfs @ 12.43 hrs, Volume= 0.124 af  
 Secondary = 0.90 cfs @ 12.43 hrs, Volume= 0.086 af

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
 Peak Elev= 49.16' @ 12.43 hrs Surf.Area= 3,710 sf Storage= 4,360 cf

Plug-Flow detention time= 430.7 min calculated for 0.210 af (90% of inflow)  
 Center-of-Mass det. time= 383.2 min ( 1,205.0 - 821.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	47.00'	9,893 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
47.00	1,215	0	0
48.00	1,486	1,351	1,351
50.00	5,325	6,811	8,162
50.27	7,500	1,731	9,893

Device	Routing	Invert	Outlet Devices
#1	Primary	46.00'	<b>1.4" Round Culvert</b> L= 20.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 46.00' / 44.33' S= 0.0835 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.01 sf
#2	Secondary	49.00'	<b>6.0' long x 4.0' breadth Broad-Crested Rectangular Weir</b> 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) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

**Primary OutFlow** Max=0.05 cfs @ 12.43 hrs HW=49.16' (Free Discharge)  
 ↑1=Culvert (Barrel Controls 0.05 cfs @ 4.85 fps)

**Secondary OutFlow** Max=0.90 cfs @ 12.43 hrs HW=49.16' (Free Discharge)  
 ↑2=Broad-Crested Rectangular Weir (Weir Controls 0.90 cfs @ 0.95 fps)

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Type III 24-hr 25-Year Rainfall=5.80"

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**Summary for Subcatchment SC-10:**

Runoff = 89.13 cfs @ 12.77 hrs, Volume= 15.394 af, Depth= 2.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
290,987	79	1 acre lots, 20% imp, HSG C
2,633,076	70	Woods, Good, HSG C
* 14,357	98	Impervious
2,938,420	71	Weighted Average
2,865,866		97.53% Pervious Area
72,554		2.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0200	0.08		<b>Sheet Flow, A-B</b>
					Woods: Light underbrush n= 0.400 P2= 3.30"
33.1	1,803	0.0330	0.91		<b>Shallow Concentrated Flow, B-C</b>
					Woodland Kv= 5.0 fps
0.8	1,202	0.0400	25.65	5,770.86	<b>Channel Flow, C-D</b>
					Area= 225.0 sf Perim= 71.0' r= 3.17'
					n= 0.025 Earth, clean & winding
55.0	3,105	Total			

**Summary for Subcatchment SC-11:**

Runoff = 4.73 cfs @ 12.07 hrs, Volume= 0.327 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
30,919	73	Woods, Fair, HSG C
* 15,262	98	Impervious
46,181	81	Weighted Average
30,919		66.95% Pervious Area
15,262		33.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry, 5 Minute Minimum</b>

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Type III 24-hr 25-Year Rainfall=5.80"

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**Summary for Subcatchment SC-12:**

Runoff = 2.27 cfs @ 12.07 hrs, Volume= 0.158 af, Depth= 4.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
12,024	74	>75% Grass cover, Good, HSG C
* 8,609	98	Impervious
20,633	84	Weighted Average
12,024		58.28% Pervious Area
8,609		41.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry, 5 Minute Minumum</b>

**Summary for Subcatchment SC-20:**

Runoff = 88.22 cfs @ 13.30 hrs, Volume= 21.376 af, Depth= 2.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
482,464	80	1/2 acre lots, 25% imp, HSG C
251,755	79	1 acre lots, 20% imp, HSG C
3,134,916	70	Woods, Good, HSG C
* 78,561	98	Impervious
3,947,696	72	Weighted Average
3,698,168		93.68% Pervious Area
249,528		6.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0200	0.08		<b>Sheet Flow, A-B</b> Woods: Light underbrush n= 0.400 P2= 3.30"
71.2	3,238	0.0230	0.76		<b>Shallow Concentrated Flow, B-C</b> Woodland Kv= 5.0 fps
2.0	2,635	0.0080	21.68	30,899.48	<b>Channel Flow, C-D</b> Area= 1,425.0 sf Perim= 173.0' r= 8.24' n= 0.025
94.3	5,973	Total			

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Type III 24-hr 25-Year Rainfall=5.80"

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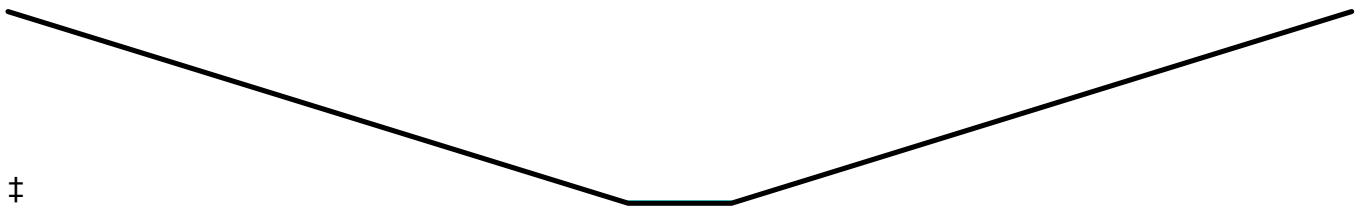
**Summary for Reach R1:**

Inflow Area = 1.060 ac, 33.05% Impervious, Inflow Depth > 3.43" for 25-Year event  
Inflow = 2.52 cfs @ 12.20 hrs, Volume= 0.303 af  
Outflow = 2.26 cfs @ 12.37 hrs, Volume= 0.302 af, Atten= 10%, Lag= 10.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Max. Velocity= 1.29 fps, Min. Travel Time= 4.6 min  
Avg. Velocity = 0.93 fps, Avg. Travel Time= 6.4 min

Peak Storage= 626 cf @ 12.29 hrs  
Average Depth at Peak Storage= 0.16'  
Bank-Full Depth= 10.00' Flow Area= 700.0 sf, Capacity= 9,473.79 cfs

10.00' x 10.00' deep channel, n= 0.025  
Side Slope Z-value= 6.0 '/' Top Width= 130.00'  
Length= 358.0' Slope= 0.0056 '/'  
Inlet Invert= 44.00', Outlet Invert= 42.00'



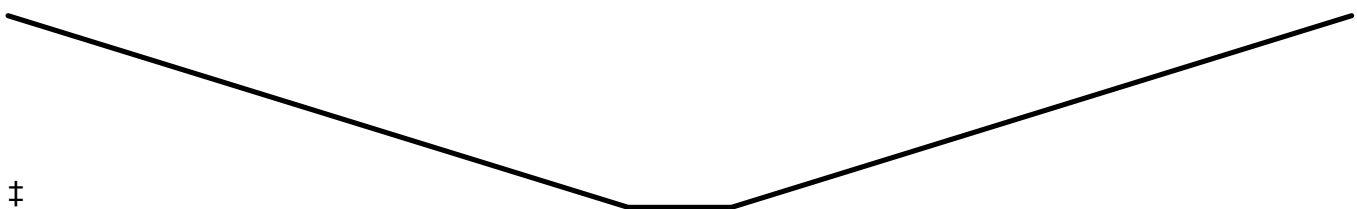
**Summary for Reach R2:**

Inflow Area = 1.534 ac, 35.73% Impervious, Inflow Depth > 3.51" for 25-Year event  
Inflow = 3.01 cfs @ 12.36 hrs, Volume= 0.449 af  
Outflow = 2.44 cfs @ 12.65 hrs, Volume= 0.447 af, Atten= 19%, Lag= 17.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Max. Velocity= 2.34 fps, Min. Travel Time= 7.9 min  
Avg. Velocity = 2.34 fps, Avg. Travel Time= 7.9 min

Peak Storage= 1,161 cf @ 12.52 hrs  
Average Depth at Peak Storage= 0.10'  
Bank-Full Depth= 10.00' Flow Area= 700.0 sf, Capacity= 24,028.82 cfs

10.00' x 10.00' deep channel, n= 0.025  
Side Slope Z-value= 6.0 '/' Top Width= 130.00'  
Length= 1,113.0' Slope= 0.0359 '/'  
Inlet Invert= 40.00', Outlet Invert= 0.00'



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Type III 24-hr 25-Year Rainfall=5.80"

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**Summary for Pond AP-1: Wetland**

Inflow Area = 159.617 ac, 4.98% Impervious, Inflow Depth > 2.80" for 25-Year event  
 Inflow = 158.73 cfs @ 12.95 hrs, Volume= 37.218 af  
 Primary = 158.73 cfs @ 12.95 hrs, Volume= 37.218 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs

**Summary for Pond UDSF - 2:**

Inflow Area = 0.474 ac, 41.72% Impervious, Inflow Depth = 4.01" for 25-Year event  
 Inflow = 2.27 cfs @ 12.07 hrs, Volume= 0.158 af  
 Outflow = 0.75 cfs @ 12.36 hrs, Volume= 0.147 af, Atten= 67%, Lag= 17.4 min  
 Primary = 0.04 cfs @ 12.36 hrs, Volume= 0.093 af  
 Secondary = 0.71 cfs @ 12.36 hrs, Volume= 0.054 af

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
 Peak Elev= 45.18' @ 12.36 hrs Surf.Area= 2,043 sf Storage= 3,059 cf

Plug-Flow detention time= 455.6 min calculated for 0.147 af (93% of inflow)  
 Center-of-Mass det. time= 417.8 min ( 1,221.6 - 803.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	43.00'	4,915 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
43.00	603	0	0
44.00	1,426	1,015	1,015
46.00	2,474	3,900	4,915

Device	Routing	Invert	Outlet Devices
#1	Primary	43.00'	<b>1.5" Round Culvert</b> L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 43.00' / 40.00' S= 0.0500 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.01 sf
#2	Secondary	45.00'	<b>4.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

**Primary OutFlow** Max=0.04 cfs @ 12.36 hrs HW=45.18' (Free Discharge)  
 ↑1=Culvert (Barrel Controls 0.04 cfs @ 3.19 fps)

**Secondary OutFlow** Max=0.70 cfs @ 12.36 hrs HW=45.18' (Free Discharge)  
 ↑2=Broad-Crested Rectangular Weir (Weir Controls 0.70 cfs @ 0.99 fps)

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Type III 24-hr 25-Year Rainfall=5.80"

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**Summary for Pond UDSF-1:**

Inflow Area = 1.060 ac, 33.05% Impervious, Inflow Depth = 3.70" for 25-Year event  
 Inflow = 4.73 cfs @ 12.07 hrs, Volume= 0.327 af  
 Outflow = 2.52 cfs @ 12.20 hrs, Volume= 0.303 af, Atten= 47%, Lag= 7.4 min  
 Primary = 0.05 cfs @ 12.20 hrs, Volume= 0.127 af  
 Secondary = 2.46 cfs @ 12.20 hrs, Volume= 0.176 af

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
 Peak Elev= 49.30' @ 12.20 hrs Surf.Area= 3,987 sf Storage= 4,915 cf

Plug-Flow detention time= 309.2 min calculated for 0.303 af (93% of inflow)  
 Center-of-Mass det. time= 271.0 min ( 1,083.0 - 812.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	47.00'	9,893 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
47.00	1,215	0	0
48.00	1,486	1,351	1,351
50.00	5,325	6,811	8,162
50.27	7,500	1,731	9,893

Device	Routing	Invert	Outlet Devices
#1	Primary	46.00'	<b>1.4" Round Culvert</b> L= 20.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 46.00' / 44.33' S= 0.0835 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.01 sf
#2	Secondary	49.00'	<b>6.0' long x 4.0' breadth Broad-Crested Rectangular Weir</b> 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) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

**Primary OutFlow** Max=0.05 cfs @ 12.20 hrs HW=49.30' (Free Discharge)

↑**1=Culvert** (Barrel Controls 0.05 cfs @ 4.92 fps)

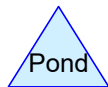
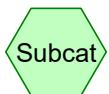
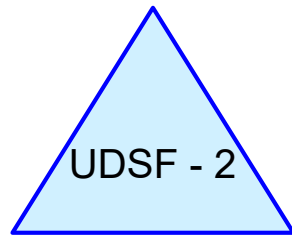
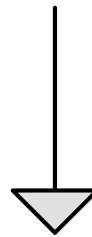
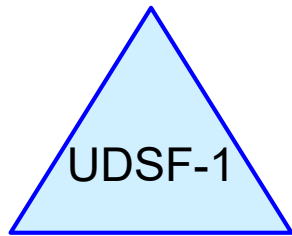
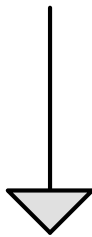
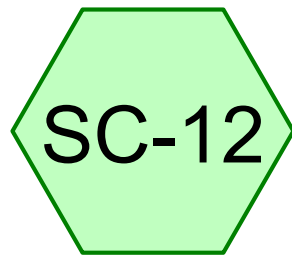
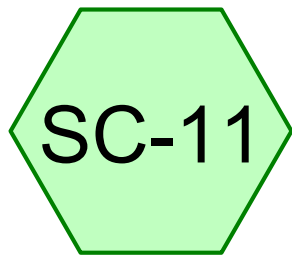
**Secondary OutFlow** Max=2.46 cfs @ 12.20 hrs HW=49.30' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** (Weir Controls 2.46 cfs @ 1.35 fps)

**Attachment B – Stormwater Quality Sizing Calculations**

<b>Grassed Underdrained Soil Filter #1 Sizing</b>		
		<b>Units</b>
Impervious Area	15,262	Square Feet
Landscaped Area	15,657	Square Feet
Forebay Volume	19	Cubic Feet
Storage Volume Required	1,794	Cubic Feet
Surface Area Required	1,076	Square Feet
Ponding Depth for Water Quality Volume	~18	Inches
Filter Media Thickness	18	Inches
Filter Media Void Ratio	30%	
Bed Surface Area	1,215	Square Feet
Storage in Filter Media	547	Cubic Feet
Total Water Quality Storage Volume	2,369	Cubic Feet

<b>Grassed Underdrained Soil Filter #2 Sizing</b>		
		<b>Units</b>
Impervious Area	8,609	Square Feet
Landscaped Area	3,415	Square Feet
Forebay Volume	11	Cubic Feet
Storage Volume Required	831	Cubic Feet
Surface Area Required	499	Square Feet
Ponding Depth for Water Quality Volume	~18	Inches
Filter Media Thickness	18	Inches
Filter Media Void Ratio	30%	
Bed Surface Area	1,000	Square Feet
Storage in Filter Media	450	Cubic Feet
Total Water Quality Storage Volume	1,950	Cubic Feet



**Routing Diagram for Spillway Sizing**  
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## Spillway Sizing

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### Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.276	74	>75% Grass cover, Good, HSG C (SC-12)
0.548	98	Impervious (SC-11, SC-12)
0.710	73	Woods, Fair, HSG C (SC-11)
<b>1.534</b>	<b>82</b>	<b>TOTAL AREA</b>

## Spillway Sizing

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Type III 24-hr 25-Year Rainfall=5.80"

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### Summary for Subcatchment SC-11:

Runoff = 4.73 cfs @ 12.07 hrs, Volume= 0.327 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
30,919	73	Woods, Fair, HSG C
* 15,262	98	Impervious
46,181	81	Weighted Average
30,919		66.95% Pervious Area
15,262		33.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry, 5 Minute Minimum</b>

### Summary for Subcatchment SC-12:

Runoff = 2.27 cfs @ 12.07 hrs, Volume= 0.158 af, Depth= 4.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
12,024	74	>75% Grass cover, Good, HSG C
* 8,609	98	Impervious
20,633	84	Weighted Average
12,024		58.28% Pervious Area
8,609		41.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry, 5 Minute Minimum</b>

### Summary for Pond UDSF - 2:

Inflow Area = 0.474 ac, 41.72% Impervious, Inflow Depth = 4.01" for 25-Year event  
Inflow = 2.27 cfs @ 12.07 hrs, Volume= 0.158 af  
Outflow = 1.75 cfs @ 12.14 hrs, Volume= 0.117 af, Atten= 23%, Lag= 3.7 min  
Secondary = 1.75 cfs @ 12.14 hrs, Volume= 0.117 af

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
Peak Elev= 44.82' @ 12.14 hrs Surf.Area= 1,855 sf Storage= 2,357 cf

Plug-Flow detention time= 148.8 min calculated for 0.117 af (74% of inflow)  
Center-of-Mass det. time= 61.5 min ( 865.4 - 803.8 )

## Spillway Sizing

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Type III 24-hr 25-Year Rainfall=5.80"

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Volume	Invert	Avail.Storage	Storage Description
#1	43.00'	4,915 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
43.00	603	0	0
44.00	1,426	1,015	1,015
46.00	2,474	3,900	4,915

Device	Routing	Invert	Outlet Devices
#1	Secondary	44.50'	<b>4.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

**Secondary OutFlow** Max=1.74 cfs @ 12.14 hrs HW=44.82' (Free Discharge)  
 ↑1=**Broad-Crested Rectangular Weir** (Weir Controls 1.74 cfs @ 1.37 fps)

### Summary for Pond UDSF-1:

Inflow Area = 1.060 ac, 33.05% Impervious, Inflow Depth = 3.70" for 25-Year event  
 Inflow = 4.73 cfs @ 12.07 hrs, Volume= 0.327 af  
 Outflow = 3.00 cfs @ 12.16 hrs, Volume= 0.240 af, Atten= 37%, Lag= 5.4 min  
 Secondary = 3.00 cfs @ 12.16 hrs, Volume= 0.240 af

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs  
 Peak Elev= 49.34' @ 12.16 hrs Surf.Area= 4,063 sf Storage= 5,076 cf

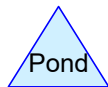
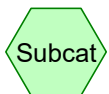
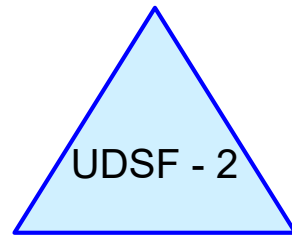
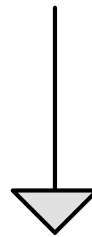
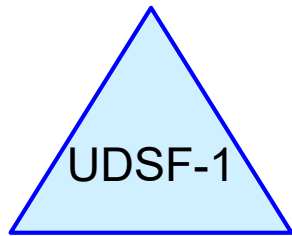
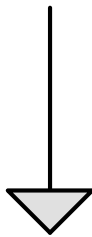
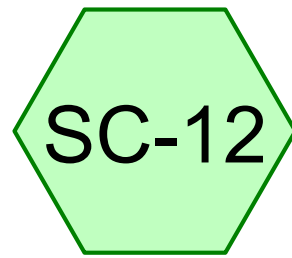
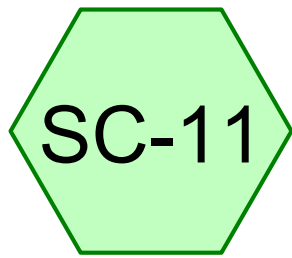
Plug-Flow detention time= 153.2 min calculated for 0.240 af (73% of inflow)  
 Center-of-Mass det. time= 63.8 min ( 875.8 - 812.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	47.00'	10,342 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
47.00	1,215	0	0
48.00	1,486	1,351	1,351
50.00	5,325	6,811	8,162
50.34	7,500	2,180	10,342

Device	Routing	Invert	Outlet Devices
#1	Secondary	49.00'	<b>6.0' long x 4.0' breadth Broad-Crested Rectangular Weir</b> 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) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

**Secondary OutFlow** Max=2.99 cfs @ 12.16 hrs HW=49.34' (Free Discharge)  
 ↑1=**Broad-Crested Rectangular Weir** (Weir Controls 2.99 cfs @ 1.46 fps)



**Routing Diagram for Drain Time**  
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## Drain Time

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### Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.276	74	>75% Grass cover, Good, HSG C (SC-12)
0.548	98	Impervious (SC-11, SC-12)
0.710	73	Woods, Fair, HSG C (SC-11)
<b>1.534</b>	<b>82</b>	<b>TOTAL AREA</b>

**Drain Time**

Type III 24-hr 1.00 hrs No Rain Rainfall=0.04"

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**Summary for Subcatchment SC-11:**

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs  
Type III 24-hr 1.00 hrs No Rain Rainfall=0.04"

Area (sf)	CN	Description
30,919	73	Woods, Fair, HSG C
* 15,262	98	Impervious
46,181	81	Weighted Average
30,919		66.95% Pervious Area
15,262		33.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry, 5 Minute Minimum</b>

**Summary for Subcatchment SC-12:**

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs  
Type III 24-hr 1.00 hrs No Rain Rainfall=0.04"

Area (sf)	CN	Description
12,024	74	>75% Grass cover, Good, HSG C
* 8,609	98	Impervious
20,633	84	Weighted Average
12,024		58.28% Pervious Area
8,609		41.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry, 5 Minute Minimum</b>

**Summary for Pond UDSF - 2:**

Inflow Area = 0.474 ac, 41.72% Impervious, Inflow Depth = 0.00" for No Rain event

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Outflow = 0.04 cfs @ 0.00 hrs, Volume= 0.062 af, Atten= 0%, Lag= 0.0 min

Primary = 0.04 cfs @ 0.00 hrs, Volume= 0.062 af

Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Starting Elev= 45.00' Surf.Area= 1,950 sf Storage= 2,703 cf

Peak Elev= 45.00' @ 0.00 hrs Surf.Area= 1,950 sf Storage= 2,703 cf

Plug-Flow detention time= (not calculated: no plugs found)

Center-of-Mass det. time= (not calculated: no inflow)

**Drain Time**

Type III 24-hr 1.00 hrs No Rain Rainfall=0.04"

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Volume	Invert	Avail.Storage	Storage Description
#1	43.00'	4,915 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
43.00	603	0	0
44.00	1,426	1,015	1,015
46.00	2,474	3,900	4,915

Device	Routing	Invert	Outlet Devices
#1	Primary	43.00'	<b>1.5" Round Culvert</b> L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 43.00' / 40.00' S= 0.0500 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.01 sf
#2	Secondary	45.00'	<b>4.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

**Primary OutFlow** Max=0.04 cfs @ 0.00 hrs HW=45.00' (Free Discharge)

↑1=Culvert (Barrel Controls 0.04 cfs @ 3.13 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=45.00' (Free Discharge)

↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Summary for Pond UDSF-1:**

Inflow Area = 1.060 ac, 33.05% Impervious, Inflow Depth = 0.00" for No Rain event  
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Outflow = 0.05 cfs @ 0.00 hrs, Volume= 0.087 af, Atten= 0%, Lag= 0.0 min  
 Primary = 0.05 cfs @ 0.00 hrs, Volume= 0.087 af  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs  
 Starting Elev= 49.00' Surf.Area= 3,406 sf Storage= 3,796 cf  
 Peak Elev= 49.00' @ 0.00 hrs Surf.Area= 3,406 sf Storage= 3,796 cf

Plug-Flow detention time= (not calculated: no plugs found)  
 Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	47.00'	9,893 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
47.00	1,215	0	0
48.00	1,486	1,351	1,351
50.00	5,325	6,811	8,162
50.27	7,500	1,731	9,893

**Drain Time**

Type III 24-hr 1.00 hrs No Rain Rainfall=0.04"

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Device	Routing	Invert	Outlet Devices
#1	Primary	46.00'	<b>1.4" Round Culvert</b> L= 20.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 46.00' / 44.33' S= 0.0835 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.01 sf
#2	Secondary	49.00'	<b>6.0' long x 4.0' breadth Broad-Crested Rectangular Weir</b> 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) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

**Primary OutFlow** Max=0.05 cfs @ 0.00 hrs HW=49.00' (Free Discharge)

↑1=Culvert (Barrel Controls 0.05 cfs @ 4.77 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=49.00' (Free Discharge)

↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Attachment C - Stormwater Treatment Summary**

## STORMWATER TREATMENT SUMMARY

	Square Feet	Acres
<b>Total Area</b>	2,955,408	67.8

### Predeveloped Site Summary

	Square Feet	Acres
Developed Area	0	0.00
Impervious Area	24,000	0.55
Forrested Area	2,955,408	67.3

### Proposed Site Summary

	Square Feet	Acres	Percentage of Total Area
Developed Area	52,323	1.2	2%
New Impervious Area	29,574	0.7	1%

### Required Treatment

**Linear Portion of a Project:** For a linear portion of a project, treatment may be reduced to no less than 75% of the linear portion's impervious area and no less than 50% of the linear portion's developed area. This exception does not apply to a linear portion of a project subject to the urban impaired stream standard.

### Proposed Treatment Summary

	Impervious Area Treated		Developed Area Treated	
	Square Feet	Percent of Total Impervious	Square Feet	Percent of Total Developed
<b>Underdrained Soil Filter 1</b>	15,262	52%	30,919	59%
<b>Underdrained Soil Filter 2</b>	8,609	29%	12,024	23%
<b>TOTAL</b>	<b>23,871</b>	<b>81%</b>	<b>12,024</b>	<b>82%</b>

**Attachment D– Stormwater Maintenance Plan**

# STILLWATER PINES SUBDIVISION

## STORMWATER MAINTENANCE PLAN

### Maintenance Responsibilities

During construction activities, the maintenance of all stormwater measures will be the direct responsibility of the Contractor. After acceptance by the Owner, the maintenance of all stormwater management facilities, the establishment of any contract services required to implement the program, and the keeping of records and maintenance logbook will be the responsibility of Homeowners Association. The current contact for Stillwater Pines Subdivision is:

Allen Hamilton, Owner  
170 Shaker Road  
Gray, Maine 04039  
Phone: [207.650.0209](tel:207.650.0209)  
Email: [allen3600@hotmail.com](mailto:allen3600@hotmail.com)

Regular inspection and maintenance of stormwater management BMPs shall be undertaken as follows:

### Ditches, Swales, and Riprap Aprons

Open swales and ditches shall be inspected on a monthly basis or after a major rainfall event to assure that debris and/or sediments do not reduce the effectiveness of the system. Debris shall be removed at that time. Any sign of erosion or blockage shall be immediately repaired to assure a vigorous growth of vegetation for the stability of the structure and proper function. Maintenance shall include, but not be limited to, mowing, trimming and removal vegetation in the ditches as required to prevent vegetation from blocking or diverting storm flows, replacement of riprap channel lining to prevent scour of the channel invert, removing vegetation and debris from the culverts.

Vegetated ditches should be mowed at least three times during the growing season. Larger brush or trees must not be allowed to become established in the channel. Any areas where the vegetation fails will be subject to erosion and should be reseeded and mulched immediately.

Riprap ditches and aprons where stone is displaced should be replaced and chinked to assure stability. With time, additional riprap may be added. Vegetation growing through riprap and accumulated sediments and debris should be removed on a bi-annual basis.

### Driveways, Walkways and Parking Lots

Accumulations of winter sand along paved surfaces shall be cleared at least once a year, preferably in the spring, to minimize transportation of sediment during rainfall events. Accumulations on pavement may be removed by pavement sweeping. Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader. Grading of gravel roads, or grading of the gravel shoulders of gravel or paved roads, must be routinely performed to ensure that stormwater drains immediately off the road surface to adjacent buffer areas or stable ditches, and is not impeded by accumulations of graded material on the road shoulder or by excavation of false ditches in the shoulder.

### Underdrained Grassed Soil Filters

Inspections of the infiltrating soil filters shall be conducted on a semi-annual basis and following significant rainfall events. Delayed or poor maintenance practices can result in loss of treatment capacity. Records should be kept of all maintenance operations to help plan future work and identify problem areas.

The basin embankments should be maintained to preserve their integrity including, but not limited to, vegetation maintenance (mowing, control of woody vegetation), rodent control, erosion control and

repair, and outlet control structure maintenance and repair. The embankment should be inspected annually for erosion or destabilization of side slopes, embankment settling and other signs of overtrop structural failure.

Basin plantings, and vegetation should be maintained on a quarterly basis. Regular maintenance activities should include cutting back shrub plantings where necessary to prevent excessive woody growth, removal of dead vegetation and re-planting to maintain good cover and root spread. Shrub or grass clippings should be removed to minimize the amount of organic material accumulation in the basin.

Sediment and debris should be removed from the sediment forebay at least annually, where applicable.

Bioretention cells and soil filters shall not be used for snow storage areas. Snow storage should be sited so that snow melt flows to a pretreatment BMP before reaching the infiltration area.

Vehicular equipment used to maintain or rehabilitate the basins should work from the cell perimeter and not enter the basin floor area, as this would compact the soil surface and reduce infiltration.

The surface of the basins may clog with fine sediments over time. Maintenance of good plant or grass cover should minimize this; however, if ponded runoff does not infiltrate within 48 hours, rototilling the top of the soil bed may be required to re-establish the soils infiltration capacity.

## Forested Buffers

Maintenance: Buffers should be inspected annually for evidence of erosion or concentrated flows through or around the buffer. All eroded areas should be repaired, seeded and mulched.

- Access and Use: Buffers should not be traversed by all-terrain vehicles or other vehicles. Activities within buffers should be conducted so as not to damage vegetation, disturb any organic duff layer, or expose soil.

- Model Maintenance Plan: The following techniques should be followed to maintain the integrity of buffers from initial planning through post-construction: o Planning Stage:

- Require buffer limits on all clearing/grading and erosion control plans.
- Record all buffer boundaries on official maps and site plans.
- Clearly establish acceptable and unacceptable uses for the buffer, and include these uses in deed restrictions and conservation easements.
- Establish clear vegetation targets and management rules for the buffer.
- Provide incentives for owners to protect buffers through perpetual conservation easements rather than deed restrictions.

- o Construction Stage:

- Pre-construction stakeout of buffers to define the Limit of Disturbance (LOD).
- Set LOD based on drip-line of the forested buffer.
- Familiarize contractors with LOD and buffer limit.
- Mark the LOD with barriers or signs to exclude construction equipment.

- o Post-Development Stage: }

- Mark buffer boundaries with permanent signs (or fences) describing use.
- Educate property owners/homeowner associations on the purpose, limits and allowable uses of the buffer.
- Conduct periodic "buffer walks" to inspect the condition of the buffer network.

