



**City of Biddeford
Planning Board**

December 3, 2025 at 5:00 PM
City Hall Council Chambers & Zoom

[Click here to join Zoom](#)

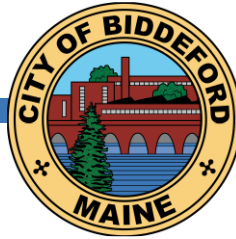
Or call in by phone: +1 312 626 6799
Meeting ID: 991 9788 6357
Passcode: 991759

1. Workshop
 - 1.a **Workshop the Comprehensive Plan with the Conservation Commission**
2. Pledge of Allegiance
3. Declaration of Quorum/Voting Members
4. Adjustment(s) to Agenda
5. Planner's Business
6. Consent Agenda
 - 6.a **Review & Approval of Meeting Minutes from November 19, 2025**
7. Unfinished Business
 - 7.a **Case # 2025.50 (Prior Case # 2021.04 - Final Subdivision and Site Plan approval) request for Adams Point Housing – Southern Maine Affordable Housing / 69 Adam's Street (Tax Map 38, Lot 296) for 39 residential units – Proposed Landscaping Amendment. This project was heard and tabled on November 5, 2025, Site Walk scheduled for December 1, 2025.**
8. New Business
 - 8.a **2025.51 Review of a Conditional Use Permit for Thriving Wellness who wants to open a medical marijuana caregiver retail store at 642 Elm Street, Unit 4 (Tax Map 11, Lot 7) in the I-1 Zone.**
 - 8.b **2025.11 Preliminary Plan Review for Bedard Homes, LLC for a proposed 30-lot single-family subdivision (The Woodlands Reserve) off Parkside Drive and 268 Pool Street (Tax Map 8, Lot 52-1) in the Suburban Residential 1 (SR1) Zoning District and a portion within the Stream Protection Shoreland Overlay District.**
9. Other Business

9.a Workshop the Electronic Vehicle Charging Station (EVCS) Ordinance with the Sustainability Commission.

10. Adjourn

The Board reserves the right to halt official business at 9:30 p.m. Items not heard at tonight's meeting shall be rescheduled to the next meeting of the Board. All materials pertaining to items on the agenda are available for public review at the Biddeford Planning Department, second floor, Biddeford City Hall during normal business hours.



PLANNING BOARD MEETING MINUTES

November 19, 2025

DRAFT

1. Pledge of Allegiance Meeting came to order at 6:00 PM
2. Declaration of Quorum/Voting Members
Roch Angers (Chair “Pro-Tem”), Matthew Sargent-Dubois, Steve Beaudette
(Alternate who will be voting in place of Patoine) & Kayla Lewis (alternate who will
be voting in place of Deschambault)
Absent-Alexa Plotkin, Larry Patoine & Susan Deschambault
Motions 6:00 PM
Motion-Sargent-Dubois-Motion to declare Roch Angers as Chair “Pro-Tem”
Second-Beaudette
Vote: Motion passed unanimously
3. Adjustment(s) to Agenda-none
4. Planner’s Business
4.a. Galbraith asked the Board about site walks now that it is getting dark early.
Not everyone can make it, but the consensus was 8:00 AM is good until we can go
back to later in the day.
4.b. Galbraith reminded the Board to talk into the microphone loudly when
speaking and to pay attention once the meeting is over for “hot mics”
5. Consent Agenda
5.a. Approval of Meeting Minutes from November 5, 2025
MOTIONS: 6:02 PM
Motion-Sargent-Dubois-Motion to approve Meeting Minutes as posted
Second-Beaudette
Vote-Motion passed unanimously
6. Unfinished Business-None
7. New Business
7.a. 2025.49 The Biddeford Planning Board will review a Sketch Plan for Site Plan
& Conditional Use Permit for N.A. Wright Creative Construct, LLC. The applicant
wishes to construct a 17,600 SF building for an 18-hole mini-golf course along with a
climbing wall, arcades and escape rooms. The applicant also intends to hold special
events along with food and non-alcoholic beverages located at 532 Elm Street (Tax
Map 14, Lot 11) in the B-2 Zone.
 - Galbraith introduced the project; this is sketch plan only.
 - Paul Gadbois represented the applicant as applicant is out of the country.

- The applicant is an entrepreneur who creates theme parks around the country and is a strong believer in giving back to the community.
- The applicant has letters of approval from sewer, water & fire.

PUBLIC COMMENTS

Nancy Merrow-534 Elm Street

Charlene Dutremble-536 Elm Street

BOARD QUESTIONS & COMMENTS

- Lewis-concerns about drainage, Thatcher Brook. She wants to investigate and eliminate the contaminants that will run off the parking lot into Thatcher Brook, she feels the Board should bring the Conservation Commission in for review.
- The CFUP Fee was explained to Lewis and how it is state mandated and helps to keep procedures in check to keep Thatcher Brook clean.
- Lewis had questions about the adjacent City owned property.
- Galbraith will look into it and get back to her.

PUBLIC COMMENTS

Charlene Dutremble 536 Elm Street

Nancy Merrow 534 Elm Street

- Gadbois explained about having to go to DEP and install an infiltration pond to protect Thatcher Brook.
- Gadbois also explained that they will have to apply for a traffic movement permit.
- Major concerns of abutters: traffic, outdoor events, hours, buffers
- No votes taken as this is a sketch plan only, applicant to return for preliminary.

7.b. 025.12 The Biddeford Planning Board will review a Private Way Request for Jason Martel. This proposal is to create a private way to provide access to two new single-family residences for the immediate family at 10 Wood Island Acres (Tax Map 8, Lot 5) in the SR-1 Zone.

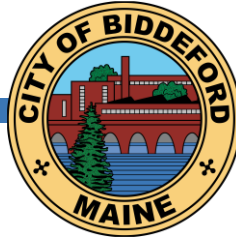
- Galbraith introduced the project
- Paul Gadbois represented the applicant
- The applicant has obtained DEP and Army Corp approval
- This application is a sketch plan

NO PUBLIC COMMENTS

BOARD QUESTIONS AND COMMENTS

- Lewis asked about the waiver request
- Galbraith explained that this waiver is something that would go through the Engineering Department. It is a common waiver regarding the performance guarantee and no building permit issue until road is done according to City standards.
- No votes taken as this is a sketch plan only, applicant to return for preliminary.

205 Main Street / PO Box 586 • Biddeford, ME

 City of Biddeford Government(207) 571-0700 • www.biddefordmaine.org @CityofBiddeford

7.c 2025.48 Review of a Conditional Use Permit Request for Reveler, LLC (fka Tom Watson & Co). This proposal is to open a "Convention Center" at 30 Upper Falls Road (Tax Map 40, Lot 55-3) in the MSRD 3 Zone.

- Galbraith introduced the project
- Roby Fecteau, Code Enforcement Officer, has categorized this project as a "Convention Center" according to the City Ordinance.
- Staff has been concerned about traffic, and this project has triggered a traffic movement permit amendment.
- Applicant has requested a preliminary & final decision at this meeting.
- Staff recommends approval
- Michael Barton from Reveler along with Tom Errico from TYLin and a representative from Acorn Engineering represented the applicant.
- Matthew Sargent-Dubois recused himself as Reveler is his employer.

NO PUBLIC COMMENTS

BOARD QUESTIONS AND COMMENTS

- Lewis said the community is very excited about this project and asked if this is the first time the Board has heard about the traffic issues, and answered no.

MOTIONS: 6:40 PM

Motion-Beaudette-I motion to APPROVE Case # 2025.48 Preliminary & Final Conditional Use Permit for Reveler LLC - Proposed development of existing building into a Convention Center at 30 Upper Falls Road (Tax Map 40, Lot 55-3) in the MSRD 3 Zone with the Conditions of Approval as documented in the Finding of Fact.

Second-Lewis

Vote-Motion passed 2-1 (Angers & Beaudette in favor, Lewis against)

7.d 2025.52 Review of a Residential Subdivision Amendment request for Pinehurst Development, LLC. The proposal is to split one lot into 3 with a private way at 13 Brook Street (Tax Map 32, Lot 16) in the R1B Zone.

- Galbraith introduced the project
- This is an amendment to the 1917 Riverview park Plan
- All lots are conforming
- Staff recommends approval
- Matthew Chamberlain represented the applicant
- He mentioned there is an error in the description, there is no private way all lots have enough frontage.
- All lots are on City water & sewer

NO PUBLIC COMMENTS

NO PLANNING BOARD QUESTIONS OR COMMENTS

MOTIONS: 6:49 PM

Motion-Lewis- I motion to APPROVE Case # 2025.52 Three (3) Lot Subdivision Review for Aaron Shields / Pinehurst Development, LLC. Three (3) lot subdivision of the property located at 13 Brook Street (Tax Map 32, Lot 16) located within the R-1B Zoning District along with the requested waivers outlined within this report. Second-Sargent-Dubois

Vote-Motion passed unanimously

7.e 2022.24 Review of Subdivision Amendment for Devine Capital (KDK Biddeford, LLC) at 588 & 590 Alfred Street (Tax Map 2, Lots 6 & 12) in the B-2 Zone. The amendment is strictly limited to an internal lot division that was requested by the applicant's financial institution. No other changes are proposed.

- **Galbraith introduced the project**
- **He explained this division is for financing only**
- **This project was run by the City Attorney, and he has no issue with it.**
- **Bill Fletcher, attorney for the applicant represented the application**

NO PUBLIC COMMENTS

NO PLANNING BOARD QUESTIONS OR COMMENTS

MOTIONS: 6:53 PM

Motion-Sargent-Dubois- Motion to approve Case # 2022.24 – Biddeford Residential (AKA Devine Capital) Preliminary and Final Subdivision Amendment – Lot Line Adjustment for 216-unit multi-family development at 588 and 590 Alfred Street (Tax Map 2, Lots 6 and 12) and reaffirming the previously approved Conditions of Approval (COA).

Second-Beaudette

Vote: Motion passed unanimously

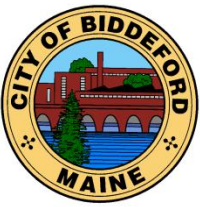
8. Other Business-None

9. Adjourn 6:55 PM

Signature-Planning Board Chair “Pro-Tem”

Date

These minutes are summary and are not intended to be verbatim. Archived meetings are viewable on the City’s website: www.biddefordmaine.org.



CITY OF BIDDEFORD

Planning and Development Department

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Deputy Director/City Planner
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P.O. Box 586
Biddeford, ME 04005
(207) 284-9115

David.Galbraith@biddefordmaine.org

Planning Board – Staff Report

TO: Chair Plotkin and Members of the Biddeford Planning Board

FROM: David C.M. Galbraith, Acting Director of Planning and Development / City Planner

DATE: October 29, 2025

RE: Case # 2025.50 (Prior Case # 2021.04 - Final Subdivision and Site Plan approval) request for Adams Point Housing – Southern Maine Affordable Housing / 69 Adam's Street (Tax Map 38, Lot 296) for 39 residential units – Proposed Landscaping Amendment.

MEETING DATE: November 5, 2025

PROJECT HISTORY / APPLICANT REQUEST:

As the Board may recall, *on September 30, 2021, the Planning Board granted* Final Subdivision and Site Plan approval request for Adams Point Housing – Southern Maine Affordable Housing for 39 residential units to be located at 69 Adam's Street (Tax Map 38, Lot 296). The subject development is currently under construction and at this time Guy M. Gagnon, President of the Biddeford Housing Authority (BHA), is seeking approval of a landscaping plan amendment to modify / reduce the amount of landscaping / screening per the submitted "Draft Review" landscape plan amendment dated 10-10-2025. Included with this request is a letter to the Planning Department outlining the proposed changes which is attached and provided below:

Our request for changes to the landscape plan stems from the fact that we were able to save a large percentage of the existing trees lining the northeast corner of the site. This was a welcome surprise and will guarantee the neighbors continued shading and canopy coverage for the area.

The attached plan notes the changes being proposed but in summary these are the changes requested and reason behind them.

- a. The western portion of the site near entrance to Adams street (marked "A" on the plan) is where we plan to add more plantings to provide a more appealing entrance and also to assist with erosion control below the new block wall and above the granite bolder shorter wall. These are all new additional plantings not originally shown on the plan.
- b. The revised schedule of plantings is noted on the attached landscape plan. It includes the additions to area "A" and also the reductions proposed for area "B"
- c. Noted in the original application was the potential for the loss of most of the existing mature tree growth in the lower wall area (shown as area "B") At that time, the plantings proposed made sense since they would be replacing the loss of vegetation expected. However, during construction of the new driveway and retaining wall, much of the existing tree canopy was not impacted and is expected to survive without damage. Therefore, the proposal to reduce new plantings makes sense for a number of reasons, all of which have been endorsed by the landscape designer, Matt Phillips, who provided this new landscape plan for your consideration.

RE: Case # 2025.50 (Prior Case # 2021.04 - Final Subdivision and Site Plan approval) request for Adams Point Housing – Southern Maine Affordable Housing / 69 Adam’s Street (Tax Map 38, Lot 296) for 39 residential units – Proposed Landscaping Amendment.

MEETING DATE: November 5, 2025

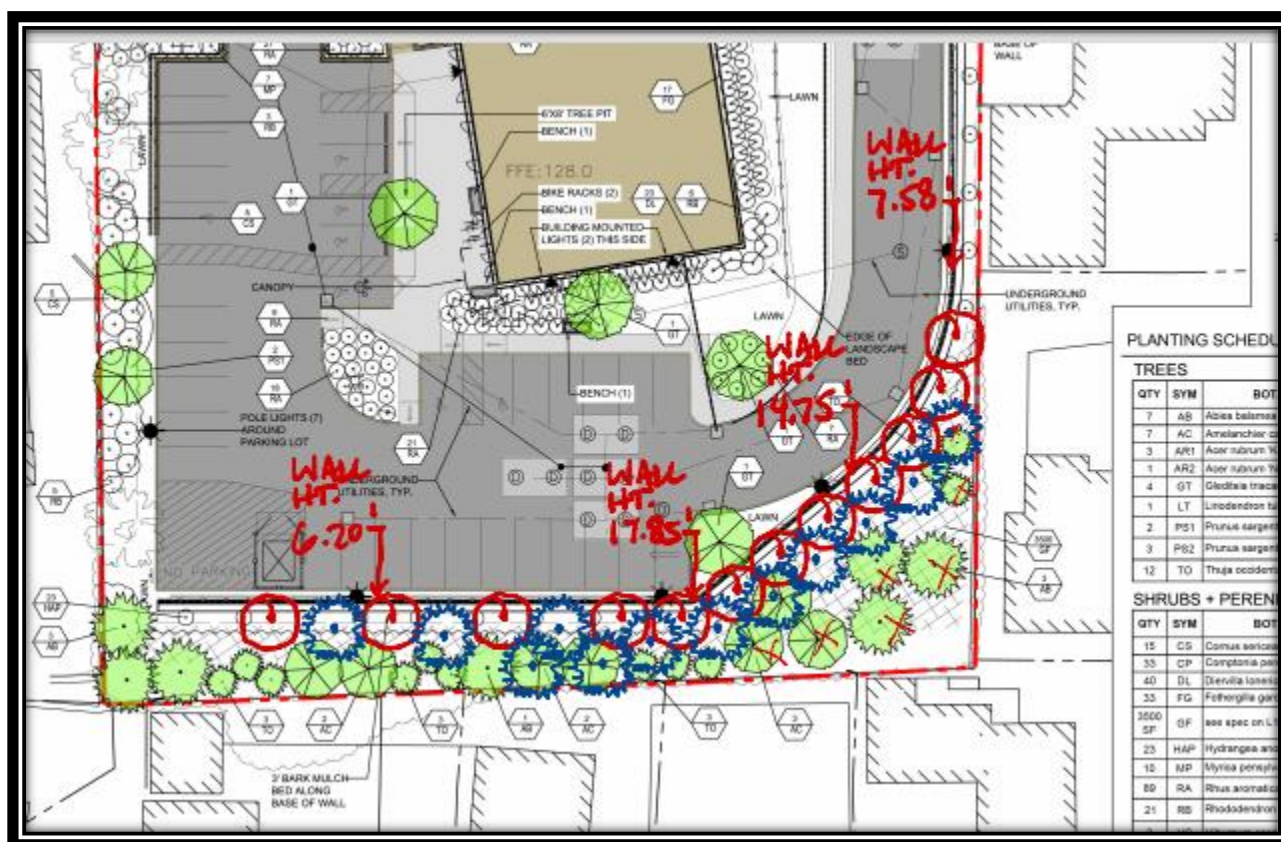
d. The proposed plan takes into consideration that excavating for new plantings could not only risk the health of existing trees but could make it impossible to even dig into the ground where numerous roots are just below the surface.

e. Matt Phillips and a representative from Oak Point Associates, conducted a site walk and the resulting proposal is a commonsense plan for including some new plantings in available areas.

f. It should be noted that the 23 climbing Hydrangea plants are still being installed at the base of the wall to soften that tall retention wall.

In summary, we are confident that if the board had a chance to visit the site, they would all agree that what is being requested for amendment is a reasonable solution and will actually provide an even better overall landscape than was originally thought possible.

Shown below is a September 21, 2021, plan illustrating a Staff mark-up of the desired landscaping treatment which came about following public hearing.



Adam’s Point Landscape Design Comments September 21, 2021

MEETING DATE: November 5, 2025



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MEETING DATE: November 5, 2025



RE: Case # 2025.50 (Prior Case # 2021.04 - Final Subdivision and Site Plan approval) request for Adams Point Housing – Southern Maine Affordable Housing / 69 Adam’s Street (Tax Map 38, Lot 296) for 39 residential units – Proposed Landscaping Amendment.

MEETING DATE: November 5, 2025

PLANTING SCHEDULE						
TREES						
QTY	SYM	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS	NATIVE
16	AB	<i>Abies balsamea</i> var. <i>phanerolepis</i>	Canaan Balsam Fir	8-10' HT.		
2	AC	<i>Amelanchier canadensis</i>	Native Shadbush	7-8' HT	B+B, CLUMP	X
3	AR1	<i>Acer rubrum</i> 'Karpick'	Red Maple	2-2.5"	B+B	X
1	AR2	<i>Acer rubrum</i> 'Northwood'	Red Maple	2-2.5"	B+B	X
4	GT	<i>Gleditsia triacanthos</i> 'Street Keeper'	Honeylocust	2-2.5"	B+B	
1	LT	<i>Liriodendron tulipifera</i> 'Little Volunteer'	Tulip tree	2-2.5"	B+B	X
11	NS	<i>Nyssa sylvatica</i> 'Green Gable'	Tupelo	2-2.5"	B+B	X
2	PS1	<i>Prunus sargentii</i>	Sargent Cherry	2-2.5"	B+B	
3	PS2	<i>Prunus sargentii</i> 'Rancho' or 'Columnaris'	Sargent Cherry	2-2.5"	B+B	
6	TO	<i>Thuja occidentalis</i> 'Techy'	Arborvitae	6-7' HT	B+B	X
6	TW	<i>Thuja occidentalis</i> 'Woodward'	Arborvitae	3-3.5' HT	B+B	X
SHRUBS + PERENNIALS + VINES + GROUND COVERS						
QTY	SYM	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS	NATIVE
15	CS	<i>Cornus sericea</i> 'Farrow'	Red Twig Dogwood	4'-5' #7		X
28	CP	<i>Comptonia peregrina</i>	Sweetfern	#7		X
40	DL	<i>Diervilla lonicera</i>	Northern Bush Honeysuckle	#5		X
33	FG	<i>Fothergilla gardenii</i>	Dwarf Bottlebrush Bush	#5		
1000 SF	GF	see spec on L1.0	Grass + Forbes mix (semi-shade blend)	1,450 SF PER LBS		X
23	HAP	<i>Hydrangea anomala</i> petiolaris	Climbing Hydrangea	4-5' #10	15' O.C.	
3	MP	<i>Myrica pensylvanica</i> 'Bobee'	Northern Bayberry	3-4' #7		X
91	RA	<i>Rhus aromatica</i> 'Gro-Low'	Fragrant Sumac	2.5'-3' #7		X
21	RB	<i>Rhododendron</i> 'Boule-de-Neige'	Rhododendron	3' HT	B+B	
3	VC	<i>Viburnum cassinoides</i>	Withered Viburnum	3-3.5' HT	B+B	X

Planting Schedule - Approved Landscape Plan “Revised per Conditions of Approval” 12-17-2021

PLANTING SCHEDULE						
TREES						
QTY	SYM	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS	NATIVE
16	AB	<i>Abies balsamea</i> var. <i>phanerolepis</i>	Canaan Balsam Fir	8-10' HT		
2	AC	<i>Amelanchier canadensis</i>	Native Shadbush	7-8' HT	B+B, CLUMP	X
3	AR1	<i>Acer rubrum</i> 'Karpick'	Red Maple	2-2.5"	B+B	X
1	AR2	<i>Acer rubrum</i> 'Northwood'	Red Maple	2-2.5"	B+B	X
4	GT	<i>Gleditsia triacanthos</i> 'Street Keeper'	Honeylocust	2-2.5"	B+B	
1	LT	<i>Liriodendron tulipifera</i> 'Little Volunteer'	Tulip tree	2-2.5"	B+B	X
11	NS	<i>Nyssa sylvatica</i> 'Green Gable'	Tupelo	2-2.5"	B+B	X
2	PS1	<i>Prunus sargentii</i>	Sargent Cherry	2-2.5"	B+B	
3	PS2	<i>Prunus sargentii</i> 'Rancho' or 'Columnaris'	Sargent Cherry	2-2.5"	B+B, MATCHING	
6	TO	<i>Thuja occidentalis</i> 'Techy'	Arborvitae	6-7' HT	B+B	X
SHRUBS + PERENNIALS + VINES + GROUND COVERS						
QTY	SYM	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS	NATIVE
15	CS	<i>Cornus sericea</i> 'Farrow'	Red Twig Dogwood	4'-5' #7		X
28	CP	<i>Comptonia peregrina</i>	Sweetfern	#7		X
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33	FG	<i>Fothergilla gardenii</i>	Dwarf Bottlebrush Bush	2-2.5' #7		
1000 SF	GF	see detail / spec 10.2.1	Grass + Forbes mix (semi-shade blend)	1,450 SF PER LBS		X
23	HAP	<i>Hydrangea anomala</i> petiolaris	Climbing Hydrangea	4-5' #10	15' O.C.	
3	MP	<i>Myrica pensylvanica</i> 'Bobee'	Northern Bayberry	3-4' #7		X
91	RA	<i>Rhus aromatica</i> 'Gro-Low'	Fragrant Sumac	2-2.5' #5		X
40	RV	<i>Rosa virginiana</i>	Virginia Rose	#5		X
21	RB	<i>Rhododendron</i> 'Boule-de-Neige'	Rhododendron	3' HT	B+B	
6	TW	<i>Thuja occidentalis</i> 'Woodward'	Arborvitae	3-3.5' HT	B+B	X
3	VC	<i>Viburnum cassinoides</i>	Withered Viburnum	3-3.5' HT	B+B	X

RE: Case # 2025.50 (Prior Case # 2021.04 - Final Subdivision and Site Plan approval) request for Adams Point Housing – Southern Maine Affordable Housing / 69 Adam’s Street (Tax Map 38, Lot 296) for 39 residential units – Proposed Landscaping Amendment.

MEETING DATE: November 5, 2025

Proposed Planting Schedule – Dated 10-10-2025

PROJECT DESCRIPTION:

The project site, located on an approx. 1.5 AC vacant lot in the MSRD-2 Zone between. The property has access to Adams Street to the north and, via a 15-foot-wide water easement, access to Birch Street to the south. The site is located behind the current Parish Place Apartments, and the St. James School and Ledgewood Apartments (Graham Street). The applicant is seeking re-approval, in conjunction with a previously approved / existing contract zone, for 39 affordable housing units in a new five story building. This project has a lengthy history and detailed project file including the establishment of a Council approved Contract Zone. It should further be noted that the City Council authorized the distribution of up to \$490,000. from the City’s Affordable Housing Trust Fund, to fill the project’s funding gap. Staff would recommend that if the Board grants the approval of reduced landscaping, the materials and labor costs between the approved and proposed landscaping should be returned to the City’s Housing Trust Fund.

STAFF RECOMMENDATION:

From reviewing the case history file, it appears that landscaping screening / buffering was a point of major discussion and the approved landscaping plan was the result of these deliberations. Further, from reviewing the approved plans against the proposed plans a retaining wall has been added where a sheer ledge face wall was to remain. Staff is supportive of the proposed landscaping near the Adams Street entrance but have major reservations about reducing the landscaping adjacent to the large retaining wall located at the southwest corner of the site. The image below shows the grade difference between the planting area and the top of the retaining wall. The wall height in this area, from grade, varies from about 6’ to approximately 18’ in height.



RE: Case # 2025.50 (Prior Case # 2021.04 - Final Subdivision and Site Plan approval) request for Adams Point Housing – Southern Maine Affordable Housing / 69 Adam’s Street (Tax Map 38, Lot 296) for 39 residential units – Proposed Landscaping Amendment.

MEETING DATE: November 5, 2025

The landscaping as approved in this area not only provides a buffer for the surrounding, mostly residential uses, it also helps to soften the tall split-faced concrete block wall face. As such Staff is not supportive of the proposed changes as presented and recommends denial of the requested landscaping modifications.

That said, Staff would be open to conducting a Site Walk with Mr. Gagnon, his landscape architect and the Planning Board to determine an acceptable screening and buffering consisting of existing trees that are desirable to save, while supplementing with additional materials. If the number of trees is permitted to be reduced by the Board, Staff would further recommend that the sizes of the agreed upon new plantings be increased in size to create a more substantial buffer upon installation.

Staff is not supportive of the proposed amendments to the approved Landscape Plan in area “B” in the proposal and recommends denying the applicant’s request.

Staff Recommendation:

- A. Motion to Deny: I **motion to DENY** Case # 2025.50 (Prior Case # 2021.04 - Final Subdivision and Site Plan approval) request for Adams Point Housing – Southern Maine Affordable Housing / 69 Adam’s Street (Tax Map 38, Lot 296) for 39 residential units – Proposed Landscaping Amendment, for the following reasons:
- 1) _____.
 - 2) _____.
 - 3) _____.
- B. Motion to Approve: I **motion to APPROVE** Case # 2025.50 (Prior Case # 2021.04 - Final Subdivision and Site Plan approval) request for Adams Point Housing – Southern Maine Affordable Housing / 69 Adam’s Street (Tax Map 38, Lot 296) for 39 residential units – Proposed Landscaping Amendment.
- C. Motion to Table: I **motion to TABLE** Case # 2025.50 (Prior Case # 2021.04 - Final Subdivision and Site Plan approval) request for Adams Point Housing – Southern Maine Affordable Housing / 69 Adam’s Street (Tax Map 38, Lot 296) for 39 residential units – Proposed Landscaping Amendment, for the following reasons:
- 1) _____.
 - 2) _____.
 - 3) _____.

SOUTHERN MAINE AFFORDABLE HOUSING



P.O. BOX 2287, BIDDEFORD, MAINE 04005

Date: 10-20-25

To: Planning Department, City of Biddeford

From: Guy M. Gagnon, President - Southern Maine Affordable Housing

Re: Landscape Plan proposed amendment.

Attached is a request to amend the landscape plan for Adams Point, our previously approved 39-unit affordable housing development, which is progressing very well with an expected completion date in March 2026.

Our request for changes to the landscape plan stems from the fact that we were able to save a large percentage of the existing trees lining the northeast corner of the site. This was a welcome surprise and will guarantee the neighbors continued shading and canopy coverage for the area.

The attached plan notes the changes being proposed but in summary these are the changes requested and reason behind them.

- a. The western portion of the site near entrance to Adams street (marked "A" on the plan) is where we plan to add more plantings to provide a more appealing entrance and also to assist with erosion control below the new block wall and above the granite bolder shorter wall. These are all new additional plantings not originally shown on the plan.
- b. The revised schedule of plantings is noted on the attached landscape plan. It includes the additions to area "A" and also the reductions proposed for area "B"
- c. Noted in the original application was the potential for the loss of most of the existing mature tree growth in the lower wall area (shown as area "B") At that time, the plantings proposed made sense since they would be replacing the loss of vegetation expected. However, during construction of the new driveway and retaining wall, much of the existing tree canopy was not impacted and is expected to survive without damage. Therefore, the proposal to reduce new plantings makes sense for a number of reasons, all of which have been endorsed by the landscape designer, Matt Phillips, who provided this new landscape plan for your consideration.

- d. The proposed plan takes into consideration that excavating for new plantings could not only risk the health of existing trees but could make it impossible to even dig into the ground where numerous roots are just below the surface.
- e. Matt Phillips and a representative from Oak Point Associates, conducted a site walk and the resulting proposal is a commonsense plan for including some new plantings in available areas.
- f. It should be noted that the 23 climbing Hydrangea plants are still being installed at the base of the wall to soften that tall retention wall.

In summary, we are confident that if the board had a chance to visit the site, they would all agree that what is being requested for amendment is a reasonable solution and will actually provide an even better overall landscape than was originally thought possible.

Thanks for your consideration!

A handwritten signature in blue ink, appearing to be 'G. A. M.', with a long, sweeping horizontal line extending to the right.

**City of Biddeford – Planning Department****Planning Board Application**

P.O. Box 586, 205 Main Street Biddeford, Maine 04005
207-284-9115

Type of Application:

☐ Shoreland Zoning Permit ☐ Site Plan Review (Please include checklist) ☐ Extraction
☐ Conditional Use Permit ☐ Subdivision (Please include Checklist) ☐ Private Way
X ☒ Other: ***landscape plan amendment to Adams Point project approved and under construction***

Applicant Information:

Name: Southern Maine Affordable Housing
Mailing Address: 22 South St., Biddeford, Me. 04005
Telephone: 207-282-6537
Email: ggagnon@bhousing.org
What is your legal interest in the property?
☒ Owner ☐ Potential Buyer with Contract ☐ Lease/Rental Agreement

Owner's Information:

Name: same as above
Mailing Address: _____
Telephone: 207-415-2939
Email: ggagnon@bhousing.org

Agent's Information:

Name: Guy M. Gagnon
Mailing Address: c/o SMAH 22 South St., Biddeford, Me. 04005
Telephone: 207-415-2939
Email: ggagnon@bhousing.org

Engineer/Surveyor's Information:

Name: (landscape engineer) _____
Matthew A. Phillips
Maine Licensed Landscape Architect
Carroll Associates Landscape Architects
207.772.1552 207.632.7712
Email: mphilips@carroll-assoc.com

Project Location and Lot Information:

Street Address: 69 Adams St. Drainage Watershed: _____
Tax Map: 38 Lot: 296
Current Zoning: MSRD 2 Shoreland Zoning: _____
Size of Lot: _____ () acres () s.f. Lot Frontage: _____
Existing Use of Property: 39 unit approved affordable multi family Adams Point, under construction

Property currently serviced by:

☒ City Road ☒ Public Sewer ☒ Public Water ☐ Public Trash
☐ Private Road ☐ Septic System ☐ Private Well ☐ Private Hauler

Slope Conditions in Area of Construction (if applicable): N/A

☐ Flat (0-3% slope) ☐ Rolling (3-8% slope) ☐ Hilly (8-15% slope) ☐ Steep (15%+ Slope)

Are there any wetlands or waterbodies on the site? ☐ (Yes) ☒ (No) if yes attach information

Is the project within the 100-year floodplain? ☐ (Yes) ☒ (No) if yes attach information

Do you plan to bring fill onto the lot? ☐ (Yes) ☐ (No) If yes attach information N/A

Description of proposed use of property:

Project/Proposed Use:

Property to be Serviced by:

☐ City Road ☐ Public Sewer ☐ Public Water ☐ Public Trash

☐ Private Road ☐ Septic System ☐ Private Well ☐ Private Hauler

Limits of Disturbance: _____ () acres () s.f.

Net change in impervious cover: _____ () acres () s.f.

Is this project part of a larger project? ☐ (Yes) ☐ (No)

Is the project proposing a new Private or Public Road? ☐ (Yes, Private) ☐ (Yes, Public) ☐ (No)

Is this project within the Urbanized Area/MS4 (see [City Drainage Map](#)) ☐ (Yes) ☐ (No)

Is the project proposing any Stormwater facilities/BMPs? ☐ (Yes) ☐ (No)

Will a Traffic Movement Permit (TMP) be required?: ☐ (Yes) ☐ (No)

If in a Shoreland Zone:

Percent of residential lot coverage (Max 20%): _____

Percent of structure expansion (Max 30%): _____

If Subdivision Review, number of lots proposed: _____

If a Private Way is proposed, number of lots served: _____

If Site Plan Review, you must provide the following information:

Total new square feet footprint of structure: _____

Total new square feet paving/parking: _____

Waiver Requests (attach details):N/A

1. _____
2. _____
3. _____

Required Submittal Attachments:

A. Letters of Approval

☐ Fire Department – Contact Chief or Deputy Chief – 282-9986

☐ Ability to Serve for Water Service – Maine Water – 282-1543

☐ Ability to Serve for Sewer Service – Engineering Department – Tom Milligan 284-9118

☐ Police Department – e-911 Road Name Designation – Contact Joanne Fisk 282-5127

☐ Ability to Serve for Electrical Service-CMP-1-866-225-4200

☐ Letter to Planning Board describing project, Waiver requests, proposed improvements, addressing permit requirements, etc.

B. Photographs of Site.

C. Architectural renderings/drawings of proposed buildings, as required.

D. Engineering Plans, as required.

E. Stormwater Management Report, as required.

Fees (Due at time of Submission):

- \$75 Nonrefundable Administration Fee is required for every application.
- Refer to "Attachment A Fees and Charges" of the Land Development Regulations for more information. Consult with Planning Staff if you have questions.

Required Signatures:

By signing this application, as the foresaid applicant or authorized agent:

- I certify that I have read and completely understand the application;
- I certify that the information contained in this application and its attachments are true and correct;
- I understand that all information provided on this form and all other documents submitted as part of my proposal is a matter of public record;
- I understand that copies of this information may be supplied upon request to an interested party.
- I understand that additional funds may be required through the course of the review for special studies, legal review costs, and/or engineering review.
- I understand that by submitting an application I am not guaranteed a place on any particular agenda. I further understand that the City Planner will place me on an agenda for review when the application is deemed substantially complete.

Will the proposed project cause 1 acre or more of site disturbance? __ (Yes) X (No)

- **If Yes, applicant is responsible for any required Maine Construction General Permits and shall comply with the requirements of DEP Chapter 500 Stormwater Regulations, as they apply.**

Signature of Applicant:

Date 10-19-25

Signature of Property Owner:

Date 10-19-25

*****Formal request letter and amended landscape plan attached***

DIGITAL SUBMITTAL REQUIREMENTS FOR ALL SUBMITTALS:

- A) PDF OF SIGNED APPLICATION
- B) PDFs OF ALL DRAWING SETS AND OTHER REQUIRED SUBMITTAL ATTACHMENTS NOTED ABOVE

HARD-COPY SUBMITTAL REQUIREMENTS FOR PLANNING BOARD APPLICATIONS:

- A) SEVEN (7) FULL-SIZE PAPER COPIES OF DRAWING SETS

DIGITAL SUBMITTAL REQUIREMENTS FOR FINAL APPROVAL:

- A) INDIVIDUALLY NAMED PDFs OF EACH DRAWING (NOT A COMBINED PDF SET)
 - *Individual Drawing PDF Naming Format: 'PROJECT/SHEETSET NAME_INDIVIDUAL DRAWING NAME.pdf'*
- B) PDF COPIES OF ALL PERMIT APPROVALS, APPLICATIONS, REPORTS, NARRATIVES, LETTERS, ETC.
- C) FINAL CAD REFERENCE FILES IN DWG FORMAT (SURVEY & PROPOSED DESIGN LINEWORK)
 - *All drawings & CAD reference files must be to-scale and within the following coordinate systems:*
 - MAINE STATE PLANE WEST NAD83 (Horizontal Datum) & NAVD88 (Vertical Datum)

HARD-COPY SUBMITTAL REQUIREMENTS FOR FINAL APPROVAL:

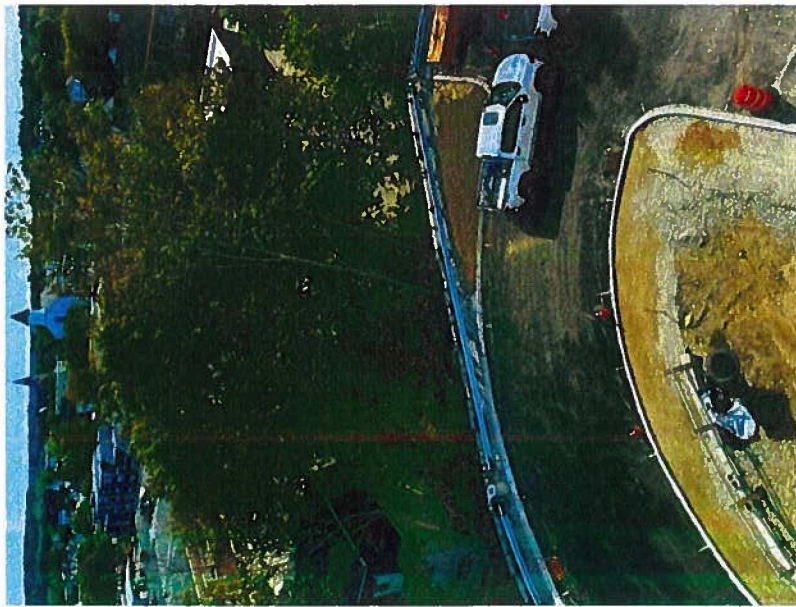
- A) THREE (3) FULL-SIZE PAPER COPIES OF INDIVIDUAL DRAWINGS REQUIRING BOARD SIGNATURE
- B) ONE (1) FULL-SIZE PAPER COPY OF ENTIRE DRAWING SET FOR ENGINEERING RECORDS

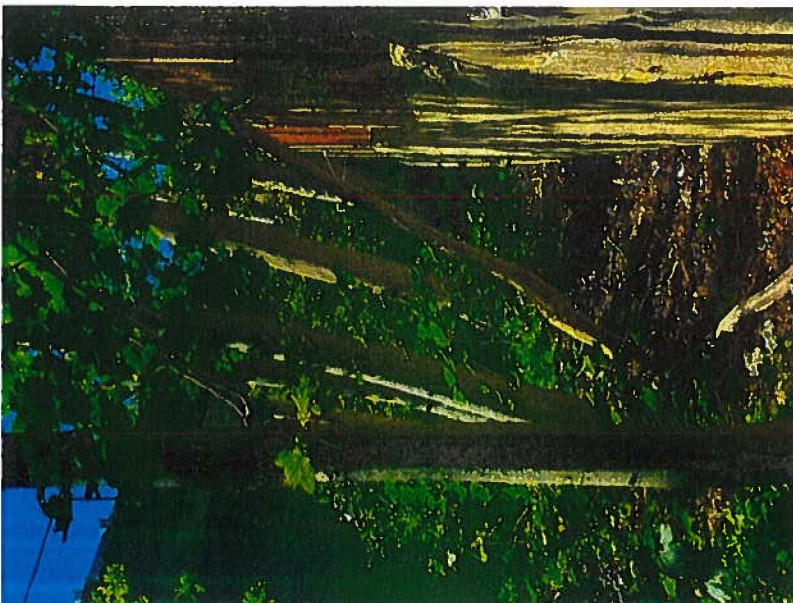
PLEASE CONFIRM WITH PLANNING STAFF FOR CLARIFICATION

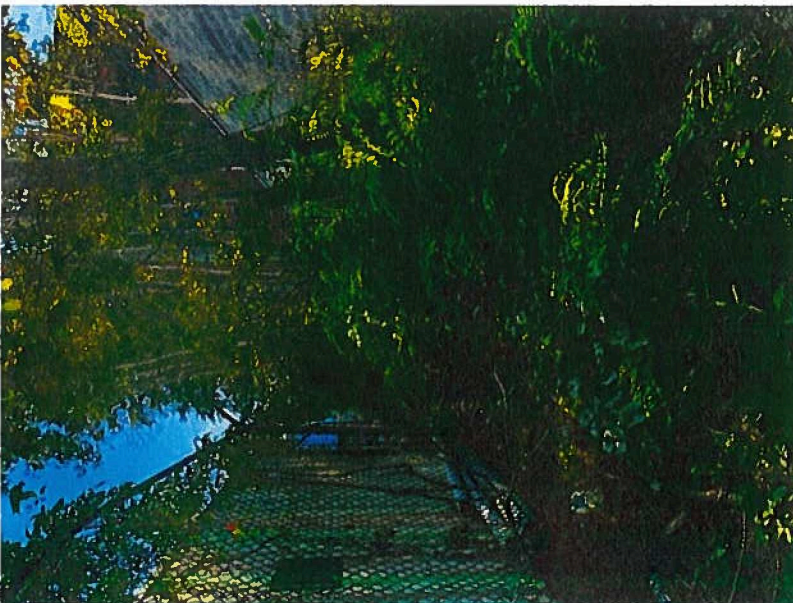


Adams Point lower wall area Oct 2025

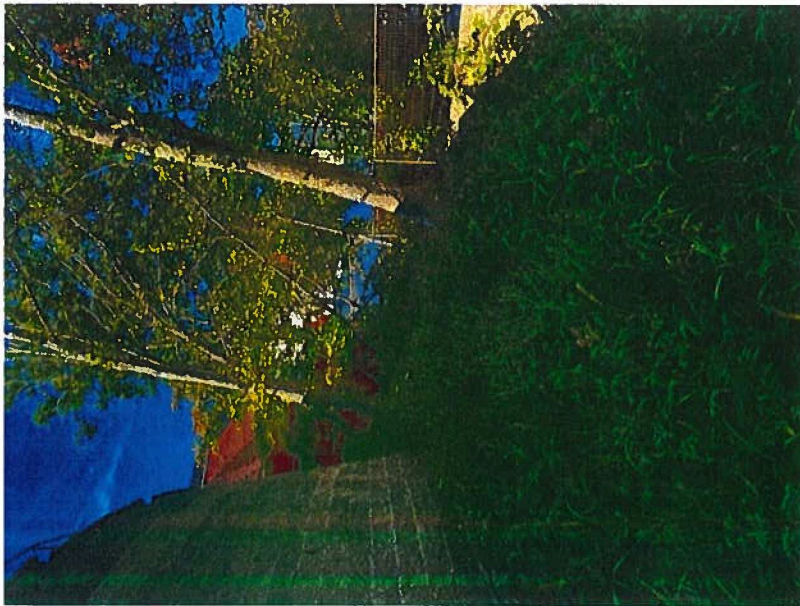
From Guy Gagnon <ggagnon@bhousing.org>
Date Tue 10/21/2025 3:19 PM



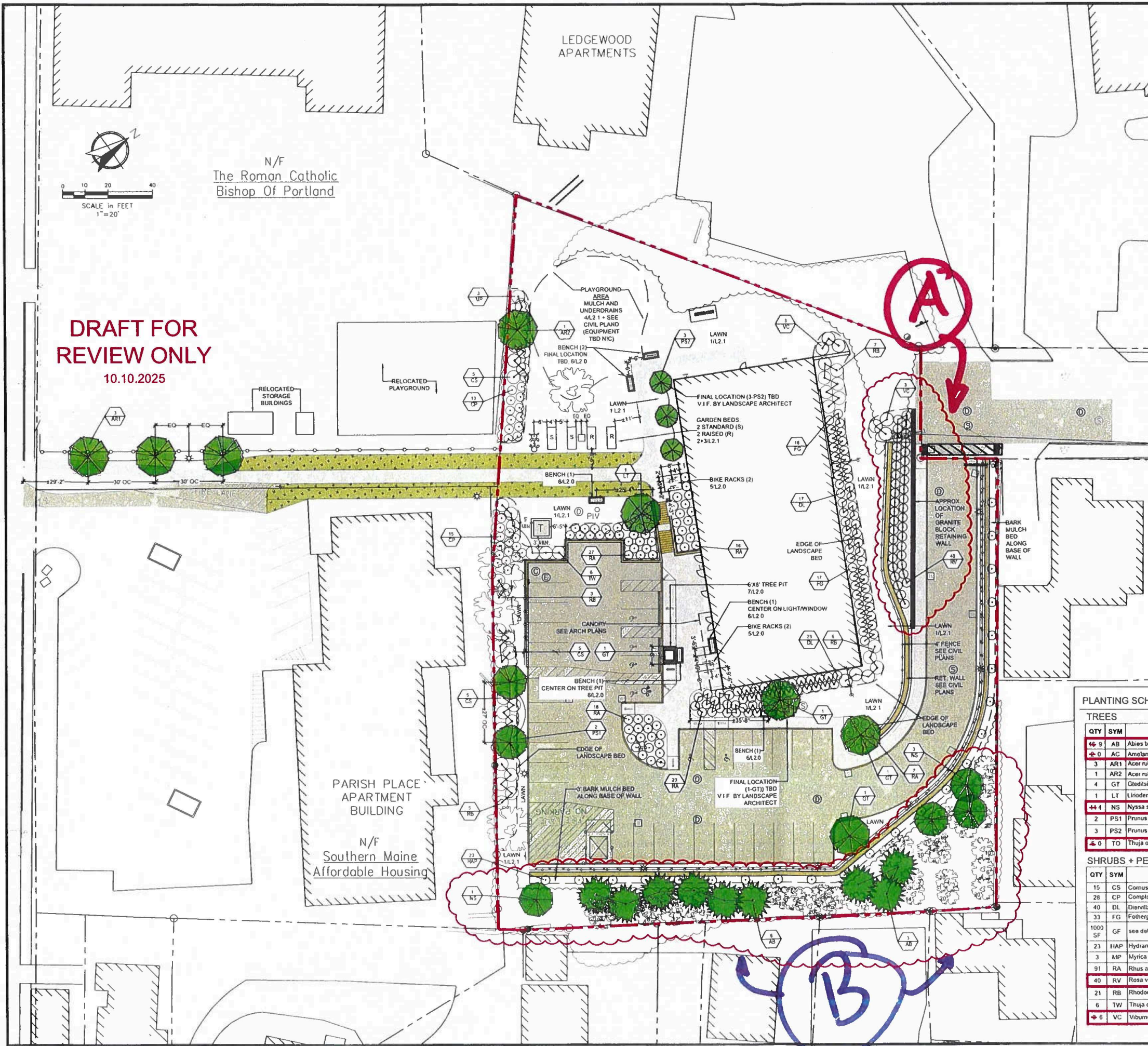








Guy G. Sent from my iPhone



PLANTING NOTES:

- CONTRACTOR SHALL BEGIN MAINTENANCE IMMEDIATELY AFTER PLANTING AND SHALL CONTINUE UNTIL FINAL ACCEPTANCE. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MEANS AND METHODS OF WATERING AND MAINTENANCE.
- CONTRACTOR SHALL SUPPLY PLANTS IN QUANTITIES SUFFICIENT TO COMPLETE WORK SHOWN ON THE PLAN. ANY DISCREPANCY BETWEEN THE QUANTITIES SHOWN IN THE PLANT SCHEDULE AND THOSE REQUIRED ON THE PLAN SHALL NOT ENTITLE THE CONTRACTOR TO ADDITIONAL REMUNERATION. ANY DISCREPANCIES SHALL BE CLARIFIED WITH THE LANDSCAPE ARCHITECT PRIOR TO ORDERING PLANT MATERIAL.
- ALL MATERIALS SHALL CONFORM TO SPECIFICATIONS OF THE AMERICAN STANDARDS FOR NURSERY STOCK (LATEST EDITION) AS SET FORTH BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
- ALL PLANTS SHALL BEAR THE SAME RELATIONSHIP TO FINISH GRADE AS THE ORIGINAL GRADES BEFORE DIGGING.
- THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL PLANT MATERIALS FOR ONE (1) FULL YEAR FROM DATE OF SUBSTANTIAL COMPLETION.
- ALL PLANT MATERIALS ARE SUBJECT TO THE APPROVAL OF THE LANDSCAPE ARCHITECT AT THE NURSERY AND AT THE SITE.
- ALL PLANT BEDS SHALL MEET MINIMUM TOPSOIL REQUIREMENTS (SEE SPECIFICATIONS).
- NO PLANT MATERIAL SHALL BE INSTALLED UNTIL GRUBBING, BED PREPARATION, AND FINISH GRADING HAS BEEN COMPLETED IN THE IMMEDIATE AREA.
- ALL PLANTS BEDS AND TREE WELLS SHALL HAVE A MINIMUM OF 3" OF UNIFORMLY DISTRIBUTED, DARK, SHREDDED BARK MULCH.
- CONTRACTOR SHALL SUBMIT SOIL SAMPLE AND TEST OF TOPSOIL TO LANDSCAPE ARCHITECT PRIOR TO INSTALLATION. SOIL ADMIXTURE SHALL BE ADDED TO EXISTING SOIL (BY CONTRACTOR) IF DEEMED NECESSARY BY SOIL TEST RESULTS.
- ROUGH GRADING AND BED PREPARATION SHALL BE APPROVED BY LANDSCAPE ARCHITECT PRIOR TO PLANT INSTALLATION. CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT 48 HOURS PRIOR TO REQUIRED SITE VISIT.
- ALL PLANTS SHALL BE BALLED AND WRAPPED OR CONTAINER GROWN AS SPECIFIED. ALL ROOT WRAPPING AND CONTAINER MATERIAL MADE OF SYNTHETICS OR PLASTICS SHALL BE REMOVED AT THE TIME OF PLANTING.
- ALL BROAD LEAF EVERGREEN PLANTS SHALL BE SPRAYED WITH AN ANTI-DESSICANT AT THE BEGINNING OF THEIR FIRST WINTER.
- ALL PLANTS SHALL BE INSTALLED AS PER DETAILS AND THE CONTRACT SPECIFICATIONS. THE LANDSCAPE CONTRACTOR SHALL REFER TO THE CONTRACT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- ALL PLANTS SHALL BE WATERED BY THE CONTRACTOR, AS NECESSARY TO INSURE HEALTH UNTIL FINAL ACCEPTANCE.
- CONTRACTOR SHALL STAKE TREES IF DEEMED NECESSARY BY THE LANDSCAPE ARCHITECT.
- THE LANDSCAPE CONTRACTOR SHALL PROVIDE PREPARED SOIL PLANTING MIX AS PER THE CONTRACT SPECIFICATIONS.
- THE LANDSCAPE CONTRACTOR SHALL REFER TO THE PLANT LIST AND PLANTING SPECIFICATIONS FOR SEASONAL REQUIREMENTS AND OTHER RESTRICTIONS RELATED TO THE TIME AND SEASON OF PLANTING.
- PLANTING SOIL MIX: 1 PART COMPOST, 8 PARTS TOPSOIL, 3 PARTS HUMUS. TOPSOIL: FERTILE, FRIABLE, NATURAL TOPSOIL OF LOAMY CHARACTER, WITHOUT ADMIXTURE OF SUBSOL MATERIAL. FREE FROM CLAY LUMPS, COARSE SANDS, STONES, PLANTS, ROOTS, STICKS, AND OTHER FOREIGN MATERIALS GREATER THAN 1" IN ANY DIMENSION. PH RANGE 5.0-7.0. AND SHALL CONTAIN NOT LESS THAN 6% ORGANIC MATTER BY WEIGHT. SANDY LOAM OR LOAM SOIL AS DEFINED BY THE USDA SOIL CONSERVATION SERVICE, AND HAVE THE FOLLOWING MECHANICAL ANALYSIS:

TEXTURAL CLASS	% OF TOTAL WEIGHT	AVERAGE %
SAND (0.05-2.0 MM)	45 TO 75%	60%
SILT (0.002-0.05 MM)	15 TO 35%	25%
CLAY (<0.002 MM)	5 TO 25%	15%
- THE APPLICANT HAS FLEXIBILITY ON THE FINAL PLACEMENT OF THE PROPOSED TREES, ALONG THE SOUTH EASTERN PROPERTY LINE, IF THE EXISTING VEGETATION PROVES TO BE INADEQUATE TO PROVIDE AN EFFECTIVE SCREEN.

PLANTING SCHEDULE

TREES						
QTY	SYM	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS	NATIVE
46	AB	Abies balsamea var. phanerolepis	Canadan Balsam Fir	8-10' HT.		
4	AC	Amelanchier canadensis	Native Shadbush	7-8' HT.	B+B, CLUMP	X
3	AR1	Acer rubrum 'Karpick'	Red Maple	2-2.5'	B+B	X
1	AR2	Acer rubrum 'Northwood'	Red Maple	2-2.5'	B+B	X
1	GT	Gleditsia triacanthos 'Street Keeper'	Honeylocust	2-2.5'	B+B	
4	LT	Liriodendron tulipifera 'Little Volunteer'	Tulip tree	2-2.5'	B+B	X
44	NS	Nyssa sylvatica 'Firestarter'	Tupelo	2-2.5'	B+B	X
2	PS1	Prunus sargentii	Sargent Cherry	2-2.5'	B+B	
3	PS2	Prunus sargentii 'Rancho' or 'Columbian'	Sargent Cherry	2-2.5'	B+B, MATCHING	
4	TO	Thuja occidentalis 'Techny'	Arborvitae	6-7' HT.	B+B	X

SHRUBS + PERENNIALS + VINES + GROUND COVERS						
QTY	SYM	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS	NATIVE
15	CS	Cornus sericea 'Farrow'	Red Twig Dogwood	4-5' #7		X
28	CP	Comptonia peregrina	Sweetfern	#7		X
40	DL	Diervilla lonicera	Northern Bush Honeysuckle	#5		X
33	FG	Fothergilla gardenii	Dwarf Bottlebrush Bush	2-2.5' #7		
1000	SF	see detail / spec 1/L2.1	Grass + Forbes mix (sem-shade blend)	1.450 SF PER LBS		X
23	HAP	Hydrangea anomala pectiolans	Climbing Hydrangea	4-5' #10	15' O.C.	
3	MP	Myrica pensylvanica 'Bobee'	Northern Bayberry	3-4' #7		X
91	RA	Rhus aromatica 'Gro-Low'	Fragrant Sumac	2-2.5' #5		X
40	RV	Rosa virginiana	Virginia Rose	#5		X
21	RB	Rhododendron 'Boule-de-Neige'	Rhododendron	3' HT	B+B	
6	TW	Thuja occidentalis 'Woodwardii'	Arborvitae	3-3.5' HT.	B+B	X
4	VC	Viburnum cassinoides	Withered Viburnum	3-3.5' HT.	B+B	X

OWNER:

SOUTHERN MAINE AFFORDABLE HOUSING
22 SOUTH STREET
P.O. BOX 2287
BIDDEFORD, MAINE 04005

APPLICANT:

BIDDEFORD HOUSING AUTHORITY
22 SOUTH STREET
P.O. BOX 2287
BIDDEFORD, MAINE 04005

ADAMS POINT
For Paradise

ADAMS POINT

Revisions	Date	Description
#1	09.21.2021	Revised per City comments
#2	12.17.2021	Revised per Conditions of Approval
#3	11.22.2022	90% MSHA Submission
#4	05.05.2023	100% GMP Set

Scale: as shown

Approved By: PC

Drawn By: MAP

LANDSCAPE PLAN

Phase FOR CONSTRUCTION

CARROLL ASSOCIATES
LANDSCAPE ARCHITECTS
217 COMMERCIAL STREET, STE 200
PORTLAND, MAINE 04101
207.772.1552 V. F. 207.772.0112

Date MAY 5, 2023

Sheet No

L1.0



































ADAMS POINT HOUSING

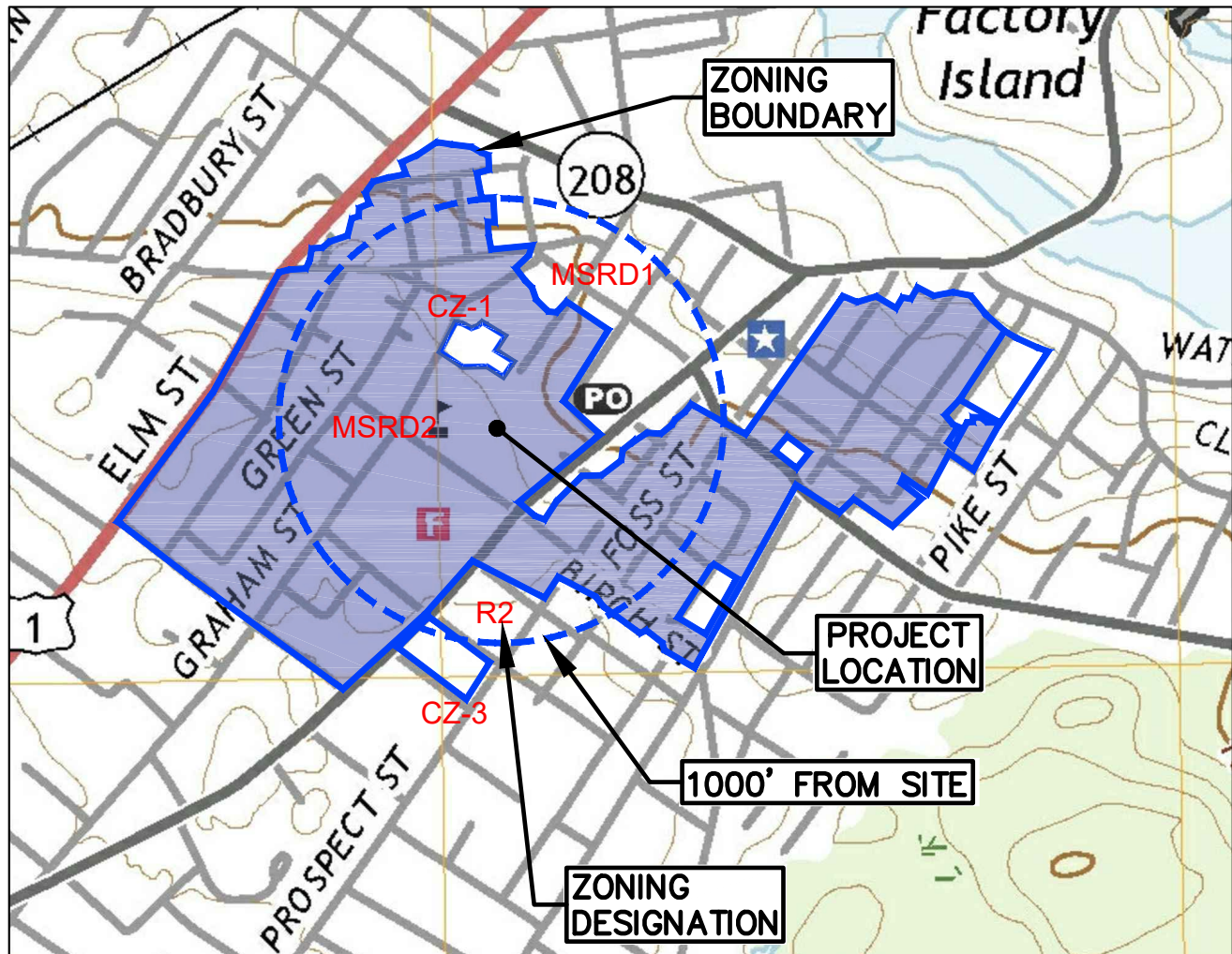
69 ADAMS STREET, BIDDEFORD, MAINE, 04005

LEGEND

	EXISTING EDGE OF ASPHALT CONCRETE PAVEMENT
	SAWCUT (SHEET CD101 ONLY)
	REMOVALS (SHEET CD101 ONLY)
	EDGE OF ASPHALT CONCRETE PAVEMENT
	EXISTING BUILDING LINE
	BUILDING LINE
	EXISTING STORM DRAIN LINE (PIPE SIZE IF KNOWN)
	STORM DRAIN LINE (PIPE SIZE INDICATED)
	EXISTING SANITARY SEWER LINE (PIPE SIZE IF KNOWN)
	SANITARY SEWER LINE (PIPE SIZE INDICATED)
	EXISTING WATER LINE (PIPE SIZE AND IF KNOWN)
	DOMESTIC WATER LINE (PIPE SIZE INDICATED)
	EXISTING OVERHEAD ELECTRIC AND COMMUNICATION LINE
	UNDERGROUND ELECTRIC CONDUIT (SIZE INDICATED).
	UNDERGROUND ELECTRIC CONDUIT (SIZE INDICATED).
	UNDERGROUND COMMUNICATIONS CONDUIT (SIZE INDICATED).
	EXISTING UNDERGROUND NATURAL GAS (PIPE SIZE IF KNOWN).
	UNDERGROUND NATURAL GAS LINE (SIZE INDICATED).
	SILT FENCE
	EXISTING ELEVATION CONTOURS (DECIMAL FEET)
	FINISH ELEVATION CONTOURS (DECIMAL FEET)
	UTILITY POINT OF CONNECTION
	EXISTING PIPE FLOW DIRECTION
	PIPE FLOW DIRECTION
	EXISTING SURFACE FLOW
	EXISTING PAD MOUNTED TRANSFORMER.
	EXISTING LIGHT POLE WITH CONCRETE FOUNDATION
	EXISTING WATER SHUT-OFF VALVE
	WATER SHUT-OFF VALVE
	FOUNDATION DRAIN CLEANOUT
	EXISTING TREELINE
	REMOVAL TREELINE
	TREELINE
	EXISTING SPOT GRADE
	FINISH SPOT GRADE
	EXISTING AND FINISH SPOT GRADES (NO CHANGE IN GRADES)
	FINISH SPOT GRADE
	EXISTING SPOT GRADE
	EXISTING SOIL TEST PIT
	DETAIL NUMBER SHEET WHERE DETAIL IS DRAWN SHEETS WHERE DETAIL IS TAKEN
	DETAIL NUMBER SHEET WHERE DETAIL IS DRAWN
	DEMOLITION KEYNOTE
	NEW WORK KEYNOTE

ABBREVIATIONS

@	AT
&	AND
#,NO	NUMBER
°	DEGREES
±	PLUS/MINUS
ACT	ACOUSTICAL CEILING TILE
ASTM	AMERICAN SOCIETY OF TESTING AND MATERIALS
BD	BOARD
¢	CENTERLINE
CONC	CONCRETE
DIA Ø	DIAMETER
EPDM	ETHYLENE PROPYLENE DIENE TERPOLYMER
ELEV,EL	ELEVATION
EMERG	EMERGENCY
EQ	EQUAL
EXIST,E	EXISTING
F	FINISH
FDN	FOUNDATION
FEC	FIRE EXTINGUISHER CABINET
FFE	FINISH FLOOR ELEVATION
FRT	FIRE RETARDANT TREATED
FT	FOOT, FEET
HDPE	HIGH DENSITY POLYETHYLENE
IN	INCH(ES)
INSUL	INSULATION
INV	INVERT
MAX	MAXIMUM
MIN	MINIMUM
mm	MILLIMETER(S)
MTL	METAL
N	NORTH
OC	ON CENTER
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
PLYWD	PLYWOOD
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
PT	PRESSURE TREATED
REINF	REINFORCED
SF	SQUARE FEET
SIM	SIMILAR
SQ	SQUARE
SS	STAINLESS STEEL
STL	STEEL
STRUCT	STRUCTURAL
SYS	SYSTEM
TBM	TEMPORARY BENCH MARK
TOS	TOP OF STEEL
TYP	TYPICAL
VIF	VERIFY IN FIELD
W/	WITH
WD	WOOD



VICINITY MAP

SCALE: 1"=800'



NOTES

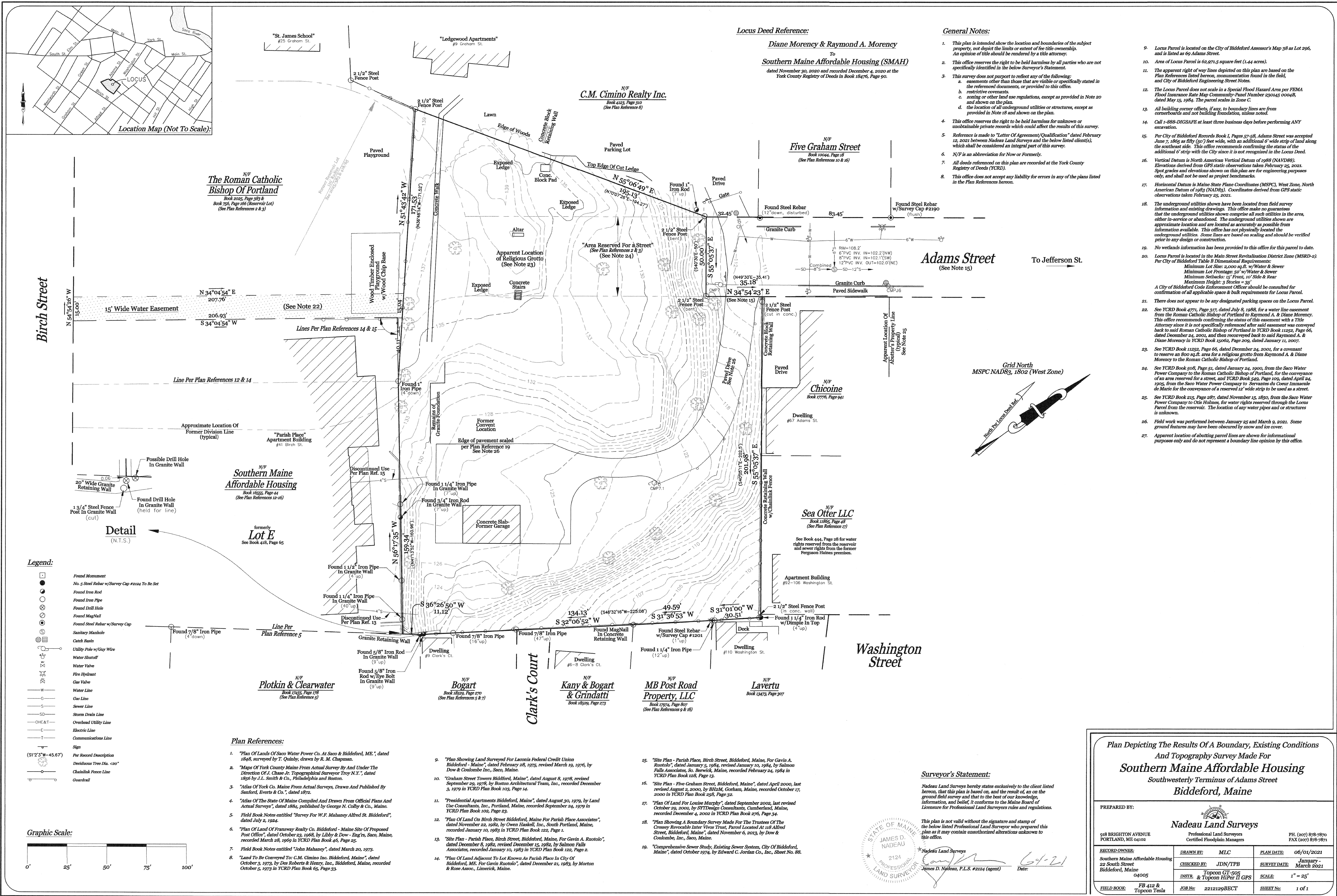
- THESE ARE GENERAL PROJECT NOTES THAT APPLY TO THE ENTIRE PROJECT INCLUDING EACH DISCIPLINE.
- ALL COMPONENTS ARE NEW AND SHALL BE PROVIDED BY THE CONTRACTOR UNLESS NOTED OTHERWISE.
- VERIFY EXISTING CONDITIONS AND DIMENSIONS PRIOR TO COMMENCING WORK. REPORT ANY DISCREPANCIES TO THE ARCHITECT. PROCEED WITH THE WORK AFTER DISCREPANCIES HAVE BEEN RESOLVED.
- CONFORM TO STATE, NATIONAL AND OTHER CODES AND ORDINANCES WHICH ARE APPLICABLE TO THIS PROJECT, KNOWN PERMITS THAT HAVE BEEN OBTAINED BY THE OWNER INCLUDE:
 - CITY OF BIDDEFORD SITE PLAN REVIEW.
 - STATE OF MAINE STORMWATER PERMIT BY RULE.
- WORK FROM GIVEN DIMENSIONS AND LARGE SCALE DETAILS ONLY. DO NOT SCALE DRAWINGS.
- DO NOT PENETRATE NEW BEAMS, GIRDERS, WAFFLE SLABS OR OTHER STRUCTURAL MEMBERS UNLESS SHOWN OTHERWISE ON THE STRUCTURAL DRAWINGS.
- DURING THE ENTIRE CONTRACT PERIOD, MAINTAIN THE CONSTRUCTION SITE IN A SECURE, WEATHER TIGHT, NEAT, CLEAN AND SAFE CONDITION.
- DISPOSE OF AND/OR RECYCLE CONSTRUCTION DEBRIS FROM THE PROJECT AS REQUIRED BY THE CONTRACT AND STATE OF MAINE. OBTAIN DISPOSAL PERMITS WHICH ARE REQUIRED. DISPOSE OF CONSTRUCTION DEBRIS FROM THE PROJECT IN A STATE APPROVED LANDFILL.
- COMPLETE WORK IN COMPLIANCE WITH INDUSTRY STANDARDS AND PERFORM WORK IN A WORKMANLIKE PROFESSIONAL MANNER.
- UNLESS NOTED OTHERWISE, DIMENSIONS ARE TO FACE OF FRAMING.
- ELEVATIONS ARE BASED UPON NAVD 88.
- RESTORE SURFACES, SITE FEATURES AND LANDSCAPING THAT ARE DAMAGED BY CONSTRUCTION TO THEIR ORIGINAL CONDITION, AS ACCEPTABLE TO THE OWNER.
- DO NOT DIRECT VEHICLE OR EQUIPMENT EXHAUST TOWARDS THE BUILDINGS.
- HAND EXCAVATE WITHIN 5' OF EXISTING UNDERGROUND UTILITIES AND EXISTING FOUNDATION WALLS.
- CONTACT "DIGSAFE" AT 1-888-344-7233 AND OBTAIN A "DIGSAFE" PERMIT PRIOR TO COMMENCING EXCAVATION OPERATIONS. ADDITIONALLY CONTACT "OKTODIG" AT 1-866-658-6344 FOR NON-DIG SAFE MEMBERS WITHIN THE CITY OF BIDDEFORD.