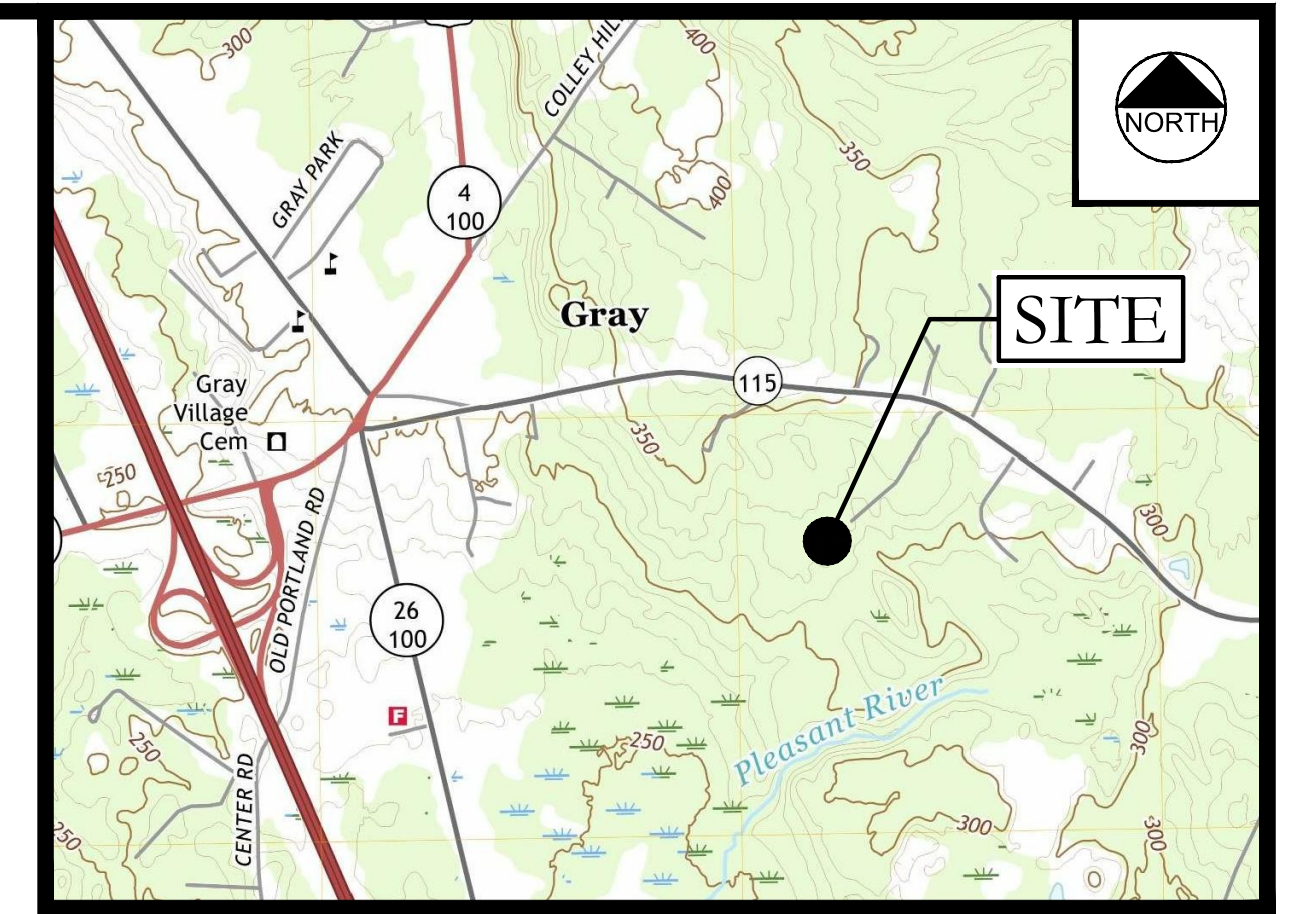
**Attachment E – Pre and Post Development Watershed Maps (see project plan set)**

## ATTACHMENT D

# STILLWATER PINES SUBDIVISION

## MAP: 44 LOT: 32-112

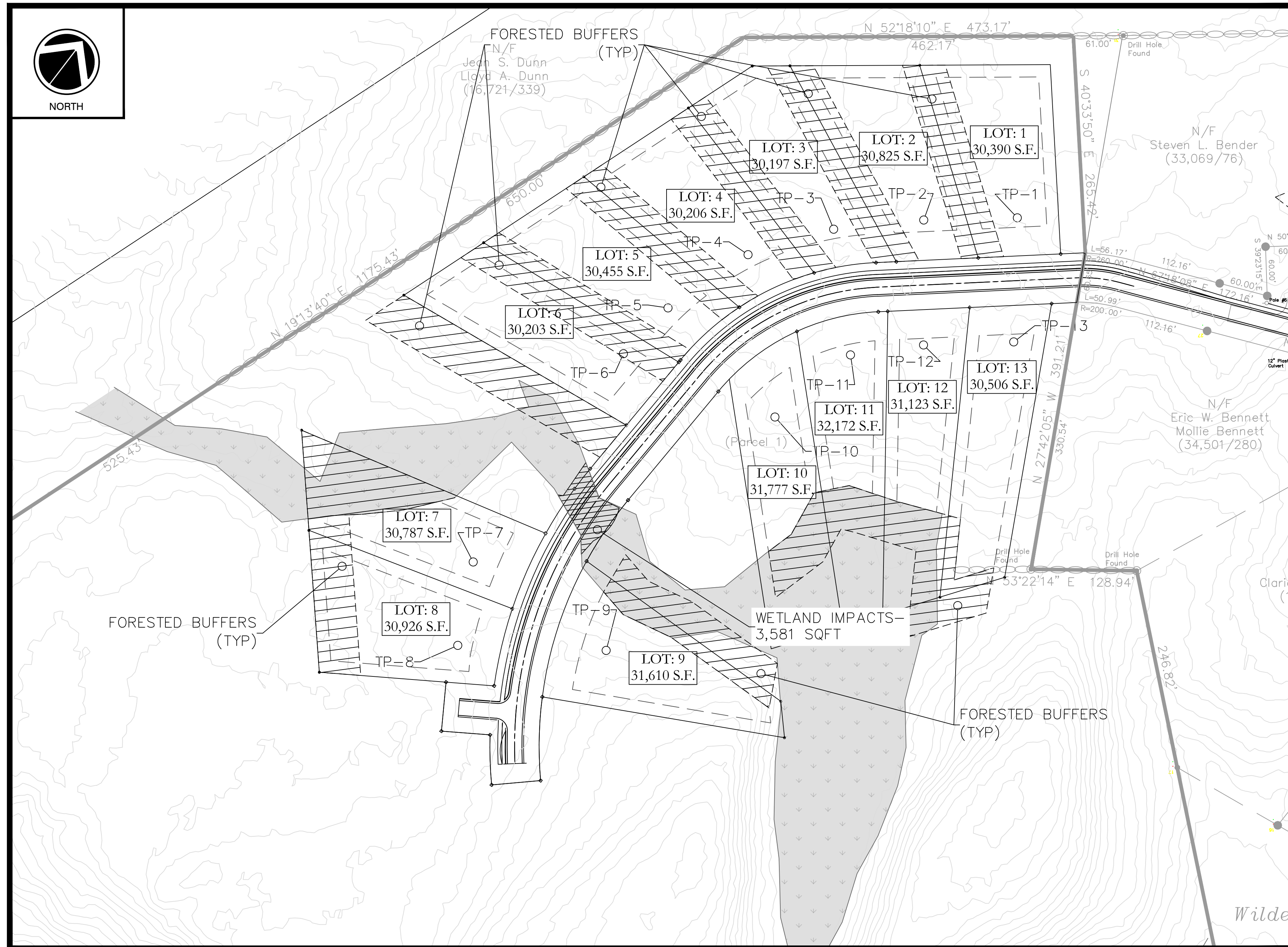
### GRAY, MAINE 04039



LOCATION MAP

SCALE: 1" = 1500'

**OWNER/DEVELOPER:**  
 ALLEN HAMILTON & BEN GROVER  
 170 SHAKER ROAD  
 GRAY, MAINE 04039



PLAN VIEW

SCALE 1"=80'

#### SHEET INDEX

COVER	SHEET SET COVER
C-100	OVERALL EXISTING CONDITIONS PLAN
C-101	SUBDIVISION LAYOUT AND UTILITIES PLAN
C-102	SITE GRADING AND EROSION CONTROL PLAN
C-103	ACCESS IMPROVEMENTS PLAN
C-200	ROADWAY PLAN AND PROFILE I
C-201	ROADWAY PLAN & PROFILE II
C-300	EROSION & SEDIMENTATION CONTROL NOTES
C-301	EROSION & SEDIMENTATION CONTROL DETAILS
C-302	SITE CIVIL DETAILS I
C-303	SITE CIVIL DETAILS II
C-304	SITE CIVIL DETAILS III
C-305	SITE CIVIL DETAILS IV

**CIVIL ENGINEER:**



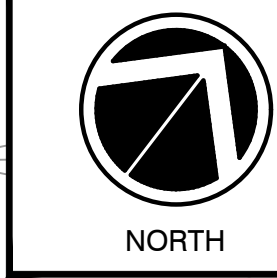
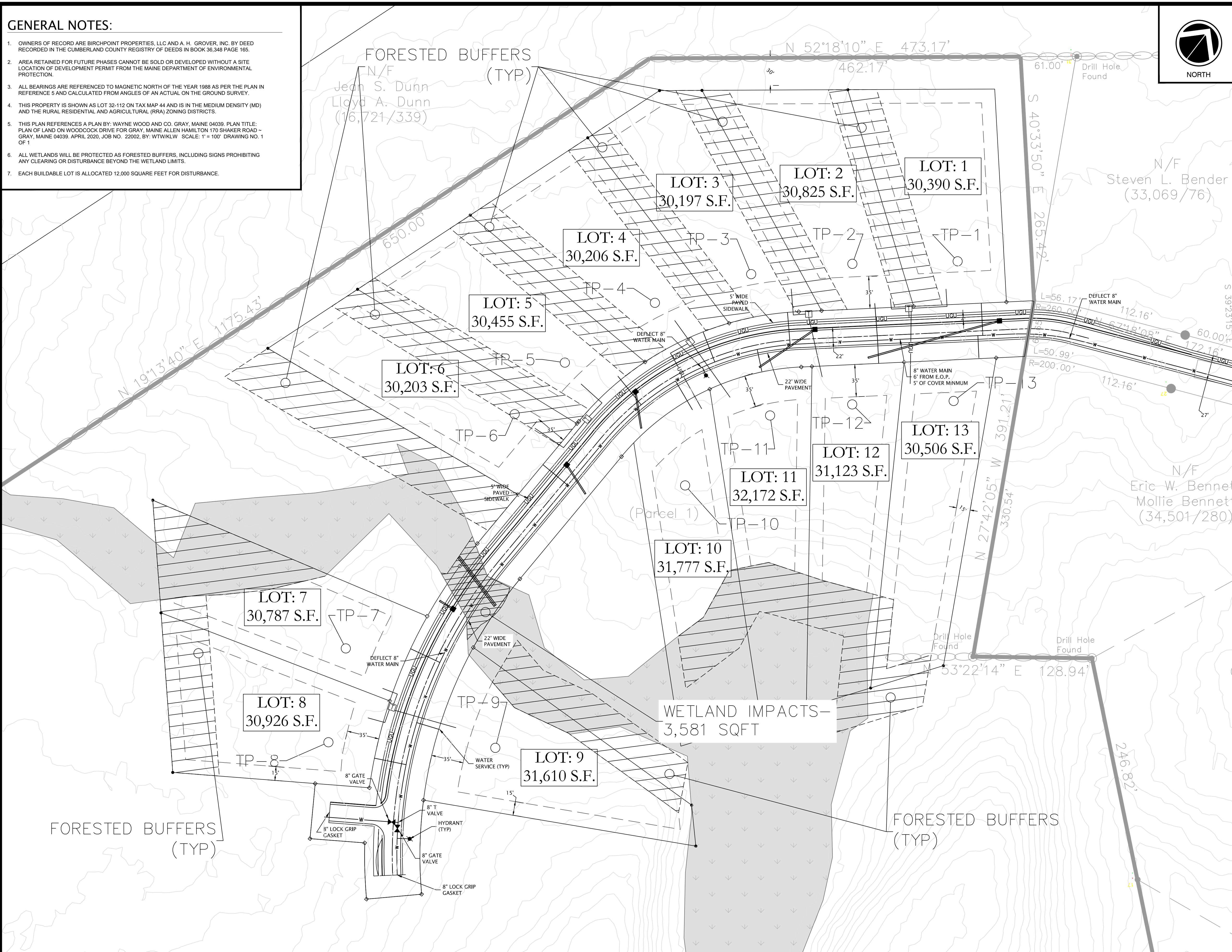
541 US ROUTE ONE, SUITE 21  
 FREEPORT, MAINE 04032

**SUBMITTED FOR  
 FINAL PLAN  
 REVIEW**

ISSUED: JUNE 2021

**GENERAL NOTES:**

- OWNERS OF RECORD ARE BIRCHPOINT PROPERTIES, LLC AND A. H. GROVER, INC. BY DEED RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 36,348 PAGE 165.
- AREA RETAINED FOR FUTURE PHASES CANNOT BE SOLD OR DEVELOPED WITHOUT A SITE LOCATION OF DEVELOPMENT PERMIT FROM THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
- ALL BEARINGS ARE REFERENCED TO MAGNETIC NORTH OF THE YEAR 1988 AS PER THE PLAN IN REFERENCE 5 AND CALCULATED FROM ANGLES OF AN ACTUAL ON THE GROUND SURVEY.
- THIS PROPERTY IS SHOWN AS LOT 32-112 ON TAX MAP 44 AND IS IN THE MEDIUM DENSITY (MD) AND THE RURAL RESIDENTIAL AND AGRICULTURAL (RRA) ZONING DISTRICTS.
- THIS PLAN REFERENCES A PLAN BY WAYNE WOOD AND CO. GRAY, MAINE 04039. PLAN TITLE: PLAN OF LAND ON WOODCOCK DRIVE FOR GRAY, MAINE ALLEN HAMILTON 170 SHAKER ROAD - GRAY, MAINE 04039. APRIL 2020. JOB NO. 22002. BY: WTWKLV SCALE: 1" = 100' DRAWING NO. 1 OF 1
- ALL WETLANDS WILL BE PROTECTED AS FORESTED BUFFERS, INCLUDING SIGNS PROHIBITING ANY CLEARING OR DISTURBANCE BEYOND THE WETLAND LIMITS.
- EACH BUILDABLE LOT IS ALLOCATED 12,000 SQUARE FEET FOR DISTURBANCE.



**ZONING SUMMARY:**

CURRENT USE: UNDEVELOPED LAND  
 PROPOSED USE: SINGLE FAMILY DWELLING (DETACHED)  
 ZONE - MD MEDIUM DENSITY DISTRICT (WITH PUBLIC WATER)

APPLICABLE SPACE AND BULK REGULATIONS	MINIMUM	PROVIDED
LOT AREA	30,000 S.F.	> 30,000 S.F.
STREET FRONTAGE	100'	> 100'
CUL-DE-SAC FRONTAGE	N/A	N/A
LOT WIDTH	100'	> 100'
<b>PRINCIPAL STRUCTURE:</b>		
FRONT SETBACK	35 FT.	35 FT.
SIDE SETBACK	15 FT.	15 FT.
REAR SETBACK	15 FT.	15 FT.
<b>ACCESSORY STRUCTURE:</b>		
FRONT SETBACK	35 FT.	35 FT.
SIDE SETBACK	15 FT.	15 FT.
REAR SETBACK	15 FT.	15 FT.
<b>BUILDING COVERAGE</b>		
20%	<20%	
<b>BUILDING HEIGHT</b>		
35 FT.	35 FT.	
<b>ACCESSORY STRUCTURE HEIGHT</b>		
35 FT.	35 FT.	

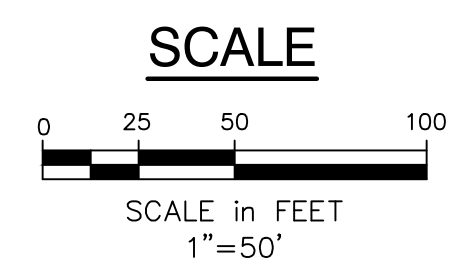
**NET DEVELOPMENT DENSITY CALCULATION:**

TOTAL PARCEL AREA	2,310,376 S.F.
<b>AREAS UNSUITABLE IN NATURAL STATE:</b>	
-- WETLANDS/WATERCOURSES & FLOODPLAIN	178,727 S.F.
-- STEEP SLOPES OVER 30%	0 S.F.
<b>AREAS REMOVED FOR:</b>	
-- ACCESS ROAD/R.O.W.*	127,488 S.F.
-- EASEMENTS*	0 S.F.
REMAINING LAND	2,004,161 S.F.
MINIMUM LOT AREA IN MEDIUM DENSITY DISTRICT WITH PUBLIC WATER = 30,000 S.F.	
NET DEVELOPMENT DENSITY CALCULATION: 2,004,161/30,000 = 50 UNITS	
PROPOSED LOTS = 13 UNITS	

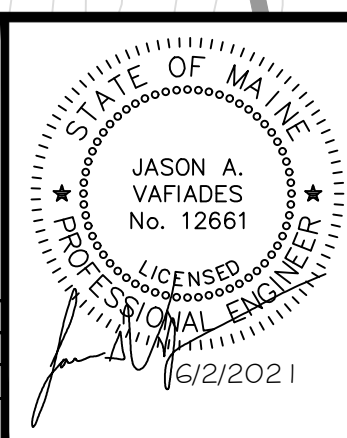
**LEGEND**

EXISTING	DESCRIPTION	PROPOSED
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---	ABUTTER LINE/R.O.W.	---
---	SETBACK	---
---	EASEMENT	---
---	IRON PIPE/ROD	---
---	BUILDING	---
---	WETLAND	---
---	SIGN	---
---	EDGE PAVEMENT	---
---	EDGE CONCRETE	---
---	PAVEMENT PAINT	---
---	GRAVEL ROAD	---
---	CURBLINE	---
---	TREELINE	---
---	CONTOURS	---
---	SPOT GRADE	---
---	STORMWATER FLOW	---
---	STORM DRAIN	---
---	WATER MAIN/SERVICE	---
---	UNDERGROUND UTILITY	---
---	UTILITY	---
---	OVERHEAD UTILITY	---
---	UTILITY POLE TRANSFORMER	---

**SUBMITTED FOR FINAL PLAN REVIEW**



REV	DATE	DESCRIPTION	REVISIONS



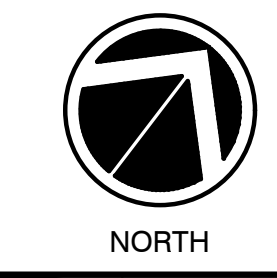
**STILLWATER PINES SUBDIVISION**  
 WOODCOCK DRIVE, MAINE 04261  
**SITE MATERIALS & UTILITIES PLAN**  
 ALLEN HAMILTON & BEN GROVER  
 170 SHAKER ROAD  
 GRAY, MAINE 04039

**Atlantic Resource Consultants**  
 541 US Route One  
 Freeport, ME 04032  
 Tel: 207.869.9050

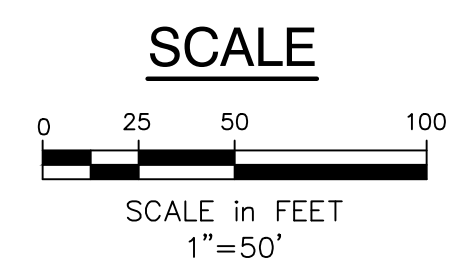
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**GENERAL NOTES:**

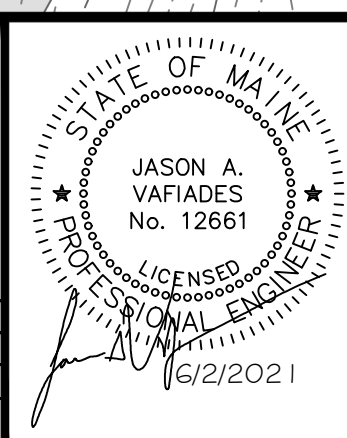
- OWNERS OF RECORD ARE BIRCHPOINT PROPERTIES, LLC AND A. H. GROVER, INC. BY DEED RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 36,348 PAGE 165.
- AREA RETAINED FOR FUTURE PHASES CANNOT BE SOLD OR DEVELOPED WITHOUT A SITE LOCATION OF DEVELOPMENT PERMIT FROM THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
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- THIS PLAN REFERENCES A PLAN BY WAYNE WOOD AND CO. GRAY, MAINE 04039. PLAN TITLE: PLAN OF LAND ON WOODCOCK DRIVE FOR GRAY, MAINE ALLEN HAMILTON 170 SHAKER ROAD - GRAY, MAINE 04039. APRIL 2020, JOB NO. 22002. BY: WTW/KLW SCALE: 1" = 100' DRAWING NO. 1 OF 1
- ALL WETLANDS WILL BE PROTECTED AS FORESTED BUFFERS, INCLUDING SIGNS PROHIBITING ANY CLEARING OR DISTURBANCE BEYOND THE WETLAND LIMITS.
- EACH BUILDABLE LOT IS ALLOCATED 12,000 SQUARE FEET FOR DISTURBANCE AND 6,000 SQUARE FEET OF IMPERVIOUS.
- EXISTING CONTOURS ARE FROM LIDAR. CONTRACTOR IS REQUIRED TO CONFIRM THE TOPOGRAPHY IN THE VICINITY OF THE UDSF'S ALIGNS WITH THE LIDAR AND PROVIDE EVIDENCE TO THE TOWN ENGINEER THAT THE SYSTEM WILL WORK PROPERLY.
- A 15" CULVERT WILL BE INSTALLED AT THE ENTRANCE TO EACH DRIVEWAY WITH A MINIMUM SLOPE OF 1%. EACH CULVERT WILL HAVE INLET AND OUTLET PROTECTION.
- ROOF DRIPLINE FILTERS WILL BE INSTALLED FOR ALL NEW STRUCTURES IN ACCORDANCE WITH THE MAINE BMP MANUAL.



**SUBMITTED FOR  
PRELIMINARY PLAN  
REVIEW**



REV	DATE	DESCRIPTION	REVISIONS



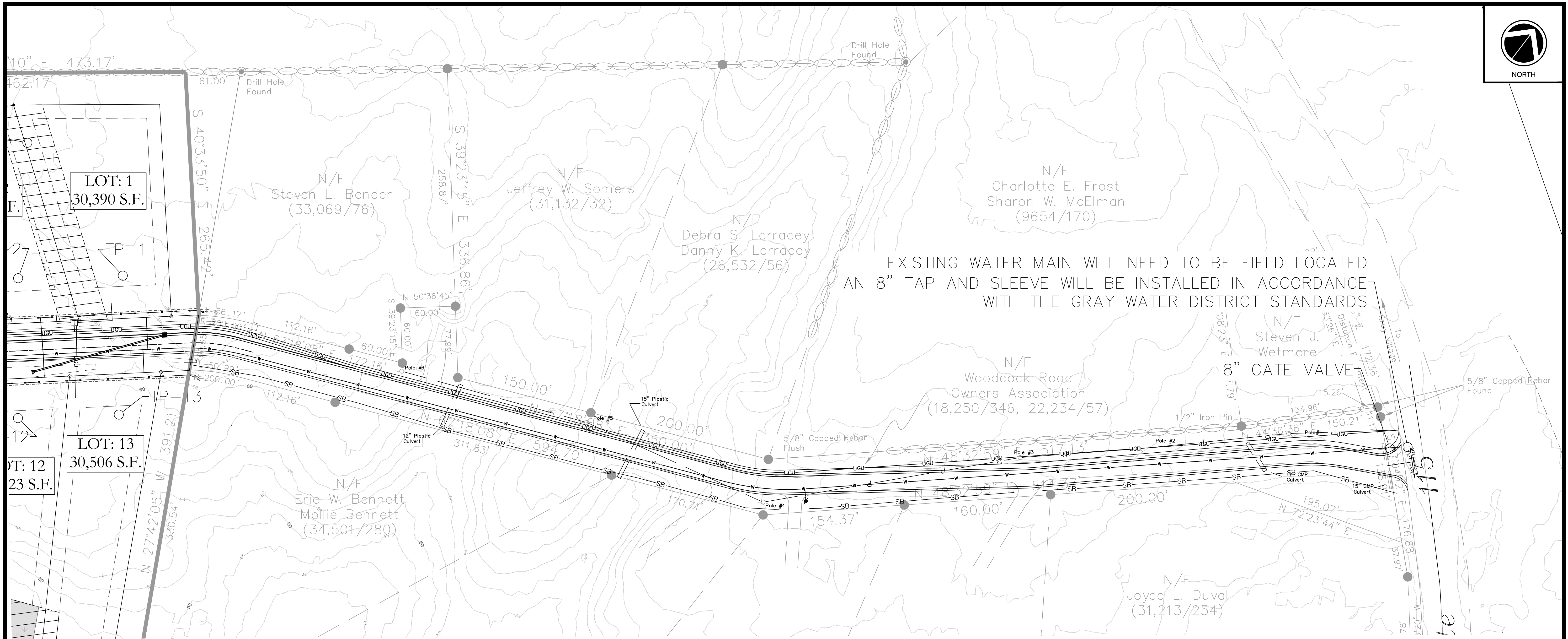
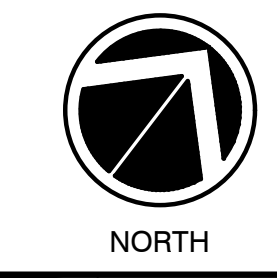
**STILLWATER PINES SUBDIVISION**  
WOODCOCK DRIVE, MAINE 04261

**SITE GRADING &  
EROSION CONTROL PLAN**

ALLEN HAMILTON & BEN GROVER  
170 SHAKER ROAD  
GRAY, MAINE 04039

**Atlantic Resource Consultants**  
541 US Route One  
Freeport, ME 04032  
Tel: 207.869.9050

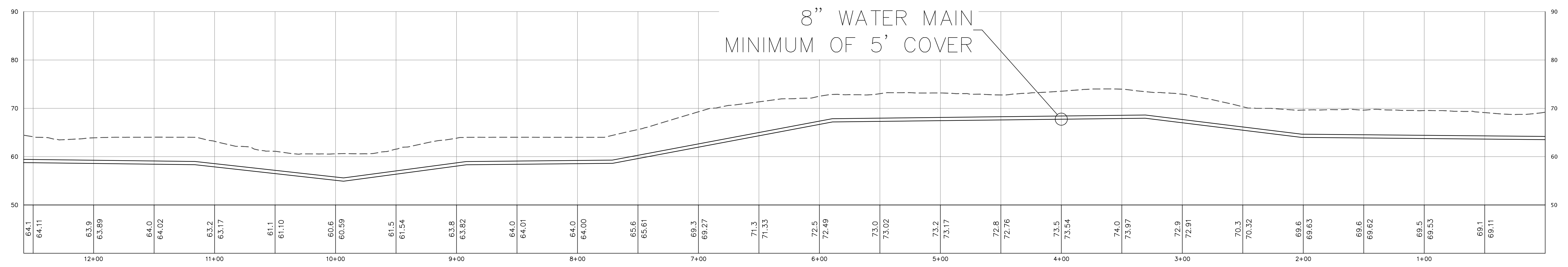
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SHEET: C-102



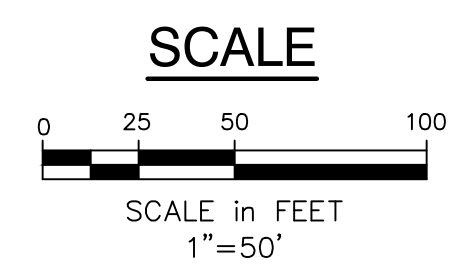
EXISTING WATER MAIN WILL NEED TO BE FIELD LOCATED  
 AN 8" TAP AND SLEEVE WILL BE INSTALLED IN ACCORDANCE  
 WITH THE GRAY WATER DISTRICT STANDARDS

8" GATE VALVE

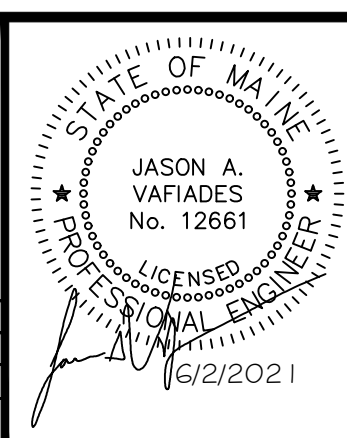
8" WATER MAIN  
 MINIMUM OF 5' COVER



**SUBMITTED FOR  
 FINAL PLAN  
 REVIEW**



REV	DATE	DESCRIPTION



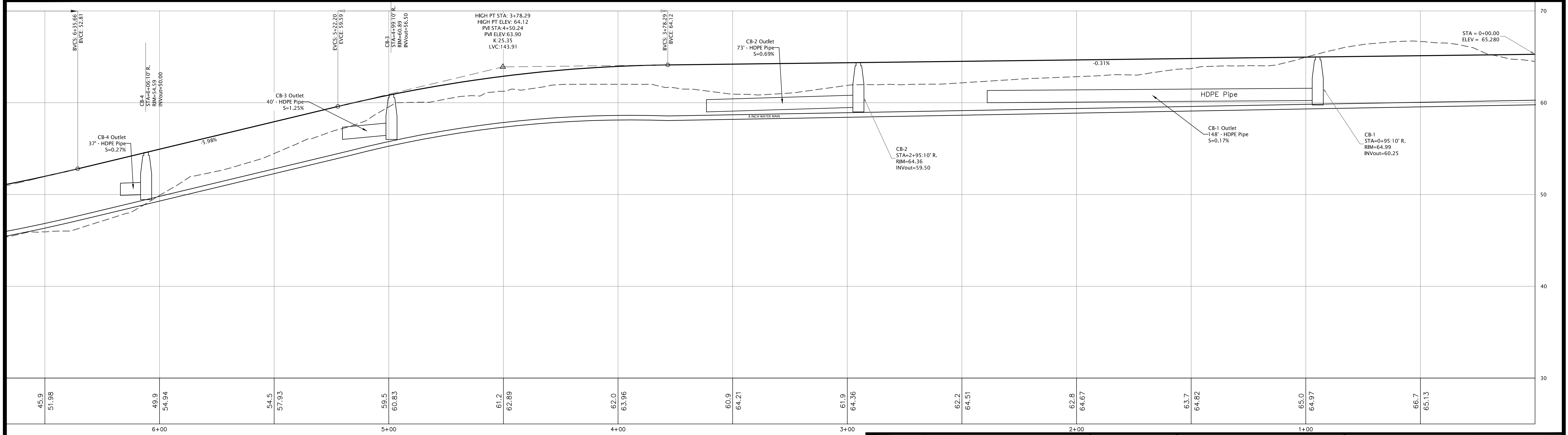
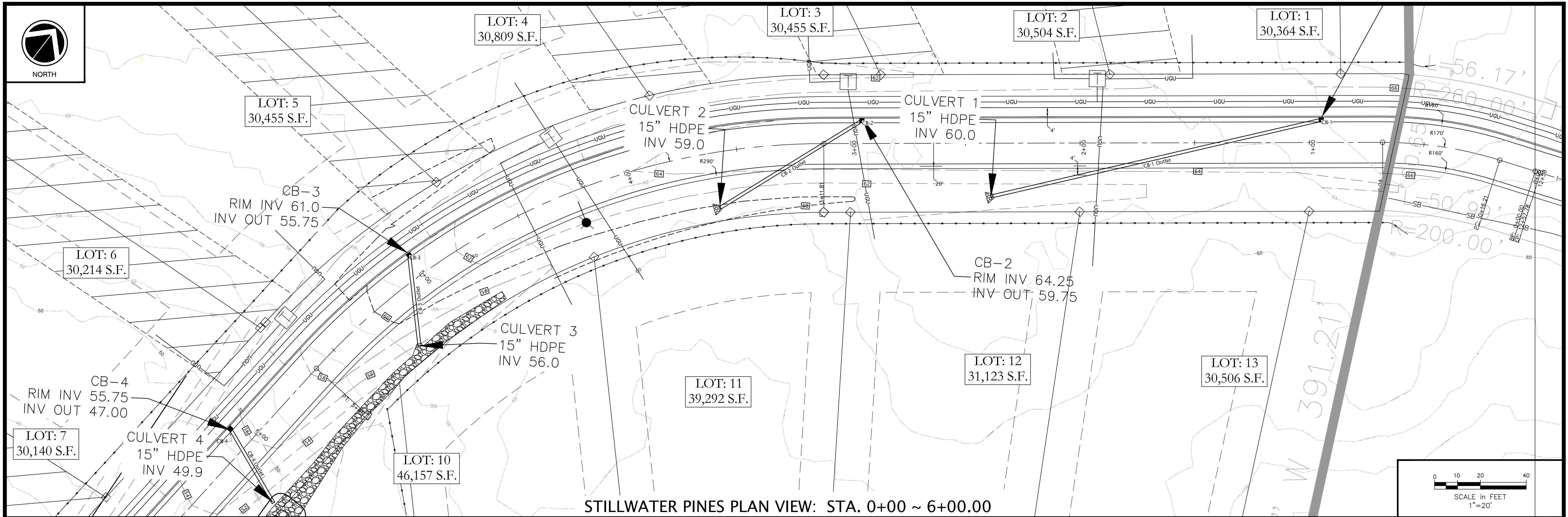
STILLWATER PINES SUBDIVISION  
 WOODCOCK DRIVE, MAINE 04261  
 ACCESS IMPROVEMENTS  
 PLAN (Woodcock Drive)  
 ALLEN HAMILTON & BEN GROVER  
 170 SHAKER ROAD  
 GRAY, MAINE 04039

Atlantic Resource Consultants  
 541 US Route One  
 Freeport, ME 04032  
 Tel: 207.869.9050

DRAWN: MPV/CGB	DATE: JUNE 2021
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SHEET: C-103	



NORTH

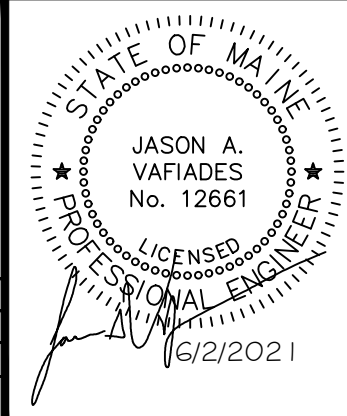


SCALE  
VERTICAL - 1" = 5'  
HORIZONTAL - 1" = 20'

STILLWATER PINES PROFILE VIEW: STA. 0+00 ~ 6+00.00

**SUBMITTED FOR  
PRELIMINARY PLAN  
REVIEW**

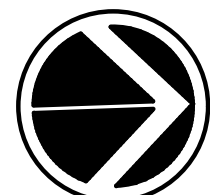
REV	DATE	DESCRIPTION	REVISIONS



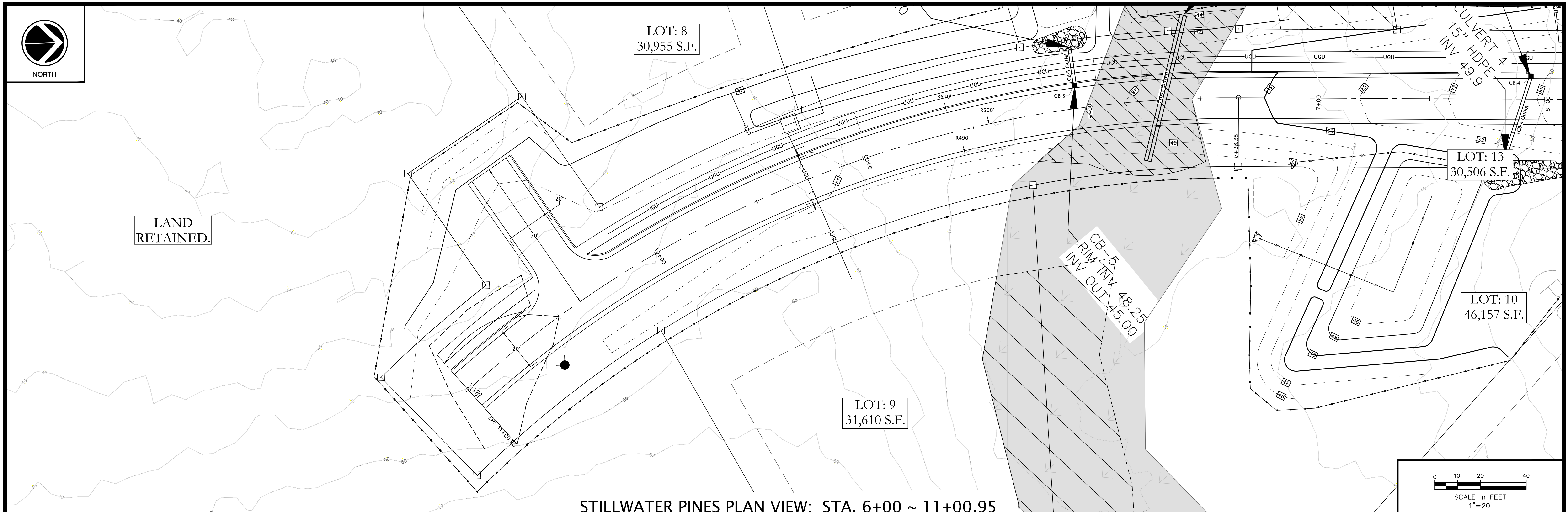
STILLWATER PINES SUBDIVISION  
WOODCOCK DRIVE, MAINE 04261  
ROADWAY  
PLAN & PROFILE I  
ALLEN HAMILTON & BEN GROVER  
170 SHAKER ROAD  
GRAY, MAINE 04039

Atlantic Resource Consultants  
541 US Route One  
Freeport, ME 04032  
Tel: 207.869.9050

DRAWN: MPV/CGB DATE: JUNE 2021  
DESIGNED: CEB/MPV SCALE: AS SHOWN  
CHECKED: JAV/CGB JOB NO. 20-012  
FILE NAME:  
SHEET: C-200

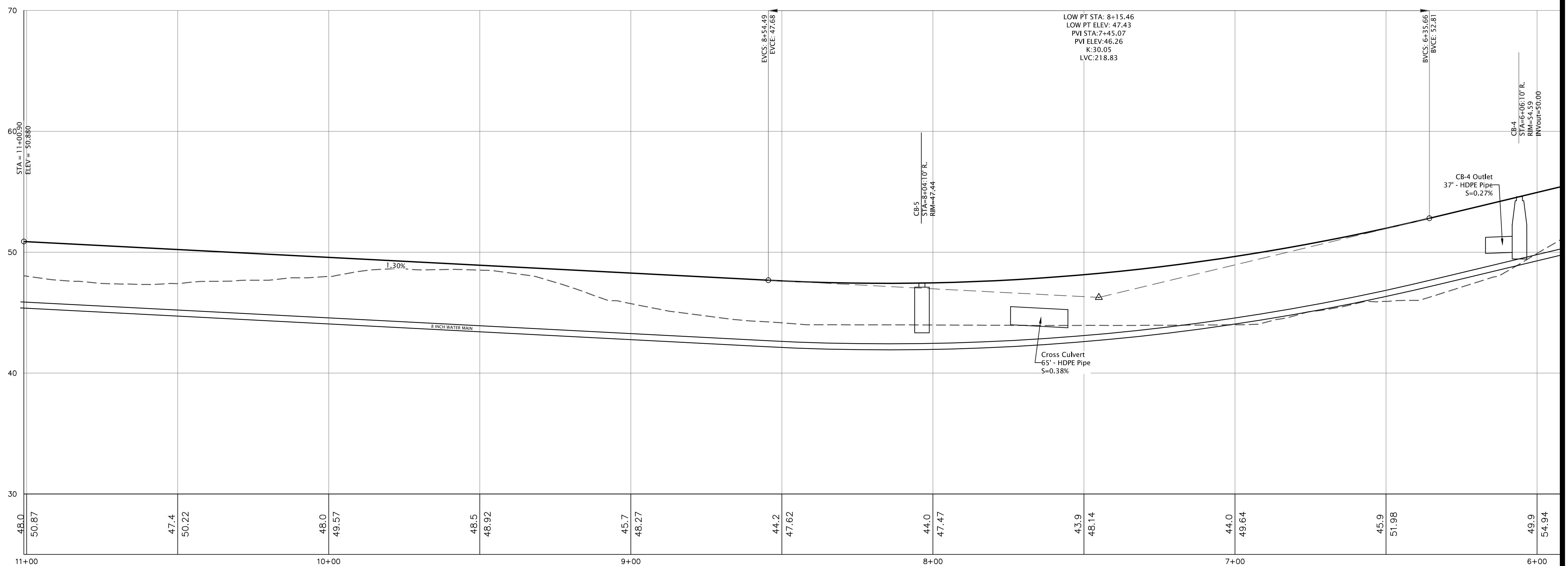


NORTH



### LEGEND

EXISTING	DESCRIPTION	PROPOSED
---	BOUNDARY LINE/O.W.	---
---	ABUTTER LINE/O.W.	---
---	SETBACK	---
---	EASEMENT	---
---	IRON PIPE/ROD	---
---	BUILDING	---
---	WETLAND	---
---	SIGN	---
---	EDGE PAVEMENT	---
---	EDGE CONCRETE	---
---	PAVEMENT PAINT	---
---	GRAVEL ROAD	---
---	CURBLINE	---
---	TREELINE	---
---	CONTOURS	---
---	SPOT GRADE	---
---	STORMWATER FLOW	---
---	STORM DRAIN	---
---	WATER MAIN/SERVICE	---
---	UNDERGROUND UTILITY	---
---	OVERHEAD UTILITY	---
---	UTILITY POLE	---
---	TRANSFORMER	---



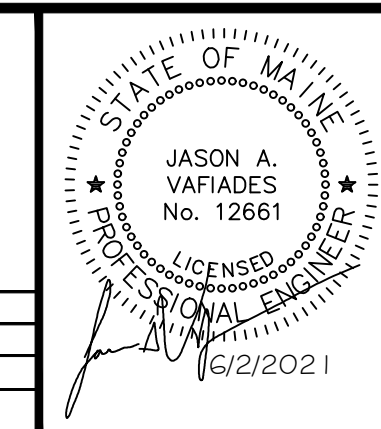
SUBMITTED FOR  
PRELIMINARY PLAN  
REVIEW

### SCALE

VERTICAL - 1" = 5'  
HORIZONTAL - 1" = 20'

### STILLWATER PINES PROFILE VIEW: STA. 6+00 ~ 11+00.95

REV	DATE	DESCRIPTION



STILLWATER PINES SUBDIVISION  
WOODCOCK DRIVE, MAINE 04261  
ROADWAY  
PLAN & PROFILE II  
ALLEN HAMILTON & BEN GROVER  
170 SHAKER ROAD  
GRAY, MAINE 04039

Atlantic Resource Consultants  
541 US Route One  
Freeport, ME 04032  
Tel: 207.869.9050

DRAWN: MPV/CGB DATE: JUNE 2021  
DESIGNED: CEB/MPV SCALE: AS SHOWN  
CHECKED: JAV/CGB JOB NO. 20-012  
FILE NAME:  
SHEET: C-201

**A. SOIL EROSION AND SEDIMENT CONTROL NOTES**

TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES INCLUDE THE USE OF STABILIZED CONSTRUCTION ENTRANCES, SILTATION FENCE, EROSION CONTROL MIX, STONE CHECK DAMS, HAY BALE BARRIERS, CATCH BASIN SEDIMENT COLLECTION BAGS, EROSION CONTROL BLANKET, AND TEMPORARY SEEDING AND MULCHING AS REQUIRED. PERMANENT DEVICES INCLUDE THE USE OF RIP RAP AT EXPOSED STORM DRAIN AND CULVERT INLETS AND OUTLETS, AND PERMANENT VEGETATION.

**GENERAL**

- 1. IT IS ANTICIPATED THAT CONSTRUCTION MAY BEGIN AS SOON AS POSSIBLE FOLLOWING RECEIPT OF NECESSARY PERMITS.
2. ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE MAINE EROSION & SEDIMENT CONTROL BMPs - MANUAL FOR DESIGNERS AND ENGINEERS (2016), OR AS CURRENTLY REVISED OR U.S. ENVIRONMENTAL PROTECTION AGENCY PUBLICATION 832/R-92-005 (SEPTEMBER, 1992) STORM WATER MANAGEMENT FOR CONSTRUCTION, CHAPTER 3, WHICHEVER IS MORE STRINGENT.
3. ANY ADDITIONAL EROSION AND SEDIMENTATION CONTROL DEEMED NECESSARY BY THE OWNER'S REPRESENTATIVE, DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP) PERSONNEL AND/OR MUNICIPAL OFFICIALS SHALL BE INSTALLED BY THE CONTRACTOR.
4. THE CONTRACTOR IS RESPONSIBLE FOR ALL FINES RESULTING FROM EROSION OR SEDIMENTATION FROM THE SITE TO SURROUNDING PROPERTIES, WATER BODIES, OR WETLANDS AS A RESULT OF THIS PROJECT.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR/ REPLACEMENT MAINTENANCE OF ALL EROSION CONTROL MEASURES UNTIL ALL DISTURBED AREAS ARE STABILIZED TO THE SATISFACTION OF THE ABOVE PERSONNEL. DESCRIPTIONS OF ACCEPTABLE PERMANENT STABILIZATION FOR VARIOUS COVER TYPES FOLLOWS:
a. 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.
b. 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.
c. 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.
d. FOR AREAS STABILIZED WITH RIP RAP, PERMANENT STABILIZATION MEANS THAT SLOPES STABILIZED WITH RIP RAP HAVE AN APPROPRIATE BACKING OF A WELL-GRADED GRAVEL OR APPROVED GEOTEXTILE TO PREVENT SOIL MOVEMENT FROM BEHIND THE RIP RAP. STONE MUST BE SIZED APPROPRIATELY.
e. PAVED AREAS: FOR PAVED AREAS, PERMANENT STABILIZATION MEANS THE PLACEMENT OF THE COMPACTED GRAVEL SUBBASE IS COMPLETED.
f. FOR OPEN CHANNELS, PERMANENT STABILIZATION MEANS THE CHANNEL IS STABILIZED WITH MATURE VEGETATION AT LEAST THREE INCHES IN HEIGHT, WITH WELL-GRADED RIP RAP, OR WITH ANOTHER NON-EROSIVE LINING CAPABLE OF WITHSTANDING THE ANTICIPATED FLOW VELOCITIES AND FLOW DEPTHS WITHOUT RELIANCE ON CHECK DAMS TO SLOW FLOW. THERE MUST BE NO EVIDENCE OF SLUMPING OF THE LINING, UNDERCUTTING OF THE BANKS, OR DOWN CUTTINGS OF THE CHANNEL.

**B. EROSION AND SEDIMENTATION CONTROL MEASURES**

- 1. PRIOR TO THE BEGINNING OF CONSTRUCTION, THE TEMPORARY SILT FENCE SHALL BE INSTALLED AS SHOWN ON THE PLANS OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE, OR ENGINEER. SILT FENCE SHALL BE INSTALLED ALONG THE DOWNGRADIENT SIDE OF CONSTRUCTION WORK AREAS, WITH LOCATIONS BEING ADJUSTED ALONG WITH THE CONSTRUCTION PHASING AREAS. THE CONTRACTOR MAY USE EROSION MIX IN PLACE OF SINGLE SILT FENCE BARRIER. IN AREAS WHERE THE GRADE IS STEEPER THAN 8% SILT FENCE AND EROSION CONTROL MIX SHOULD BE USED.
2. THE SILT FENCE SHALL BE INSTALLED PER THE DETAIL PROVIDED IN THE PLAN SET AND INSPECTED IMMEDIATELY AFTER EACH RAINFALL, AND AT LEAST WEEKLY IN THE ABSENCE OF SIGNIFICANT RAINFALL. ANY REQUIRED REPAIRS WILL BE MADE IMMEDIATELY. SEDIMENT DEPOSITS SHALL BE PERIODICALLY REMOVED FROM THE UPSTREAM SIDE OF THE SILT BARRIERS. THIS SEDIMENT WILL BE SPREAD AND STABILIZED IN AREAS OF THE SITE NOT SUBJECT TO EROSION. THE CONTRACTOR SHALL MAKE REPAIRS IMMEDIATELY IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THE FENCE LINE. IF SUCH EROSION IS OBSERVED, THE CONTRACTOR SHALL TAKE PROACTIVE ACTION TO IDENTIFY THE CAUSE OF THE EROSION AND TAKE ACTION TO AVOID ITS REOCCURRENCE. PROPER PLACEMENT OF STAKES AND KEYING THE BOTTOM OF THE FABRIC INTO THE GROUND IS CRITICAL TO THE FENCE'S EFFECTIVENESS. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THE FENCE, THE BARRIER SHALL BE REPLACED WITH A STONE CHECK DAM AND MEASURES TAKEN TO AVOID THE CONCENTRATION OF FLOWS NOT INTENDED TO BE DIRECTED TO THE SILT FENCE. SILT FENCE SHALL BE REPLACED AS NECESSARY TO PROVIDE PROPER FILTERING ACTION.
3. TEMPORARY SEDIMENT SUMPS WILL PROVIDE SEDIMENTATION CONTROL FOR STORMWATER RUNOFF FROM DISTURBED AREAS DURING CONSTRUCTION UNTIL STABILIZATION HAS BEEN ACHIEVED.
4. A CONSTRUCTION ENTRANCE WILL BE CONSTRUCTED AT ALL ACCESS POINTS ONTO THE SITE TO PREVENT TRACKING OF SOIL ONTO ADJACENT LOCAL ROADS AND STREETS.
5. SILT LOGS MAY BE INSTALLED IN LIEU OF STONE CHECK DAMS PROVIDED THE DEVICES ARE WELL ANCHORED, AND IF PRIOR APPROVAL IS RECEIVED FROM THE PROJECT ENGINEER.
6. SILTSACKS™ WILL BE UTILIZED IN CATCH BASINS IN OR NEAR WORK AREAS AT RISK FROM RECEIVING TRANSPORTED SEDIMENT.
7. ALL CATCH BASINS AND FIELD INLETS, NEW OR EXISTING, THAT MAY RECEIVE RUNOFF FROM DISTURBED AREAS MUST BE PROTECTED DURING CONSTRUCTION.
8. REMOVAL OF SOD, TREES, BUSHES AND OTHER VEGETATION AND SOIL DISTURBANCE WILL BE KEPT TO A MINIMUM WHILE ALLOWING PROPER SITE DEVELOPMENT.
9. GRUBBINGS AND ANY UNUSABLE TOPSOIL SHALL BE STRIPPED AND REMOVED FROM THE PROJECT SITE AND DISPOSED OF IN AN APPROVED MANNER.
10. ANY SUITABLE TOPSOIL WILL BE STRIPPED AND STOCKPILED FOR REUSE IN FINAL GRADING. TOPSOIL WILL BE STOCKPILED IN A MANNER SUCH THAT NATURAL DRAINAGE IS NOT OBSTRUCTED AND NO OFF-SITE SEDIMENT DAMAGE WILL RESULT. IF A STOCKPILE IS NECESSARY, THE SIDE SLOPES OF THE TOPSOIL STOCKPILE WILL NOT EXCEED 2:1. TOPSOIL STOCKPILES WILL BE TEMPORARILY SEEDED WITH AROOSTOOK RYE, ANNUAL OR PERENNIAL RYE GRASS WITHIN 7 DAYS OF FORMATION, OR TEMPORARILY MULCHED IF SEEDING CANNOT BE DONE WITHIN THE RECOMMENDED SEEDING DATES.
11. TEMPORARY DIVERSION BERMS AND DRAINAGE SWALES SHALL BE CONSTRUCTED AS NECESSARY TO PREVENT OFF-SITE DRAINAGE FROM ENTERING THE WORK AREA.
12. TEMPORARY STABILIZATION SHALL BE CONSTRUCTED WITHIN 7 DAYS OF INITIAL DISTURBANCE OF SOILS, PRIOR TO ANY RAIN EVENT, AND PRIOR TO ANY WORK SHUT DOWN LASTING MORE THAN ONE DAY. TEMPORARY STABILIZATION INCLUDES SEED, MULCH, OR OTHER NON-ERODABLE COVER.
13. TEMPORARY SEEDING SPECIFICATIONS: WHERE SEEDED HAS BEEN COMPACTED BY CONSTRUCTION OPERATIONS, LOOSEN SOIL TO A DEPTH OF 2 INCHES BEFORE APPLYING FERTILIZER, LIME, AND SEED. APPLY LIMESTONE AT A RATE OF 3 TONS PER ACRE (138 LB. PER 1,000 SQUARE FEET) AND 10-10-10 (N-P205-K20) FERTILIZER AT A RATE OF 800 LBS PER ACRE (18.4 LBS PER 1,000 SQUARE FEET), UNIFORMLY APPLY SEED AT THE RECOMMENDED SEEDING RATES AND DATES, APPLY HAY OR STRAW MULCH AT A RATE OF 2 TONS PER ACRES, AND ANCHOR AS NECESSARY. RECOMMENDED TEMPORARY SEEDING DATES AND APPLICATION RATES ARE AS FOLLOWS:

AROOSTOOK RYE: RECOMMENDED SEEDING DATES: 8/15 - 10/1
APPLICATION RATE: 112 LBS/ACRE
ANNUAL RYE GRASS: RECOMMENDED SEEDING DATES: 4/1 - 7/1
APPLICATION RATE: 40 LBS/ACRE
PERENNIAL RYE GRASS: RECOMMENDED SEEDING DATES: 8/15 - 9/15
APPLICATION RATE: 40 LBS/ACRE

- 14. PERMANENT SEEDING SPECIFICATION. IF A LANDSCAPE PLAN HAS BEEN PREPARED FOR THE PROJECT, SOIL PREPARATION AND SEED SPECIFICATIONS OF THAT PLAN SHALL SUPERSEDE THESE GENERAL PERMANENT SEEDING REQUIREMENTS. IT IS RECOMMENDED THAT PERMANENT SEEDING BE COMPLETED BETWEEN APRIL 1 AND JUNE 15 OF EACH YEAR. LATE SEASON SEEDING MAY BE DONE BETWEEN AUGUST 15 AND SEPTEMBER 15. AREAS NOT SEEDED OR WHICH DO NOT OBTAIN A SATISFACTORY GROWTH BY OCTOBER 15 SHALL BE SEEDED WITH AROOSTOOK RYE OR MULCHED AT RATES PREVIOUSLY SPECIFIED. SEE WINTER CONDITIONS NOTES FOR SEEDING STABILIZATION AFTER NOVEMBER 1.
a. APPLY TOPSOIL TO A MINIMUM DEPTH OF 4 INCHES. MIX TOPSOIL WITH THE SUBSOIL TO A MINIMUM DEPTH OF 6 INCHES.
b. APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TESTS. IN LIEU OF SOIL TESTS, APPLY GROUND LIMESTONE AT A RATE OF 3 TONS PER ACRE (138 LB. PER 1,000 SQUARE FEET) AND GRANULAR, COMMERCIAL-GRADE, 10-10-10 (N-P205-K20) FERTILIZER AT A RATE OF 800 LBS PER ACRE (18.4 LBS PER 1,000 SQUARE FEET).
c. UNIFORMLY APPLY SEED MIXTURE AT THE RECOMMENDED SEEDING RATES AND DATES, APPLY HAY OR STRAW MULCH AT A RATE OF 2 TONS PER ACRES, AND ANCHOR AS NECESSARY.
d. THE SEED MIXTURE FOR LAWN AND FILTRATION BASIN AREAS SHALL CONSIST OF SEEDS PROPORTIONED BY WEIGHT AS FOLLOWS:
30% CREEPING RED FESCUE
50% KENTUCKY BLUEGRASS
20% ITALIAN/PERENNIAL RYE GRASS
NOTE: SEED MIXTURE SHALL CONSIST OF AT LEAST TWO VARIETIES OF EACH TYPE OF GRASS. WHEN USED IN A FILTER BASIN, STORMWATER SHALL NOT BE DIRECTED TO THE BASIN UNTIL THE GRASS IS ESTABLISHED.
15. MULCH ALL AREAS SEEDED SO THAT SOIL IS NOT VISIBLE THROUGH THE MULCH REGARDLESS OF THE APPLICATION RATE.

- 1. DITCH LININGS, STONE CHECK DAMS, AND RIP RAP INLET AND OUTLET PROTECTION SHALL BE INSTALLED WITHIN 48 HOURS OF COMPLETING THE GRADING OF THAT SECTION OF DITCH OR INSTALLATION OF CULVERT.
2. RIP RAP REQUIRED AT CULVERTS AND STORM DRAIN INLETS AND OUTLETS SHALL CONSIST OF FIELD STONE OR ROUGH UNHEWN QUARRY STONE OF APPROXIMATELY RECTANGULAR SHAPE.
3. EROSION CONTROL BLANKET SHALL BE INSTALLED ON ALL PERMANENT SLOPES STEEPER THAN 15%, IN THE BASE OF DITCHES NOT OTHERWISE PROTECTED, AND ANY DISTURBED AREAS WITHIN 100 FEET OF A PROTECTED NATURAL RESOURCE (E.G. WETLANDS AND WATER BODIES). EROSION CONTROL BLANKET SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
4. TEMPORARY CONTROL MEASURES, SUCH AS SILT FENCE, SHALL BE REMOVED WITHIN 30 DAYS AFTER PERMANENT STABILIZATION IS ATTAINED.

**C. SPECIAL MEASURES FOR SUMMER CONSTRUCTION**

DURING DRY SUMMER CONDITIONS, THE CONTRACTOR SHALL:

- 1. IMPLEMENT A PROGRAM TO APPLY DUST CONTROL MEASURES ON A DAILY BASIS EXCEPT THOSE DAYS WHERE PRECIPITATION IS SUFFICIENT TO SUPPRESS DUST FORMATION. THIS PROGRAM SHALL EXTEND TO AND INCLUDE SWEEPING OF ADJACENT STREETS.
2. SPRAY ANY MULCHES WITH WATER AFTER ANCHORING TO DAMPEN THE SOIL AND ENCOURAGE EARLY GROWTH. SPRAYING MAY BE REQUIRED SEVERAL TIMES. TEMPORARY SEED MAY BE REQUIRED UNTIL THE LATE SUMMER SEEDING SEASON.
3. COVER STOCKPILES OF FINE-GRAINED MATERIALS, OR EXCAVATED SOILS WHICH ARE SUSCEPTIBLE TO EROSION TO PROTECT FROM THE INTENSE, SHORT-DURATION STORMS WHICH ARE MORE PREVALENT IN THE SUMMER MONTHS.
4. TAKE ADDITIONAL STEPS NEEDED, INCLUDING WATERING, OR COVERING EXCAVATED MATERIALS TO CONTROL FUGITIVE DUST EMISSIONS TO MINIMIZE REDUCTIONS IN VISIBILITY AND THE AIRBORNE DISPERSION OF FINE-GRAINED SOLIDS. THIS IS PARTICULARLY IMPORTANT GIVEN THE POTENTIAL PRESENCE OF SOIL CONTAMINANTS, AND THEIR PROXIMITY ALONG THE ADJACENT STREETS AND PROPERTIES.
5. THESE MEASURES MAY ALSO BE REQUIRED IN THE SPRING AND FALL DURING THE DRIER PERIODS OF THESE SEASONS.

**D. WINTER CONDITIONS**

- 1. "WINTER CONSTRUCTION" IS CONSTRUCTION ACTIVITY PERFORMED DURING THE PERIOD FROM NOVEMBER 1ST THROUGH APRIL 15TH. IF AREAS WITHIN THE CONSTRUCTION ACTIVITY ARE NOT STABILIZED WITH TEMPORARY OR PERMANENT MEASURES OUTLINED ABOVE BY NOVEMBER 15TH, THEN THE SITE MUST BE PROTECTED WITH ADDITIONAL STABILIZATION MEASURES THAT ARE SPECIFIC TO WINTER CONDITIONS. NO MORE THAN ONE ACRE OF THE SITE MAY BE WITHOUT STABILIZATION AT ONE TIME.
2. SILT FENCE: IN LIEU OF PROVIDING THE 4' X 4' TRENCH FOR FROZEN GROUND, STONY SOIL, THE PRESENCE OF LARGE ROOTS, OR OTHER PROHIBITIVE CONDITIONS, THE BOTTOM 8" TO 12" OF THE FABRIC MAY BE LAID ON EXISTING GRADE AND BACK FILLED WITH STONE ANCHORING MATERIAL, AS SHOWN ON THE DRAWINGS.
3. 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 MUST BE STABILIZED. MULCH MAY NOT BE SPREAD ON TOP OF SNOW.
4. AFTER NOVEMBER 1ST OR THE FIRST KILLING FROST FOR THE REGION AND BEFORE SNOW FALL, ALL EXPOSED AND DISTURBED AREAS NOT TO UNDERGO FURTHER DISTURBANCE ARE TO HAVE DORMANT SEEDING. THE DORMANT SEEDING METHOD: PREPARE THE SEEDED, LIME AND FERTILIZE, APPLY THE SELECTED PERMANENT SEED MIXTURE AT DOUBLE THE REGULAR SEEDING RATE, AND MULCH AND ANCHOR. DORMANT SEEDINGS NEED TO BE ANCHORED EXTREMELY WELL ON SLOPES, DITCH BASES AND AREAS OF CONCENTRATED FLOWS. DORMANT SEEDING REQUIRES INSPECTION AND RESEEDING AS NEEDED IN THE SPRING. ALL AREAS WHERE COVER IS INADEQUATE MUST BE IMMEDIATELY RESEEDED AND MULCHED AS SOON AS POSSIBLE.
5. ALL VEGETATED DITCH LINES THAT HAVE NOT BEEN STABILIZED BY NOVEMBER 1ST, OR WILL BE WORKED DURING THE WINTER CONSTRUCTION PERIOD, MUST BE STABILIZED WITH AN APPROPRIATE STONE LINING BACKED BY AN APPROPRIATE GRAVEL BED OR GEOTEXTILE UNLESS SPECIFICALLY RELEASED FROM THIS STANDARD BY THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
6. MULCH NETTING MUST BE USED TO ANCHOR MULCH ON ALL SLOPES GREATER THAN 8% UNLESS EROSION CONTROL BLANKETS OR EROSION CONTROL MIX IS BEING USED ON THESE SLOPES.

**E. HOUSEKEEPING**

- 1. SPILL PREVENTION. CONTROLS MUST BE USED TO PREVENT POLLUTANTS FROM CONSTRUCTION AND WASTE MATERIALS STORED ON-SITE, INCLUDING STORAGE PRACTICES TO MINIMIZE EXPOSURE OF THE MATERIALS TO STORM WATER, AND APPROPRIATE SPILL PREVENTION, CONTAINMENT, AND RESPONSE PLANNING AND IMPLEMENTATION.
2. GROUNDWATER PROTECTION. DURING CONSTRUCTION, LIQUID PETROLEUM PRODUCTS AND OTHER HAZARDOUS MATERIALS WITH THE POTENTIAL TO CONTAMINATE GROUNDWATER MAY NOT BE STORED OR HANDLED IN AREAS OF THE SITE DRAINING TO AN INFILTRATION AREA. AN INFILTRATION AREA IS ANY AREA OF THE SITE THAT BY DESIGN OR AS A RESULT OF SOILS, TOPOGRAPHY AND OTHER RELEVANT FACTORS, ACCUMULATES RUNOFF THAT INFILTRATES INTO THE SOIL DIKES, BERMS, SUMPS, AND OTHER FORMS OF SECONDARY CONTAINMENT THAT PREVENT DISCHARGE TO GROUNDWATER MAY BE USED TO ISOLATE PORTIONS OF THE SITE FOR THE PURPOSES OF STORAGE AND HANDLING OF THESE MATERIALS.
3. FUGITIVE SEDIMENT AND DUST. ACTIONS MUST BE TAKEN TO ENSURE THAT ACTIVITIES DO NOT RESULT IN NOTICEABLE EROSION OF SOILS OR FUGITIVE DUST EMISSIONS DURING OR AFTER CONSTRUCTION. OIL MAY NOT BE USED FOR DUST CONTROL.
4. DEBRIS AND OTHER MATERIAL. LITTER, CONSTRUCTION DEBRIS, AND CONSTRUCTION CHEMICALS EXPOSED TO STORM WATER, MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE.
5. COMPLY WITH ALL LOCAL AND STATE REGULATIONS FOR THE REMOVAL AND DISPOSAL OF CONSTRUCTION DEBRIS AND WASTE.
6. TRENCH OR FOUNDATION DE-WATERING. THE COLLECTED WATER REMOVED FROM THE PONDED AREA, EITHER THROUGH GRAVITY OR PUMPING, MUST BE SPREAD THROUGH NATURAL WOODED BUFFERS OR REMOVED AREAS THAT ARE SPECIFICALLY DESIGNATED TO COLLECT THE MAXIMUM AMOUNT OF SEDIMENT POSSIBLE, LIKE A COFFER DAM SEDIMENTATION BASIN. AVOID ALLOWING THE WATER TO FLOW OVER DISTURBED AREAS OF THE SITE.
7. NON-STORMWATER DISCHARGES. IDENTIFY AND PREVENT CONTAMINATION BY NON-STORWATER DISCHARGES. WHERE ALLOWED NON-STORWATER DISCHARGES EXIST, THEY MUST BE IDENTIFIED AND STEPS SHOULD BE TAKEN TO ENSURE THE IMPLEMENTATION OF APPROPRIATE POLLUTION PREVENTION MEASURES FOR THE NON-STORMWATER COMPONENT(S) OF THE DISCHARGE.

**F. INSPECTION AND MAINTENANCE**

- 1. INSPECT DISTURBED AND IMPERVIOUS AREAS, EROSION AND STORM WATER CONTROL MEASURES, AREAS USED FOR STORAGE THAT ARE EXPOSED TO PRECIPITATION, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE AT LEAST ONCE A WEEK AND BEFORE AND AFTER A STORM EVENT. PRIOR TO COMPLETION OF PERMANENT STABILIZATION, A PERSON WITH KNOWLEDGE OF EROSION AND STORM WATER CONTROLS, INCLUDING THE STANDARDS IN THE MAINE CONSTRUCTION GENERAL PERMIT AND ANY DEP OR MUNICIPAL COMPANION DOCUMENTS, MUST CONDUCT THE INSPECTION. THIS PERSON MUST BE IDENTIFIED IN THE INSPECTION LOG. IF BEST MANAGEMENT PRACTICES (BMPs) NEED TO BE MODIFIED IF ADDITIONAL 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.
2. AN INSPECTION AND MAINTENANCE LOG MUST BE KEPT SUMMARIZING THE SCOPE OF THE INSPECTION, NAME AND QUALIFICATIONS OF THE PERSON PERFORMING THE INSPECTION, DATE, AND MAJOR OBSERVATIONS RELATING TO OPERATION OF EROSION AND SEDIMENTATION CONTROLS AND POLLUTION PREVENTION MEASURES.
3. INSPECTION OF THE PROJECT WORK SITE SHALL INCLUDE:
a. IDENTIFICATION OF PROPER EROSION CONTROL MEASURE INSTALLATION IN ACCORDANCE WITH THE EROSION CONTROL DETAIL SHEET.
b. DETERMINE WHETHER EACH EROSION CONTROL MEASURE IS PROPERLY OPERATING. IF NOT, IDENTIFY DAMAGE TO THE CONTROL DEVICE AND DETERMINE REMEDIAL MEASURES.
c. IDENTIFY AREAS WHICH APPEAR VULNERABLE TO EROSION AND DETERMINE ADDITIONAL EROSION CONTROL MEASURES WHICH SHOULD BE USED TO IMPROVE CONDITIONS.
d. INSPECT AREAS OF RECENT SEEDING TO DETERMINE PERCENT CATCH OF GRASS. A MINIMUM CATCH OF 90 PERCENT IS REQUIRED PRIOR TO REMOVAL OF EROSION CONTROL MEASURES.
4. IF INSPECTION OF THE SITE INDICATES A CHANGE SHOULD BE MADE TO THE EROSION CONTROL PLAN, TO EITHER IMPROVE EFFECTIVENESS OR CORRECT A SITE-SPECIFIC DEFICIENCY, THE INSPECTOR SHALL IMMEDIATELY IMPLEMENT THE CORRECTIVE MEASURE AND NOTIFY THE OWNER OF THE CHANGE.
5. ALL CERTIFICATIONS, INSPECTION FORMS, AND WRITTEN REPORTS PREPARED BY THE INSPECTOR(S) SHALL BE FILED WITH THE OWNER, AND THE PERMIT FILE CONTAINED ON THE PROJECT SITE. ALL WRITTEN CERTIFICATIONS, INSPECTION FORMS, AND WRITTEN REPORTS MUST BE FILED WITHIN ONE (1) WEEK OF THE INSPECTION DATE.
6. THE PERMITTEE SHALL RETAIN COPIES OF THE ESC PLAN AND ANY FORMS, SUBMISSIONS, REPORTS, OR OTHER MATERIALS REQUIRED BY THE GENERAL PERMIT FOR A PERIOD OF AT LEAST THREE YEARS FROM THE COMPLETION OF PERMANENT STABILIZATION.
7. THE CONTRACTOR HAS SOLE RESPONSIBILITY FOR COMPLYING WITH THE EROSION/SEDIMENT CONTROL REPORT, INCLUDING CONTROL OF FUGITIVE DUST, AND SHALL BE RESPONSIBLE FOR ANY MONETARY PENALTIES RESULTING FROM FAILURE TO COMPLY WITH THESE STANDARDS.

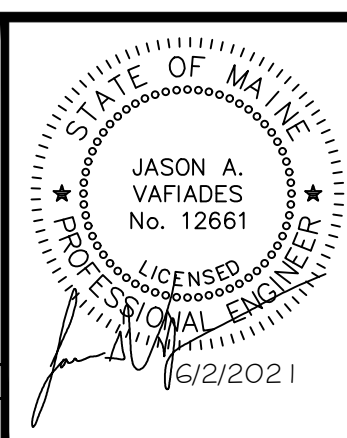
**C. CONSTRUCTION SCHEDULE & SEQUENCE**

(TIMELINES ARE APPROXIMATE AND WILL BE DEPENDENT ON WEATHER AND SITE CONDITIONS).