LIST OF DRAWINGS

SHEET NUMBER	DISCIPLINE SHEET	TITLE
1 OF 23	G-001	LIST OF DRAWINGS, MAPS, NOTES, LEGEND AND ABBREVIATIONS
2 OF 23	V-101	BOUNDARY, EXISTING CONDITIONS, AND TOPOGRAPHIC SURVEY
3 OF 23	CD101	REMOVALS SITE PLAN
4 OF 23	CS101	SUBDIVISION AND SITE PLAN
5 OF 23	CL101	LAYOUT PLAN
6 OF 23	CU101	UTILITY PLAN
7 OF 23	CG101	GRADING PLAN
8 OF 23	CG102	ENLARGED GRADING PLAN
9 OF 23	C-301	ROAD PROFILE
10 OF 23	C-302	UTILITY PROFILES
11 OF 23	C-501	EROSION CONTROL NOTES AND DETAIL
12 OF 23	C-502	EROSION CONTROL DETAILS
13 OF 23	C-503	SITE DETAILS - 1
14 OF 23	C-504	SITE DETAILS - 2
15 OF 23	C-505	SITE DETAILS - 3
16 OF 23	C-506	SITE DETAILS - 4
17 OF 23	L1.0	LANDSCAPE PLAN
18 OF 23	L2.0	LANDSCAPE DETAILS
19 OF 23	A100	GROUND FLOOR PLAN
20 OF 23	A101	FIRST FLOOR - 4th FLOOR PLAN
21 OF 23	A200	EXTERIOR ELEVATIONS
22 OF 23	E100	EXTERIOR LIGHTING PLAN
23 OF 23	WS101	WATERSHED PLANS

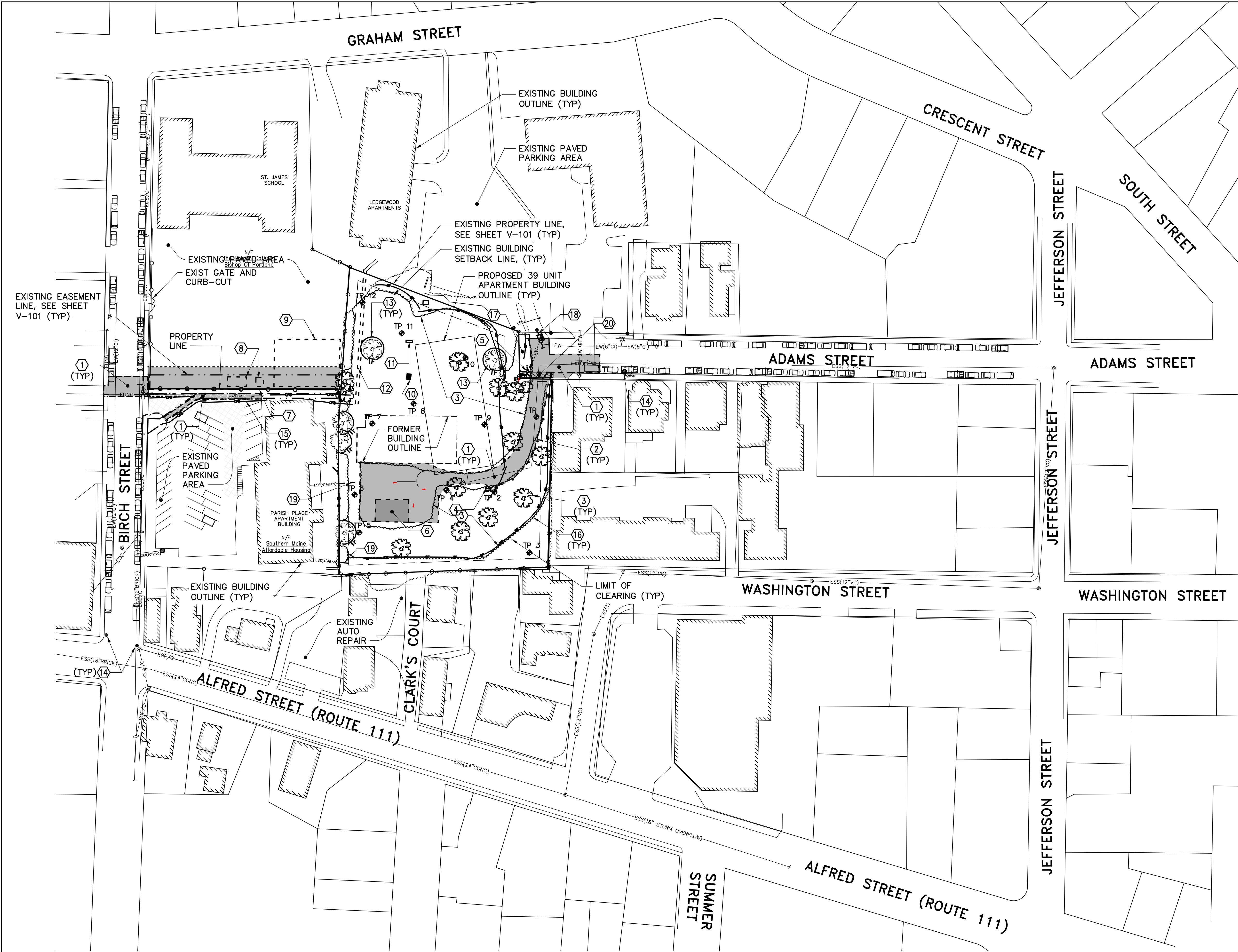
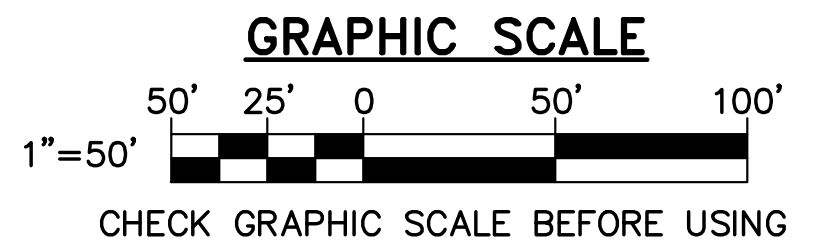
FOR PERMITTING PURPOSES ONLY NOT FOR CONSTRUCTION



1	12/7/21	REVISED FOR CONDITIONS OF APPROVAL	JLG
NO.	DATE	DESCRIPTION	BY
REVISIONS			

1 REMOVALS SITE PLAN
CD101 SCALE: 1"=50'

NOTE:
ALL ADJACENT USES ARE RESIDENTIAL
UNLESS NOTED OTHERWISE.



- KEYNOTES:**
- 1 REMOVE EXISTING ASPHALT CONCRETE PAVEMENT (SAWCUT WHERE INDICATED).
 - 2 REMOVE EXISTING VEHICLE GUARD RAIL AND POSTS.
 - 3 REMOVE EXISTING TREE, GRUB STUMP (ONLY TREES OVER 10-INCH DIAMETER IDENTIFIED).
 - 4 REMOVE EXISTING UTILITY POLE AND GUY WIRES.
 - 5 RELOCATE EXISTING UTILITY POLE AND LIGHT.
 - 6 REMOVE EXISTING CONCRETE SLAB-ON-GRADE AND FOUNDATION.
 - 7 REMOVE EXISTING FENCE.
 - 8 RELOCATE EXISTING STORAGE SHEDS.
 - 9 RELOCATE EXISTING PLAYGROUND.
 - 10 REMOVE EXISTING CONCRETE STAIRS.
 - 11 REMOVE EXISTING REMAINS OF ALTAR.
 - 12 REMOVE EXISTING CONCRETE WALK.
 - 13 EXISTING TREE TO REMAIN WITH TREE PROTECTION FENCE AT DRIPLINE.
 - 14 CATCH BASIN INLET PROTECTION, 2/C-502.
 - 15 SEDIMENT CONTROL FILTER SOCK, 1/C-502.
 - 16 SILT FENCE, 1/C-501.
 - 17 CLEAR EXISTING VEGETATION TO BASE OF HILL FOR SNOW STORAGE (APPROXIMATELY 10 TO 15 FEET FROM EDGE OF PAVEMENT).
 - 18 REMOVE EXISTING STORM DRAIN PIPE AND CONNECT TO NEW DRAIN MANHOLE, SEE DRAWING CU101.
 - 19 REMOVE EXISTING ABANDONED SEWER LINES.
 - 20 CONSTRUCTION ENTRANCE/EXIT, SEE 3/C-501.

SCALE: AS NOTED
DATE: 08-02-2021

DWG.: CD101

SHEET: 3 OF 23

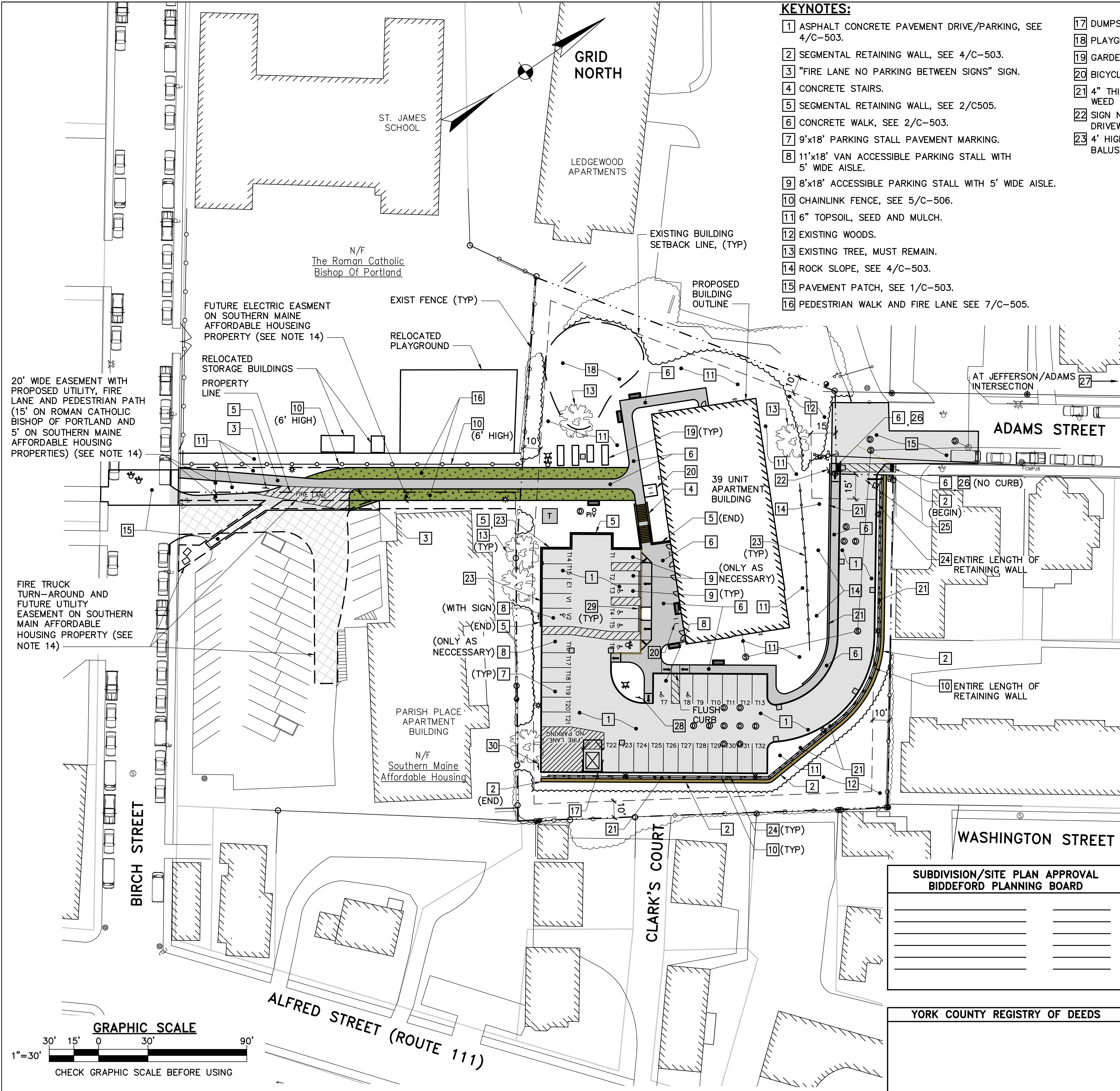
OWNER:
SOUTHERN MAINE
AFFORDABLE HOUSING
22 South Street
Biddeford, Maine, 04005

PROJECT TITLE AND LOCATION:
ADAMS POINT HOUSING
69 Adams Street
Biddeford, Maine, 04005

DESIGNED BY: JLG
DRAWN BY: DEW
CHECKED BY: JLG
PROJECT: 22104.04

OAK POINT
ASSOCIATES
ARCHITECTURE • ENGINEERING • PLANNING
231 Main Street, Biddeford, Maine 04005 (T) 207.283.0183 (F) 207.283.4283
www.oakpoint.com

FOR PERMITTING PURPOSES ONLY NOT FOR CONSTRUCTION



KEYNOTES:

- 1 ASPHALT CONCRETE PAVEMENT DRIVE/PARKING, SEE 4/C-503.
- 2 SEGMENTAL RETAINING WALL, SEE 4/C-503.
- 3 "FIRE LANE NO PARKING BETWEEN SIGNS" SIGN.
- 4 CONCRETE STAIRS.
- 5 SEGMENTAL RETAINING WALL, SEE 2/C505.
- 6 CONCRETE WALK, SEE 2/C-503.
- 7 9'x18' PARKING STALL PAVEMENT MARKING.
- 8 11'x18' VAN ACCESSIBLE PARKING STALL WITH 5' WIDE AISLE.
- 9 8'x18' ACCESSIBLE PARKING STALL WITH 5' WIDE AISLE.
- 10 CHAINLINK FENCE, SEE 5/C-506.
- 11 6" TOPSOIL, SEED AND MULCH.
- 12 EXISTING WOODS.
- 13 EXISTING TREE, MUST REMAIN.
- 14 ROCK SLOPE, SEE 4/C-503.
- 15 PAVEMENT PATCH, SEE 1/C-503.
- 16 PEDESTRIAN WALK AND FIRE LANE SEE 7/C-505.

- 17 DUMPSTER PAD AND ENCLOSURE, SEE 1/C-506.
- 18 PLAYGROUND, SEE 7/L2.0.
- 19 GARDENS, SEE DRAWING L1.0.
- 20 BICYCLE RACK, SEE DRAWING L1.0.
- 21 4" THICK, 3/4" CRUSHED STONE WITH WEED CONTROL FABRIC.
- 22 SIGN NEAR 69 ADAMS STREET: "PRIVATE DRIVEWAY FOR 69 ADAMS STREET".
- 23 4' HIGH DECORATIVE FENCE (VERTICAL BALUSTRADES WITH BLACK FINISH).

- 24 VEHICLE GUARD RAIL, SEE 4/C-503.
- 25 1' WIDE WHITE STOP BAR.
- 26 TACTILE WARNING PANEL, SEE 4/C-505.
- 27 PROVIDE STOP SIGNS AND STOP BAR AT JEFFERSON AND ADAMS INTERSECTION, SEE 6-C505.
- 28 "LOADING ZONE NO PARKING" SIGN AND POST.
- 29 PARKING STOP.
- 30 "FIRE LANE NO PARKING" SIGN.

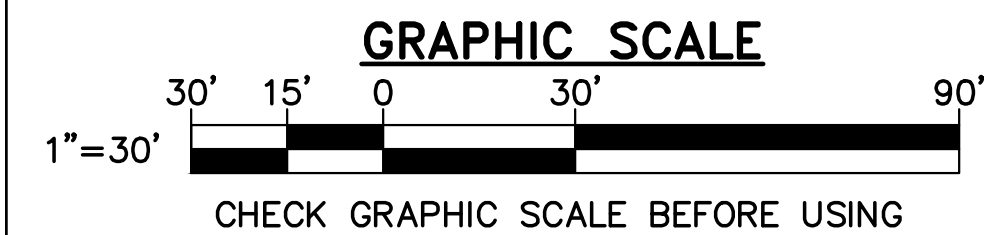
NOTES:

- PROPERTY INFORMATION
 - 1.a. OWNER: SOUTHERN MAINE AFFORDABLE HOUSING
22 SOUTH STREET
BIDDEFORD, MAINE 04005
 - 1.b. LOCUS TAX MAP: MAP 38, LOT 290
 - 1.c. DEED REFERENCE: BOOK 18476, PAGE 90 (EASEMENT: BOOK 15062, PAGE 209)
 - 1.d. TOTAL PARCEL AREA (BASED ON BOUNDARY SURVEY REFERENCED IN NOTE 2, BELOW): 62,971.5 FT² (1.44 ACRES)
- INFORMATION SHOWN HEREON IS BASED ON THE FOLLOWING:
 - 2.a. A PLAN ENTITLED "A PLAN DEPICTING THE RESULTS OF A BOUNDARY, EXISTING CONDITIONS AND TOPOGRAPHIC SURVEY MADE FOR SOUTHERN MAINE AFFORDABLE HOUSING, SOUTHWESTERLY TERMINUS OF ADAMS STREET, BIDDEFORD, MAINE". PREPARED BY MADEAU LAND SURVEYS, 918 BRIGHTON AVENUE, PORTLAND, ME, 04102, PLAN DATE 06/01/2021.
 - 2.b. TOPOGRAPHIC SURVEY DATA INFORMATION FROM THE PLAN REFERENCE 2.a. ABOVE.
 - 2.c. SUBSURFACE WATER AND GAS MAIN LOCATIONS FROM GEOGRAPHICAL INFORMATION SYSTEM DATABASE INFORMATION OBTAINED FROM MAINE WATER COMPANY AND UNITIL CO.
 - 2.d. SUBSURFACE SEWER AND STORM DRAIN INFORMATION PROVIDED BY THE CITY OF BIDDEFORD, MAINE IN MAY, 2021 CONSISTING OF THE FOLLOWING:
 - 2.e. GEOGRAPHIC INFORMATION SYSTEM INFORMATION.
 - 2.f. A PLAN ENTITLED "GRAHAM STREET TOWERS", BIDDEFORD, MAINE, DRAWING 1 OF 2 BY BOSTON ARCHITECTURAL TEAM REVISED SEPT 19, 1978.
 - 2.f.a. A PLAN ENTITLED "PARISH PLACE", BIRCH STREET, BIDDEFORD, MAINE, SHEET S1 BY SWIFT ENGINEERING AND SALMON FALLS ASSOCIATES DATED 1-5-84.
 - 2.f.b. A PLAN ENTITLED "PLAN OF LAND FOR LOUISE MURPHY", SHEET S-100 BY SYTDESIGN CONSULTANTS DATED SEPT 2002.
 - 2.f.c. PLAN ENTITLED "EXISTING SEWER SYSTEM" INCLUDED IN THE PROJECT ENTITLED "COMPREHENSIVE SEWER STUDY" BY EDWARD C. JORDAN CO, INC, DATED OCTOBER, 1974.
- ELEVATIONS INDICATED HEREON ARE BASED ON THE NAVD 88 VERTICAL DATUM.
- UTILITIES INDICATED HEREON ARE BASED ON FIELD RECONNAISSANCE AND INFORMATION PROVIDED BY THE CITY OF BIDDEFORD, MAINE WATER, UNITIL, AND PLAN REFERENCE 2.a.. THEY ARE SHOWN IN THEIR APPROXIMATE LOCATION. AT LEAST THREE (3) BUSINESS DAYS PRIOR TO COMMENCING WORK, DETERMINE THE EXACT LOCATION OF ALL UNDERGROUND UTILITIES IN THE WORK AREA, INCLUDING UTILITIES IN HILL STREET, AND CONTACT THE FOLLOWING:
 - 4.a. "DIGSAFE" AT 1-888-344-7233 TO OBTAIN A "DIGSAFE" PERMIT
 - 4.b. "OK-TO-DIG" AT 1-866-658-6344
 - 4.c. MAINE WATER AT 1-800-287-1643
 - 4.d. CITY OF BIDDEFORD AT 207-282-1579 OR AT 207-282-1350
- REPORT DISCREPANCIES BETWEEN THE DRAWINGS AND THE FIELD-IDENTIFIED UTILITY LOCATIONS TO THE OWNER PRIOR TO DISTURBING AREAS SURROUNDING THE EXISTING UNDERGROUND UTILITIES.
- ZONING INFORMATION:

6.a. ZONE:	MSRD 2	PER ORDINANCE:	PER CONTRACT ZONE:
6.b. FRONT YARD SETBACK:	15'	15'	CONTRACT ZONE NO. 20
6.c. SIDE AND REAR YARD SETBACKS:	10'	10'	15' (41.5' PROVIDED)
6.d. MINIMUM LOT SIZE PER DWELLING:	2,000 FT ²	10'	10' (21.3' PROVIDED)
6.e. MINIMUM LOT FRONTAGE:	50'	1,614 FT ²	1,614 FT ² (39 UNITS)
6.f. MAXIMUM HEIGHT:	50'	50'	50' (85.18' PROVIDED)
6.g. PARKING SPACES	3 STORIES (35')	5 STORIES (60')	5 STORIES (60')
6.h. BICYCLES:	2 PER UNIT (78)	0.75 PER UNIT (30)	0.75 PER UNIT (30) (35 PROVIDED)
6.i. PARKING AND PROTECTIVE BUFFERS:	-	8 OUTDOOR, 20 INDOOR PROVIDED	8 OUTDOOR, 20 INDOOR PROVIDED
6.i.a. NON-VEGETATED:	75% MAX	75% MAX	75% MAX (53.0% PROVIDED)
6.i.b. PAVED/PARKING AND PEDESTRIAN SURFACE:	30% MAX	30% MAX	30% MAX (38.6%, WITH WAIVER OF ARTICLE XI,5.1.3)
6.i.c. NATURAL AREAS/LANDSCAPED AREAS:	25% MIN	25% MIN	25% MIN (47.0% PROVIDED)
- TRAFFIC CONTROL NOTE: PREPARE AND SUBMIT A WRITTEN TRAFFIC CONTROL PLAN TO THE CITY OF BIDDEFORD FOR APPROVAL PRIOR TO ANY LANE CLOSURES OR WORK WITHIN THE RIGHT OF WAY.
- OBTAIN CITY OF BIDDEFORD STREET OPENING PERMIT PRIOR TO PERFORMING WORK IN THE RIGHT OF WAY.
- PRIOR TO BEGINNING EXCAVATION, PROVIDE PRODUCT INFORMATION SUBMITTALS FOR THE FOLLOWING PRODUCTS TO THE CITY OF BIDDEFORD ENGINEERING DEPARTMENT AND PUBLIC WORKS DEPARTMENT FOR REVIEW AND APPROVAL:
 - 9.a. STORM DRAIN PIPING
 - 9.b. STORM DRAIN LATERAL CONNECTION
 - 9.c. DRAIN MANHOLE
 - 9.d. SEWER LINE PIPING
- PRIOR TO BEGINNING EXCAVATION, COORDINATE WITH THE CITY OF BIDDEFORD PUBLIC WORKS DEPARTMENT FOR INSPECTIONS OF THE FOLLOWING ITEMS:
 - 10.a. LATERAL CONNECTIONS TO THE EXISTING STORM DRAIN SYSTEM
 - 10.b. STORM DRAIN LINE INSTALLATION WITHIN THE ADAMS STREET RIGHT OF WAY
 - 10.c. CONNECTIONS TO THE EXISTING SANITARY SEWER STUB AT THE EDGE OF THE ADAMS STREET RIGHT OF WAY
- MAIL BOXES WILL BE INSIDE BUILDING LOBBY.
- PARKING MUST BE AVAILABLE FOR USE BEFORE OCCUPANCY PERMIT IS ISSUED.
- THE PURPOSE OF THIS PLAN IS APPROVAL OF A 39 AFFORDABLE HOUSING RESIDENTIAL-UNIT DEVELOPMENT THAT IS SUBJECT TO THE CITY OF BIDDEFORD'S SUBDIVISION ORDINANCE (CHAPTER 66), SITE PLAN AND ZONING REGULATIONS (ARTICLE XI OF THE LAND DEVELOPMENT REGULATIONS), AND CONTRACT ZONE AMENDMENT NO. 20.
- FIRE LANE AND UTILITY EASEMENT FROM BIRCH STREET TO 69 ADAMS STREET CONSISTS OF A 15-FOOT WIDE EASEMENT FROM THE ROMAN CATHOLIC BISHOP OF PORTLAND PROPERTY TO BE EXECUTED AS A CONDITION OF APPROVAL. A 5-FOOT WIDE UTILITY EASEMENT AND FIRE TRUCK TURNING EASEMENT FROM SOUTHERN MAINE AFFORDABLE HOUSING TO A FUTURE OWNER OF 69 ADAMS STREET MUST BE EXECUTED AS PART OF THE PROPERTY TRANSFER.

SUBDIVISION/SITE PLAN APPROVAL
BIDDEFORD PLANNING BOARD

YORK COUNTY REGISTRY OF DEEDS



1	12/7/21	REVISED FOR CONDITIONS OF APPROVAL	JLG
NO.	DATE	DESCRIPTION	BY
REVISIONS			

1 SUBDIVISION AND SITE PLAN
CS101 SCALE: 1"=30'

NOTE:
SEE THE LANDSCAPE SHEET L1.0 FOR PLANTINGS,
SITE AMENITIES, AND GROUND COVERS.

FOR PERMITTING PURPOSES ONLY NOT FOR CONSTRUCTION

DESIGNED BY: JLG
DRAWN BY: DEW
CHECKED BY: JLG
PROJECT: 22104.04

OWNER:
SOUTHERN MAINE
AFFORDABLE HOUSING
22 South Street
Biddeford, Maine, 04005

PROJECT TITLE AND LOCATION:
ADAMS POINT HOUSING
69 Adams Street
Biddeford, Maine, 04005

SUBDIVISION
AND
SITE
PLAN

SCALE: AS NOTED

DATE: 08-02-2021

DWG.: CS101

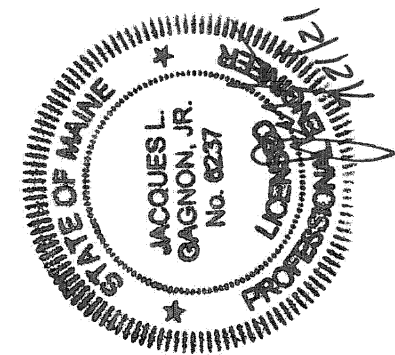
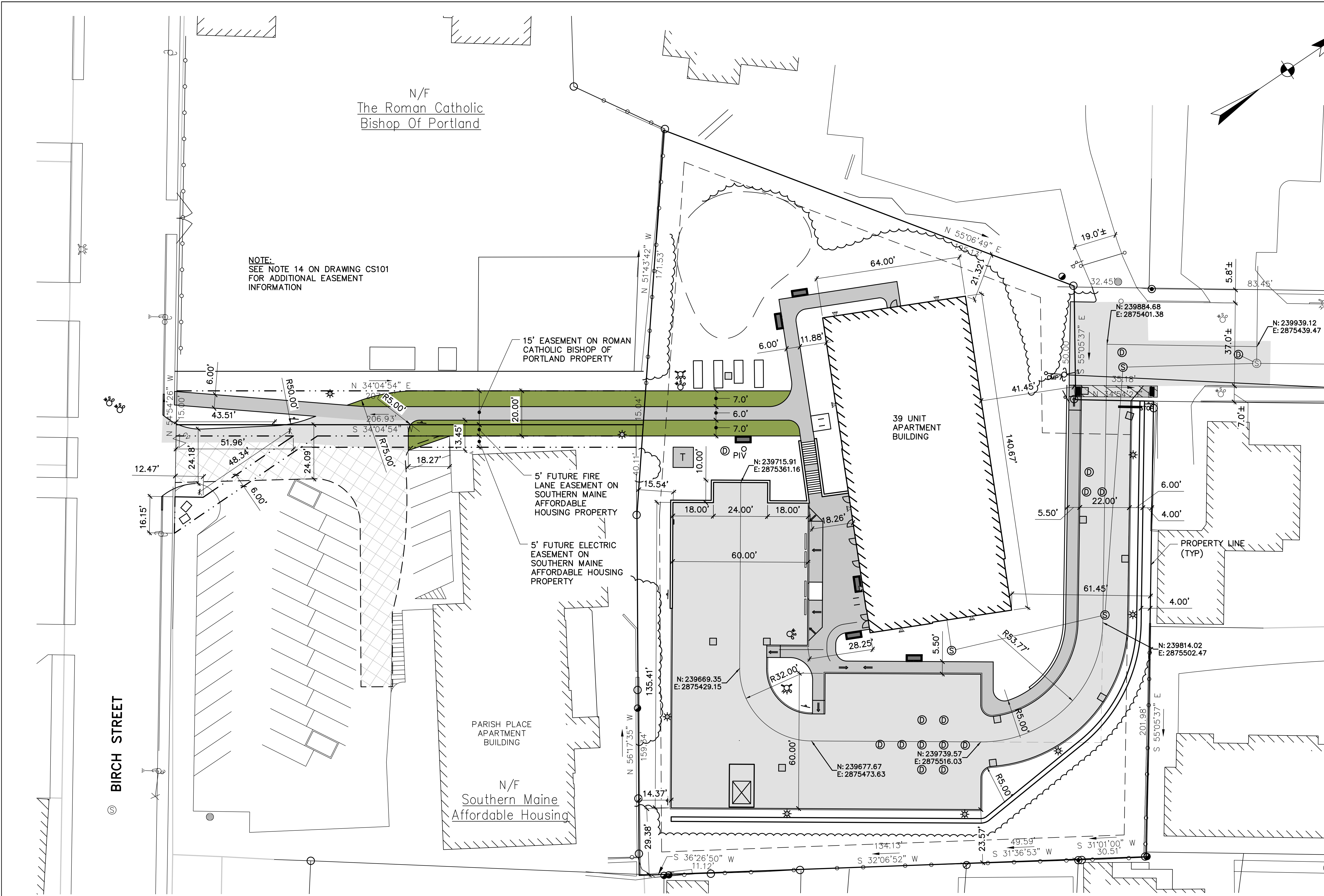
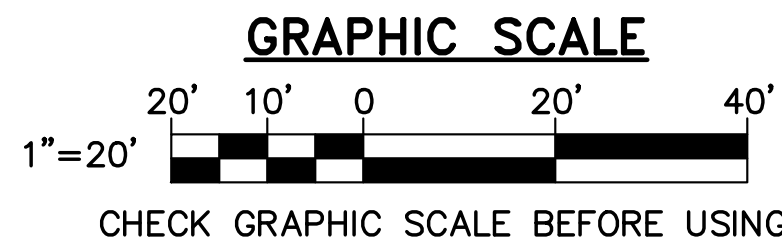
SHEET: 4 OF 23

1	12/7/21	REVISED FOR CONDITIONS OF APPROVAL	JLG
NO.	DATE	DESCRIPTION	BY
REVISIONS			

1 LAYOUT PLAN
CL101 SCALE: 1"=20'

LAYOUT NOTES:

- DIMENSIONS SHOWN TO FACE OF CURB, FACE OF RETAINING WALL, EDGE OF PAVEMENT, EDGE OF STABILIZED TURF, AND FACE OF BUILDING FOUNDATION WALL UNLESS NOTED OTHERWISE.
- DIMENSIONS SHOWN ARE IN DECIMAL FEET.
- COORDINATES ARE BASED ON MAINE STATE PLANE COORDINATES NAD83 WEST ZONE.



DESIGNED BY: JLG
DRAWN BY: DEW
CHECKED BY: JLG
PROJECT: 22104.04

OWNER:
SOUTHERN MAINE
AFFORDABLE HOUSING
22 South Street
Biddeford, Maine, 04005

PROJECT TITLE AND LOCATION:
ADAMS POINT HOUSING
69 Adams Street
Biddeford, Maine, 04005

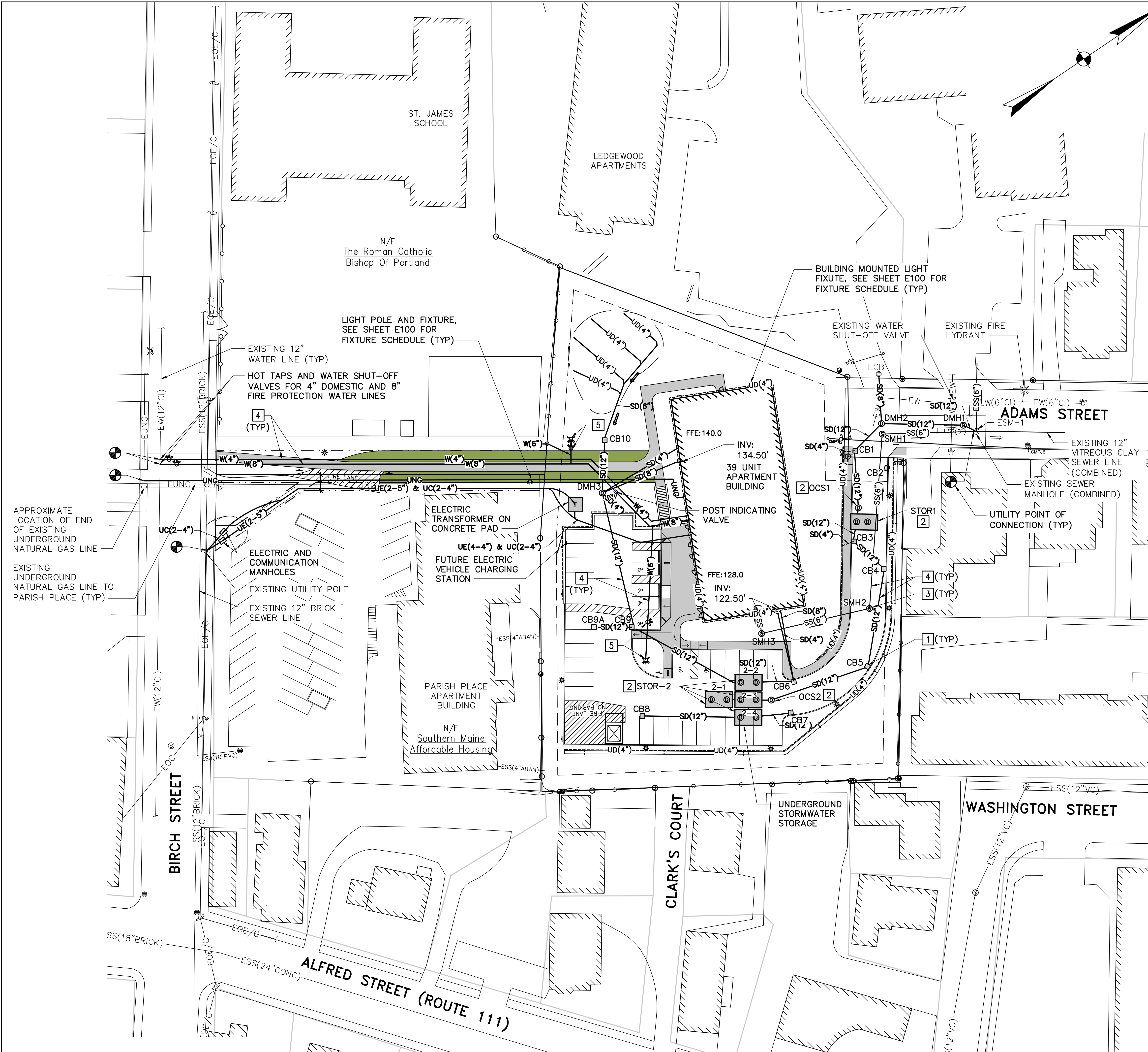
LAYOUT PLAN

SCALE: AS NOTED

DATE: 08-02-2021

DWG.: CL101

SHEET: 5 OF 23



GRID NORTH

KEYNOTES

1

CATCH BASIN, SEE 5/C-503.

2

STORAGE TANK AND OUTLET CONTROL STRUCTURE, SEE 1/C-504 AND 2-C504.

3

SANITARY SEWER MANHOLE, SEE 3/C-505.

4

PIPE TRENCH (TYP), SEE 5/C-505.

5

FIRE HYDRANT AND SHUT-OFF VALVE

STRUCTURE TABLE

STRUCTURE NAME:	DETAILS:
ESMH1	RIM:108.15 INV IN:102.10, SS(6") INV IN:102.20, ESS(6") INV IN:102.10, SD(12") INV OUT:102.00, ESS(12")
SMH1	RIM:111.76 INV IN:105.76, SS(6") INV OUT:104.93, SS(6")
SMH2	RIM:118.35 INV IN:113.50, SS(6") INV OUT:113.20, SS(6")
SMH3	RIM:126.24 INV IN:121.50, SS(6") INV OUT:118.18, SS(6")

STRUCTURE TABLE

STRUCTURE NAME:	DETAILS:
CB1	RIM:112.03 INV IN:102.82, SD(12") INV IN:107.14, SD(12") INV IN:106.06, SD(4") INV OUT:102.72, SD(12")
CB2	RIM:112.22 INV OUT:106.89, SD(12")
CB3	RIM:114.00 INV IN:109.27, SD(12") INV IN:109.24, SD(4") INV OUT:109.16, SD(12")
CB4	RIM:115.61 INV IN:109.50, SD(12") INV OUT:109.40, SD(12")
CB5	RIM:121.68 INV IN:109.91, SD(12") INV OUT:109.81, SD(12")
CB6	RIM:124.65 INV IN:119.82, SD(8") INV IN:119.82, SD(4") INV OUT:119.72, SD(12")
CB7	RIM:124.81 INV OUT:119.79, SD(12")
CB8	RIM:126.31 INV OUT:119.79, SD(12")
CB9	RIM:126.72 INV IN:122.84, SD(12") INV IN:122.61, SD(12") INV OUT:122.74, SD(12")
CB9A	RIM:126.68 INV OUT:122.49, SD(12")
CB10	RIM:137.16 INV OUT:132.36, SD(12")
DMH1	RIM:108.70 INV IN:102.24, SD(12") INV OUT:102.14, SD(12")
DMH2	RIM:111.82 INV IN:102.60, SD(12") INV IN:102.70, SD(8") INV OUT:102.50, SD(12")
DMH3	RIM:138.08 INV IN:132.03, SD(12") INV IN:132.03, SD(4") INV IN:132.03, SD(8") INV OUT:124.50, SD(12") INV OUT:122.88, SD(4")
ECB	RIM:110.78 INV OUT:107.78, SD(8")

STRUCTURE TABLE

STRUCTURE NAME:	DETAILS:
OCS1	RIM:113.00 INV IN:103.10, SD(4") INV IN:106.32, SD(4") INV IN:108.86, SD(12") INV OUT:103.00, SD(12")
OCS2	RIM:125.36 INV IN:109.10, SD(4") INV IN:115.67, SD(4") INV IN:119.29, SD(12") INV OUT:110.23, SD(12")
STOR1	RIM:113.29 INV IN:109.10, SD(12") INV OUT:108.90, SD(12") INV OUT:106.36, SD(4") INV OUT:103.14, SD(4")
STOR2-1	RIM:126.03 INV OUT:110.50, SD(12")
STOR2-2	RIM:125.60 INV IN:119.09, SD(12") INV IN:120.51, SD(12") INV OUT:110.51, SD(12")
STOR2-3	RIM:125.68 INV IN:110.50, SD(12") INV IN:110.51, SD(12") INV OUT:119.36, SD(12") INV OUT:115.74, SD(4") INV OUT:110.40, SD(4")
STOR2-4	RIM:125.58 INV IN:119.46, SD(12") INV IN:119.94, SD(12") INV OUT:110.51, SD(12")

GRAPHIC SCALE

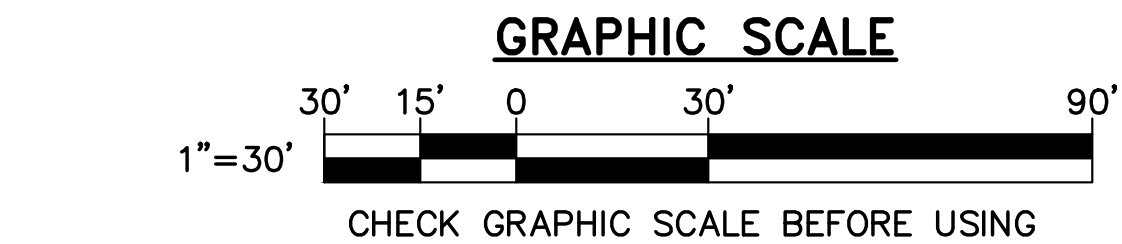
30' 15' 0 30' 90'

1"=30'

CHECK GRAPHIC SCALE BEFORE USING

1	12/7/21	REVISED FOR CONDITIONS OF APPROVAL	JLG
NO.	DATE	DESCRIPTION	BY
REVISIONS			

1 GRADING PLAN
CG101 SCALE: 1"=30'



SHEET: 7 OF 23

DWG.: CG101

DATE: 08-02-2021

SCALE: AS NOTED

GRADING PLAN

PROJECT TITLE AND LOCATION:
ADAMS POINT HOUSING

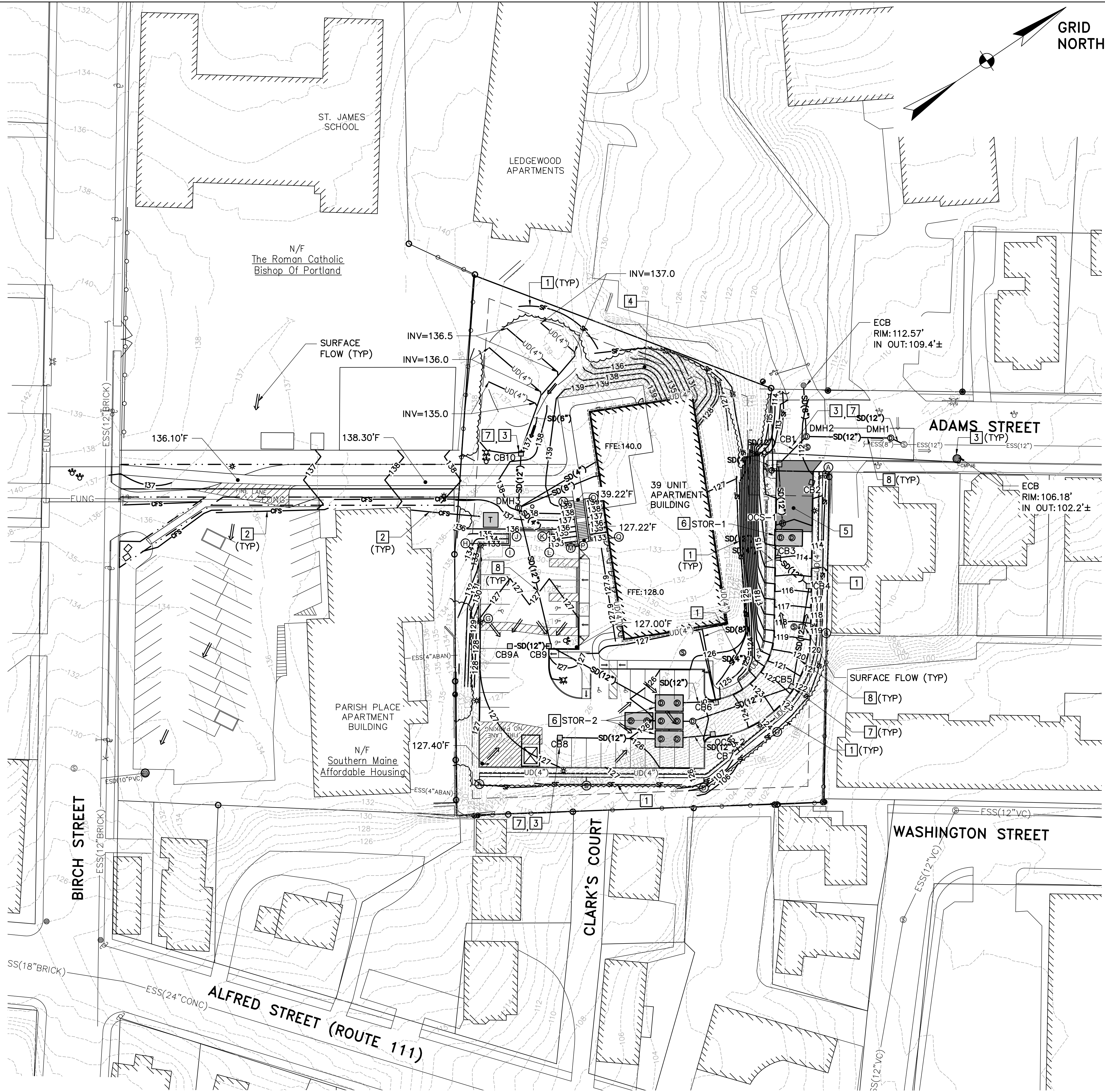
69 Adams Street
Biddeford, Maine, 04005

OWNER:
**SOUTHERN MAINE
AFFORDABLE HOUSING**

22 South Street
Biddeford, Maine, 04005

DESIGNED BY: JLG
DRAWN BY: DEW
CHECKED BY: JLG
PROJECT: 22104.04

FOR PERMITTING PURPOSES ONLY NOT FOR CONSTRUCTION



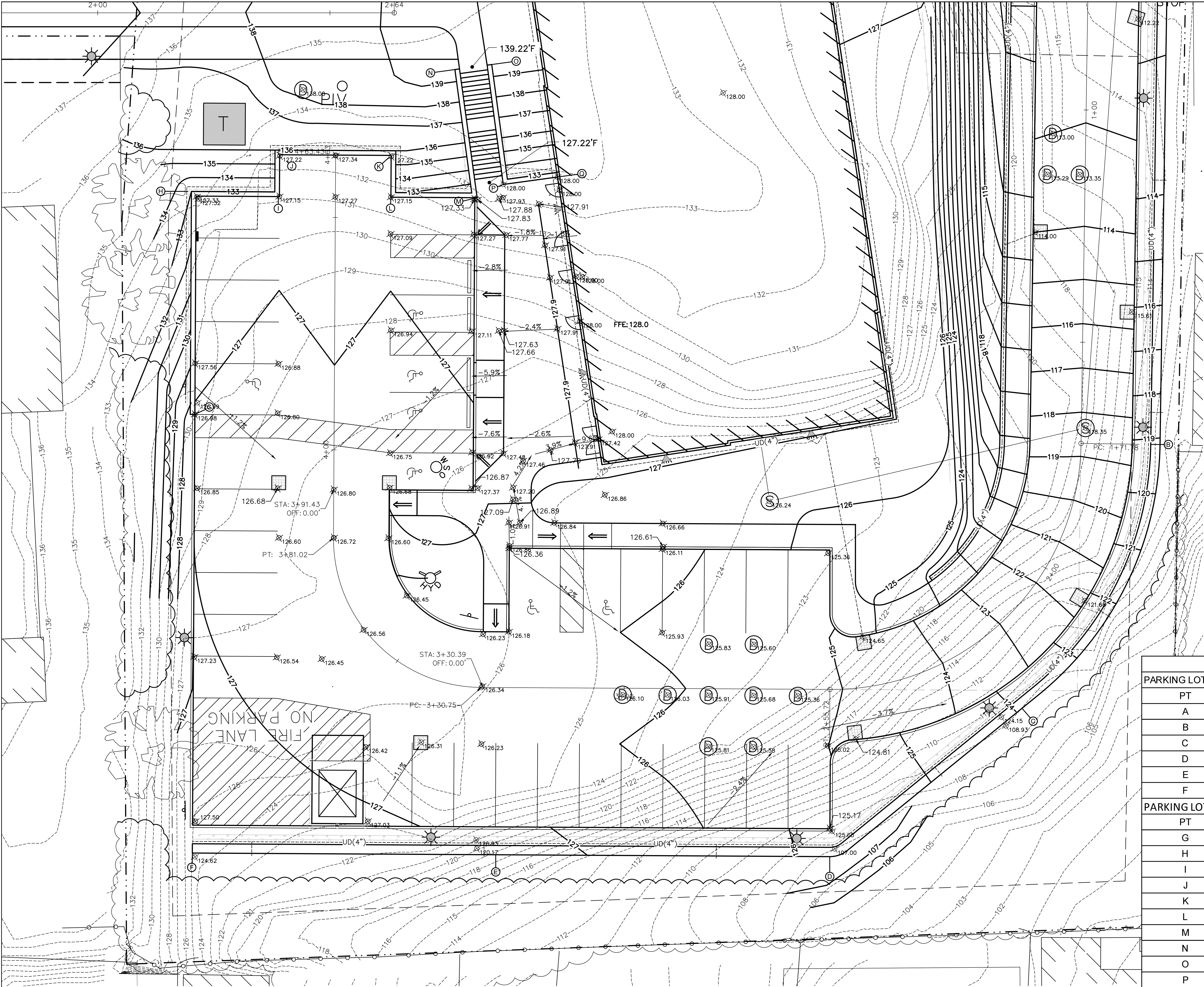
NOTES:

- SEE DRAWING C-501 FOR EROSION CONTROL NOTES.
- SEE DRAWING CU101 FOR RIM AND INVERT INFORMATION.
- SEE DRAWING CG102 FOR ADDITIONAL GRADING INFORMATION.

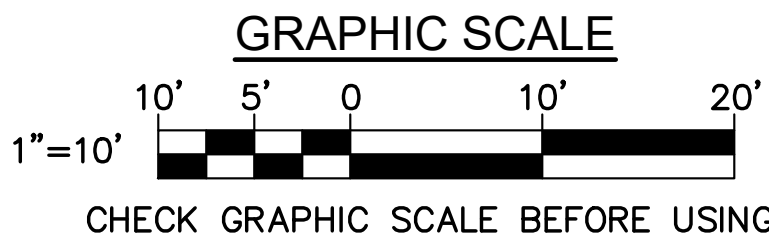
KEYNOTES: (THIS SHEET ONLY)

- SILT FENCE, SEE 1/C-501.
- SEDIMENT CONTROL FILTER SOCK, SEE 1/C-502.
- CATCH BASIN INLET PROTECTION, SEE 2/C-502.
- EROSION CONTROL BLANKET, SEE 8/C-502.
- STABILIZED CONSTRUCTION ENTRANCE/EXIT, SEE 3/C-502.
- OUTLET CONTROL STRUCTURE AND UNDERGROUND STORMWATER STORAGE, SEE 1/C-504 AND 2/C-504.
- CATCH BASIN, SEE 5/C-503.
- PIPE TRENCH, SEE 5/C-505.

RETAINING WALL ELEVATIONS			
PARKING LOT: EAST/NORTH			
PT	BOW	TOW	HEIGHT
A	111.38	112.62	1.24
B	112.36	119.18	6.82
C	109.00	124.07	15.07
D	107.90	125.77	17.87
E	118.70	127.00	8.30
F	125.00	128.00	3.00
PARKING LOT: SOUTH/WEST			
PT	BOW	TOW	HEIGHT
G	127.00	128.00	1.00
H	127.33	133.00	5.67
I	127.15	133.00	5.85
J	127.22	136.00	8.78
K	127.22	136.00	8.78
L	127.15	133.00	5.85
M	127.33	133.00	5.67
N	139.15	140.50	1.35
O	139.25	140.50	1.25
P	128.10	133.00	4.90
Q	128.10	133.00	4.90



RETAINING WALL ELEVATIONS			
PARKING LOT: EAST/NORTH			
PT	BOW	TOW	HEIGHT
A	111.38	112.62	1.24
B	112.36	119.18	6.82
C	109.00	124.07	15.07
D	107.90	125.77	17.87
E	118.70	127.00	8.30
F	125.00	128.00	3.00
PARKING LOT: SOUTH/WEST			
PT	BOW	TOW	HEIGHT
G	127.00	128.00	1.00
H	127.33	133.00	5.67
I	127.15	133.00	5.85
J	127.22	136.00	8.78
K	127.22	136.00	8.78
L	127.15	133.00	5.85
M	127.33	133.00	5.67
N	139.15	140.50	1.35
O	139.25	140.50	1.25
P	128.10	133.00	4.90
Q	128.10	133.00	4.90



1 ENLARGED GRADING PLAN
C-301 SCALE: 1"=10'

NO.	DATE	DESCRIPTION	BY
1	12/7/21	REVISED FOR CONDITIONS OF APPROVAL	JLG
REVISIONS			

FOR PERMITTING PURPOSES ONLY NOT FOR CONSTRUCTION

DESIGNED BY: JLG
DRAWN BY: DEW
CHECKED BY: JLG
PROJECT: 22104.04

OWNER:
SOUTHERN MAINE
AFFORDABLE HOUSING
22 South Street
Biddeford, Maine, 04005

PROJECT TITLE AND LOCATION:
ADAMS POINT HOUSING
69 Adams Street
Biddeford, Maine, 04005

ENLARGED
GRADING
PLAN

SCALE: AS NOTED

DATE: 08-02-2021

DWG.: CG102

SHEET: 8 OF 23

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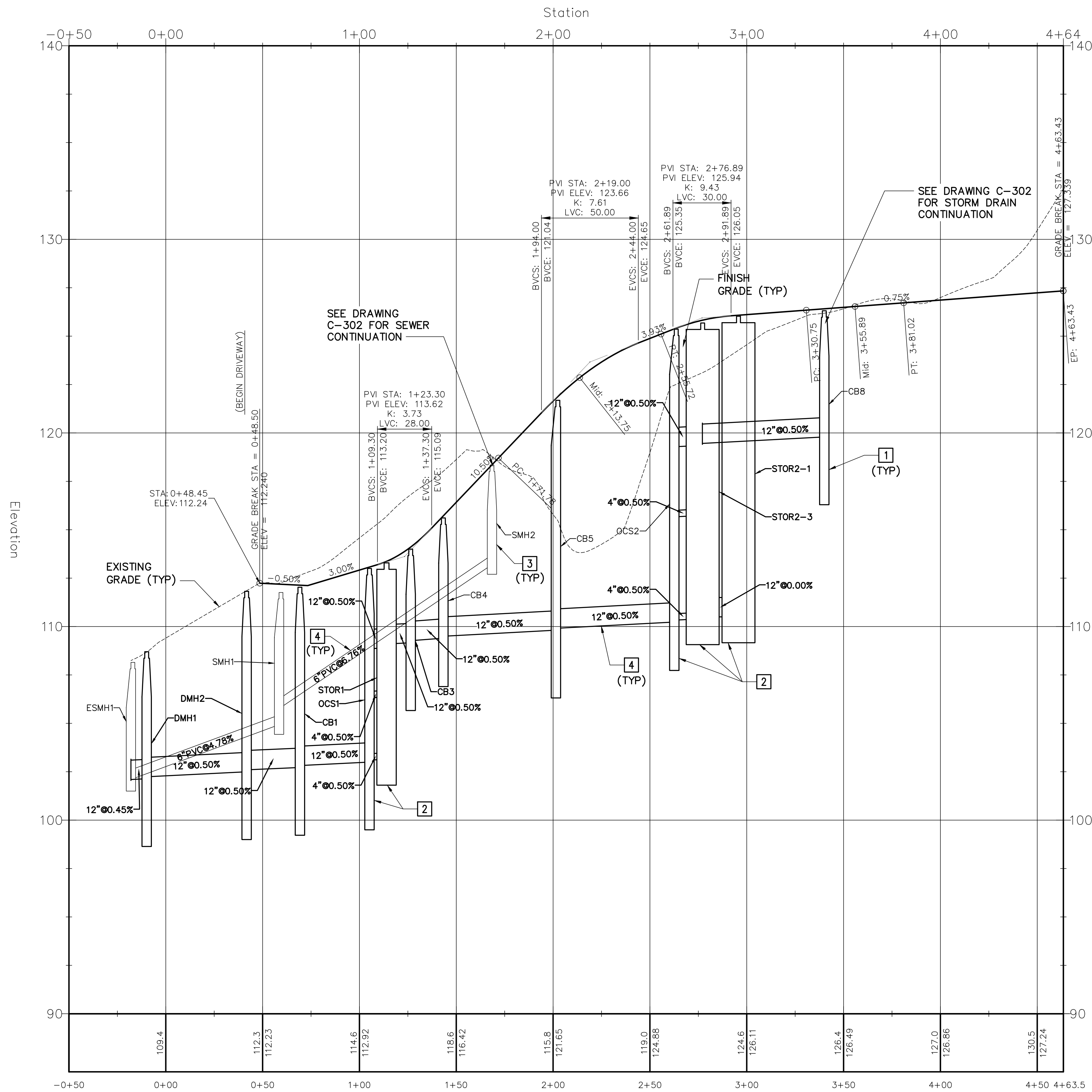
1	12/7/21	REVISED FOR CONDITIONS OF APPROVAL	JLG
NO.	DATE	DESCRIPTION	BY
REVISIONS			

1

DRIVEWAY/PARKING LOT PROFILE

C-301

SCALE: 1"=30' HORIZ, 1"=3' VERT



STRUCTURE TABLE	
STRUCTURE NAME:	DETAILS:
CB1	RIM: 112.03 INV IN: 102.82, SD(12") INV IN: 107.14, SD(12") INV IN: 106.06, SD(4") INV OUT: 102.72, SD(12")
CB2	RIM: 112.22 INV OUT: 106.89, SD(12")
CB3	RIM: 114.00 INV IN: 109.27, SD(12") INV IN: 109.24, SD(4") INV OUT: 109.16, SD(12")
CB4	RIM: 115.61 INV IN: 109.50, SD(12") INV OUT: 109.40, SD(12")
CB5	RIM: 121.68 INV IN: 109.91, SD(12") INV OUT: 109.81, SD(12")
CB6	RIM: 124.65 INV IN: 119.82, SD(8") INV IN: 119.82, SD(4") INV OUT: 119.72, SD(12")
CB7	RIM: 124.81 INV OUT: 119.89, SD(12")
CB8	RIM: 126.31 INV OUT: 119.79, SD(12")
CB9	RIM: 126.72 INV IN: 122.84, SD(12") INV IN: 122.61, SD(12") INV OUT: 122.74, SD(12")
CB9A	RIM: 126.68 INV OUT: 122.49, SD(12")
CB10	RIM: 137.16 INV OUT: 132.36, SD(12")
DMH1	RIM: 108.70 INV IN: 102.24, SD(12") INV OUT: 102.14, SD(12")
DMH2	RIM: 111.82 INV IN: 102.60, SD(12") INV IN: 102.70, SD(8") INV OUT: 102.50, SD(12")
DMH3	RIM: 138.08 INV IN: 132.03, SD(12") INV IN: 132.03, SD(4") INV IN: 132.03, SD(8") INV OUT: 124.50, SD(12") INV OUT: 122.88, SD(4")
ECB	RIM: 110.78 INV OUT: 107.78, SD(8")

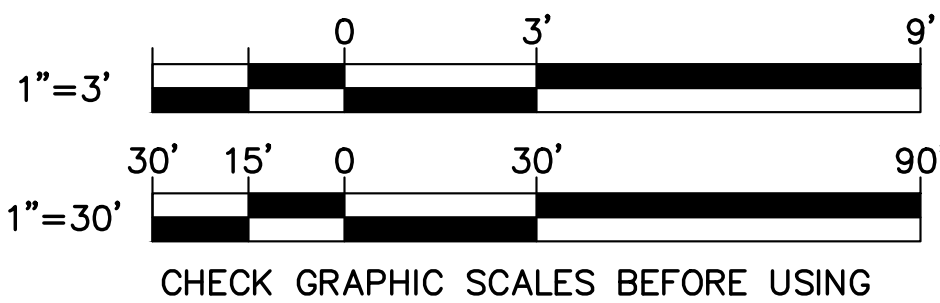
STRUCTURE TABLE	
STRUCTURE NAME:	DETAILS:
ESMH1	RIM: 108.15 INV IN: 102.10, SS(6") INV IN: 102.20, ESS(6") INV IN: 102.10, SD(12") INV OUT: 102.00, ESS(12")
SMH1	RIM: 111.76 INV IN: 105.76, SS(6") INV OUT: 104.93, SS(6")
SMH2	RIM: 118.35 INV IN: 113.30, SS(6") INV OUT: 113.20, SS(6")
SMH3	RIM: 126.24 INV IN: 121.50, SS(6") INV OUT: 118.18, SS(6")

KEYNOTES

- 1 CATCH BASIN, SEE 5/C-503.
- 2 STORAGE TANK AND OUTLET CONTROL STRUCTURE, SEE 1/C-504 AND 2-C504.
- 3 SANITARY SEWER MANHOLE, SEE 3/C-505.
- 4 PIPE TRENCH (TYP), SEE 5/C-505.