- 1. **PRE-CONSTRUCTION CONFERENCE:** PRIOR TO ANY CONSTRUCTION AT THE SITE, REPRESENTATIVES OF THE CONTRACTOR, THE ARCHITECT, THE OWNER, AND THE SITE DESIGN ENGINEER SHALL MEET TO DISCUSS THE SCHEDULING OF THE SITE CONSTRUCTION AND THE DESIGNATION OF THE RESPONSIBLE PARTIES FOR IMPLEMENTING THE PLAN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SCHEDULING THE MEETING. PRIOR TO THE MEETING, THE CONTRACTOR SHALL PREPARE A DETAILED SCHEDULE AND A MARKED-UP SITE PLAN INDICATING AREAS AND COMPONENTS OF THE WORK AND KEY DATES SHOWING DATE OF DISTURBANCE AND COMPLETION OF THE WORK. THE CONTRACTOR SHALL CONDUCT A MEETING WITH EMPLOYEES AND SUB-CONTRACTORS TO REVIEW THE EROSION CONTROL PLAN, THE CONSTRUCTION TECHNIQUES WHICH WILL BE EMPLOYED TO IMPLEMENT THE PLAN AND PROVIDE A LIST OF ATTENDEES AND ITEMS DISCUSSED AT THE MEETING TO THE OWNER. THREE COPIES OF THE SCHEDULE, THE CONTRACTOR'S MEETING MINUTES, AND MARKED-UP SITE PLAN SHALL BE PROVIDED TO THE OWNER.
2. THE FOLLOWING CONSTRUCTION SEQUENCE SHALL BE REQUIRED TO INSURE THE EFFECTIVENESS OF THE EROSION AND SEDIMENTATION CONTROL MEASURES IS OPTIMIZED.
a. INSTALL SAFETY AND CONSTRUCTION FENCE TO SECURE THE SITE FOR DEMOLITION.
b. INSTALL ALL PERIMETER SILTATION FENCE AND EROSION CONTROL BARRIERS. PARTICULAR ATTENTION SHALL BE PAID TO AREAS UPSTREAM OF PROTECTED NATURAL RESOURCES. SIGNS SHALL BE ERECTED PERIODICALLY ALONG THESE PERIMETER BARRIERS INDICATING THAT THE DOWNSTREAM AREAS ARE OFF LIMITS TO ALL CONSTRUCTION ACTIVITIES.
c. INSTALL CONSTRUCTION ENTRANCES.
d. MAINTAIN EXISTING PAVED AREAS FOR LAYDOWN AND ACCESS DURING INITIAL CONSTRUCTION ACTIVITIES.
e. CONSTRUCT ACTIVITIES ON THE SITE TO OPTIMIZE THE HANDLING OF MATERIALS AND RESTRICT THE DENUDED AREAS TO THE TIME STIPULATED.
f. CONSTRUCT STABILIZED PADS FOR FOUNDATION AND BUILDING CONSTRUCTION.
g. MAINTAIN STABILIZED SITE ACCESS AND WORKING AREAS DURING BUILDING CONSTRUCTION.
h. INSTALL STORMWATER BMP'S
i. REMOVE EXISTING PAVEMENT AND INSTALL NEW PAVEMENT BASE GRAVEL MATERIALS TO RAISE THE SITE TO THE DESIGN SUBGRADE ELEVATION.
j. INSTALL BINDER PAVEMENT.
k. LANDSCAPE (LOAM AND SEED).
l. INSTALL SURFACE PAVEMENTS.
m. INSTALL STRIPING, SIGNAGE, AND MISCELLANEOUS SITE IMPROVEMENTS.
n. REVIEW AND PUNCH THE SITE.
o. REMOVE ANY TEMPORARY EROSION CONTROL MEASURES.
3. THE CONTRACTOR MUST MAINTAIN AN ACCURATE SET OF RECORD DRAWINGS INDICATING THE DATE WHEN AN AREA IS FIRST DENUDED, THE DATE OF TEMPORARY STABILIZATION, AND THE DATE OF FINAL STABILIZATION. ON OCTOBER 1 OF ANY CALENDAR YEAR, THE CONTRACTOR SHALL SUBMIT A DETAILED PLAN FOR STABILIZING THE SITE FOR THE WINTER AND A DESCRIPTION OF WHAT ACTIVITIES ARE PLANNED DURING THE WINTER.

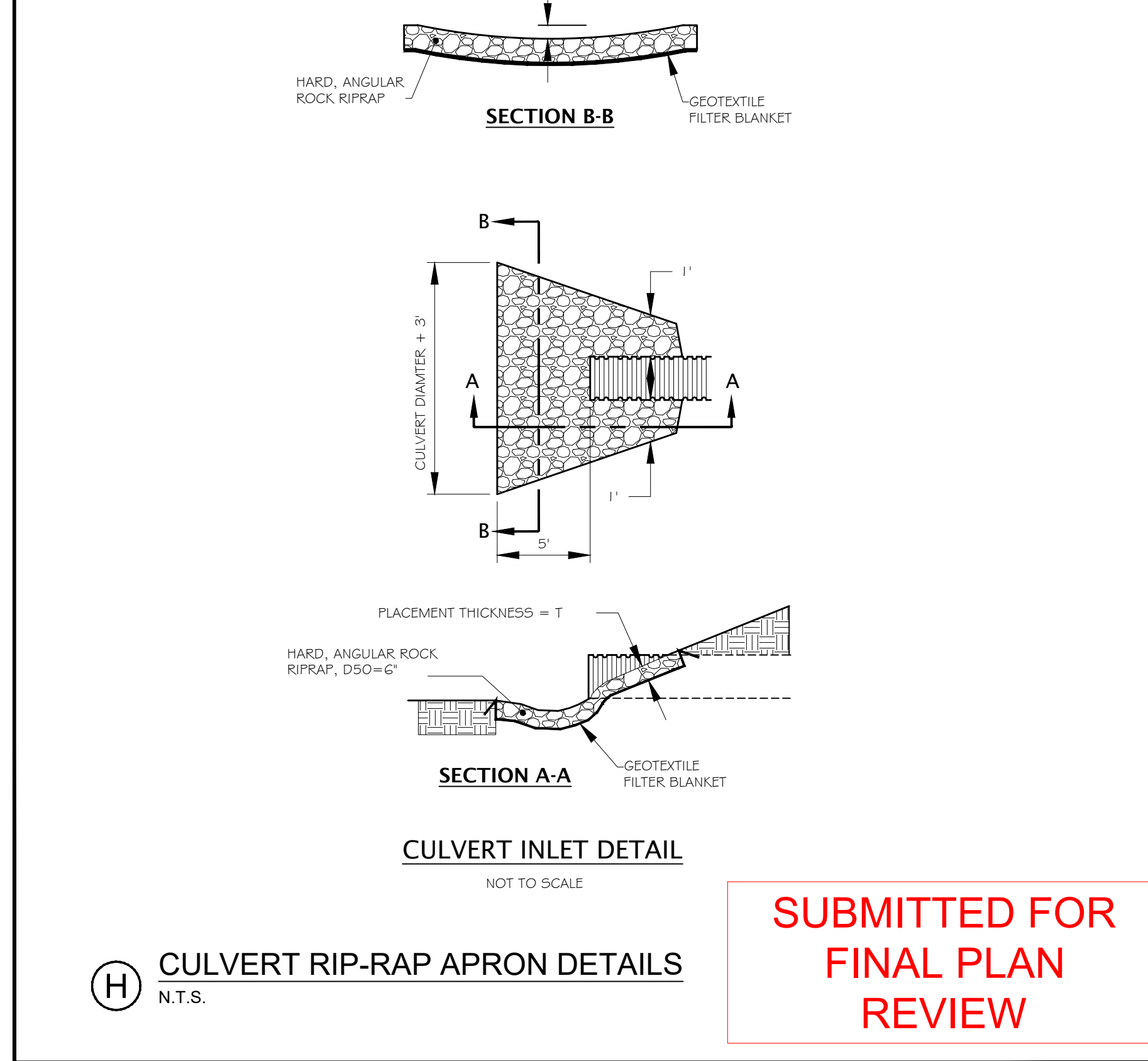
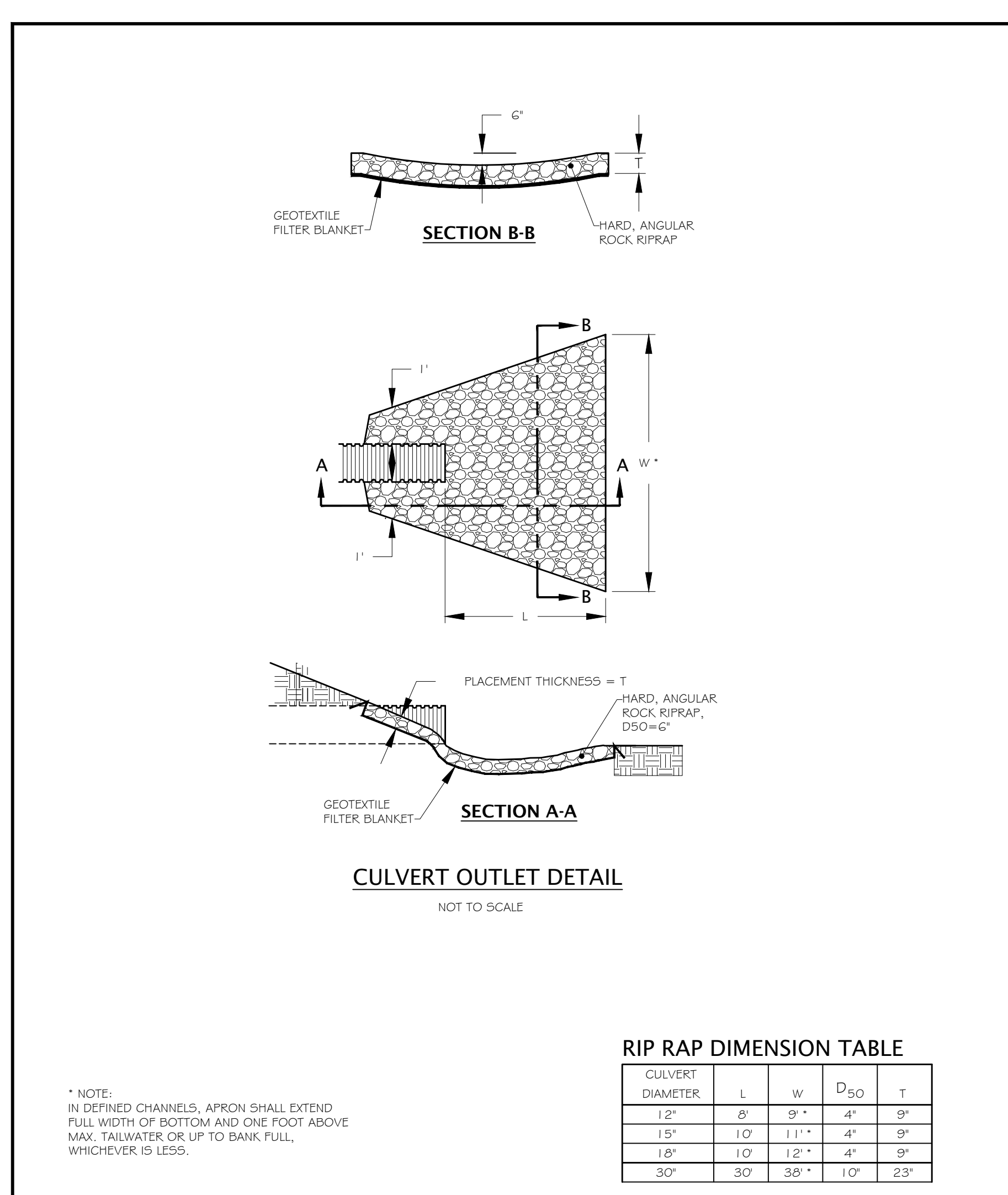
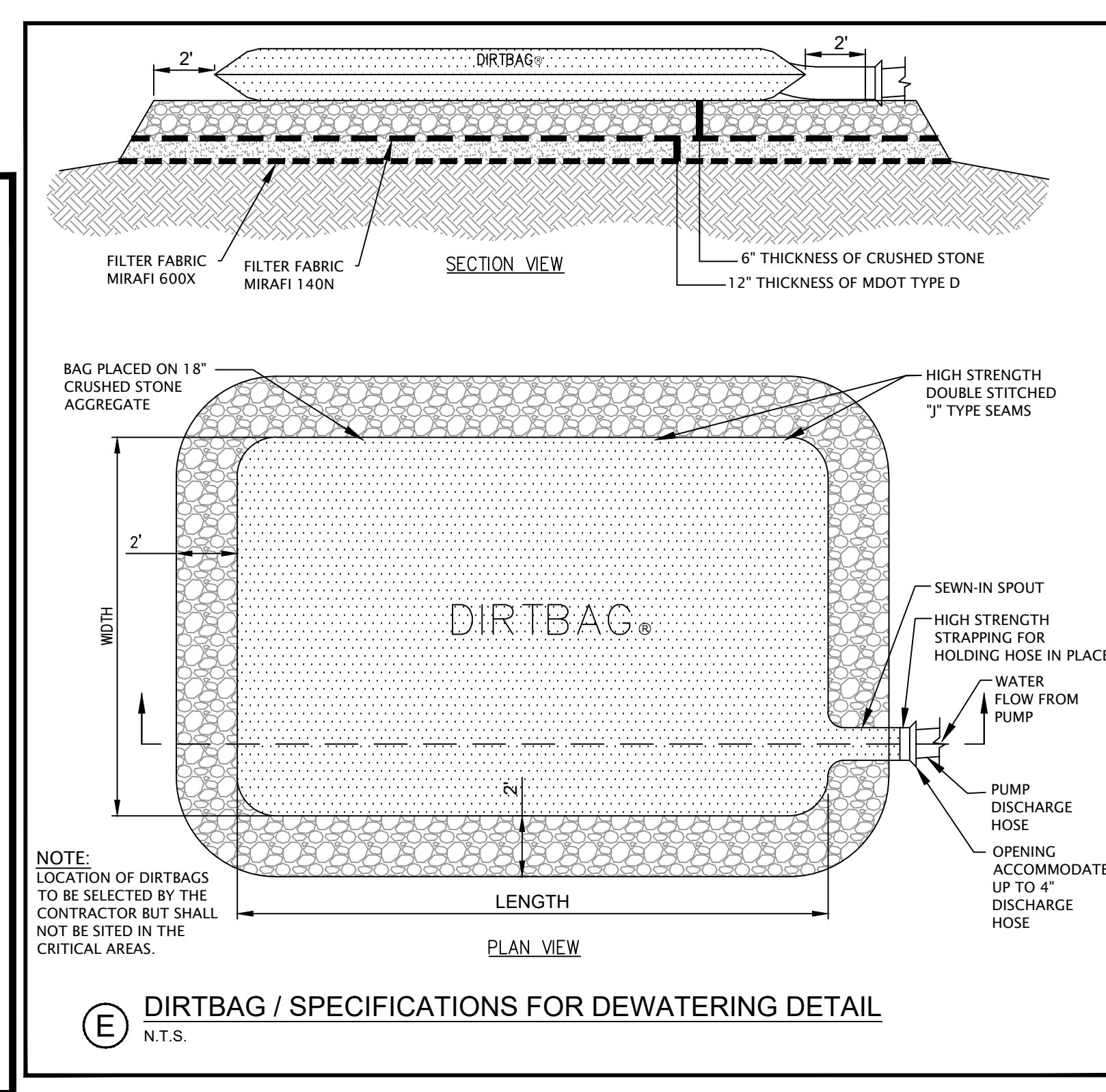
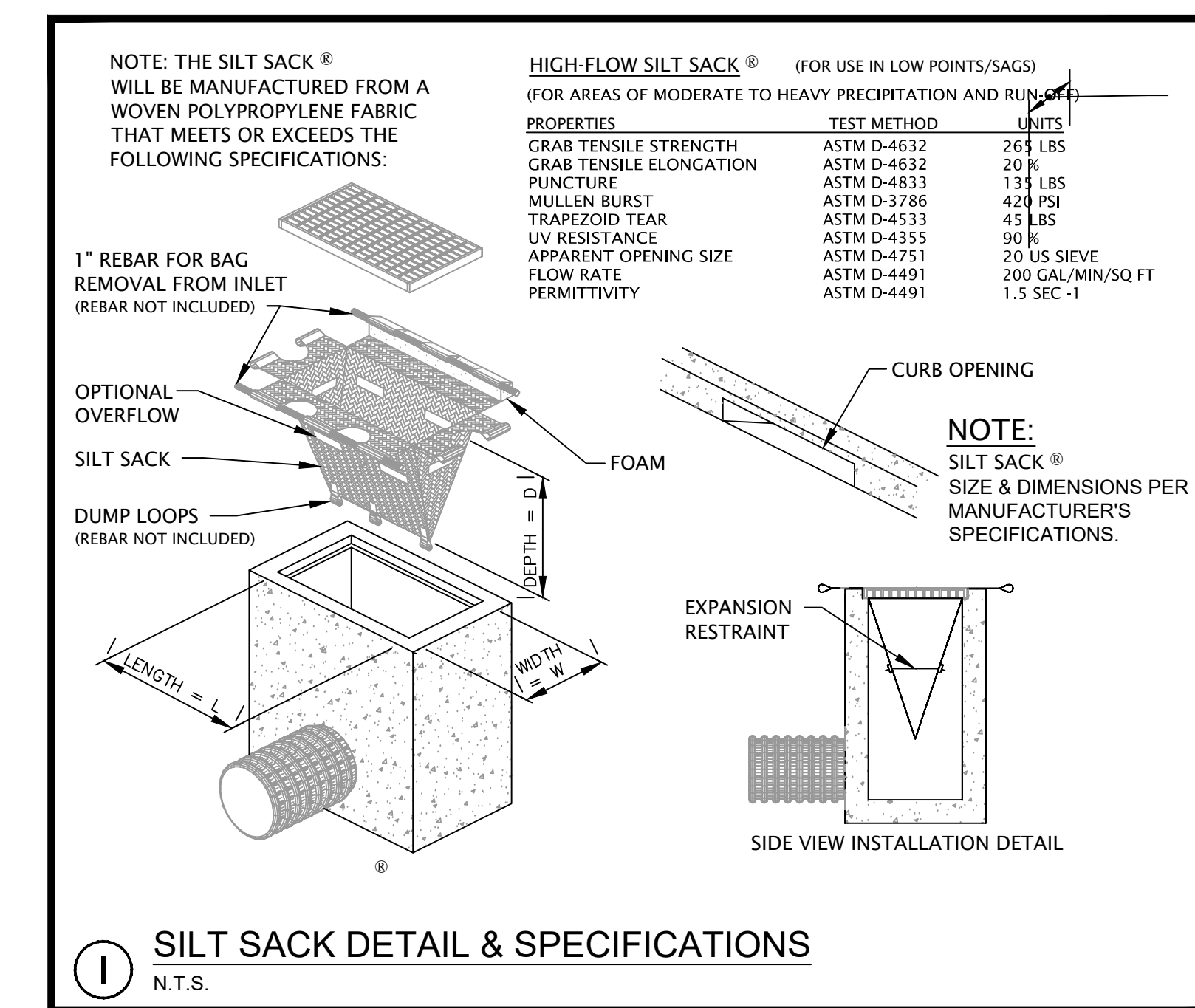
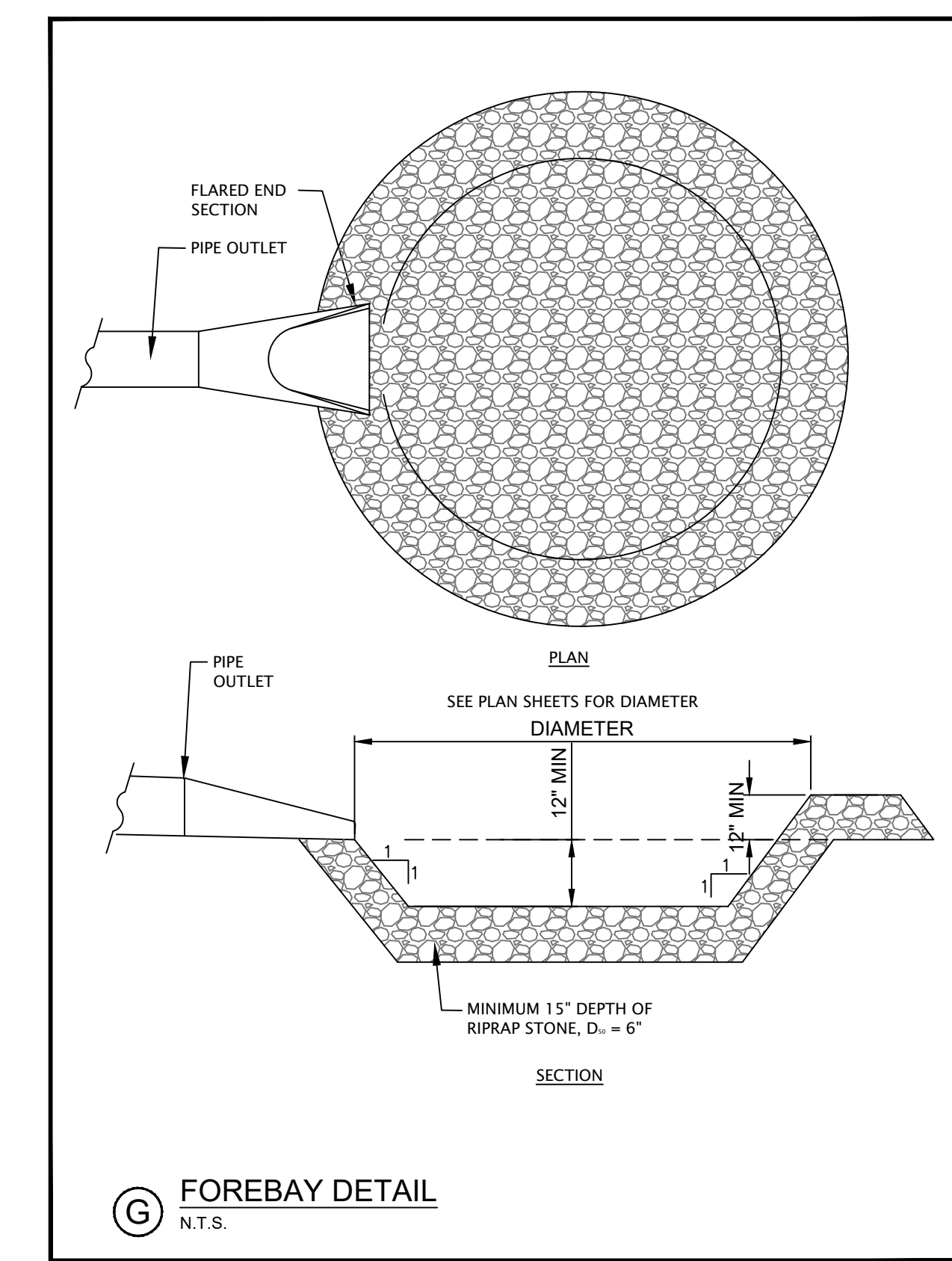
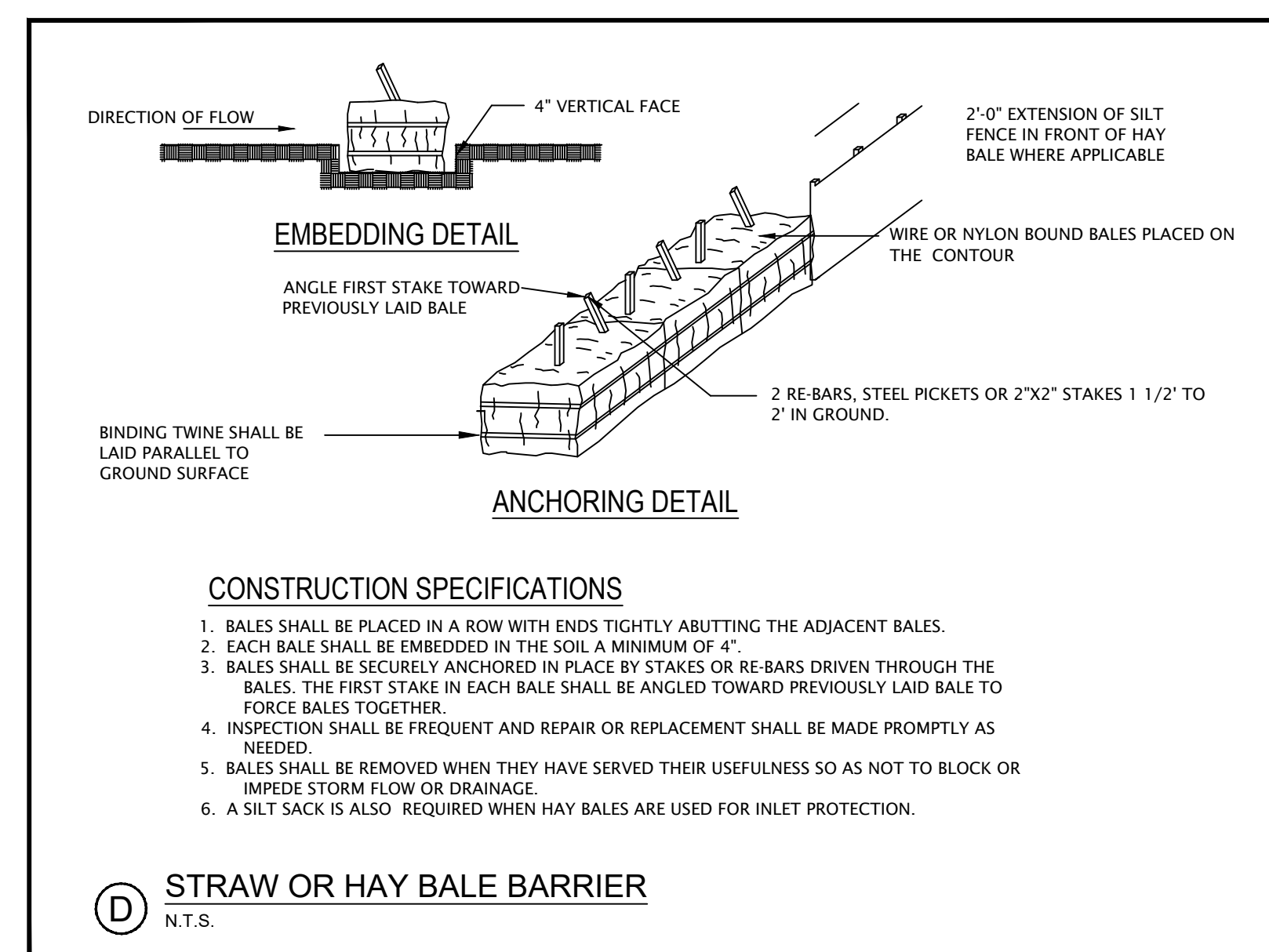
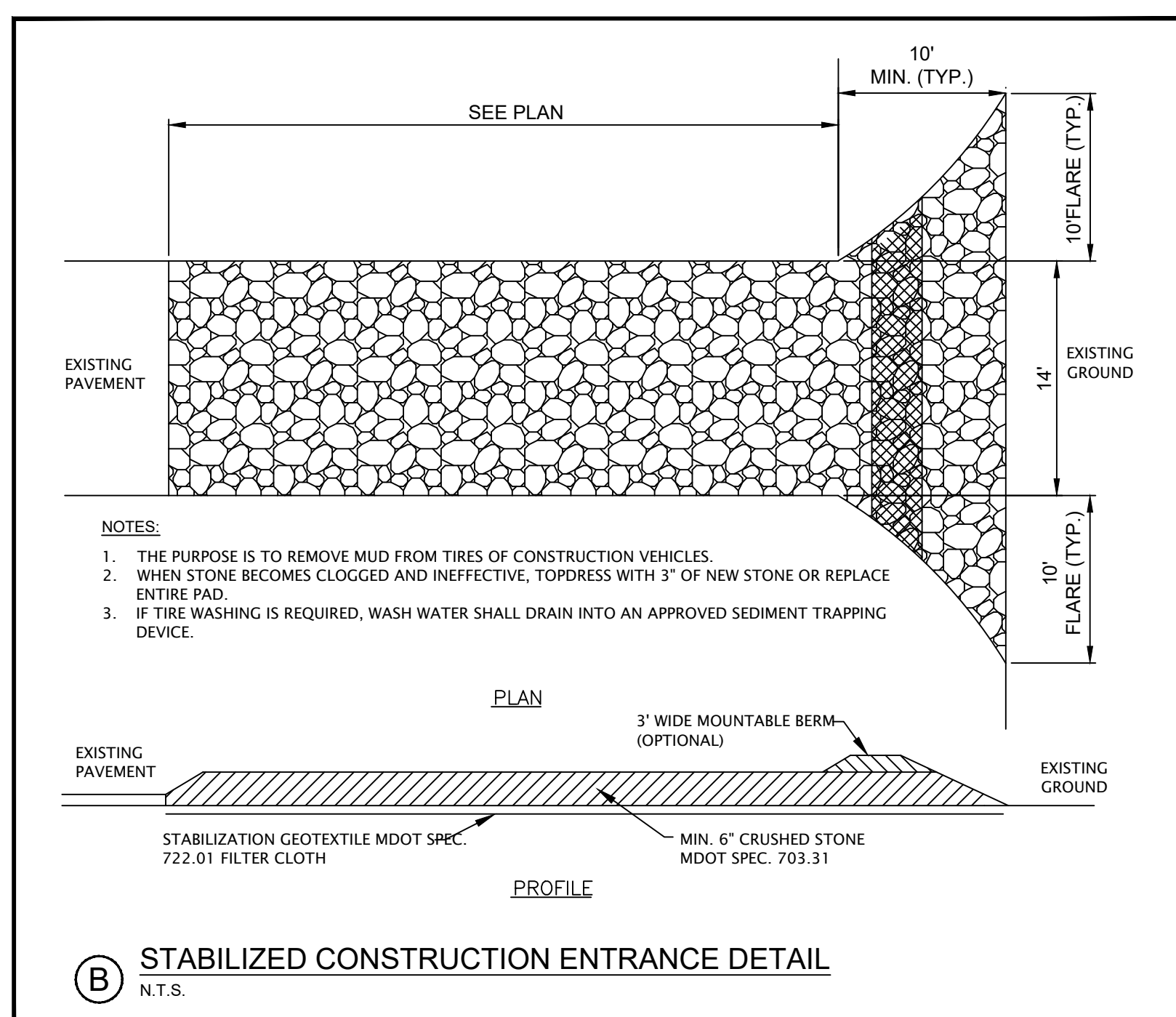
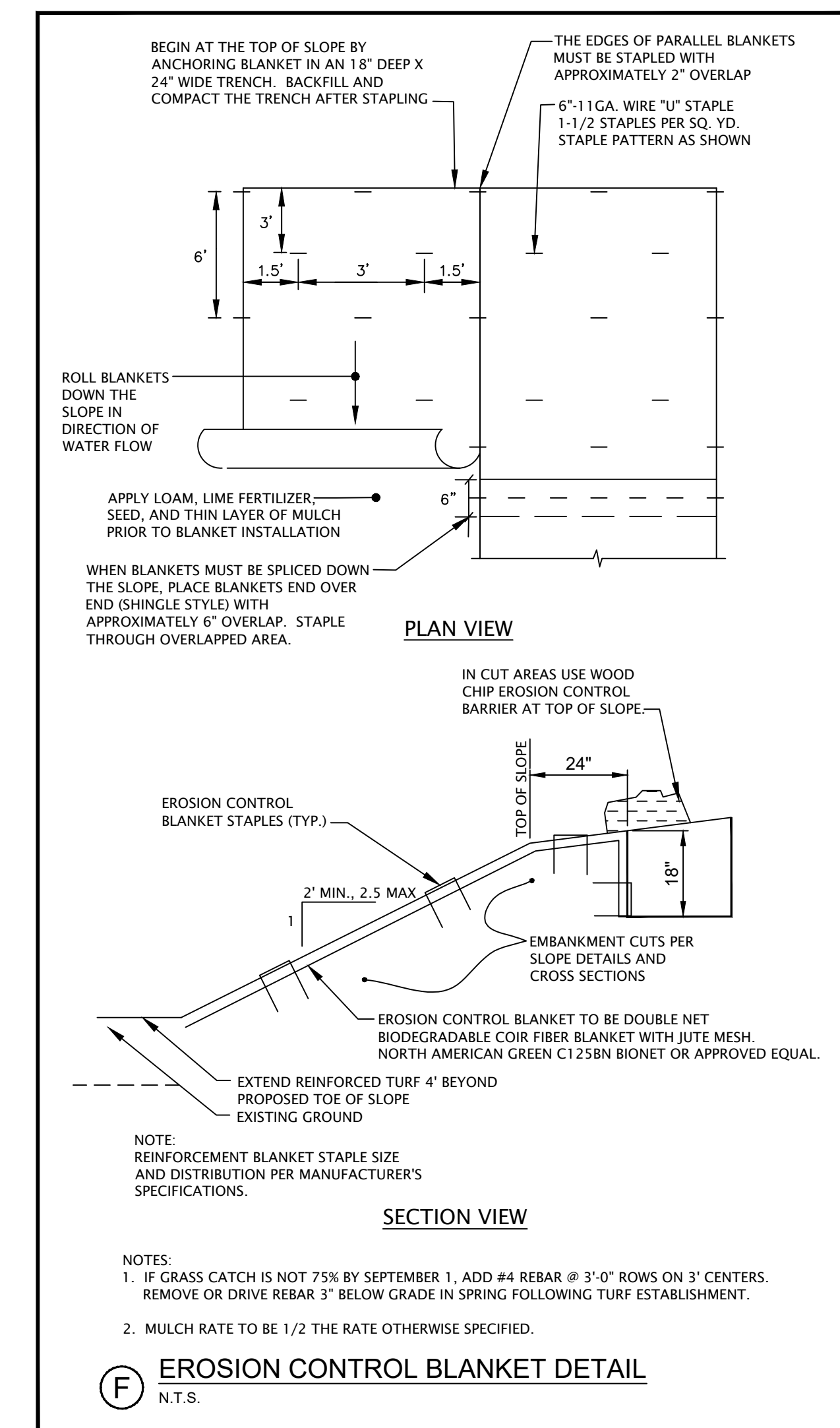
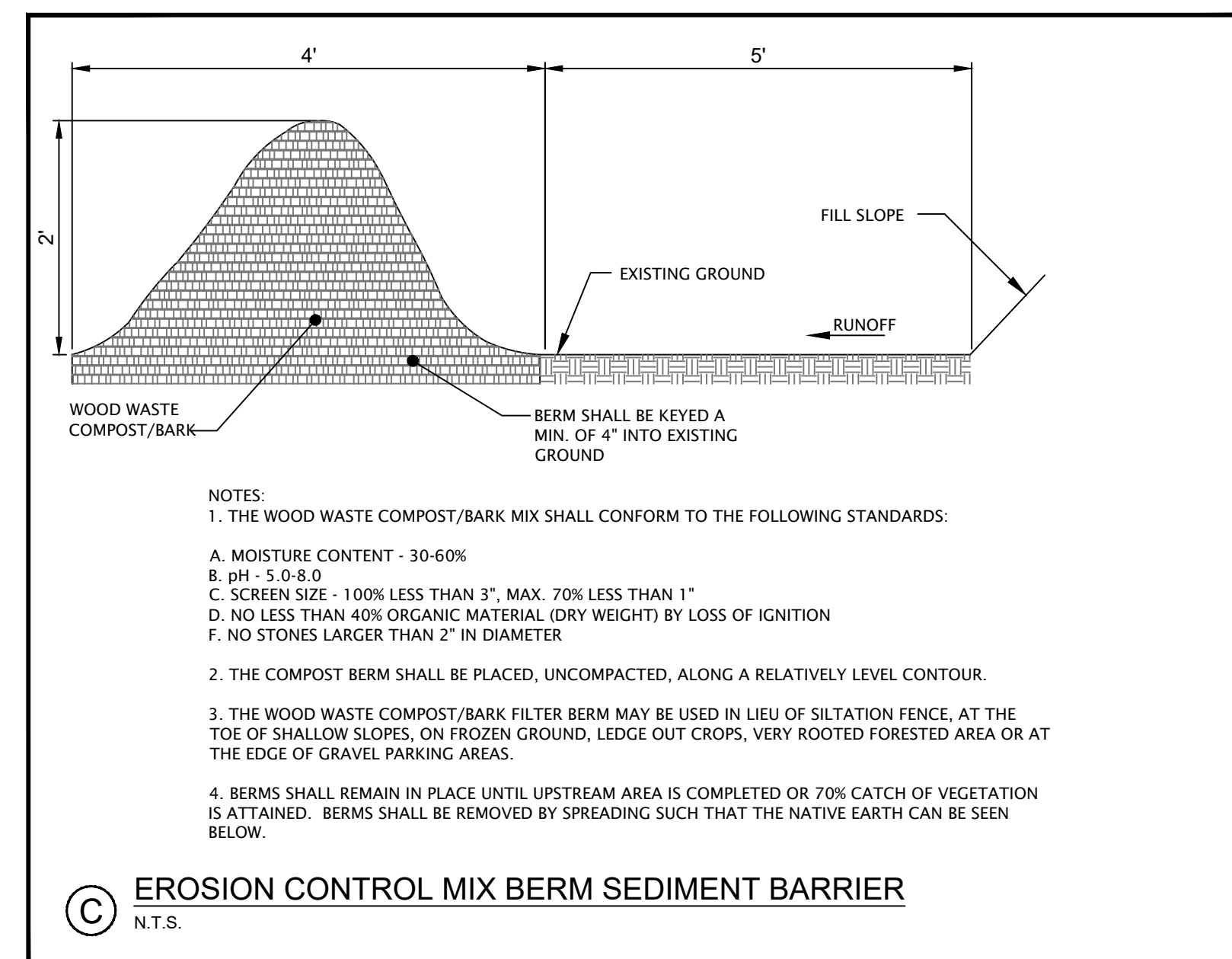
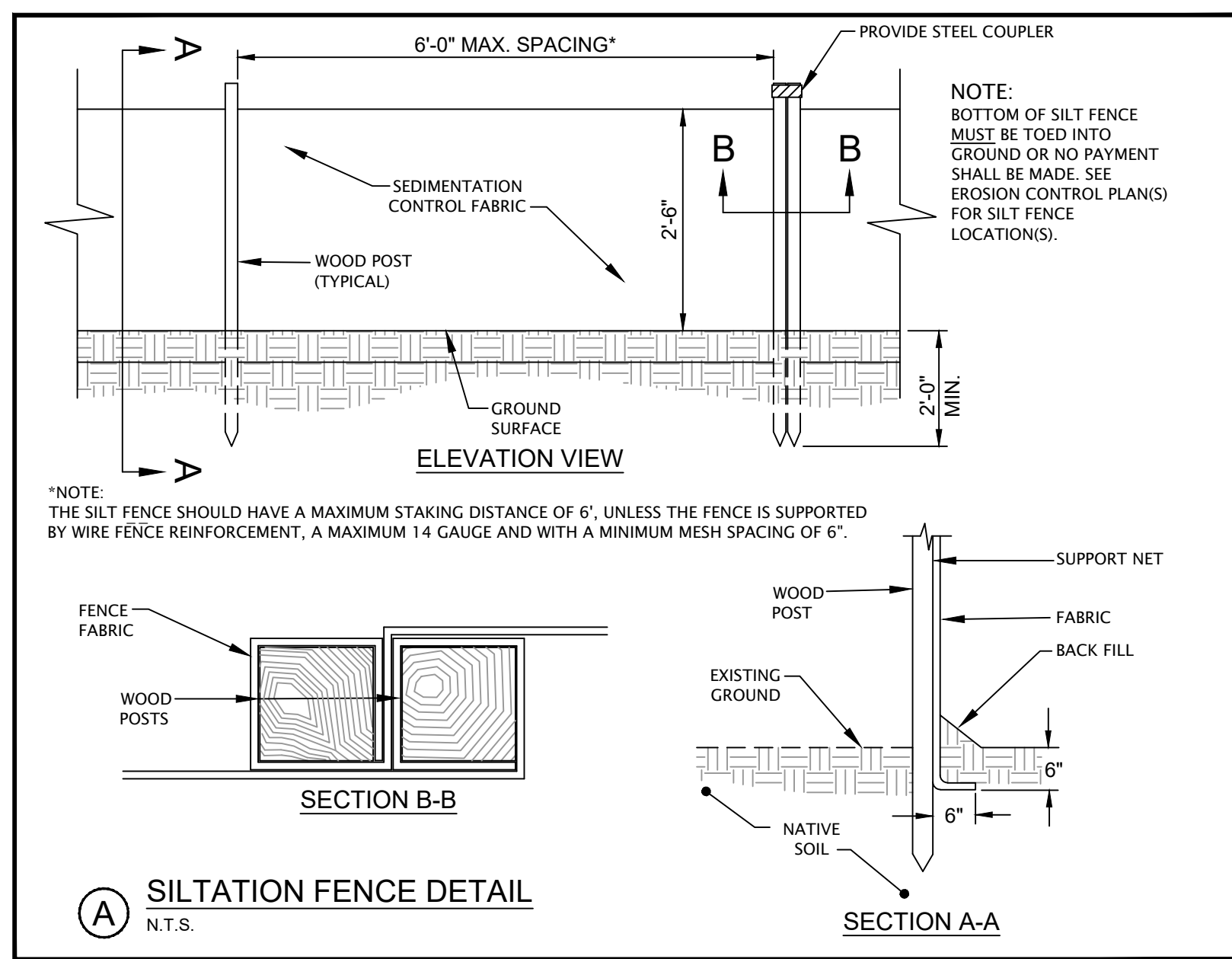
SUBMITTED FOR FINAL PLAN REVIEW