STRUCTURE TABLE	
STRUCTURE NAME:	DETAILS:
OCS1	RIM: 113.00 INV IN: 103.10, SD(4") INV IN: 106.32, SD(4") INV IN: 108.86, SD(12") INV OUT: 103.00, SD(12")
OCS2	RIM: 125.36 INV IN: 110.33, SD(4") INV IN: 115.67, SD(4") INV IN: 119.29, SD(12") INV OUT: 110.23, SD(12")
STOR1	RIM: 113.29 INV IN: 109.10, SD(12") INV OUT: 108.90, SD(12") INV OUT: 106.36, SD(4") INV OUT: 103.14, SD(4")
STOR2-1	RIM: 126.03 INV OUT: 110.50, SD(12")
STOR2-2	RIM: 125.60 INV IN: 119.09, SD(12") INV IN: 120.51, SD(12") INV OUT: 110.51, SD(12")
STOR2-3	RIM: 125.68 INV IN: 110.50, SD(12") INV IN: 110.51, SD(12") INV OUT: 119.36, SD(12") INV OUT: 115.74, SD(4") INV OUT: 110.40, SD(4")
STOR2-4	RIM: 125.58 INV IN: 119.46, SD(12") INV IN: 119.94, SD(12") INV OUT: 110.51, SD(12")

GRAPHIC SCALES



FOR PERMITTING PURPOSES ONLY NOT FOR CONSTRUCTION

DESIGNED BY: JLG
DRAWN BY: DEW
CHECKED BY: JLG
PROJECT: 22104.04

OWNER:
SOUTHERN MAINE AFFORDABLE HOUSING

22 South Street
Biddeford, Maine, 04005

PROJECT TITLE AND LOCATION:
ADAMS POINT HOUSING

69 Adams Street
Biddeford, Maine, 04005

ROAD PROFILE

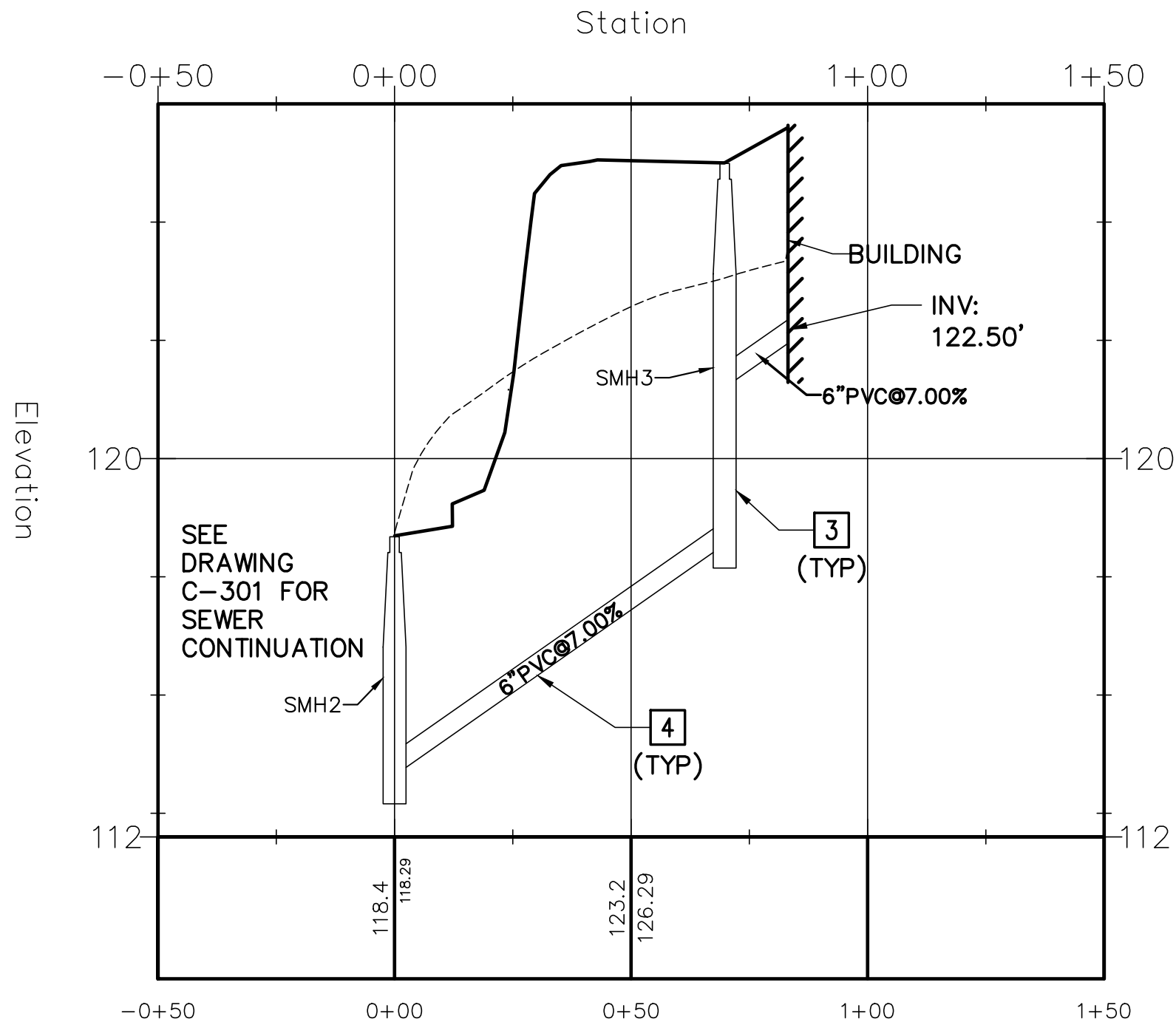
SCALE: AS NOTED

DATE: 08-02-2021

DWG.: C-301

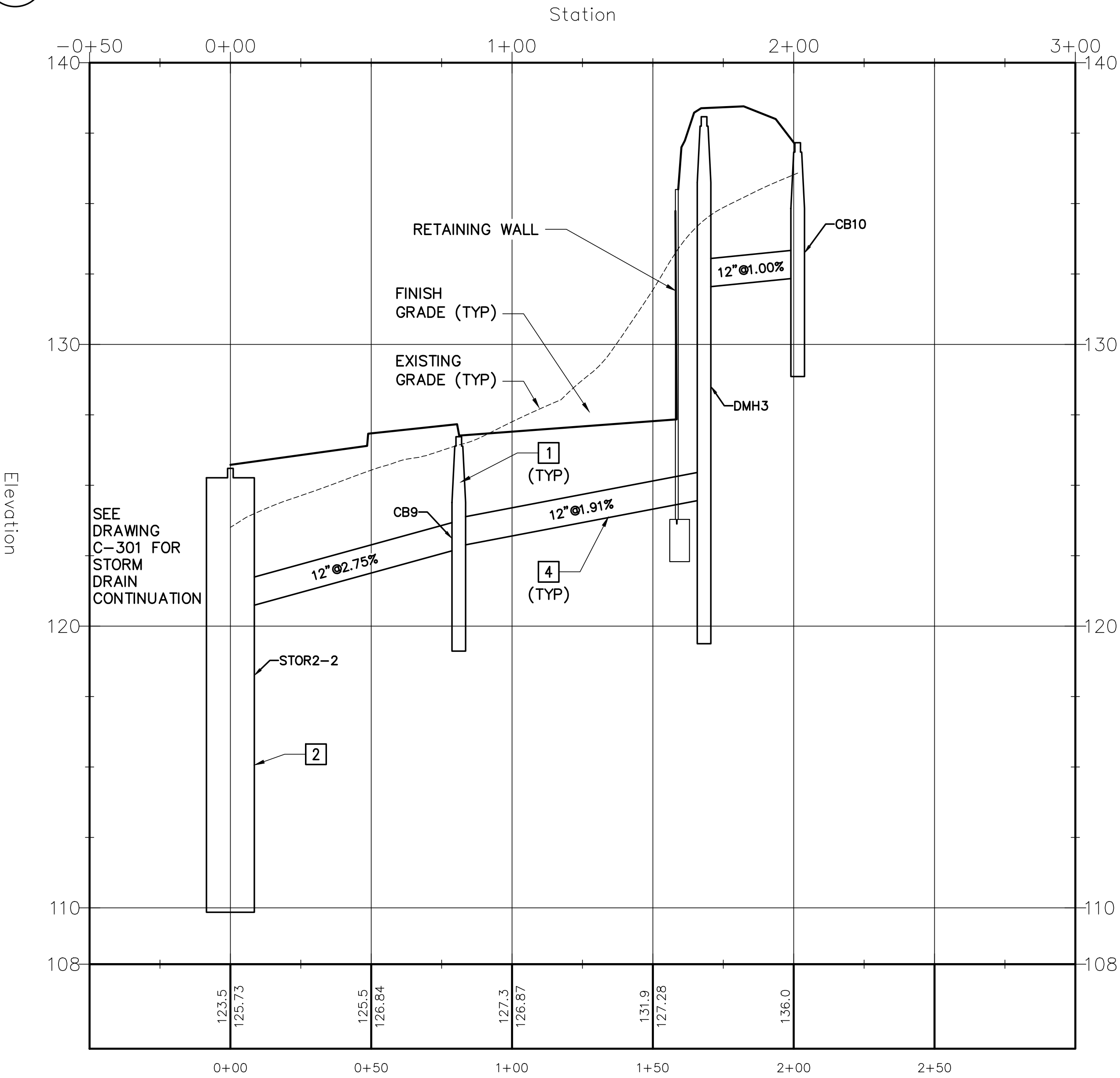
SHEET: 9 OF 23

SANITARY SEWER PROFILE



2 SANITARY SEWER PROFILE
C-302 SCALE: 1"=30' HORIZ, 1"=3' VERT

STORM DRAIN PROFILE



1 STORM DRAIN PROFILE
C-302 SCALE: 1"=30' HORIZ, 1"=3' VERT

STRUCTURE TABLE	
STRUCTURE NAME:	DETAILS:
CB1	RIM: 112.03 INV IN: 102.82, SD(12") INV IN: 107.14, SD(12") INV IN: 106.06, SD(4") INV OUT: 102.72, SD(12")
CB2	RIM: 112.22 INV OUT: 106.89, SD(12")
CB3	RIM: 114.00 INV IN: 109.27, SD(12") INV IN: 109.24, SD(4") INV OUT: 109.16, SD(12")
CB4	RIM: 115.61 INV IN: 109.50, SD(12") INV OUT: 109.40, SD(12")
CB5	RIM: 121.68 INV IN: 109.91, SD(12") INV OUT: 109.81, SD(12")
CB6	RIM: 124.65 INV IN: 119.82, SD(8") INV IN: 119.82, SD(4") INV OUT: 119.72, SD(12")
CB7	RIM: 124.81 INV OUT: 119.89, SD(12")
CB8	RIM: 126.31 INV OUT: 119.79, SD(12")
CB9	RIM: 126.72 INV IN: 122.84, SD(12") INV IN: 122.61, SD(12") INV OUT: 122.74, SD(12")
CB9A	RIM: 126.68 INV OUT: 122.49, SD(12")
CB10	RIM: 137.16 INV OUT: 132.36, SD(12")
DMH1	RIM: 108.70 INV IN: 102.24, SD(12") INV OUT: 102.14, SD(12")
DMH2	RIM: 111.82 INV IN: 102.60, SD(12") INV IN: 102.70, SD(8") INV OUT: 102.50, SD(12")
DMH3	RIM: 138.08 INV IN: 132.03, SD(12") INV IN: 132.03, SD(4") INV IN: 132.03, SD(8") INV OUT: 124.50, SD(12") INV OUT: 122.88, SD(4")
ECB	RIM: 110.78 INV OUT: 107.78, SD(8")

STRUCTURE TABLE	
STRUCTURE NAME:	DETAILS:
ESMH1	RIM: 108.15 INV IN: 102.10, SS(6") INV IN: 102.20, ESS(6") INV IN: 102.10, SD(12") INV OUT: 102.00, ESS(12")
SMH1	RIM: 111.76 INV IN: 105.76, SS(6") INV OUT: 104.93, SS(6")
SMH2	RIM: 118.35 INV IN: 113.30, SS(6") INV OUT: 113.20, SS(6")
SMH3	RIM: 126.24 INV IN: 121.50, SS(6") INV OUT: 118.18, SS(6")

KEYNOTES

- 1 CATCH BASIN, SEE 5/C-503.
- 2 STORAGE TANK AND OUTLET CONTROL STRUCTURE, SEE 1/C-504 AND 2-C504.
- 3 SANITARY SEWER DROP MANHOLE, SEE 3/C-505.
- 4 PIPE TRENCH (TYP), SEE 5/C-505.

STRUCTURE TABLE	
STRUCTURE NAME:	DETAILS:
OCS1	RIM: 113.00 INV IN: 103.10, SD(4") INV IN: 106.32, SD(4") INV IN: 108.86, SD(12") INV OUT: 103.00, SD(12")
OCS2	RIM: 125.36 INV IN: 110.33, SD(4") INV IN: 115.67, SD(4") INV IN: 119.29, SD(12") INV OUT: 110.23, SD(12")
STOR1	RIM: 113.29 INV IN: 109.10, SD(12") INV OUT: 108.90, SD(12") INV OUT: 106.36, SD(4") INV OUT: 103.14, SD(4")
STOR2-1	RIM: 126.03 INV OUT: 110.50, SD(12")
STOR2-2	RIM: 125.60 INV IN: 119.09, SD(12") INV IN: 120.51, SD(12") INV OUT: 110.51, SD(12")
STOR2-3	RIM: 125.68 INV IN: 110.50, SD(12") INV IN: 110.51, SD(12") INV OUT: 119.36, SD(12") INV OUT: 115.74, SD(4") INV OUT: 110.40, SD(4")
STOR2-4	RIM: 125.58 INV IN: 119.46, SD(12") INV IN: 119.94, SD(12") INV OUT: 110.51, SD(12")

FOR PERMITTING PURPOSES ONLY NOT FOR CONSTRUCTION

DESIGNED BY: JLG
DRAWN BY: DEW
CHECKED BY: JLG
PROJECT: 22104.04

OWNER:
SOUTHERN MAINE
AFFORDABLE HOUSING
22 South Street
Biddeford, Maine, 04005

PROJECT TITLE AND LOCATION:
ADAMS POINT HOUSING
69 Adams Street
Biddeford, Maine, 04005

UTILITY
PROFILES

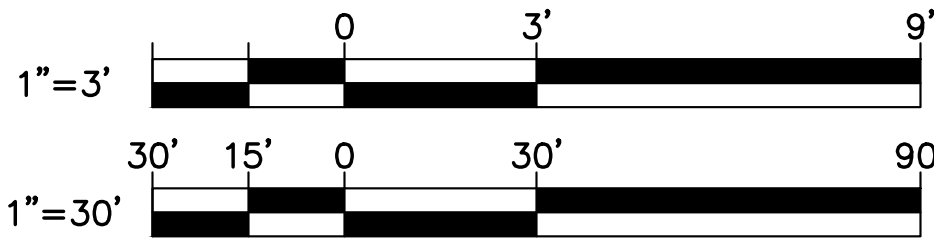
SCALE: AS NOTED

DATE: 08-02-2021

DWG.: C-302

SHEET: 10 OF 23

GRAPHIC SCALES



CHECK GRAPHIC SCALES BEFORE USING

NO.	DATE	DESCRIPTION	BY
1	12/7/21	REVISED FOR CONDITIONS OF APPROVAL	JLG
REVISIONS			

EROSION AND SEDIMENT CONTROL

A. GENERAL NOTES

1. DURING CONSTRUCTION AND THEREAFTER, IMPLEMENT EROSION CONTROL MEASURES AS INDICATED AND SPECIFIED. ALL EROSION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION "MAINE EROSION AND SEDIMENT CONTROL PRACTICES FIELD GUIDE FOR CONTRACTORS" BY THE MAINE DEP.
2. IMPLEMENT ALL NECESSARY MEASURES TO CONTROL EROSION AND SEDIMENTATION FROM THE PROJECT SITE AS REQUIRED PURSUANT TO THE MAINE EROSION AND SEDIMENTATION CONTROL LAW.
3. LIMIT AREAS OF EXPOSED SOILS TO THOSE AREAS THAT WILL ACTIVELY BE WORKED. TEMPORARILY STABILIZE ANY AREA OF DISTURBED SOIL THAT REMAINS UNWORKED FOR MORE THAN 14 DAYS USING TEMPORARY MULCHING (IF THE SOIL WILL BE PERMANENTLY STABILIZED WITHIN 30 DAYS) OR TEMPORARY SEEDING AND MULCHING (IF THE SOIL WILL NOT BE PERMANENTLY STABILIZED WITHIN 30 DAYS). PERMANENTLY STABILIZE ANY AREA OF DISTURBED SOIL BROUGHT TO FINAL GRADE WITHIN 7 DAYS. DISTURBED SOILS DO NOT INCLUDE COMPACTED STRUCTURAL FILLS USED FOR ROADS, PARKING LOTS, AND BUILDING FOUNDATIONS.
4. TEMPORARY EROSION CONTROL MEASURES INCLUDE THE USE OF EROSION CONTROL DEVICES, TEMPORARY SEEDING AND MULCHING, CONSTRUCTION PIASING, AND PROVISIONS FOR STABILIZING INACTIVE AREAS. PERMANENT EROSION CONTROL MEASURES INCLUDE THE USE OF EROSION CONTROL BLANKETS, RIPRAP OUTLET PROTECTION, AND PERMANENT SEEDING AND MULCHING.
5. PROVIDE INLET PROTECTION FOR EACH CATCH BASIN ON THE SAME DAY THAT BACKFILL IS PLACED AROUND THE CATCH BASIN.
6. PROVIDE PLANTING SOIL, SEED, FERTILIZER AND MULCH ON ALL DISTURBED AREAS NOT OTHERWISE SPECIFIED. PERMANENT SEEDING SHALL BE ACCOMPLISHED BETWEEN THE DATES OF APRIL 15 AND SEPTEMBER 15. WATER ALL VEGETATED AREAS AS NECESSARY TO ESTABLISH A VIGOROUS GRASS.

B. INSPECTION AND MAINTENANCE

1. INSPECT DISTURBED AND IMPERVIOUS AREAS, EROSION AND STORMWATER CONTROL MEASURES, AREAS USED FOR STORAGE THAT ARE EXPOSED TO PRECIPITATION, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE PARCEL AT LEAST ONCE A WEEK AND BEFORE AND AFTER EACH STORM EVENT, GREATER THAN 0.5 INCH, PRIOR TO COMPLETION OF PERMANENT STABILIZATION. MAJOR OBSERVATIONS OF EROSION AND STORMWATER CONTROL, INCLUDING THE MAINE POLLUTANT DISCHARGE ELIMINATION SYSTEM (MPDES) STANDARDS AND ANY DEPARTMENTAL COMPANION DOCUMENT TO THIS PERMIT, SHALL CONDUCT THE INSPECTION. THIS PERSON SHALL BE IDENTIFIED IN THE INSPECTION LOG. IF BEST MANAGEMENT PRACTICES (BMPs) NEED TO BE MODIFIED OR IF ADDITIONAL BMPs ARE NECESSARY, IMPLEMENTATION SHALL BE COMPLETED WITHIN 7 CALENDAR DAYS AND PRIOR TO ANY STORM EVENT (RAINFALL). ALL MEASURES SHALL BE MAINTAINED IN EFFECTIVE OPERATING CONDITION UNTIL AREAS ARE PERMANENTLY STABILIZED.
2. A LOG (REPORT) SHALL BE KEPT SUMMARIZING THE SCOPE OF THE INSPECTION, NAME(S) AND QUALIFICATIONS OF THE PERSONNEL MAKING THE INSPECTION, THE DATE(S) OF THE INSPECTION, AND MAJOR OBSERVATIONS RELATING TO OPERATION OF EROSION AND SEDIMENTATION CONTROLS AND POLLUTION PREVENTION MEASURES. MAJOR OBSERVATIONS SHALL INCLUDE: BMPs THAT NEED TO BE MAINTAINED; LOCATION(S) OF BMPs THAT FAILED TO OPERATE AS DESIGNED OR PROVED INADEQUATE FOR A PARTICULAR LOCATION; AND LOCATION(S) WHERE ADDITIONAL BMPs ARE NEEDED THAT DID NOT EXIST AT THE TIME OF INSPECTION. FOLLOW-UP TO CORRECT DEFICIENCIES OR ENHANCE CONTROLS SHALL ALSO BE INDICATED IN THE LOG AND DATED, INCLUDING WHAT ACTION WAS TAKEN AND WHEN.
3. MAINTAIN ALL EROSION CONTROL MEASURES FOR THE LIFE OF THE PROJECT AND UNTIL PERMANENT STABILIZATION OF THE ENTIRE SITE IS ESTABLISHED. PERMANENT STABILIZATION SHALL CONSIST OF AT LEAST 90%-PERCENT VEGETATION, PAVEMENT, GRAVEL BASE, OR RIPRAP.
4. SEDIMENT ACCUMULATIONS SHALL BE REMOVED FROM SILT FENCES, HAY BALE BARRIERS, AND STONE CHECK DAMS WHEN THE SEDIMENT DEPTH APPROACHES 6 INCHES, OR AS INDICATED ON DETAILS ON DRAWINGS C-501 AND C-502.
5. THE AREA OF THE DETENTION POND AND EMBANKMENTS SHALL BE INSPECTED WEEKLY AND AFTER EACH STORM EVENT. ALL EROSION AND AREAS OF EXPOSED SOILS SHALL BE PROMPTLY SEEDED AND MULCHED.
6. PROTECT ALL STABILIZED AREAS FROM EROSION AND IMMEDIATELY REPAIR / REVEGETATE ERODED AREAS.
7. REMOVE ALL TEMPORARY EROSION CONTROL MEASURES WITHIN 30 DAYS AFTER THE TRIBUTARY AREA HAS BEEN PERMANENTLY STABILIZED. REMOVE ANY ACCUMULATED SEDIMENTS AND STABILIZE.

C. CONSTRUCTION DEWATERING

1. IF DEWATERING OF EXCAVATIONS ARE NECESSARY, UTILIZE BAG-TYPE DEWATERING SEDIMENT FILTERS. DEWATERING SEDIMENT FILTERS SHALL BE LOCATED A MINIMUM OF 100 FEET FROM ANY WATER BODY OR WETLAND. SEE DETAIL 4/C-502.

D. SEQUENCE OF CONSTRUCTION

1. CONSTRUCTION SHALL BE PHASED TO DISTURB THE LEAST PRACTICAL AREA AT A TIME AND MINIMIZE DISRUPTION. FOR APPROXIMATE CONSTRUCTION PHASE LIMITS, SEQUENCE AND TIMING. CONSTRUCTION IS EXPECTED TO BEGIN IN THE APRIL 2022 AND BE COMPLETED BY JUNE 2023. INITIAL OPERATIONS INCLUDE LAYOUT OF CLEARING LIMITS AND INSTALLATION OF SILT FENCE, EROSION CONTROL MIX AND CONSTRUCTION ENTRANCE / EXIT AS INDICATED ON REMOVALS SITE PLAN AND GRADING PLANS.
2. CLEAR TREES, GRUB OUT STUMPS, AND STRIP TOPSOIL. REMOVE ALL WOODY DEBRIS FROM THE PROJECT SITE. STOCKPILE TOPSOIL AS SHOWN ON REMOVALS SITE PLAN AND GRADING PLAN. PROVIDE SILT FENCE DOWNGRADE OF ALL STOCKPILES AND COVER STOCKPILES WITH MULCH.
3. COMMENCE LARGE-SCALE EARTH MOVING OPERATIONS AND INSTALL EROSION CONTROL BLANKETS AND STONE CHECK DAMS AND SWALES AND OTHER AREAS ARE ESTABLISHED. AS AREAS APPROACH FINISH GRADE, AND AFTER ESTABLISHMENT OF GRASS IN THE DETENTION BASIN, CONSTRUCT STORM DRAINAGE SYSTEM BEGINNING AT THE LOW POINT IN THE SYSTEM. PROVIDE CULVERT INLET AND OUTLET PROTECTION AS SOON AS PIPES ARE INSTALLED.
4. PERFORM GRADING AND SHAPING TO FILTER BED SUBGRADE FOR ALL GRASSSED UNDERDRAIN SOIL FILTERS AND SAND FILTERS, AS DEPICTED ON GRADING PLANS. TREATMENT AREAS MAY BE USED AS STORMWATER AND SEDIMENTATION CONTROL TO FACILITATE CONSTRUCTION. AFTER TRIBUTARY AREAS HAVE BEEN PERMANENTLY STABILIZED, REMOVE ANY ACCUMULATED SEDIMENT AND INSTALL UNDERDRAIN TO COMPLETE THE CONSTRUCTION OF THE FILTER BED.
5. CONTINUE WITH OTHER UTILITY (WATER, SEPTIC, ELECTRICAL, ETC.) AND BUILDING CONSTRUCTION. PROVIDE VEGETATION, TEMPORARY SEEDING, MULCHING, OR OTHER SURFACE TREATMENTS AS INDICATED IMMEDIATELY UPON ESTABLISHMENT OF FINISH GRADES.

ITEM	IMPLEMENTATION SCHEDULE
SILT FENCE / EROSION CONTROL MIX / SEDIMENT CONTROL FILTER SOCK	INSTALL AS FIRST ORDER OF WORK AND AS NECESSARY TO CONTROL EROSION FROM THE WORK AREA.
CONSTRUCTION ENTRANCE / EXIT	CONSTRUCT AFTER INSTALLING SILT FENCE AND PRIOR TO EARTHWORK OPERATIONS.
CATCH BASIN INLET PROTECTION	INSTALL SAME DAY THAT BACKFILL IS PLACED AROUND STRUCTURE.
STABILIZATION OF INACTIVE AREAS	MULCH AREAS THAT REMAIN UN-WORKED FOR MORE THAN 14 DAYS AND WILL BE STABILIZED WITHIN 30 DAYS.
SWALES, STEEP SLOPES	INSTALL RIPRAP OR EROSION CONTROL BLANKET/NETTING (AS INDICATED ON DRAWINGS) THE SAME DAY FINAL GRADE IS ESTABLISHED.
GRASS ESTABLISHMENT	SEED AND MULCH DISTURBED AREAS WITHIN 7 DAYS OF BEING BROUGHT TO FINAL GRADE.

F. DITCH AND CULVERT STABILIZATION

1. ANY SECTION OF DITCH, SWALE, OR CHANNEL BROUGHT TO FINAL GRADE SHALL BE STABILIZED WITH A RIPRAP LINING OR PROPERLY-INSTALLED EROSION CONTROL BLANKETS (USED OVER PERMANENT SEEDING) WITHIN 24 HOURS.
2. USE STONE CHECK DAMS AND TEMPORARY MULCHING IN ANY ROUGH-GRADED DITCH THAT WILL NOT BE FINAL GRADED AND PERMANENTLY STABILIZED WITHIN THE NEXT 7 DAYS. THE STONE CHECK DAMS AND MULCHING SHALL BE PUT IN PLACE WITHIN 48 HOURS OR PRIOR TO ANY RAINFALL.

F. SOIL STOCKPILE STABILIZATION

1. SOIL AND FILL STOCKPILES EXPECTED TO REMAIN IN PLACE FOR LESS THAN 30 DAYS SHALL BE COVERED WITH HAY MULCH (AT 90 LBS HAY/1000 SF) OR COVERED WITH A 4 MIL POLYETHYLENE SHEETING, WOVEN OR NON-WOVEN GEOTEXTILE FABRIC WITHIN 7 DAYS OR PRIOR TO ANY RAINFALL.
2. POLYETHYLENE SHEETING OR GEOTEXTILE FABRIC SHALL BE CONTINUOUSLY ANCHORED ON ALL SIDES AND 12" TO 24" OVERLAP AT SEAMS IN THE DIRECTION OF THE RUNOFF. PROVIDE ADDITIONAL ANCHORS ON THE WINDY SIDE OF THE STOCKPILE.
2. SOIL AND FILL STOCKPILES EXPECTED TO REMAIN LONGER THAN 30 DAYS SHALL BE SEEDED WITH A CONSERVATION MIX OF ANNUAL RYE GRASS (AT 0.9 LBS/1000 SF) AND HAY MULCHED (AT 90 LBS HAY/1000 SF) WITHIN 7 DAYS OR PRIOR TO ANY RAINFALL.
3. ALL SOIL AND FILL STOCKPILES SHALL HAVE A SEDIMENT BARRIER (e.g. HAY-BALE BARRIER OR SILT FENCING) INSTALLED AROUND THE DOWNHILL EDGE OF THE STOCKPILE TO TRAP SEDIMENTS.

G. TEMPORARY SEEDING -- (DURING CONSTRUCTION AND PRIOR TO PERMANENT SEEDING) WITHIN 14 DAYS OF INACTIVITY OR 7 DAYS AFTER BEING BROUGHT TO FINISH GRADE.

1. BEDDING -- REMOVE STONES AND TRASH WITHIN SEEDING THE AREA. TILL THE SOIL TO A DEPTH OF ABOUT 3" TO PREPARE SEED BED AND MIX THE FERTILIZER INTO THE SOIL.
2. FERTILIZER -- FERTILIZER SHALL BE UNIFORMLY SPREAD OVER THE AREA PRIOR TO BEING TILLED INTO THE SOIL. A 10-10-10 MIX OF FERTILIZER SHALL BE APPLIED AT A RATE OF 300 POUNDS PER ACRE (OR 7 LBS/1,000 SF).
3. SEED MIXTURE -- USE ANY OF THE FOLLOWING IN UPLAND AREAS:

TEMPORARY SEEDING RATES			
SPECIES	PER ACRE	PER 1,000 SF	SEEDING DATES
WINTER RYE	112 LBS	2.6 LBS	8/15-10/1
OATS	80 LBS	1.8 LBS	4/1-7/1 & 8/15-9/15
ANNUAL RYE GRASS	40 LBS	0.9 LBS	4/1-7/1 WITH MULCH

4. MULCHING FOR TEMPORARY SEEDING -- WHERE IT IS IMPRACTICAL TO INCORPORATE FERTILIZER AND SEED INTO MOIST SOIL, THE SEEDED AREA SHALL BE MULCHED TO FACILITATE GERMINATION. MULCH IN THE FORM OF HAY OR STRAW SHALL BE APPLIED AT A RATE OF 70 TO 90 LBS PER 1,000 SF.
- H. MULCHING
- TEMPORARY MULCHING SHALL BE USED ON SLOPES, CHANNELS, OTHER EROSION PRONE AREAS, AND ALL EXPOSED SOILS THAT CANNOT RECEIVE PERMANENT COVER WITH 14 DAYS OF DISTURBANCE OR WITHIN 7 DAYS IN AREAS WITHIN 100' OF A NATURAL RESOURCE. MULCH SHALL ALSO BE USED FOLLOWING TEMPORARY AND PERMANENT SEEDING AS SPECIFIED. MULCH ANCHORS SHALL BE USED ON SLOPES GREATER THAN 5% IN FALL (PAST SEPTEMBER 15 AND OVER WINTER TO APRIL 15).

MULCHING RATES		
MULCH TYPE	RATE PER 1,000 SF	USE AND COMMENTS
HAY OR STRAW	70 TO 90 LBS *	MOLD FREE AND DRY, MAY BE USED WITH PLANTINGS.
	* DOUBLE THE RATE FOR OVER WINTER STABILIZATION	ANCHOR IN AREAS OF STRONG WIND AND SLOPES GREATER THAN 5%.
WOOD CHIPS OR BARK MULCH	3" THICK OR MORE	USE IN FLAT AREAS AND SHORT 4:1 SLOPES.
EROSION CONTROL BLANKETS / MATS	SEE DETAIL 8/C-502	DITCHES AND STEEP SLOPES.
EROSION CONTROL MIX	2" FOR SLOPES FLATTER THAN 3:1 OR 4" FOR SLOPES GREATER THAN 3:1. ADD AND ADDITIONAL 1/2" PER 20' OF SLOPE UP TO 100' IF SLOPE IS STEEPER THAN 3:1	FOR USE ON SLOPES LESS THAN 45%.

L. TEMPORARY EROSION CONTROL BLANKET SPECIFICATIONS

1. EXCELSIOR EROSION CONTROL BLANKET SHALL CONSIST OF A MACHINE PRODUCED MAT OF CURLED WOOD EXCELSIOR COVERED WITH EITHER A 3 BY 1 INCH WEAVE OF TWISTED CRAFT PAPER OR A 2 BY 1 INCH BIODEGRADABLE EXTRUDED PLASTIC MESH. THE BLANKET SHALL BE OF CONSISTENT THICKNESS WITH FIBERS EVENLY DISTRIBUTED THROUGHOUT. 80 PERCENT OF THE FIBERS SHALL BE OVER 6 INCHES IN LENGTH. MINIMUM WIDTH: 48 INCHES, MINIMUM WEIGHT: 0.8 POUNDS PER SQUARE YARD.
2. STRAW-COCONUT EROSION CONTROL BLANKET SHALL CONSIST OF A MACHINE PRODUCED BLANKET OF 70 PERCENT WHEAT STRAW AND 30 PERCENT COCONUT FIBER WITH PHOTODEGRADABLE NETTING ON BOTH SIDES AND SEWN TOGETHER WITH COTTON THREAD. MINIMUM WIDTH: 48 INCHES, MINIMUM WEIGHT: 0.75 POUNDS PER SQUARE YARD.

J. EXTENDED USE EROSION CONTROL BLANKET SPECIFICATION

1. JUTE EROSION CONTROL BLANKETS SHALL BE OF UNIFORM PLAIN WEAVE SINGLE JUTE YARN AVERAGING APPROXIMATELY 130 POUNDS PER SPINDLE OF 14,400 YARDS. THE YARN SHALL BE LOOSELY TWISTED AND WOVEN INTO 48 INCH WIDE BLANKETS WITH A MINIMUM AVERAGE WEIGHT OF 1.0 POUNDS PER SQUARE YARD.

K. OVER WINTER CONSTRUCTION -- (WINTER CONSTRUCTION PERIOD IS FROM NOVEMBER 1 THROUGH APRIL 15)

ADDITIONAL STABILIZATION MEASURES SHALL BE PROVIDED BY NOVEMBER 1 FOR WINTER AND SPRING SNOW MELT IF THE CONSTRUCTION SITE IS NOT PERMANENTLY STABILIZED WITH PAVEMENT, GRAVEL ROAD BASE, 90% MATURE VEGETATION COVER, EROSION CONTROL MULCH OR RIPRAP. PERMANENT SEEDING SHOULD OCCUR BY AUGUST 15 (45 DAYS BEFORE THE FIRST KILLING FROST), OTHERWISE, OVER WINTER MULCHING IS REQUIRED.

1. DITCHES AND CHANNELS : CONSTRUCT AND STABILIZE ALL GRASS-LINED DITCHES AND CHANNELS BY SEPTEMBER 1. CONSTRUCT AND STABILIZE ALL STONE-LINED DITCHES AND CHANNELS BY NOVEMBER 15.

IF THE CONTRACTOR FAILS TO STABILIZE A DITCH OR CHANNEL TO BE GRASS-LINED (75% COVER) BY NOVEMBER 15, THEN THE CONTRACTOR SHALL TAKE THE FOLLOWING ACTION TO STABILIZE THE DITCH FOR WINTER AND SPRING:

- a. STONE RIPRAP LINING IN THE DITCH OR CHANNEL
- LINE THE DITCH OR CHANNEL WITH STONE RIPRAP BY NOVEMBER 15. USE ANGULAR D50 = 6" STONE FOR STONE RIPRAP OVER FILTER FABRIC. IF NECESSARY, THE CONTRACTOR SHALL REGRADE THE DITCH / CHANNEL PRIOR TO PLACING THE STONE RIPRAP LINING TO PREVENT THE STONE RIPRAP LINING FROM REDUCING THE DITCH'S CROSS-SECTIONAL AREA.

2. VEGETATED AREAS WITH SLOPES OF 15% SLOPE OR LESS: SHOULD HAVE 90% GRASS COVER BY NOVEMBER 1st OR BE SEEDED WITH WINTER RYE AT 3 LBS PER 1,000 SF, MULCHED WITH HAY AT 75 LBS PER 1,000 SF, AND ANCHORED WITH NETTING OR, BY NOVEMBER 15th THE CONTRACTOR SHALL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SLOPE FOR WINTER AND SPRING:

- a. EROSION CONTROL BLANKET -- SEE DETAIL 6/C-502.
- b. EROSION CONTROL MIX -- THE MIX MUST BE WELL-GRADED WITH AN ORGANIC COMPONENT THAT IS BETWEEN 50 AND 100% OF DRY WEIGHT, AND THAT IS COMPOSED OF FIBROUS AND ELONGATED FRAGMENTS. THE MINERAL PORTION OF THE MIX SHOULD BE NATURALLY INCLUDED IN THE PRODUCT WITH NO LARGER ROCKS (>3") OR LARGE AMOUNTS OF FINES (SILTS AND CLAYS). IN STUMP GRINDING, THE MINERAL SOIL ORIGINATES FROM THE ROOT BALL AND SHOULD NOT BE REMOVED BEFORE GRINDING. THE MIX SHOULD BE FREE OF REFUSE, MATERIAL TOXIC TO PLANT GROWTH OR UNSUITABLE MATERIAL (BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS). APPLY A THICKNESS OF 2" ON 3:1 SLOPES OR LESS AND ADD AN ADDITIONAL 1/2" PER 20' OF SLOPE OR UP TO 4" FOR A 100' SLOPE.

- c. HAY MULCH -- APPLY AT A RATE OF 150 LBS PER 1,000 SF (3 TONS PER ACRE) AND ANCHORED WITH NETTING (PEG AND TWINE) OR A TRAKIFIER TO PREVENT MULCH DISPLACEMENT BEFORE FREEZING CONDITIONS. NO SOIL SHOULD BE VISIBLE THROUGH THE MULCH AND HAY MULCH CAN NOT BE APPLIED OVER SNOW.

3. VEGETATED SLOPES GREATER THAN 15% : SHOULD BE SEEDED AND MULCHED BY SEPTEMBER 1. IF A SLOPE IS NOT STABILIZED BY OCTOBER 15, THE SOIL MAY BE SEEDED WITH WINTER RYE AT A SEEDING RATE OF 3 LBS PER 1,000 SF AND PROTECTED WITH EROSION CONTROL BLANKETS. IF THE RYE FAILS TO GROW 3" OR FAILS TO COVER AT LEAST 75% OF THE SLOPE BY NOVEMBER 15, THE CONTRACTOR SHALL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SLOPE FOR WINTER AND SPRING:

- a. EROSION CONTROL BLANKET -- SEE DETAIL 8/C-502.
- b. EROSION CONTROL MIX -- THE MIX MUST BE WELL-GRADED WITH AN ORGANIC COMPONENT THAT IS BETWEEN 50 AND 100% OF DRY WEIGHT, AND THAT IS COMPOSED OF FIBROUS AND ELONGATED FRAGMENTS. THE MINERAL PORTION OF THE MIX SHOULD BE NATURALLY INCLUDED IN THE PRODUCT WITH NO LARGER ROCKS (>3") OR LARGE AMOUNTS OF FINES (SILTS AND CLAYS). IN STUMP GRINDING, THE MINERAL SOIL ORIGINATES FROM THE ROOT BALL AND SHOULD NOT BE REMOVED BEFORE GRINDING. THE MIX SHOULD BE FREE OF REFUSE, MATERIAL TOXIC TO PLANT GROWTH OR UNSUITABLE MATERIAL (BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS). APPLY A THICKNESS OF 4" ON GREATER THAN 3:1 AND AND IF SLOPES ARE GREATER THAN 60' LONG, 5" IS NEEDED.
- c. RIPRAP -- ANGULAR STONE WITH SIZE AND THICKNESS APPROPRIATE TO STABILIZE THE SLOPE.

4. SOIL STOCKPILES : SHOULD BE MULCHED FOR OVER WINTER PROTECTION WITH HAY AT TWICE THE NORMAL RATE (150 LBS PER 1,000 SF), OR WITH 4" LAYER OF EROSION CONTROL MIX. DO NOT LEAVE STOCKPILES, EVEN OVER WINTER (EVEN MULCHED), WITHIN 100' OF OF A PROTECTED RESOURCE.

L. PERMANENT SEEDING -- (SEEDING DATES APRIL 15 TO AUGUST 15 ONLY)

1. PERMANENT SEEDING SHALL OCCUR BY AUGUST 15 (45 DAYS BEFORE THE FIRST KILLING FROST TO ALLOW FOR 90% STAND OF TURF TO ESTABLISH PRIOR TO NOVEMBER 1.
2. SITE PREPARATION -- INSTALL NEEDED SURFACE WATER CONTROL MEASURES PRIOR TO SEEDING. GRADE TO PERMIT USE OF CONVENTIONAL EQUIPMENT FOR SEED-BED PREPARATION. PROVIDE ADEQUATE DRAINAGE WHERE INTERNAL WATER MOVEMENT MAY CAUSE SEEPS OR SLIPPAGE BEFORE SEEDING IS WELL ESTABLISHED.
3. BEDDING -- STONES, TRASH, ROOTS, AND OTHER DEBRIS THAT WILL INTERFERE WITH SEEDING AND FUTURE MAINTENANCE OF THE AREA SHALL BE REMOVED. WHERE FEASIBLE, THE SOIL SHALL BE TILLED TO A DEPTH OF 4" TO PREPARE A SEEDBED AND MIX FERTILIZER INTO THE SOIL. WHEN PRACTICAL, PERFORM ALL CULTURAL OPERATIONS AT RIGHT ANGLES TO THE SLOPE. PROVIDE THE BEST CONDITIONS POSSIBLE FOR SEEDING.

4. FERTILIZER -- LIME AND FERTILIZER SHALL BE APPLIED EVENLY OVER THE AREA PRIOR TO OR AT THE TIME OF SEEDING AND INCORPORATED INTO THE SOIL. KINDS AND AMOUNTS OF LIME AND FERTILIZER SHALL BE BASED ON AN EVALUATION OF SOIL TESTS. WHEN A SOIL TEST IS NOT AVAILABLE, THE FOLLOWING MINIMUM SHALL BE APPLIED:

- a. GROUND LIMESTONE AT A RATE OF 138 LBS PER 1,000 SF (3 TONS PER ACRE) 10-20-20 FERTILIZER OR EQUIVALENT AT 18.4 LBS PER 1,000 SF (800 LBS PER ACRE) WORK LIME AND FERTILIZER INTO THE SOIL TO A DEPTH OF 4" EITHER BEFORE OR DURING THE FINAL SEEDED PREPARATIONS.

5. SEED MIXTURE: SEE SPECIFICATIONS AND DRAWINGS FOR SEEDING MIXTURES AND LOCATIONS OF SEED MIXTURE TYPES.

M. RIPRAP SPECIFICATION

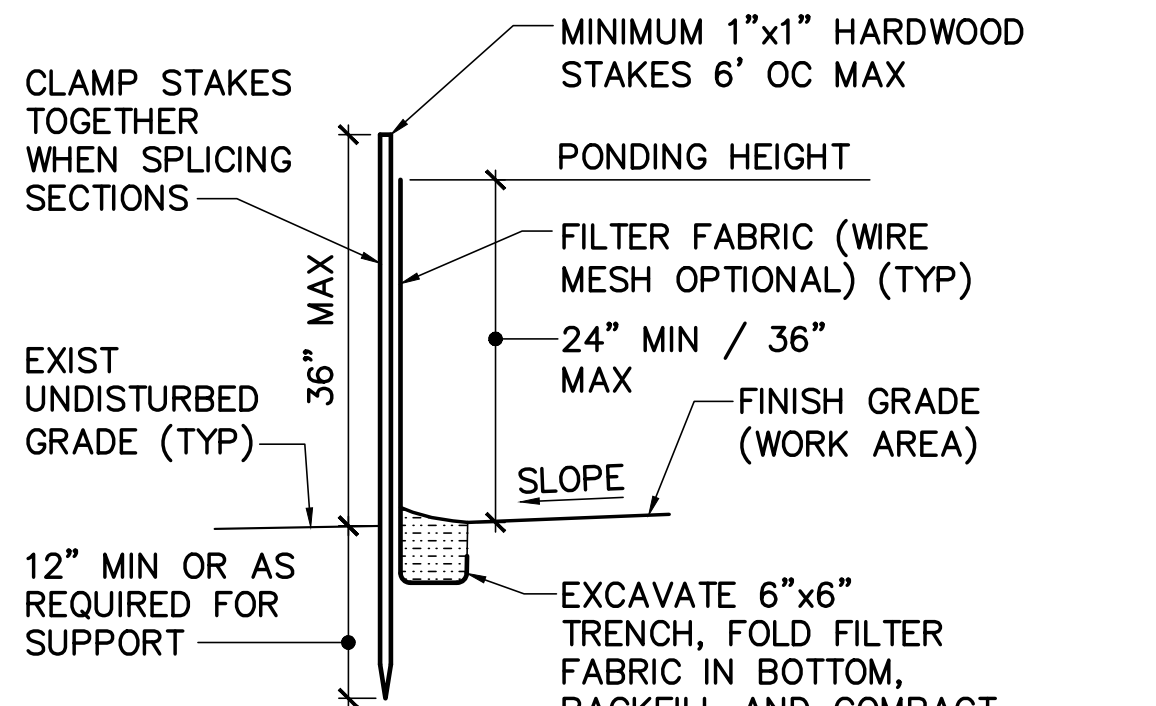
ALL RIPRAP AND STONE FOR CHECK DAMS AND STONE LININGS SHALL CONSIST OF SOUND, DURABLE ROCK WHICH WILL NOT DISINTEGRATE BY EXPOSURE TO WATER OR WEATHER. ANGULAR FIELD STONE, ROUGH QUARRY STONE OR BLASTED LEDGE ROCK MAY BE USED. THE MEDIAN STONE SIZE SHALL BE AS INDICATED. THE MAXIMUM STONE SIZE SHALL BE TWICE THE MEDIAN SIZE. INCLUDE ENOUGH SMALLER STONES TO FILL THE VOIDS IN THE LARGER STONES.

N. OFF-SITE VEHICLE TRACKING

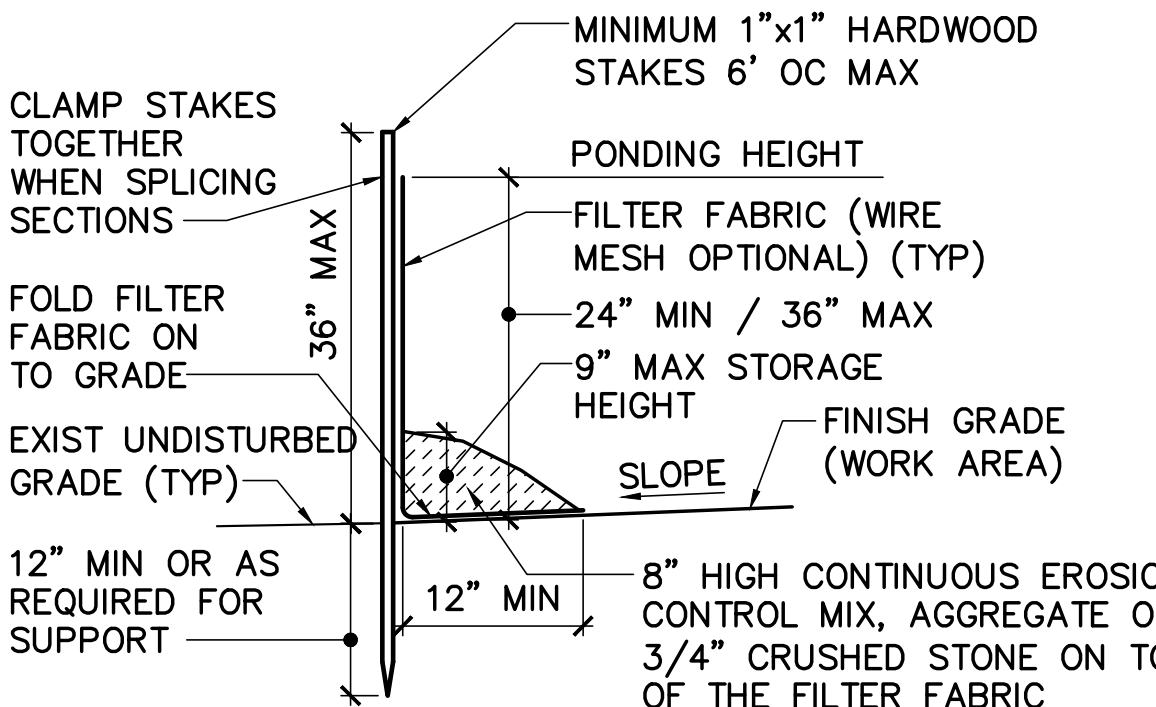
1. VEHICLE ACCESS TO THE CONSTRUCTION AREA SHALL UTILIZE A STABILIZED CONSTRUCTION ENTRANCE, SEE DETAIL 3/C-502.

O. HOUSEKEEPING

1. ALL WASTE MATERIALS SHALL BE COLLECTED AND STORED IN SECURELY LIDDED RECEPTACLES. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE SHALL BE DEPOSITED IN A DUMPSTER. NO CONSTRUCTION WASTE MATERIALS SHALL BE BURIED ON SITE.
2. ALL HAZARDOUS WASTE MATERIALS SHALL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATIONS OR BY THE MANUFACTURER.
3. ALL SANITARY WASTE SHALL BE COLLECTED FROM THE PORTABLE UNITS A MINIMUM OF ONCE PER WEEK BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR.
4. ALL MATERIALS STORED ON SITE SHALL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR PROPER (ORIGINAL IF POSSIBLE) CONTAINER AND IF POSSIBLE UNDER A ROOF OR OTHER ENCLOSURE. STORE ONLY SUFFICIENT AMOUNTS OF MATERIALS TO COMPLETE THE JOB.
5. DISPOSE OF NOT TO BE USED SURPLUS MATERIALS OFF SITE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND STATE AND FEDERAL CODES.
6. ALL CONSTRUCTION RELATED EQUIPMENT AND VEHICLES SHALL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTATIVE MAINTENANCE TO REDUCE LEAKAGE.
7. CONCRETE TRUCKS SHALL DISCHARGE AND WASH OUT SURPLUS CONCRETE OR DRUM WASH WATER IN A CONTAINED AREA ON SITE.
8. ALL SPILLS SHALL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDED METHODS. MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP SHALL BE KEPT IN THE MATERIAL STORAGE AREA ON SITE AND SHALL INCLUDE, BUT BE NOT LIMITED TO, BROOMS, DUSTPANS, MOPS, RAGS, GLOVES, GOGGLES, KITTY LITTER, SAND, SAWDUST AND PLASTIC OR METAL TRASH CONTAINERS. SPILLS OF TOXIC OR HAZARDOUS MATERIALS SHALL BE REPORTED TO THE APPROPRIATE STATE OR LOCAL GOVERNMENT AGENCY IMMEDIATELY REGARDLESS OF THE SIZE.



WITH TRENCHING



WITHOUT TRENCHING

SILT FENCE NOTES

1. SEDIMENT DEPOSITS SHALL BE REMOVED WHEN DEPOSITS EXCEED 6" IN DEPTH.
2. SILT FENCES SHALL BE INSPECTED AFTER EACH RAINFALL AND ALL NECESSARY REPAIRS/REPLACEMENT MADE IMMEDIATELY.
3. SILT FENCES SHALL BE REMOVED AFTER SATISFACTORY VEGETATIVE COVER IS ESTABLISHED. PROVIDE TOPSOIL, FINISH GRADE, SEED AND MULCH DISTURBED AREAS.
4. IN AREAS WHERE SILT FENCE CAN NOT BE TRENCHED SUCH AS FROZEN GROUND, BEDROCK, STONY SOIL, ROOTS OR NEAR A PROTECTED RESOURCE THE SILT FENCE SHALL BE ANCHORED USING THE "WITHOUT TRENCHING" METHOD SHOWN ABOVE.

1 TYP SILT FENCE DETAIL C-501/NOT TO SCALE

CD101, CG101

FOR PERMITTING PURPOSES ONLY NOT FOR CONSTRUCTION



DESIGNED BY: JLG
DRAWN BY: DEW
CHECKED BY: JLG
PROJECT: 22104.04

OWNER:
SOUTHERN MAINE
AFFORDABLE HOUSING

PROJECT TITLE AND LOCATION:
ADAMS POINT HOUSING

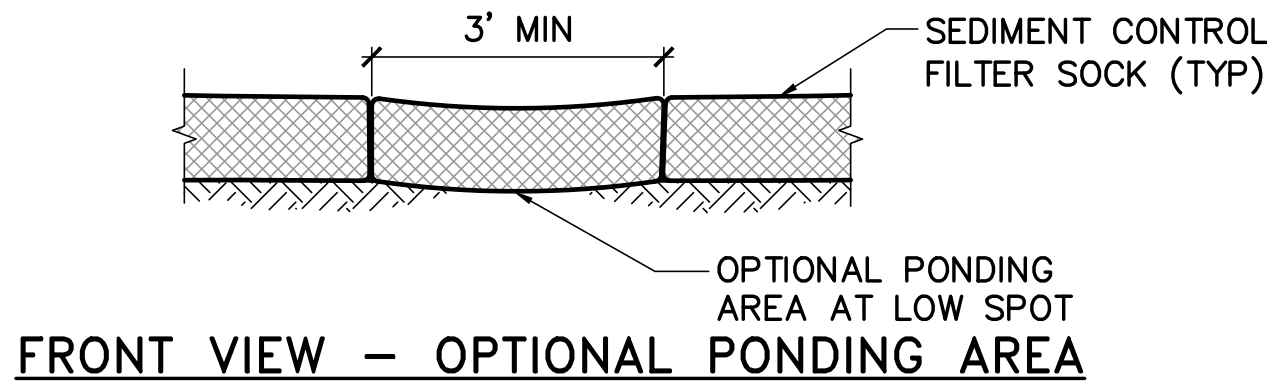
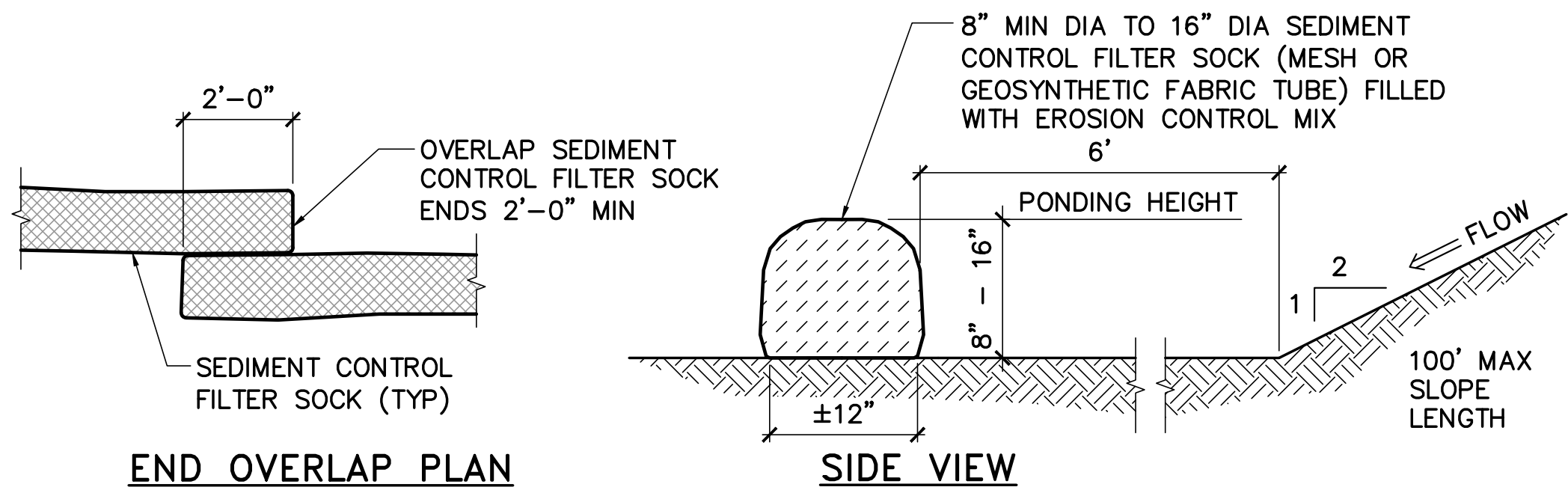
EROSION
CONTROL
NOTES AND
DETAIL

SCALE: AS NOTED

DATE: 08-02-2021

dwg.: C-501

SHEET: 11 OF 23

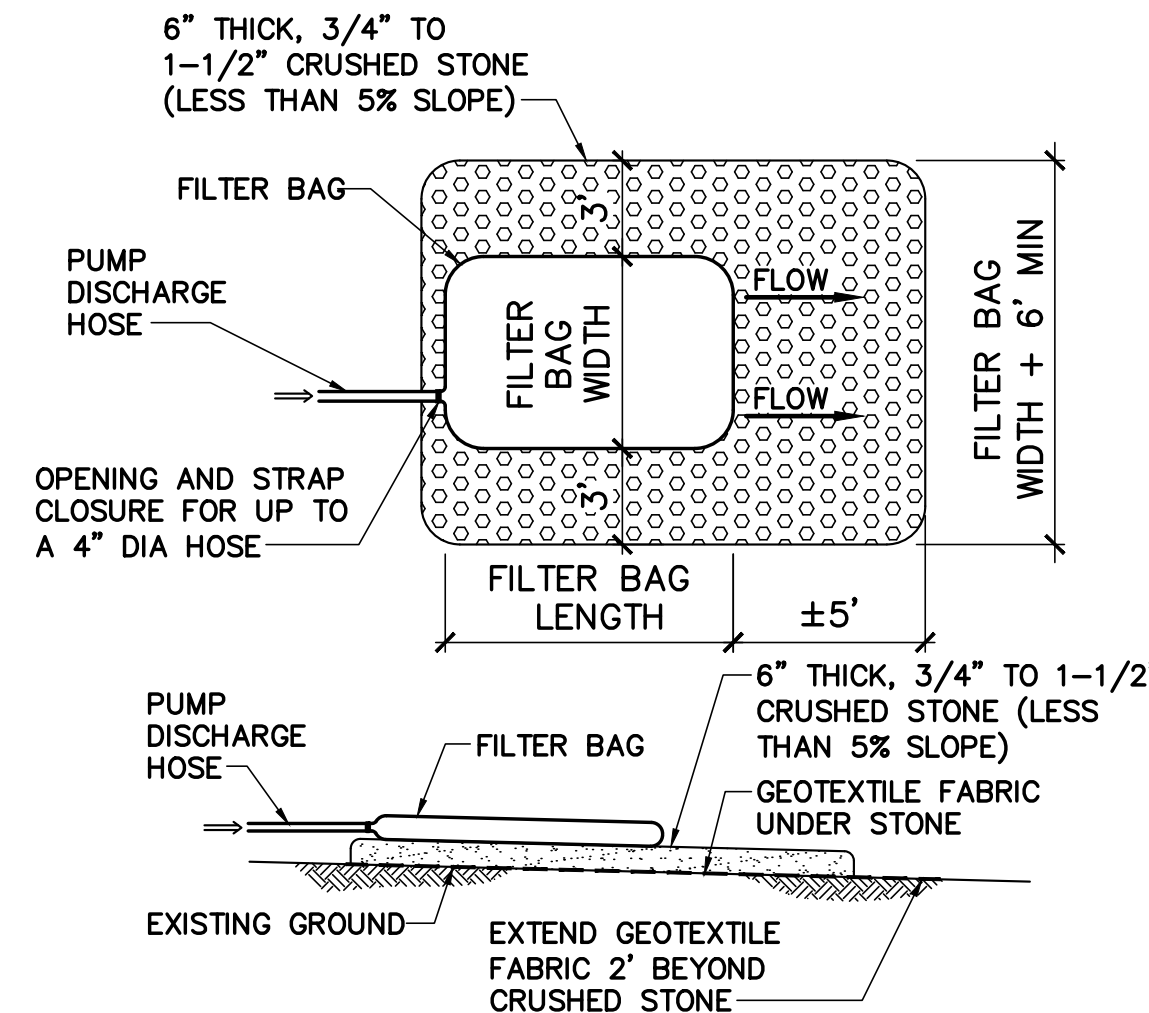


SEDIMENT CONTROL FILTER SOCK NOTES:

1. SEDIMENT CONTROL FILTER SOCKS SHALL BE MANUFACTURED FOR THE PURPOSE OF TEMPORARY SEDIMENT CONTROL AND INSTALLED ACCORDING TO THE MANUFACTURERS RECOMMENDATIONS.
2. REMOVE ROOTS, ROCKS, MOW OR FLATTEN GRASS TO MAINTAIN FULL CONTACT WITH GROUND AND FILTER SOCK.
3. REMOVE ACCUMULATED SEDIMENT WHEN IT REACHES ONE HALF THE FILTER SOCK HEIGHT.
4. SEDIMENT CONTROL FILTER SOCKS SHALL REMAIN IN PLACE UNTIL ALL AREAS ARE STABILIZED.
5. SECURE SEDIMENT CONTROL FILTER SOCKS WITH CONCRETE BLOCKS AND/OR WOOD STAKES IN LOCATIONS WHERE SOCK FAILS TO REMAIN IN PLACE DUE TO HYDRAULIC FORCE.
6. EROSION CONTROL MIX SHALL CONSIST PRIMARILY OF WELL GRADED ORGANIC MATERIAL AND SHALL INCLUDE SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK, OR OTHER PRODUCTS BASED ON A SIMILAR RAW SOURCE. SILT, CLAY, OR FINE SAND ARE NOT ACCEPTABLE IN THE FILTER SOCK EROSION CONTROL MIX.

1 TYP SEDIMENT CONTROL FILTER SOCK DETAIL

CD101, CG101

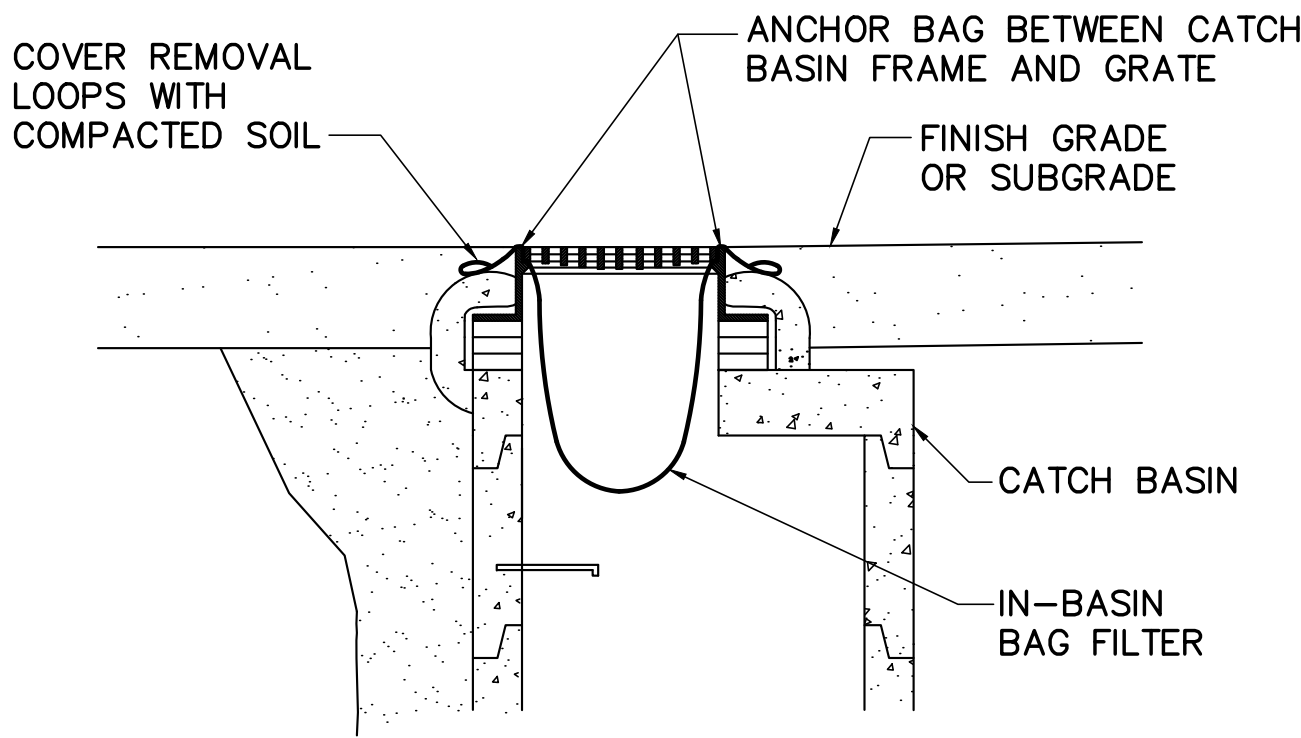


GEOTEXTILE FILTER BAG NOTES:

1. DEWATERING SEDIMENT FILTERS SHALL BE LOCATED A MINIMUM OF 100 FEET FROM ANY WATER BODY OR WETLAND. DEWATERING SEDIMENT FILTERS SHALL BE A NON-WOVEN GEOTEXTILE FABRIC WITH THE FOLLOWING MINIMUM PROPERTIES:
 - a. WEIGHT IN ACCORDANCE WITH ASTM D3776: 8 OZ/YARD MIN
 - b. GRAB TENSILE STRENGTH IN ACCORDANCE WITH ASTM D4632: 205 LBS MIN
 - c. PUNCTURE RESISTANCE IN ACCORDANCE WITH ASTM D4833: 110 LBS MIN
 - d. MULLEN BURST STRENGTH IN ACCORDANCE WITH ASTM D3786: 350 PSI MIN
 - e. AOS % RETAINED IN ACCORDANCE WITH ASTM D4751: 100 US SIEVE
 - f. FLOW RATE IN ACCORDANCE WITH ASTM D4491: 60 GAL/MIN/SF
2. INSTALL, OPERATE AND REMOVE DEWATERING SEDIMENT FILTERS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND PRINTED INSTRUCTIONS.

4 TYP GEOTEXTILE FILTER BAG DETAIL

C-501

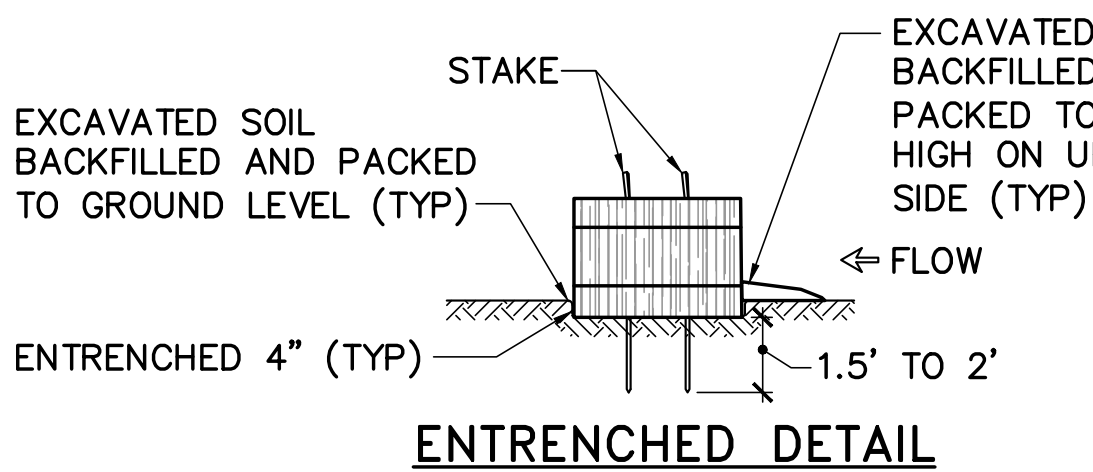
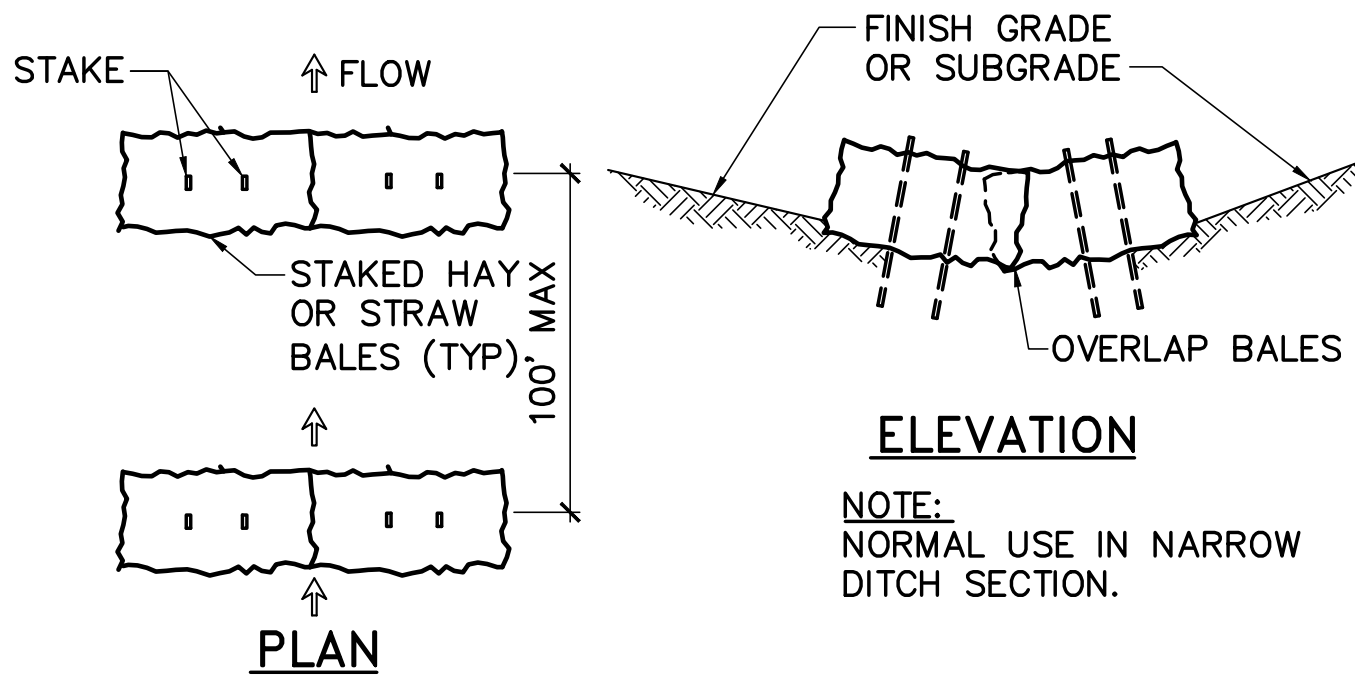


NOTES

1. IN-BASIN BAG FILTERS SHALL BE A WOVEN POLYPROPYLENE WITH THE FOLLOWING MINIMUM PROPERTIES:
 - a. GRAB TENSILE STRENGTH ACCORDING TO ASTM D4632: 300 LBS
 - b. PUNCTURE RESISTANCE ACCORDING TO ASTM D4833: 120 LBS
 - c. MULLEN BURST ACCORDING TO ASTM D3786: 800 PSI
 - d. FLOW RATE ACCORDING TO ASTM D4491: 44 GAL/MIN/SF
2. BAG FILTER SEAMS SHALL BE DOUBLE STITCHED WITH HIGH-STRENGTH NYLON THREAD AND SHALL HAVE AN AVERAGE WIDE WIDTH STRENGTH PER ASTM D4884 OF 165 LBS/INCH.
3. PROVIDE TYPE A INLET PROTECTION IN EXISTING OR NEWLY PAVED AREAS WITH NON-STABILIZED TRIBUTARY WATERSHEDS.
4. REMOVE ACCUMULATED SEDIMENTS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. DO NOT PUNCTURE BAG FILTER TO CLEAN OUT SEDIMENT.

2 TYP CATCH BASIN INLET PROTECTION DETAIL

CD101, CG101

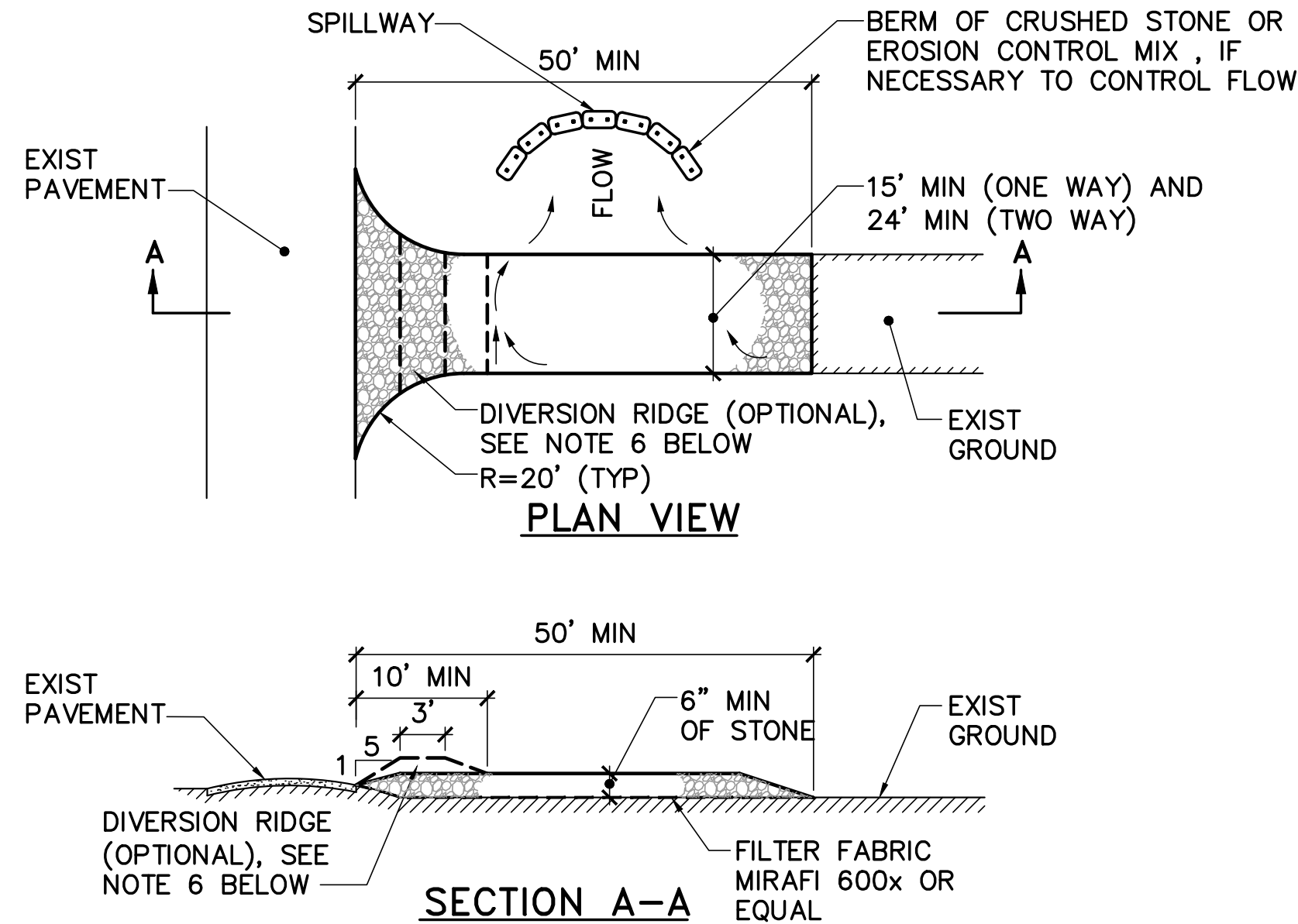


HAY BALE EROSION PROTECTION NOTES:

1. EACH BALE SHALL BE ENTRENCHED IN THE SOIL A MINIMUM OF 4".
2. BALES SHALL BE SECURELY ANCHORED IN PLACE BY A MINIMUM OF 2 STAKES DRIVEN THROUGH THE BALES 1.5' TO 2' INTO THE GROUND. THE FIRST STAKE IN EACH BALE SHALL BE ANGLED TOWARD PREVIOUSLY LAID BALE TO FORCE BALES TOGETHER. THE BINDINGS ON THE BALES SHALL BE PARALLEL WITH THE GROUND.
3. FILL GAPS BETWEEN BALES BY CHINKING / WEDGING WITH HAY OR STRAW TO PREVENT WATER FLOW BETWEEN BALES.
4. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE IMMEDIATELY AS NEEDED.
5. BALES ARE FOR USE AS SEDIMENT BARRIERS FOR SMALL DISTURBANCES WITH A SMALL WATERSHED, AND AS AS EMERGENCY MEASURE FOR CONTROLLING UNEXPECTED SEDIMENTATION.
6. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
7. BALES MAY BE USED AS SILT FENCE REINFORCEMENT AS NECESSARY. PLACE THE BALE IN CONTACT (THE LONG SIDE OF THE BALE) AND PARALLEL TO THE SILT FENCE ON THE DOWN SLOPE SIDE.