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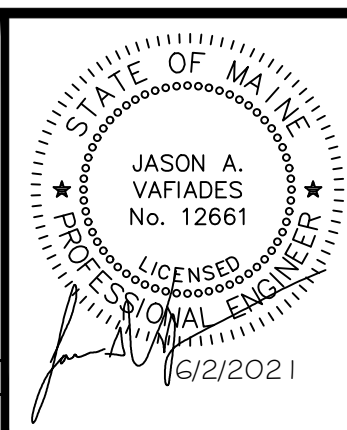
STILLWATER PINES SUBDIVISION
WOODCOCK DRIVE, MAINE 04261
EROSION & SEDIMENTATION
CONTROL NOTES
ALLEN HAMILTON & BEN GROVER
170 SHAKER ROAD
GRAY, MAINE 04039

Atlantic Resource Consultants
541 US Route One
Freeport, ME 04032
Tel: 207.869.9050
DRAWN: MPV/CEB DATE: JUNE 2021
DESIGNED: CEB/MPV SCALE: N/A
CHECKED: JAV/CEB JOB NO. 20-012
FILE NAME:
SHEET: C-300



**SUBMITTED FOR FINAL PLAN REVIEW**

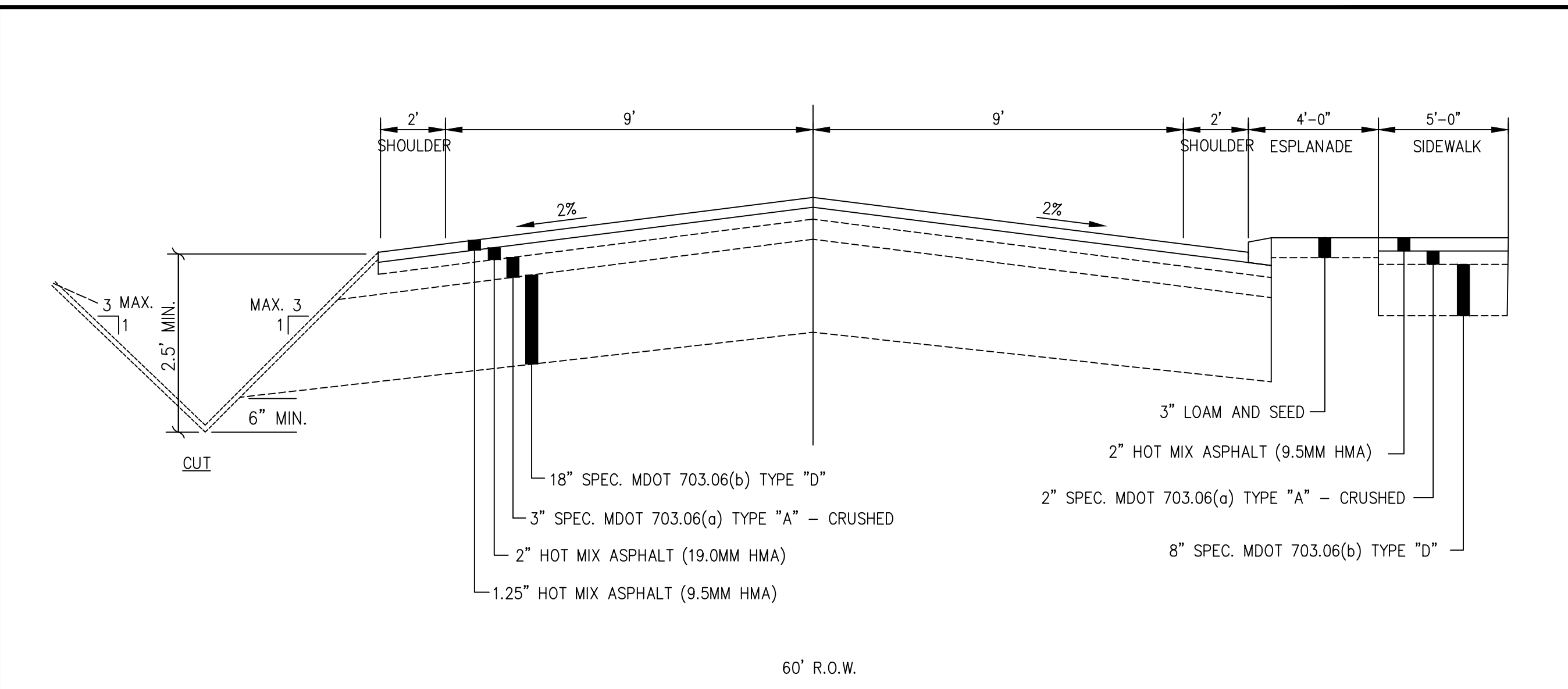
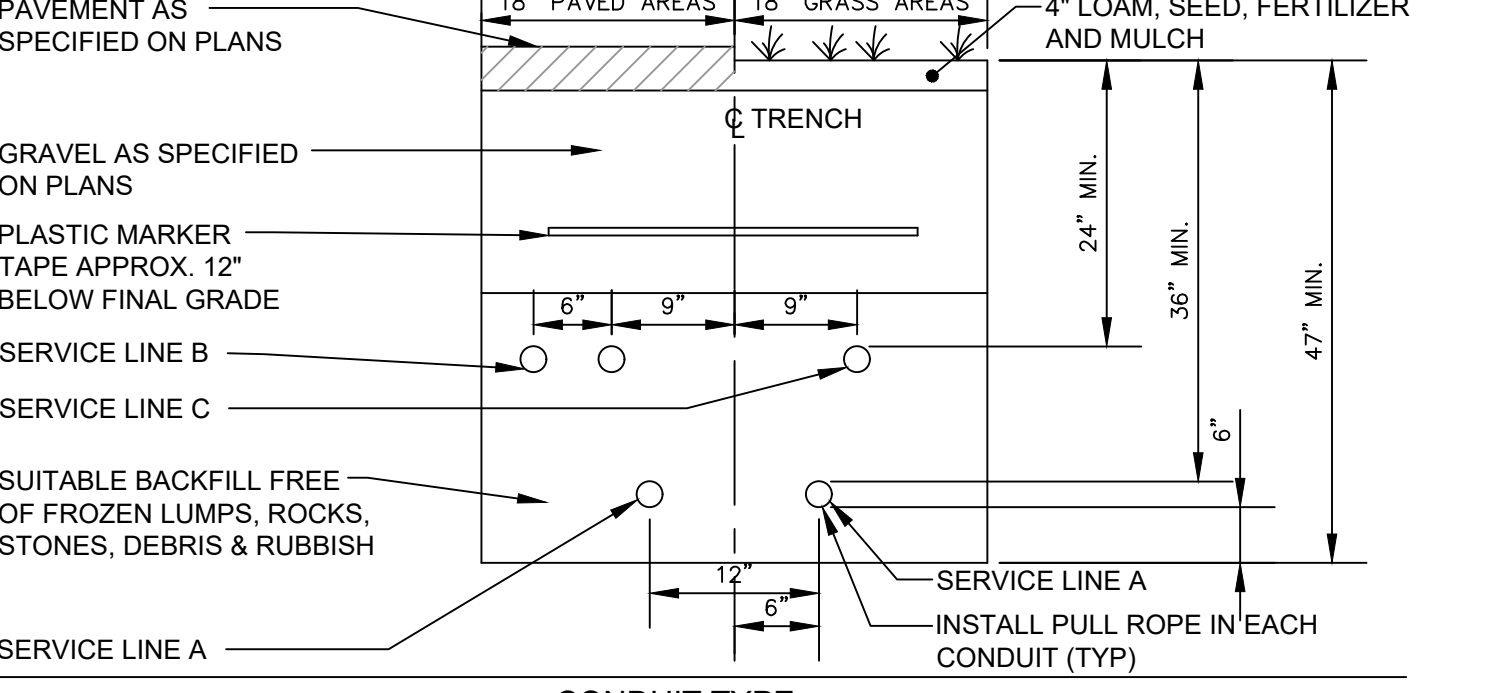
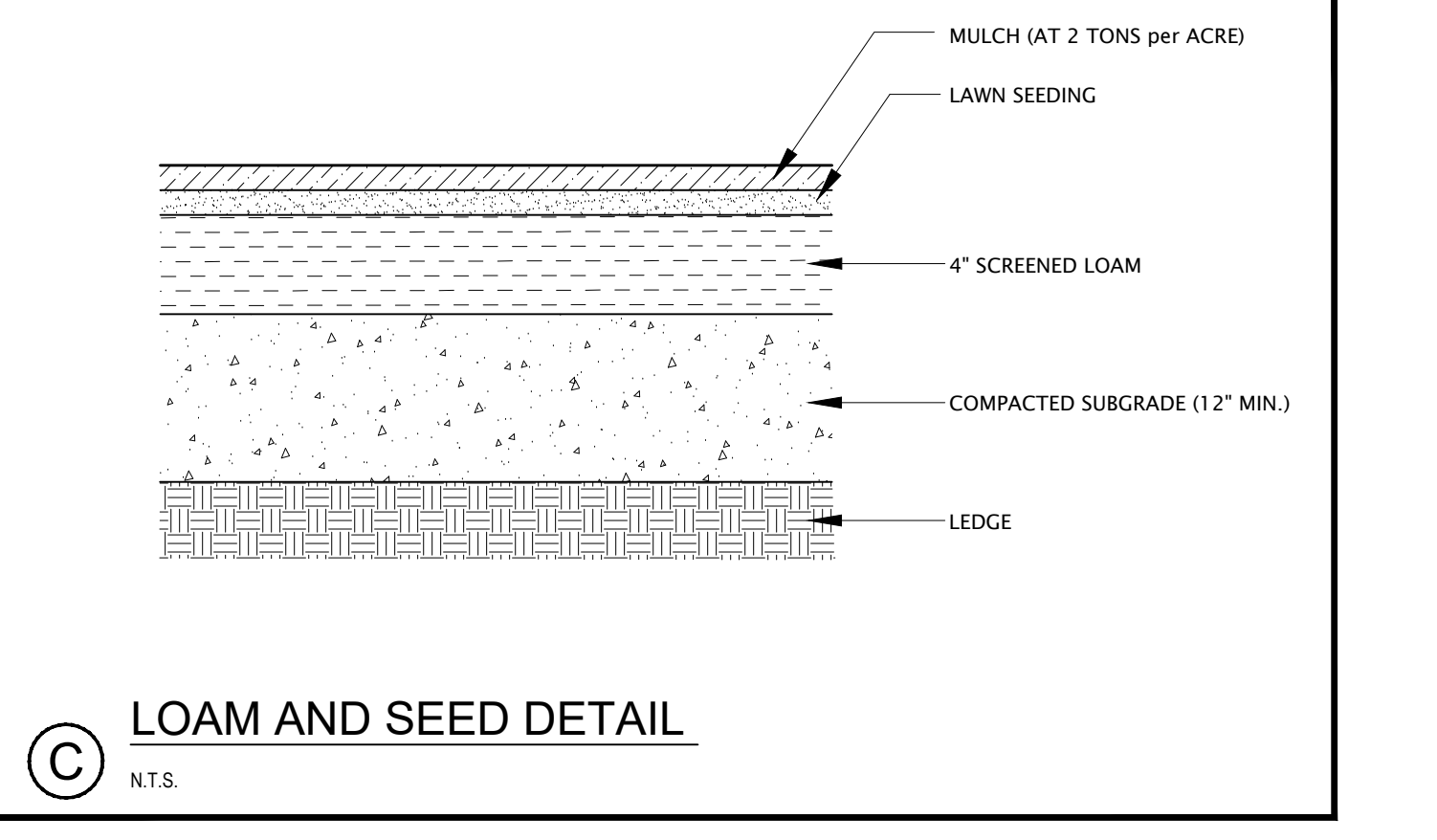
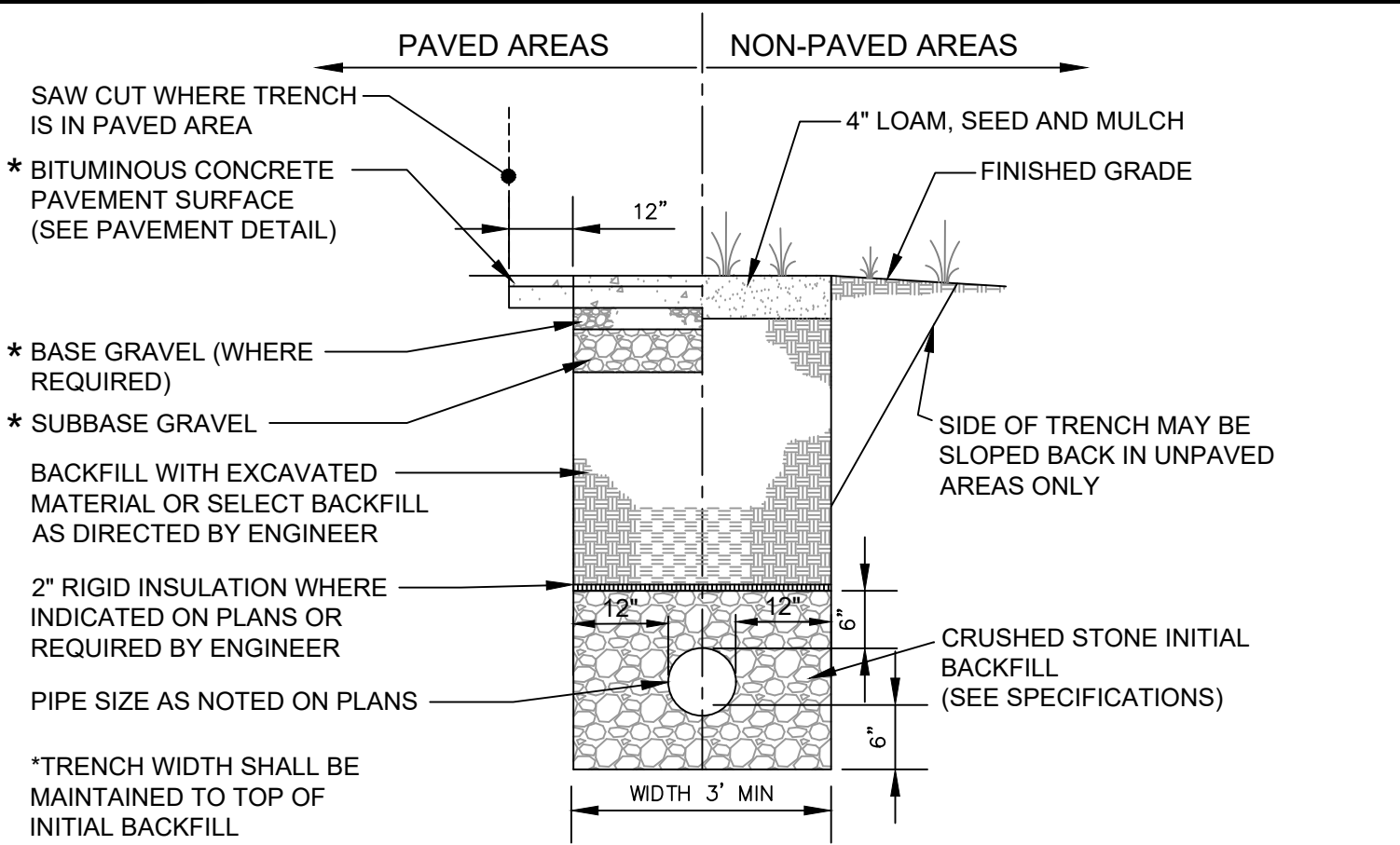
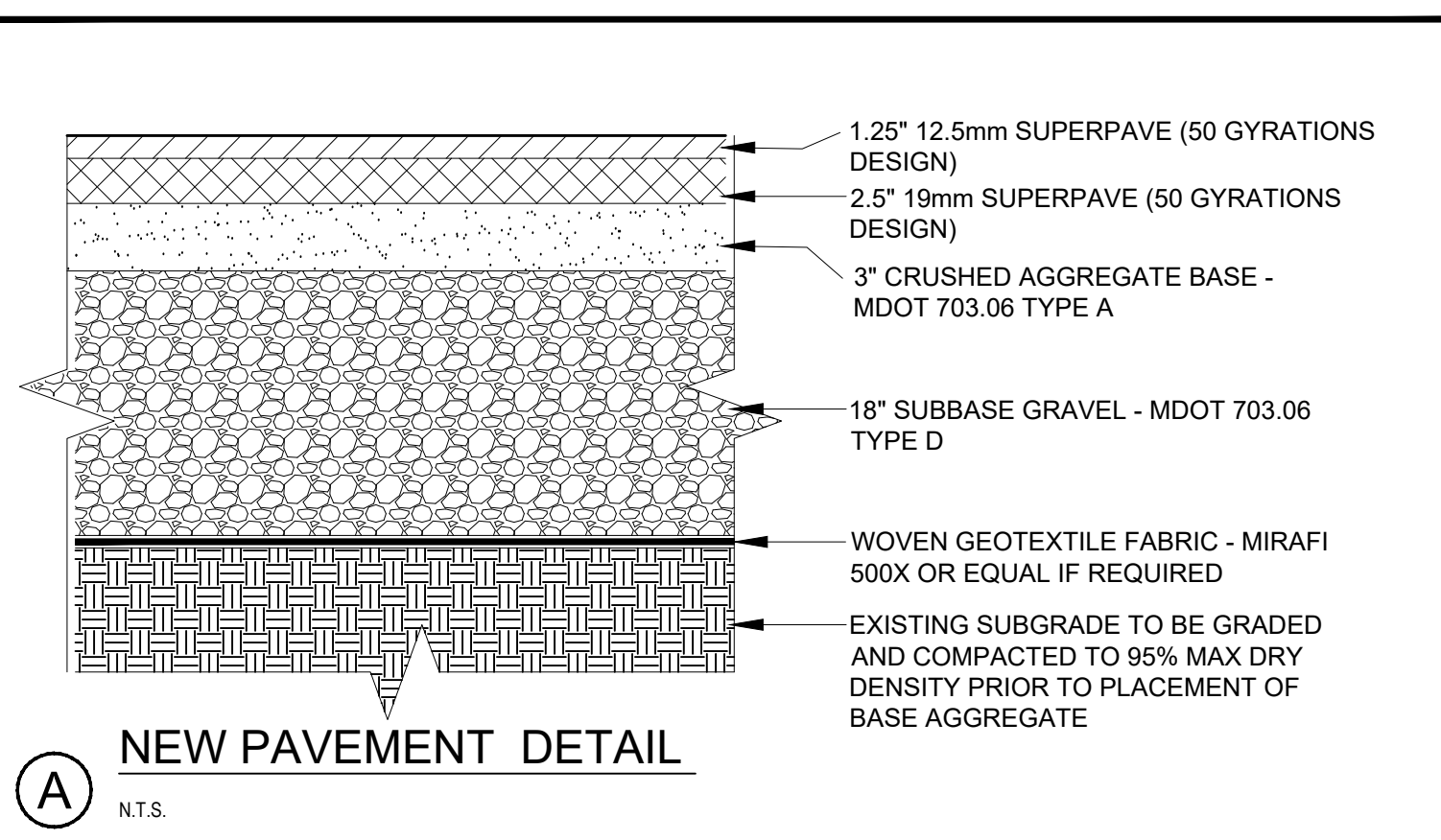
REV	DATE	DESCRIPTION



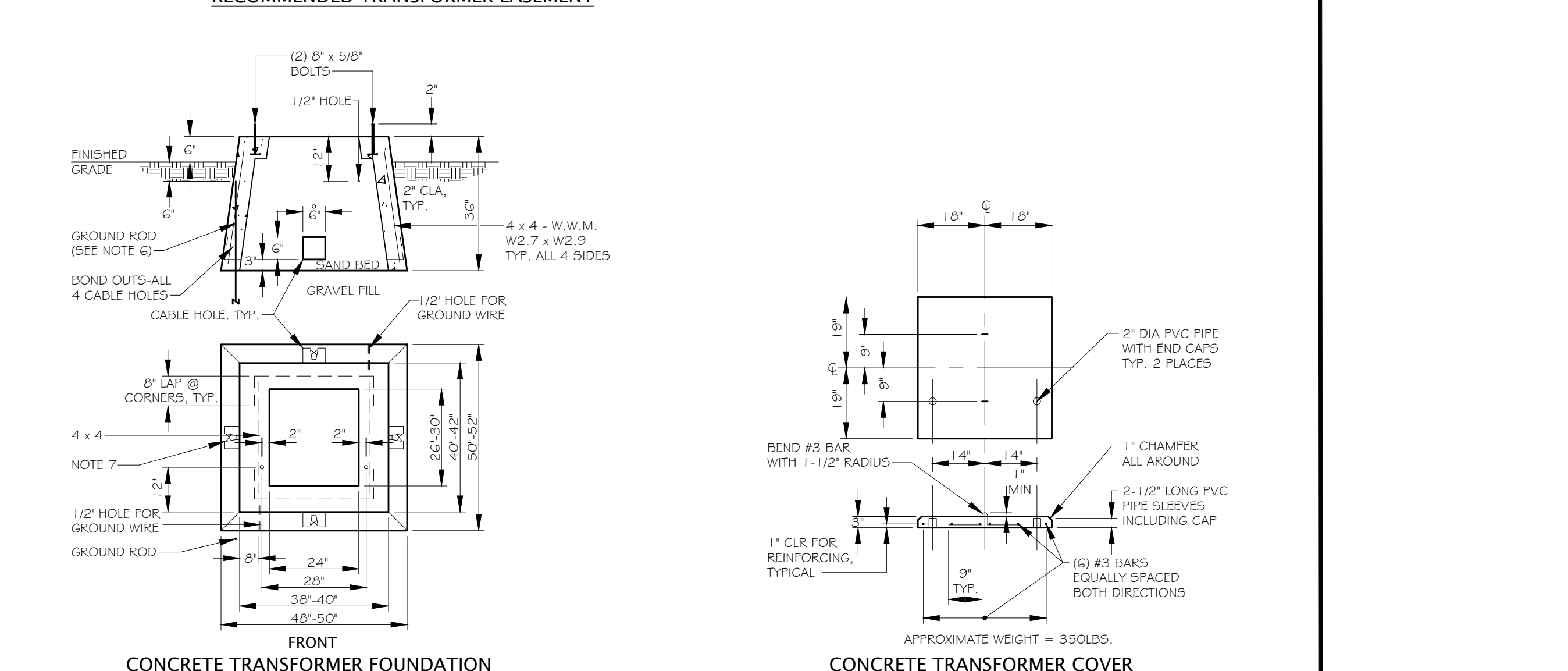
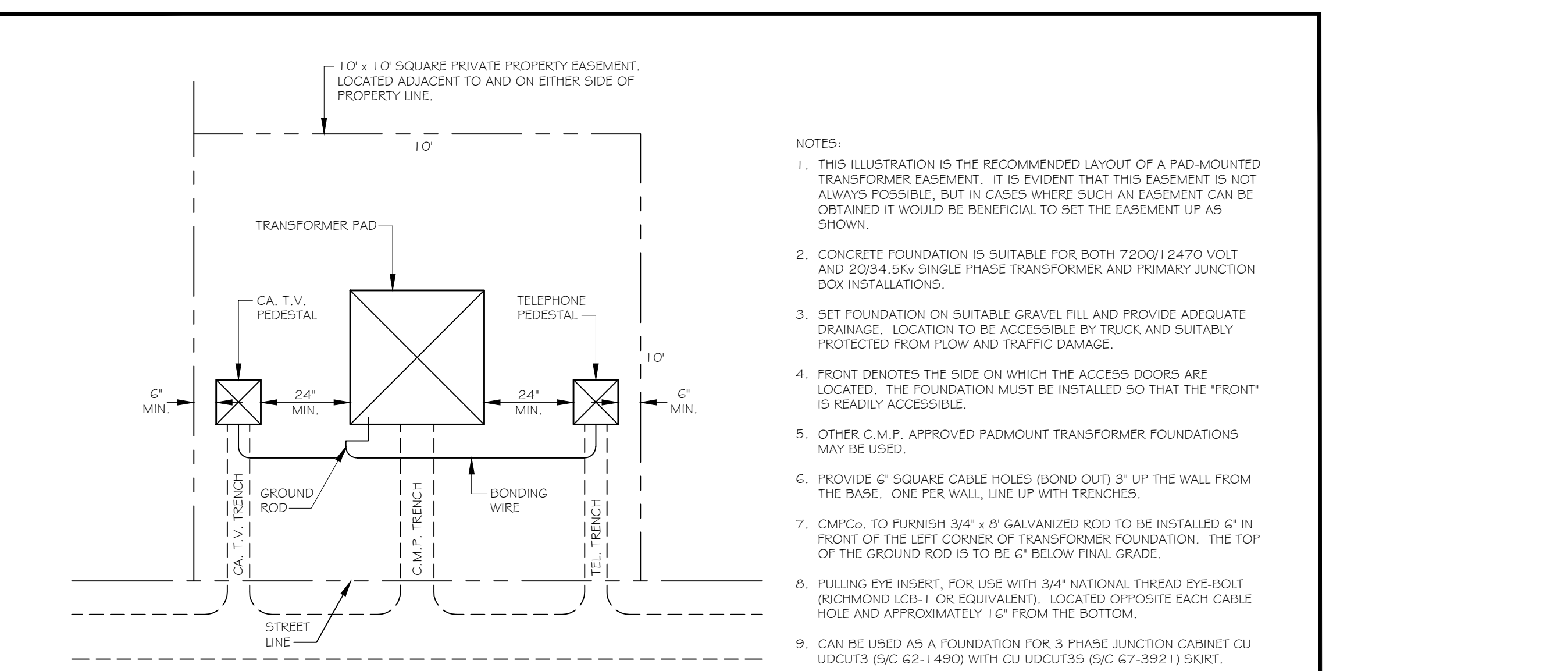
STILLWATER PINES SUBDIVISION  
WOODCOCK DRIVE, MAINE 04261  
EROSION & SEDIMENTATION  
CONTROL DETAILS  
ALLEN HAMILTON & BEN GROVER  
170 SHAKER ROAD  
GRAY, MAINE 04039

Atlantic Resource Consultants  
541 US Route One  
Freeport, ME 04032  
Tel: 207.869.9050