5 TYP HAY BALE EROSION PROTECTION DETAIL

C-502

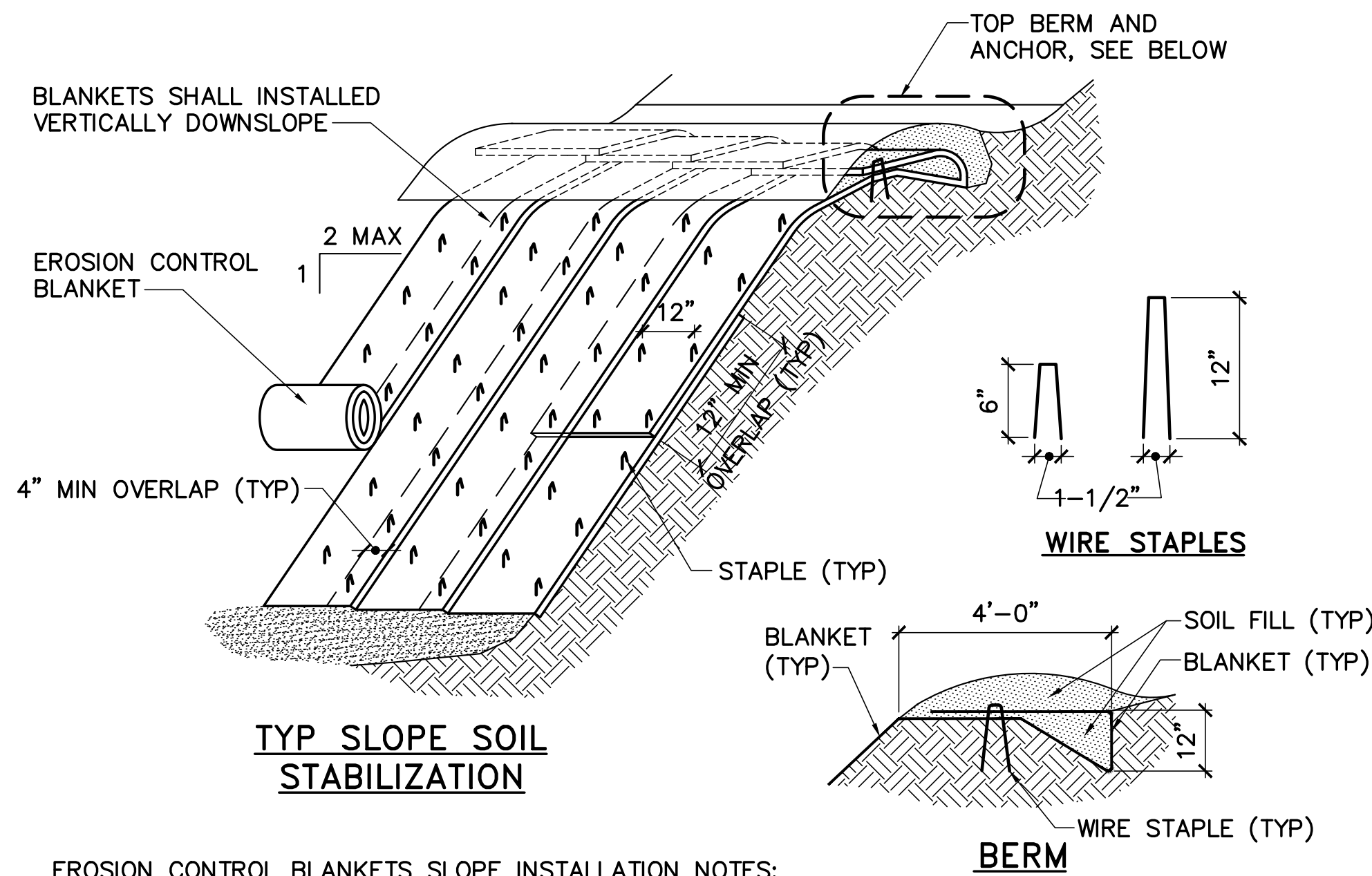


STABILIZED CONSTRUCTION ENTRANCE / EXIT NOTES

1. STONE FOR A STABILIZED CONSTRUCTION ENTRANCE / EXIT SHALL BE ANGULAR 2 TO 3 INCH STONE OR APPROPRIATE RECLAIMED CONCRETE MATERIAL.
2. THE LENGTH OF THE STABILIZED ENTRANCE / EXIT SHALL NOT BE LESS THAN 50 FEET.
3. THE THICKNESS OF THE STONE FOR THE STABILIZED ENTRANCE / EXIT SHALL NOT BE LESS THAN 6 INCHES.
4. THE WIDTH OF THE ENTRANCE / EXIT SHALL NOT BE LESS THAN THE FULL WIDTH OF THE ENTRANCE WHERE INGRESS OR EGRESS OCCURS OR 20 FEET, WHICHEVER IS GREATER.
5. GEOTEXTILE FILTER FABRIC SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING THE STONE.
6. ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION ENTRANCE / EXIT SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A DIVERSION RIDGE WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE. IF THE ENTRANCE / EXIT SLOPES 5% OR MORE TOWARD THE EXISTING ROAD A DIVERSION RIDGE IS REQUIRED.
7. THE ENTRANCE / EXIT SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, WASHED, OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY SHALL BE REMOVED IMMEDIATELY.
8. WHEELS SHALL BE CLEANED TO REMOVE MUD PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE PERFORMED ON AN AREA STABILIZED WITH STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

3 STABILIZED CONSTRUCTION ENTRANCE / EXIT DETAIL

CD101, CG101, C-501



EROSION CONTROL BLANKETS SLOPE INSTALLATION NOTES:

1. INSTALL BLANKETS AND WIRE STAPLES PER MANUFACTURER'S WRITTEN RECOMMENDATIONS. THE NUMBER OF WIRE STAPLES AND ROWS OF STAPLES PER EROSION CONTROL BLANKET MANUFACTURER'S WRITTEN INSTRUCTIONS.
2. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. BLANKETS SHALL HAVE GOOD SOIL CONTACT.
3. APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS.
4. LAY BLANKETS LOOSELY AND WIRE STAPLE TO MAINTAIN DIRECT CONTACT WITH SOIL, DO NOT STRETCH.

8 EROSION CONTROL BLANKETS SLOPE INSTALLATION

CG101, C-501

FOR PERMITTING PURPOSES ONLY NOT FOR CONSTRUCTION

DESIGNED BY: JLG
DRAWN BY: DEW
CHECKED BY: JLG
PROJECT: 22104.04

OWNER:
SOUTHERN MAINE
AFFORDABLE HOUSING
22 South Street
Biddeford, Maine, 04005

PROJECT TITLE AND LOCATION:
ADAMS POINT HOUSING
69 Adams Street
Biddeford, Maine, 04005

EROSION CONTROL
DETAILS

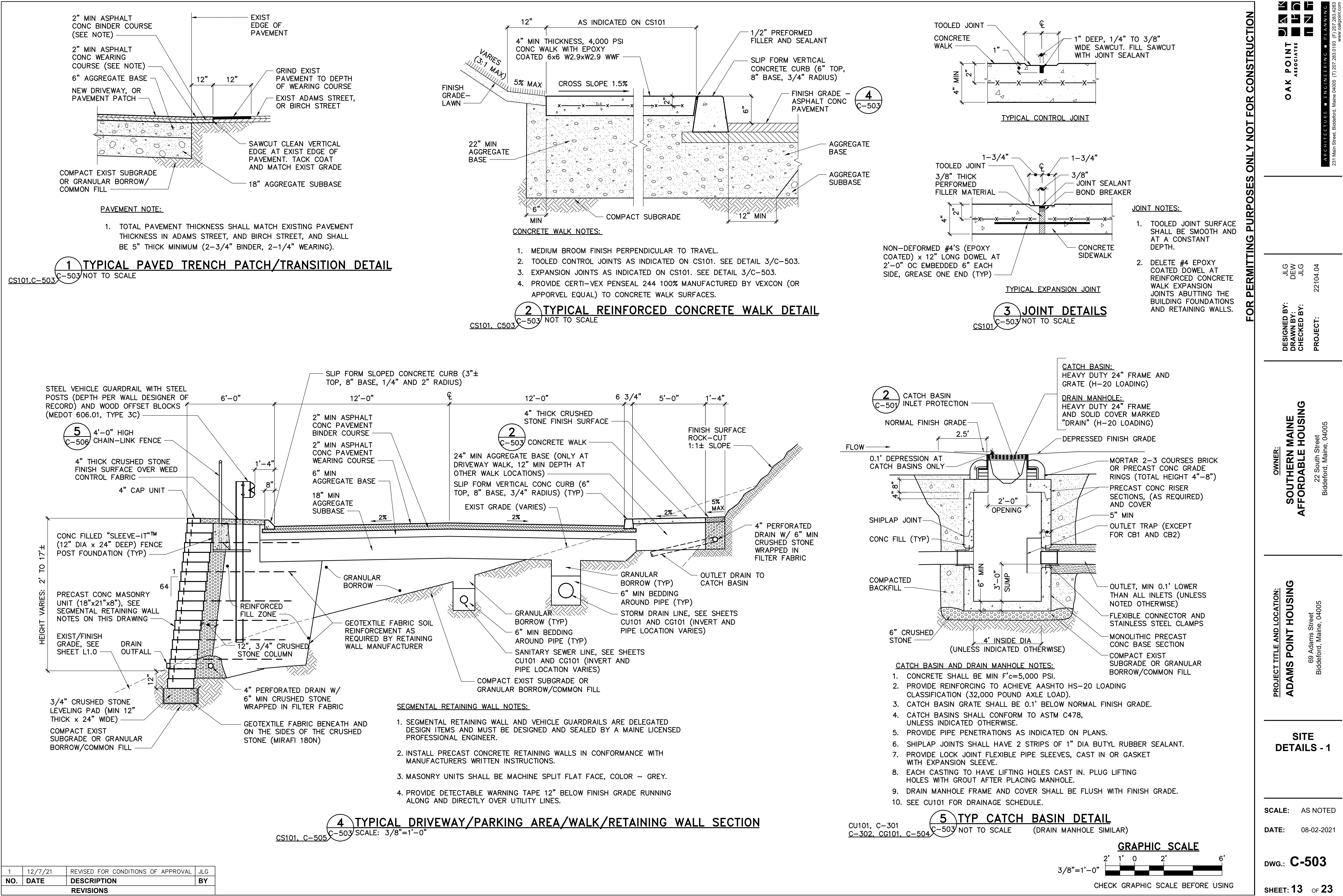
SCALE: AS NOTED

DATE: 08-02-2021

DWG.: C-502

SHEET: 11 OF 23

NO.	DATE	DESCRIPTION	BY
1	12/7/21	REVISED FOR CONDITIONS OF APPROVAL	JLG
REVISIONS			



1	12/7/21	REVISED FOR CONDITIONS OF APPROVAL	JLG
NO.	DATE	DESCRIPTION	BY
REVISIONS			

ARCHITECTURE ■ ENGINEERING ■ PLANNING

OAK POINT ASSOCIATES

231 Main Street, Biddeford, Maine 04005 (T) 207-283-0183 (F) 207-283-0283 www.oakpoint.com

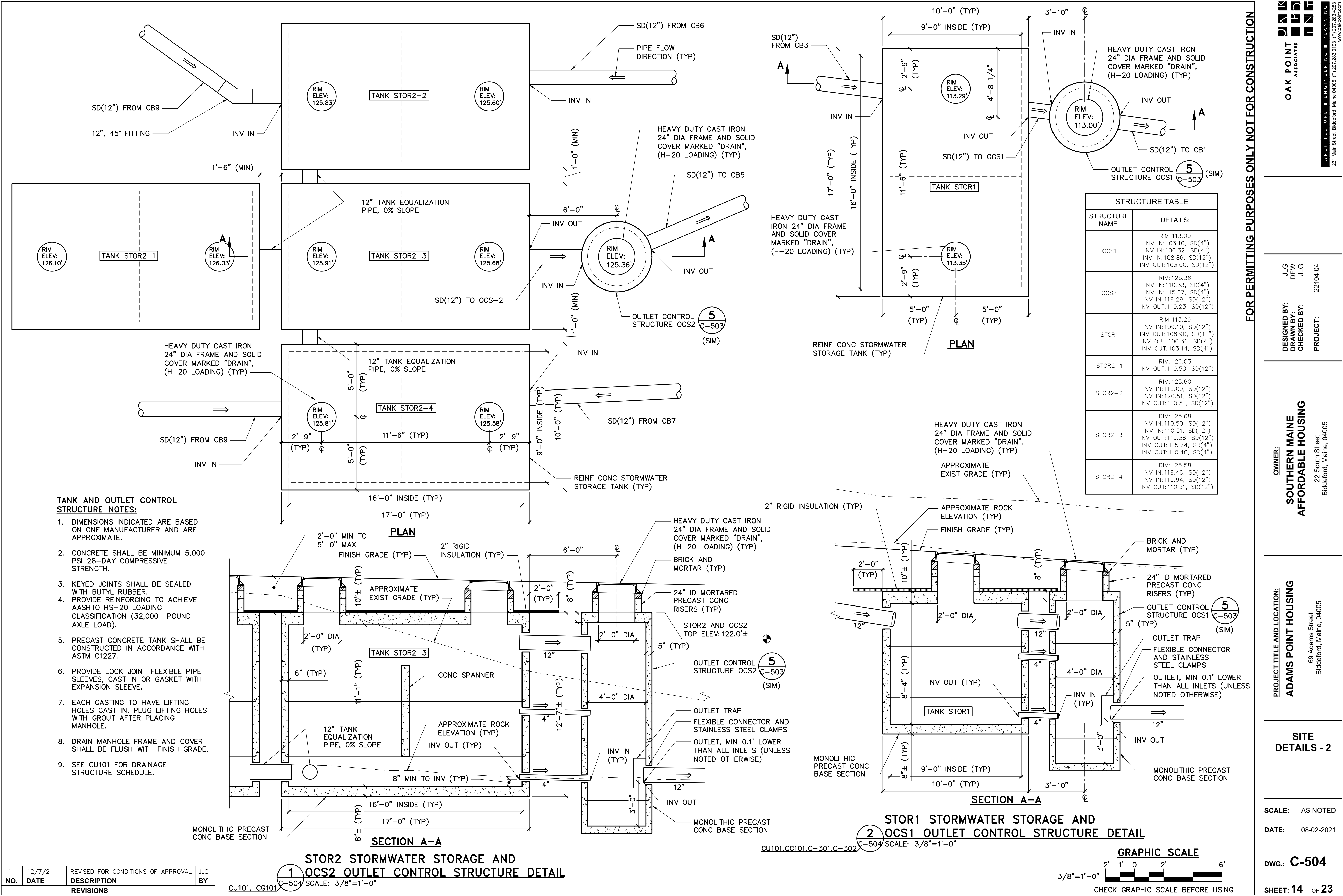
DESIGNED BY: JLG
DRAWN BY: DEW
CHECKED BY: JLG
PROJECT: 22104.04

OWNER:
SOUTHERN MAINE AFFORDABLE HOUSING
22 South Street
Biddeford, Maine, 04005

PROJECT TITLE AND LOCATION:
ADAMS POINT HOUSING
69 Adams Street
Biddeford, Maine, 04005

SITE DETAILS - 1

SCALE: AS NOTED
DATE: 08-02-2021
DWG.: C-503
SHEET: 13 OF 23



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1	12/7/21	REVISED FOR CONDITIONS OF APPROVAL	JLG
REVISIONS			

CU101, CG101

NO.	DATE	DESCRIPTION	BY
1	12/7/21	REVISED FOR CONDITIONS OF APPROVAL	JLG
REVISIONS			

ARCHITECTURE ■ ENGINEERING ■ PLANNING

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DESIGNED BY: JLG

DRAWN BY: DEW

CHECKED BY: JLG

PROJECT: 22104.04

OWNER:

SOUTHERN MAINE AFFORDABLE HOUSING

22 South Street Biddeford, Maine, 04005

PROJECT TITLE AND LOCATION:

ADAMS POINT HOUSING

69 Adams Street Biddeford, Maine, 04005

SITE DETAILS - 2

SCALE: AS NOTED

DATE: 08-02-2021

DWG.: C-504

SHEET: 14 OF 23

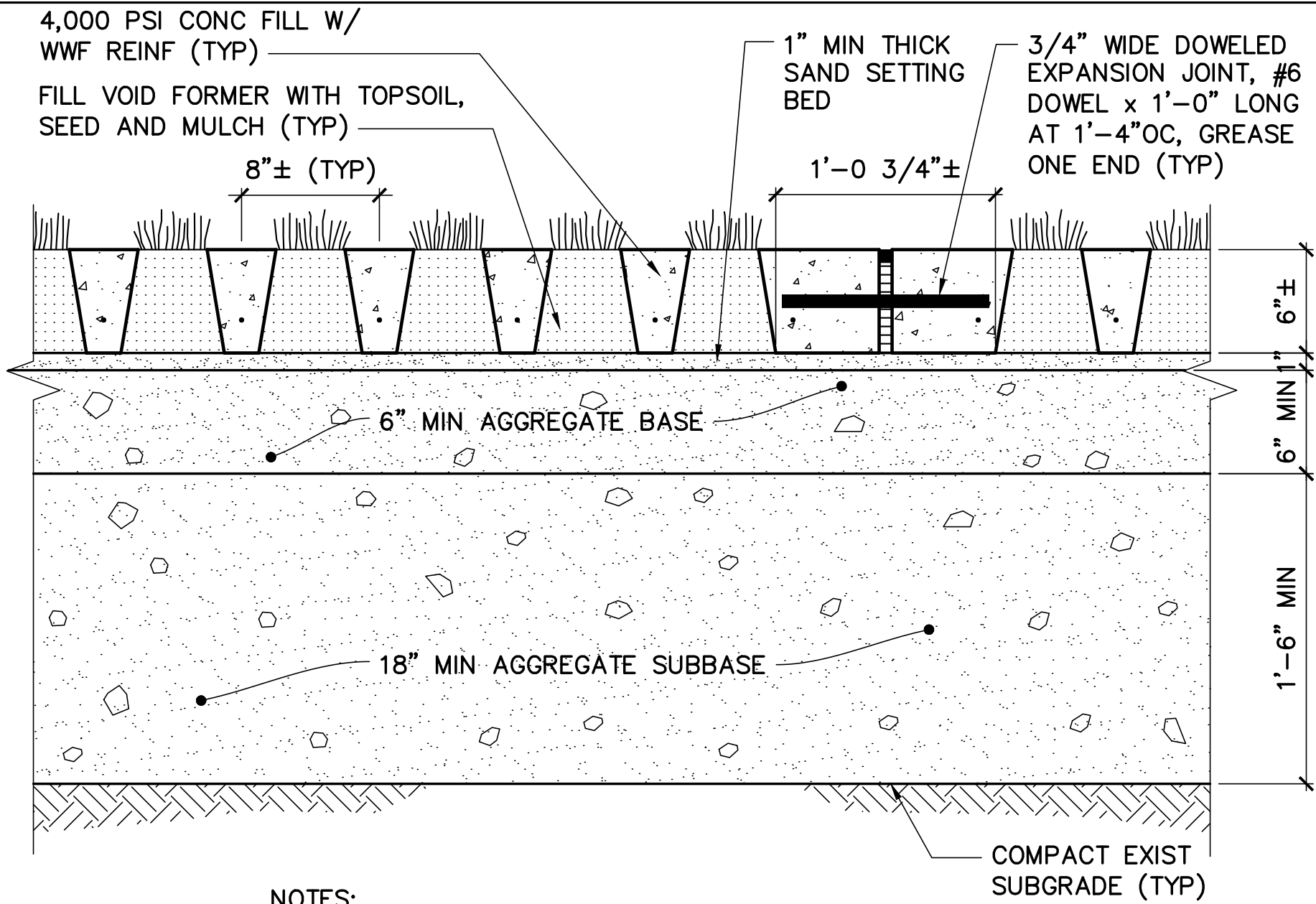
FOR PERMITTING PURPOSES ONLY NOT FOR CONSTRUCTION

GRAPHIC SCALE

3/8"=1'-0"

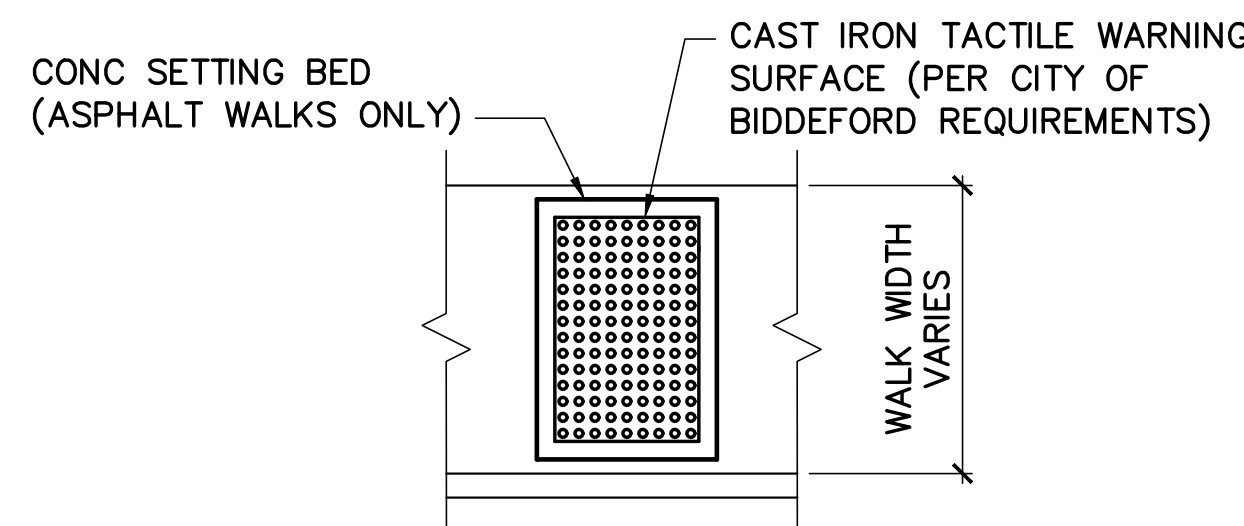
2' 1' 0' 2' 6'

CHECK GRAPHIC SCALE BEFORE USING

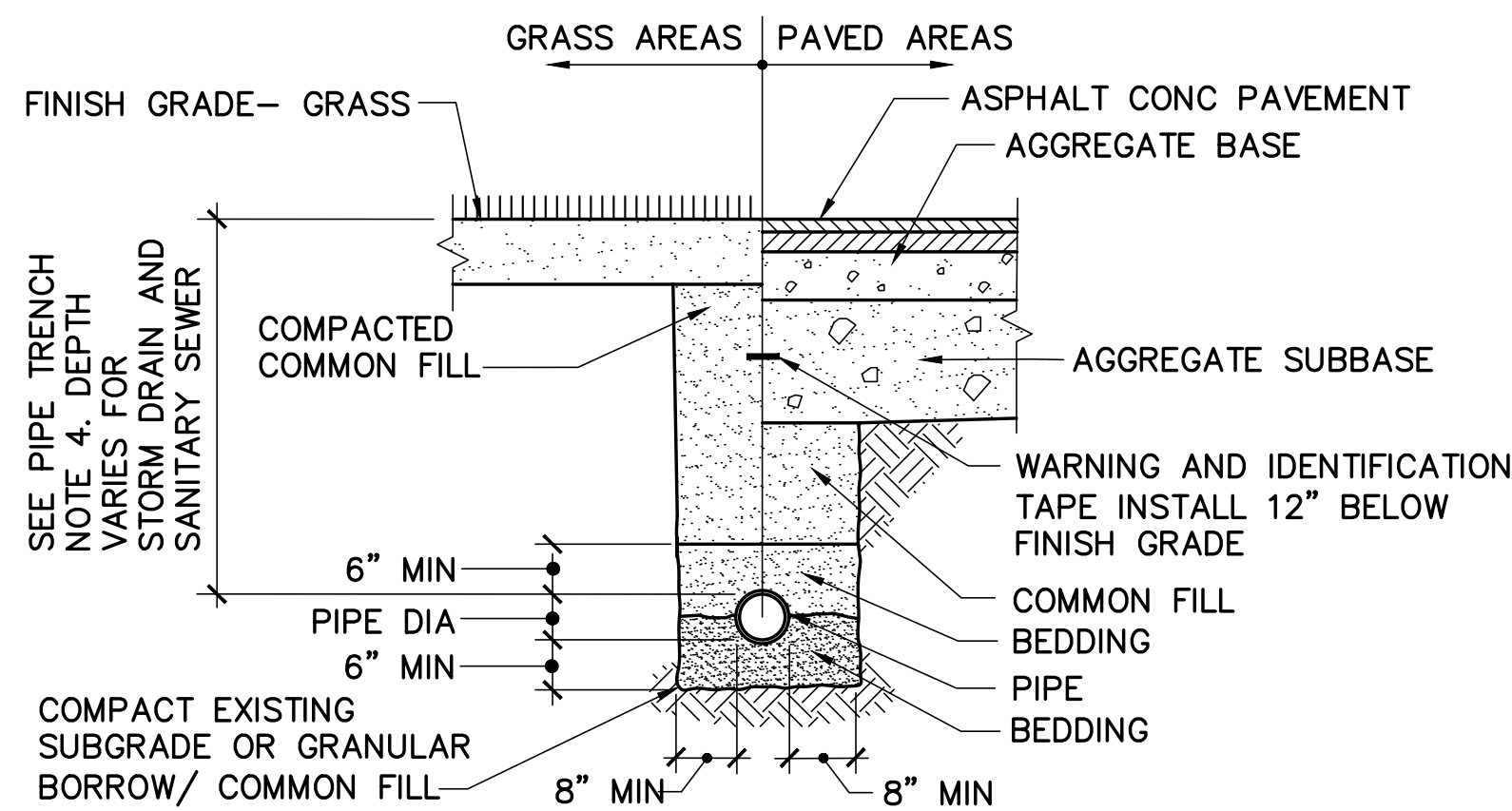


- NOTES:**
1. STABILIZED TURF SHALL BE CAPABLE OF H-20 LOADING, AND FIRE TRUCK OUTRIGGER LOADING.
 2. BASIS OF DESIGN: GRASS CONCRETE LIMITED, MODEL GC2 VOID FORMER, <https://www.grasscrete.com/index.html>.
 3. INSTALL PER MANUFACTURERS WRITTEN INSTRUCTIONS.

1 TYP STABILIZED TURF DETAIL
C-505 SCALE: 1-1/2"=1'-0"

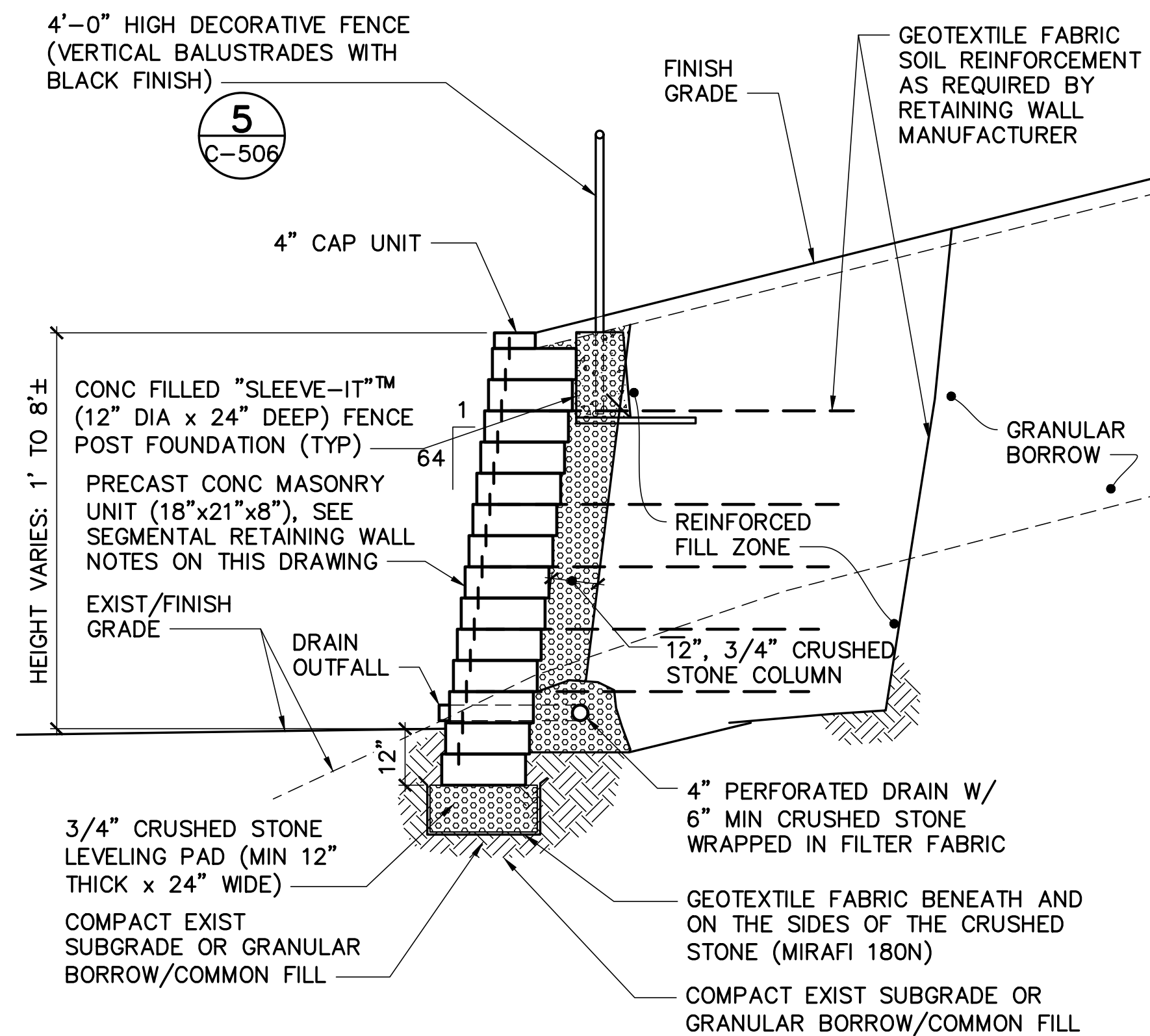


4 TYP TACTILE WARNING PANEL DETAIL
C-505 NOT TO SCALE



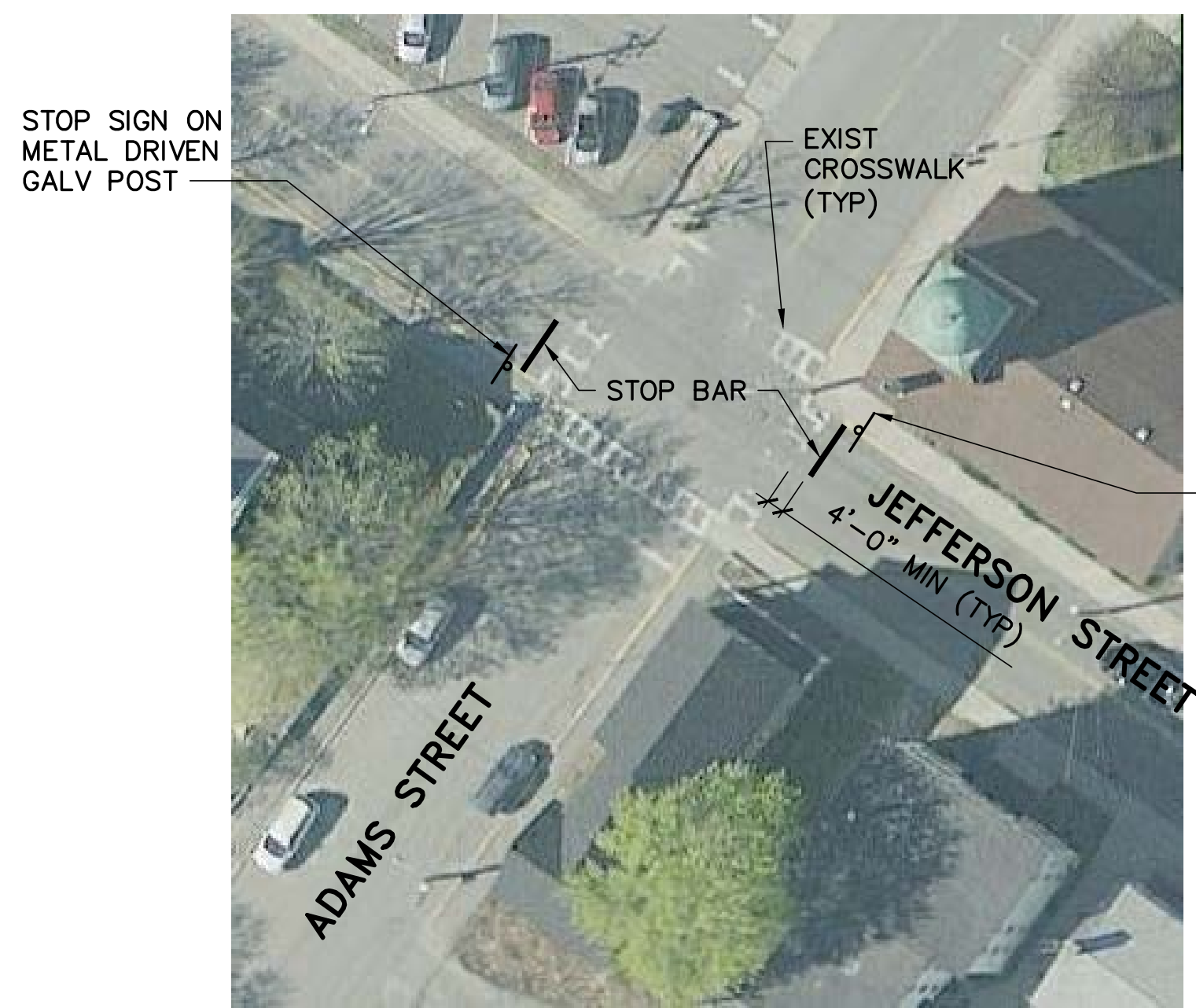
- PIPE TRENCH NOTES:**
1. INSTALL THERMOPLASTIC (HDPE AND PVC) GRAVITY PIPING IN ACCORDANCE WITH ASTM D 2321 (CLASS II BEDDING/BLANKET UNLESS INDICATED OTHERWISE).
 2. ALL EXCAVATION WORK SHALL COMPLY WITH OSHA STANDARDS. TRENCH SIDEWALLS SHALL BE VERTICAL FROM TRENCH BOTTOM TO 12" ABOVE TOP OF PIPE.
 3. PROVIDE A MINIMUM OF 6" VERTICAL CLEARANCE BETWEEN CROSSING PIPES.
 4. MAINTAIN THE FOLLOWING DEPTH OF COVER FOR EACH SERVICE:
- | SERVICE | MINIMUM DEPTH OF COVER |
|--------------------------|--|
| WATER (FIRE PROTECTION) | 6'-0" |
| WATER (DOMESTIC) | 5'-0" MIN |
| SANITARY SEWER (GRAVITY) | 4'-0" |
| STORM DRAIN | 4'-0" |
| NATURAL GAS | PER NATURAL GAS PROVIDER'S REQUIREMENTS. |

5 TYP UTILITY TRENCH DETAIL
C-505 NOT TO SCALE



- SEGMENTAL RETAINING WALL NOTES:**
1. SEGMENTAL RETAINING WALL AND VEHICLE GUARDRAILS ARE DELEGATED DESIGN ITEMS AND MUST BE DESIGNED AND SEALED BY A MAINE LICENSED PROFESSIONAL ENGINEER.
 2. INSTALL PRECAST CONCRETE RETAINING WALLS IN CONFORMANCE WITH MANUFACTURERS WRITTEN INSTRUCTIONS.
 3. MASONRY UNITS SHALL BE MACHINE SPLIT FLAT FACE, COLOR - GREY.

2 TYP RETAINING WALL DETAIL
C-505 SCALE: 3/8"=1'-0"

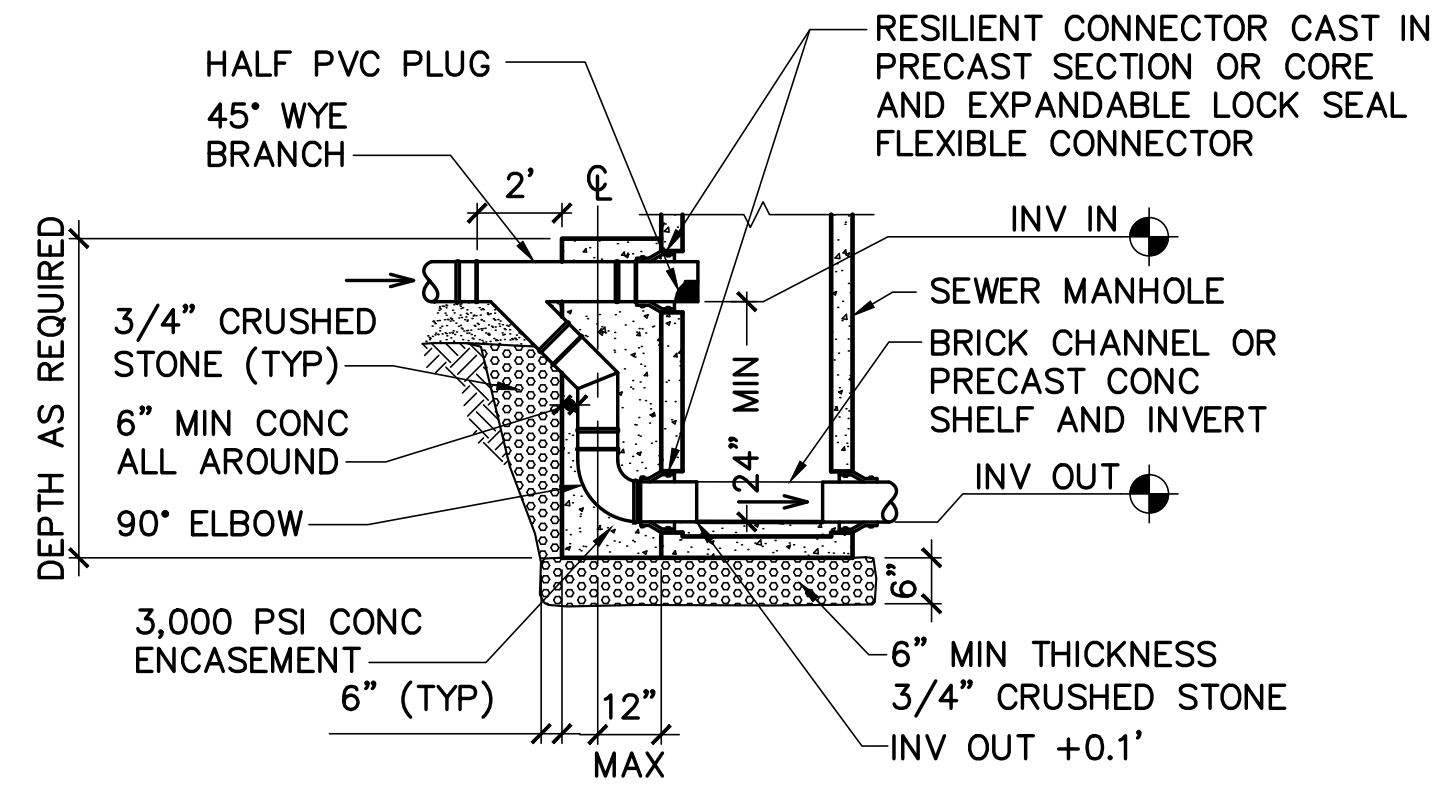
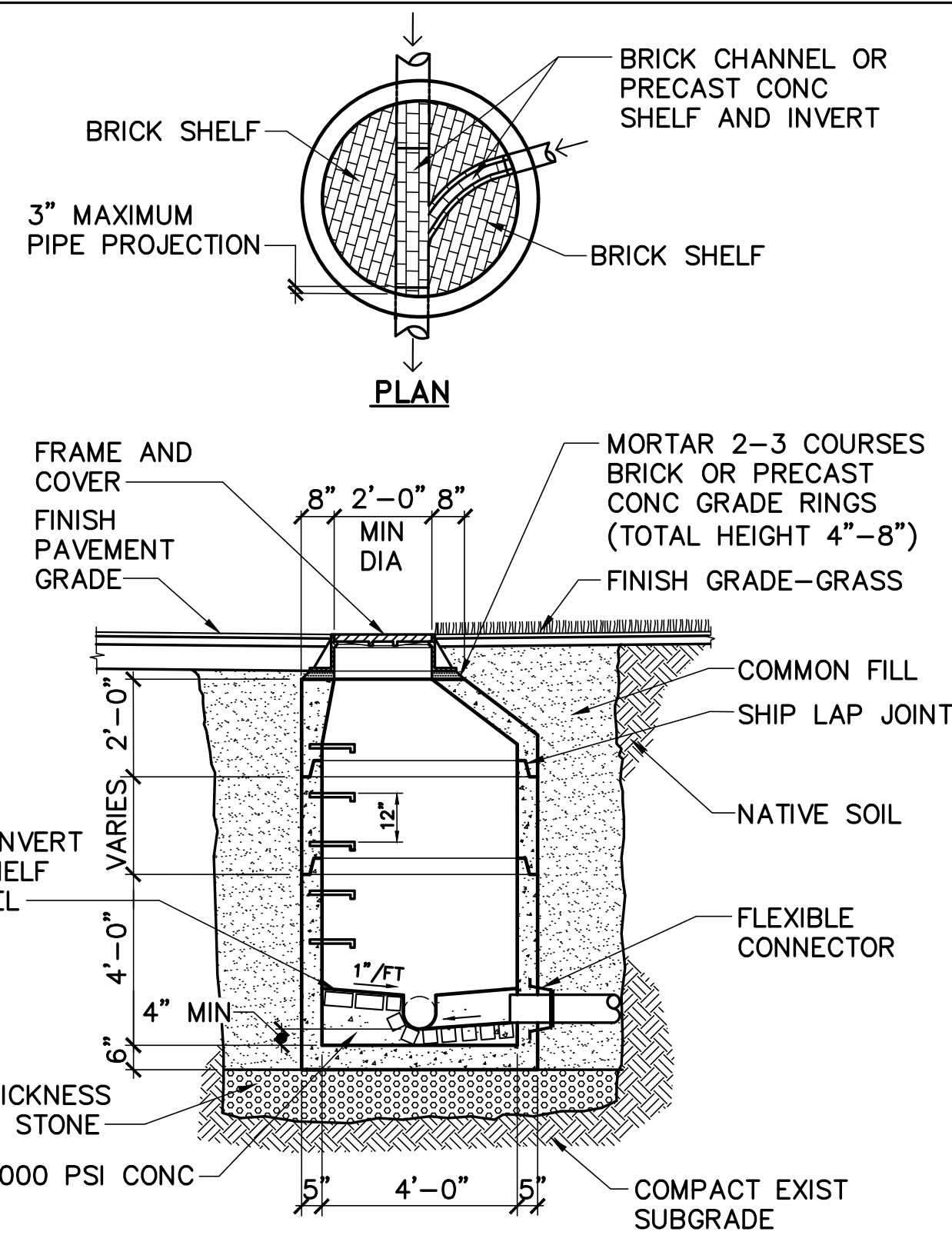


- NOTES:**
1. STOP BARS: 1'-0" WIDE x TO CENTER OF ROAD, WHITE PAVEMENT MARKING.
 2. STOP SIGNS: MUTCD R1-1, SIZE = 30"x30".
 3. STOP BAR LAYOUT PER MAINE DOT STANDARD DETAILS DATED MARCH 2020, PAGE 627(03).

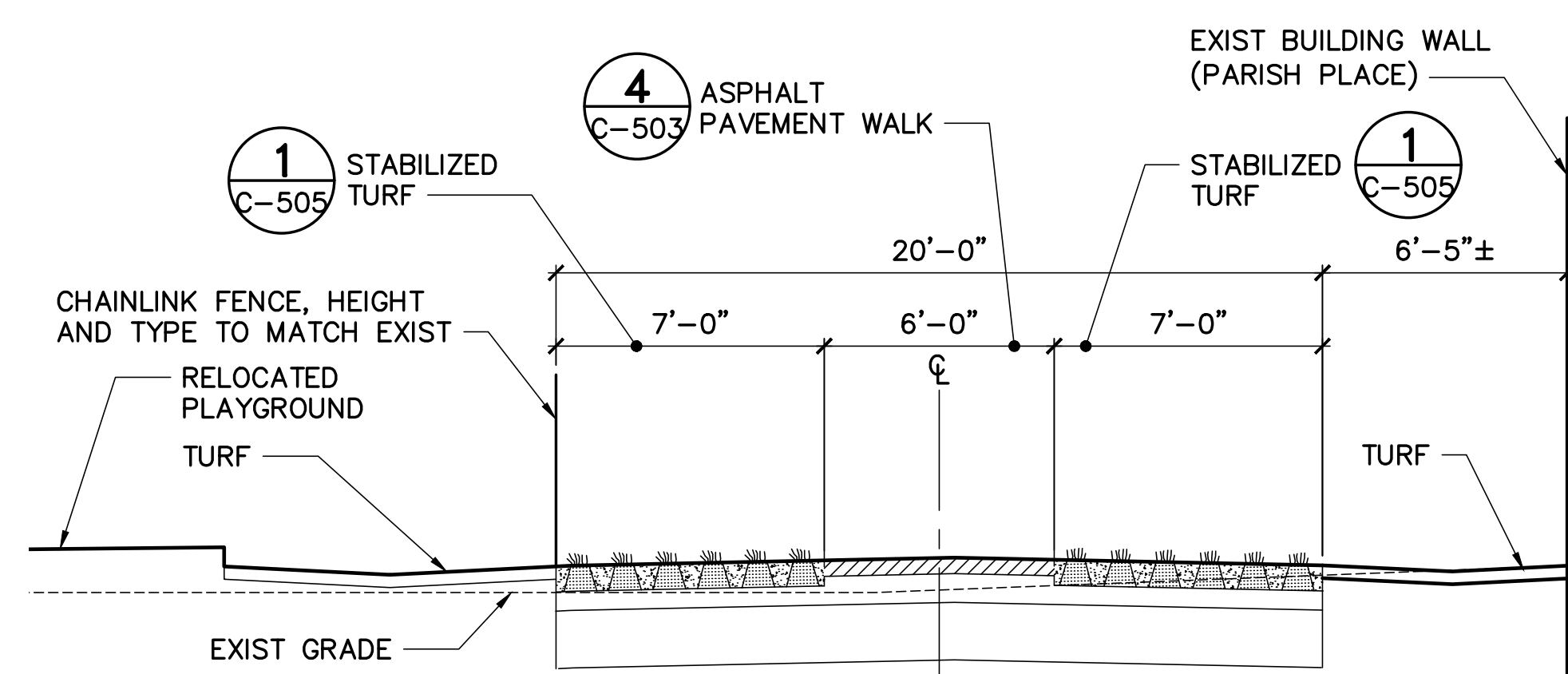
6 INTERSECTION IMPROVEMENTS PLAN
C-505 SCALE: 1"=30'

MANHOLE NOTES:

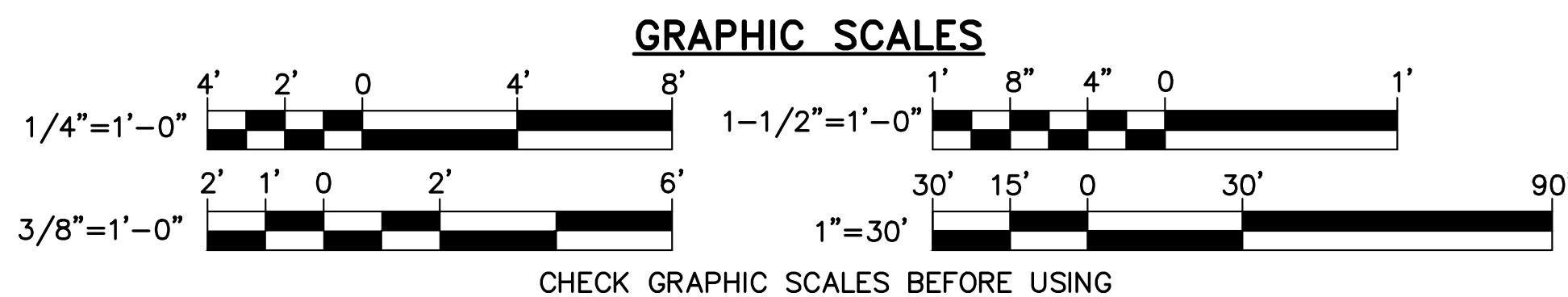
1. CONCRETE: 5,000 PSI AFTER 28 DAYS.
2. PROVIDE REINFORCING TO ACHIEVE AASHTO HS-20 LOADING CLASSIFICATION (32,000 POUND AXLE LOAD).
3. SHIPLAP JOINTS SHALL BE SEALED WITH 2 STRIPS OF 1" DIA BUTYL RUBBER SEALANT.
4. PROVIDE LOCK JOINT FLEXIBLE PIPE SLEEVES, CAST INTO BASE.
5. EACH CASTING TO HAVE LIFTING HOLES CAST IN. PLUG LIFTING HOLES WITH GROUT AFTER PLACING MANHOLE.
6. PROVIDE MANHOLE STEPS @ 12" OC.
7. INVERT SHELF TO BE PLACED AFTER LEAKAGE TEST.
8. INVERT BRICKS SHALL BE LAID ON EDGE.



3 TYP SANITARY SEWER MANHOLE DETAIL
C-505 NOT TO SCALE



7 TYP STABILIZED TURF FIRE LANE SECTION
C-505 SCALE: 1/4"=1'-0"



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CHECKED BY: JLG
PROJECT: 22104.04

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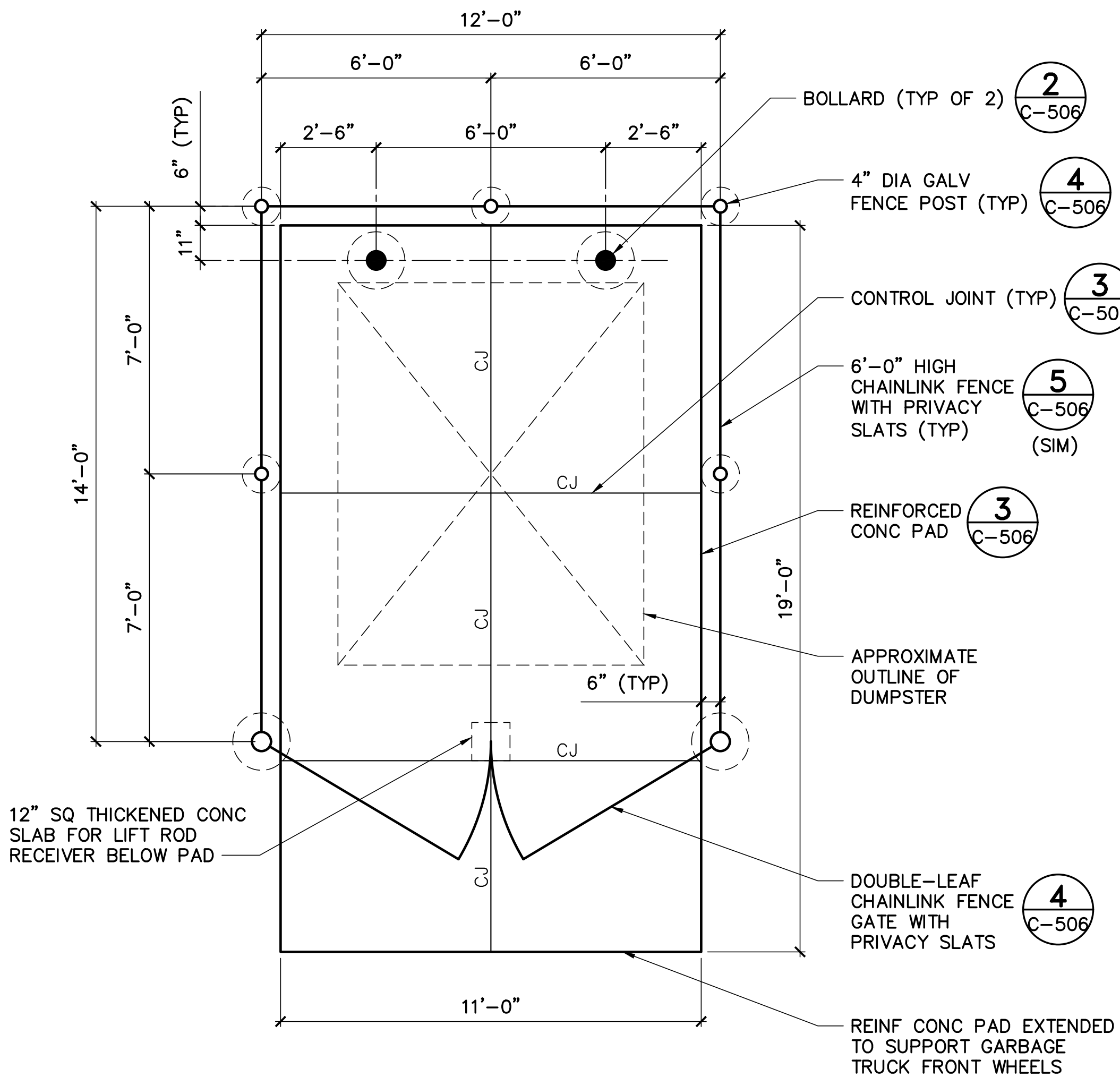
SITE
DETAILS - 3

SCALE: AS NOTED

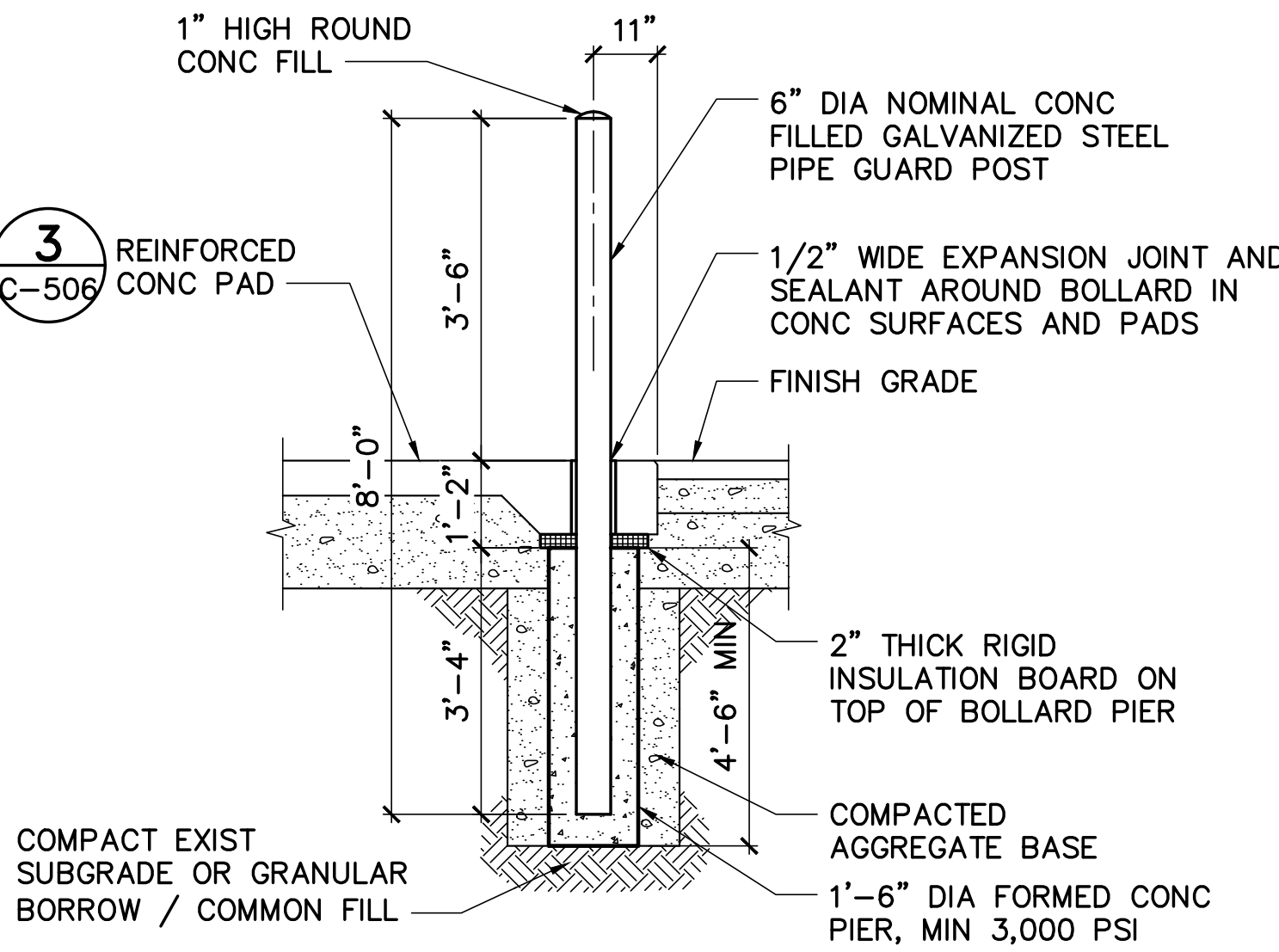
DATE: 08-02-2021

DWG.: C-505

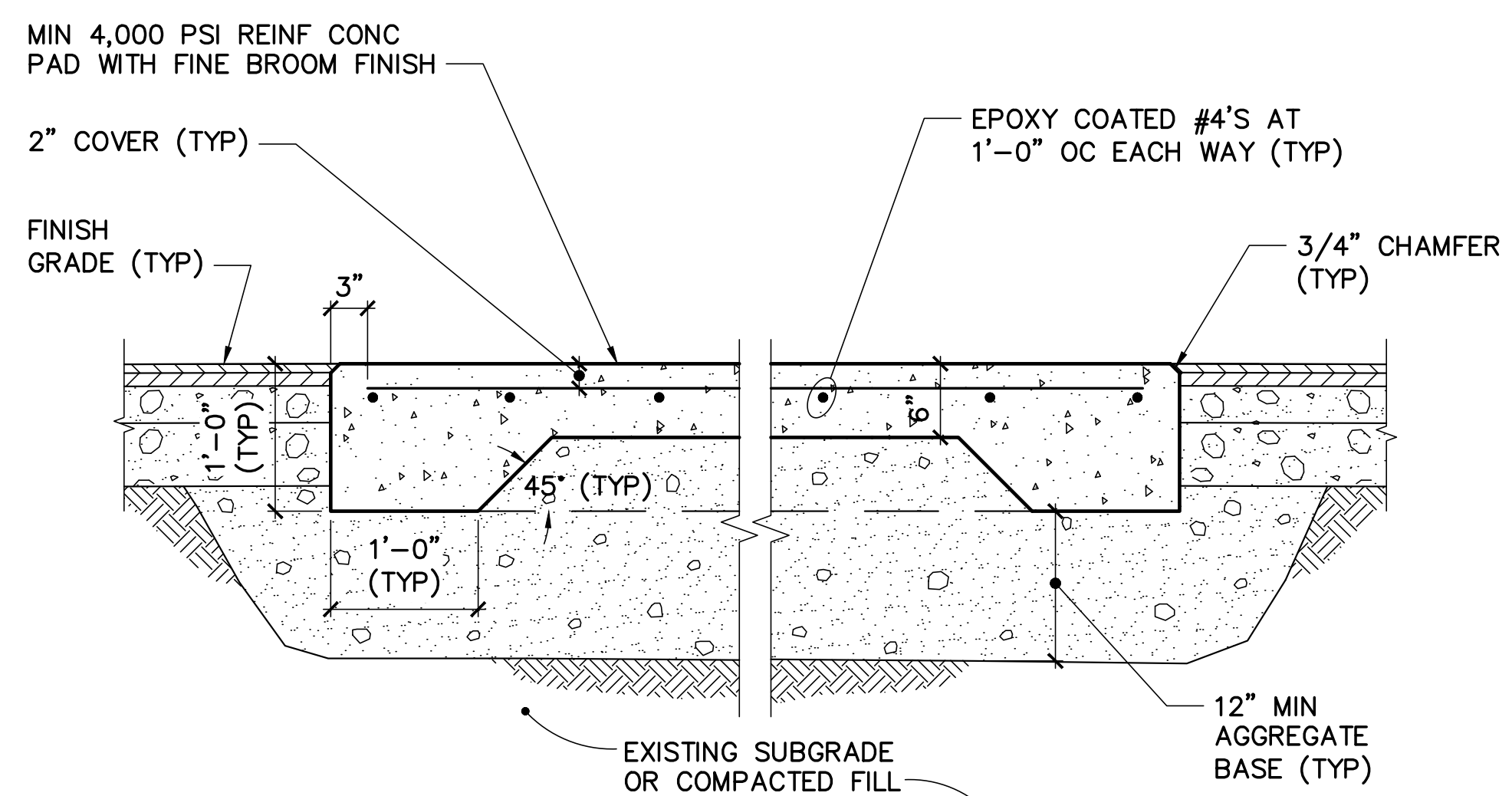
SHEET: 15 OF 23



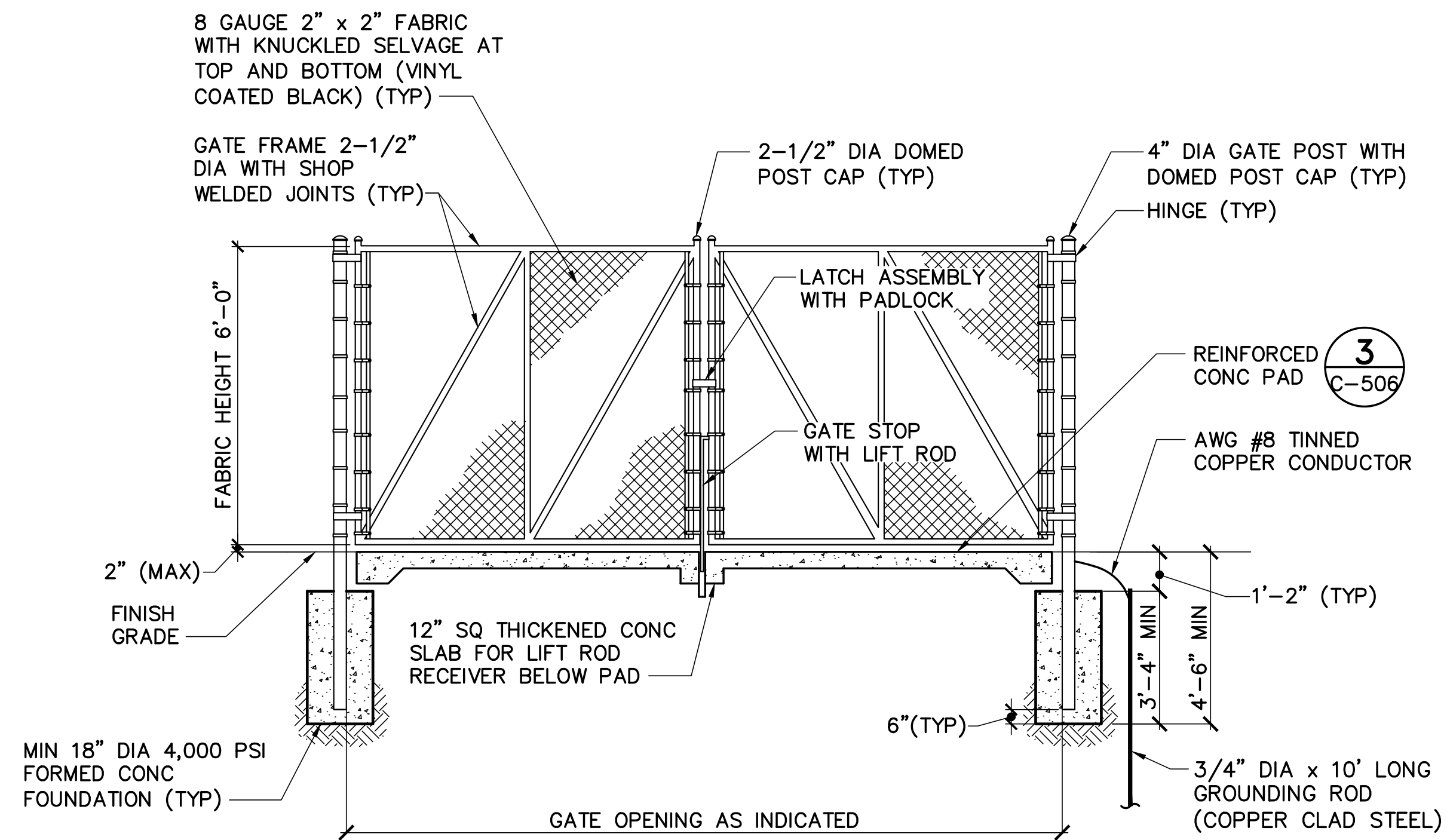
1 DUMPSTER PAD AND ENCLOSURE
C-506 SCALE: 3/8"=1'-0"



2 TYP BOLLARD DETAIL
C-506 NOT TO SCALE



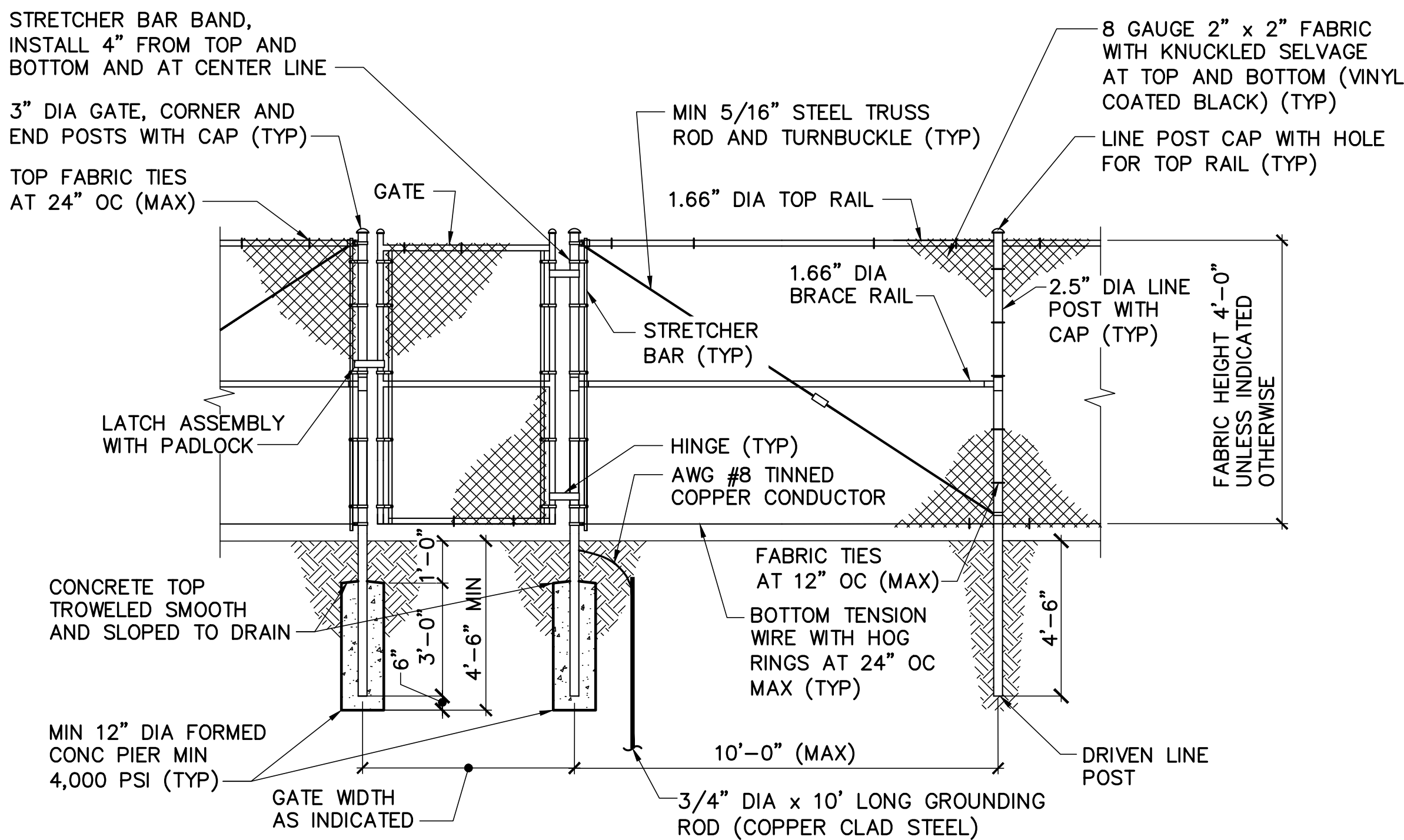
3 REINFORCED CONCRETE PAD DETAIL
C-506 NOT TO SCALE



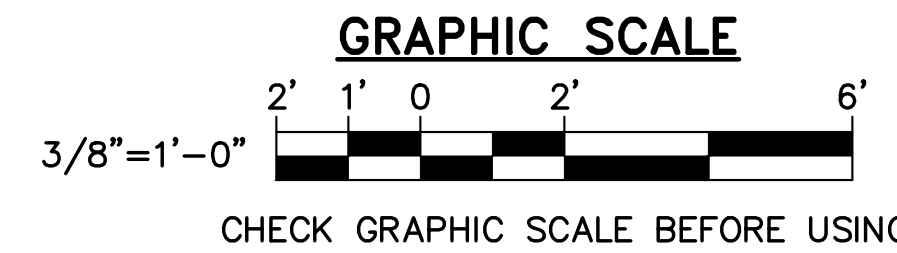
4 CHAIN LINK FENCE DOUBLE-LEAF GATE DETAIL
C-506 NOT TO SCALE

CHAIN LINK FENCE AND GATE NOTES:

1. POSTS, RAILS, FABRIC, TIES AND APPURTENANCES SHALL BE GALVANIZED STEEL WITH BLACK VINYL COATING.
2. FASTENING AND HINGE HARDWARE SHALL BE SECURED IN PLACE BY PEENING OR WELDING TO PREVENT DISASSEMBLY OF FENCING/GATES.
3. WHEN LEDGE IS ENCOUNTERED, STEEL POSTS SHALL BE SET AND GROUTED 12 INCHES DEEP UNLESS THE POSTS PENETRATE THE GROUND TO THE DEPTH INDICATED ON THE DRAWINGS.
4. CONNECT BONDING JUMPERS BETWEEN GATE POSTS AND FRAMES. BONDING JUMPERS SHALL BE MADE OF ELECTROPLATED OR HOT TIN COATED COPPER TO ENSURE HIGH CONDUCTIVITY. MAKE GROUNDING CONNECTIONS AT BARE METAL POINTS OF CONTACT.
5. PIPE SIZES INDICATED ARE OUTSIDE DIAMETER (FENCE INDUSTRY STANDARD).
6. FOR EACH GATE LEAF, PROVIDE GATE KEEPERS CONSISTING OF 2" DIA x 4'-0" MIN HIGH POST WITH MECHANICAL LATCH SECURING THE FREE END OF THE GATE IN THE FULL OPEN POSITION.
7. PROVIDE PRIVACY SLATS (COLOR: BLACK) WOVEN INTO THE CHAINLINK FABRIC AT THE DUMPSTER ENCLOSURE CHAINLINK FENCE.



5 CHAIN LINK FENCE DOUBLE-LEAF GATE DETAIL
C-506 NOT TO SCALE



FOR PERMITTING PURPOSES ONLY NOT FOR CONSTRUCTION

DESIGNED BY: JLG
DRAWN BY: DEW
CHECKED BY: JLG
PROJECT: 22104.04

OWNER:
SOUTHERN MAINE
AFFORDABLE HOUSING
22 South Street
Biddeford, Maine, 04005

PROJECT TITLE AND LOCATION:
ADAMS POINT HOUSING
69 Adams Street
Biddeford, Maine, 04005

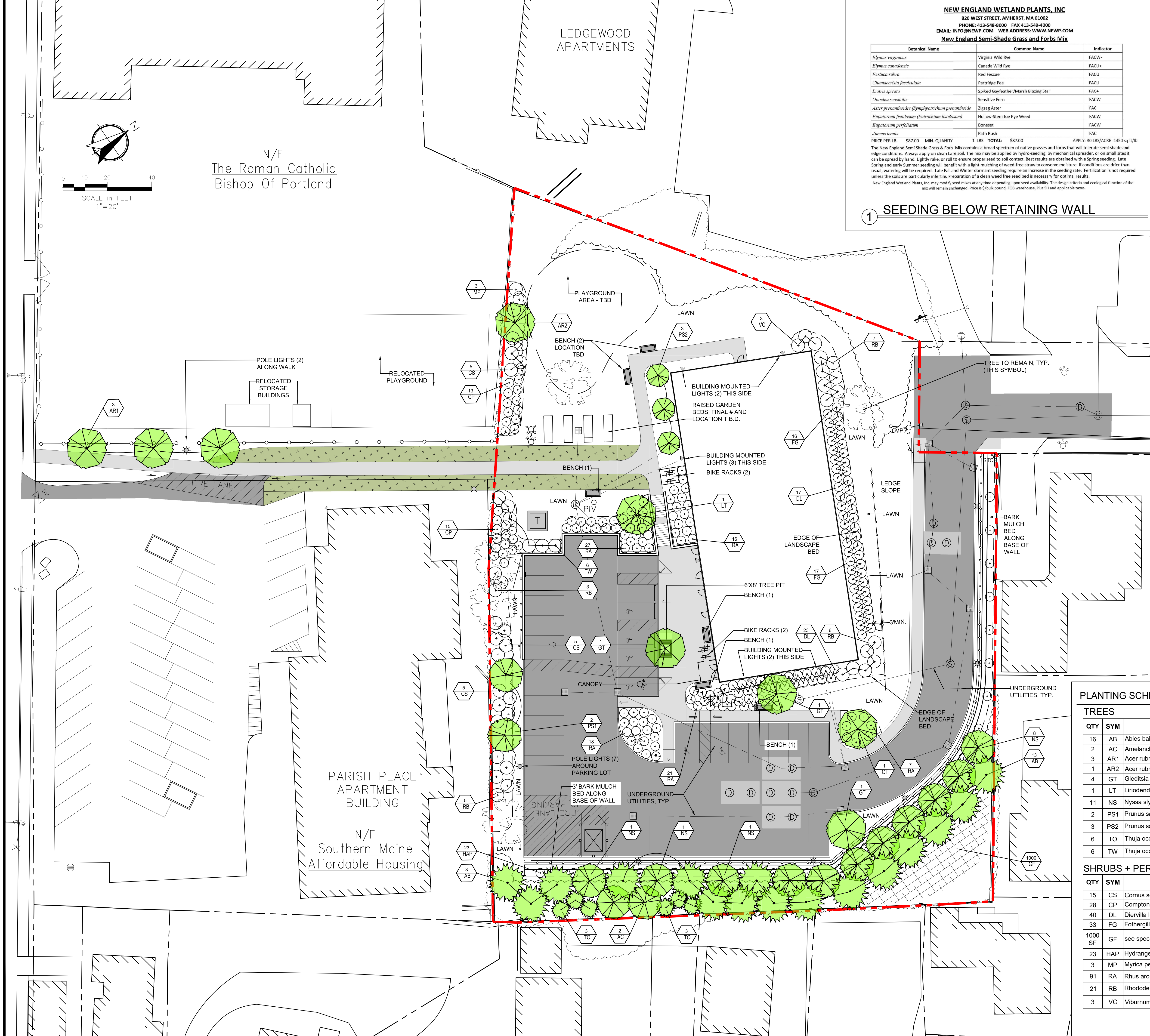
SITE
DETAILS - 4

SCALE: AS NOTED
DATE: 08-02-2021

DWG.: C-506

SHEET: 16 OF 23

NO.	DATE	DESCRIPTION	BY
1	12/7/21	REVISED FOR CONDITIONS OF APPROVAL	JLG
REVISIONS			



NEW ENGLAND WETLAND PLANTS, INC.		
820 WEST STREET, AMHERST, MA 01002		
PHONE: 413-548-8000 FAX 413-549-4000		
EMAIL: INFO@NEWP.COM WEB ADDRESS: WWW.NEWP.COM		
New England Semi-Shade Grass and Forbs Mix		
Botanical Name	Common Name	Indicator
<i>Elymus virginicus</i>	Virginia Wild Rye	FACW-
<i>Elymus canadensis</i>	Canada Wild Rye	FACU+
<i>Festuca rubra</i>	Red Fescue	FACU
<i>Chamaecrista fasciculata</i>	Partridge Pea	FACU
<i>Liatris spicata</i>	Spiked Gayfeather/Marsh Blazing Star	FAC+
<i>Oenoclea sensibilis</i>	Sensitive Fern	FACW
<i>Aster prenanthoides</i> (Symphyotricum prenanthoides)	Zigzag Aster	FAC
<i>Eupatorium fistulosum</i> (Eutrochium fistulosum)	Hollow-Stem Joe Pye Weed	FACW
<i>Eupatorium perfoliatum</i>	Boneset	FACW
<i>Juncus torreyi</i>	Path Rush	FAC
PRICE PER LB.	\$87.00	MIN. QUANTITY 1 LBS. TOTAL: \$87.00
APPLY: 30 LBS./ACRE (1450 sq ft/lb)		
The New England Semi Shade Grass & Forb Mix contains a broad spectrum of native grasses and forbs that will tolerate semi-shade and edge conditions. Always apply on clean bare soil. The mix may be applied by hydro-seeding, by mechanical spreader, or on small sites it can be spread by hand. Lightly rake, or roll to ensure proper seed to soil contact. Best results are obtained with a Spring seeding. Late Spring and early Summer seeding will benefit with a light mulching of weed-free straw to conserve moisture. If conditions are drier than usual, watering will be required. Late Fall and Winter dormant seeding require an increase in the seeding rate. Fertilization is not required unless the soils are particularly infertile. Preparation of a clean weed free seed bed is necessary for optimal results.		
New England Wetland Plants, Inc. may modify seed mixes at any time depending upon seed availability. The design criteria and ecological function of the mix will remain unchanged. Price is \$/bulk pound, FOB warehouse, Plus SH and applicable taxes.		

SEEDING BELOW RETAINING WALL

- PLANTING NOTES:**
- CONTRACTOR SHALL BEGIN MAINTENANCE IMMEDIATELY AFTER PLANTING AND SHALL CONTINUE UNTIL FINAL ACCEPTANCE. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MEANS AND METHODS OF WATERING AND MAINTENANCE.
 - CONTRACTOR SHALL SUPPLY PLANTS IN QUANTITIES SUFFICIENT TO COMPLETE WORK SHOWN ON THE PLAN. ANY DISCREPANCY BETWEEN THE QUANTITIES SHOWN IN THE PLANT SCHEDULE AND THOSE REQUIRED ON THE PLAN SHALL NOT ENTITLE THE CONTRACTOR TO ADDITIONAL RENUMERATION. ANY DISCREPANCIES SHALL BE CLARIFIED WITH THE LANDSCAPE ARCHITECT PRIOR TO ORDERING PLANT MATERIAL.
 - ALL MATERIALS SHALL CONFORM TO SPECIFICATIONS OF THE AMERICAN STANDARDS FOR NURSERY STOCK (LATEST EDITION) AS SET FORTH BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
 - ALL PLANTS SHALL BEAR THE SAME RELATIONSHIP TO FINISH GRADE AS THE ORIGINAL GRADES BEFORE DIGGING.
 - THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL PLANT MATERIALS FOR ONE (1) FULL YEAR FROM DATE OF SUBSTANTIAL COMPLETION.
 - ALL PLANT MATERIALS ARE SUBJECT TO THE APPROVAL OF THE LANDSCAPE ARCHITECT AT THE NURSERY AND AT THE SITE.
 - ALL PLANT BEDS SHALL MEET MINIMUM TOPSOIL REQUIREMENTS (SEE SPECIFICATIONS).
 - NO PLANT MATERIAL SHALL BE INSTALLED UNTIL GRUBBING, BED PREPARATION, AND FINISH GRADING HAS BEEN COMPLETED IN THE IMMEDIATE AREA.
 - ALL PLANTS BEDS AND TREE WELLS SHALL HAVE A MINIMUM OF 3" OF UNIFORMLY DISTRIBUTED, DARK, SHREDDED BARK MULCH.
 - CONTRACTOR SHALL SUBMIT SOIL SAMPLE AND TEST OF TOPSOIL TO LANDSCAPE ARCHITECT PRIOR TO INSTALLATION. SOIL ADMIXTURE SHALL BE ADDED TO EXISTING SOIL (BY CONTRACTOR) IF DEEMED NECESSARY BY SOIL TEST RESULTS.
 - ROUGH GRADING AND BED PREPARATION SHALL BE APPROVED BY LANDSCAPE ARCHITECT PRIOR TO PLANT INSTALLATION. CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT 48 HOURS PRIOR TO REQUIRED SITE VISIT.
 - ALL PLANTS SHALL BE BALLED AND WRAPPED OR CONTAINER GROWN AS SPECIFIED. ALL ROOT WRAPPING AND CONTAINER MATERIAL MADE OF SYNTHETICS OR PLASTICS SHALL BE REMOVED AT THE TIME OF PLANTING.
 - ALL BROAD LEAF EVERGREEN PLANTS SHALL BE SPRAYED WITH AN ANTI-DESSICANT AT THE BEGINNING OF THEIR FIRST WINTER.
 - ALL PLANTS SHALL BE INSTALLED AS PER DETAILS AND THE CONTRACT SPECIFICATIONS. THE LANDSCAPE CONTRACTOR SHALL REFER TO THE CONTRACT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
 - ALL PLANTS SHALL BE WATERED BY THE CONTRACTOR, AS NECESSARY TO INSURE HEALTH UNTIL FINAL ACCEPTANCE.
 - CONTRACTOR SHALL STAKE TREES IF DEEMED NECESSARY BY THE LANDSCAPE ARCHITECT.
 - THE LANDSCAPE CONTRACTOR SHALL PROVIDE PREPARED SOIL PLANTING MIX AS PER THE CONTRACT SPECIFICATIONS.
 - THE LANDSCAPE CONTRACTOR SHALL REFER TO THE PLANT LIST AND PLANTING SPECIFICATIONS FOR SEASONAL REQUIREMENTS AND OTHER RESTRICTIONS RELATED TO THE TIME AND SEASON OF PLANTING.
 - PLANTING SOIL MIX: 1 PART COMPOST, 8 PARTS TOPSOIL, 3 PARTS HUMUS. TOPSOIL: FERTILE, FRIABLE, NATURAL TOPSOIL OF LOAMY CHARACTER, WITHOUT ADMIXTURE OF SUBSOIL MATERIAL, FREE FROM CLAY, LUMPS, COARSE SANDS, STONES, PLANTS, ROOTS, STICKS, AND OTHER FOREIGN MATERIALS GREATER THAN 1" IN ANY DIMENSION, PH RANGE 5.0-7.0, AND SHALL CONTAIN NOT LESS THAN 6% ORGANIC MATTER BY WEIGHT. SANDY LOAM OR LOAM SOIL AS DEFINED BY THE USDA SOIL CONSERVATION SERVICE, AND HAVE THE FOLLOWING MECHANICAL ANALYSIS:

TEXTURAL CLASS	% OF TOTAL WEIGHT	AVERAGE %
SAND (0.05- 2.0 MM)	45 TO 75%	60%
SILT (0.002- 0.05 MM)	15 TO 35%	25%
CLAY (< 0.002 MM)	5 TO 25%	15%
 - THE APPLICANT HAS FLEXIBILITY ON THE FINAL PLACEMENT OF THE PROPOSED TREES, ALONG THE SOUTH EASTERN PROPERTY LINE, IF THE EXISTING VEGETATION PROVES TO BE INADEQUATE TO PROVIDE AN EFFECTIVE SCREEN.

PLANTING SCHEDULE

TREES						
QTY	SYM	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS	NATIVE
16	AB	Abies balsamea var. phanerolepis	Canaan Balsam Fir	8-10' HT.		
2	AC	Amelanchier canadensis	Native Shadbush	7-8' HT	B+B, CLUMP	X
3	AR1	Acer rubrum 'Karpick'	Red Maple	2-2.5"	B+B	X
1	AR2	Acer rubrum 'Northwood'	Red Maple	2-2.5"	B+B	X
4	GT	Gleditsia triacanthos 'Street Keeper'	Honeylocust	2-2.5"	B+B	
1	LT	Liriodendron tulipifera 'Little Volunteer'	Tulip tree	2-2.5"	B+B	X
11	NS	Nyssa sylvatica 'Green Gable'	Tupelo	2-2.5"	B+B	X
2	PS1	Prunus sargentii	Sargent Cherry	2-2.5"	B+B	
3	PS2	Prunus sargentii 'Rancho' or 'Columaris'	Sargent Cherry	2-2.5"	B+B	
6	TO	Thuja occidentalis 'Techny'	Arborvitae	6-7' HT	B+B	X
6	TW	Thuja occidentalis 'Woodwardii'	Arborvitae	3-3.5' HT	B+B	X

SHRUBS + PERENNIALS + VINES + GROUND COVERS

QTY	SYM	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS	NATIVE
15	CS	Cornus sericea 'Farrow'	Red Twig Dogwood	4'-5' #7		X
28	CP	Comptonia peregrina	Sweetfern	#7		X
40	DL	Diervilla lonicera	Northern Bush Honeysuckle	#5		X
33	FG	Fothergilla gardenii	Dwarf Bottlebrush Bush	#5		
1000	SF	see spec on L1.0	Grass + Forbs mix (semi-shade blend)	1,450 SF PER LBS		X
23	HAP	Hydrangea anomala petiolaris	Climbing Hydrangea	4-5' #10	15' O.C.	
3	MP	Myrica pensylvanica 'Bobee'	Northern Bayberry	3-4' #7		X
91	RA	Rhus aromatica 'Gro-Low'	Fragrant Sumac	2.5'-3' #7		X
21	RB	Rhododendron 'Boule-de-Neige'	Rhododendron	3' HT	B+B	
3	VC	Viburnum cassinoides	Witherod Viburnum	3-3.5' HT	B+B	X

OWNER:

SOUTHERN MAINE AFFORDABLE HOUSING
22 SOUTH STREET
P.O. BOX 2287
BIDDEFORD, MAINE 04005

APPLICANT:

BIDDEFORD HOUSING AUTHORITY
22 SOUTH STREET
P.O. BOX 2287
BIDDEFORD, MAINE 04005

ADAMS POINT
For Families

Project:

ADAMS POINT

Date	Description	Revisions
09.21.2021	Revised per City comments	
12.17.2021	Revised per Conditions of Approval	
#1		
#2		

NEEDED LANDSCAPE ARCHITECT
PATRICK J. CARROLL
NO. 127
STATE OF MAINE

Scale: as shown

Approved By: PC

Drawn By: MAP

Phase: PLANNING BOARD APPLICATION

LANDSCAPE PLAN

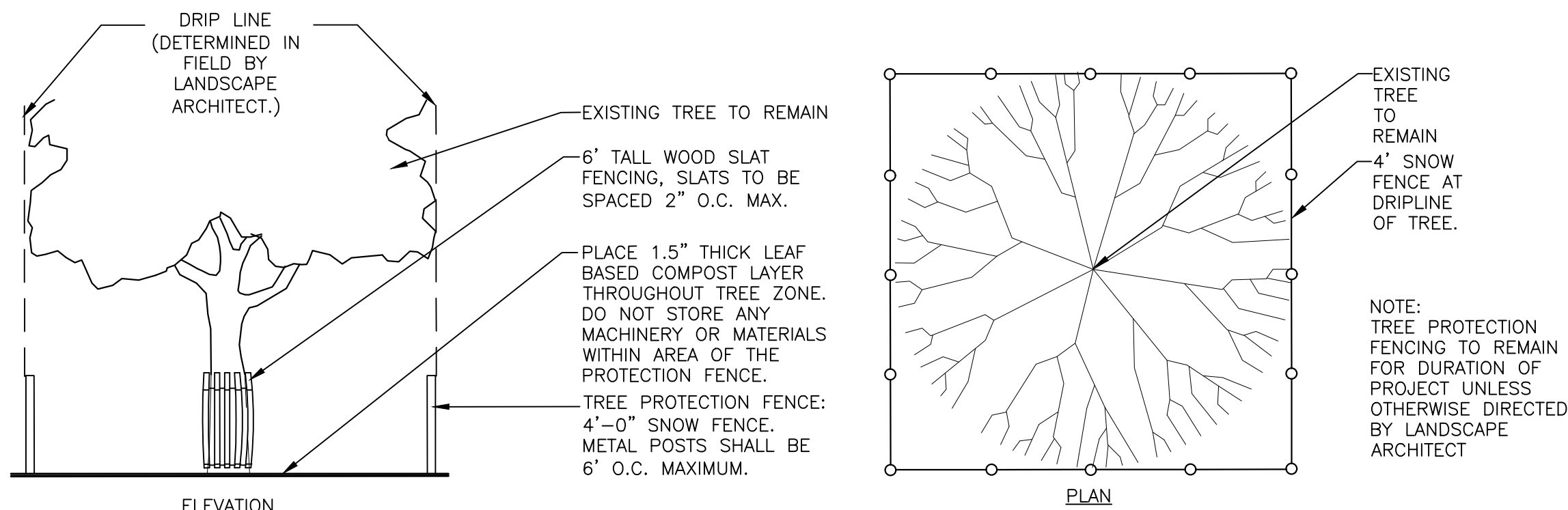
CARROLL ASSOCIATES
LANDSCAPE ARCHITECTS
217 COMMERCIAL STREET, STE 200
PORTLAND, MAINE 04101
207.772.1552 V. F. 207.772.0712

Date: JUNE 14, 2021

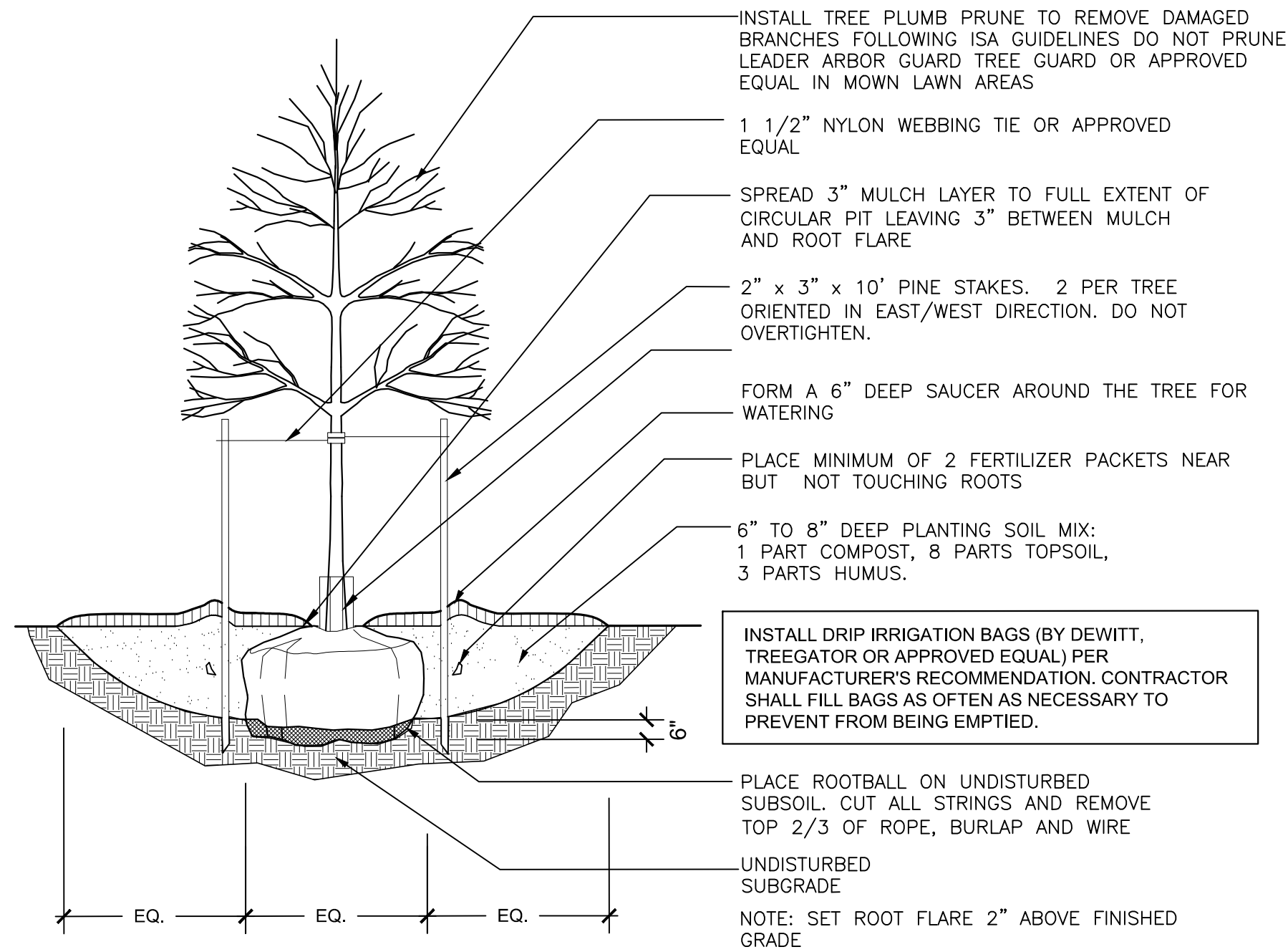
Sheet No:

L1.0

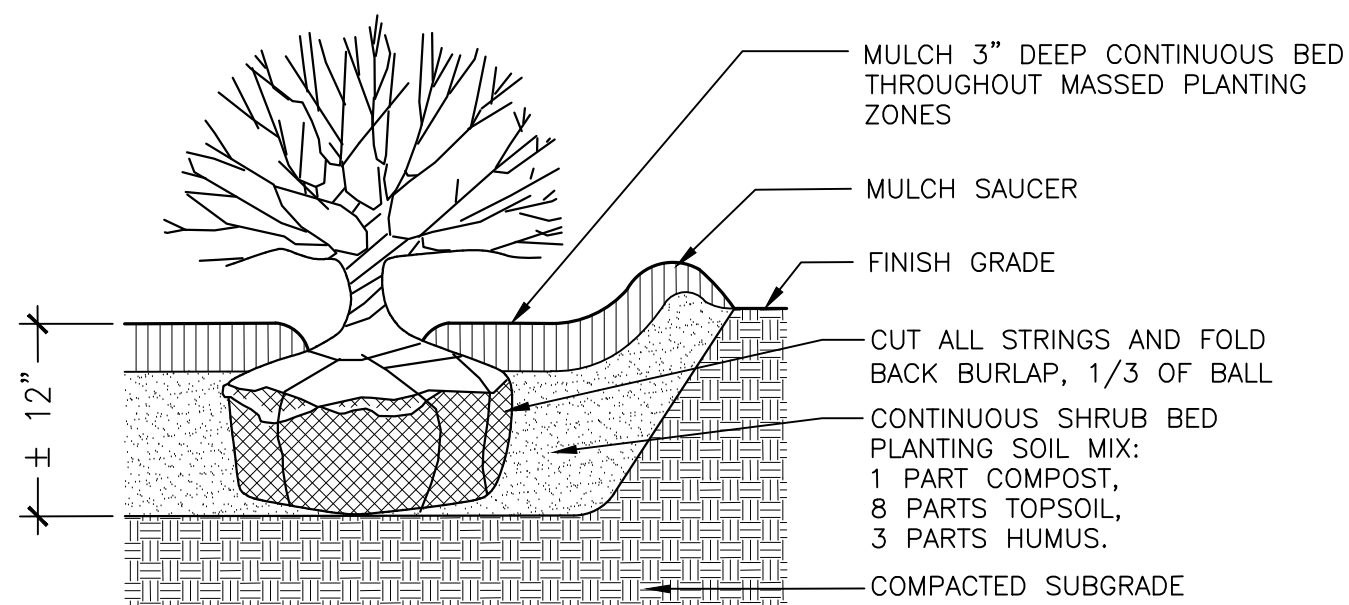
NOT FOR CONSTRUCTION



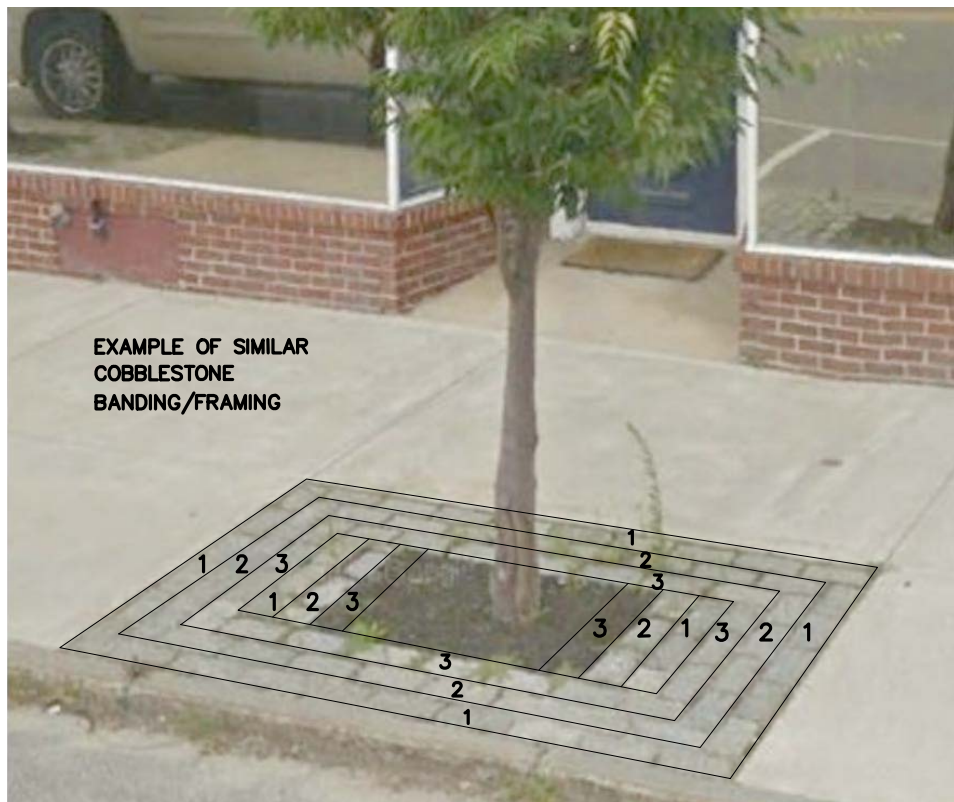
1 TYPICAL TREE PROTECTION



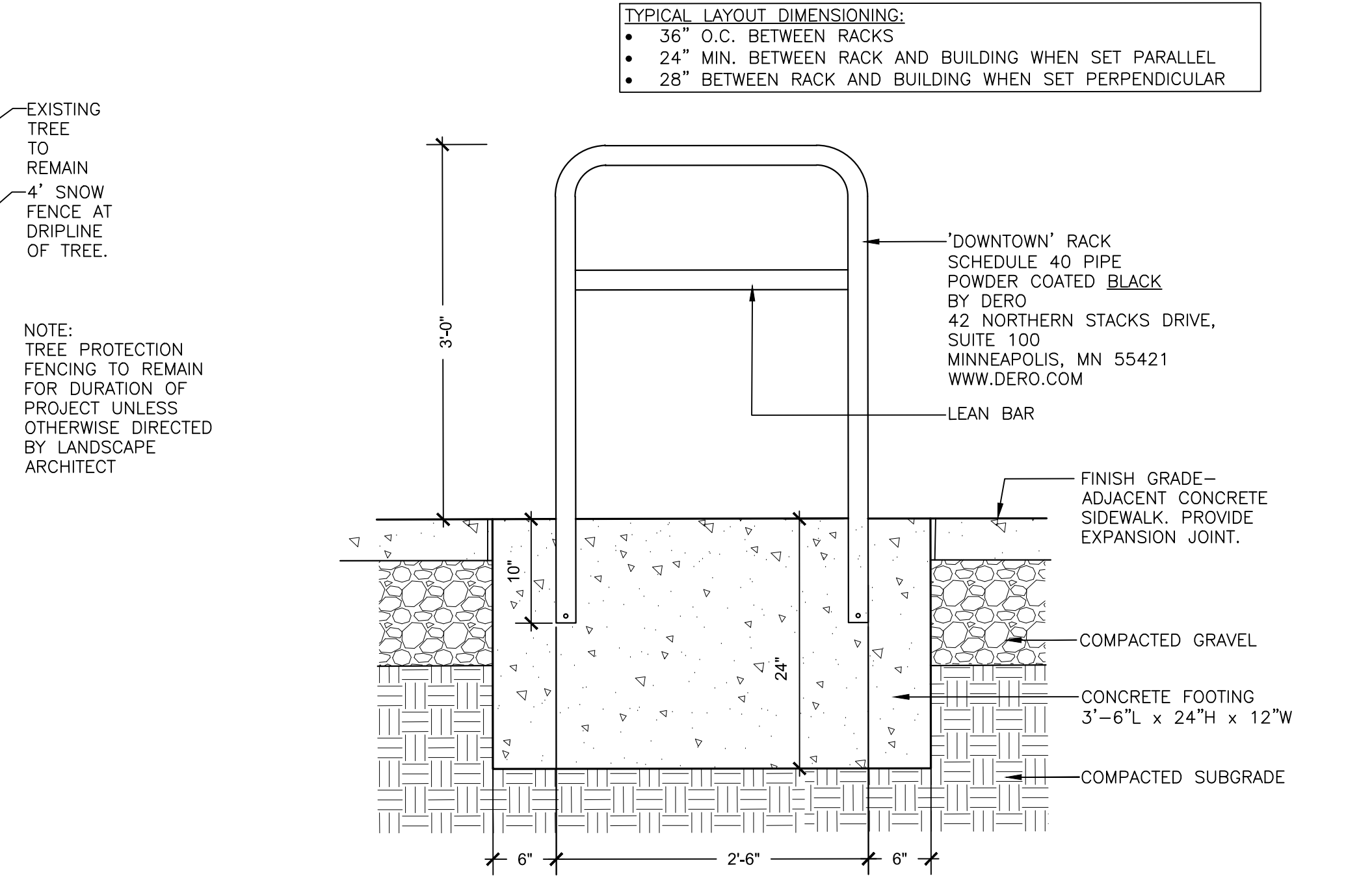
2 TYPICAL TREE PLANTING



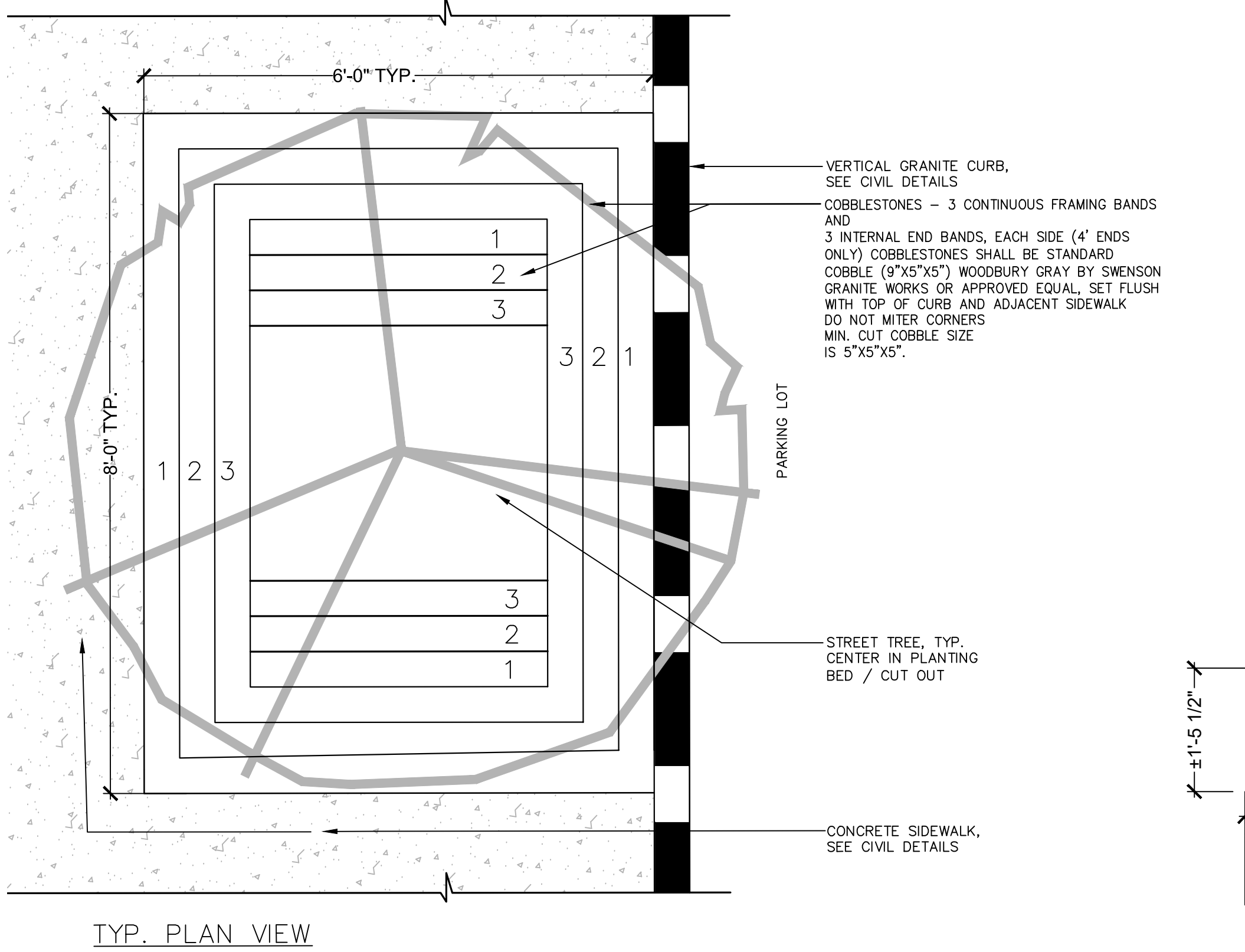
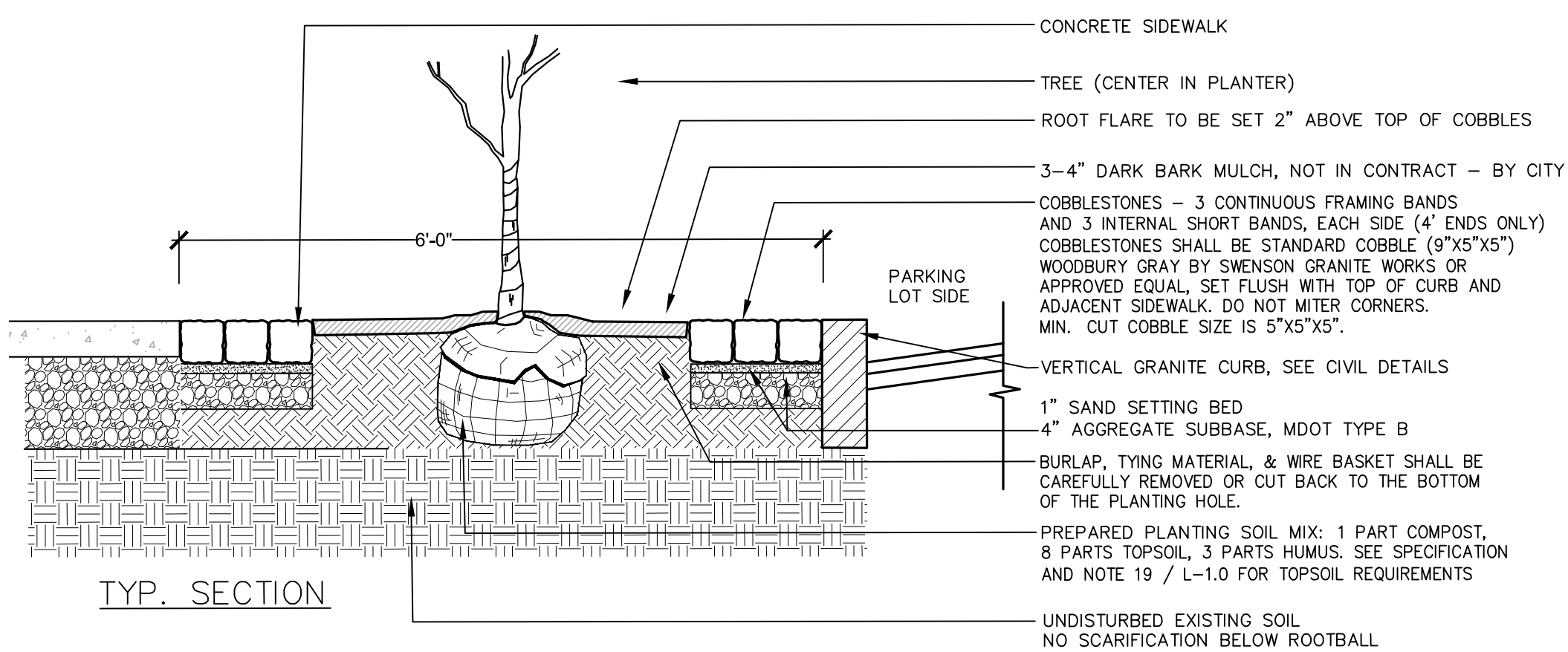
3 TYPICAL SHRUB PLANTING



5 TREE PIT



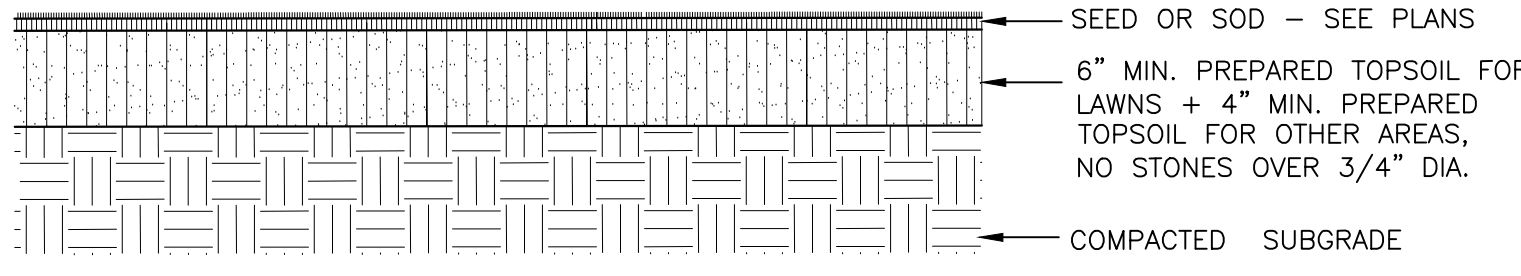
4 BIKE RACK



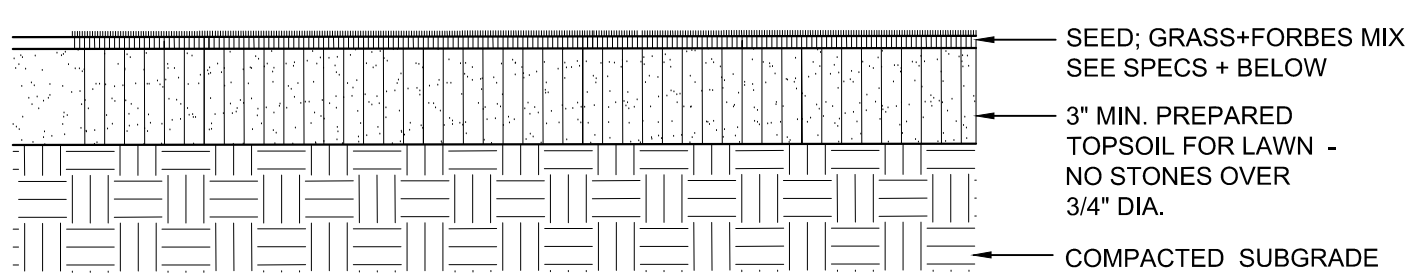
TYP. PLAN VIEW

TOPSOIL: FERTILE, FRIABLE, NATURAL TOPSOIL OF LOAMY CHARACTER, WITHOUT ADMIXTURE OF SUBSOIL MATERIAL, FREE FROM CLAY, LUMPS, COARSE SANDS, STONES, PLANTS, ROOTS, STICKS, AND OTHER FOREIGN MATERIALS GREATER THAN 1" IN ANY DIMENSION, PH RANGE 5.0-7.0, AND SHALL CONTAIN NOT LESS THAN 6% ORGANIC MATTER BY WEIGHT. SANDY LOAM OR LOAM SOIL AS DEFINED BY THE USDA SOIL CONSERVATION SERVICE, AND HAVE THE FOLLOWING MECHANICAL ANALYSIS:

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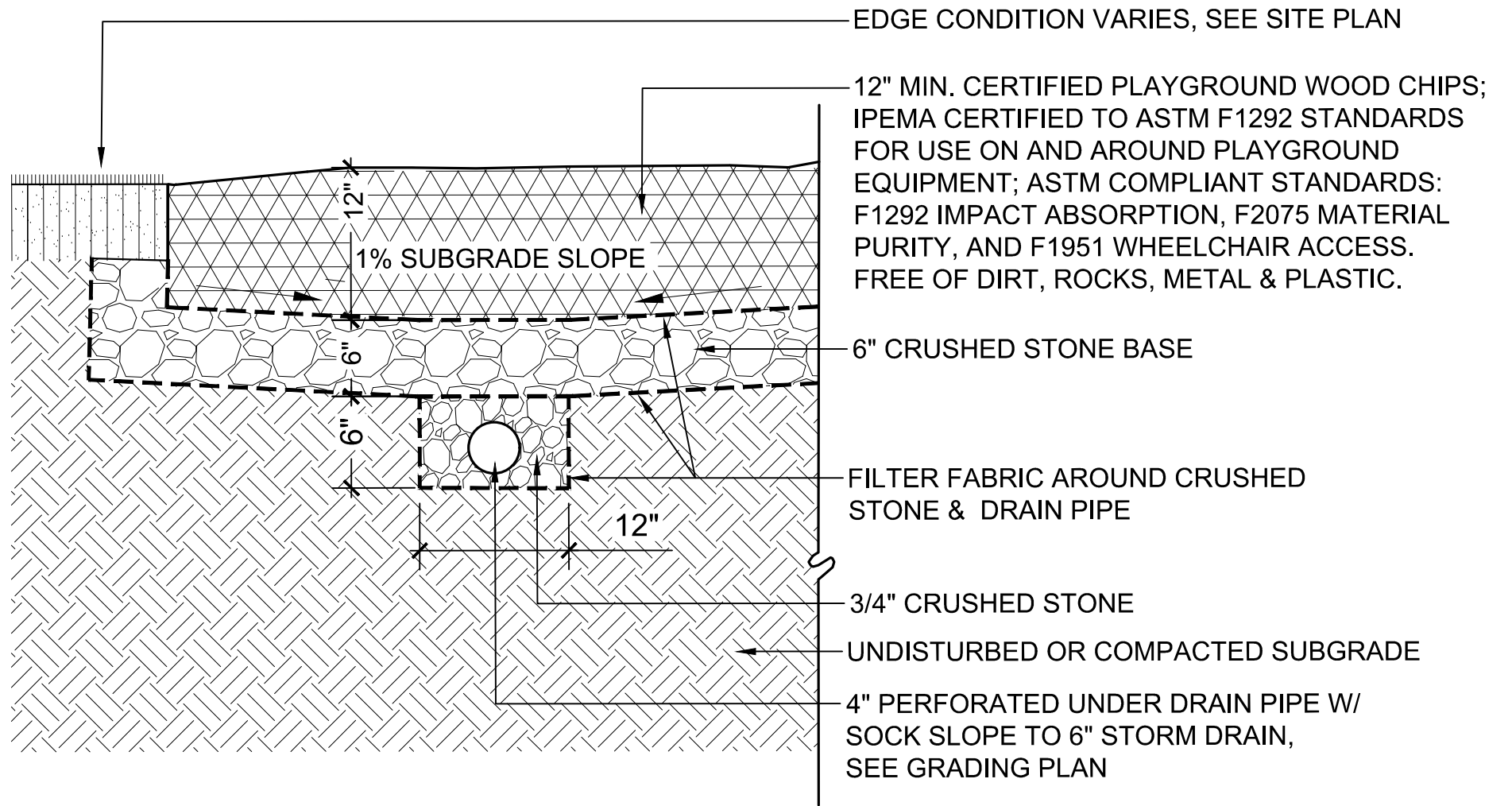


SEED MIX PLANTING (LAWN & OTHER AREAS)

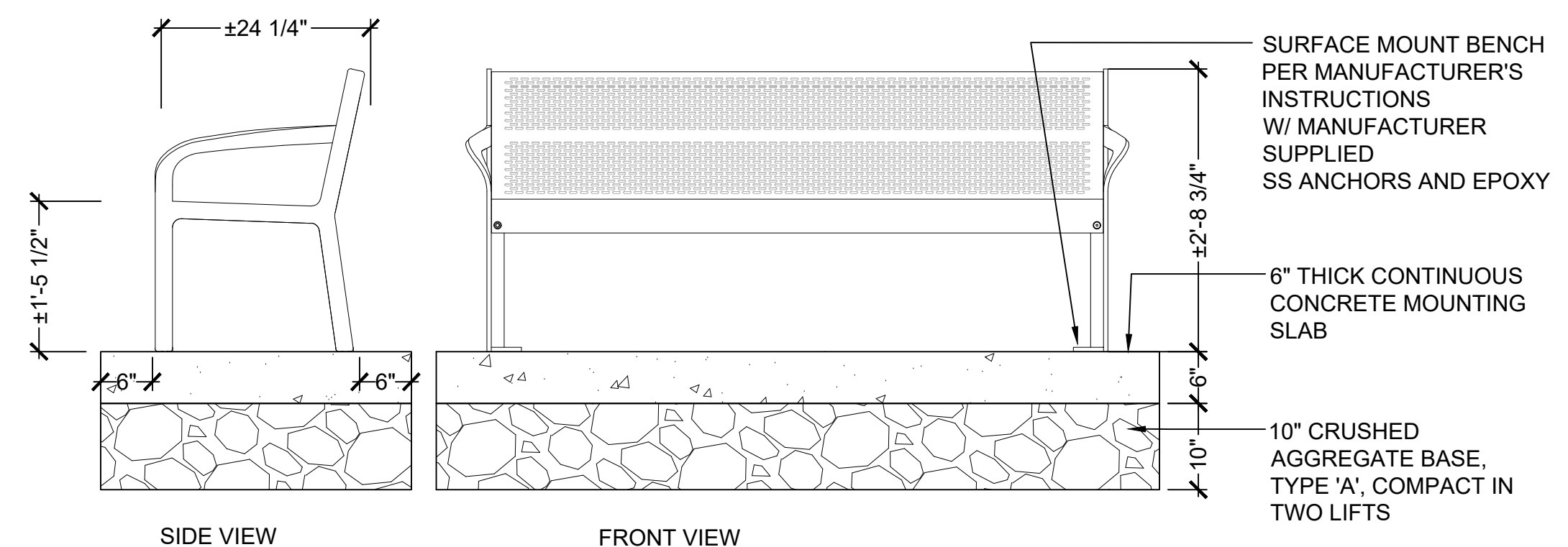
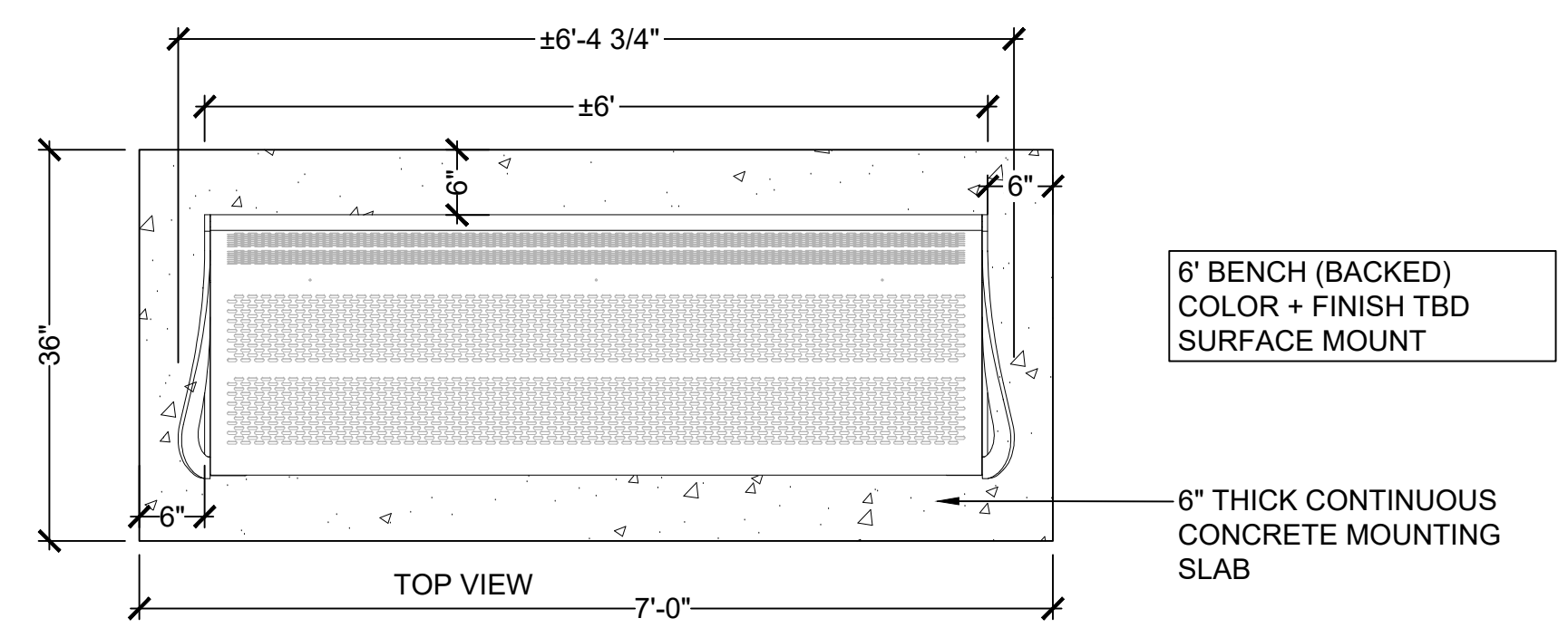


SEED MIX PLANTING (NON-LAWN AREAS)

6 SEEDING



7 PLAYGROUND SURFACING



8 BENCH

OWNER:

SOUTHERN MAINE AFFORDABLE HOUSING
22 SOUTH STREET
P.O. BOX 2287
BIDDEFORD, MAINE 04005

APPLICANT:

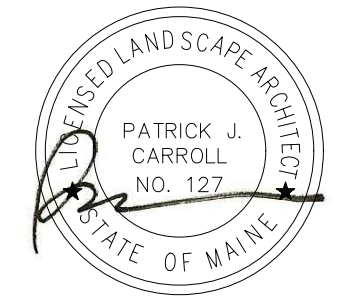
BIDDEFORD HOUSING AUTHORITY
22 SOUTH STREET
P.O. BOX 2287
BIDDEFORD, MAINE 04005



ADAMS POINT

Project:

Description	Date	Revisions
Revised per City comments	09.21.2021	#1
Revised per Conditions of Approval	12.17.2021	#2



Scale: as shown

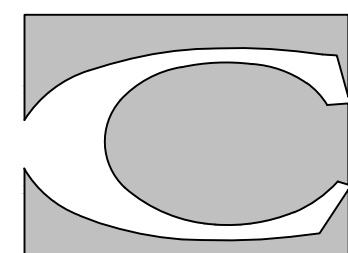
Approved By: PC

Drawn By: MAP

LANDSCAPE DETAILS

Phase:

PLANNING BOARD APPLICATION



CARROLL ASSOCIATES LANDSCAPE ARCHITECTS
217 COMMERCIAL STREET, STE 200
PORTLAND, MAINE 04101
207.772.1552 V. F. 207.772.0712

Date:

JUNE 14, 2021

Sheet No:

L2.0

NOT FOR CONSTRUCTION

ADAMS POINT MULTI FAMILY HOUSING
69 Adams St. Biddeford, ME 04005

No.	Date	Description
B		Revision Schedule

JOB NO.
Project Number

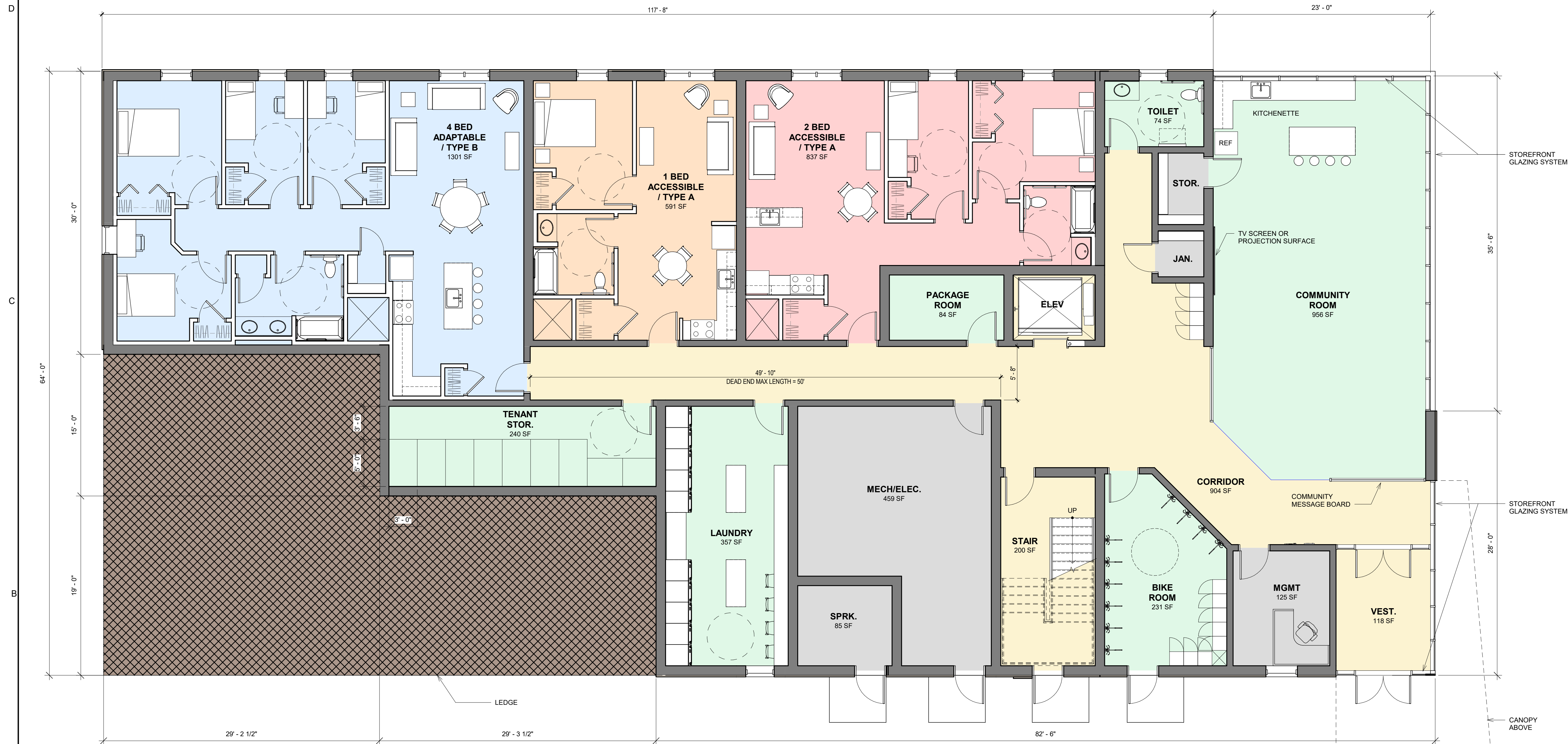
DRWN. CHK
Author Checker

SCALE:
3/16" = 1'-0"

ISSUE:
ISSUED FOR BID
04/02/2021

TITLE
Ground Floor Plan

SHEET
A100



1 GROUND FLOOR - CONCEPT
3/16" = 1'-0"

GROUND FLOOR PLAN SUMMARY

UNITS:
(1) - 4 BED ROOM UNIT
(1) - 2 BED ROOM UNIT
(1) - 1 BED ROOM UNIT

AREA:
FLOOR FOOTPRINT: 7,450sf
FLOOR PLATE (EXCLUDES STAIRS, ELEV.
AND MECHANICAL SHAFTS): 7,360sf

BUILDING INTERIOR FINISHES SUMMARY

FLOORING
CARPET:
• CORRIDORS
• MANAGEMENT OFFICE
VINYL SHEET FLOORING W/ BACKING:
• LAUNDRY, BATHROOMS
SOLID VINYL FLOOR TILE:
• THROUGHOUT LIVING UNITS
(EXCLUDING BATHROOMS)
LUXURY VINYL FLOORING:
• COMMUNITY ROOM
• MAIL ROOM
WALK-OFF MATT
• VESTIBULE
RUBBER
• STAIRS AND LANDINGS
SEALED CONC.
• MECH/ELEC.
• SPRINKLER ROOM
• JANITOR
• STORAGE SPACES

WALLS
PAINT:
• ASSUME SINGLE COLOR (ZERO-
VOC) THROUGHOUT LIVING UNITS
• ASSUME (2) COLORS FOR SHARED
SPACES
FIBERGLASS REINFORCED PLASTIC:
• JANITOR
• GRND FLR. TOIL.
• PACKAGE ROOM
COUNTERTOPS
LAMINATE:
• LIVING UNIT KITCHENS
QUARTZ:
• BATHROOMS

BUILDING PROGRAM LEGEND

- 1 BED UNIT
- 2 BED UNIT
- 4 BED UNIT
- BUILDING STORAGE
- BUILDING SUPPORT
- CIRCULATION
- MANAGEMENT
- SHARED SPACE

ADAMS POINT MULTI FAMILY HOUSING

69 Adams St. Biddeford, ME 04005

No.	Date	Description
B		Revision Schedule

JOB NO.
Project Number

DRWN. CHK
Author Checker

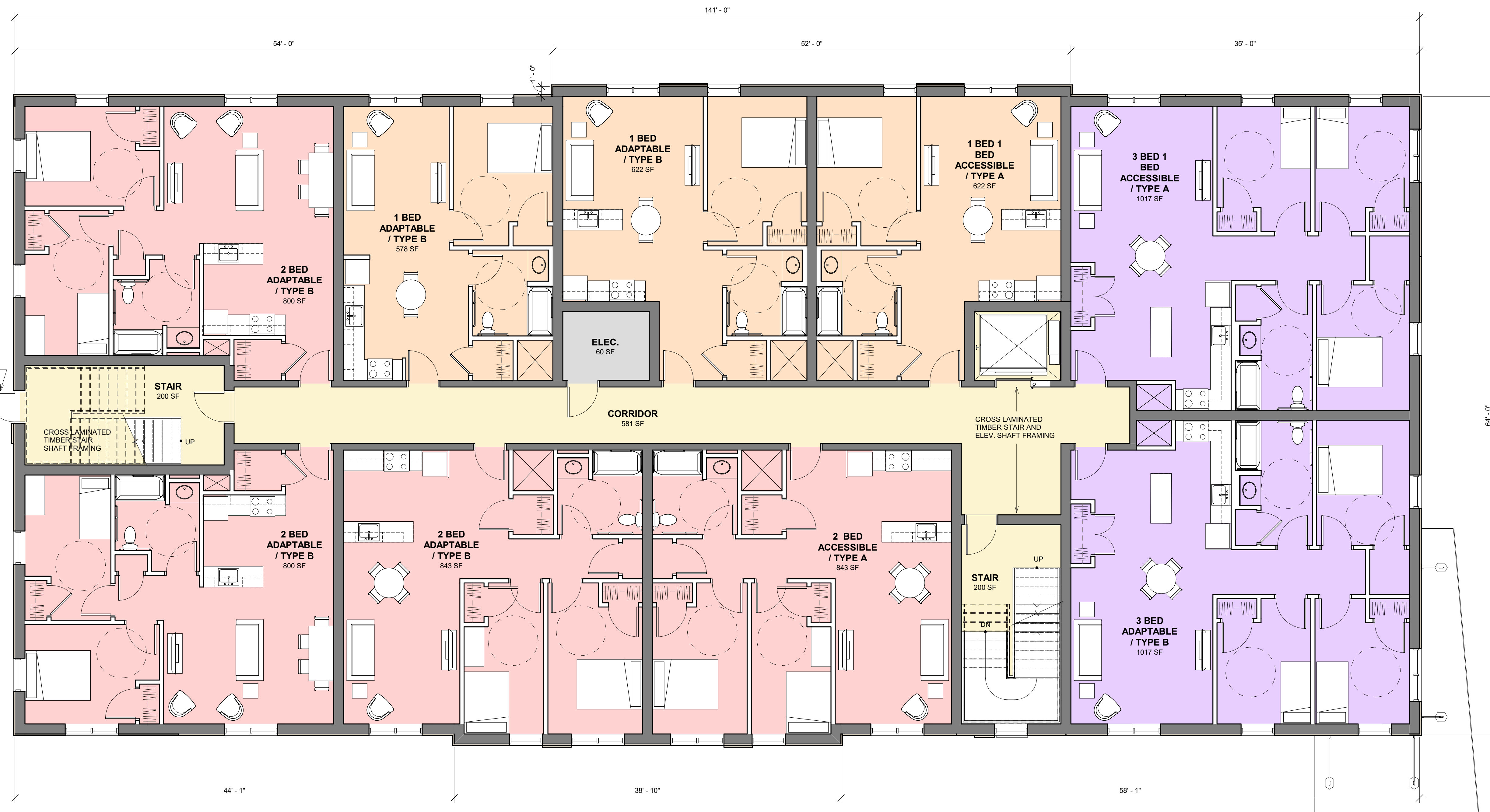
SCALE:
3/16" = 1'-0"