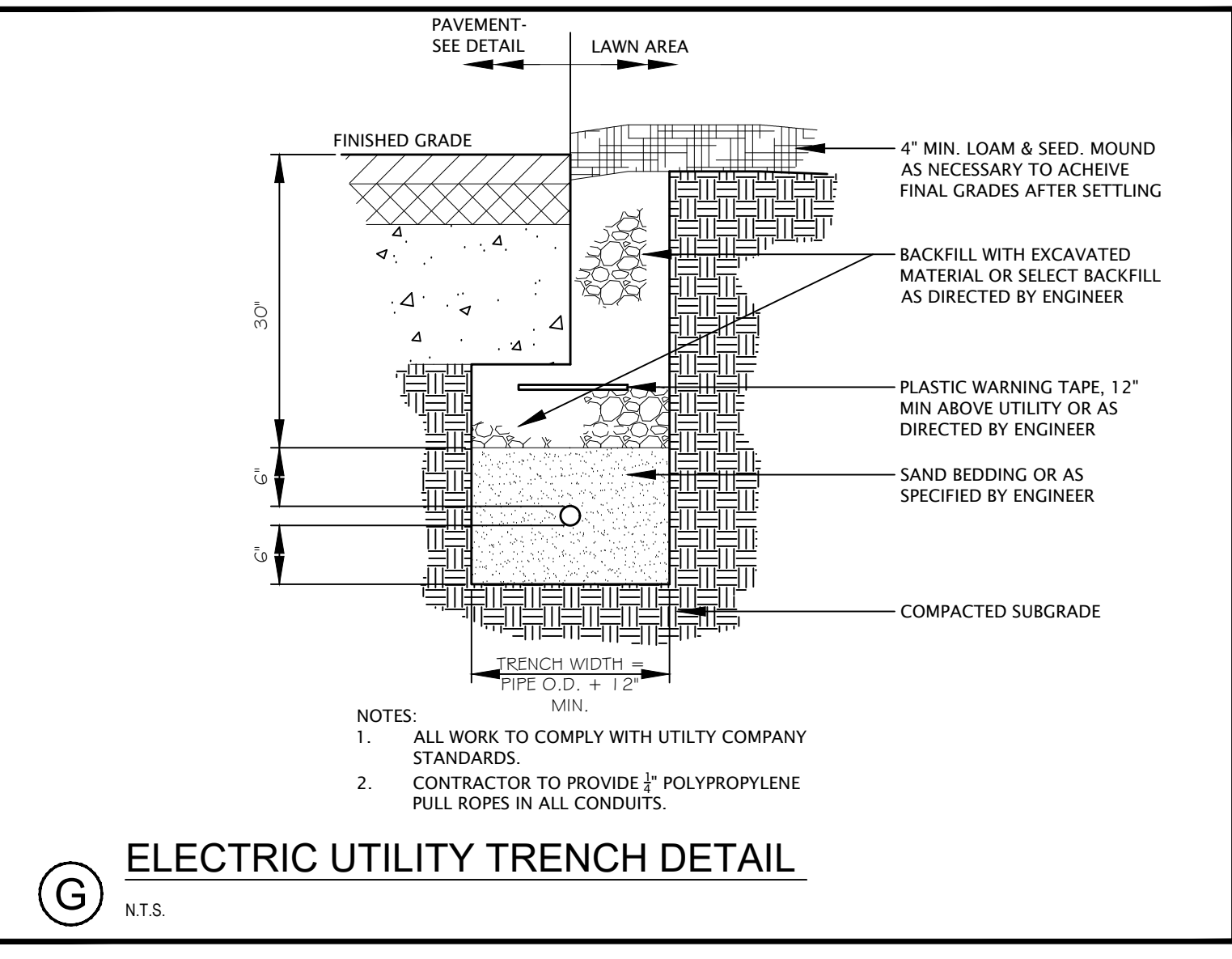
DRAWN: MPV/CEB DATE: JUNE 2021  
DESIGNED: CEB/MPV SCALE: N.T.S.  
CHECKED: JAV/CEB JOB NO. 20-012  
FILE NAME:  
SHEET: C-301



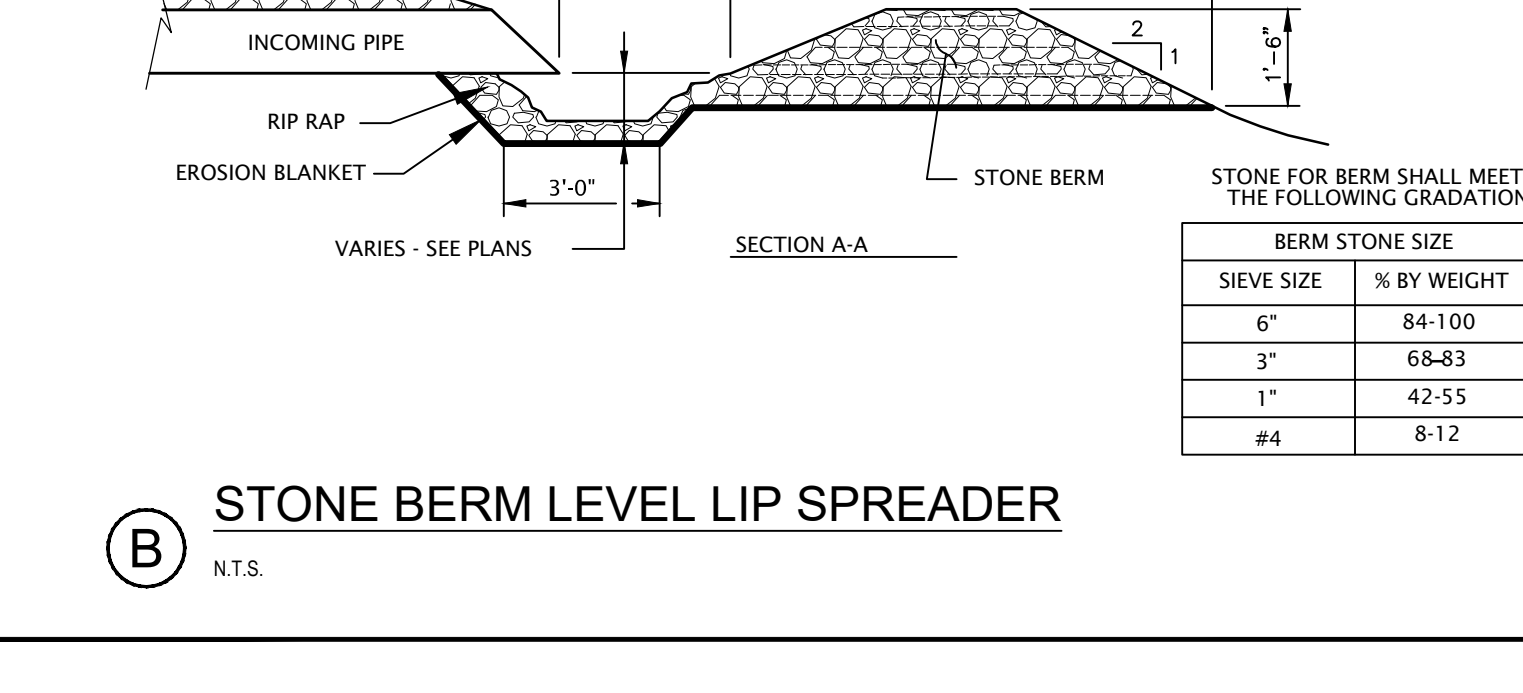
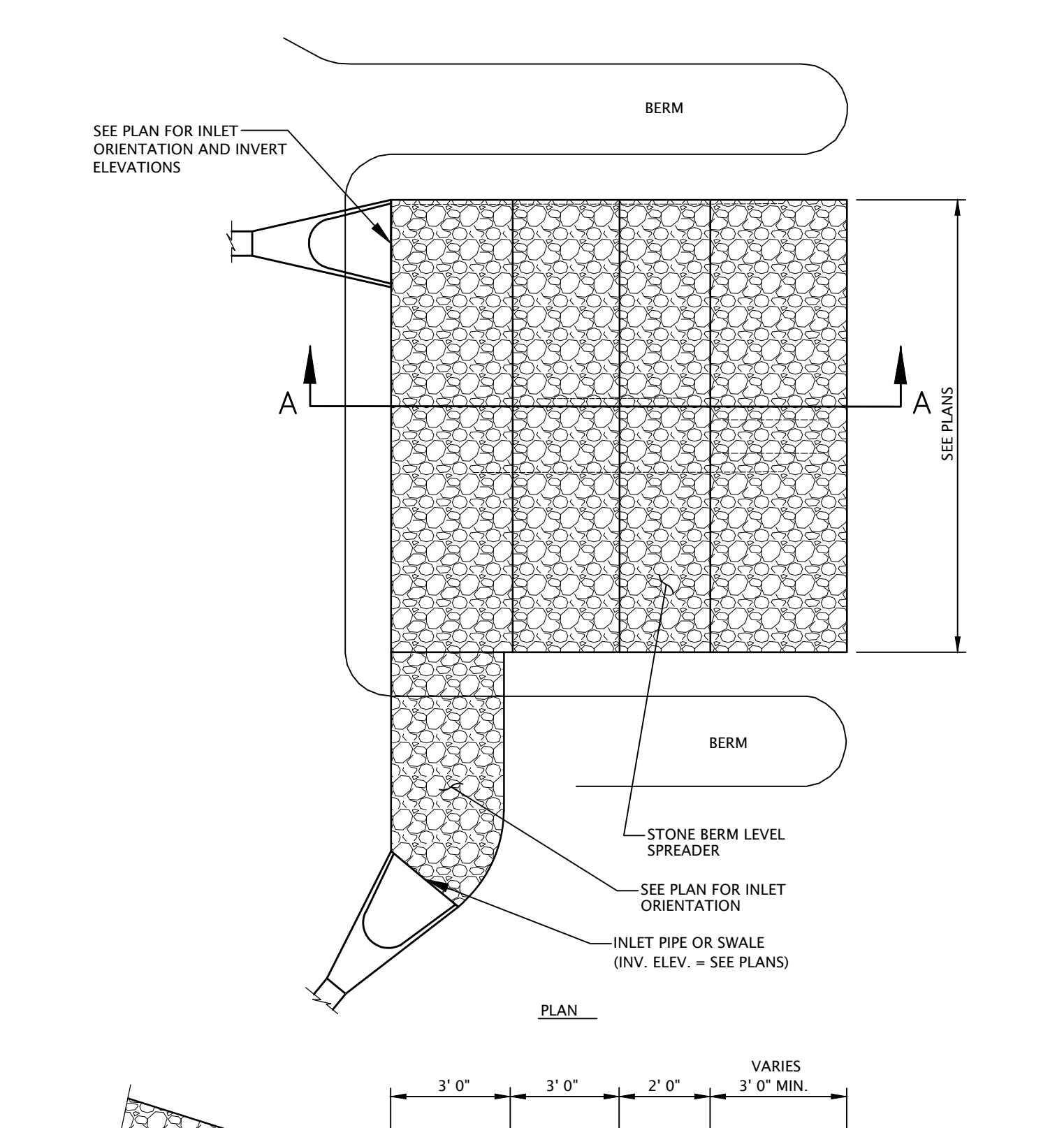
**E WOODCOCK DRIVE EXTENSION**  
N.T.S.



**F CENTRAL MAINE POWER TRANSFORMER PAD**  
NOT TO SCALE



**B STONE BERM LEVEL LIP SPREADER**  
N.T.S.



**B STONE BERM LEVEL LIP SPREADER**  
N.T.S.

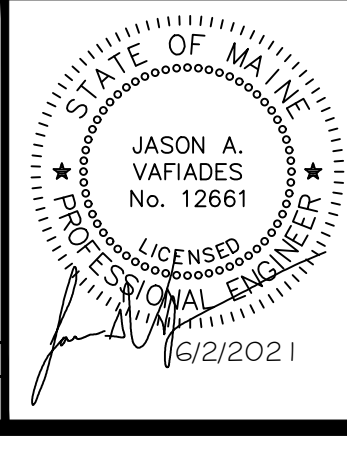
SERVICE	CONDUIT SIZE	CONDUIT TYPE		UTILITY	REMARKS
		GRASS AREAS	PAVED AREAS		
A	5"	SCHEDULE 40 PVC ELECTRICAL GRADE	RIGID GALVANIZED STEEL, ASTM A120	POWER	SEE NOTE 1
B	4"	SCHEDULE 40 PVC	RIGID GALVANIZED STEEL, ASTM A120	TELEPHONE	SEE NOTE 1
C	2"	SCHEDULE 40 PVC	RIGID GALVANIZED STEEL, ASTM A120	COMMUNICATION	

NOTES:  
1. ONE CONDUIT CAPPED FOR SPARE, PROVIDE GALVANIZED STEEL LONG SWEEP AT RISER POLE AND EXTEND GALVANIZED CONDUIT TO 10' ABOVE GRADE AT POLE WITH STAND-OFF BRACKETS.  
2. SEE SITE ELECTRICAL PLAN FOR LOCATION AND NUMBER OF CONDUITS.

**D COMBINED UTILITY TRENCH DETAIL**  
N.T.S.

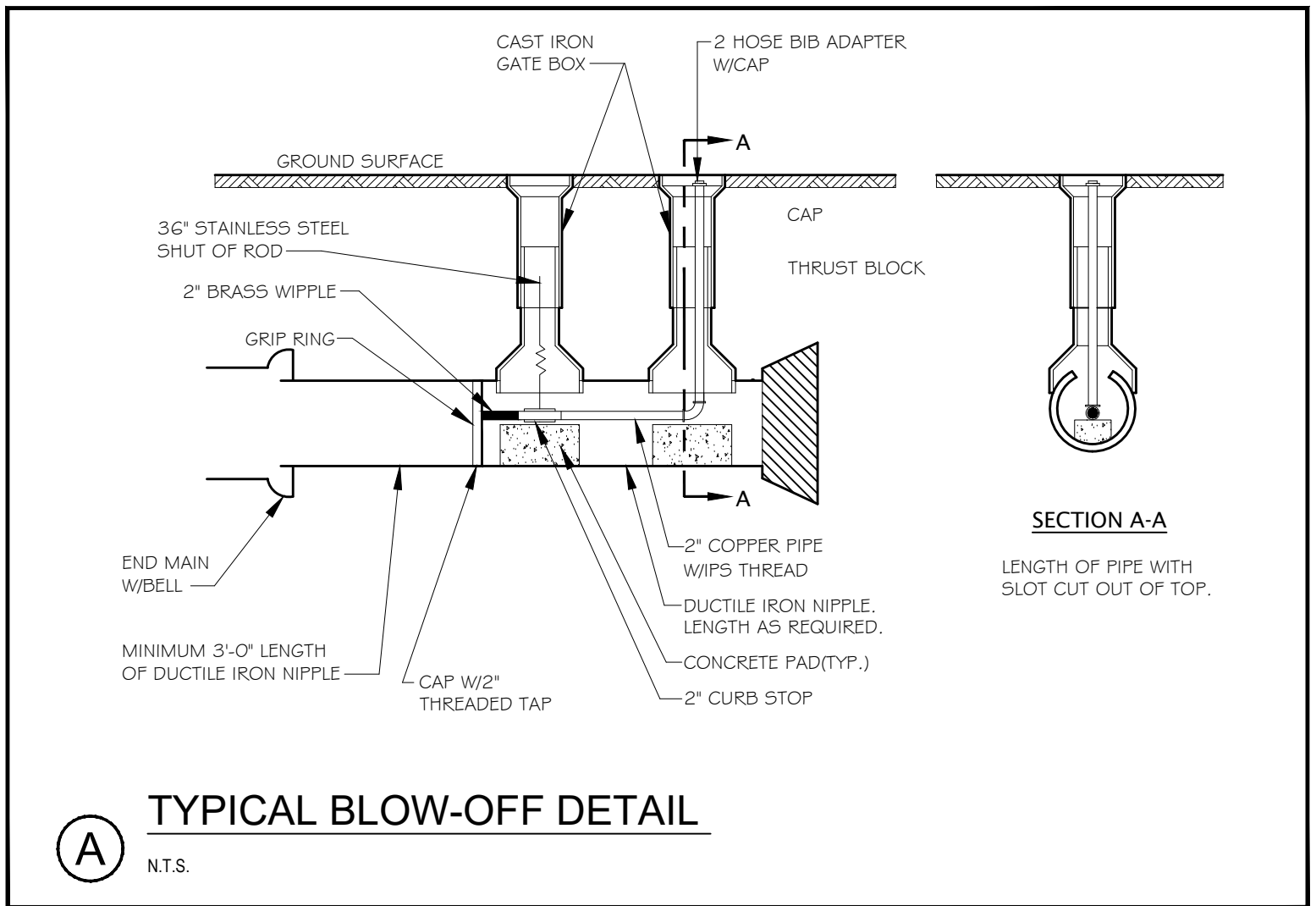
SUBMITTED FOR  
FINAL PLAN  
REVIEW

REV	DATE	DESCRIPTION	REVISIONS

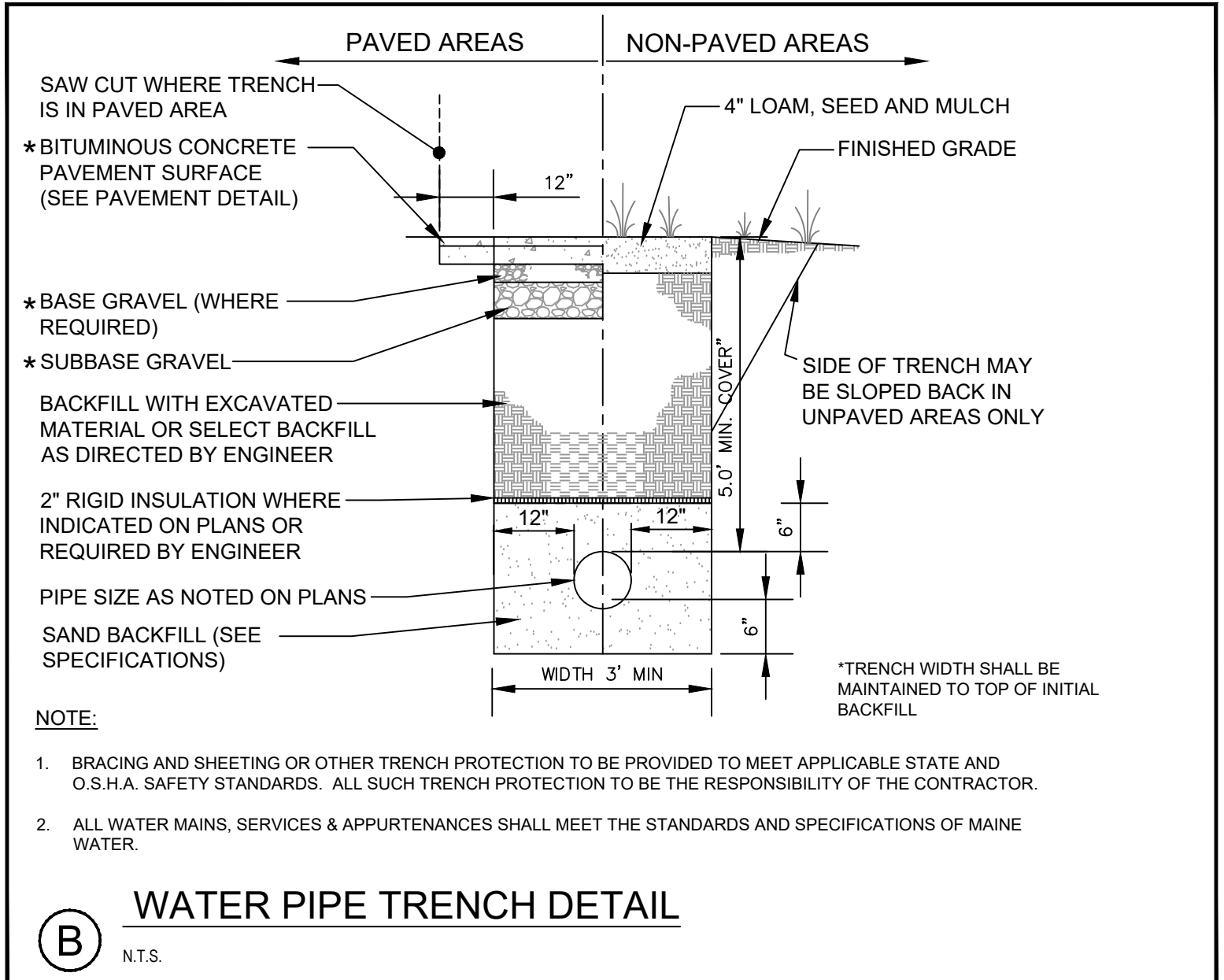


STILLWATER PINES SUBDIVISION  
WOODCOCK DRIVE, MAINE 04261  
**SITE CIVIL**  
DETAILS I  
ALLEN HAMILTON & BEN GROVER  
170 SHAKER ROAD  
GRAY, MAINE 04039

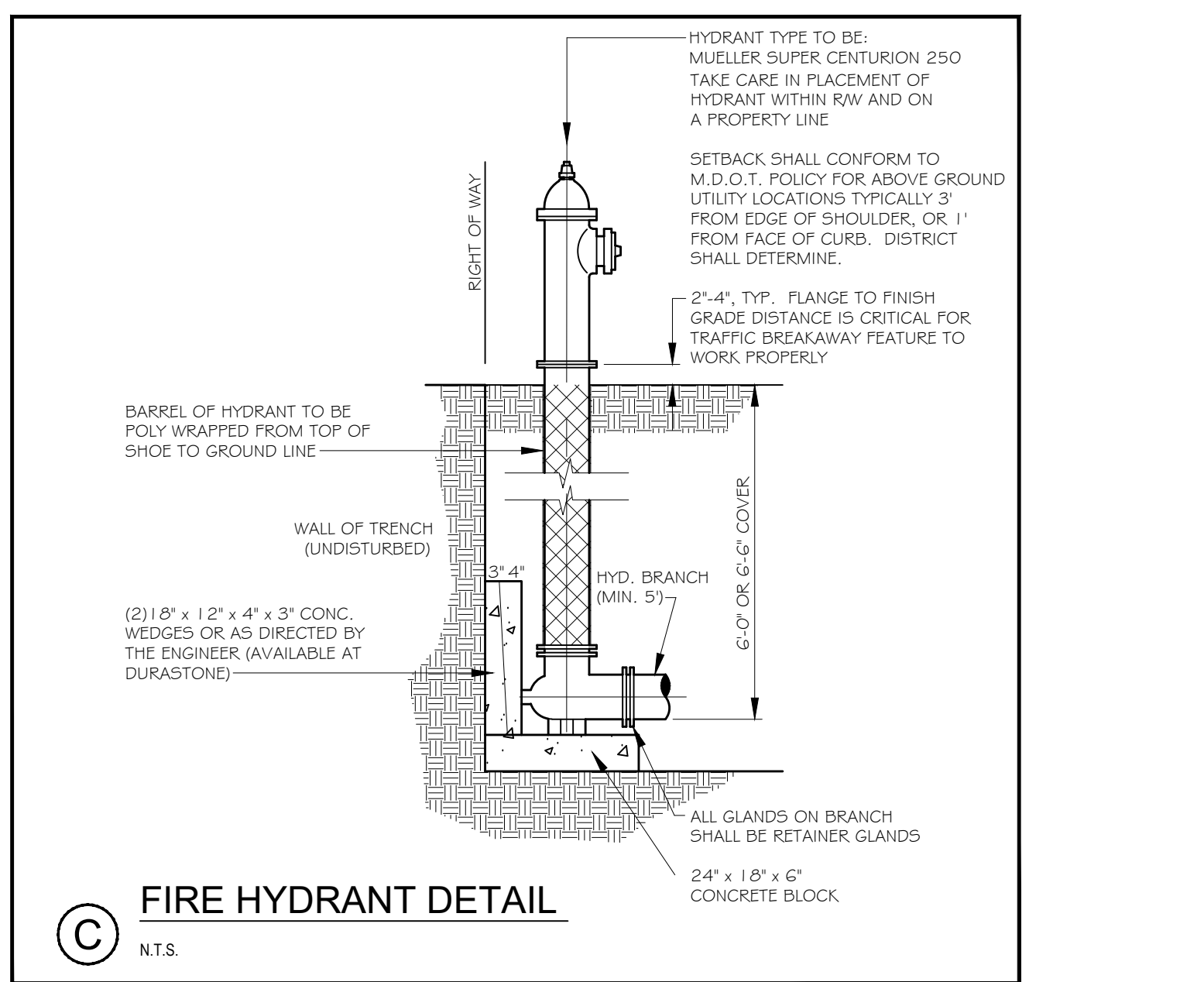
Atlantic Resource Consultants  
541 US Route One  
Freeport, ME 04032  
Tel: 207.869.9050  
DRAWN: MPV DATE: JUNE 2021  
DESIGNED: CEB/MPV SCALE: N.T.S.  
CHECKED: JAV/CEB JOB NO. 20-012  
FILE NAME:  
SHEET: C-302



**(A) TYPICAL BLOW-OFF DETAIL**  
N.T.S.



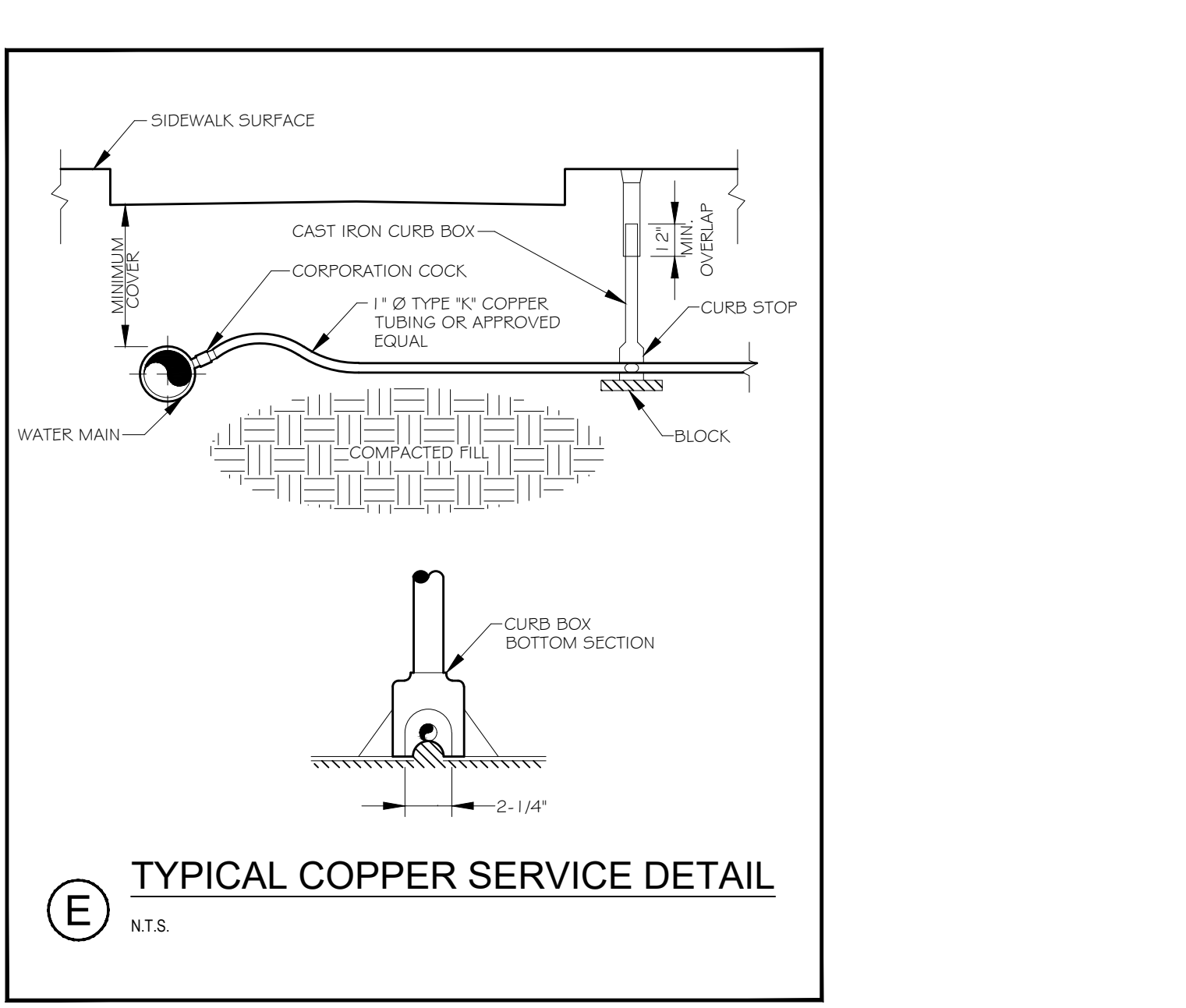
**(B) WATER PIPE TRENCH DETAIL**  
N.T.S.



**(C) FIRE HYDRANT DETAIL**  
N.T.S.

(HORIZONTAL) BEARING AREA OF THRUST BLOCKS IN SQUARE FEET										(VERTICAL) VOLUME OF THRUST BLOCK IN CUBIC YARDS					
FITTING SIZE	TEE, WYE, DEAD END AND HYDRANT	STRADDLE BLOCK	90° BEND FLANGED CROSS	TEE FLANGED ON RUN	45° BEND	22-1/2° BEND	11-1/4° BEND	90° BEND	45° BEND	22-1/2° BEND	11-1/4° BEND				
4	1.0	1.6	1.4	1.9	1.4	1.0	---	---	---	---	---				
6	2.1	3.7	3.0	4.3	3.0	1.6	---	1.3	---	---	---				
8	3.8	6.5	5.3	7.6	5.4	2.9	1.5	1.0	2.3	1.1	---				
10	5.9	10.2	8.4	11.8	8.4	4.6	2.4	1.2	3.7	1.8	---				
12	8.5	14.7	12.0	17.0	12.0	6.6	3.4	1.7	5.5	2.8	1.2				
14	11.5	---	16.3	23.0	16.3	8.9	4.6	2.3	7.6	3.9	1.7				
16	15.0	26.1	21.3	30.0	21.3	11.6	6.0	3.0	9.9	5.1	2.3	0.9			
18	19.0	---	27.0	38.0	27.0	14.6	7.6	3.8	---	---	---				
20	23.5	40.8	33.3	47.0	33.3	18.1	9.4	4.7	---	---	---				
24	34.0	58.8	48.0	68.0	48.0	26.2	13.6	6.8	---	---	---				

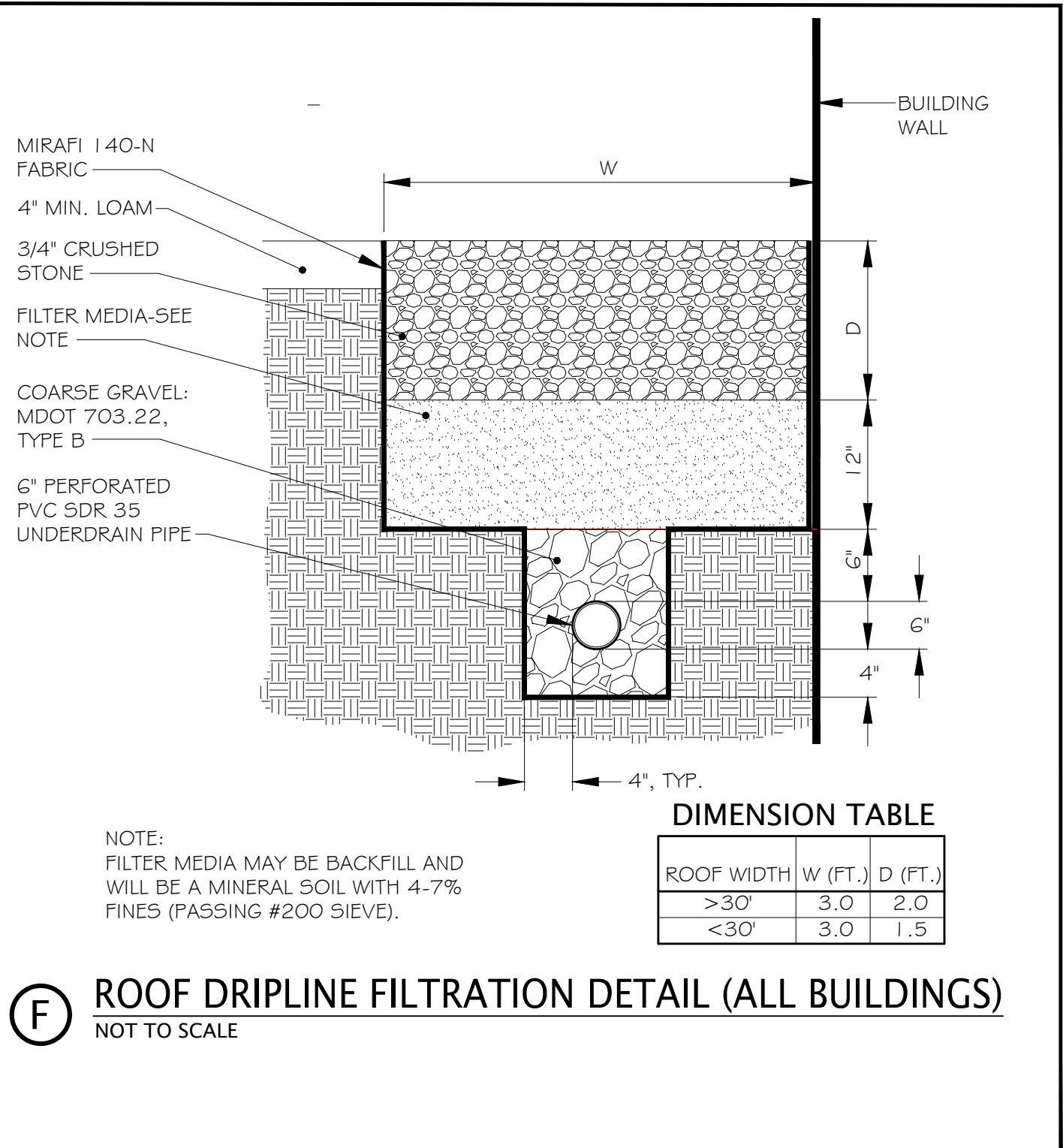
NOTES:  
 1. ABOVE BEARING AREAS BASED ON TEST PRESSURE OF 150 PSI AND AN ALLOWABLE SOIL BEARING STRESS OF 2000 POUNDS PER SQUARE FOOT. TO COMPUTE BEARING AREAS FOR DIFFERENT TEST PRESSURES AND SOIL BEARING STRESSES, USE THE FOLLOWING EQUATION: BEARING AREA = (TEST PRESSURE / 150) x (2000 / SOIL BEARING STRESS) x (TABLE VALUE)  
 2. ABOVE VOLUMES BASED ON TEST PRESSURE OF 150 PSI AND THE WEIGHT OF CONCRETE = 4050 POUNDS PER CUBIC YARD. TO COMPUTE FOR DIFFERENT TEST PRESSURES, USE THE FOLLOWING EQUATION: VOLUME = (TEST PRESSURE / 150) x (TABLE VALUE)



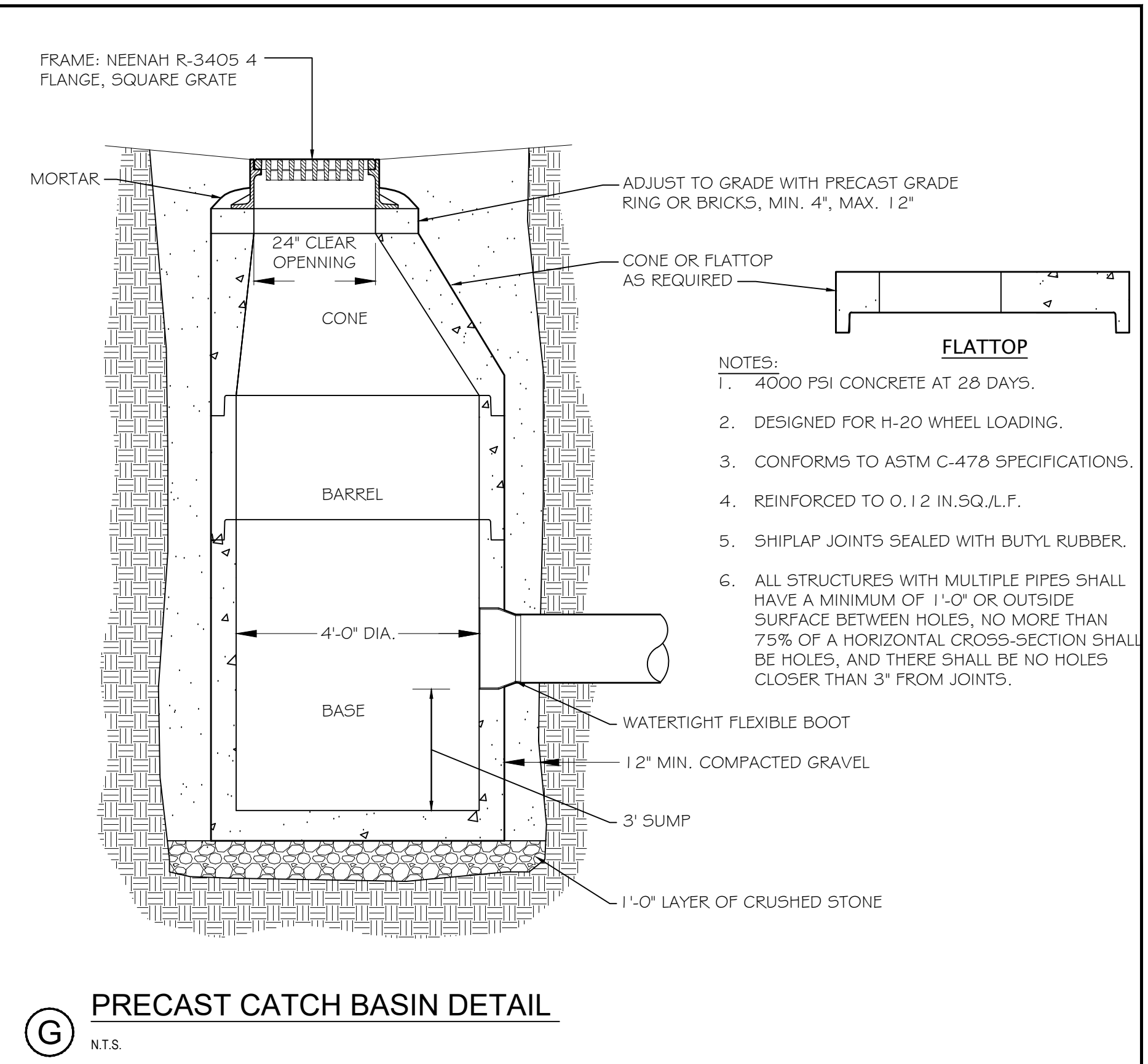
**(D) THRUST BLOCKING DETAIL**  
N.T.S.