ISSUE:
ISSUED FOR BID
04/02/2021

TITLE
First Floor - 4th Floor
Plan

SHEET

A101



TYPICAL FLOOR PLAN 1ST THRU 4TH FLOORS

UNITS:
(2) - 3 BED ROOM UNITS
(4) - 2 BED ROOM UNITS
(3) - 1 BED ROOM UNITS
AREA:
FLOOR FOOTPRINT: 9,115sf
FLOOR PLATE (EXCLUDES STAIRS, ELEV.
AND MECHANICAL SHAFTS): 8,392sf

CANOPY OVER MAIN
ENTRY BELOW

BUILDING PROGRAM LEGEND

- 1 BED UNIT
- 2 BED UNIT
- 3 BED UNIT
- BUILDING SUPPORT
- CIRCULATION

1 TYPICAL FLOOR PLAN - CONCEPT
3/16" = 1'-0"

Revision Schedule		
No	Date	Description

JOB NO.
Project Number

DRWN. CHK
Checker

SCALE:

ISSUE
06/08/2021

TITLE
Exterior Elevations

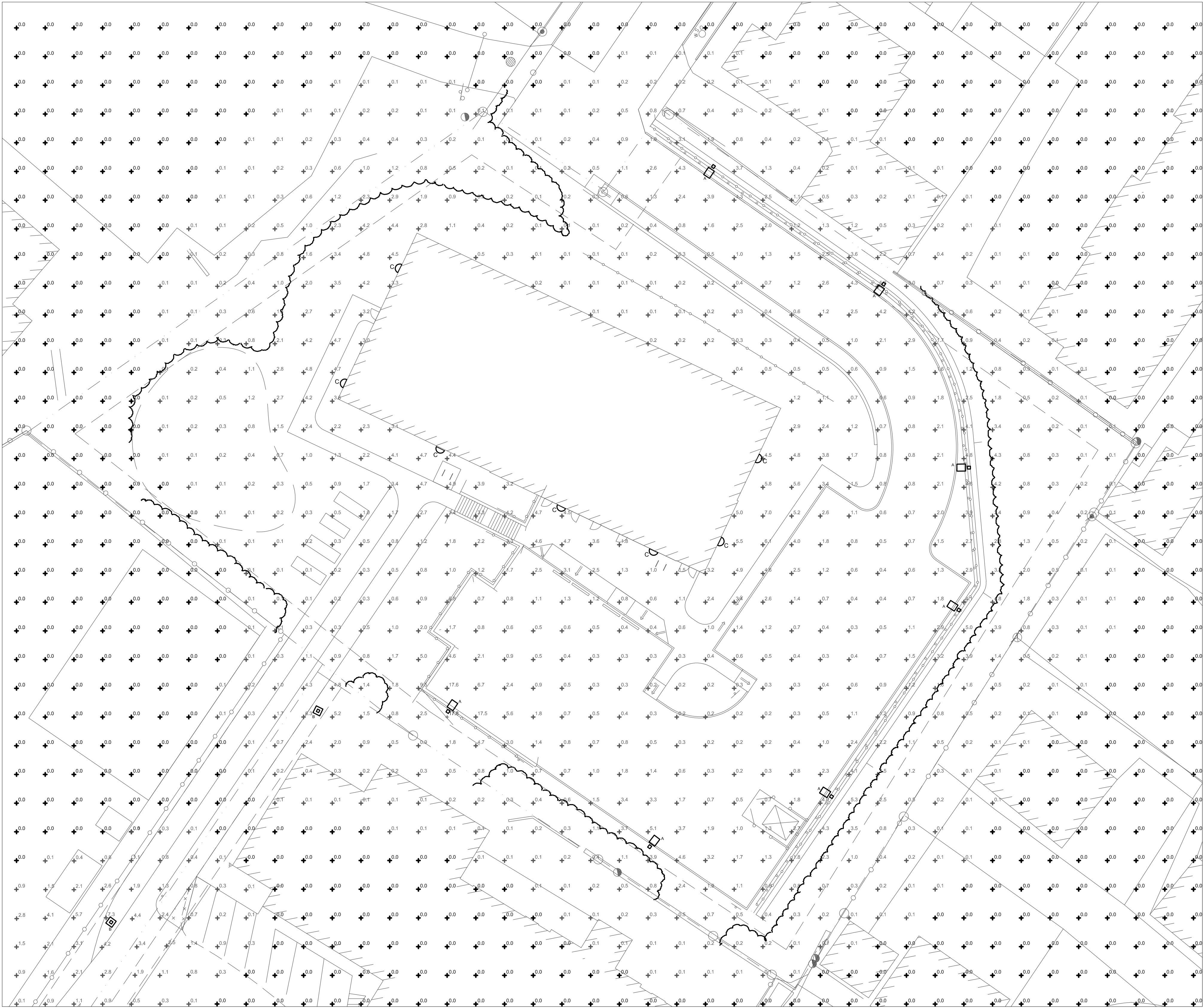
SHEET

A200



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LIGHTING FIXTURE SCHEDULE						
Label	Manufacturer	Catalog Number	Description	Lumens Per Lamp	Wattage	Symbol
A	Sternberg Lighting	ML630-24L40T3-MDL014-SV1-HSS-BLOC	Medium size Millenia Arm Mount fixture, LEDII T3revB optic, Soft Vue 1 Flat, With House Side Shield	6583	87.3	
B	Sternberg Lighting	ML660-12L40T5-MDL018-SV1	ML660 Medium size Millenia, Post Top, Soft Vue 1 Flat, T5	4791	59.3	
C	Sternberg Lighting	ML630-16L40T4-MDL018-SV1	ML630 Medium Millenia Fixture, Luxeon 50-50 LED, T4, Soft Vue 1	8411	75.1	



IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, ARCHITECT, LANDSCAPE ARCHITECT OR LAND SURVEYOR TO ALTER AN ITEM IN ANY WAY IF AN ITEM BEARING THE STAMP OF A LICENSED PROFESSIONAL IS ALTERED. IF ALTERING, ENGINEER, ARCHITECT, LANDSCAPE ARCHITECT OR LAND SURVEYOR SHALL STAMP THE DOCUMENT AND INCLUDE THE NOTATION "ALTERED BY" FOLLOWED BY THEIR SIGNATURE, THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

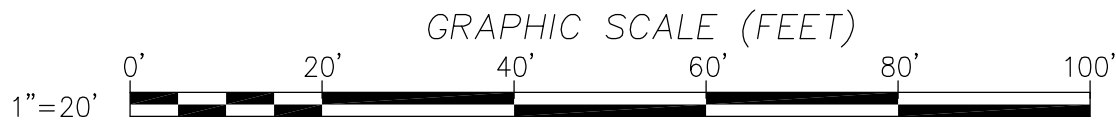
ADAMS POINT HOUSING
69 ADAMS STREET,
BIDDEFORD, MAINE, 04005

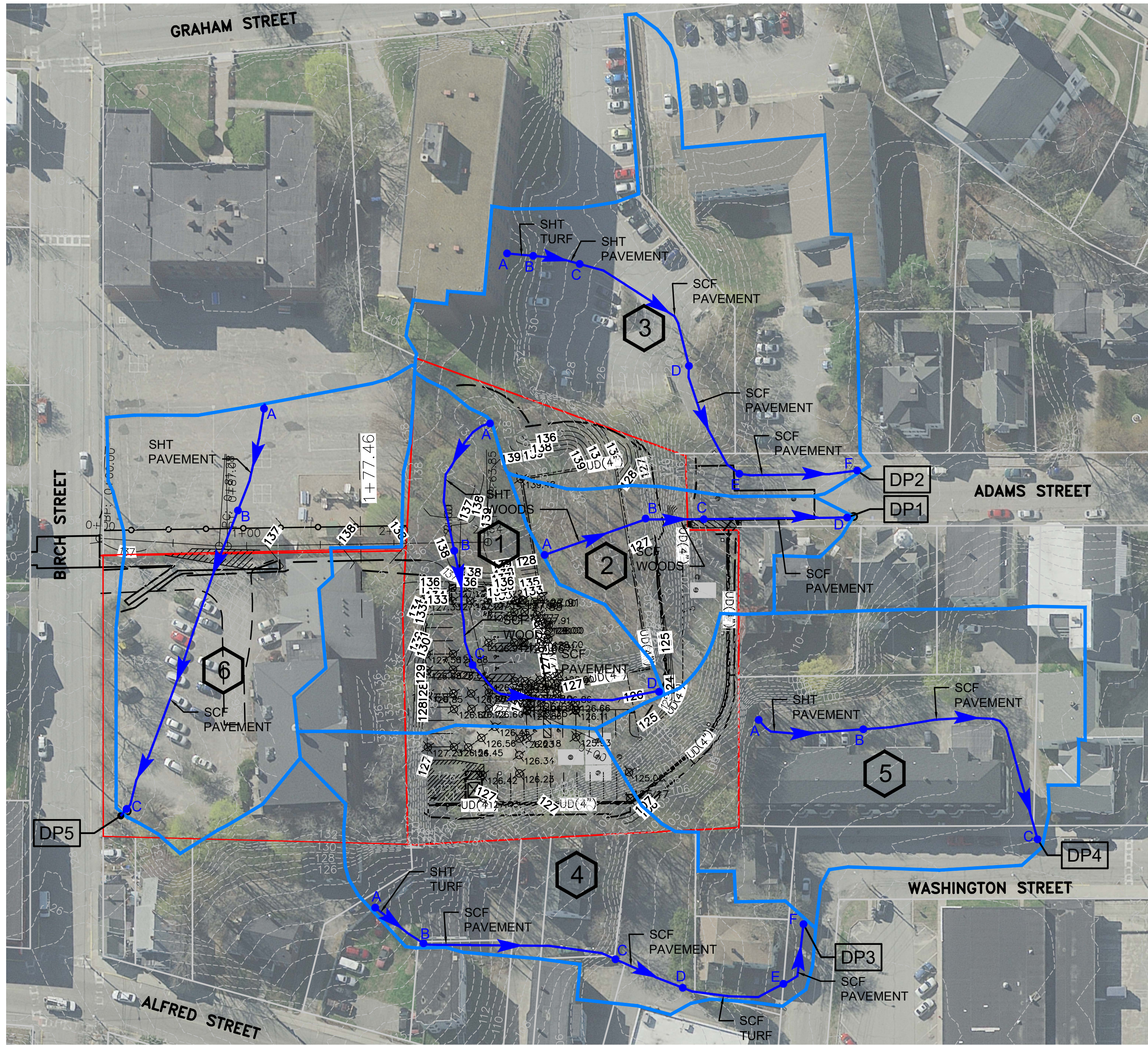
No.	Submittal / Revision	App'd.	By	Date

EXTERIOR LIGHTING PLAN

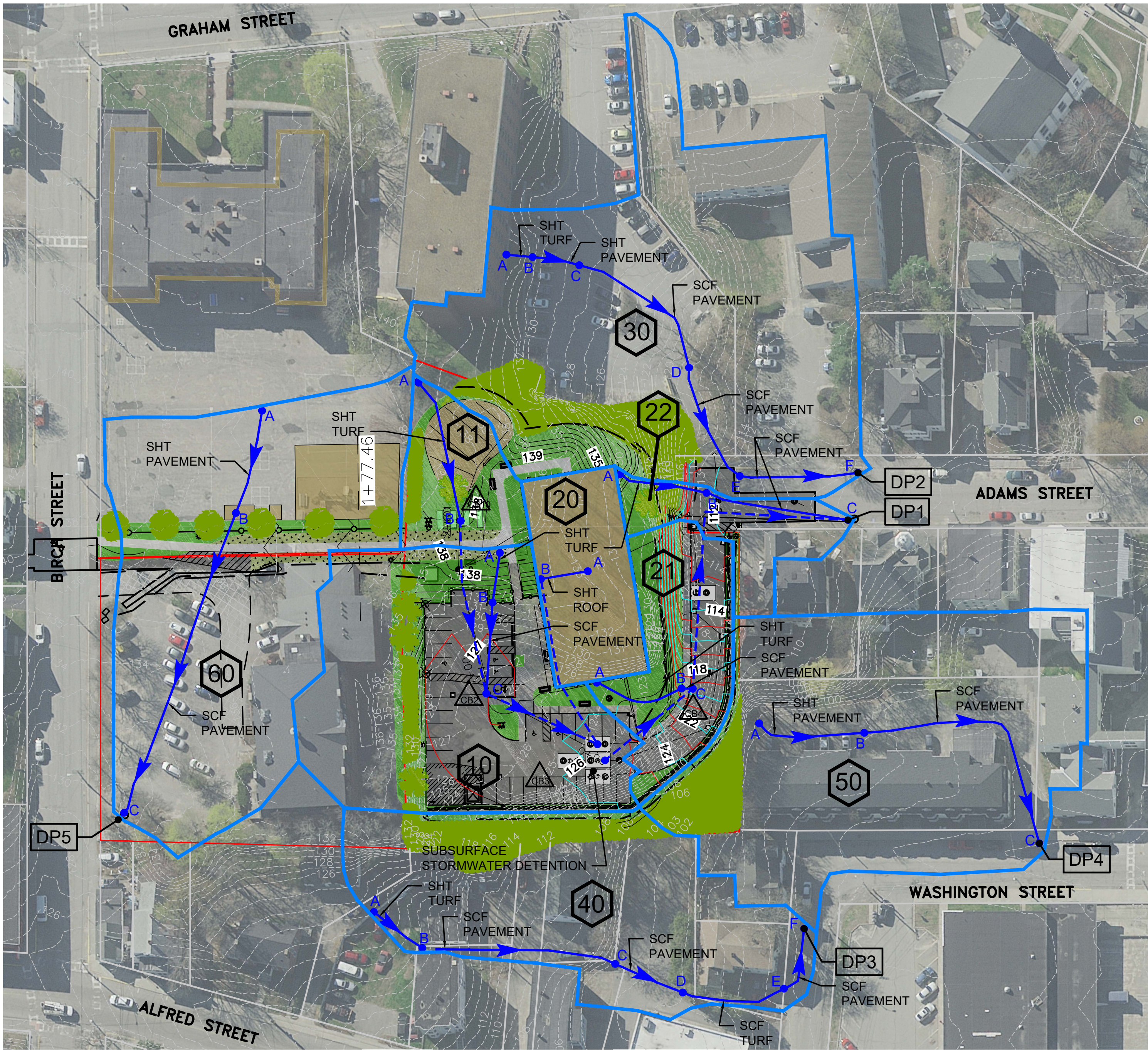
Designed By: MA	Drawn By: DN	Checked By:
Issue Date: 01/14/2022	Project No: 068944	Scale:

Drawing No.:
E-100





1 PRE-DEVELOPMENT WATERSHED PLAN
WS101 1"=50'



2 POST-DEVELOPMENT WATERSHED PLAN
WS101 1"=50'

LEGEND

- 1 WATERSHED NUMBER
- A B TIME OF CONCENTRATION FLOW PATH
- CATCH BASIN/REACH FLOW PATH
- WATERSHED BOUNDARY
- EXISTING CONTOUR LINE
- DP1 DISCHARGE POINT (POINT OF ANALYSIS)
- CATCH BASIN/POND ROUTING
- REACH ROUTING
- SHT SHEET FLOW
- SCF SHALLOW CONCENTRATED FLOW
- CHAN CHANNEL FLOW
- PIPE PIPE FLOW

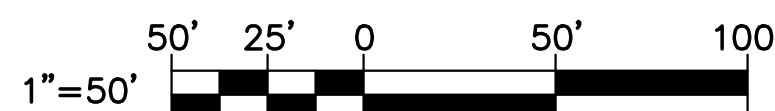
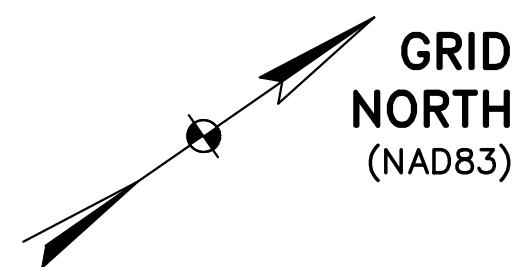
Pre-Development Areas					Post-Development Areas				
Total	Imp	Woods	Land		Total	Imp	Woods	Land	
1	31923	9348	21811	764	10	32145	16482	10017	5646
2	17060	5366	10277	1417	11	7244	655	0	6589
					20	9031	9031	0	0
					21	11110	6606	42	2386
					22	6408	3615	1758	1035
3	59081	31821	10196	17064	30	57888	31627	5016	21245
4	41667	20716	11331	9620	40	30666	15998	2290	11678
5	50046	31877	10115	8054	50	45225	31877	4600	8748
6	44117	36602	0	7515	60	44117	35651	0	8466

Pre- and Post-Development Peak Runoff Rates (ft ³ /s)						
Discharge Point	2-Year Storm		10-Year Storm		25-Year Storm	
	Pre	Post	Pre	Post	Pre	Post
DP1	1.2	1.2	2.4	2.1	3.4	3.3
DP2	3.2	3.2	5.5	5.5	7.4	7.4
DP3	2.1	1.6	3.8	2.8	5.1	3.8
DP4	2.9	2.9	4.9	4.7	6.5	6.1
DP5	3.1	3	4.8	4.8	6.2	6.1
Sum	12.5	11.9	21.4	19.9	28.6	26.7

Time to Concentration:											
Flow Path Data - Pre						Flow Path Data - Post					
Subcatchment 1						Subcatchment 10					
item	length	start elev	end elev	slope	surface	item	length	start elev	end elev	slope	surface
sheet	100	139.4	135.17	0.042	woods	sheet	36	139.25	128	0.313	turf
scf	115	135.17	127.37	0.068	woods	scf	62	128	126.87	0.018	pavement
scf	134	127.37	122.5	0.036	pavement						
Subcatchment 2						Subcatchment 11					
item	length	start elev	end elev	slope	surface	item	length	start elev	end elev	slope	surface
sheet	74	134.2	129	0.07	woods	sheet	100	139.1	136.6	0.025	turf
scf	39	129	113	0.41	woods						
scf	100	113	107.5	0.055	pavement						
Subcatchment 3						Subcatchment 21					
item	length	start elev	end elev	slope	surface	item	length	start elev	end elev	slope	surface
sheet	74	134.2	129	0.07	woods	sheet	32	-	-	0.01	Roof
scf	39	129	113	0.41	woods						
scf	100	113	107.5	0.055	pavement						
Subcatchment 4						Subcatchment 22					
item	length	start elev	end elev	slope	surface	item	length	start elev	end elev	slope	surface
sheet	74	134.2	129	0.07	woods	sheet	61	136.5	112	0.303	turf
scf	39	129	113	0.41	woods	scf	7	119	118.86	0.02	pavement
scf	100	113	107.5	0.055	pavement						
Subcatchment 5						Subcatchment 30					
item	length	start elev	end elev	slope	surface	item	length	start elev	end elev	slope	surface
sheet	20	134.75	131.47	0.164	turf	sheet	20	134.75	131.47	0.164	turf
sheet	30	131.47	128.52	0.098	pavement	sheet	30	131.47	128.52	0.098	pavement
scf	110	128.52	118.7	0.080	pavement	scf	110	128.52	118.7	0.080	pavement
scf	85	118.7	111.33	0.087	pavement	scf	85	118.7	111.33	0.087	pavement
scf	85	111.33	107.71	0.043	pavement	scf	85	111.33	107.71	0.043	pavement
Subcatchment 6						Subcatchment 40					
item	length	start elev	end elev	slope	surface	item	length	start elev	end elev	slope	surface
sheet	40	122.46	117.53	0.123	turf	sheet	40	122.46	117.53	0.123	turf
sheet	10	117.53	116.7	0.083	pavement	sheet	10	117.53	116.7	0.083	pavement
scf	125	117.53	103.88	0.109	pavement	scf	125	117.53	103.88	0.109	pavement
scf	50	103.88	102.04	0.037	pavement	scf	50	103.88	102.04	0.037	pavement
scf	75	102.04	96.31	0.076	turf	scf	75	102.04	96.31	0.076	turf
scf	45	96.31	95.77	0.012	pavement	scf	45	96.31	95.77	0.012	pavement
Subcatchment 7						Subcatchment 50					
item	length	start elev	end elev	slope	surface	item	length	start elev	end elev	slope	surface
sheet	75	98.94	97.15	0.024	pavement	sheet	75	98.94	97.15	0.024	pavement
scf	180	97.15	93.11	0.022	pavement	scf	180	97.15	93.11	0.022	pavement
Subcatchment 6						Subcatchment 60					
item	length	start elev	end elev	slope	surface	item	length	start elev	end elev	slope	surface
sheet	75	137.36	136.57	0.011	pavement	sheet	75	137.36	136.57	0.011	pavement
scf	225	136.57	131.12	0.024	pavement	scf	225	136.57	131.12	0.024	pavement

NOTES:

1. THE SOILS FOR THE ENTIRE SITE ARE CLASSIFIED AS "URBAN" BASED ON A CLASS D MEDIUM INTENSITY SOIL SURVEY PERFORMED IN SPRING, 2021. FOR THE PURPOSES OF STORMWATER ANALYSIS, THE HYDROLOGIC SOIL GROUP IS ASSUMED TO BE "C."
2. ELEVATION INFORMATION SHOWN IS BASED ON GPS STATIC OBSERVATIONS TAKEN FEBRUARY 25, 2021. THE VERTICAL DATUM IS THE NORTH AMERICAN VERTICAL DATUM OF 1988.



FOR PERMITTING PURPOSES ONLY NOT FOR CONSTRUCTION

DESIGNED BY: JSD
DRAWN BY: JSD
CHECKED BY: JLG
PROJECT: 22104.04

OWNER:
SOUTHERN MAINE
AFFORDABLE HOUSING
22 South Street
Biddeford, Maine, 04005

PROJECT TITLE AND LOCATION:
ADAMS POINT HOUSING
69 Adams Street
Biddeford, Maine, 04005

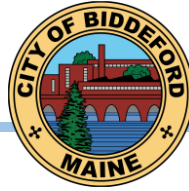
WATERSHED
PLANS

SCALE: AS NOTED

DATE: 08-02-2021

DWG.: WS101

SHEET: 23 OF 23



PLANNING BOARD STAFF REPORT

To: Chair Plotkin and Members of the Biddeford Planning Board
From: Adi Iriqat, Assistant City Planner

Date: November 24, 2025

RE: 2025.51_A Conditional Use Permit Application for Thriving Wellness, LLC, to occupy a leased space in an existing industrial building for use as a licensed medical cannabis retail dispensary. The property is at 642 Elm Street (Tax Map 11, Lot 7) in the IZ zone.

Meeting Date: December 03, 2025

1) Introduction

Thriving Wellness, LLC is seeking approval to operate a medical cannabis retail dispensary. The space they are eying is part of a 12-unit industrial warehouse located at 642 Elm Street. The leased space unit is identified as unit #4 in the building.

The applicant is requesting a waiver of the full Site Plan Review requirement, as no physical alterations to the existing building or site are proposed.

2) Project Data / Information

1.	Applicant:	Thriving Wellness, LLC 9 Lund Road Saco, ME 04072
2.	Owner of Property:	Six Forty-Two, LLC PO box 526 Biddeford ME 04005
3.	Agent:	Same as Applicant
4.	Surveyor:	N/A
5.	Project Location:	642 Elm St, Unit #4
6.	Project Tax Map #/Lot #:	Tax Map 11, Lot 7
7.	Lot Size:	7.17 acres
8.	Base Zoning:	I-1
9.	Overlay Zoning:	N/A
10.	Existing Use:	Multi-tenant industrial/ commercial building
11.	Proposed Use:	Occupy unit #4 to operate a medical cannabis caregiver retail store.

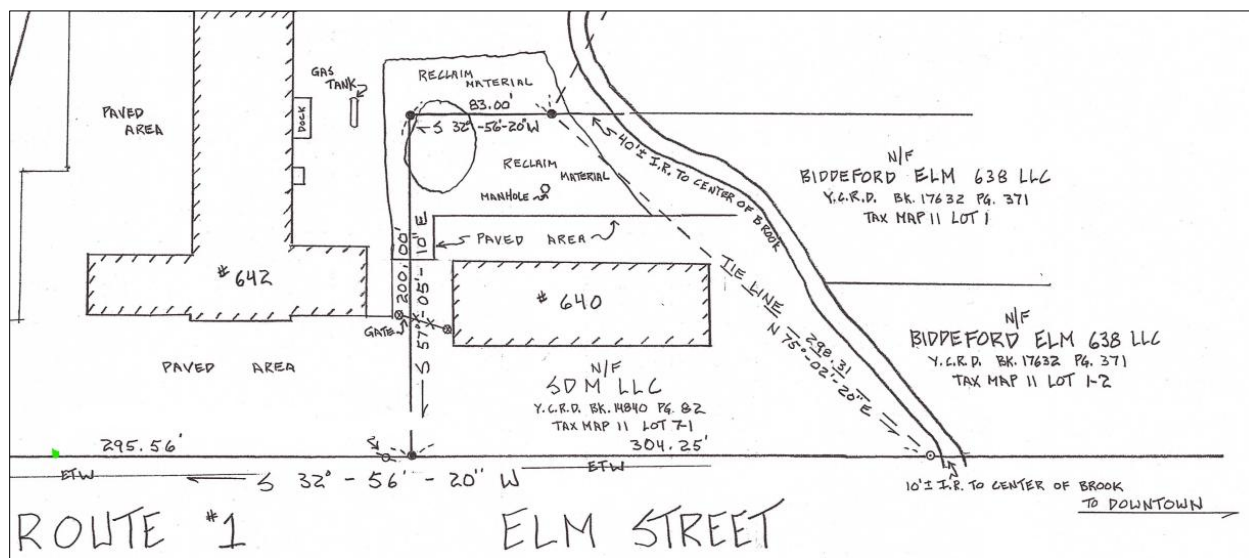
2025.51_A Conditional Use Permit Application for Thriving Wellness, LLC, to occupy a leased space in an industrial building as a licensed medical cannabis retail dispensary. The property is at 642 Elm St (Tax Map 11, Lot 7) in the IZ zone.

12.	Approvals Required:	Conditional Use Permit
13.	Uses in the Vicinity:	Industrial
14.	Waivers Request:	Full Site Plan Review
15.	Waivers Granted:	N/A
16.	Other Non-City Permits Required:	N/A
17.	LDR Attachment A: Fees Paid:	Application Fees Paid
18.	Planning Board Review History:	Sketch Plan: Dec 3, 2025

3) Existing Conditions

The subject property is approximately 7.17 acres with one warehouse building. There are 12 units in the building. Each unit has an overhead garage door.

Below is a cropped image of the site plan survey. The left portion of the image illustrates the subject property.



4) Proposed Project

The applicant proposes to occupy the leased space at 642 Elm Street. The sole use will be to sell medical cannabis, not cultivate or manufacture. The applicant is not proposing any physical modification to the property nor to unit #4, which they will be occupying. The size of the unit is 1750 sf (45' x 30').

2025.51_A Conditional Use Permit Application for Thriving Wellness, LLC, to occupy a leased space in an industrial building as a licensed medical cannabis retail dispensary. The property is at 642 Elm St (Tax Map 11, Lot 7) in the IZ zone.

The property will generate modest waste, since cannabis products will be prepackaged rather than cultivated, manufactured, or packaged, which generates more waste.

Inline fans will be installed to control and/or mitigate odor caused by the terpene compounds in the plant.

The store will have between 1-2 employees with different schedules. Hours of operation will be 8 AM to 8 PM, Sunday through Saturday.

5) Review Process

To receive approval from the Planning Board, the applicant must establish compliance with the Conditional Use Standards listed below (Article VII, Section 6), Performance Standards (Article VI, Section 77), and Site Plan Review (Article XI).

- A. Fire Department (FD): Pending. The request was initiated on Nov 5, 2025.
- B. Police Department: Pending. The request was initiated on Nov 5, 2025.

6) Staff Review

Waivers: Article XI, Full Site Plan Review:

Staff Recommendation: Given that no building expansions or increases in impervious surface are proposed, Staff recommends that the Board grant this waiver, which states that sufficient information has been provided to allow this application to be reviewed.

- A. All signage for the property shall meet the standards of the City's Sign Ordinance and shall include a street address, with the height of each number within the address being a minimum of 4' in height. City Staff further recommend that the street number be reflective materials for easy identification for E-911 services.
- B. The applicant shall comply with Land Development Regulations, Article VI (Performance Standards), Section 77 (Marijuana establishments), including, but not limited to, the odor of marijuana shall not be detectable off premises, meaning not detectable on any property that is not under the control of the establishment.

7) Sample Motions

- a) Motion to Approve the Conditional Use Permit application for Thriving Wellness, LLC to be located at 642 Elm St (Tax Map 11, Lot 7), within the Industrial Zone.

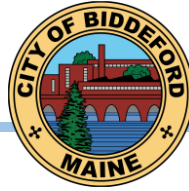
2025.51_A Conditional Use Permit Application for Thriving Wellness, LLC, to occupy a leased space in an industrial building as a licensed medical cannabis retail dispensary. The property is at 642 Elm St (Tax Map 11, Lot 7) in the IZ zone.

- b) Motion to Deny the Conditional Use Permit application for Thriving Wellness, LLC to be located at 642 Elm St (Tax Map 11, Lot 7), within the Industrial Zone, for the following reasons:

- 1) _____.
- 2) _____.
- 3) _____.

- c) Motion to Table the Conditional Use Permit application for Thriving Wellness, LLC to be located at 642 Elm St (Tax Map 11, Lot 7), within the Industrial Zone, for the following reasons:

- 1) _____.
- 2) _____.
- 3) _____.



Findings of Fact and Conclusion of Law
Conditional Use Permit
Thriving Wellness, LLC,
A licensed Medical Cannabis Retail Dispensary.
642 Elm St, Biddeford, ME
Case #2025.51-December 03, 2025

Under the provisions of the City of Biddeford Land Development Regulations, Article VI (Performance Standards), Section 77 –Marijuana Establishments, the Biddeford Planning Board has considered the application of Thriving Wellness to operate a medical cannabis caregiver retail store at 642 Elm Street.

1) Project Data / Information

1.	Applicant:	Thriving Wellness, LLC 9 Lund Road Saco, ME 04072
2.	Owner of Property:	Six Forty-Two, LLC PO box 526 Biddeford ME 04005
3.	Agent:	Same as Applicant
4.	Surveyor:	N/A
5.	Project Location:	642 Elm St, Unit #4
6.	Project Tax Map #/Lot #:	Tax Map 11, Lot 7
7.	Lot Size:	7.17 acres
8.	Base Zoning:	I-1
9.	Overlay Zoning:	N/A
10.	Existing Use:	Multi-tenant industrial/ commercial building
11.	Proposed Use:	Occupy unit #4 to operate a medical cannabis caregiver retail store.
12.	Approvals Required:	Conditional Use Permit
13.	Uses in the Vicinity:	Industrial
14.	Waivers Request:	Full Site Plan Review
15.	Waivers Granted:	N/A
16.	Other Non-City Permits Required:	N/A
17.	LDR Attachment A: Fees Paid:	Application Fees Paid
18.	Planning Board Review History:	Sketch Plan: Dec 3, 2025

2) Performance Standards

The Board made the following conclusions in their review of Article VI (Performance Standards), Section 77 (Marijuana Establishments), states as follows:

1. The proposed use meets specific requirements outlined in this ordinance and would be in compliance with applicable state or federal laws. The proposed use will comply with all State and local Codes and Ordinances.
2. The proposed use would not create fire safety hazards by providing adequate access to the site, or to the buildings on the site, for emergency vehicles, and would not create hazards through the storage of chemicals and wastes.
3. The proposed exterior lighting, where allowed, would not create hazards for motorists traveling on adjacent public streets, would not be inadequate for the safety of occupants or users of the site, and would not damage the value and diminish the usability of adjacent properties.
4. The provisions for buffers and on-site landscaping provide adequate protection to neighboring properties from detrimental or unsightly features of the development.
5. The proposed use would not have a significant, detrimental effect on the use and peaceful enjoyment of abutting property because of noise, vibrations, fumes, odor, dust, glare, hours of operation, or other causes.
6. The provisions for vehicle loading and unloading, parking, and vehicle and pedestrian circulation on the site and onto adjacent public streets would not create hazards to public safety or traffic congestion.
7. The proposed use would generate a volume of traffic that can reasonably be accommodated by the existing road network or would not create unreasonable traffic hazards, exacerbate an existing traffic hazard, or create unreasonable traffic congestion.
8. The proposed use would not have a significant, detrimental effect on the value of adjacent properties, which could be avoided by reasonable modification of the proposal.
9. The proposed use would not harm the privacy of the residents of the immediate area (within 500 feet), which could be avoided by reasonable modification of the proposal.
10. The proposed use would comply with Biddeford's Comprehensive Plan.
11. The proposed use would not harm the immediate neighborhood or the community relative to architectural design, scale, bulk, building height, identity, and historical character, or visual integrity, which could be avoided by reasonable modification of the proposal.
12. The design of the site would not result in significant flood hazards or flood damage or would be in conformance with applicable flood hazard protection requirements.
13. Adequate provision has been made for the disposal of wastewater or solid waste or the prevention of ground or surface water contamination.

14. Adequate provision has been made to control erosion or sedimentation.
15. Adequate provision has been made to handle stormwater runoff or other drainage problems on the site, and the proposed development will not unduly burden off-site surface water systems.
16. The proposed water supply would meet the demands of the proposed use for fire protection purposes.
17. Adequate provision has been made for the transportation, storage, and disposal of hazardous substances and materials as defined by state law.
18. The proposed use would not harm scenic vistas on significant wildlife habitats or wetland areas and water bodies, which could be avoided by reasonable modification of the proposal.
19. When located in the Shoreland Zone, the proposed use would meet the purposes of Shoreland Zoning as identified in Article XIV, Section 1 (Purposes) of this ordinance.

3) Conclusion of Law

Based on the evidence available and the Findings of Fact above, the Biddeford Planning Board approves the Conditional Use Permit for the proposed project at 642 Elm Street, per the submitted application, supporting data, representations made, other related materials on file, and the following Conditions of Approval:

1. The material provided for the proposed project has been reviewed only for general conformance to the City's technical requirements. The applicant(s) and/or their technical consultant shall be responsible for the actual design details and completeness of their work. It is incumbent upon the applicant(s) to ensure that the project is in conformance and complies with all City Codes, ordinances, and regulations, as well as with all state regulations, including, but not limited to, space and bulk standards, performance standards, use standards, and other zoning-type requirements.
2. All work shall be in conformance with the approved plans and submission documents. No deviations from the approved plans are permitted without prior approval from the Planning Board for major changes, and from the City Planner and City Engineer for minor changes. The City Planner shall determine whether the change is major or minor.
3. The applicant shall obtain all other pertinent local, state, and federal permits, licenses, and insurance, such as blasting, building, electrical, plumbing, etc., before commencing business.
4. After completing the project, the owner/applicant shall request a final inspection. This request shall be directed to the Code Enforcement Office and Fire Department. A Certificate of Occupancy shall not be issued until the project complies with the approval and all applicable City Ordinances.

5. The applicant shall comply with Land Development Regulations, Article VI (Performance Standards), Section 77 (Marijuana Establishments), including, but not limited to, the odor of marijuana shall not be detectable off premises, meaning not detectable on any property that is not under the control of the establishment.
6. All signage for the property shall meet the standards of the City's Sign Ordinance and shall include a street address, with the height of each number within the address being a minimum of 4' in height. City Staff further recommends that the street number be reflective to facilitate easy identification by E-911 services.
7. No building permit or certificate of occupancy shall be issued until the pending Letters of Approval from the Fire and Police Departments have been received. These letters shall be submitted to both the Planning Department and the Codes Department.

Date: _____

Mrs. Alexa Plotkin

Planning Board Chairwoman

Conditional Use Application

**Thriving Wellness, LLC
642 Elm Street Unit 4
Biddeford, ME 04005
November 5, 2025**

November 5, 2025

City of Biddeford
Planning Department
205 Main Street
Biddeford, ME 04005

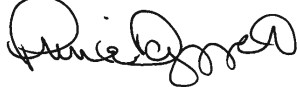
Re: Conditional Use Application
Thriving Wellness, LLC
Medical Caregiver Retail, 642 Elm Street Unit 4

Dear City of Biddeford Planning Board,

Thriving Wellness, LLC is seeking approval to utilize leased space located at 642 Elm Street Unit 4 as a medical cannabis caregiver retail storefront. This space will not be utilized for cannabis cultivation or cannabis manufacturing. There will be no physical alterations to the existing property or existing building.

Enclosed are 3 signed copies of the completed application and supporting documents for your review. Please contact me if you have any questions or need further information.

Sincerely,

A handwritten signature in black ink, appearing to read 'Prima Daggett', with a stylized, cursive script.

Prima Daggett

**Thriving Wellness LLC
Planning Board Application**

Table of Contents

Section A	Planning Board Application
Section B	Tax Map and Warranty Deed
Section C	Business Narrative
Section D	Letters of Ability to Serve Requests
Section E	Waiver Request
Section F	Site Photographs

Section A

Planning Board Application



**City of Biddeford – Planning Department
Planning Board Application**

P.O. Box 586, 205 Main Street Biddeford, Maine 04005
207-284-9115

Revised: November 6, 2025

Type of Application:

☐ Shoreland Zoning Permit ☐ Site Plan Review (Please include checklist) ☐ Extraction
☒ Conditional Use Permit ☐ Subdivision (Please include Checklist) ☐ Private Way
☐ Other: _____

Applicant Information:

Name: Thriving Wellness LLC
Mailing Address: 9 Lund Road Saco, ME 04072
Telephone: (207) 651-9148
Email: thrivingwellnessfcc@gmail.com
What is your legal interest in the property?
☐ Owner ☐ Potential Buyer with Contract ☒ Lease/Rental Agreement

Owner's Information:

Name: Six Forty-Two LLC
Mailing Address: PO box 526 Biddeford ME 04005
Telephone: (207) 899-8337
Email: _____

Agent's Information:

Name: _____
Mailing Address: _____
Telephone: _____
Email: _____

Engineer/Surveyor's Information:

Name: _____
Mailing Address: _____
Telephone: _____
Email: _____

Project Location and Lot Information:

Street Address: 642 Elm Street Unit #4 Drainage Watershed: _____
Tax Map: 11 Lot: 7
Current Zoning: 11 Shoreland Zoning: _____
Size of Lot: 7.17 (x) acres () s.f. Lot Frontage: _____
Existing Use of Property: existing multi-tenant industrial/commercial building

Property currently serviced by:

☐ City Road ☐ Public Sewer ☒ Public Water ☐ Public Trash
☐ Private Road ☒ Septic System ☐ Private Well ☐ Private Hauler

Slope Conditions in Area of Construction (if applicable):

☐ Flat (0-3% slope) ☐ Rolling (3-8% slope) ☐ Hilly (8-15% slope) ☐ Steep (15%+ Slope)

Are there any wetlands or waterbodies on the site? ☐ (Yes) ☐ (No) if yes attach information

Is the project within the 100-year floodplain? ☐ (Yes) ☐ (No) if yes attach information

Do you plan to bring fill onto the lot? ☐ (Yes) ☐ (No) If yes attach information

Description of proposed use of property:

Project/Proposed Use: Applicant is seeking approval to operate a medical cannabis caregiver retail store

Property to be Serviced by:

☐ City Road ☐ Public Sewer ☒ Public Water ☐ Public Trash
☐ Private Road ☒ Septic System ☐ Private Well ☒ Private Hauler

Limits of Disturbance: _____ () acres () s.f.

Net change in impervious cover: _____ () acres () s.f.

Is this project part of a larger project? ☐ (Yes) ☒ (No)

Is the project proposing a new Private or Public Road? ☐ (Yes, Private) ☐ (Yes, Public) ☒ (No)

Is this project within the Urbanized Area/MS4 (see *City Drainage Map*) ☐ (Yes) ☐ (No)

Is the project proposing any Stormwater facilities/BMPs? ☐ (Yes) ☒ (No)

Will a Traffic Movement Permit (TMP) be required?: ☐ (Yes) ☒ (No)

☐ If in a Shoreland Zone:

Percent of residential lot coverage (Max 20%): _____

Percent of structure expansion (Max 30%): _____

☐ If Subdivision Review, number of lots proposed: _____

☐ If a Private Way is proposed, number of lots served: _____

If Site Plan Review, you must provide the following information:

Total new square feet footprint of structure: _____

Total new square feet paving/parking: _____

Waiver Requests (attach details):

1. site plan review; no proposed changes to existing building or landscape
2. _____
3. _____
4. _____
5. _____

Required Submittal Attachments:

A. Letters of Approval

Pending: ☒ Fire Department – Contact Chief or Deputy Chief – 282-9986 -

☐ Ability to Serve for Water Service – Maine Water – 282-1543

☐ Ability to Serve for Sewer Service – Engineering Department – Tom Milligan 284-9118

Pending ☒ Police Department – e-911 Road Name Designation – Contact Joanne Fisk 282-5127 -

☐ Ability to Serve for Electrical Service-CMP-1-866-225-4200

☒ Letter to Planning Board describing project, Waiver requests, proposed improvements, addressing permit requirements, etc.

B. Photographs of Site.

C. Architectural renderings/drawings of proposed buildings, as required.

- D. Engineering Plans, as required.
- E. Stormwater Management Report, as required.

Fees (Due at time of Submission):

- \$75 Nonrefundable Administration Fee is required for every application.
- Refer to "Attachment A Fees and Charges" of the Land Development Regulations for more information. Consult with Planning Staff if you have questions.

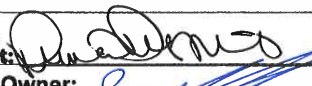
Required Signatures:

By signing this application, as the foresaid applicant or authorized agent:

- I certify that I have read and completely understand the application;
- I certify that the information contained in this application and its attachments are true and correct;
- I understand that all information provided on this form and all other documents submitted as part of my proposal is a matter of public record;
- I understand that copies of this information may be supplied upon request to an interested party.
- I understand that additional funds may be required through the course of the review for special studies, legal review costs, and/or engineering review.
- I understand that by submitting an application I am not guaranteed a place on any particular agenda. I further understand that the City Planner will place me on an agenda for review when the application is deemed substantially complete.

Will the proposed project cause 1 acre or more of site disturbance? __ (Yes) x (No)

- If Yes, applicant is responsible for any required Maine Construction General Permits and shall comply with the requirements of DEP Chapter 500 Stormwater Regulations, as they apply.

Signature of Applicant: 

Date 11/5/25

Signature of Property Owner: 

Date 11/6/25

DIGITAL SUBMITTAL REQUIREMENTS FOR ALL SUBMITTALS:

- A) PDF OF SIGNED APPLICATION
- B) PDFs OF ALL DRAWING SETS AND OTHER REQUIRED SUBMITTAL ATTACHMENTS NOTED ABOVE

HARD-COPY SUBMITTAL REQUIREMENTS FOR PLANNING BOARD APPLICATIONS:

- A) SEVEN (7) FULL-SIZE PAPER COPIES OF DRAWING SETS

DIGITAL SUBMITTAL REQUIREMENTS FOR FINAL APPROVAL:

- A) INDIVIDUALLY NAMED PDFs OF EACH DRAWING (NOT A COMBINED PDF SET)
- Individual Drawing PDF Naming Format: 'PROJECT/SHEETSET NAME_INDIVIDUAL DRAWING NAME.pdf'

- B) PDF COPIES OF ALL PERMIT APPROVALS, APPLICATIONS, REPORTS, NARRATIVES, LETTERS, ETC.
- C) FINAL CAD REFERENCE FILES IN DWG FORMAT (SURVEY & PROPOSED DESIGN LINEWORK)

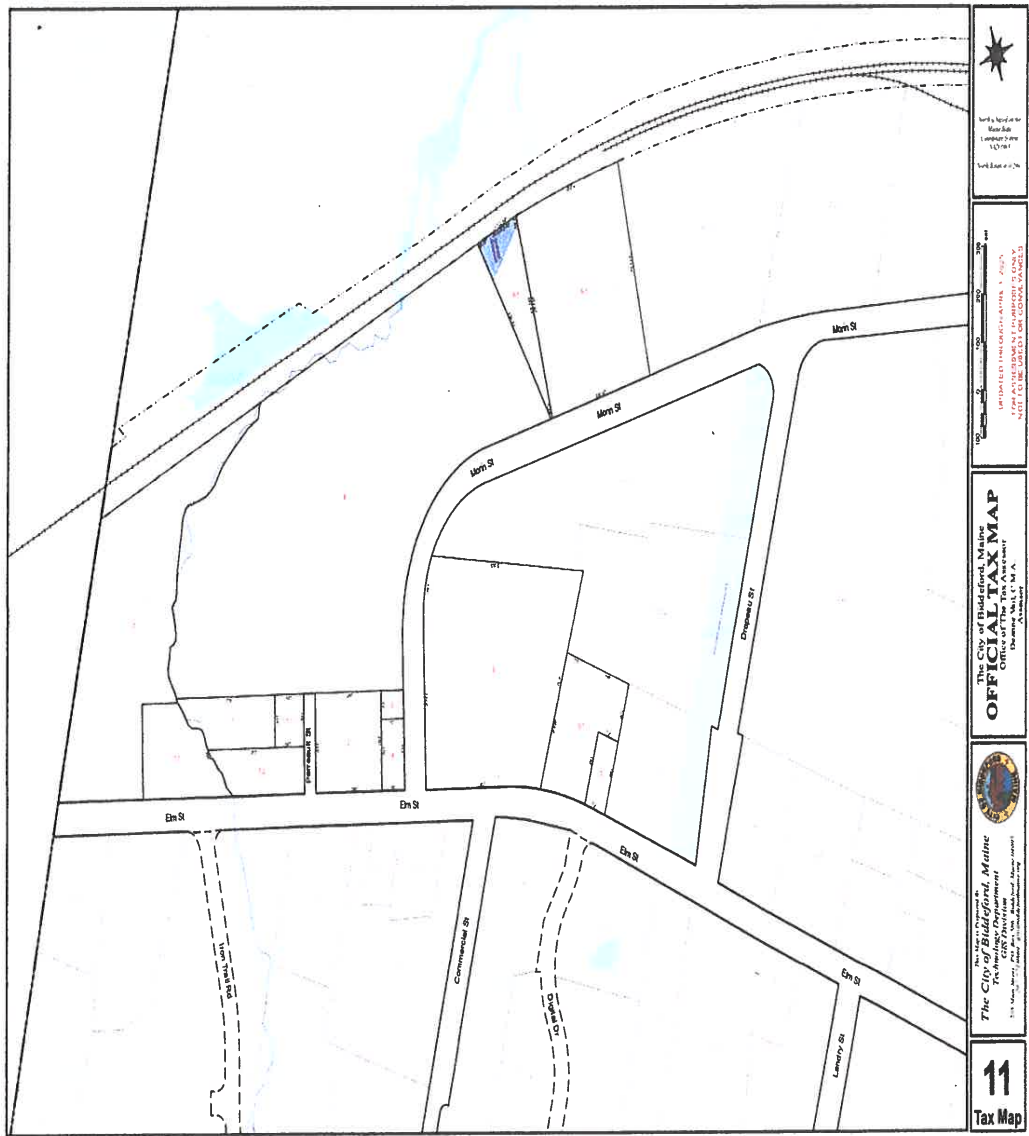
*- All drawings & CAD reference files must be to-scale and within the following coordinate systems:
- MAINE STATE PLANE WEST NAD83 (Horizontal Datum) & NAVD88 (Vertical Datum)*

HARD-COPY SUBMITTAL REQUIREMENTS FOR FINAL APPROVAL:

- A) THREE (3) FULL-SIZE PAPER COPIES OF INDIVIDUAL DRAWINGS REQUIRING BOARD SIGNATURE
- B) ONE (1) FULL-SIZE PAPER COPY OF ENTIRE DRAWING SET FOR ENGINEERING RECORDS

PLEASE CONFIRM WITH PLANNING STAFF FOR CLARIFICATION

Section B
Tax Map and Warranty Deed



DLN: 1002240210342
WARRANTY DEED

KNOW ALL MEN BY THESE PRESENTS

THAT ARUNDEL AUTO SERVICE, INC., a Maine corporation having its registered office at 374 Main Street, Saco, County of York, State of Maine 04072. (hereinafter referred to as "Grantor"), in consideration of One Dollar and Other Valuable Consideration paid by **SIX FORTY-TWO, LLC**, a Maine limited liability company having its principal place of business in the City of Biddeford, County of York and State of Maine, and whose mailing address is 593 Elm Street, Biddeford, ME 04005 (hereinafter referred to as "Grantee"), the receipt whereof it does hereby acknowledge, does hereby **give, grant, bargain, sell and convey** to the said **Six Forty-Two, LLC**, its successors and assigns, a certain lot or parcel of land located partly in the City of Biddeford, and partly in the Town of Arundel, both in said County of York and State of Maine, being more particularly bounded and described in **Attachment "A"** attached hereto and incorporated herein by reference.

Maine R.E. Transfer Tax Paid

After recording return to:
Alan S. Nelson, Esq.
374 Main Street
Saco, ME 04072

TO HAVE AND TO HOLD the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said **Six Forty-Two, LLC**, its successors and assigns, to it and their use and behoof forever.

AND IT DOES COVENANT with the said Grantee, its successors and assigns, that it is lawfully seized in fee of the premises; that they are free of all encumbrances except any and all state, federal and local land use regulations, ordinances, statutes and acts and zoning laws and ordinances of the City of Biddeford and the Town of Arundel and except as noted above; that it has good right to sell and convey the same to the said Grantee to hold as aforesaid; and that it and its successors and assigns shall and will **WARRANT and DEFEND** the same to the said Grantee, its successors and assigns forever, against the lawful claims and demands of all persons.

IN WITNESS WHEREOF, Arundel Auto Service, Inc., by George Danis, its President thereunto duly authorized, has hereunto set its seal this 16th day of September, 2022.

**Signed, Sealed and Delivered
in Presence of:**

Alan A. Nelson

Arundel Auto Service, Inc.

By: George Danis
**George Danis, its President
thereunto duly authorized**

STATE OF MAINE

York. ss.

September 16, 2022

Then personally appeared **George Danis, President of Arundel Auto Service, 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 **Arundel Auto Service, Inc.**

Before me.

My Notary Commission
expires on: _____

Alan S. Nelson
~~Notary Public~~ / Attorney-at-Law

ALAN S. NELSON, ESQ.
(Print or Type Name)

Maine Bar Reg. # 001168

ATTACHMENT A

GRANTOR: ARUNDEL AUTO SERVICE, INC.

GRANTEE: SIX FORTY-TWO, LLC

A certain lot or parcel of land with the buildings thereon, situated partly in the City of Biddeford and partly in the Town of Arundel, both in said County of York and State of Maine, and being more particularly bounded and described as follows:

Beginning on the Northwestern side of the State Road leading from Portland to Portsmouth, at a point which is about 30 feet, more or less, Southwesterly from the line dividing the City of Biddeford and the Town of Arundel, said point being also in line with a metal culvert crossing said Road; thence N 60° 10' W, five hundred and fourteen and thirty-five hundredths (514.35) feet, more or less, to land of Boston and Maine Railroad; thence Northeasterly by said Boston and Maine Railroad land five hundred eleven (511) feet, more or less, to land now or formerly of one Nadeau; thence by said Nadeau land and along a brook in a Southeasterly direction to said State Road; thence S 35° W 640' feet, more or less, along said State Road to the point of beginning.

EXCEPTING and RESERVING from the within conveyed parcel a parcel conveyed from Arundel Auto Service, Inc. to SDM, LLC dated May 15, 2006, recorded in the York County Registry of Deeds in Book 14840, Page 82. The Excepted parcel herein and therein being described as a lot containing 1.07 acres, more or less.

Reference is also made to a "Standard Boundary Survey Plan Showing Land of Arundel Auto Service, Inc., U.S. Route No. 1, Biddeford & Arundel, Maine", dated June 25, 1985, by Oak Point Associates, Engineers and Surveyors, Robert C. Tillotson, R.L.S.

#1253. said Plan being recorded in Said Registry of Deeds in Plan Book 143, Page 02.

Bearings above are based upon an observation of Magnetic North in June, 1985.

This conveyance is made **SUBJECT TO** five (5) certain Utility Easements granted to Central Maine Power Company and New England Telephone and Telegraph Company as follows:

- (a) Dated June 11, 1952, recorded in said Registry in Book 1280, Page 548;
- (b) Dated November 16, 1965, recorded in said Registry in Book 1697, Page 345;
- (c) Dated November, 1968, recorded in said Registry in Book 1853, Page 211;
- (d) Dated July 12, 1979, recorded in said Registry in Book 2551, Page 77; and
- (e) Dated December 6, 1985, recorded in said Registry in Book 3752, Page 76.

Being the remaining portion of the premises conveyed by Warranty Deed from Gerard A. Roy to Arundel Auto Services, Inc., dated February 24, 1977 and recorded on the York County Registry of Deeds Book 2171, Page 681.

Section C

Business Narrative

Business Narrative

Thriving Wellness, LLC intends to lease Unit 4 at 642 Elm Street and is seeking approval to operate a Medical Cannabis Caregiver Retail Store. This location will not be used to cultivate cannabis or manufacture cannabis products. There will be no physical alterations to the existing building or property.

Business Operation

Thriving Wellness will have between 1-2 employees with varying shifts throughout the week. The typical hours of operation will be from 8:00am to 8:00pm Sunday to Saturday.

Parking

The leased space unit 4 is approximately 1750 sf (45'x30'). The proposed retail space will occupy 900 sf of this space. This will require 3 parking spaces that will be located directly in front of unit #4. There will be 2 additional designated parking spaces in the parking lot for employees.

Waste Management:

Thriving Wellness LLC will generate very little waste other than common garbage that will be picked up by a private company. Any cannabis waste, packaging or containers used for cannabis will be collected and moved off site to be discarded appropriately.

Thriving Wellness LLC Odor Mitigation Plan

Thriving Wellness, LLC will not be cultivating, manufacturing or packaging cannabis products at this location. Cannabis products will be prepackaged prior to entering the store. Packaged products will be displayed in small quantities in closed locked glass retail cabinets. Excess inventory will be stored in a locked secure designated storage area.

Odor Controls: The odor from cannabis is caused by the terpene compounds that are produced by the plant. Terpenes are essential oils that are produced by many different types of plants and flowers and serve a multitude of purposes. These terpene compounds are classified as Volatile Organic Compound (VOC). Controlling odor at the facility will require the isolation and removal of VOC's produced by terpenes in the space. This will be accomplished by using inline fans with activated carbon filter system in rooms containing any products produced from the plant material. This technology is most accepted in the cannabis industry as best control measures and designed to effectively mitigate odors. These fans will be inspected once a month to ensure they are performing correctly. The carbon filters will be changed every 3 months or as deemed necessary. Active carbon filters have been found to absorb VOC's from the air as these organic compounds activate with the carbon causing them to be trapped in the filter. Spaces that contain cannabis or cannabis products will be fully sealed: walls, doors and infrastructure. Premises doors and windows will remain closed. And that any air that is being exhausted from the spaces is passed through additional carbon filtration, to further remove VOC's before being released outside. The ventilations fans, dehumidifiers and HVAC will have pleated carbon filter box that will be installed on the fan inlet. These will be changed every 3 months or as deemed necessary.

Monitoring and Maintenance: All rooms that emit odor will be monitored for proper equipment and carbon filter functioning. Staff will report any equipment concerns or detection of high odor volume to the Operations Manager. The Operations Manager will determine the plan of action needed to maintain the odor mitigation process. There will be a supply of carbon filters on site to allow for immediate replacement if needed. The replacement of carbon filters is recorded for each filter change that includes the date, time and location. It is the Operations Manager's responsibility to reorder carbon filters as needed to ensure the correct stock is available. If maintenance of the equipment is required, it will be completed promptly to avoid effecting other areas of the building.



Ventilation Style

4-inch w/ GrowHub E42A+ 6-inch w/ GrowHub E42A+ 8-inch w/ GrowHub E42A+

About this item

Bring cleaner, stronger airflow to your grow space or workshop with this all in one 6" ventilation kit. Designed for efficiency and convenience, it combines high performance airflow with advanced odor control in a compact setup that installs in minutes. Perfect for grow tents, indoor gardens, or DIY projects, it keeps temperature stable and air fresh—so your plants and spaces stay healthy year round with minimal effort.

Energy-Efficient Ventilation: High-efficiency EC motor uses up to 30% less power than AC fans: This 6-inch inline duct fan delivers strong airflow to keep your setup well-ventilated and stable while lowering your energy bills

Strong Airflow, Whisper-Quiet Operation: Delivers up to 408 CFM at 3100 RPM with a mixed-flow design that ensures fast air circulation and precise climate control; it runs at just 32 dB—ideal for indoor grow tents of any size, even in quiet spaces near bedrooms or living areas

Precise Ventilation Control: PWM technology delivers exact airflow adjustments to match your environment, perfect for seedlings, flowering plants, or high-heat conditions

Control Anytime, Anywhere: Full smart control with the E42A+ Controller; Connect to the Vivosun app to monitor and adjust fan settings remotely—switch between Auto, Standby, Manual, and Cycle modes anytime, anywhere

Excellent Odor Control: Made with premium RC 412 Australian Virgin charcoal at 1200+ IAV, this carbon filter helps to eliminate pungent smells; The 38mm thick charcoal bed with high microporosity ensures its high absorption

Fast Setup, Versatile Use: With dual patented anchors, this booster fan installs in minutes and stays securely in place. Perfect for indoor cultivation tents, 3D printers, garages, or laser engravers, it improves airflow, temperature control, and keeps air circulating



ABOUT

- Odor Eliminator air filter MERV 8 replacement for your furnace, air conditioner, heat pump, or HVAC system
- Odor eliminator synthetic media (comparable with MPR 600 & FPR 5) offers standard protection from odors, dust, pollen, and more by trapping 90% of airborne particles without impacting air flow.
- High-quality construction means electrostatically charged pleated filter media, reinforced wire backing for structural integrity, and a durable frame to resist heat and humidity
- Built to last 3 months. 300% longer than fiberglass models
- 100% manufactured in the United States and designed with recyclable materials

Section D

Letters of Ability to Serve Requests



First Class Cannabis <thrivingwellnessfcc@gmail.com>

Request For Ability To Serve - 642 Elm Street Unit #4

1 message

First Class Cannabis <thrivingwellnessfcc@gmail.com>
To: lawrence.best@biddefordmaine.org

Wed, Nov 5, 2025 at 9:51 AM

Dear Chief,

My name is Prima Daggett, owner of Thriving Wellness LLC. I am currently in the application process of seeking the City's approval for a medical cannabis retail store located at 642 Elm Street Unit #4. As part of the process, can you please confirm that the Biddeford Fire Department has the ability to serve this address?

Feel free to contact me if you need any further information.

Thank you,

Prima



First Class Cannabis <thrivingwellnessfcc@gmail.com>

Request For Ability To Serve - 642 Elm Street Unit #4

1 message

First Class Cannabis <thrivingwellnessfcc@gmail.com>

Wed, Nov 5, 2025 at 10:00 AM

To: Joanne.Fisk@biddefordmaine.org

Dear Chief Fisk,

My name is Prima Daggett, owner of Thriving Wellness LLC. I am currently in the application process of seeking the City's approval for a medical cannabis retail store located at 642 Elm Street Unit #4. As part of the process, can you please confirm that the Biddeford Police Department has the ability to serve this address?

Feel free to contact me if you need any further information.

Thank you,

Prima

Section F

Site Photographs

Street View 642 Elm Street



Unit #4 front view



Satellite View



Section E

Waiver Request

Waiver Request

Request to waive Site Plan as the applicant is not proposing any changes to the existing building or existing landscape.

October 22, 2025

Thriving Wellness, LLC
Prima Daggett
9 Lund Road
Saco, ME 04072
Contact: Prima Daggett
E-mail: Thrivingwellnessfcc@gmail.com
Phone: (207) 651-9148

City of Biddeford, Maine
Code Enforcement Office
PO Box 586
205 Main Street
Biddeford, ME 04005

RE: LETTER OF INTENT

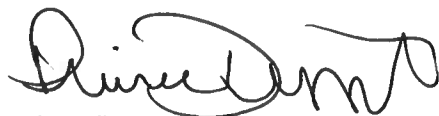
To Whom It Concerns,

Business Purpose: Thriving Wellness, LLC seeks to utilize leased space located at 642 Elm Street Unit #4 Biddeford, Maine 04005 as a licensed medical cannabis retail dispensary. This is not a cannabis cultivation space. Appropriate odor control will be put in place as needed. There will be no physical alterations to the existing property. Thriving Wellness will have between 1-2 employees with varying shifts throughout the week. The typical hours of operation will be from 8:00am to 8:00pm Sunday to Saturday.

Office Comprehension: Leased space Unit #4 is approximately 1750 sf (45'x30') in the building.

Waste: Thriving Wellness, LLC will generate very little waste other than common garbage. Any cut material/waste will be collected and moved off (642 Elm Street site) to be discarded at the appropriate landfill facility. Absolutely no cut material/waste will be discarded on site. There will be no burning on site of any unused materials.

Additional Storage: No additional storage facility – all operation will be confined to the leased space.



Prima Daggett/Owner



CITY OF BIDDEFORD, MAINE

Code Enforcement Office
PO Box 586
205 Main Street
Biddeford, Maine 04005
Phone: (207)284-9236 Fax: (207)286-9382

BUSINESS APPLICATION

Name of New Business

Thriving Wellness, LLC

Application Date:

10/22/25

Address of New Business:

642 Elm Street
Unit 4
Biddeford Me 04005

Map and Lot:

Business Phone Number:

207-651-9148

Owner of Property:

642 LLC

Phone Number:

Address:

PO Box 526 Biddeford Me 04005

Cell Phone Number:

Emergency contact name and number:

Scott Collins 207-899-8337

Owner of New Business:

Prima Daeggett

Home Phone Number:

Home Address:

1149 Waterboro Rd Lyman Me

Cell Phone Number:

207-651-9148

Emergency contact name and number:

SUBMIT THIS COMPLETED APPLICATION ALONG WITH A LETTER OF INTENT, SPECIFYING TYPE OF BUSINESS, HOURS OF OPERATION, NUMBER OF EMPLOYEES, AND ANY OTHER PERTINENT INFORMATION.

Guidance for new businesses:

1. Letter of intent and new business application
2. City approvals required:
City Clerk Planning Board Historic Preservation Committee
3. State approvals required:
Fire Marshall Food Liquor other
4. Building permit required:
Yes No
5. Sign approval (HPC) complete:
Yes No
6. Occupancy permit**:
Yes No

**Space needs to be completely set-up prior to occupancy inspection

Potential Fees Associated with New Business Start Up

CITY OF BIDDEFORD BUSINESS LICENSE APPLICATION

BUSINESS NAME: Thriving Wellness LLC

Business Address: 642 Elm Street Unit 4 Biddeford Map Lot

Mailing Address: 9 Lund Road Saco Me 04072

Business Telephone Number: 207-651-9148

Email Address: thrivingwellnessfcc@gmail.com

OWNER/OPERATOR: Prima Daggett

Home Physical Address: 1149 S. Waterboro Road Lyman Me

Home Mailing Address: 1149 S. Waterboro Rd Lyman Me 04002

Home Telephone Number: 207-651-9148

Applicant(s) Date of Birth: 1/19/75

Prima Daggett Date 10/22/25

Applicant's Signature

Any information provided in this application, which is found to be false, will result in the denial or revocation of this license – per 1 M.R.S. 17-A §453.

All applications are subject to a \$10.00 administrative fee and a late charge of \$10 for each license that has expired more than 30 days and an additional \$10 shall be charged for each month thereafter that the license has not been renewed.

TYPES OF ENTERTAINMENT:

\$150.00 (single/multiple events)

- ☐ Concert
- ☐ Exhibitions (live performances)
- ☐ Circus/Carnival
- ☐ Indoor Skating Rink
- ☐ Bowling Lanes
- ☐ Theater/Movie House
(plus \$25.00 per screen)
- ☐ Billiard Room(s)

☐ Playhouse/Play

\$150.00 (annual)

- ☐ Public Firing Range
- ☐ Bottle Club

AUTOMOBILE REPAIR AND/OR GRAVEYARD:

- ☐ Automobile Repair Garage for maintenance
- ☐ Automobile Graveyard

\$75.00

\$200.00

PLACES/DEALERS IN PRODUCTS:

\$200.00

- ☐ Secondhand Dealers
- ☐ Dealers in gold jewelry, etc.
- ☐ Antique Dealer

- ☐ Flea Market (for 20 tables; \$5 per add'l table)
- ☐ Junk Dealer/Recycling



OFFICE OF CANNABIS POLICY

DEPARTMENT OF ADMINISTRATIVE AND FINANCIAL SERVICES

Maine Medical Cannabis Program Dispensary Local Authorization Form

This Local Authorization Form must be completed by the host municipality where a dispensary registration certificate applicant intends to locate one or both of its registered premises. The authorized local official responsible for completing this Form must return it to the Office of Cannabis Policy at Licensing.OCP@maine.gov or 162 State House Station, Augusta, Maine 04333.

If the authorized local official in receipt of this Form has not recently met with the Office of Cannabis Policy to discuss the local authorization process and OCP's expectations for completion of this Form, please contact the Director of Licensing, at Licensing.OCP@maine.gov or (207) 624-7530, prior to filling it out.

Section 1: Dispensary Information. Information to be completed by the dispensary applicant.

Section 1(a): Required information for all applicants for dispensary registration certificate.

Business Legal Name THRIVING WELLNESS, LLC	Business DBA FIRST CLASS CANNABIS	Dispensary Phone (207) 651-9148	
Primary Contact Person PRIMA DAGGETT	Primary Contact Email THRIVINGWELLNESSFCC@GMAIL.COM		
Physical Address of the Proposed Dispensary Registered Premises 642 ELM STREET UNIT #4	City BIDDEFORD	State ME	Zip 04005
Mailing Address 9 LUND ROAD	City SACO	State ME	Zip 04072

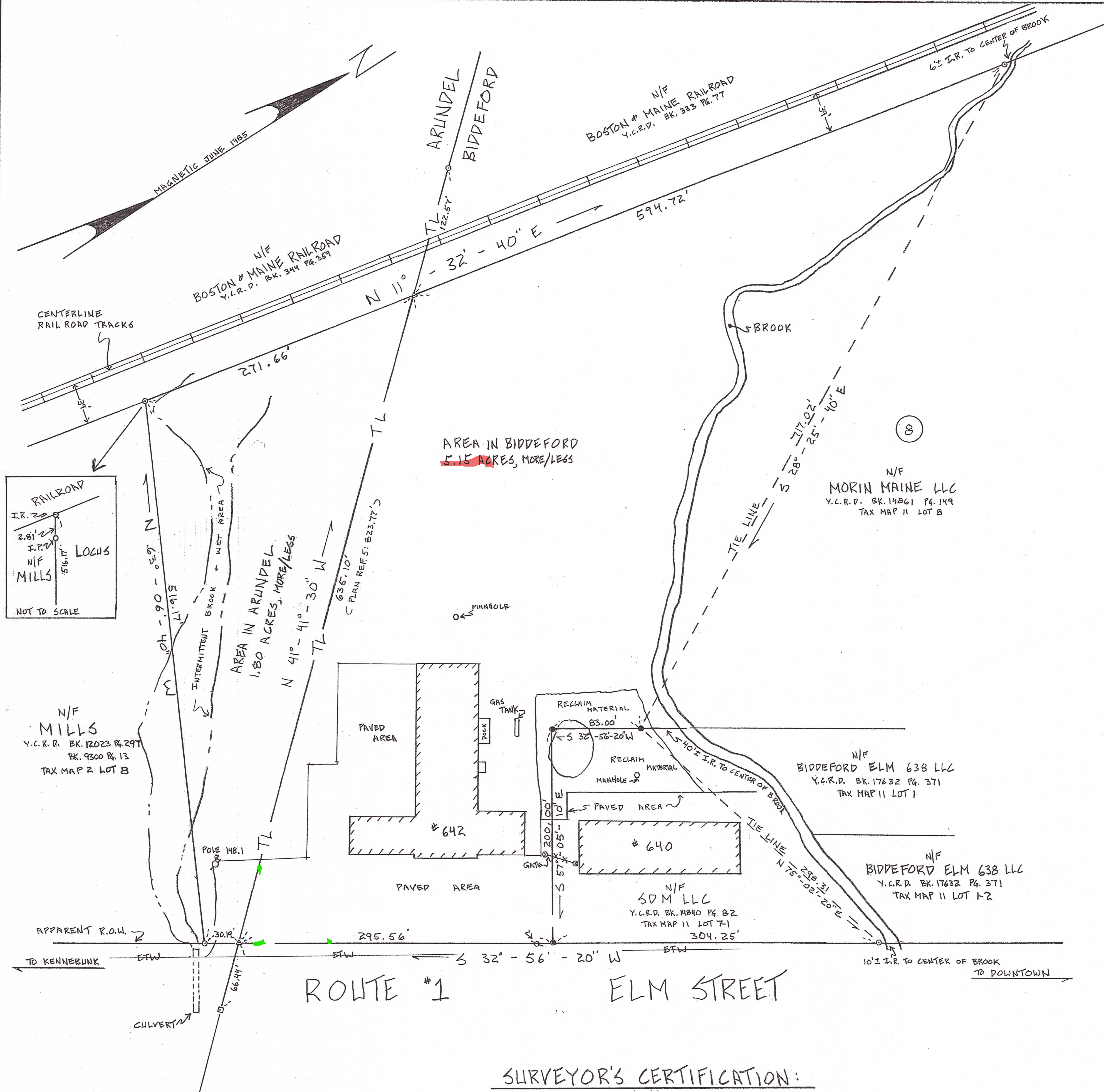
Section 2: Medical Cannabis Dispensary and Local Authorization Information. This section to be completed by the Municipality in receipt of request for Local Authorization.

Physical Location of Establishment (include unit number)	Municipality	State	Zip
Tax Map #	Tax Lot #		
Owner of Record of the Physical Location Listed Above			
Date Local Authorization Form Presented to the Municipality	Date Local Authorization Form Approved by Municipality		

Dispensary authorized activities to be conducted listed in section 1:

Indicate at all authorized activities the applicant intends to conduct at the registered premises to be located at Location 1. Check all that apply.

- ☐ Cultivation of cannabis (Note: A registered dispensary must ensure that any employee or agent applying pesticides to cannabis for medical use is appropriately licensed as a pesticide applicator by the Board of Pesticide Control).
- ☐ Manufacturing harvested cannabis without the use of inherently hazardous substances (Note: A registered dispensary must obtain an appropriate Food Establishment License from the Department of Agriculture, Conservation and Forestry to manufacture edible cannabis products).
- ☐ Manufacturing harvested cannabis with inherently hazardous substances (Note: A registered dispensary must obtain a separate inherently hazardous substance registration manufacturing facility registration certificate to use inherently hazardous substances to manufacture harvested cannabis).
- ☐ Providing harvested cannabis to a registered manufacturing facility for the production of cannabis concentrate or cannabis products.
- ☐ Accepting from, or transferring to, registered caregivers or other registered dispensaries cannabis plants or harvested cannabis in wholesale transactions.
- ☐ Consulting with, assisting, and/or dispensing cannabis plants or harvested cannabis to qualifying patients, visiting qualifying patients or caregivers.
- ☐ Operating a dispensary retail space for the conduct of sales or transfers of cannabis plants or harvested cannabis to qualifying patients, visiting qualifying patients or caregivers.



LEGEND:

TL	TOWN LINE
ETW	EDGE TRAVELLED WAY
N/F	NOW OR FORMERLY
Y.C.R.D.	YORK COUNTY REGISTRY OF DEEDS
BK. PG.	BOOK PAGE
REF.	REFERENCE
R.O.W.	RIGHT OF WAY
PLS	PROFESSIONAL LAND SURVEYOR
RLS	REGISTERED LAND SURVEYOR
(8)	LOT NUMBER PLAN REF. 3
I.R.	IRON ROD
I.P.	IRON PIPE
□	REMAINS OF TOWN LINE MONUMENT
●	FOUND IRON ROD
○	SET IRON ROD WITH SURVEY CAP
○	FOUND IRON PIPE
○	UTILITY POLE
⊗	GATE POST

NOTES:

1. PARCEL IDENTIFIED AS TAX MAP 11 LOT 7
 2. TOTAL AREA OF PARCEL : 6.95 ACRES ±
 3. EXISTING ZONING:
BIDDEFORD SECTION I1 (INDUSTRIAL1)
WITH A SP (STREAM PROTECTION) OVERLAY
ZONE ALONG BROOK ON EAST SIDE
OF LOCUS - 100' FROM HIGH WATER LINE
ARUNDEL SECTION B1 (BUSINESS/INDUSTRIAL)
SEE BIDDEFORD ZONING ORDINANCE AND
ARUNDEL LAND USE ORDINANCE
 4. PARCEL SERVED BY MAINE WATER CO.
 5. PRIVATE ON SITE WASTEWATER SYSTEM
 6. PARCEL SUBJECT TO THE FOLLOWING
EASEMENTS TO CENTRAL MAINE POWER
AND NEW ENGLAND TEL & TEL
Y.C.R.D. BK. 1697 PG. 345 - NOV. 16, 1965
Y.C.R.D. BK. 1853 PG. 211 - NOV. 25, 1968
Y.C.R.D. BK. 2551 PG. 77 - JULY 12, 1978
Y.C.R.D. BK. 3752 PG. 76 - DEC. 6, 1985
5. PLAN SHOWING A SURVEY OF
THE LINE BETWEEN THE
CITY OF BIDDEFORD AND THE TOWNS OF ARUNDEL
AND KENNEBUNKPORT
DATED: JULY 1978
SHEET 3 OF 5
BY: DON & COHLOMBE, INC.
JOHN A. BELDING, RLS #1093
RECORDED: Y.C.R.D. PLAN BK. 109 PG. 39

RECORD OWNER:

SIX FORTY-TWO, LLC
593 ELM STREET
BIDDEFORD, MAINE 04005

LOCUS DEED REFERENCE:

ARUNDEL AUTO SERVICE, INC. TO
SIX FORTY-TWO, LLC
DATED: SEPTEMBER 16, 2022
RECORDED: Y.C.R.D. BK. 19114 PG. 416

PLAN SHOWING A STANDARD BOUNDARY SURVEY
MADE FOR
SIX FORTY-TWO, LLC
AT

642 ELM STREET, BIDDEFORD, MAINE

DATE: JULY 18, 2025 SCALE: 1" = 50'

BY: GUY F. CASAVANT, PLS #1301

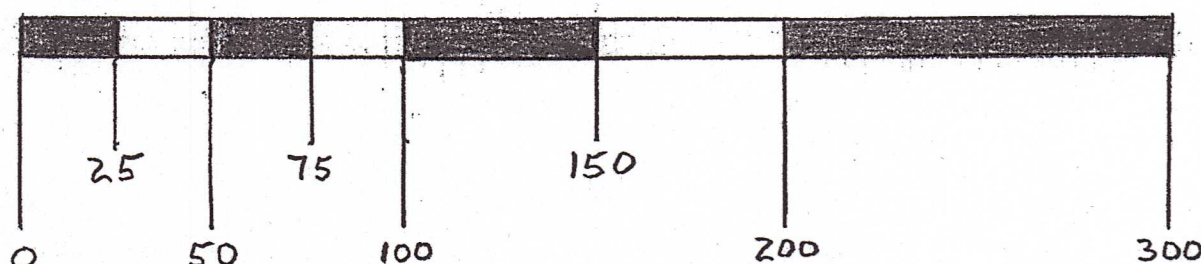
23 WESTLAND AVENUE, BIDDEFORD, MAINE 04005

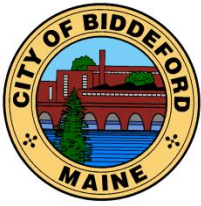
SURVEYOR'S CERTIFICATION:

THIS SURVEY CONFORMS TO THE MAINE STATE BOARD
OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS
RULES, CHAPTER 90, STANDARDS OF PRACTICE.

Guy F. Casavant
GUY F. CASAVANT, PLS #1301

GRAPHIC SCALE:





CITY OF BIDDEFORD

Planning and Development Department

David C.M. Galbraith
Deputy Director/City Planner
205 Main Street
P.O. Box 586
Biddeford, ME 04005
(207) 284-9115

David.Galbraith@biddefordmaine.org

PLANNING BOARD STAFF REPORT

TO: Chair Plotkin and Members of the Biddeford Planning Board

FROM: David C.M. Galbraith, City Planner & Acting Director of the Planning & Development Dept.

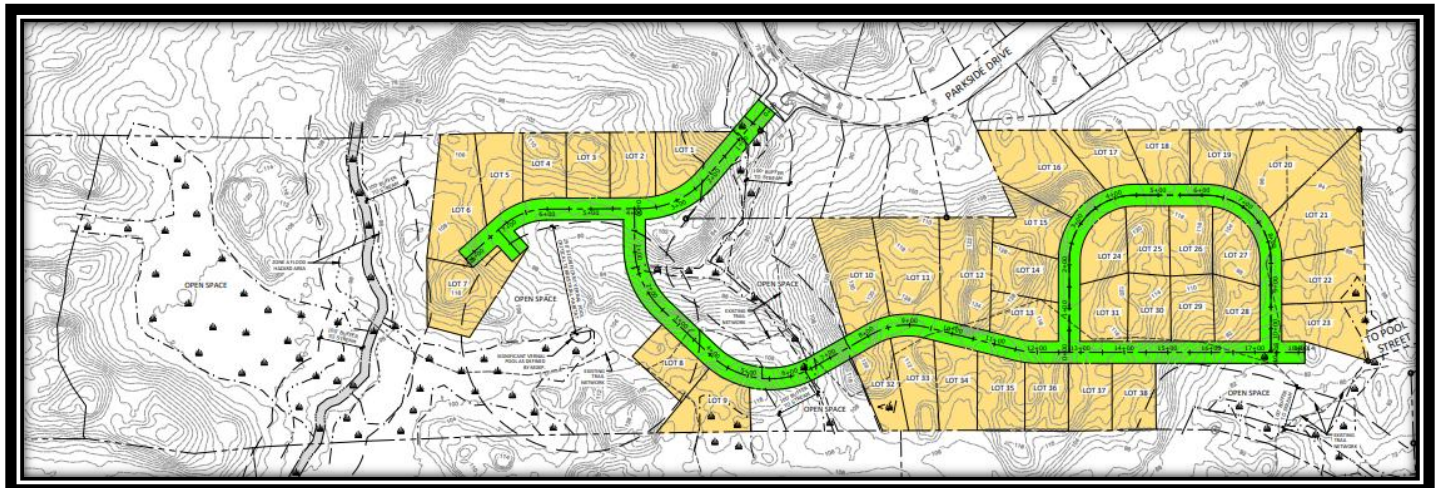
DATE: November 24, 2025

RE: **2025.11 Preliminary Plan Review for Bedard Homes, LLC for a proposed 38-lot single-family subdivision, called "The Woodlands Reserve" located off Parkside Drive and 268 Pool Street (Tax Map 8, Lot 52-1) in the Suburban Residential 1 (SR1) Zoning District and a portion within the Stream Protection Shoreland Overlay District.**

MEETING DATE: December 3, 2025, 6:00 PM

1. INTRODUCTION

The application is being presented by Jason Haskell, P.E. of DM Roma Consulting Engineers, and Agent for Bedard Homes, LLC., referred to as "Applicant or Applicants. This project was last before the Planning Board on August 6, 2025, for "Sketch Plan" review. As the Board may recall, This application was first presented to the Planning Board at the April 2, 2025, meeting where the Applicant proposed a 38-lot single-family subdivision development of a currently vacant 46.5-acre property located at 268 Pool Street, as shown below:



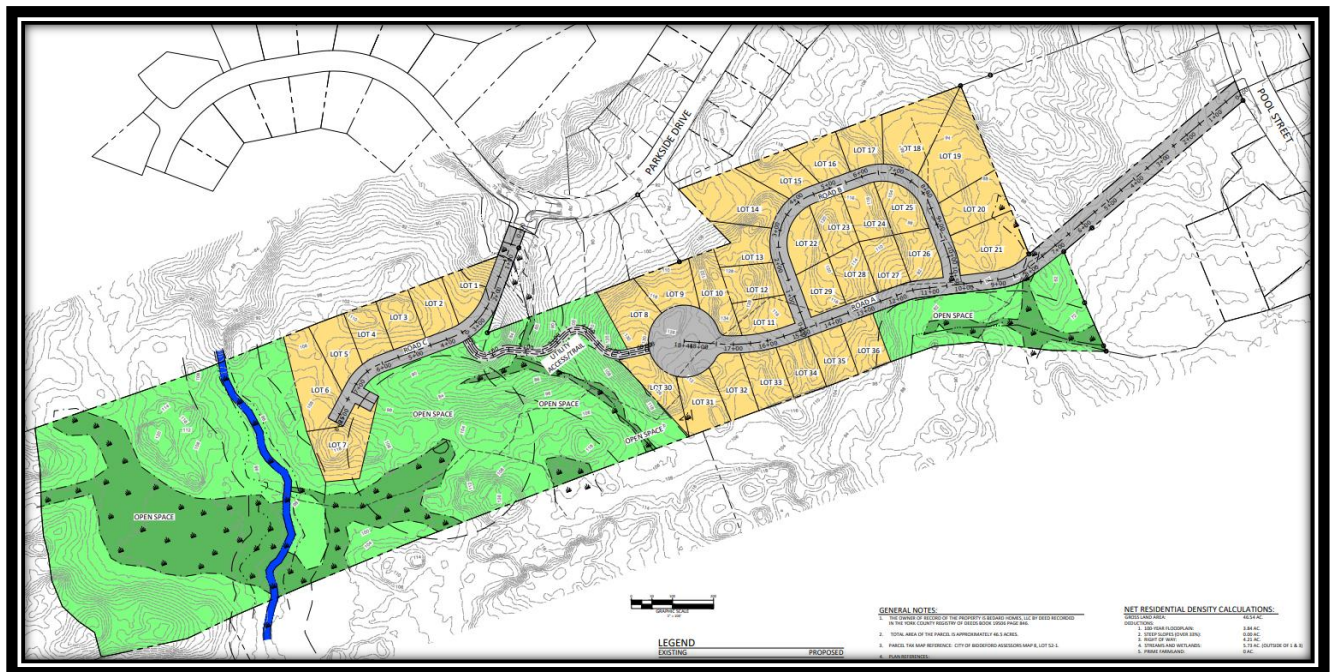
Proposed 38-lot Single-Family Subdivision off Parkside Drive and Pool Street

The Application was also scheduled for a second "Sketch Plan Review" at the June 18, 2025, Planning Board meeting, where the Applicant requested the application be tabled while they were consulting with Inland Fisheries and Wildlife (IF&W).

RE: 2025.11 Preliminary Plan Review for Bedard Homes, LLC for a proposed 38-lot single-family subdivision, called “The Woodlands Reserve” located off Parkside Drive and 268 Pool Street (Tax Map 8, Lot 52-1) in the Suburban Residential 1 (SR1) Zoning District and a portion within the Stream Protection Shoreland Overlay District.

MEETING DATE: December 3, 2025, at 6:00 PM

The Board asked the applicant to look at an alternative site plan that would limit the amount of traffic utilizing Parkside Drive as the initial application proposed for all of the proposed lots to be accessed off Parkside Drive. At that time the Applicant has reviewed the Board’s request and has amended their proposal from a 38-unit subdivision into a 36-lot subdivision where lots #1-7 would continue to access Parkside Drive and lots # 8-36 would have direct access to Pool Street, thus significantly reducing the traffic impacts to Parkside. A copy of their first amended plan is shown below, which incorporates the design elements discussed with the Board.

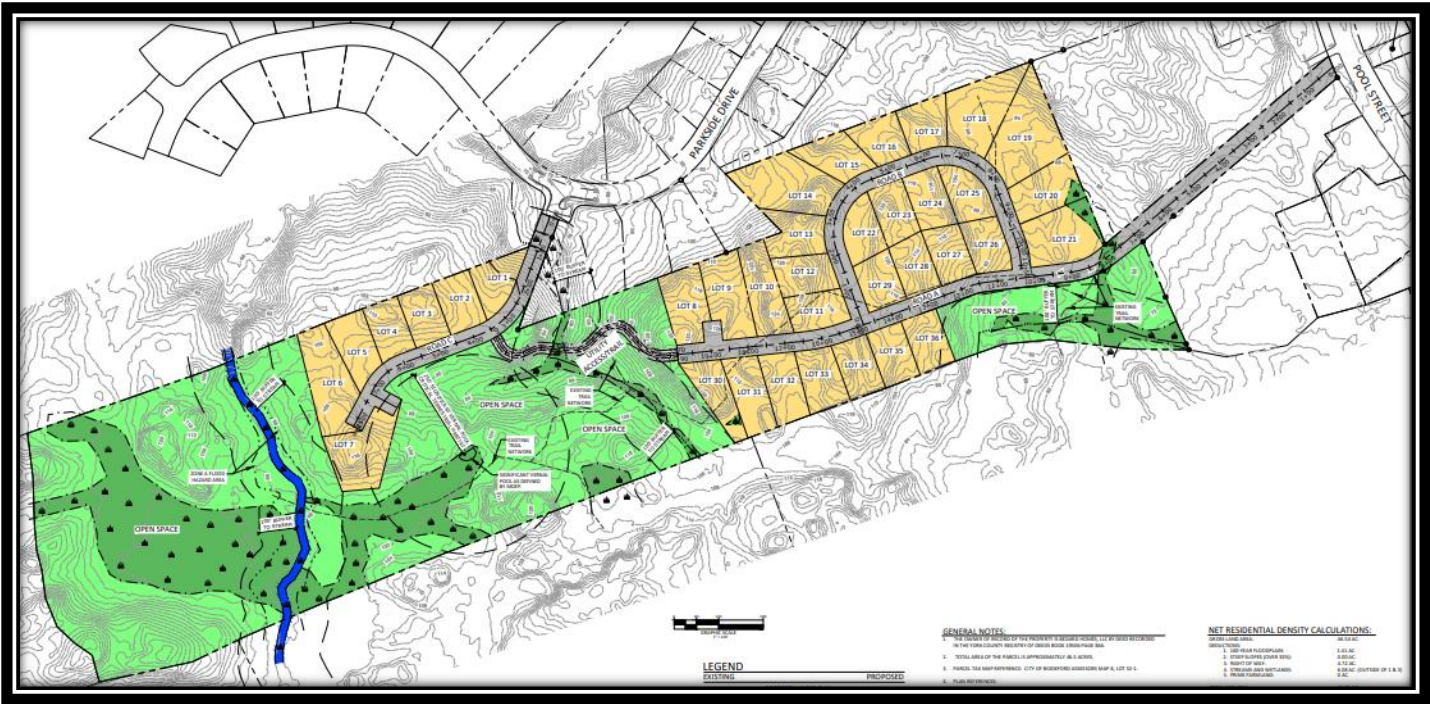


1st AMENDED Subdivision / 36-lot Single-Family Subdivision off Parkside Drive and Pool Street

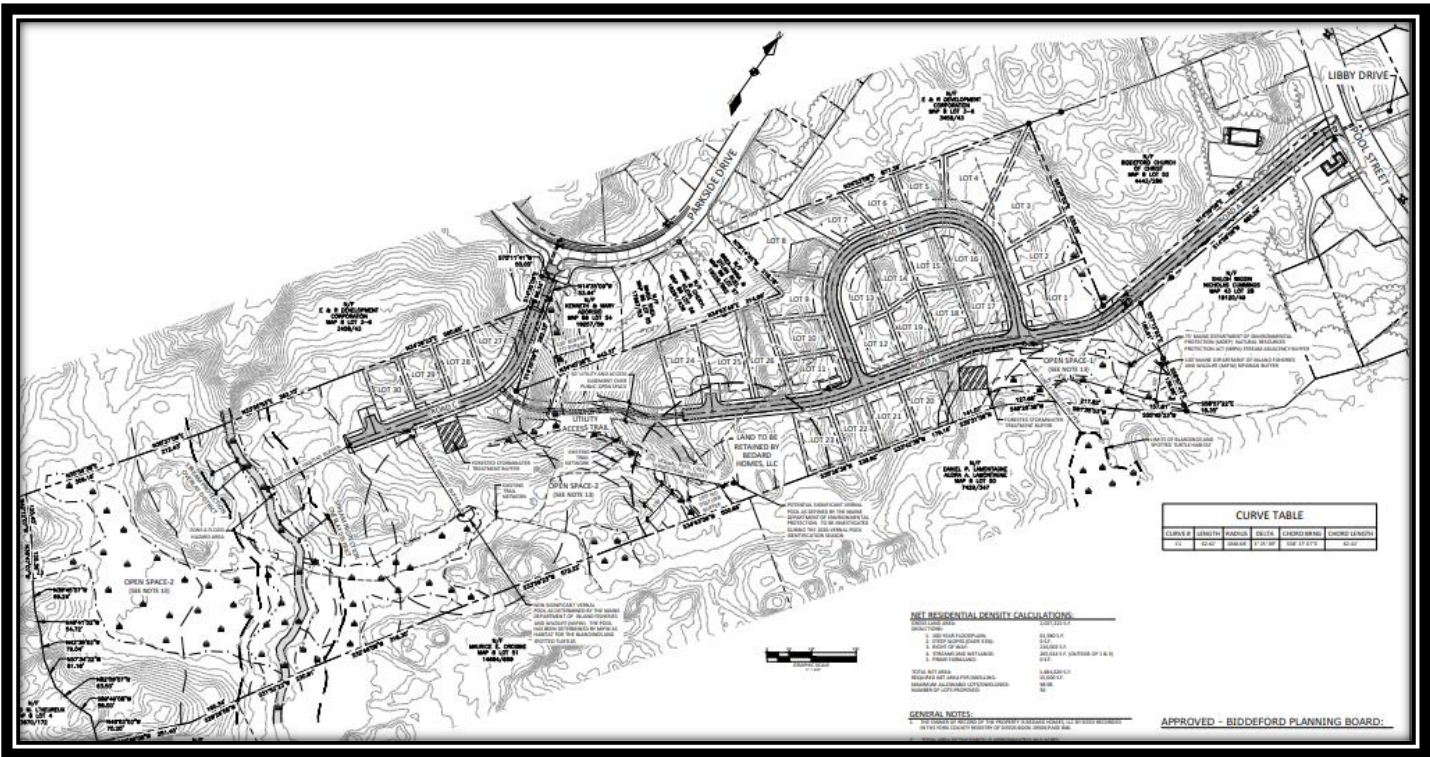
The above plans followed the Planning Board’s suggestions and separated the subdivision into two distinct developments removing the need for all of the lots to access Parkside Drive. Staff further worked with the development team in a slightly revised subdivision plan which maintains the design of the above plan while reducing impervious surface by eliminating the proposed cul-de-sac and replacing it with a “hammer-head” turn-around for emergency access / maneuvering. The most recent development design is shared below:

RE: 2025.11 Preliminary Plan Review for Bedard Homes, LLC for a proposed 38-lot single-family subdivision, called “The Woodlands Reserve” located off Parkside Drive and 268 Pool Street (Tax Map 8, Lot 52-1) in the Suburban Residential 1 (SR1) Zoning District and a portion within the Stream Protection Shoreland Overlay District.

MEETING DATE: December 3, 2025, at 6:00 PM



2nd AMENDED Subdivision / 36-lot Single-Family Subdivision off Parkside Drive and Pool Street

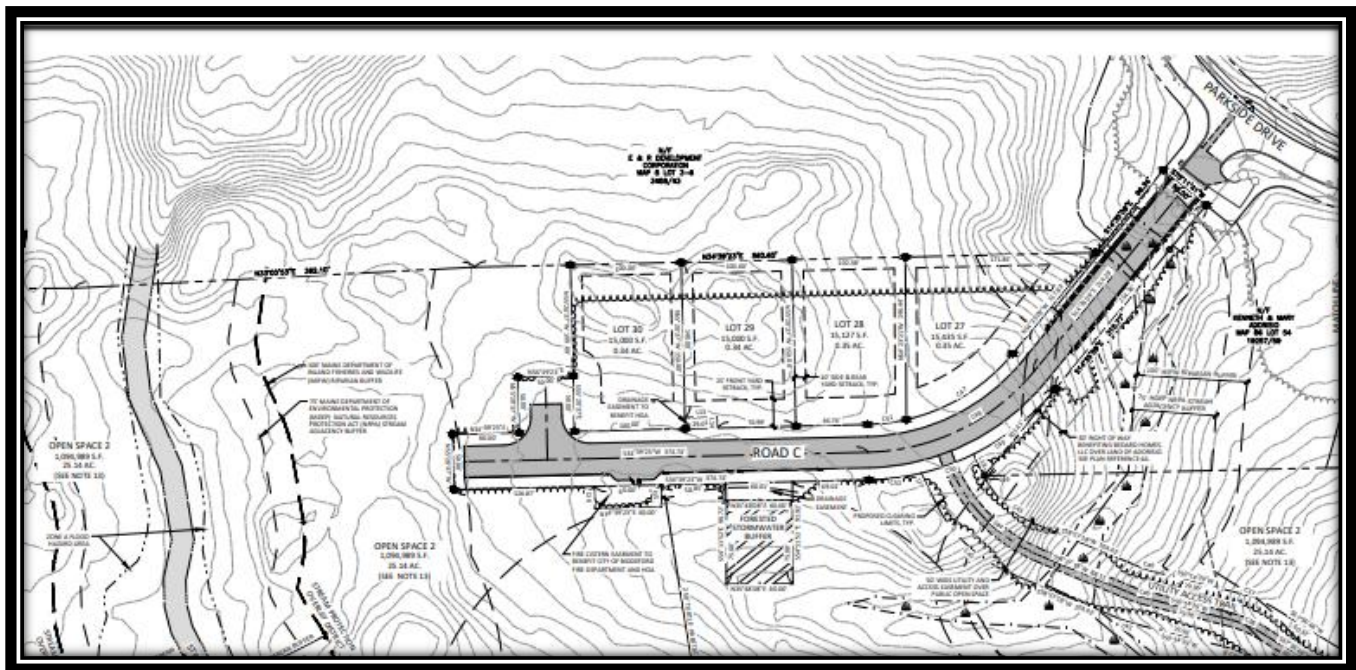


3rd AMENDED Subdivision / 30-lot Single-Family Subdivision off Parkside Drive and Pool Street

RE: 2025.11 Preliminary Plan Review for Bedard Homes, LLC for a proposed 38-lot single-family subdivision, called “The Woodlands Reserve” located off Parkside Drive and 268 Pool Street (Tax Map 8, Lot 52-1) in the Suburban Residential 1 (SR1) Zoning District and a portion within the Stream Protection Shoreland Overlay District.

MEETING DATE: December 3, 2025, at 6:00 PM

The Applicant’s most recent plan (3rd Amended Plan), shown above, reduces the proposed subdivision to a total of thirty (30) house lots which have been clustered and are accessed in two (2) locations; one accessed off Parkside Drive and the other directly off Pool Street. As the Board may recall, the original design includes 38 house lots all being accessed via Parkside Drive. The Applicant’s then modified their plans so that only seven (7) of the proposed lots would have vehicle access onto Parkside Drive. The most recent redesign has only four (4) lots accessing Parkside Drive (Lots # 27 through Lot #30).

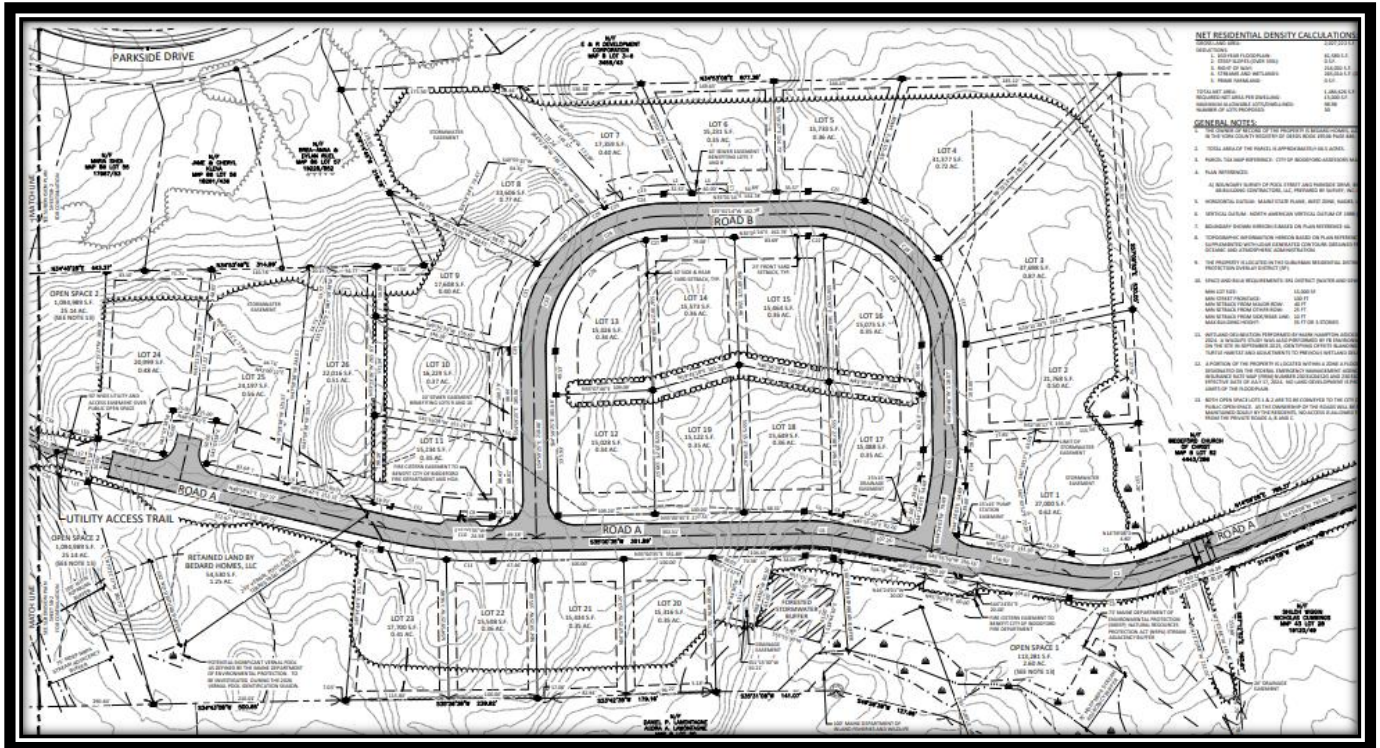


Parkside Drive Access to four (4) single-family houses lots.

The majority of the development (Lot # 1 through Lot # 26), as proposed will be accessed via Pool Road. The Applicant’s are proposing two new roadways (shown as Road A and Road B) which serve these 26 house lots. Road A provides a straight connection to the development from Pool Road and provides street frontage to 11 of the proposed lots. The roadway terminates in a hammerhead for emergency vehicle turn-around. “Road B” is a half-circle drive off “Road A” which serves the remaining 15 house lots. “Roadway A” connects to “Road C” via a “utility access trail” which connects the two sections of the development with a pedestrian path with underground utilities. “Road A” also illustrates two (2) “Fire Cistern Easements to Benefit the City of Biddeford Fire Department”, one located at Lot #11 and the other located across the street from Lot #1. As proposed and noted on Sheet SB-1 (Sheet 4 of 19), note #13 *“Both open space Lots 1 & 2 are to be conveyed to the City of Biddeford as Public Open Space. As the ownership of the roads will be private and maintained solely by the residents, No access is allowed to the open space from private Roads A, B, and C”*. Draft Homeowner’s Association (HOA) Documents shall be submitted for City review and approval prior to final plan submission. HOA documents shall address roadway plowing and maintenance, stormwater management, cistern management and annual stormwater reporting.

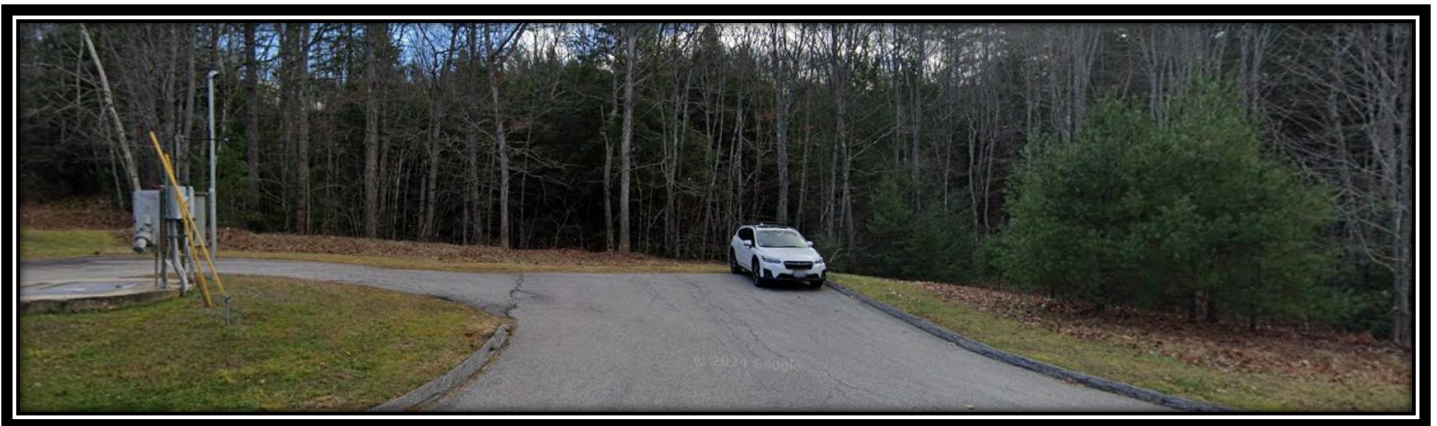
RE: 2025.11 Preliminary Plan Review for Bedard Homes, LLC for a proposed 38-lot single-family subdivision, called “The Woodlands Reserve” located off Parkside Drive and 268 Pool Street (Tax Map 8, Lot 52-1) in the Suburban Residential 1 (SR1) Zoning District and a portion within the Stream Protection Shoreland Overlay District.

MEETING DATE: December 3, 2025, at 6:00 PM



Woodlands Reserve Preliminary Subdivision Plan – Pool Road Access

When the proposed subdivision’s entrance was designed off Parkside Drive, a 100’ right-of-way was approved although only 50’ is required for a public right-of-way (ROW). Below is an image of the proposed “future entrance” to the proposed development which will access four (4) lots, namely, Lots # 27 through Lot #30.



Future access point for the proposed Lots # 27 through #30 for single-family homes

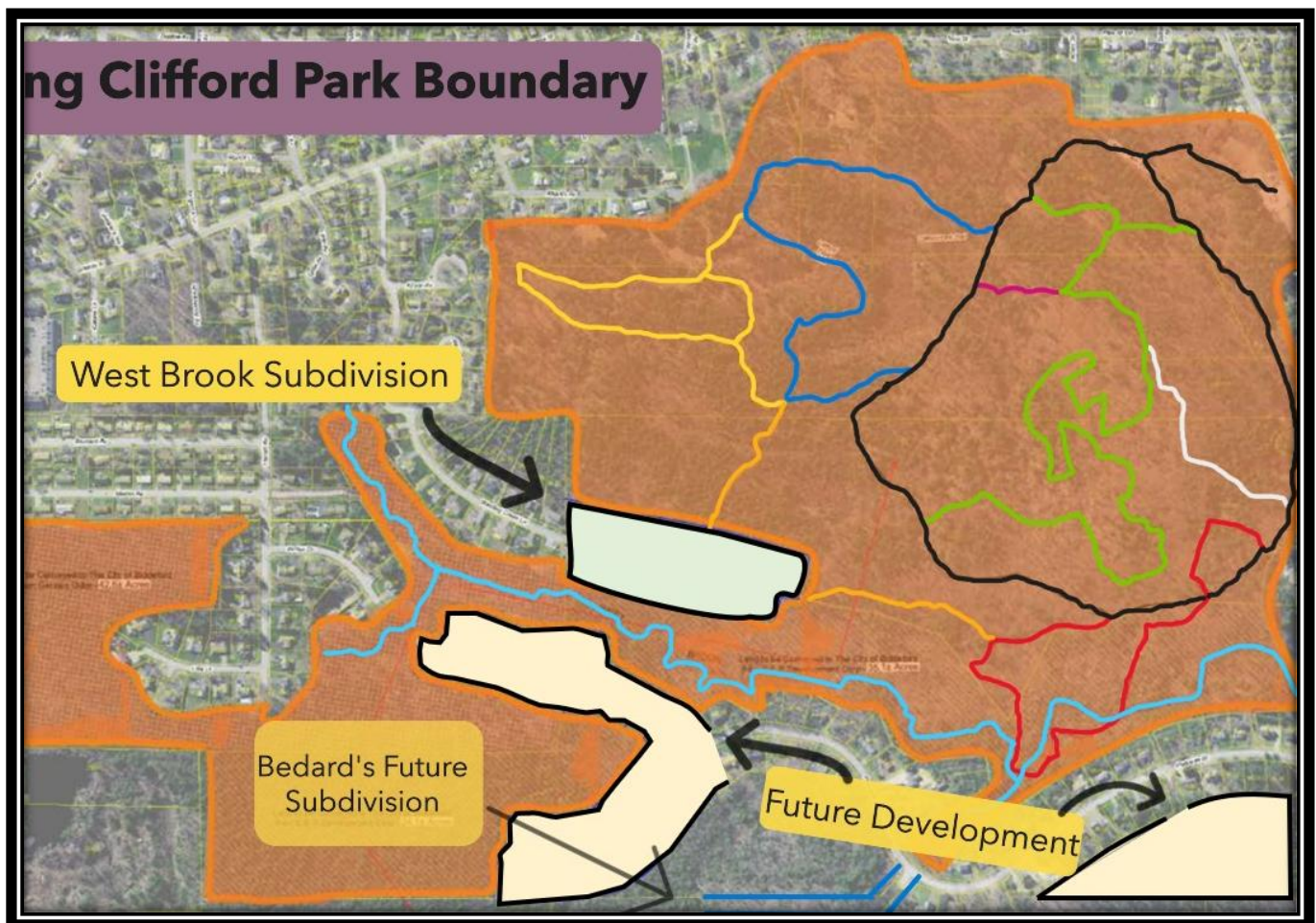
The proposed design is seeking to maximize the number of house lots being created while minimizing impacts on the natural environment. Although the property is 46.5-acres in area, the Applicants are

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MEETING DATE: December 3, 2025, at 6:00 PM

proposing to keep over 25-acres as dedicated open space, *“including a larger stream segment and associated Zone A Flood Hazard Area that bisects the site flowing to the northwest”*.

The lots are proposed to be served by public sewer and water extensions from Parkside Drive, and utilities will be provided underground. As outlined in their project narrative, *“stormwater treatment and flooding control is anticipated to be provided via a closed drainage system and under drained filter basins designed throughout the site”*. These designs are currently being finalized and plans drafted to the City’s satisfaction. The City has sewer capacity to accept this development and has issued a “Ability to Serve” letter.



Clifford Park Existing Boundary illustrated in orange – Bedard Subdivision bottom middle of image

The above map illustrates the existing stream in light blue; existing trails shown in black, green, red, white and yellow and future development areas illustrated in cream.

During the review of this subdivision, Staff has been aware of the environmental impact issues, protecting the natural environment while allowing for the development of private property. The above map illustrates Clifford park boundaries in orange, while also showing currently vacant development parcels which, once

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MEETING DATE: December 3, 2025, at 6:00 PM

proposed, will have their street access directly onto Parkside Drive. Staff and the Applicants have also been working on the most environmentally sensitive land are they are proposing to gift to the City so that it can add an additional 25 acres of land to Clifford Park. We continue to work together in a mutually beneficial way. Staff believes this conservation of the proposed 25 acres is a win for the developers, “the City”, and surrounding neighborhoods.

2. PROJECT DATA/INFORMATION

1.		Applicant:	Bedard Homes, LLC PO Box 481 Biddeford, ME 04005
2.		Owner of Property:	Bedard Homes, LLC PO Box 481 Biddeford, ME 04005
3.		Agent:	Jason Haskell, P.E. D.M. Roma Consulting Engineers PO Box 1116 Windham, ME 04062
4.		Surveyor:	Survey, Inc. PO Box 210 Windham, Maine 04062
5.		Project Location:	268 Pool Street, Biddeford, ME
6.		Project Tax Map #/Lot #:	Tax Map 8, Lot 52-1
7.		Lot Size:	46.5-acres
8.		Base Zoning:	Suburban Residential 1 (SR-1)
9.		Overlay Zoning:	Stream Protection Shoreland Overlay District
10.		Existing Use:	Vacant
11.		Proposed Use:	38-unit single-family homes
12.		Approvals Required:	Subdivision/Site Plan
13.		Uses in the Vicinity:	Residential / openspace
14.		Waivers Needed:	a. None
15.		Waivers Granted:	a. None
16.		Other Non-City Permits Required:	a. None
17.		LDR Attachment A: Fees Paid	Sketch Plan Fees Paid
18.		Planning Board Review History: Sketch Plan- April 2, 2025 Sketch Plan Review 2 – June 18, 2025. Sketch Plan Review 3 – August 6, 2025. Site Walk – September 3, 2025. Preliminary Plan Review – December 3, 2025.	

3. REVIEW PROCESS

RE: 2025.11 Preliminary Plan Review for Bedard Homes, LLC for a proposed 38-lot single-family subdivision, called “The Woodlands Reserve” located off Parkside Drive and 268 Pool Street (Tax Map 8, Lot 52-1) in the Suburban Residential 1 (SR1) Zoning District and a portion within the Stream Protection Shoreland Overlay District.

MEETING DATE: December 3, 2025, at 6:00 PM

Per City ordinance, this application is subject to Subdivision Review (Chapter 66 – Subdivisions) and site plan approval by the Planning Board. This process involves Sketch Plan review, followed by Preliminary Plan Review, and ultimately Final Plan review / approval. The project will also require the following:

- A. Site Location of Development Act review under the City’s delegated review status.
- B. A Chapter 500 Stormwater Permit issued by the Maine Department of Environmental Protection (MDEP).

4. GENERAL REVIEW COMMENTS:

- **APPLICATION COMPLETENESS:** This application is being submitted for Preliminary Plan review, and Staff remain confident that this project will continue to move ahead with full Staff support.
- **ZONING:** The subject property is zoned Suburban Residential 1 (SR-1) and single-family dwellings are permitted use within the district.
- **REVIEW STANDARDS:**

Staff found the Preliminary Site / Subdivision Plan application satisfy City subdivision requirements.

- **WAIVERS:** None

5. STAFF REVIEW COMMENTS:

A. Planning Department Comments:

- 1) The Applicants are proposing to keep approximately 24.5-acres as dedicated open space, *“including a larger stream segment and associated Zone A Flood Hazard Area that bisects the site flowing to the northwest”*. It has not yet been determined who will be the future owner of the open space provided (conservation or open space), but it may be offered to a land trust, the City, or it may remain with the homeowner’s association. Due to the close proximity of Clifford Park to the development, it appears that this proposed openspace could remain protected permanently and connect to other undisturbed habitats and allow for species migration between the protected areas. Staff are supportive of the proposed openspace being dedicated to the City to combine it with Clifford Park so that subject land may be protected in perpetuity. This openspace dedication concept will need to be reviewed and approved by the City Council prior to Final Plan Review.

6. STAFF RECOMMENDATION

Staff have been working diligently with the Applicant to regarding the design of the now amended subdivision plan, have been working through the sewer and water upgrades and the future land dedication for preservation. The Applicants have been very responsive to Staff’s comments. The Application before the Board this evening is for Subdivision “Preliminary Plan Review” and Staff is supportive of this development project and recommends the Planning Board Approve this application for Preliminary Site and Subdivision Review.

RE: 2025.11 Preliminary Plan Review for Bedard Homes, LLC for a proposed 38-lot single-family subdivision, called “The Woodlands Reserve” located off Parkside Drive and 268 Pool Street (Tax Map 8, Lot 52-1) in the Suburban Residential 1 (SR1) Zoning District and a portion within the Stream Protection Shoreland Overlay District.

MEETING DATE: December 3, 2025, at 6:00 PM

Planning Board Sample Motions:

- A. Motion to Approve: I motion to APPROVE Case # 2025.11 Preliminary Site and Subdivision Plan Review for Bedard Homes, LLC for a proposed 38-lot single-family subdivision, called “The Woodlands Reserve” located off Parkside Drive and 268 Pool Street (Tax Map 8, Lot 52-1) in the Suburban Residential 1 (SR1) Zoning District and a portion within the Stream Protection Shoreland Overlay District.

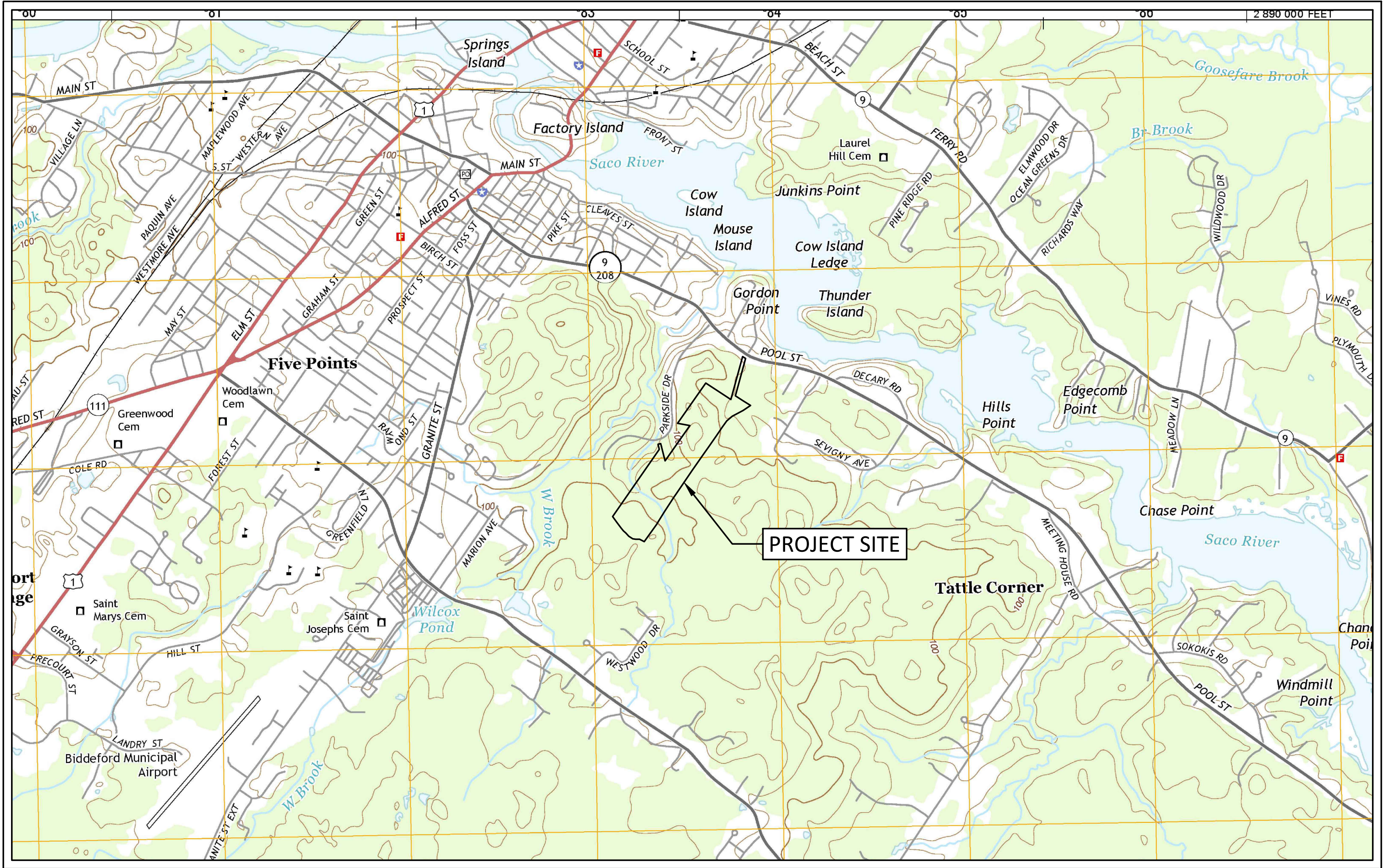
- B. Motion to Deny I motion to DENY Case # 2025.11 Preliminary Site and Subdivision Plan Review for Bedard Homes, LLC for a proposed 38-lot single-family subdivision, called “The Woodlands Reserve” located off Parkside Drive and 268 Pool Street (Tax Map 8, Lot 52-1) in the Suburban Residential 1 (SR1) Zoning District and a portion within the Stream Protection Shoreland Overlay District, for the following reasons:
 - 1) _____.
 - 2) _____.
 - 3) _____.

- C. Motion to Table: I motion to TABLE Case # 2025.11 Preliminary Site and Subdivision Plan Review for Bedard Homes, LLC for a proposed 38-lot single-family subdivision, called “The Woodlands Reserve” located off Parkside Drive and 268 Pool Street (Tax Map 8, Lot 52-1) in the Suburban Residential 1 (SR1) Zoning District and a portion within the Stream Protection Shoreland Overlay District., for the following reasons:
 - 1) _____.
 - 2) _____.
 - 3) _____.

THE WOODLANDS RESERVE SUBDIVISION

POOL STREET & PARKSIDE DRIVE
BIDDEFORD, MAINE

CONSULTANTS	
CIVIL ENGINEER	DM ROMA CONSULTING ENGINEERS
LAND SURVEYOR	SURVEY, INC.
SOILS SCIENTIST	MARK HAMPTON ASSOCIATES, INC.
WILDLIFE BIOLOGIST	FB ENVIRONMENTAL ASSOCIATES



PROJECT VICINITY MAP

ISSUED FOR PRELIMINARY SUBDIVISION REVIEW - NOT FOR CONSTRUCTION
NOVEMBER 3, 2025

PREPARED BY:

DM ROMA

CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 591-5055

APPLICANT:
BEDARD HOMES, LLC
PO BOX 481
BIDDEFORD, MAINE 04005

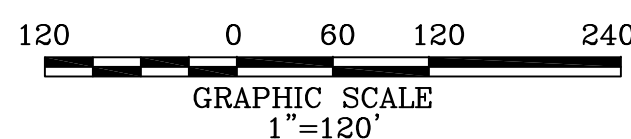
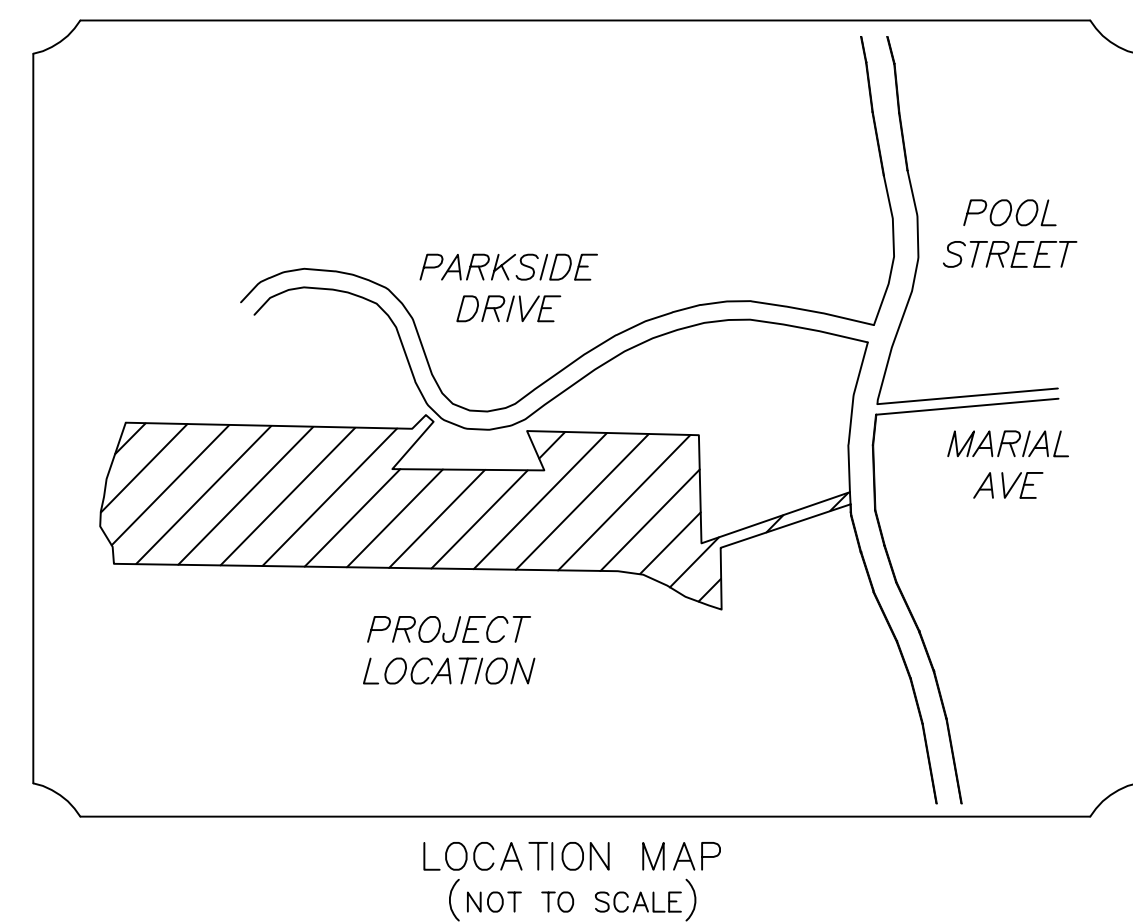
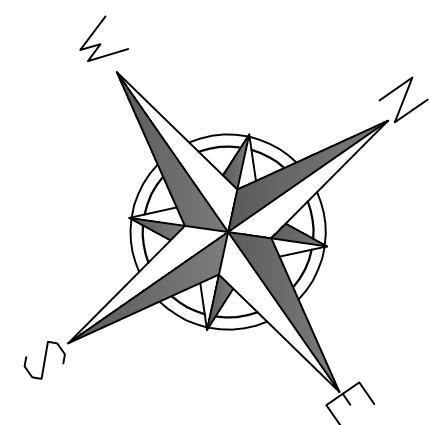
THE WOODLANDS RESERVE SUBDIVISION

DRAWING SHEET INDEX

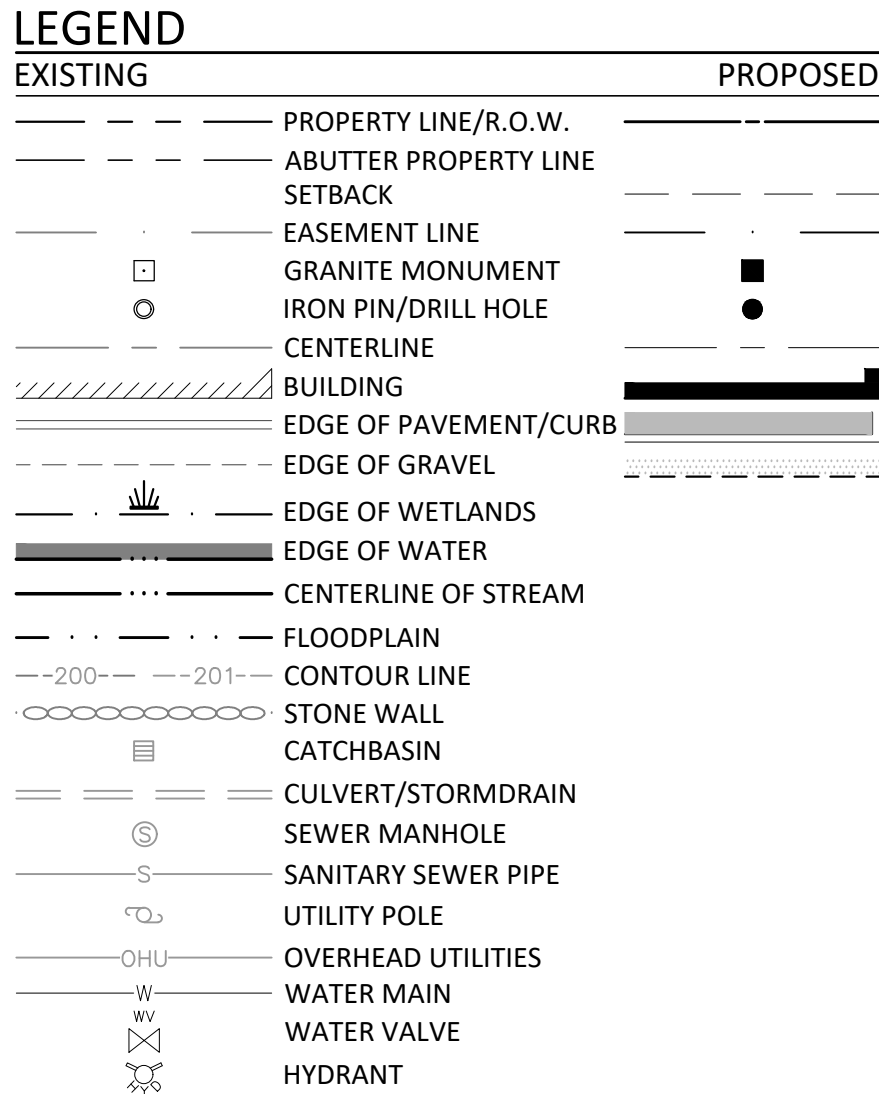
PAGE NO.	DESCRIPTION
1	TITLE SHEET
2	BOUNDARY SURVEY
3	OVERALL SUBDIVISION PLAN
4	SUBDIVISION PLAN
5	SUBDIVISION PLAN
6	STRUCTURE & PIPE TABLES - CONSTRUCTION NOTES
7	PLAN & PROFILE: ROAD A
8	PLAN & PROFILE: ROAD A
9	PLAN & PROFILE: ROAD A
10	PLAN & PROFILE: ROAD B
11	PLAN & PROFILE: ROAD B
12	PLAN & PROFILE: ROAD C
13	PLAN & PROFILE: UTILITY ACCESS TRAIL
14	STORMWATER POND PLAN
15	DETAILS
16	DETAILS
17	DETAILS
18	DETAILS
19	DETAILS

PERMITTING PLAN ATTACHMENTS

CLASS B - HIGH INTENSITY SOILS SURVEY
WATERSHED MAP - EXISTING CONDITIONS
WATERSHED MAP - DEVELOPED CONDITIONS



A circular professional seal for a land surveyor in the State of Maine. The outer ring contains the text "STATE OF MAINE" at the top and "PROFESSIONAL LAND SURVEYOR" at the bottom, separated by two stars. The center of the seal contains the name "WILLIAM C. SHIPPEN" and the number "2118".



CURVE TABLE					
CURVE #	LENGTH	RADIUS	DELTA	CHORD BRNG	CHORD LENGTH
C1	62.42'	1046.08'	3° 25' 09"	S58° 27' 07"E	62.41'

GROSS LAND AREA:	2,027,222 S.F.
DEDUCTIONS:	
1. 100-YEAR FLOODPLAIN:	61,580 S.F.
2. STEEP SLOPES (OVER 33%):	0 S.F.
3. RIGHT OF WAY:	216,002 S.F.
4. STREAMS AND WETLANDS:	265,014 S.F. (OUTSIDE OF 1 & 3)
5. PRIME FARMLAND:	0 S.F.
TOTAL NET AREA:	1,484,626 S.F.
REQUIRED NET AREA PER DWELLING:	15,000 S.F.
MAXIMUM ALLOWABLE LOTS/DWELLINGS:	98.98
NUMBER OF LOTS PROPOSED:	30

1. THE OWNER OF RECORD OF THE PROPERTY IS BEDARD HOMES, INC. BY DEED RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS BOOK 19506 PAGE 846.
2. TOTAL AREA OF THE PARCEL IS APPROXIMATELY 46.5 ACRES.
3. PARCEL TAX MAP REFERENCE: CITY OF BIDEFORD ASSESSORS MAP 8, LOT 52-1.
4. PLAN REFERENCE:
 - A) BOUNDARY SURVEY OF POOL STREET AND PARKSIDE DRIVE, BIDEFORD, MAINE BY KB BUILDING CONTRACTORS, LLC, PREPARED BY SURVEY, INC. DATED JANUARY 2025
5. HORIZONTAL DATUM: MAINE STATE PLANE, WEST ZONE, NAD83, U.S. FEET.
6. VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAV88B)
7. BOUNDARY SHOWN HEREON IS BASED ON PLAN REFERENCE 4A.
8. TOPOGRAPHIC INFORMATION HEREON BASED ON PLAN REFERENCE 4A AND SUPPLEMENTED WITH LIDAR GENERATED CONTOURS OBTAINED FROM THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION.
9. THE PROPERTY IS LOCATED IN THE SUBURBAN RESIDENTIAL DISTRICT (SR1) AND STREAM PROTECTION OVERLAY DISTRICT (SP).
10. SPACE AND BULK REQUIREMENTS: SR1 DISTRICT (WATER AND SEWER)

MIN LOT SIZE:	15,000 SF
MIN STREET FRONTAGE:	100 FT
MIN SETBACK FROM MAJOR ROAD:	40 FT
MIN SETBACK FROM OTHER ROAD:	25 FT
MIN SETBACK FROM SIDE/REAR LINE:	10 FT
MAX BUILDING HEIGHT:	35 FT OR 3 STORIES
11. WETLAND DELINEATION PERFORMED BY MARK HAMPTON ASSOCIATES, INC. IN OCTOBER 2024. A WILDLIFE STUDY WAS ALSO PERFORMED BY FB ENVIRONMENTAL ASSOCIATES ON THE SITE IN SEPTEMBER 2025. IDENTIFYING OFFSITE BLANDINGS AND SPOTTED TURTLE HABITAT AND ADJUSTMENTS TO PREVIOUS WETLAND DELINEATION.
12. A PORTION OF THE PROPERTY IS LOCATED WITHIN A ZONE A FLOOD HAZARD AREA AS DESIGNATED ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) NUMBER 23031C04526 AND 23031C04566 WITH AN EFFECTIVE DATE OF JULY 17, 2024. NO LAND DEVELOPMENT IS PROPOSED WITHIN THE LIMITS OF THE FLOODPLAIN.
13. BOTH OPEN SPACE LOTS 1 & 2 ARE TO BE CONVEYED TO THE CITY OF BIDEFORD AS PUBLIC OPEN SPACE. AS THE OWNERSHIP OF THE ROADS WILL BE PRIVATE AND MAINTAINED SOLELY BY THE RESIDENTS, NO ACCESS IS ALLOWED TO THE OPEN SPACE FROM THE PRIVATE ROADS A, B AND C.

[illegible]

STATE OF MAINE	
_____ COUNTY SS. REGISTRY OF DEEDS	
RECEIVED _____,	20 _____
AT _____h _____m _____M AND RECORDED IN	
PLAN BOOK _____	PAGE _____
ATTEST: _____	REGISTER

DM ROMA
CONSULTING ENGINEERS

P.O. BOX 1116
WINDHAM, ME 04062
(207) 591-5055

[illegible]

OVERALL SUBDIVISION PLAN

THE WOODLANDS RESERVE SUBDIVISION
POOL STREET, PARKSIDE DRIVE, LIBBY DRIVE, ROAD A, ROAD B & ROAD C

BIDDEFORD, MAINE
FOR RECORD OWNER:

BEDARD HOMES, LLC

PO BOX 481
BIDDEFORD, MAINE 04005

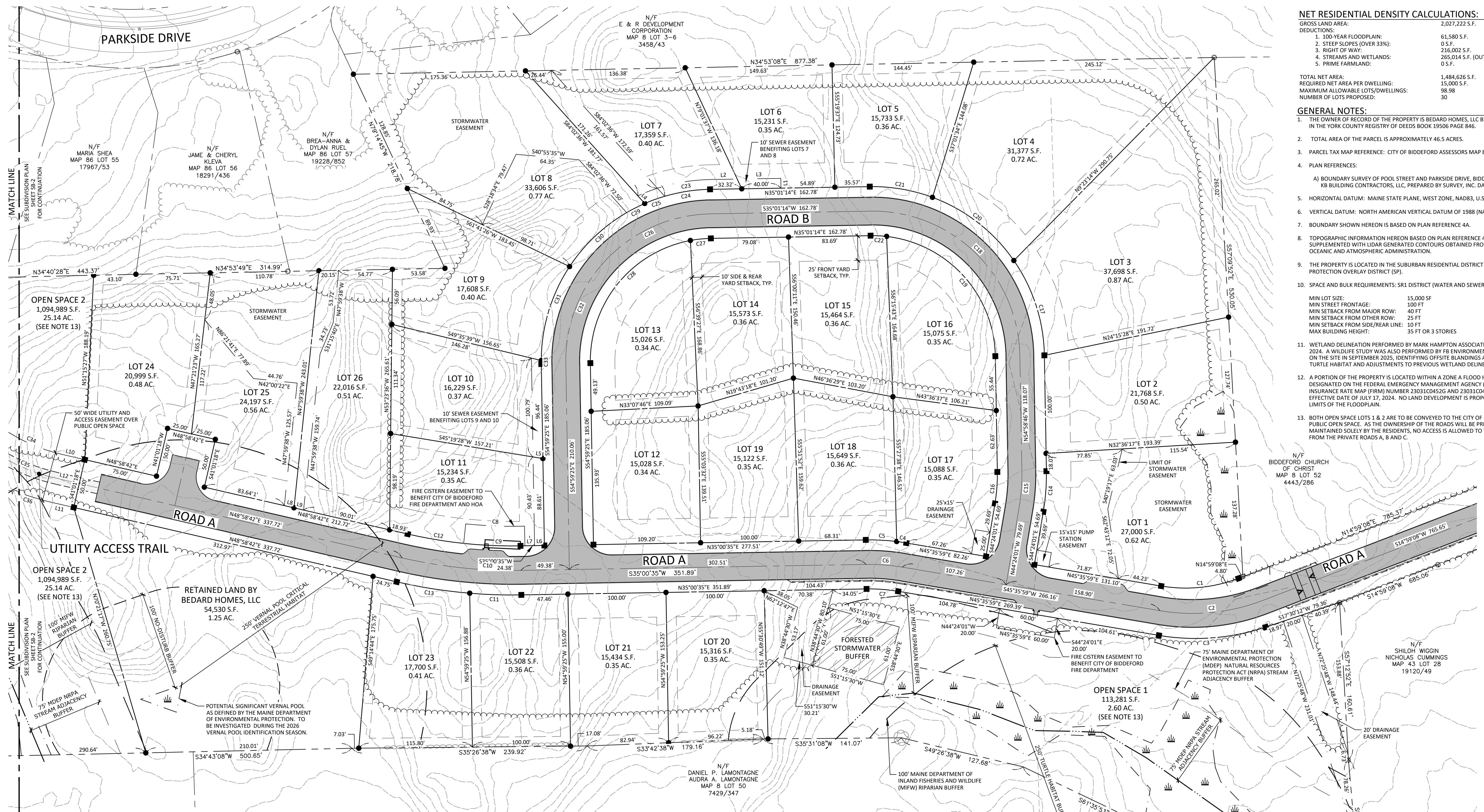
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DATE:

SHEET 3 OF 18

OSB-1

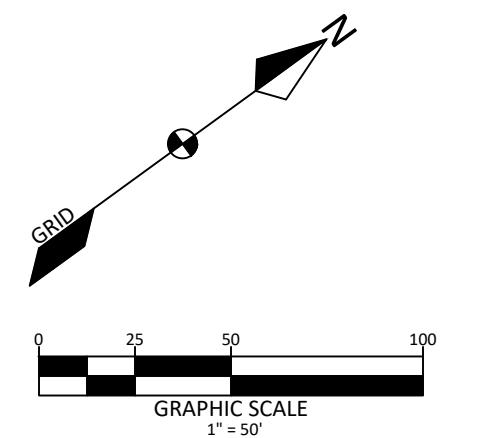


NET RESIDENTIAL DENSITY CALCULATIONS:

GROSS LAND AREA:	2,027,222 S.F.
DEDUCTIONS:	
1. 100-YEAR FLOODPLAIN:	61,580 S.F.
2. STEEP SLOPES (OVER 33%):	0 S.F.
3. RIGHT OF WAY:	216,002 S.F.
4. STREAMS AND WETLANDS:	265,014 S.F. (OUTSIDE OF 1 & 3)
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REQUIRED NET AREA PER DWELLING:	15,000 S.F.
MAXIMUM ALLOWABLE LOTS/DWELLINGS:	98.98
NUMBER OF LOTS PROPOSED:	30

- GENERAL NOTES:**
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 - TOTAL AREA OF THE PARCEL IS APPROXIMATELY 46.5 ACRES.
 - PARCEL TAX MAP REFERENCE: CITY OF BIDDEFORD ASSESSORS MAP 8, LOT 52-1.
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 - MIN STREET FRONTAGE: 100 FT
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 - A PORTION OF THE PROPERTY IS LOCATED WITHIN A ZONE A FLOOD HAZARD AREA AS DESIGNATED ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) NUMBER 23031C0452C AND 23031C0456G WITH AN EFFECTIVE DATE OF JULY 17, 2024. NO LAND DEVELOPMENT IS PROPOSED WITHIN THE LIMITS OF THE FLOODPLAIN.
 - BOTH OPEN SPACE LOTS 1 & 2 ARE TO BE CONVEYED TO THE CITY OF BIDDEFORD AS PUBLIC OPEN SPACE. AS THE OWNERSHIP OF THE ROADS WILL BE PRIVATE AND MAINTAINED SOLELY BY THE RESIDENTS, NO ACCESS IS ALLOWED TO THE OPEN SPACE FROM THE PRIVATE ROADS A, B AND C.