**(E) TYPICAL COPPER SERVICE DETAIL**  
N.T.S.



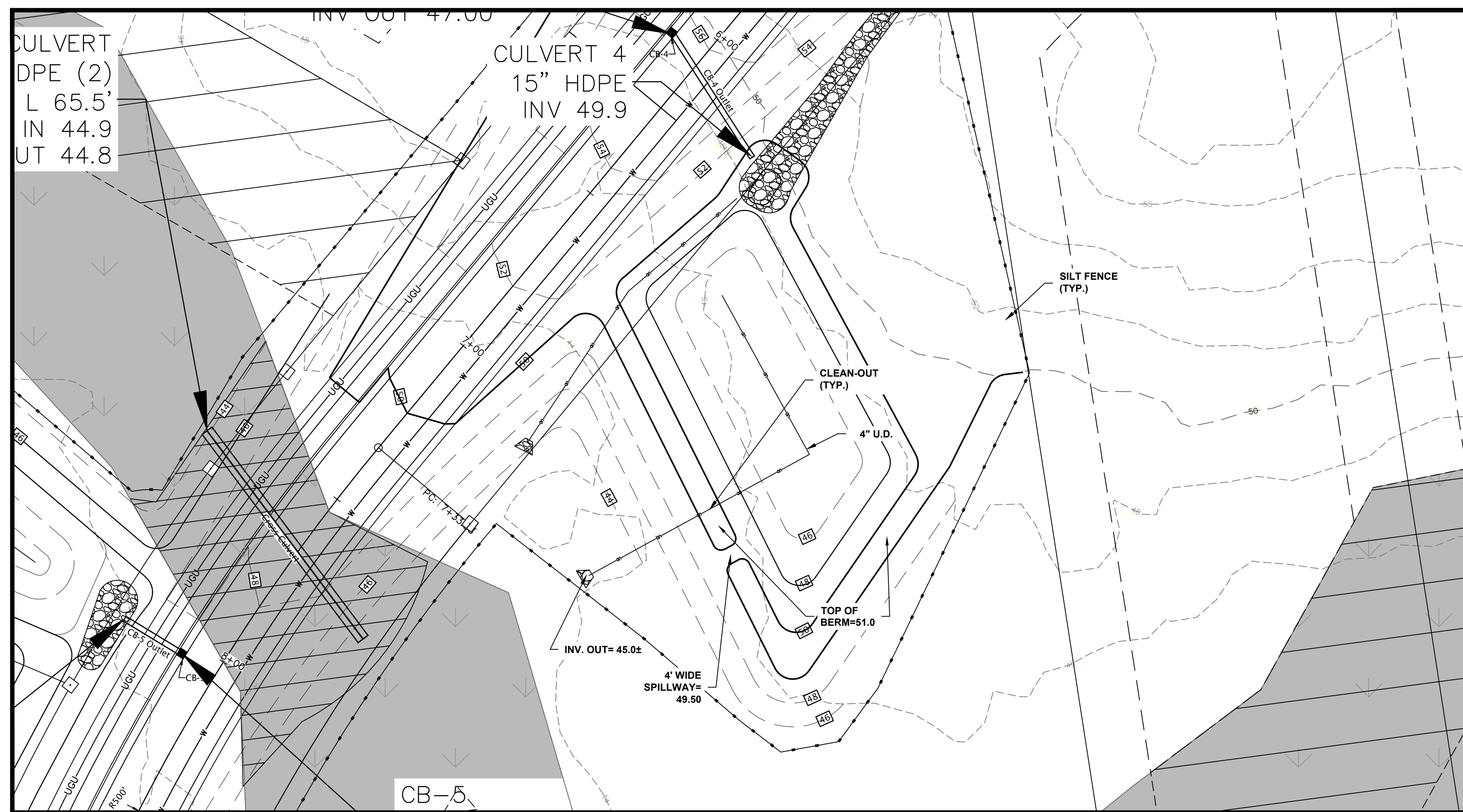
**(F) ROOF DRIPLINE FILTRATION DETAIL (ALL BUILDINGS)**  
NOT TO SCALE



**(G) PRECAST CATCH BASIN DETAIL**  
N.T.S.

SUBMITTED FOR  
FINAL PLAN  
REVIEW

			STILLWATER PINES SUBDIVISION WOODCOCK DRIVE, MAINE 04261 <b>SITE CIVIL</b> <b>DETAILS II</b>	Atlantic Resource Consultants 541 US Route One Freeport, ME 04032 Tel: 207.869.9050
REV	DATE	DESCRIPTION	ALLEN HAMILTON & BEN GROVER 170 SHAKER ROAD GRAY, MAINE 04039	DRAWN: MPV DESIGNED: CEB/MPV CHECKED: JAV/CEB FILE NAME: SHEET: C-303
		REVISIONS		DATE: JUNE 2021 SCALE: N.T.S. JOB NO. 20-012



PLAN VIEW: UNDERDRAINED SOIL FILTER BASIN UDSF-1  
SCALE 1" = 20'

**BIORETENTION AND UNDERDRAINED FILTER NOTES**

1. FILTER SOIL MATERIAL FOR UNDERDRAINED SOIL FILTERS AND BIORETENTION AREAS SHALL COMPRISE A TOPSOIL LAYER AND A LAYER OF LOAMY COARSE SAND AS FOLLOWS:
  - A. TOPSOIL LAYER SHALL BE SIX INCHES DEEP AND SHALL COMPRISE USDA SANDY LOAM TOPSOIL WITH 5-8% HUMIFIED ORGANIC MATTER AND MINIMAL CLAY CONTENT (<5%). ORGANIC MATTER MAY BE ADDED TO PROVIDE SUFFICIENT NUTRIENT CONTENT TO SUPPORT PLANTINGS PROVIDED THAT THE TEXTURE REMAINS AS SPECIFIED.
  - B. THE LOAMY COARSE SAND LAYER SHALL BE 12 INCHES DEEP. THE PREFERRED MATERIAL SHALL HAVE A CLAY CONTENT <2% BUT HAVE BETWEEN 8% AND 15% PASSING THE #200 SIEVE, 15-40% PASSING THE #60, 70-100% PASSING THE #20, AND 85-100% PASSING THE #10.
  - C. UNDERDRAIN GRAVELS SHALL MEET THE SPECIFICATION REQUIREMENTS GIVE IN MDOT SPECIFICATION 703.22.
  - D. SOIL FILTER MEDIA SHALL NOT BE INSTALLED UNTIL ALL UPSTREAM CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
2. IMPERMEABLE LINERS FOR BIORETENTION CELLS, AND UNDERDRAINED FILTERS SHALL BE A STRING REINFORCED POLYETHYLENE MEMBRANE WITH A MINIMUM THICKNESS OF 30 MILS - BTL-30 BY BEND TARP AND LINER OR APPROVED EQUAL.
3. A CONSERVATION TYPE SEED MIXTURE SHOULD BE USED (OR A 48 LBS/ACRE MIXTURE CONTAINING 20 LBS/ACRE CREEPING RED FESCUE AND TAIL TALL FESCUE EACH PLUS 8 LBS/ACRE OF BIRDSFOOT TREFOLI.

**Underdrained Soil Filter**

Construction Sequence: The filter media must not be installed until the area that drains to the filter has been permanently stabilized with pavement or other structure, 90% vegetation cover, or other permanent stabilization unless the runoff from the contributing drainage area is diverted around the filter until stabilization is complete.

Construction Oversight: Inspection by a professional engineer will occur at a minimum:

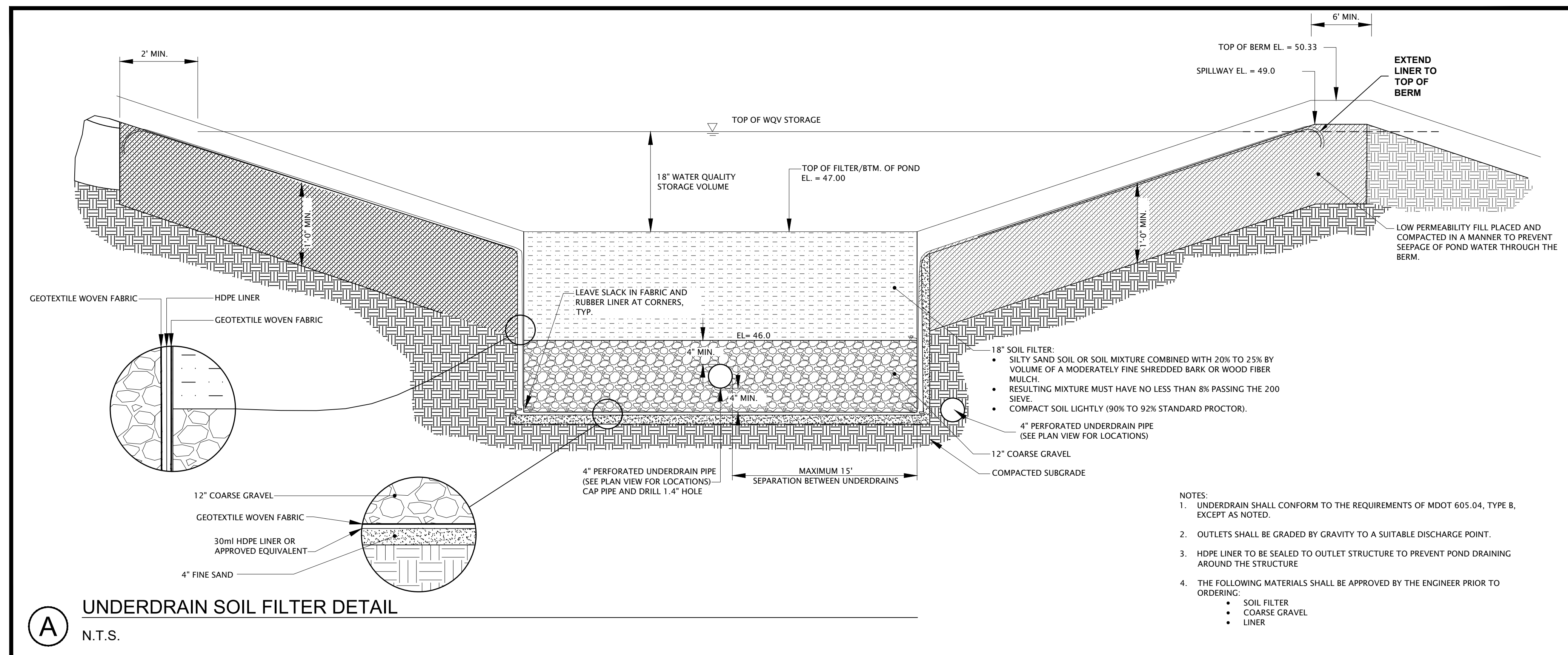
- o After the preliminary construction of the filter grades and once the underdrain pipes are installed but not backfilled,
- o After the drainage layer is constructed and prior to the installation of the filter media,
- o After the filter media has been installed and seeded.
- o After one year to inspect health of the vegetation and make corrections.
- o After the system has been brought up to final grade.

All the material used for the construction of the filter media must be confirmed as suitable by the design engineer. Testing must be done by a certified laboratory to show that they are passing DEP specifications.

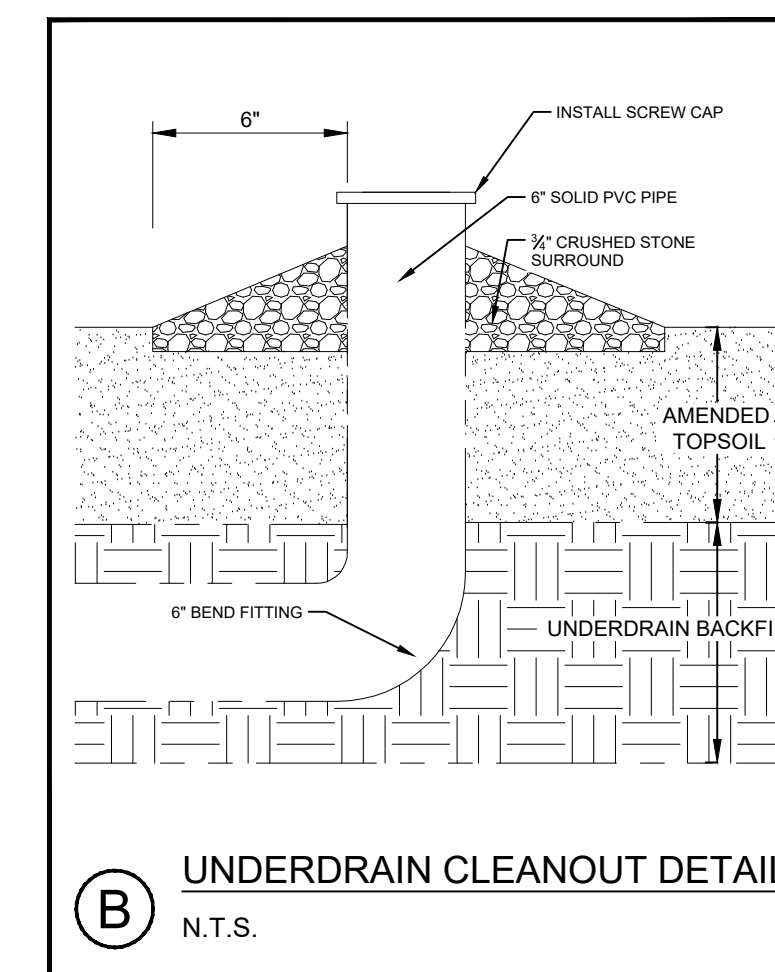
Testing and Submittals: The contractor shall identify the location of the source of each component of the filter media. All results of field and laboratory testing shall be submitted to the project engineer for confirmation. The Contractor shall:

- o Select samples for sampling of each type of material to be blended for the mixed filter media and samples of the underdrain bedding material. Samples must be composite of three different locations (Grabs) from the stockpile or pit face. Sample size required will be determined by the testing laboratory.
- o Perform a sieve analysis conforming to STM C136 (Standard Testing Method for Sieve Analysis of fine and Coarse Aggregates 1996A) on each type of the sample material. The resulting soil filter media mixture must have 8% to 12% by weight passing the # 2100 sieve, a clay content of less than 2% (determined hydrometer grain size analysis) and have 10% dry weight of organic matter.
- o Perform a permeability test on the soil filter media mixture conforming to ASTM D2434 with the mixture compacted to 90-92% of maximum dry density based on ASTM D698.

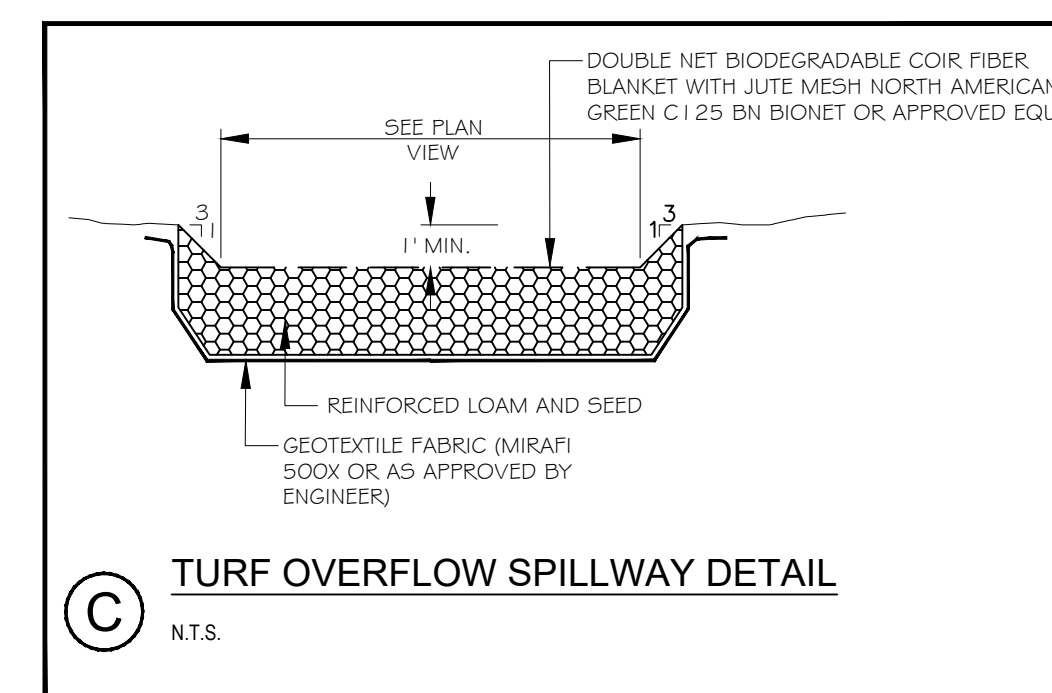
Within 30 days of completion of the underdrained filter basin, the applicant must submit a log of inspection reports detailing the items inspected, photos taken, and the dates of each inspection to the Bureau of Land Resources for review.



**(A) UNDERDRAIN SOIL FILTER DETAIL**  
N.T.S.



**(B) UNDERDRAIN CLEANOUT DETAIL**  
N.T.S.

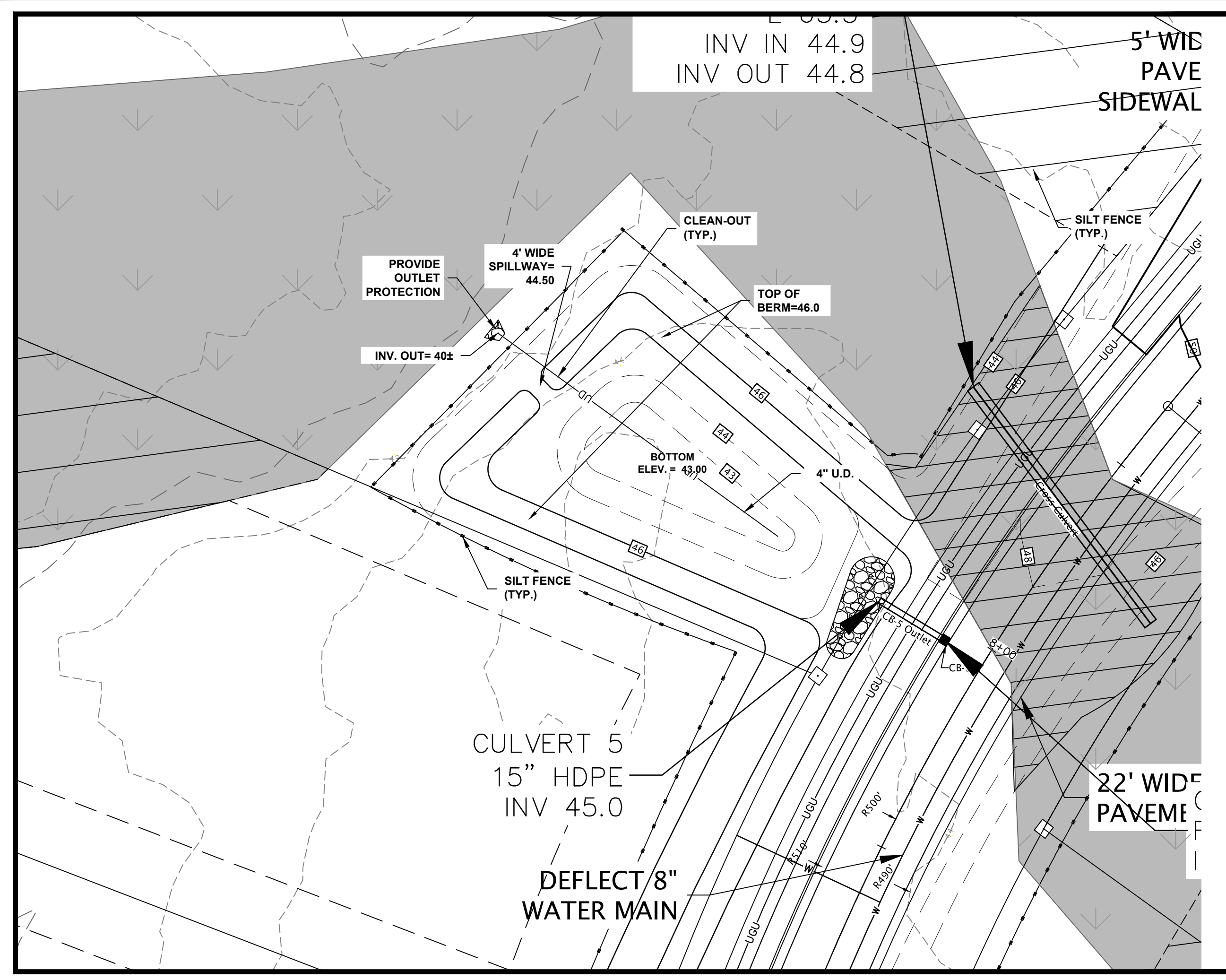


**(C) TURF OVERFLOW SPILLWAY DETAIL**  
N.T.S.

- NOTES:
1. UNDERDRAIN SHALL CONFORM TO THE REQUIREMENTS OF MDOT 605.04, TYPE B, EXCEPT AS NOTED.
  2. OUTLETS SHALL BE GRADED BY GRAVITY TO A SUITABLE DISCHARGE POINT.
  3. HDPE LINER TO BE SEALED TO OUTLET STRUCTURE TO PREVENT POND DRAINING AROUND THE STRUCTURE
  4. THE FOLLOWING MATERIALS SHALL BE APPROVED BY THE ENGINEER PRIOR TO ORDERING:
    - SOIL FILTER
    - COARSE GRAVEL
    - LINER

FINAL PLAN REVIEW

			STILLWATER PINES SUBDIVISION WOODCOCK DRIVE, MAINE 04261  SITE CIVIL DETAILS III  ALLEN HAMILTON & BEN GROVER 170 SHAKER ROAD GRAY, MAINE 04039	Atlantic Resource Consultants 541 US Route One Freeport, ME 04032 Tel: 207.869.9050
REV	DATE	DESCRIPTION	DRAWN: MPV/CGB DESIGNED: CGB/MPV CHECKED: JAV/CGB FILE NAME: SHEET: C-304	DATE: JUNE 2021 SCALE: AS SHOWN JOB NO. 20-012



PLAN VIEW: UNDERDRAINED SOIL FILTER BASIN UDSF-2  
SCALE 1" = 20'

**BIORETENTION AND UNDERDRAINED FILTER NOTES**

1. FILTER SOIL MATERIAL FOR UNDERDRAINED SOIL FILTERS AND BIORETENTION AREAS SHALL COMPRISE A TOPSOIL LAYER AND A LAYER OF LOAMY COARSE SAND AS FOLLOWS:
  - A. TOPSOIL LAYER SHALL BE SIX INCHES DEEP AND SHALL COMPRISE USDA SANDY LOAM TOPSOIL WITH 5-8% HUMIFIED ORGANIC MATTER AND MINIMAL CLAY CONTENT (<5%). ORGANIC MATTER MAY BE ADDED TO PROVIDE SUFFICIENT NUTRIENT CONTENT TO SUPPORT PLANTINGS PROVIDED THAT THE TEXTURE REMAINS AS SPECIFIED.
  - B. THE LOAMY COARSE SAND LAYER SHALL BE 12 INCHES DEEP. THE PREFERRED MATERIAL SHALL HAVE A CLAY CONTENT <2% BUT HAVE BETWEEN 8% AND 15% PASSING THE #200 SIEVE, 15-40% PASSING THE #60, 70-100% PASSING THE #20, AND 85-100% PASSING THE #10.
  - C. FILTER SOIL MATERIAL SHALL BE PLACED IN 12-INCH LIFTS USING LGP EQUIPMENT OR BY HAND. LGP EQUIPMENT SHALL EXERT A GROUND PRESSURE OF LESS THAN 5 PSI, AS STATED IN THE EQUIPMENT SPECIFICATION FROM THE MANUFACTURER. MATERIAL SHALL BE GRADED TO PROVIDE AN EVEN SURFACE, SEEDED AND COVERED WITH EROSION CONTROL BLANKET.
  - D. UNDERDRAIN GRAVELS SHALL MEET THE SPECIFICATION REQUIREMENTS GIVE IN MDOT SPECIFICATION 703.22.
2. IMPERMEABLE LINERS FOR BIORETENTION CELLS, AND UNDERDRAINED FILTERS SHALL BE A STRING REINFORCED POLYETHYLENE MEMBRANE WITH A MINIMUM THICKNESS OF 30 MILS - BTL-30 BY BEND TARP AND LINER OR APPROVED EQUAL.
3. A CONSERVATION TYPE SEED MIXTURE SHOULD BE USED (OR A 48 LBS/ACRE MIXTURE CONTAINING 20 LBS/ACRE CREEPING RED FESCUE AND TAIL TALL FESCUE EACH PLUS 8 LBS/ACRE OF BIRDSFOOT TREFOL.

**Underdrained Soil Filter**

Construction Sequence: The filter media must not be installed until the area that drains to the filter has been permanently stabilized with pavement or other structure, 90% vegetation cover, or other permanent stabilization unless the runoff from the contributing drainage area is diverted around the filter until stabilization is complete.

Construction Oversight: Inspection by a professional engineer will occur at a minimum:

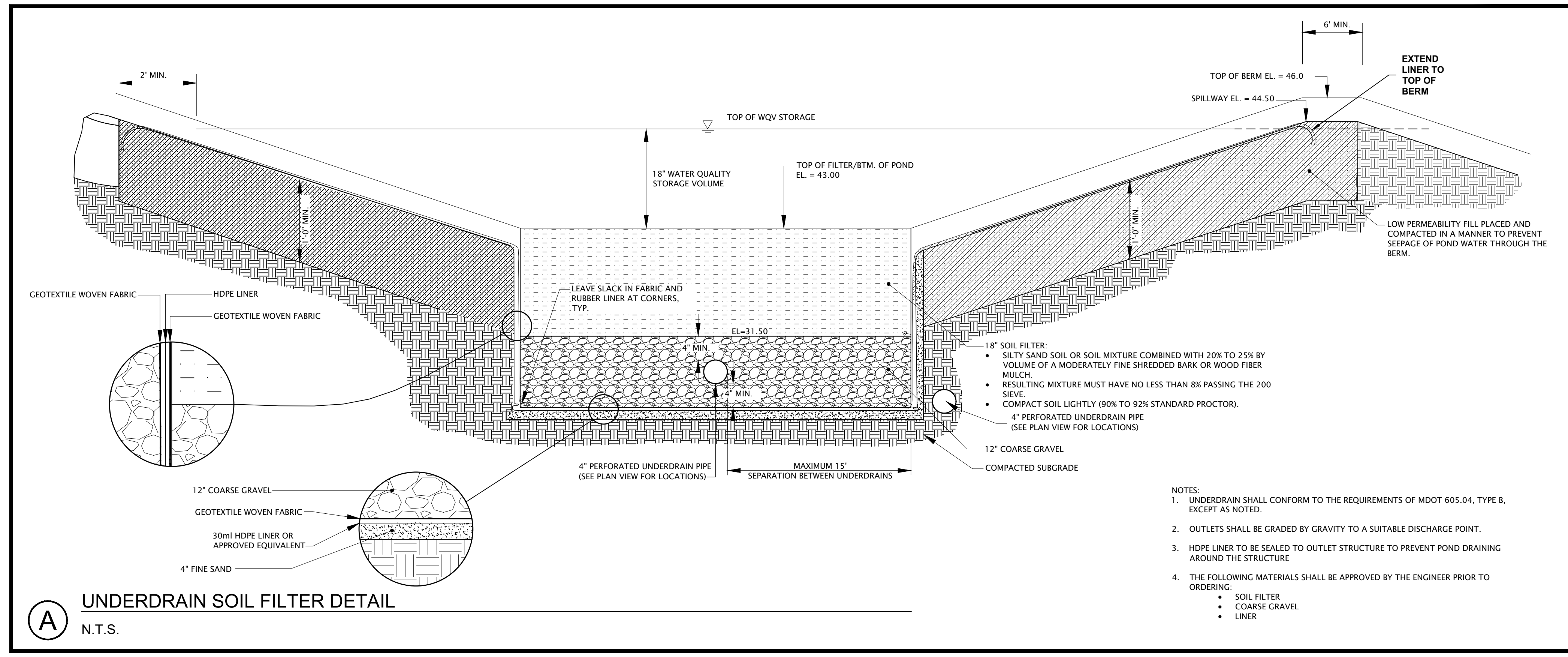
- o After the preliminary construction of the filter grades and once the underdrain pipes are installed but not backfilled,
- o After the drainage layer is constructed and prior to the installation of the filter media,
- o After the filter media has been installed and seeded.
- o After one year to inspect health of the vegetation and make corrections.
- o After the system has been brought up to final grade.

All the material used for the construction of the filter media must be confirmed as suitable by the design engineer. Testing must be done by a certified laboratory to show that they are passing DEP specifications.

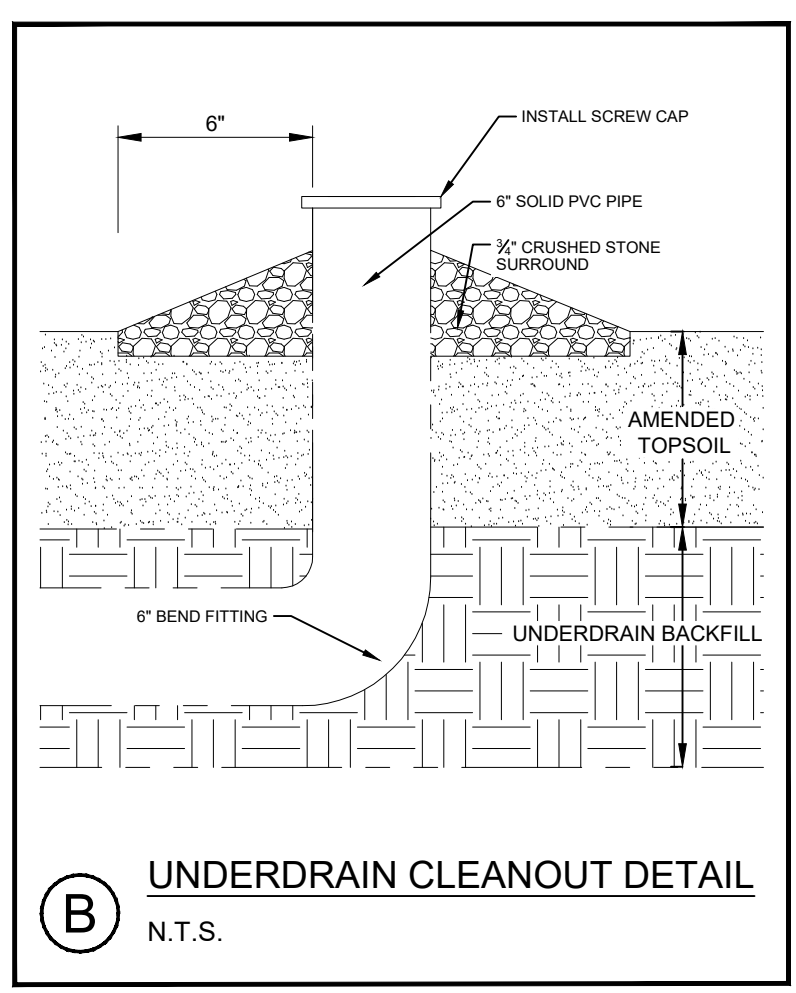
Testing and Submittals: The contractor shall identify the location of the source of each component of the filter media. All results of field and laboratory testing shall be submitted to the project engineer for confirmation. The Contractor shall:

- o Select samples for sampling of each type of material to be blended for the mixed filter media and samples of the underdrain bedding material. Samples must be composite of three different locations (Grabs) from the stockpile or pit face. Sample size required will be determined by the testing laboratory.
- o Perform a sieve analysis conforming to STM C136 (Standard Testing Method for Sieve Analysis of fine and Coarse Aggregates 1996A) on each type of the sample material. The resulting soil filter media mixture must have 8% to 12% by weight passing the # 2100 sieve, a clay content of less than 2% (determined hydrometer grain size analysis) and have 10% dry weight of organic matter.
- o Perform a permeability test on the soil filter media mixture conforming to ASTM D2434 with the mixture compacted to 90-92% of maximum dry density based on ASTM D698.

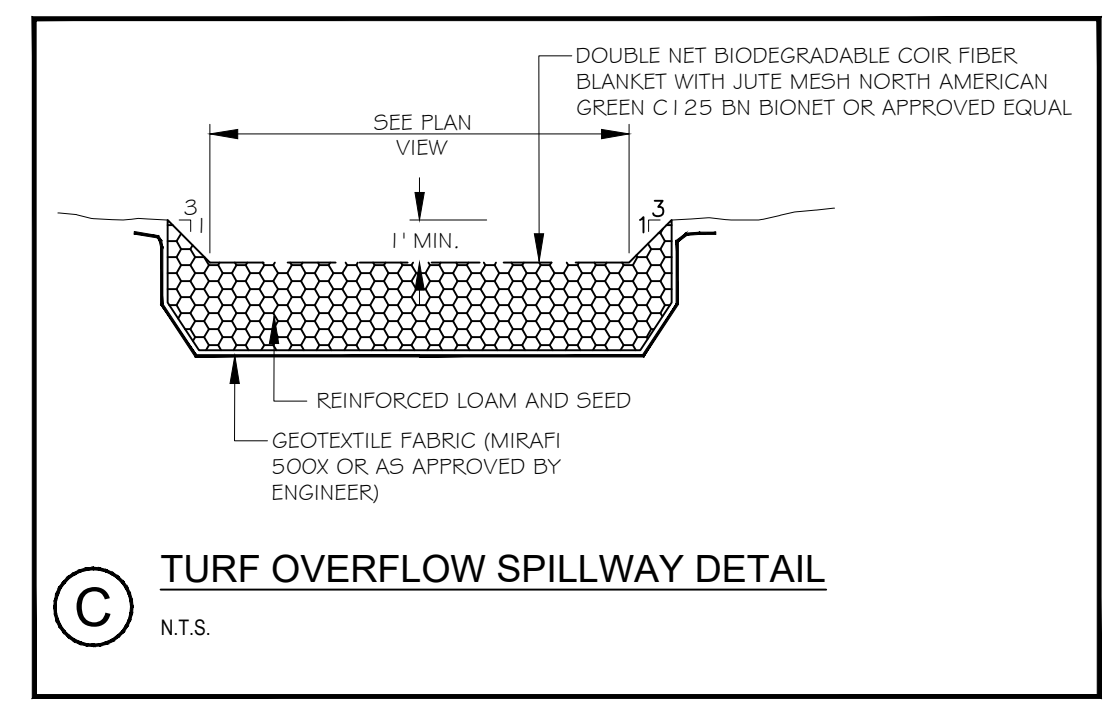
Within 30 days of completion of the underdrained filter basin, the applicant must submit a log of inspection reports detailing the items inspected, photos taken, and the dates of each inspection to the Bureau of Land Resources for review.



**(A) UNDERDRAIN SOIL FILTER DETAIL**  
N.T.S.



**(B) UNDERDRAIN CLEANOUT DETAIL**  
N.T.S.

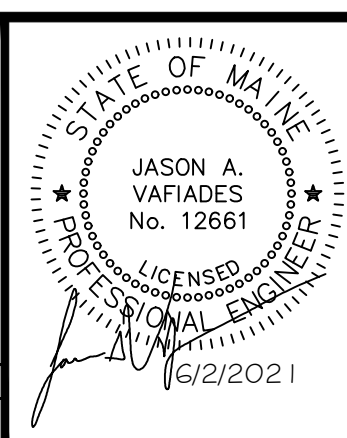


**(C) TURF OVERFLOW SPILLWAY DETAIL**  
N.T.S.

- NOTES:
1. UNDERDRAIN SHALL CONFORM TO THE REQUIREMENTS OF MDOT 605.04, TYPE B, EXCEPT AS NOTED.
  2. OUTLETS SHALL BE GRADED BY GRAVITY TO A SUITABLE DISCHARGE POINT.
  3. HDPE LINER TO BE SEALED TO OUTLET STRUCTURE TO PREVENT POND DRAINING AROUND THE STRUCTURE
  4. THE FOLLOWING MATERIALS SHALL BE APPROVED BY THE ENGINEER PRIOR TO ORDERING:
    - SOIL FILTER
    - COARSE GRAVEL
    - LINER

SUBMITTED FOR  
FINAL PLAN  
REVIEW

REV	DATE	DESCRIPTION
REVISIONS		



STILLWATER PINES SUBDIVISION  
WOODCOCK DRIVE, MAINE 04261

SITE CIVIL  
DETAILS IV

ALLEN HAMILTON & BEN GROVER  
170 SHAKER ROAD  
GRAY, MAINE 04039

Atlantic Resource Consultants  
541 US Route One  
Freeport, ME 04032  
Tel: 207.869.9050

DRAWN: MPV/CGB	DATE: JUNE 2021
DESIGNED: CEB/MPV	SCALE: AS SHOWN
CHECKED: JAV/CGB	JOB NO. 20-012
FILE NAME:	
SHEET: C-305	

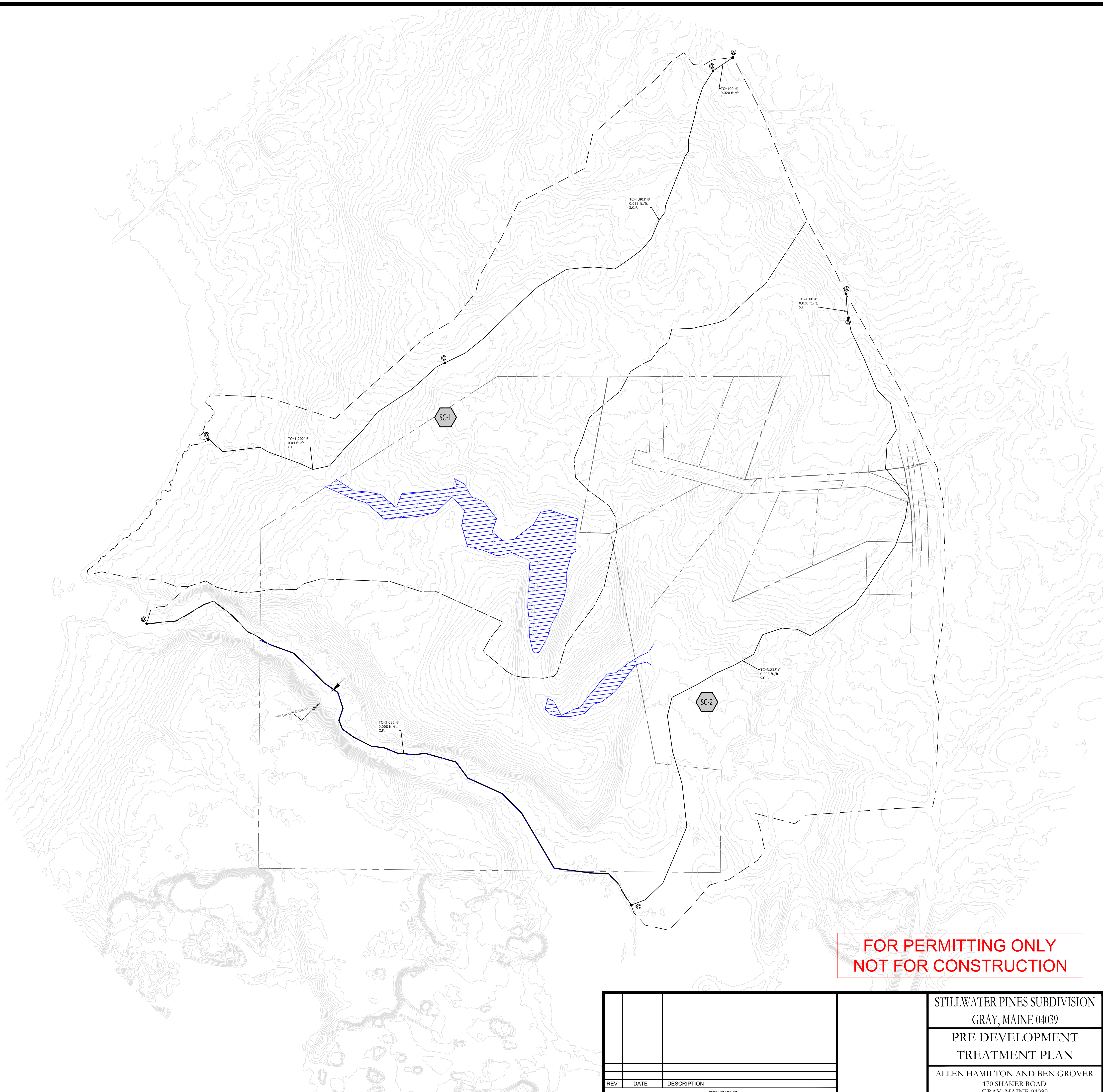


### LEGEND

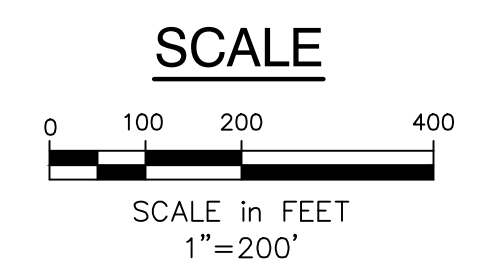
EXISTING	DESCRIPTION	PROPOSED
---	BOUNDARY LINE/R.O.W.	---
---	ABUTTER LINE/R.O.W.	---
---	SETBACK	---
---	EASEMENT	---
○	IRON PIPE/ROD	○
▭	BUILDING	▭
▨	WETLAND	▨
+	SIGN	+
---	EDGE PAVEMENT	---
---	EDGE CONCRETE	---
---	PAVEMENT PAINT	---
---	GRAVEL ROAD	---
---	CURBLINE	---
---	TREELINE	---
---	CONTOURS	---
x30.20	SPOT GRADE	142.0
---	STORMWATER FLOW	---
○	SEWER MANHOLE	○
▭	CATCH BASIN	▭
S	SEWER	S#
W	STORM DRAIN	W#
W	WATER	W#
+	WATER GATE VALVE	+
+	WATER SHUT OFF	+
+	HYDRANT	+
+	THRUST BLOCK	+
UGU	UNDERGROUND UTILITY	UGU
OHU	OVERHEAD UTILITY	OHU
↑	UTILITY POLE	↑
↑	GLY	↑
★	LIGHT POLE	★


### DRAINAGE LEGEND

4S	SUBCATCHMENT LABEL
4P	POND LABEL
3R	REACH LABEL
Ⓟ	REACH PATH
---	TIME OF CONCENTRATION
---	SUBCATCHMENT DIVIDE
---	SOILS BOUNDARY
● POA#1	POINT OF ANALYSIS



**FOR PERMITTING ONLY  
NOT FOR CONSTRUCTION**



		STILLWATER PINES SUBDIVISION GRAY, MAINE 04039		 <b>Atlantic Resource Consultants</b> 541 US Route One Freeport, ME 04032 Tel: 207.869.9050									
		PRE DEVELOPMENT TREATMENT PLAN											
<table border="1"> <thead> <tr> <th>REV</th> <th>DATE</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>		REV	DATE	DESCRIPTION							ALLEN HAMILTON AND BEN GROVER 170 SHAKER ROAD GRAY, MAINE 04039		DRAWN: CEB      DATE: JULY 2020 DESIGNED: CEB      SCALE: 1" = 200' CHECKED: CEB      JOB NO. 20-012 FILE NAME: SHEET: <b>D-101</b>
		REV	DATE	DESCRIPTION									



### LEGEND

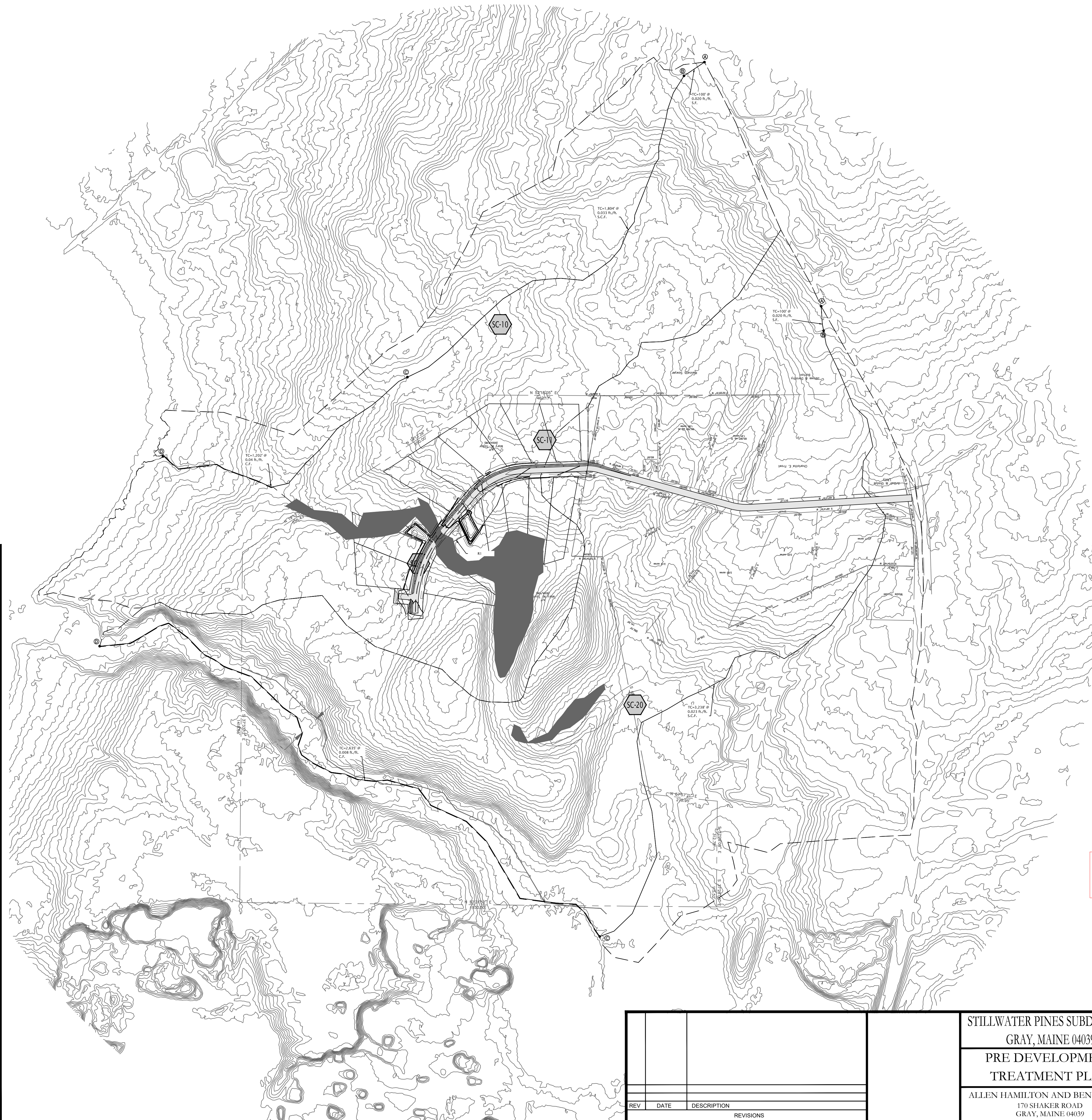
EXISTING	DESCRIPTION	PROPOSED
---	BOUNDARY LINE/R.O.W.	---
---	ABUTTER LINE/R.O.W.	---
---	SETBACK	---
---	EASEMENT	---
○	IRON PIPE/ROD	○
▭	BUILDING	▭
▨	WETLAND	▨
+	SIGN	+
---	EDGE PAVEMENT	---
---	EDGE CONCRETE	---
---	PAVEMENT PAINT	---
---	GRAVEL ROAD	---
---	CURBLINE	---
---	TREELINE	---
20	CONTOURS	20
x30.20	SPOT GRADE	142.0
---	STORMWATER FLOW	---
○	SEWER MANHOLE	○
▭	CATCH BASIN	▭
S	SEWER	S
W	STORM DRAIN	W
W	WATER	W
+	WATER GATE VALVE	+
+	WATER SHUT OFF	+
+	HYDRANT	+
+	THRUST BLOCK	+
UGU	UNDERGROUND UTILITY	UGU
OHU	OVERHEAD UTILITY	OHU
↑	UTILITY POLE	↑
↑	GLY	↑
★	LIGHT POLE	★

### SOILS LEGEND

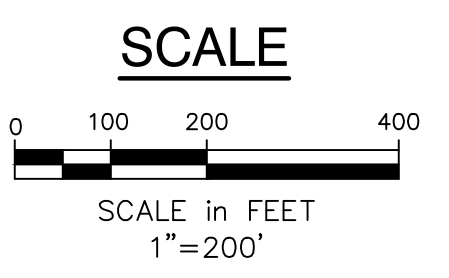
MAP UNIT SYMBOL	MAP UNIT NAME
CrB	Croghan loamy sand, 0-8 percent slopes
Na	Naumburg sand

### DRAINAGE LEGEND

4S	SUBCATCHMENT LABEL
4P	POND LABEL
3R	REACH LABEL
---	REACH PATH
---	TIME OF CONCENTRATION
---	SUBCATCHMENT DIVIDE
---	SOILS BOUNDARY
●	POINT OF ANALYSIS



FOR PERMITTING ONLY  
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	<b>STILLWATER PINES SUBDIVISION</b> GRAY, MAINE 04039	<b>Atlantic Resource Consultants</b> 541 US Route One Freeport, ME 04032 Tel: 207.869.9050												
	<b>PRE DEVELOPMENT</b> <b>TREATMENT PLAN</b>	DRAWN: CEB      DATE: JULY 2020 DESIGNED: CEB      SCALE: 1" = 200' CHECKED: CEB      JOB NO. 20-012 FILE NAME: SHEET: <b>D-101</b>												
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REV	DATE	DESCRIPTION												
REVISIONS														



**PLANNING BOARD/STAFF REVIEW COMMITTEE APPLICATION  
TOWN OF GRAY MAINE**

**PROPERTY TO BE DEVELOPED**

Property Location/Address	101 long hill rd	Property Map/Lot	059 .042 .002 .000
Zoning District	rural	Lot Acreage	7.56
Owner Name	stefan winslow	Tax Sheet	acc 2616
Owner Address	4 sugar maple rd	Owner Phone	207-838-1720

**APPLICANT**

Name (IF different than owner)		Contact Phone Number	207-838-1720
Mailing Address	4 sugar maple rd	Alternate Phone Number	
Mailing City/State/Zip	gray me 04039	Fax Number	
Email Address	swinslow@maine.rr.com		

**AGENT/CONSULTANT**

Name		Contact Phone Number	
Mailing Address		Alternate Phone Number	
Mailing City/State/Zip		Fax Number	
Email Address			

**PROJECT**

The undersigned requests that the Town of Gray Planning Board consider the following application for:

**Subdivision**

- Sketch Plan Review
- Preliminary Plan Review (Major)
- Final Plan Review (Major)
- Minor

**Other (specify)**

- Conditional Use
- Amendment
- Extension
- Workshop
- Contract Zone Request

**Site Plan Review**

- Pre-Application Conference
- Minor
- Major

**Shoreland Zoning Permit**

Project Description / Comments:

3 lot minor subdivision  
to have underground power and sprinkled dwellings

Applicant Signature

*Stefan Winslow*


Date 4/19/21

## Doug Webster

**From:** Natalie L. Burns <nburns@jensenbaird.com>  
**Sent:** Friday, May 28, 2021 2:07 PM  
**To:** Doug Webster  
**Cc:** Nathaniel Rudy  
**Subject:** RE: Additional Blackthorne info

Doug,

I have to touch base with Lee Lowry, the JB attorney who did the deed and association formation paperwork to see where the deed work is. As to the Association, once we have the deed, we need to turn the Association, which has been formed and is active in the Secretary of State's records over to the Blackthorne residents so that they can organize. Currently Lee and I are the directors. There hasn't been a lot of pressure on this since the road work isn't done.

 As to future developments with private roads, the Subdivision Ordinance (Sec. 401.8.3.b.14) requires as part of the final plan submission "agreements or other documents showing the manner in which open spaces to be retained by the developer or lot owners are to be managed and maintained shall be submitted. These may include homeowners' association or condominium bylaws and declarations." Maintenance of roads would be included in these documents. If there is no open space, you could still require submission of the documents, either as a condition of approval or as part of the final plan submission. In my experience, you need to review these items. When an association is not formed, the municipality spends a lot of time and energy when the property owners complain that the road isn't being maintained. If you require the documents and review them, it isn't foolproof, but the Town has done about all that it can.

So, these documents should provide for and include:

1. The establishment of a homeowners association for maintenance of the private road(s), any common easements, open space and stormwater facilities (where applicable). There may need to be a HOA for developments that propose public streets if these types of common improvements are established; in particular, DEP stormwater or SLODA permits may already require this. A copy of the HOA documents should be provided to the Town prior to the sale of lots in the subdivision. HOA documents typically include a Declaration of Covenants that, among other things, establishes that each lot owner is a member of the HOA and a set of Bylaws. There is also a corporate filing with the Secretary of State's Office showing that the HOA has been established, but that generally occurs after approval.
2. The provision of a sample lot deed incorporating the Declaration of Covenants or otherwise requiring membership in the HOA.

Thanks,

Natalie

**Natalie L. Burns, Esq.**  
Attorney

---

JENSEN BAIRD  
Ten Free Street  
P.O. Box 4510

MAINE REAL ESTATE TAX-Paid

1002140136234

WARRANTY DEED

JEANNE SMALL, of Turner, Maine, JOSEPH G. DUMBROCYO, of Gray, Maine, NICOLE SMALL, of Turner, Maine, ROBERT L. SMALL, of Limington, Maine, and RONALD D. SMALL, of Dixfield, Maine, for consideration paid, grant to STEFAN WINSLOW, with a mailing address at 4 Sugar Maple Road, Gray, Maine 04039, WITH WARRANTY COVENANTS, the land together with all the improvements thereon, situated in the Town of Gray, County of Cumberland and State of Maine more particularly described in Exhibit A attached hereto and a part hereof.

WITNESS my hand and seal this 10 day of March, 2021.

Jeanne Small  
JEANNE SMALL

STATE OF MAINE  
COUNTY OF CUMBERLAND, ss.

March 10, 2021

Then personally appeared before me the above named Jeanne Small, who signed the foregoing instrument and acknowledged the same to be his free act and deed.

Benjamin P. Campo Jr.  
Notary Public ATTORNEY AT LAW  
Print Name: Benjamin P. Campo Jr.  
My Commission Expires: Maine Bar # 9334

EXHIBIT A

A certain lot or parcel of land, with the buildings thereon, situated in the Town of Gray on the northerly side of the road leading from North Yarmouth to the Portland and Gray Road, known as the "Long Hill Road," County of Cumberland, and State of Maine, bounded and described as follows:

Bounded on the southwesterly side by the said "Long Hill Road;" on the northwesterly side by land now or formerly of Albert H. Doughty; northeasterly and southeasterly by land formerly owned by William Simpson.

Meaning and intending to convey the same premises conveyed to Joseph G. Dumbrocyo by deed from Joseph G. Dumbrocyo, Personal Representative of the Estate of Guy Dumbrocyo, dated October 5, 2011 and recorded in the Cumberland County Registry of Deeds in Book 29046, Page 77.

Further reference may be had to an Affidavit of Nicole Small of even date to be recorded prior to or contemporaneously with this instrument.

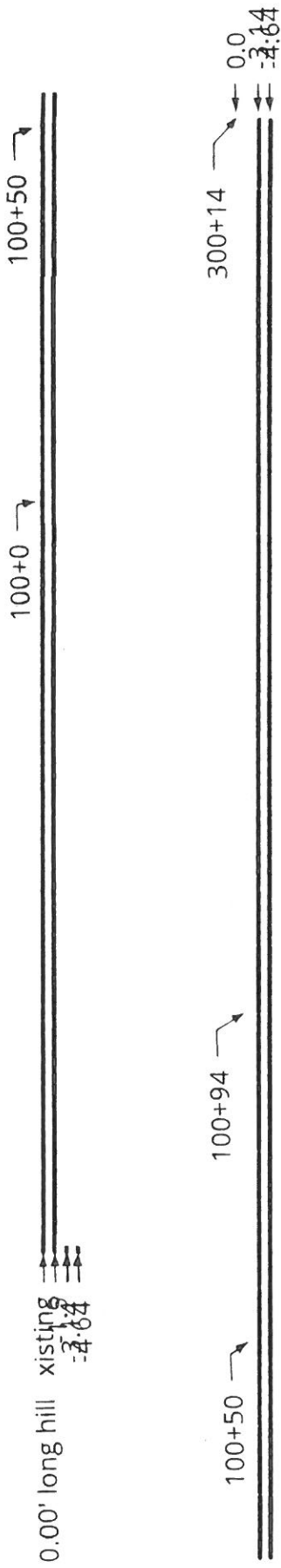
Doc: 19395 Bk: 37949 PG: 102

3/19/21

# Rooster Run Cross



# Rooster Run Profile



6579

April 16, 2021

Mr. Stefan Winslow  
4 Sugar Maple Road  
Gray, ME 04039

Re: Preliminary soil evaluation, 3 lot proposed subdivision, Long Hill Road, Gray, ME

Dear Stefan,

I have completed a preliminary soil evaluation on a proposed 3 lot subdivision located at 101 Long Hill Road in Gray, ME. The soil evaluation was conducted in accordance with the Maine Subsurface Wastewater Disposal Rules dated August 2015, as amended. I evaluated two hand excavated soil test pits on each lot. The soils found are glacial till soils with limiting factors between 18 and 22 inches. I have attached the soil test pit log descriptions and a plan of the test pit locations.

The soils as evaluated meet the minimum requirements of the state rules. The disposal bed for a 3 bedroom home would be require 900 square feet: a 20 feet wide by 45 feet long stone and pipe bed or a 15 feet by 20 feet Eljen Indrain system. In my opinion, there are suitable soils and area on each proposed lot for a septic system.

If you have any questions or require additional information, please contact me.

Sincerely,



Mark J. Hampton L.S.E., C.S.S.  
Licensed Site Evaluator #263  
Certified Soil Scientist #216

**SOIL PROFILE / CLASSIFICATION INFORMATION**

**DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES**

Project Name: **Winslow Property**      Applicant Name: **Stefan Winslow**      Project Location (municipality): **Long Hill Road - Gray**

Exploration Symbol # TP-1     Test Pit     Boring

" Organic horizon thickness    Ground surface elev. \_\_\_\_\_

\_\_\_\_\_ " Depth of exploration or to refusal

Texture	Consistency	Color	Mottling
Sandy Loam	Friable	Dark Brown	
Sandy Loam	Friable	Brown	
Sandy Loam	Firm	Olive	Common and Distinct

Depth below mineral soil surface (inches): 0, 6, 12, 18, 24, 30, 36, 42, 48, 54, 60

Soil Details by S.E.    Soil Classification: 3    C    Slope: 2    Limiting Factor: 18     Groundwater     Restrictive Layer     Bedrock

S.S.    Soil series/phase name: \_\_\_\_\_     Hydric     Non-hydric    Hydrologic    Soil Group: \_\_\_\_\_

Exploration Symbol # TP-2     Test Pit     Boring

" Organic horizon thickness    Ground surface elev. \_\_\_\_\_

\_\_\_\_\_ " Depth of exploration or to refusal

Texture	Consistency	Color	Mottling
Sandy Loam	Friable	Dark Brown	
Sandy Loam	Friable	Brown	
Sandy Loam	Firm	Olive	Common and Distinct

Depth below mineral soil surface (inches): 0, 6, 12, 18, 24, 30, 36, 42, 48, 54, 60

Soil Details by S.E.    Soil Classification: 3    C    Slope: 2    Limiting Factor: 20     Groundwater     Restrictive Layer     Bedrock

S.S.    Soil series/phase name: \_\_\_\_\_     Hydric     Non-hydric    Hydrologic    Soil Group: \_\_\_\_\_

Exploration Symbol # TP-3     Test Pit     Boring

" Organic horizon thickness    Ground surface elev. \_\_\_\_\_

\_\_\_\_\_ " Depth of exploration or to refusal

Texture	Consistency	Color	Mottling
Sandy Loam	Friable	Dark Brown	
Sandy Loam	Friable	Brown	
Sandy Loam	Firm	Olive	Common and Distinct

Depth below mineral soil surface (inches): 0, 6, 12, 18, 24, 30, 36, 42, 48, 54, 60

Soil Details by S.E.    Soil Classification: 3    C    Slope: 2    Limiting Factor: 20     Groundwater     Restrictive Layer     Bedrock

S.S.    Soil series/phase name: \_\_\_\_\_     Hydric     Non-hydric    Hydrologic    Soil Group: \_\_\_\_\_

Exploration Symbol # TP-4     Test Pit     Boring

" Organic horizon thickness    Ground surface elev. \_\_\_\_\_

\_\_\_\_\_ " Depth of exploration or to refusal

Texture	Consistency	Color	Mottling
Sandy Loam	Friable	Dark Brown	
Sandy Loam	Friable	Brown	
Sandy Loam	Firm	Olive	Common and Distinct

Depth below mineral soil surface (inches): 0, 6, 12, 18, 24, 30, 36, 42, 48, 54, 60

Soil Details by S.E.    Soil Classification: 3    C    Slope: 2    Limiting Factor: 22     Groundwater     Restrictive Layer     Bedrock

S.S.    Soil series/phase name: \_\_\_\_\_     Hydric     Non-hydric    Hydrologic    Soil Group: \_\_\_\_\_

**INVESTIGATOR INFORMATION AND SIGNATURE**

Signature: *[Handwritten Signature]*      Date: **4/16/21**

Name Printed/typed: **Mark Hampton**      Cert/Lic/Reg. #: **263/216**

Title:     Licensed Site Evaluator     Certified Soil Scientist     Certified Geologist     Professional Engineer

*attix professional seal*

# SOIL PROFILE / CLASSIFICATION INFORMATION

## DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name:

Winslow Property

Applicant Name:

Stefan Winslow

Project Location (municipality):

Long Hill Road - Gray

Exploration Symbol # TP-5  Test Pit  Boring

" Organic horizon thickness Ground surface elev. \_\_\_\_\_

" Depth of exploration or to refusal \_\_\_\_\_

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown	
6				
12	Sandy Loam	Friable	Brown	
18				
24	Sandy Loam	Firm	Olive	Common and Distinct
30				
36				
42				
48				
54				
60				

Soil Details by S.E.  3 Profile C Condition 2 Slope Percent 18 Limiting Factor Depth  Groundwater  Restrictive Layer  Bedrock

S.S. Soil series/phase name \_\_\_\_\_  Hydric  Non-hydric Hydrologic Soil Group \_\_\_\_\_

Exploration Symbol # TP-6  Test Pit  Boring

" Organic horizon thickness Ground surface elev. \_\_\_\_\_

" Depth of exploration or to refusal \_\_\_\_\_

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown	
6				
12	Sandy Loam	Friable	Brown	
18				
24	Sandy Loam	Firm	Olive	Common and Distinct
30				
36				
42				
48				
54				
60				

Soil Details by S.E.  3 Profile C Condition 2 Slope Percent 18 Limiting Factor Depth  Groundwater  Restrictive Layer  Bedrock

S.S. Soil series/phase name \_\_\_\_\_  Hydric  Non-hydric Hydrologic Soil Group \_\_\_\_\_

Exploration Symbol # \_\_\_\_\_  Test Pit  Boring

" Organic horizon thickness Ground surface elev. \_\_\_\_\_

" Depth of exploration or to refusal \_\_\_\_\_

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0				
6				
12				
18				
24				
30				
36				
42				
48				
54				
60				

Soil Details by S.E.  \_\_\_\_\_ Profile \_\_\_\_\_ Condition \_\_\_\_\_ Slope Percent \_\_\_\_\_ Limiting Factor Depth  Groundwater  Restrictive Layer  Bedrock

S.S. Soil series/phase name \_\_\_\_\_  Hydric  Non-hydric Hydrologic Soil Group \_\_\_\_\_

Exploration Symbol # \_\_\_\_\_  Test Pit  Boring

" Organic horizon thickness Ground surface elev. \_\_\_\_\_

" Depth of exploration or to refusal \_\_\_\_\_

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0				
6				
12				
18				
24				
30				
36				
42				
48				
54				
60				

Soil Details by S.E.  \_\_\_\_\_ Profile \_\_\_\_\_ Condition \_\_\_\_\_ Slope Percent \_\_\_\_\_ Limiting Factor Depth  Groundwater  Restrictive Layer  Bedrock

S.S. Soil series/phase name \_\_\_\_\_  Hydric  Non-hydric Hydrologic Soil Group \_\_\_\_\_

### INVESTIGATOR INFORMATION AND SIGNATURE

Signature

*[Handwritten Signature]*

Date 4/16/21

Name Printed/typed

Mark Hampton

Cert/Lic/Reg. # 263/216

Title

- Licensed Site Evaluator  Certified Soil Scientist  Certified Geologist  Professional Engineer

affix professional seal