- LEGEND**
- EXISTING**
- PROPERTY LINE/R.O.W.
 - ABUTTER PROPERTY LINE SETBACK
 - EASEMENT LINE
 - GRANITE MONUMENT
 - IRON PIN/DRILL HOLE
 - CENTERLINE
 - BUILDING
 - EDGE OF PAVEMENT/CURB
 - EDGE OF GRAVEL
 - EDGE OF WETLANDS
 - EDGE OF WATER
 - CENTERLINE OF STREAM
 - FLOODPLAIN
 - CONTOUR LINE
 - STONE WALL
 - CATCHBASIN
 - CULVERT/STORMDRAIN
 - SEWER MANHOLE
 - SANITARY SEWER PIPE
 - UTILITY POLE
 - OVERHEAD UTILITIES
- PROPOSED**
- PROPERTY LINE/R.O.W.
 - ABUTTER PROPERTY LINE SETBACK
 - EASEMENT LINE
 - GRANITE MONUMENT
 - IRON PIN/DRILL HOLE
 - CENTERLINE
 - BUILDING
 - EDGE OF PAVEMENT/CURB
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 - CULVERT/STORMDRAIN
 - SEWER MANHOLE
 - SANITARY SEWER PIPE
 - UTILITY POLE
 - OVERHEAD UTILITIES



CURVE TABLE					
CURVE #	LENGTH	RADIUS	DELTA	CHORD BRNG	CHORD LENGTH
C1	80.15'	150.00'	30° 36' 50"	N30° 17' 34"E	79.20'
C2	106.86'	200.00'	30° 36' 50"	S30° 17' 34"W	105.60'
C3	110.33'	225.00'	28° 05' 47"	N31° 33' 05"E	109.23'
C4	10.04'	225.00'	2° 33' 23"	S44° 19' 17"W	10.04'
C5	31.55'	225.00'	8° 02' 00"	S39° 01' 36"W	31.52'
C6	36.97'	200.00'	10° 35' 23"	S40° 18' 17"W	36.91'
C7	32.34'	175.00'	10° 35' 23"	S40° 18' 17"W	32.30'
C8	60.00'	455.00'	7° 33' 20"	N38° 13' 27"E	59.96'
C9	57.97'	475.00'	6° 59' 32"	N38° 30' 21"E	57.93'
C10	121.90'	500.00'	13° 58' 07"	S41° 59' 39"W	121.60'
C11	52.63'	525.00'	5° 44' 37"	N37° 52' 54"E	52.61'
C12	57.84'	475.00'	6° 58' 35"	N45° 29' 25"E	57.80'
C13	75.37'	525.00'	8° 13' 30"	N44° 51' 58"E	75.30'
C14	41.54'	225.00'	10° 34' 45"	S49° 41' 24"E	41.48'
C15	36.93'	200.00'	10° 34' 45"	N49° 41' 24"W	36.88'
C16	32.31'	175.00'	10° 34' 45"	S49° 41' 24"E	32.27'
C17	103.03'	175.00'	33° 43' 58"	S71° 50' 45"E	101.55'
C18	235.62'	150.00'	90° 00' 00"	S80° 01' 14"W	212.13'
C19	180.00'	125.00'	82° 30' 26"	N83° 46' 01"E	164.85'
C20	106.65'	175.00'	34° 55' 06"	N73° 49' 43"E	105.01'
C21	65.21'	175.00'	21° 20' 56"	N45° 41' 42"E	64.83'

CURVE TABLE					
CURVE #	LENGTH	RADIUS	DELTA	CHORD BRNG	CHORD LENGTH
C22	16.35'	125.00'	7° 29' 34"	N38° 46' 01"E	16.34'
C23	75.80'	185.00'	23° 28' 31"	S23° 16' 59"W	75.27'
C24	46.94'	175.00'	15° 22' 10"	S27° 20' 09"W	46.80'
C25	21.60'	175.00'	7° 04' 14"	S16° 06' 58"W	21.58'
C26	235.65'	150.00'	90° 00' 39"	S9° 59' 05"E	212.15'
C27	21.00'	125.00'	9° 37' 33"	S30° 12' 28"W	20.98'
C28	175.37'	125.00'	80° 23' 06"	S14° 47' 52"E	161.34'
C29	20.73'	175.00'	6° 47' 15"	S9° 11' 13"W	20.72'
C30	80.68'	175.00'	26° 24' 56"	S7° 24' 52"E	79.97'
C31	101.41'	175.00'	33° 12' 11"	S37° 13' 26"E	100.00'
C32	235.65'	150.00'	90° 00' 39"	S9° 59' 05"E	212.15'
C33	3.56'	175.00'	1° 09' 53"	S54° 24' 28"E	3.56'
C34	56.92'	175.00'	18° 38' 03"	S58° 17' 44"W	56.66'
C35	65.05'	200.00'	18° 38' 03"	S58° 17' 44"W	64.76'
C36	73.18'	225.00'	18° 38' 03"	S58° 17' 44"W	72.85'

LINE TABLE		
LINE #	LENGTH	BEARING
L1	10.00'	N54° 58' 46"W
L2	27.86'	N35° 01' 14"E
L3	44.46'	N35° 01' 14"E
L4	10.52'	N84° 02' 36"E
L5	10.16'	N45° 19' 28"E
L6	10.00'	N35° 00' 35"E
L7	9.90'	N35° 00' 35"E
L8	10.07'	N48° 58' 42"E
L9	10.07'	N48° 58' 42"E
L10	24.52'	S48° 58' 42"W
L11	24.52'	S48° 58' 42"W
L12	24.52'	S48° 58' 42"W

APPROVED - BIDDEFORD PLANNING BOARD:

CHAIRPERSON	DATE

STATE OF MAINE	
COUNTY SS. REGISTRY OF DEEDS	
RECEIVED	20
AT	h m M AND RECORDED IN
PLAN BOOK	PAGE
ATTEST:	REGISTER

NOT FOR CONSTRUCTION

STATE OF MAINE
JAYSON R. HASKELL
No. 13002
Professional Seal
11-3-2025

DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 591-5055

REV	DATE	BY	DESCRIPTION
A	11-3-25	JRH	ISSUED FOR PERMITTING

SUBDIVISION PLAN

THE WOODLANDS RESERVE SUBDIVISION
POOL STREET, PARKSIDE DRIVE, ROAD A, ROAD B & ROAD C
BIDDEFORD, MAINE

FOR RECORD OWNER:
BEDARD HOMES, LLC
PO BOX 483
BIDDEFORD, MAINE 04005

24036
JOB NUMBER:

1" = 50'
SCALE:

11-3-2025
DATE:

SHEET 4 OF 19

SB-1

EROSION AND SEDIMENTATION CONTROL NOTES:

EXCAVATION AND EARTHWORK SHALL BE COMPLETED SUCH THAT NO MORE THAN 1 ACRE OF THE SITE IS WITHOUT STABILIZATION AT ANY ONE TIME. LIMIT THE EXPOSED AREA TO THOSE AREAS IN WHICH WORK IS TO OCCUR DURING THE FOLLOWING 15 DAYS AND THAT CAN BE MULCHED IN ONE DAY.

IN ORDER TO EFFECTIVELY PREVENT AND CONTROL EROSION RELATED TO SOIL DISTURBANCE, THE FOLLOWING BEST MANAGEMENT PRACTICES (BMPs) SHALL BE EMPLOYED:

1. POLLUTION PREVENTION

MINIMIZE DISTURBED AREAS AND PROTECT NATURAL DOWNGRADIENT BUFFER AREAS TO THE EXTENT PRACTICABLE. CONTROL STORMWATER VOLUME AND VELOCITY WITHIN THE SITE TO MINIMIZE SOIL EROSION, MINIMIZE THE DISTURBANCE OF STEEP SLOPES, CONTROL STORMWATER DISCHARGES, INCLUDING BOTH PEAK FLOW RATES AND VOLUME, TO MINIMIZE EROSION AT OUTLETS, THE DISCHARGE MAY NOT RESULT IN EROSION OF ANY OPEN DRAINAGE CHANNELS, SWALES, STREAM CHANNELS OR STREAM BANKS, UPLAND, OR COASTAL OR FRESHWATER WETLANDS OF THE PROJECT SITE.

WHENEVER PRACTICABLE, NO DISTURBANCE ACTIVITIES SHOULD TAKE PLACE WITHIN 50 FEET OF ANY PROTECTED NATURAL RESOURCE. IF DISTURBANCE ACTIVITIES TAKE PLACE BETWEEN 30 FEET AND 50 FEET OF ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED. IF DISTURBANCE ACTIVITIES TAKE PLACE LESS THAN 30 FEET FROM ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED AND DISTURBED AREAS MUST BE TEMPORARILY OR PERMANENTLY STABILIZED WITHIN 7 DAYS.

2. TEMPORARY SOIL STABILIZATION BMPs

TEMPORARY MULCHING SHALL BE APPLIED IMMEDIATELY TO ANY AREAS THAT HAVE BEEN TEMPORARILY OR PERMANENTLY SEEDED. ANY DISTURBED SOIL WITHIN 75' OF A STREAM, WATER BODY OR WETLAND MUST RECEIVE TEMPORARY MULCH WITHIN 48 HOURS FOLLOWING DISTURBANCE AND BEFORE ANY STORM EVENT. ALL OTHER AREAS SHALL RECEIVE TEMPORARY MULCH WITHIN 7 DAYS OF DISTURBANCE. AREAS WHICH CANNOT BE SEEDING DURING THE GROWING SEASON SHALL BE MULCHED FOR OVER-WINTER PROTECTION. THE FOLLOWING ARE ACCEPTABLE TEMPORARY MULCHING METHODS:

HAY OR STRAW MULCHES MUST BE AIR-DRIED, FREE OF UNDESIRABLE SEEDS AND COARSE MATERIALS. APPLICATION RATE MUST BE 3 BALES (70-90 POUNDS) PER 1000 SQ. YD. OR 1.5 TO 2 TONS (50-100 BALES) PER ACRE TO COVER 75-90% OF THE GROUND SURFACE. HAY OR STRAW CAN BE DRIVEN INTO THE GROUND WITH TRACKED EQUIPMENT IF SLOPES ARE LESS THAN 3%, OR CAN BE ANCHORED WITH JUTE, WOOD FIBER OR PLASTIC NETTING ON STEEPER SLOPES.

EROSION CONTROL MIX MUST CONSIST PRIMARILY OF ORGANIC MATERIAL AND WILL INCLUDE ANY OF THE FOLLOWING: SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK OR OTHER ACCEPTABLE PRODUCTS BASED ON A SIMILAR RAW SOURCE. WOOD OR BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS ARE NOT ACCEPTABLE. EROSION CONTROL MIX CAN BE USED AS A STAND-ALONE REINFORCEMENT ON SLOPES OF 2 HORIZONTAL TO 1 VERTICAL OR LESS AND DRAINING IN SHEET FLOW. IT CAN BE PLACED WITH A HYDRAULIC BUCKET, WITH A PNEUMATIC BLOWER OR BY HAND, AND MUST PROVIDE 100% SOIL COVERAGE.

EROSION CONTROL MIX SHALL MEET THE FOLLOWING SPECIFICATIONS:
-ORGANIC MATTER CONTENT SHALL BE BETWEEN 80-100%, DRY WEIGHT BASIS.
-PARTICLE SIZE BY WEIGHT SHALL BE 100% PASSING A 6 IN. SCREEN AND BETWEEN 70-85% PASSING 0.75 IN. SCREEN
-ORGANIC PORTION NEEDS TO BE FIBROUS AND ELONGATED
-LARGE PORTIONS OF SILTS, CLAYS OR FINE SANDS ARE NOT ACCEPTABLE IN THE MIX

WHEN USED AS MULCH, THE THICKNESS OF THE EROSION CONTROL MIX IS BASED UPON THE FOLLOWING:

LENGTH OF SLOPE	3:1 SLOPE OR LESS	BETWEEN 2:1 AND 3:1 SLOPE
LESS THAN 20 FT	2.0 IN.	4.0 IN.
BETWEEN 20 - 60 FT	5.0 IN.	5.0 IN.
BETWEEN 60 - 100 FT	4.0 IN.	6.0 IN.

CHEMICAL MULCHES AND SOIL BINDERS MAY BE USED AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL CONSULT WITH THE MANUFACTURER TO DETERMINE ADEQUATE APPLICATION RATES AND METHODS.

TEMPORARY MULCH SHALL BE INSPECTED FOLLOWING ANY SIGNIFICANT RAINFALL EVENT. IF LESS THAN 90% OF THE SOIL SURFACE IS COVERED BY MULCH, ADDITIONAL MULCH SHALL BE IMMEDIATELY APPLIED. EROSION CONTROL MATS AND MULCH ANCHORING MUST BE INSPECTED AFTER RAINFALL EVENTS FOR DISLOCATION OR FAILURE, AND REPAIRED IMMEDIATELY. INSPECTIONS SHALL TAKE PLACE UNTIL 95% OF THE SOIL SURFACE IS COVERED WITH PERMANENT VEGETATION. WHERE MULCH IS USED WITH ORNAMENTAL PLANTINGS, INSPECT PERIODICALLY THROUGHOUT THE YEAR TO DETERMINE IF MULCH IS MAINTAINING COVERAGE OF THE SOIL SURFACE, AND REPAIR AS NEEDED.

TEMPORARY VEGETATION SHALL BE ESTABLISHED ON SOILS THAT WILL NOT BE BROUGHT TO FINAL GRADE FOR A PERIOD OF MORE THAN 30 DAYS. IF TEMPORARY VEGETATION CANNOT BE ESTABLISHED PRIOR TO OCTOBER 15, TEMPORARY MULCH SHALL BE APPLIED THROUGHOUT THE WINTER AND TEMPORARY VEGETATION SHALL BE PLANTED AT THE BEGINNING OF THE FOLLOWING YEAR. TO PREPARE THE SEEDED, THE CONTRACTOR SHALL APPLY FERTILIZER AT A RATE OF 600 POUNDS PER ACRE OF 10-10-10 (N-P205-K20) OR EQUIVALENT AND LIMESTONE AT A RATE OF 3 TONS PER ACRE, IF NECESSARY. LOOSEN SOIL TO A DEPTH OF 2 INCHES IN AREAS THAT HAVE BEEN COMPACTED BY CONSTRUCTION ACTIVITIES. GRASS SEED SHALL BE SELECTED BASED UPON THE TIME OF YEAR THE PLANTING WILL TAKE PLACE AS SUMMARIZED IN THE FOLLOWING TABLE:

SEED	LB. PER ACRE	RECOMMENDED SEEDING DATES
WINTER RYE	8-12	8/15 - 10/1
OATS	80	4/1 - 7/1 8/15 - 9/15
ANNUAL RYEGRASS	40	4/1 - 8/1 8/15 - 9/1

TEMPORARY SEEDING SHALL BE PERIODICALLY INSPECTED TO MAINTAIN AT LEAST 95% VEGETATIVE COVER OF SOIL SURFACE. IF ANY EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHALL BE MADE AND OTHER TEMPORARY MEASURES SHALL BE USED IN THE INTERIM SUCH AS TEMPORARY MULCH, FILTER BARRIERS, ETC.

3. SEDIMENT BARRIER BMPs

PRIOR TO CONSTRUCTION TEMPORARY SEDIMENT BARRIERS SHALL BE INSTALLED AT THE DOWNGRADIENT EDGE OF ANY AREA TO BE DISTURBED AND ADJACENT TO ANY DRAINAGE CHANNELS WITHIN THE DISTURBED AREA. SEDIMENT BARRIERS INCLUDE ANY OF THE FOLLOWING:

FILTER BARRIER FENCE, ALSO CALLED SILT FENCE, SHALL BE INSTALLED WHERE SHOWN ON THE PLANS AND IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS. THE FILTER FABRIC SHALL BE A PERVIOUS SHEET OF PROPYLENE, NYLON, POLYESTER OR ETHYLENE YARN AND SHALL PROVIDE A MINIMUM OF 6 MONTHS USABLE CONSTRUCTION LIFE INCLUDING PROTECTION AGAINST ULTRA-VIOLET LIGHT. THE HEIGHT OF THE FENCE SHALL NOT EXCEED 36 INCHES INSTALLED AND POST SPACING SHALL NOT EXCEED 6 FEET. JOINTS IN THE FENCE SHALL BE ADDED TO THE EXTENT POSSIBLE, AND IF NECESSARY SHALL BE SPLICED TOGETHER AT A SUPPORT POST WITH A MINIMUM 6 INCH OVERLAP. A TRENCH SHALL BE EXCAVATED APPROXIMATELY 6 INCHES WIDE AND 6 INCHES DEEP, AND THE BOTTOM 1-8 INCHES OF FABRIC SHALL BE "TOED-IN" TO THE TRENCH AND COMPACTED. THE TRENCH SHOULD BE UPHILL OF THE FABRIC PRIOR TO BURIAL.

EROSION CONTROL MIX BERMS ARE LINEAR BARRIERS COMPOSED OF EROSION CONTROL MIX AS SPECIFIED ABOVE. THE BERM MUST BE A MINIMUM OF 12 INCHES TALL AND 24 INCHES WIDE AT THE BASE IF UPHILL SLOPES ARE LESS THAN 5%. STEEPER SLOPES OR SLOPES GREATER THAN 20 FEET LONG MAY REQUIRE A LARGER WIDTH BERM. EROSION CONTROL MIX BERMS SHALL BE PROHIBITED AT THE BASE OF A LONG OR STEEP SLOPE (8% OR GREATER) WITHOUT THE ADDITIONAL SUPPORT OF A FILTER FENCE INSTALLED ON THE DOWNHILL SIDE OF THE BERM.

SEDIMENT BARRIERS SHOULD BE INSTALLED DOWNGRADIENT OF SOIL OR SEDIMENT STOCKPILES AND STORMWATER PREVENTED RUNNING onto the STOCKPILE. SEDIMENT BARRIERS SHALL BE INSPECTED AFTER ANY SIGNIFICANT RAINFALL EVENT AND REPAIRED IMMEDIATELY IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THE BARRIERS. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR EDGES OF THE BARRIER, OR IF LARGE AMOUNTS OF WATER ARE IMPOUNDED BEHIND THE BARRIER, IT MAY BE NECESSARY TO INSTALL A SEDIMENT BASIN UPGRADEMENT OF THE SEDIMENT BARRIER. SEDIMENT SHALL BE REMOVED ONCE IT REACHES HALF THE BARRIER HEIGHT. AFTER THE BARRIER IS REMOVED, ANY REMAINING SILT SHALL EITHER BE REMOVED OR GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.

TEMPORARY EROSION CONTROL MEASURES ARE REMOVED ONCE THE SITE IS PERMANENTLY STABILIZED AND CONSTRUCTION ACTIVITY HAS BEEN COMPLETED.

4. STORM DRAIN INLET PROTECTION

STORM DRAIN INLETS THAT ARE MADE OPERATIONAL BEFORE THEIR DRAINAGE AREA IS STABILIZED SHALL BE PROTECTED WITH A FILTER UNTIL THE DRAINAGE AREA IS STABILIZED OR STABILIZED WITH 95% VEGETATIVE GROWTH. THE FOLLOWING ARE ACCEPTABLE BMPs ASSOCIATED WITH STORM DRAIN INLET PROTECTION:

MANUFACTURED SEDIMENT FILTERS ARE THE PREFERRED METHOD FOR PROTECTING CATCH BASIN INLETS IN PAVED OR GRAVEL ROADWAYS. THE FILTERS TYPICALLY CONSIST OF A MINIMUM OF 10 FEET OF 2 INCH CRUSHED STONE, AND ARE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, AND THE CONTRACTOR SHALL SWEEP PAVEMENT AT EXITS THAT HAVE EXPERIENCED ANY MUD-TRACKING PRIOR TO THE NEXT STORM EVENT. MAINTAIN THE PAD UNTIL ALL DISTURBED AREAS ARE STABILIZED.

5. STABILIZED CONSTRUCTION ENTRANCE/EXIT

TO REDUCE THE TRACKING OF SEDIMENT ONTO ROADWAYS, A STABILIZED CONSTRUCTION EXIT SHALL BE INSTALLED AT ALL POINTS OF EGRESS WHERE VEHICLES MAY TRAVEL FROM THE PROJECT SITE TO A PUBLIC ROAD OR OTHER PAVED AREA. THE STONE PAD SHALL CONSIST OF A MINIMUM 6-INCH DEPTH OF 2-3 INCH CRUSHED STONE, AND SHALL BE PLACED ON A GEOTEXTILE FABRIC. THE PAD SHALL EXTEND AT LEAST 50 FEET INTO THE PROJECT SITE AND BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, AND THE CONTRACTOR SHALL SWEEP PAVEMENT AT EXITS THAT HAVE EXPERIENCED ANY MUD-TRACKING PRIOR TO THE NEXT STORM EVENT. MAINTAIN THE PAD UNTIL ALL DISTURBED AREAS ARE STABILIZED.

6. DUST CONTROL

THE CONTRACTOR IS RESPONSIBLE FOR CONTROLLING DUST ON THE PROJECT SITE AND ON ADJACENT ROADWAYS. EXPOSED SOIL SURFACES SHALL BE OVERSEEDEN PERIODICALLY TO CONTROL DUST. GRAVEL, SAND, OR OTHER MATERIALS MAY BE USED TO STABILIZE THE SURFACE. APPLICATION OF CALCIUM CHLORIDE OR COVERED WITH CRUSHED STONE IF DUST CONTROL BECOMES DIFFICULT WITH NORMAL WATER APPLICATIONS.

7. LAND GRADING AND SLOPE PREPARATION

GRADING SHALL BE PLANNED SO AS TO MINIMIZE THE LENGTH OF TIME BETWEEN INITIAL SOIL EXPOSURE AND FINAL FINISH. ON LARGE PROJECTS THIS SHOULD BE PHASED INTO TWO PHASES. THE OPERATION AND THE FINISHING THE FIRST PHASE UP TO THE FINISH GRADING AND SEEDING BEFORE STARTING THE NEXT PHASE. ANY EXPOSED AREA THAT WILL NOT BE FINISH GRADDED WITHIN 7 DAYS SHALL BE TREATED WITH MULCH OR PLANTED WITH TEMPORARY VEGETATION. PROVISIONS SHALL BE MADE TO SAFELY CONVEY SURFACE RUNOFF TO STORM DRAINS, PROTECTED OUTLETS OR TO STABLE WATER COURSES TO ENSURE THAT SURFACE RUNOFF WILL NOT DAMAGE SLOPES OR OTHER GRADDED AREAS. CUT AND FILLED AREAS SHALL BE STABILIZED WITH GRASS SHALL NOT BE STEEPER THAN 2:1. AREAS TO BE FILLED SHALL BE CLEARED OF GRUBBED AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS OR OTHER OBJECTIONABLE MATERIALS. AREAS SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 3 INCHES PRIOR TO PLACEMENT OF TOPSOIL. ALL FILLS SHALL BE COMPACTED AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE, OTHER RELATED PROBLEMS. FILLS INTENDED TO SUPPORT BUILDINGS, STRUCTURES AND CONDUITS, ETC. SHALL BE COMPACTED IN ACCORDANCE WITH LOCAL REQUIREMENTS OR CODES. ALL FILLS SHALL BE PLACED AND COMPACTED IN LAYERS NOT TO EXCEED 8 INCHES IN THICKNESS. FILL MATERIAL SHALL BE FREE OF STUMPS, BUILDING DEBRIS AND OTHER OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY FILLS. FROZEN MATERIAL OR SOFT, MUCKY OR HIGHLY COMPRESSIBLE MATERIALS SHALL NOT BE INCORPORATED INTO FILL SLOPES OR STRUCTURAL FILLS. FILL SHALL NOT BE PLACED ON A FROZEN FOUNDATION. SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED APPROPRIATELY. ALL GRADEN AREAS SHALL BE PERMANENTLY STABILIZED IMMEDIATELY FOLLOWING FINISHED GRADING.

8. TOPSOIL

IF POSSIBLE, TOPSOIL SHALL BE STOCKPILED ON THE PROJECT SITE AND REUSED. HIGH QUALITY TOPSOIL SHALL BE FRIABLE AND LOAMY (LOAM, SANDY LOAM, SILT LOAM, CLAY LOAM, CLAY LOAM), AND BE FREE OF DEBRIS, TRASH, STUMPS, ROCKS, FRUITS AND NOXIOUS WEEDS. AFTER THE AREAS TO BE TOPSOILED HAVE BEEN BROUGHT TO GRADE, AND IMMEDIATELY PRIOR TO SPREADING THE TOPSOIL, THE SUBGRADE SHALL BE LOOSENEED BY SCARIFYING TO A DEPTH OF AT LEAST 2 INCHES TO ENSURE BONDING WITH SUBSOIL. THE TOPSOIL SHALL BE UNIFORMLY DISTRIBUTED TO A MINIMUM COMPACTED DEPTH OF 4 INCHES. ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS SHALL BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS. IT IS NECESSARY TO COMPACT THE TOPSOIL ENOUGH TO ENSURE GOOD CONTACT WITH THE UNDERLYING SOIL, BUT UNDUE COMPACTION IS TO BE AVOIDED.

9. PERMANENT SOIL STABILIZATION

IF THE AREA WILL NOT BE WORKED FOR MORE THAN ONE YEAR OR HAS BEEN BROUGHT TO FINAL GRADE, THEN PERMANENTLY STABILIZE THE AREA WITHIN 7 DAYS BY PLANTING VEGETATION, SEEDING, SOD, OR THROUGH THE USE OF PERMANENT MULCH, OR RIPRAP, OR ROAD SUB-BASE. IF USING VEGETATION FOR STABILIZATION, SELECT THE PROPER VEGETATION FOR THE LIGHT, MOISTURE, AND SOIL CONDITIONS; AMEND AREAS OF DISTURBED SUBSOILS WITH TOPSOIL, COMPOST, OR FERTILIZERS; PROTECT SEEDED AREAS WITH MULCH OR, IF NECESSARY, EROSION CONTROL BLANKETS, AND SCHEDULE SODDING, PLANTING, AND SEEDING SO TO AVOID DIE-OFF FROM SUMMER DROUGHT AND FALL FROSTS. NEWLY SEEDED OR SODDED AREAS MUST BE PROTECTED FROM VEHICLE TRAFFIC, EXCESSIVE PEDESTRIAN TRAFFIC, AND CONCENTRATED RUNOFF UNTIL THE VEGETATION IS WELL-ESTABLISHED WITH 90% COVER BY HEALTHY VEGETATION. IF NECESSARY, AREAS MUST BE REWORKED AND REESTABLISHED IF GERMINATION IS SPARSE, PLANT COVERAGE IS SPOTTY, OR TOPSOIL EROSION IS EVIDENT. ONE OR MORE OF THE FOLLOWING MAY APPLY TO A PARTICULAR SITE.

SEEDED AREAS: TO PREPARE THE SEEDED, APPLY 10-20-20 FERTILIZER AT A RATE OF 800 POUNDS PER ACRE AND GROUND LIMESTONE AT A RATE OF 3 TONS PER ACRE. WORK TO THE TOPSOIL TO A DEPTH OF 4 INCHES AND REMOVE ANY STONES AND REMOVE ANY STONES, ROOTS OR OTHER VISIBLE DEBRIS. SELECT A SEED MIXTURE THAT IS APPROPRIATE FOR THE SOIL TYPE AND MOISTURE CONTENT AS FOUND AT THE SITE, AND FOR THE AMOUNT OF SUN EXPOSURE AND FOR LEVEL OF USE. REFER TO THE USDA SOIL CONSERVATION SERVICE OR THE LOCAL SOIL AND WATER CONSERVATION DISTRICT FOR APPROPRIATE SEED MIXTURES. APPLY SEED UNIFORMLY IN ACCORDANCE WITH THE RECOMMENDATIONS AND IMMEDIATELY COVER WITH MULCH AS DESCRIBED IN THE TEMPORARY MULCHING SECTION OF THIS PLAN.

HYDROSEEDING SHALL BE DONE IN ACCORDANCE WITH SUPPLIERS RECOMMENDATIONS. FOR SEEDED AREAS TO BE PERMANENTLY STABILIZED, 90% OF THE DISTURBED SOIL SHALL BE COVERED WITH MATURE HEALTHY PLANTS WITH NO EVIDENCE OF WASHING OR RILLING OF THE TOPSOIL.

SOD STRIPS SHALL BE LAID AT RIGHT ANGLES TO DIRECTION OF SLOPE OR FLOW OF WATER STARTING AT LOWEST ELEVATION. JOINTS SHALL BE STAGGERED, AND SOD STRIPS SHALL BE ROLLED OR TAMPED INTO PLACE. ON SLOPES, SOD SHALL BE ANCHORED WITH STAPLES, WIRE OR PINS. IRRIGATE SODDED AREA IMMEDIATELY AFTER INSTALLATION. FOR SODDED AREAS TO BE PERMANENTLY STABILIZED, THE ROOTS OF THE WHICH CANNOT BE SEEDING DURING THE GROWING SEASON SHALL BE MULCHED FOR OVER-WINTER PROTECTION. THE SOD MUST BE COMPLETELY BOUND INTO THE UNDERLYING SOIL WITH NO SLUMPING OF THE SOD OR DIE-OFF.

PERMANENT MULCH IS A LONG TERM COVER THAT PROVIDES A GOOD BUFFER AROUND DISTURBED AREAS. THE EROSION CONTROL MIX SHALL CONSIST PRIMARILY OF ORGANIC MATERIAL AND MAY INCLUDE SHREDDED BARK, STUMP GRINDINGS OR COMPOSTED BARK. WOOD CHIPS, GROUND CONSTRUCTION DEBRIS, REPROCESSED WOOD PRODUCTS OR BARK CHIPS ARE NOT ACCEPTABLE. THE EROSION CONTROL MIX SHALL CONTAIN A WELL-GRADED MIXTURE OF PARTICLE SIZES AND MAY CONTAIN ROCKS LESS THAN 4 INCHES IN DIAMETER. EROSION CONTROL MIX MUST BE FREE OF REFUSE, PHYSICAL CONTAMINANTS AND MATERIAL TOXIC TO PLANT GROWTH.

RIPPRAP STONE SHALL CONSIST OF SUB-ANGULAR FIELD STONE OR ROUGH UNEVEN QUARRY STONE OF APPROXIMATELY RECTANGULAR SHAPE. THE DEPTH OF STONE SHALL BE A MINIMUM OF 2.2 TIMES THE MAXIMUM STONE DIAMETER. A GRAVEL OR GEOTEXTILE FILTER BLANKET SHALL BE PLACED BETWEEN THE RIPRAP AND UNDERLYING SOIL SURFACE. GRAVEL FILTER BLANKETS SHALL MEET MDTM TYPE C UNDERDRAIN MATERIAL SPECIFICATIONS AND BE AT LEAST 6 INCHES THICK. GEOTEXTILE FILTER BLANKETS SHALL BE SPECIFIED BASED ON SITE CONDITIONS. RIPRAP SLOPES SHALL BE TOED INTO THE BASE OF THE EMBANKMENT BY EXCAVATING A TRENCH AT THE BOTTOM OF THE SLOPE AND INSTALLING A STABLE BASE OF RIPRAP TO GRADE.

DITCHES, CHANNELS AND SWALES ARE CONSIDERED PERMANENTLY STABILIZED WHEN THE CHANNEL HAS 90% COVER OF HEALTHY VEGETATION WITH A WELL GRADED RIPRAP LINING, EROSION CONTROL BLANKET, OR WITH ANOTHER NON-EROSIVE LINING SUCH AS CONCRETE OR ASPHALT PAVEMENT. THERE MUST BE NO EVIDENCE OF DISRUPTION OF THE CHANNEL LINING, UNDERCUTTING OF THE BANKS, OR DOWNCUTTING OF THE CHANNEL.

10. STORMWATER CHANNELS

EACH CHANNEL SHOULD BE CONSTRUCTED IN SECTIONS SO THAT THE SECTION'S GRADING, SHAPING, AND INSTALLATION OF THE PERMANENT LINING CAN BE COMPLETED THE SAME DAY. IF A CHANNEL'S FINAL GRADING OR LINING INSTALLATION MUST BE DELAYED, THEN DIVERSION BERMS MUST BE USED TO DIVERT STORMWATER AWAY FROM THE CHANNEL. PROPERLY-SPACED CHECK DAMS MUST BE INSTALLED IN THE CHANNEL TO SLOW THE WATER VELOCITY, AND A TEMPORARY LINING INSTALLED ALONG THE CHANNEL TO PREVENT SCOURING.

INSPECTION & MAINTENANCE NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE ALL CONSTRUCTION OPERATIONS COMPLY WITH THE INSPECTION AND MAINTENANCE PROCEDURES FOR THE PROJECT, INCLUDING, BUT NOT LIMITED TO THOSE INCLUDED IN THIS PLAN SET, THE "INSPECTION, MAINTENANCE, AND HOUSEKEEPING PLAN", AND THE "MAINE EROSION AND SEDIMENTATION CONTROL PRACTICES FIELD GUIDE FOR CONTRACTORS". THE INSPECTION AND MAINTENANCE PROCEDURES FOR THE PROJECT SHALL BE MAINTAINED AND UPDATED AS NEEDED. STORAGE AREAS THAT ARE EXPOSED TO PRECIPITATION, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE, THESE AREAS SHALL BE INSPECTED AT LEAST ONCE A WEEK AS WELL AS 24 HOURS BEFORE AND AFTER A STORM EVENT GENERATING MORE THAN 0.5 INCH OF RAINFALL OVER A 24-HOUR PERIOD AND PRIOR TO COMPLETING PERMANENT STABILIZATION MEASURES. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT, SHALL CONDUCT THE INSPECTIONS.

2. EROSION CONTROLS SHALL BE MAINTAINED IN EFFECTIVE OPERATING CONDITION UNTIL AREAS ARE PERMANENTLY STABILIZED. IF BEST MANAGEMENT PRACTICES (BMPs) NEED TO BE REPAIRED OR THE REPAIR WORKS BEYOND THE SCOPE OF THE PROBLEM, BUT NO LATER THAN THE END OF THE NEXT WORKDAY. IF BMPs NEED TO BE MAINTAINED OR MODIFIED, ADDITIONAL BMPs ARE NECESSARY, OR ANOTHER CORRECTIVE ACTION IS NEEDED, IMPLEMENTATION MUST BE COMPLETED WITHIN SEVEN CALENDAR DAYS AND PRIOR TO ANY RAINFALL EVENT.

3. A REPORT SUMMARIZING THE INSPECTIONS AND ANY CORRECTIVE ACTION TAKEN MUST BE MAINTAINED ON SITE. THE LOG MUST INCLUDE THE NAME(S) AND QUALIFICATIONS OF THE PERSON MAKING THE INSPECTIONS; THE DATE(S) OF THE INSPECTIONS; AND THE MAJOR OBSERVATIONS ABOUT THE OPERATION AND MAINTENANCE OF EROSION AND SEDIMENTATION CONTROLS, MATERIALS STORAGE AREAS, AND VEHICLE ACCESS POINTS TO THE PARCEL. MAJOR OBSERVATIONS MUST INCLUDE BMPs THAT NEED MAINTENANCE, BMPs THAT FAILED TO OPERATE AS DESIGNED OR PROVED INADEQUATE FOR A PARTICULAR LOCATION, AND LOCATION(S) WHERE ADDITIONAL BMPs ARE NEEDED. FOR EACH BMP REQUIRING MAINTENANCE, BMP NEEDING REPLACEMENT, AND LOCATION NEEDING ADDITIONAL BMPs, NOTE IN THE LOG THE CORRECTIVE ACTION TAKEN AND WHEN IT WAS TAKEN. THE LOG MUST BE MADE ACCESSIBLE TO ANY NEARBY TOWN STAFF, AND A COPY MUST BE PROVIDED UPON REQUEST. THE OWNER SHALL RETAIN A COPY OF THE LOG FOR A PERIOD OF AT LEAST THREE YEARS FROM THE COMPLETION OF PERMANENT STABILIZATION.

WINTER EROSION AND SEDIMENTATION CONTROL NOTES:

THE WINTER CONSTRUCTION PERIOD TYPICALLY BEGINS IN EARLY NOVEMBER AND ENDS IN MID APRIL. IF A CONSTRUCTION SITE IS NOT STABILIZED WITH PAVEMENT, A ROAD GRAVEL BASE OR RIPRAP BY NOVEMBER 15 THEN THE SITE NEEDS TO BE PROTECTED WITH OVER-WINTER STABILIZATION. WINTER EXCAVATION AND EARTHWORK SHALL BE COMPLETED SUCH THAT NO MORE THAN 1 ACRE OF THE SITE IS WITHOUT STABILIZATION AT ANY ONE TIME. LIMIT THE EXPOSED AREA TO THOSE AREAS IN WHICH WORK IS TO OCCUR DURING THE FOLLOWING 15 DAYS AND THAT CAN BE MULCHED IN ONE DAY PRIOR TO ANY SNOW EVENT. AN AREA SHALL BE CONSIDERED DEMANDDED UNTIL THE SUBBASE GRAVEL IS INSTALLED OR THE TEMPORARY AREAS OR THE AREAS OF FUTURE LOAM AND SEED HAVE BEEN LOADED, SEEDED AND MULCHED. A COVER OF EROSION CONTROL MIX IS THE PREFERRED TEMPORARY MULCH DURING WINTER CONDITIONS.

1. NATURAL RESOURCE PROTECTION

ANY AREAS WITHIN 75 FEET FROM ANY REGULATED NATURAL RESOURCES SHALL BE MULCHED BY DECEMBER 1 AND ANCHORED WITH PLASTIC NETTING OR PROTECTED WITH AN EROSION CONTROL COVER. DURING WINTER CONSTRUCTION, A DOUBLE ROW OF SEDIMENT BARRIERS (FOR EXAMPLE, SILT FENCE BACKED WITH HAY BALES OR EROSION CONTROL MIX) WILL BE PLACED BETWEEN ANY REGULATED NATURAL RESOURCE AND THE DISTURBED AREA. PROJECTS CROSSING THE REGULATED NATURAL RESOURCE SHALL BE PROTECTED A MINIMUM DISTANCE OF 100 FEET ON EITHER SIDE FROM THE RESOURCE. EXISTING PROJECTS NOT STABILIZED BY DECEMBER 1 SHALL BE PROTECTED WITH THE SECOND LINE OF SEDIMENT BARRIER TO ENSURE FUNCTIONALITY DURING THE SPRING THAW AND RAINS.

2. SEDIMENT BARRIERS

DURING FROZEN CONDITIONS, SEDIMENT BARRIERS MAY CONSIST OF EROSION CONTROL MIX BERMS OR ANY OTHER RECOGNIZED SEDIMENT BARRIERS AS FROZEN SOIL PREVENTS THE PROPER INSTALLATION OF HAY BALES OR SILT FENCES.

3. MULCHING

ALL AREAS SHALL BE CONSIDERED TO BE DENuded UNTIL SEEDED AND MULCHED. HAY AND STRAW MULCH SHALL BE APPLIED AT A RATE OF 3 TONS PER ACRE (TWICE THE NORMAL ACCEPTED RATE) AND SHALL BE PROPERLY ANCHORED. EROSION CONTROL MIX MUST BE APPLIED WITH A MINIMUM 4 INCHES MULCH SHALL NOT BE SPREAD ON TOP OF SNOW. SNOW MUST BE REMOVED DOWN TO A ONE-INCH DEPTH PRIOR TO APPLICATION. AFTER EACH DAY OF FINAL GRADING, THE AREA WILL BE PROPERLY STABILIZED WITH ANCHORED HAY OR STRAW OR EROSION CONTROL MATTING. AN AREA SHALL BE CONSIDERED TO HAVE BEEN STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED OR COVERED WITH A PERMANENTLY STABILIZED SEDIMENT BARRIER. THE COVER SHALL BE REMOVED BY THE END OF NOVEMBER 1 AND APRIL 15, ALL MULCH SHALL BE ANCHORED BY EITHER MULCH NETTING, TRACKING OR WOOD CELLULOSE FIBER. THE COVER WILL BE CONSIDERED SUFFICIENT WITH THE GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH. AFTER NOVEMBER 15, MULCH AND ANCHORING OF ALL EXPOSED SOIL SHALL OCCUR AT THE END OF EACH FINAL GRADING WORKDAY.

4. SOIL STOCKPIILING

STOCKPILES OF SOIL OR SUBSOIL WILL BE MULCHED FOR OVER WINTER PROTECTION WITH HAY OR STRAW AT TWICE THE NORMAL RATE FOR WITH A FOUR-INCH LAYER OF EROSION CONTROL MIX. THIS WILL BE DONE WITHIN 24 HOURS OF STACKING AND RE-ESTABLISHED PRIOR TO ANY RAINFALL OR SNOWFALL. ANY SOIL STOCKPILE WILL NOT BE PLACED WITHIN 100 FEET FROM ANY REGULATED NATURAL RESOURCE.

5. SEEDING

BETWEEN THE DATES OF OCTOBER 15 AND APRIL 1, LOAM OR SEED WILL NOT BE REQUIRED. DURING PERIODS OF ABOVE FREEZING TEMPERATURES INDICATED BY THIS DATE, FINE GRASS AND OTHER PROTECTED MULCH OR TEMPORARY VEGETATION BY OCTOBER 15. SUCH TIME AS THE FINAL TREATMENT CAN BE APPLIED. IF THE DATE IS AFTER NOVEMBER 1 AND IF THE EXPOSED AREA HAS BEEN LOOSED, FINAL GRADDED WITH A UNIFORM SURFACE, THEN THE AREA MAY BE DORMANT SEEDED AT A RATE OF 3 TIMES HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED. IF DORMANT SEEDING IS USED, ALL DISTURBED AREAS SHALL RECEIVE 4 INCHES OF LOAM AND SEED AT AN APPLICATION RATE OF 5 LBS PER 1,000 S.F. ALL AREAS INSUFFICIENTLY VEGETATED (LESS THAN 75%) IN THE SPRING SHALL BE REVEGETATED.

6. OVER-WINTER STABILIZATION OF DITCHES AND CHANNELS

ALL STONE-LINED DITCHES AND CHANNELS MUST BE CONSTRUCTED BY NOVEMBER 1. ALL GRASS-LINED DITCHES AND CHANNELS MUST BE CONSTRUCTED AND STABILIZED BY SEPTEMBER 1. IF A GRASS-LINED DITCH OR CHANNEL IS STABILIZED BY SEPTEMBER 1, THEN EITHER A SOD LINING SHALL BE INSTALLED PRIOR TO OCTOBER 1 OR THE DITCH MUST BE LINED WITH STONE RIPRAP BACKED BY AN APPROPRIATE GRAVEL BED OR GEOTEXTILE PRIOR TO NOVEMBER 1.

7. OVER-WINTER STABILIZATION OF DISTURBED SLOPES

ALL STONE-COVERED SLOPES MUST BE CONSTRUCTED AND STABILIZED BY NOVEMBER 15. ALL SLOPES TO BE VEGETATED MUST BE SEEDED AND MULCHED BY SEPTEMBER 1. ALL AREAS HAVING A GRADE STEEPER THAN 8% SHALL BE CONSIDERED A SLOPE. IF A SLOPE TO BE VEGETATED IS NOT STABILIZED WITH GRASS SHALL NOT BE STEEPER THAN 2:1. AREAS TO BE FILLED SHALL BE CLEARED OF GRUBBED AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS OR OTHER OBJECTIONABLE MATERIALS. AREAS SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 3 INCHES PRIOR TO PLACEMENT OF TOPSOIL. ALL FILLS SHALL BE COMPACTED AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE, OTHER RELATED PROBLEMS. FILLS INTENDED TO SUPPORT BUILDINGS, STRUCTURES AND CONDUITS, ETC. SHALL BE COMPACTED IN ACCORDANCE WITH LOCAL REQUIREMENTS OR CODES. ALL FILLS SHALL BE PLACED AND COMPACTED IN LAYERS NOT TO EXCEED 8 INCHES IN THICKNESS. FILL MATERIAL SHALL BE FREE OF STUMPS, BUILDING DEBRIS AND OTHER OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY FILLS. FROZEN MATERIAL OR SOFT, MUCKY OR HIGHLY COMPRESSIBLE MATERIALS SHALL NOT BE INCORPORATED INTO FILL SLOPES OR STRUCTURAL FILLS. FILL SHALL NOT BE PLACED ON A FROZEN FOUNDATION. SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED APPROPRIATELY. ALL GRADEN AREAS SHALL BE PERMANENTLY STABILIZED IMMEDIATELY FOLLOWING FINISHED GRADING.

8. OVER-WINTER STABILIZATION OF DISTURBED SLOPES

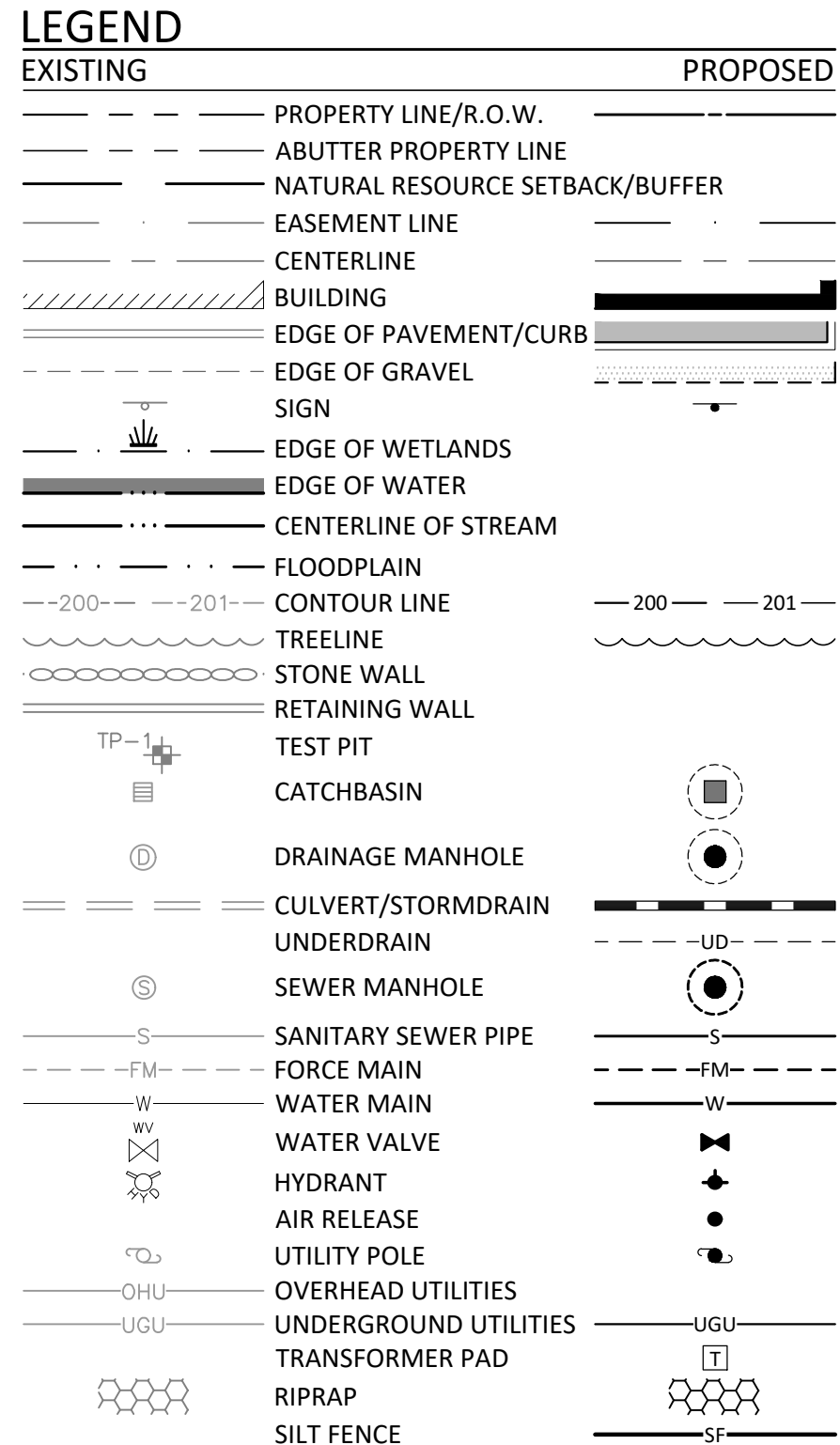
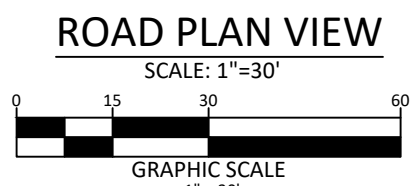
BY SEPTEMBER 15, ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 15% MUST BE SEEDED AND MULCHED. IF THE DISTURBED AREAS ARE NOT STABILIZED BY THIS DATE, FINE GRASS AND OTHER PROTECTED MULCH OR TEMPORARY VEGETATION BY OCTOBER 15. SUCH TIME AS THE FINAL TREATMENT CAN BE APPLIED. IF THE DATE IS AFTER NOVEMBER 1 AND IF THE EXPOSED AREA HAS BEEN LOOSED, FINAL GRADDED WITH A UNIFORM SURFACE, THEN THE AREA MAY BE DORMANT SEEDED AT A RATE OF 3 TIMES HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED. IF DORMANT SEEDING IS USED, ALL DISTURBED AREAS SHALL RECEIVE 4 INCHES OF LOAM AND SEED AT AN APPLICATION RATE OF 5 LBS PER 1,000 S.F. ALL AREAS INSUFFICIENTLY VEGETATED (LESS THAN 75%) IN THE SPRING SHALL BE REVEGETATED.

9. MAINTENANCE

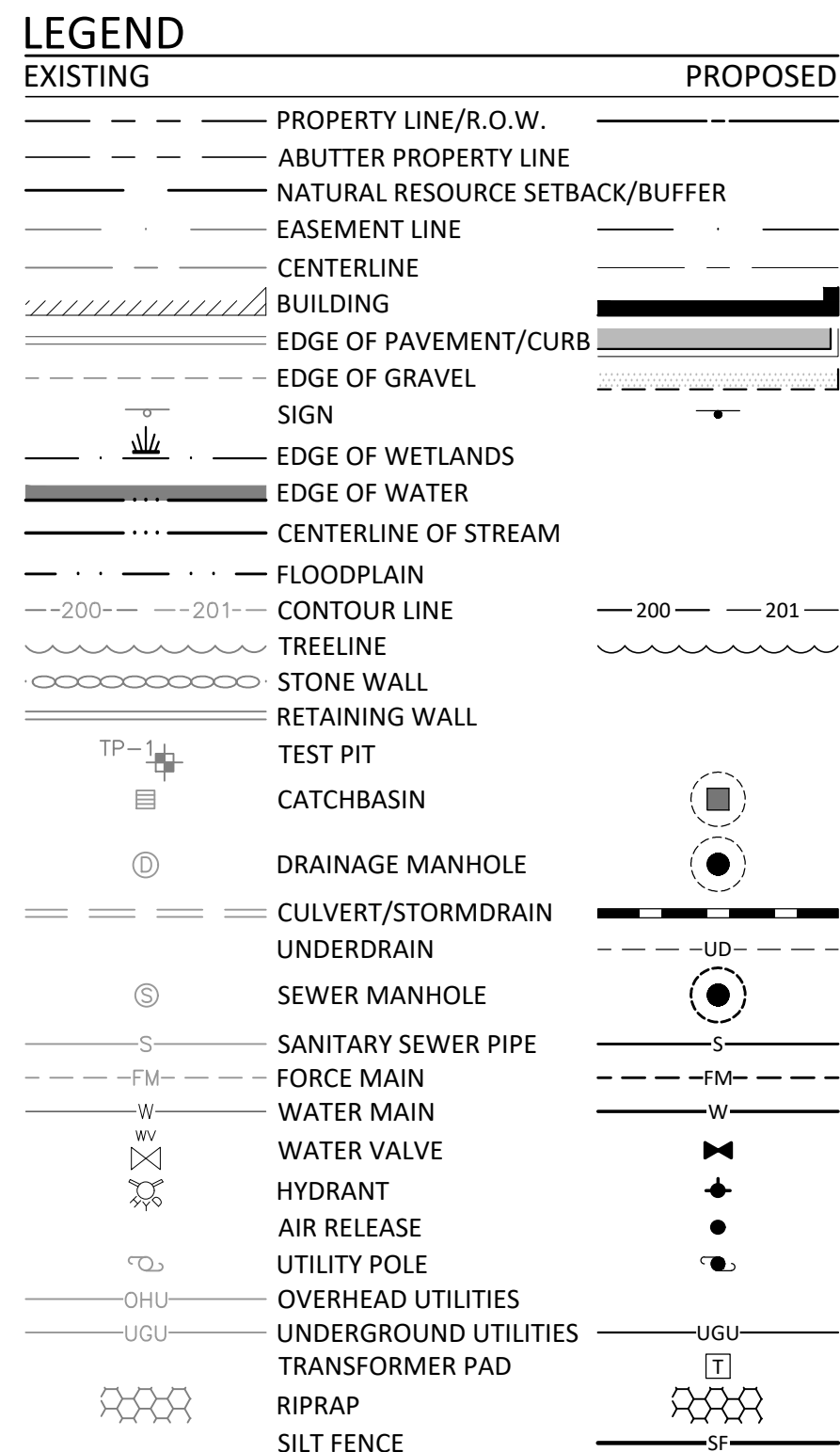
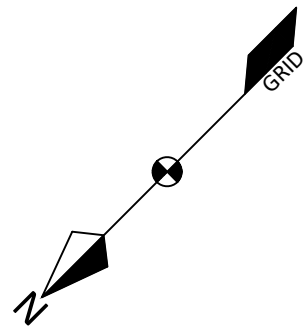
MAINTENANCE MEASURES SHALL BE APPLIED AS NEEDED DURING THE ENTIRE CONSTRUCTION SEASON. AFTER EACH RAINFALL, SNOW STORM, PERIOD OF THAWING AND RUNOFF AND AT LAST DURING A WEEK, THE SITE VISITOR SHALL PERFORM A VISUAL INSPECTION OF ALL INSTALLED EROSION CONTROL MEASURES AND PERFORM REPAIRS AS NEEDED TO INSURE THEIR CONTINUOUS FUNCTION. FOLLOWING THE TEMPORARY AND/OR FINAL SEEDING AND MULCHING, THE CONTRACTOR SHALL, IN THE SPRING, INSPECT AND REPAIR ANY DAMAGES AND/OR BARE SPOTS. AN ESTABLISHED VEGETATIVE COVER MEANS A MINIMUM OF 90% OF AREAS VEGETATED WITH VIGOROUS GROWTH.

STORM DRAIN STRUCTURE TABLE				
STRUCTURE	RIM	INV. IN	INV. OUT	
CB-1	75.02	71.80 (SD-35)	71.70 (SD-1)	
CB-2	75.02	71.55 (SD-1) 71.80 (SD-3)	71.50 (SD-2)	
CB-3	79.59	76.30 (SD-40)	75.75 (SD-4)	
CB-4	79.59	75.55 (SD-4) 76.22 (SD-39)	75.55 (SD-5)	
CB-5	84.07	79.40 (SD-7) 79.40 (SD-8)	79.40 (SD-6)	
CB-6	84.07		79.60 (SD-7)	
CB-8	90.83	86.30 (SD-10)	86.20 (SD-9)	
CB-9	90.83		86.50 (SD-10)	
CB-10	107.03	102.60 (SD-12)	102.50 (SD-11)	
CB-11	107.03		102.80 (SD-12)	
CB-12	120.38		116.60 (SD-14)	
CB-13	120.38	115.80 (SD-14)	115.70 (SD-15)	
CB-14	88.73	84.60 (SD-16)	84.50 (SD-17)	
CB-15	88.73	83.55 (SD-19) 84.30 (SD-17)	83.30 (SD-18)	
CB-16	91.59	86.70 (SD-20)	86.60 (SD-19)	
CB-17	98.80	93.60 (SD-21)	93.50 (SD-20)	
CB-18	98.80		93.80 (SD-21)	
CB-19	111.54	106.50 (SD-22)	106.70 (SD-23)	
CB-20	111.54	106.50 (SD-23) 106.50 (SD-25)	106.40 (SD-24)	
CB-21	113.46	108.50 (SD-26)	108.25 (SD-25)	
CB-22	117.24		112.13 (SD-26)	
CB-23	74.62		70.60 (SD-48)	
CB-24	81.75	76.80 (SD-31)	76.70 (SD-32)	
CB-25	80.50		76.10 (SD-41)	
CB-26	74.62	70.40 (SD-48)	70.30 (SD-49)	
DMH-1	85.22	75.60 (SD-32)	75.50 (SD-33)	
DMH-2	76.17	70.75 (SD-37) 71.50 (SD-36)	70.75 (SD-38)	
DMH-3	80.02	74.80 (SD-27)	74.70 (SD-13)	
DMH-4	87.46	82.95 (SD-9) 82.70 (SD-18)	80.20 (SD-8)	
OCS-1	81.50		76.98 (SD-31)	

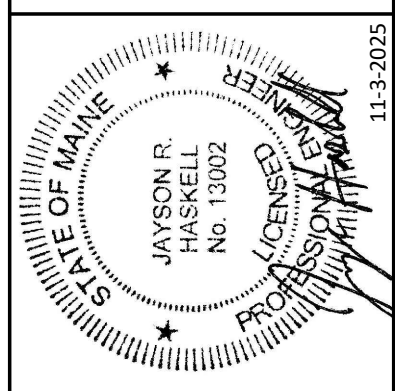
STORM DRAIN PIPE TABLE				
NAME	SIZE	LENGTH	SLOPE	
SD-1	12"	26'	0.68%	
SD-2	12"	21'	1.13%	
SD-3	4"	5'	3.91%	
SD-4	12"	24'	1.00%	
SD-5	12"	30'	0.54%	
SD-6	18"	26'	0.62%	
SD-7	12"	26'	0.91%	
SD-8	18"	165'	0.50%	
SD-9	12"	58'	6.01%	
SD-10	12"	26'	0.91%	
SD-11	12"	27'	1.98%	
SD-12	12"	26'	0.91%	
SD-13	12"	36'	0.59%	
SD-14	12"	26'	0.91%	
SD-15	12"	175'	0.58%	
SD-16	18"	18'	1.53%	
SD-17	18"	26'	0.91%	
SD-18	18"	32'	2.14%	
SD-19	12"	98'	3.24%	
SD-20	12"	140'	4.99%	
SD-21	12"	26'	0.91%	
SD-22	12"	27'	3.94%	
SD-23	12"	26'	0.91%	
SD-24	15"	29'	1.49%	
SD-25	15"	106'	1.71%	
SD-26	12"	161'	2.30%	
SD-27	6"	4'	4.43%	
SD-31	12"	26'	0.82%	
SD-32	30"	62'	1.93%	
SD-33	30"	147'	0.48%	
SD-34	15"	54'	0.56%	
SD-35	4"	4'	4.14%	
SD-36	12"	40'	0.53%	
SD-37	6"	11'	1.17%	
SD-38	12"	27'	0.60%	
SD-39	4"	6'	3.19%	
SD-40	4"	6'	2.27%	
SD-41	12"	51'	0.60%	
SD-42	24"	52'	0.86%	
SD-44	12"	29'	1.04%	
SD-48	12"	26'	0.91%	
SD-49	12"	39'	0.82%	



24036 JOB NUMBER:
1" = 30' SCALE:
11-3-2025 DATE:
SHEET 7 OF 19
PP-1



NOT FOR
CONSTRUCTION



DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062

[illegible]

PLAN AND PROFILE: ROAD A

THE WOODLANDS RESERVE SUBDIVISION

POOL STREET AND PARKSIDE DRIVE
BIDDEFORD, MAINE

FOR RECORD OWNER:
BEDARD HOMES, LLC

PO BOX 481
BIDDEFORD, MAINE 04005

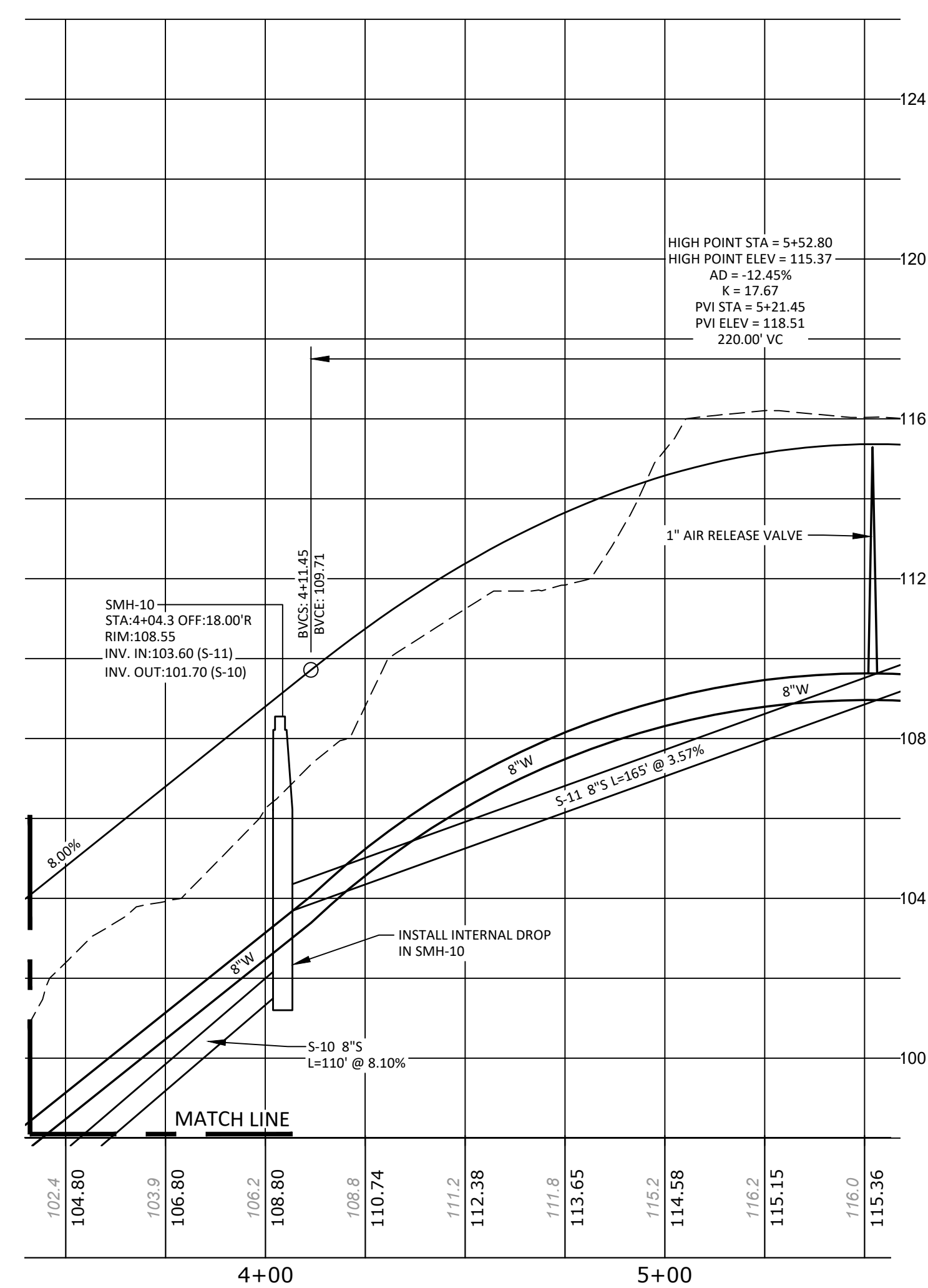
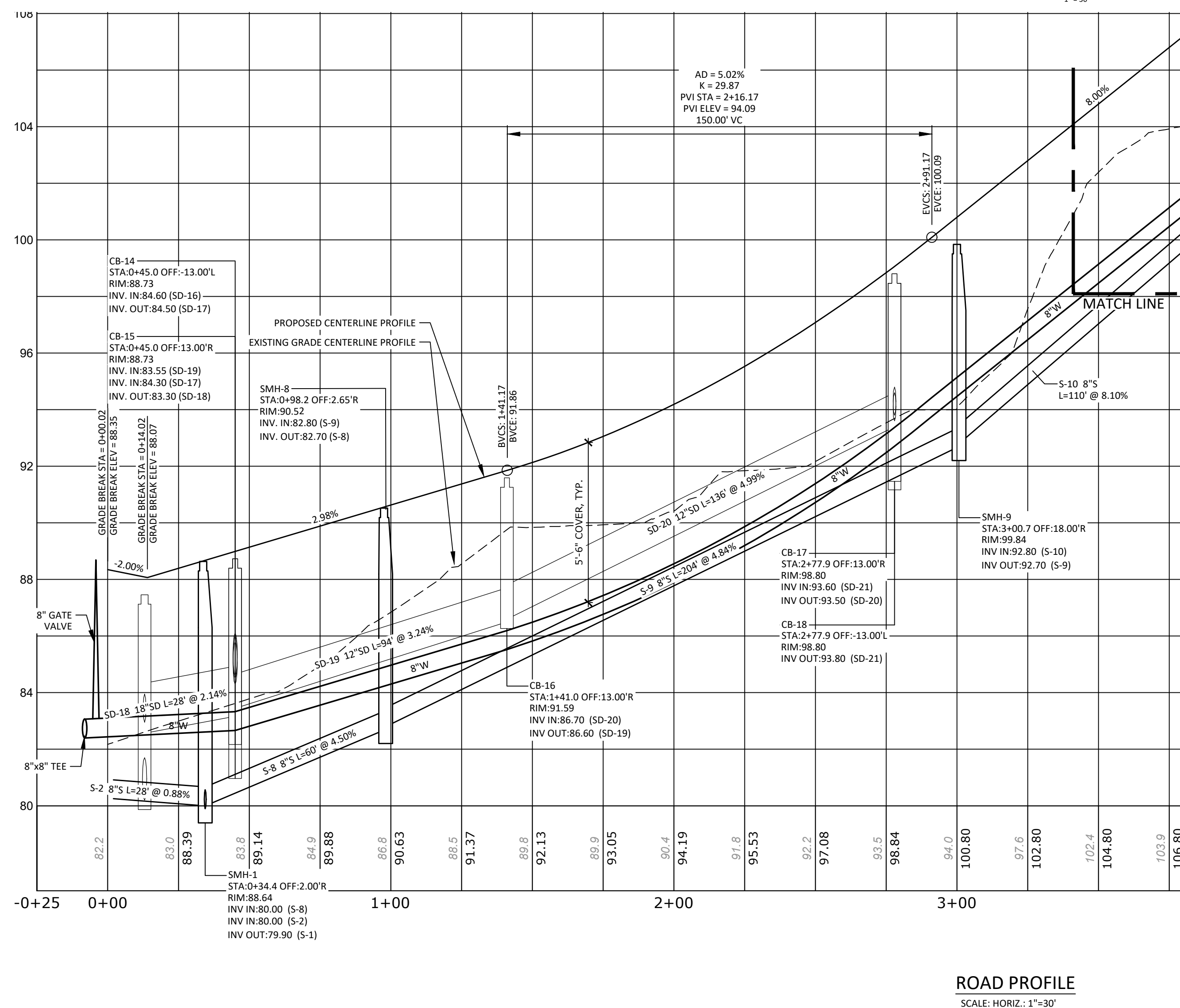
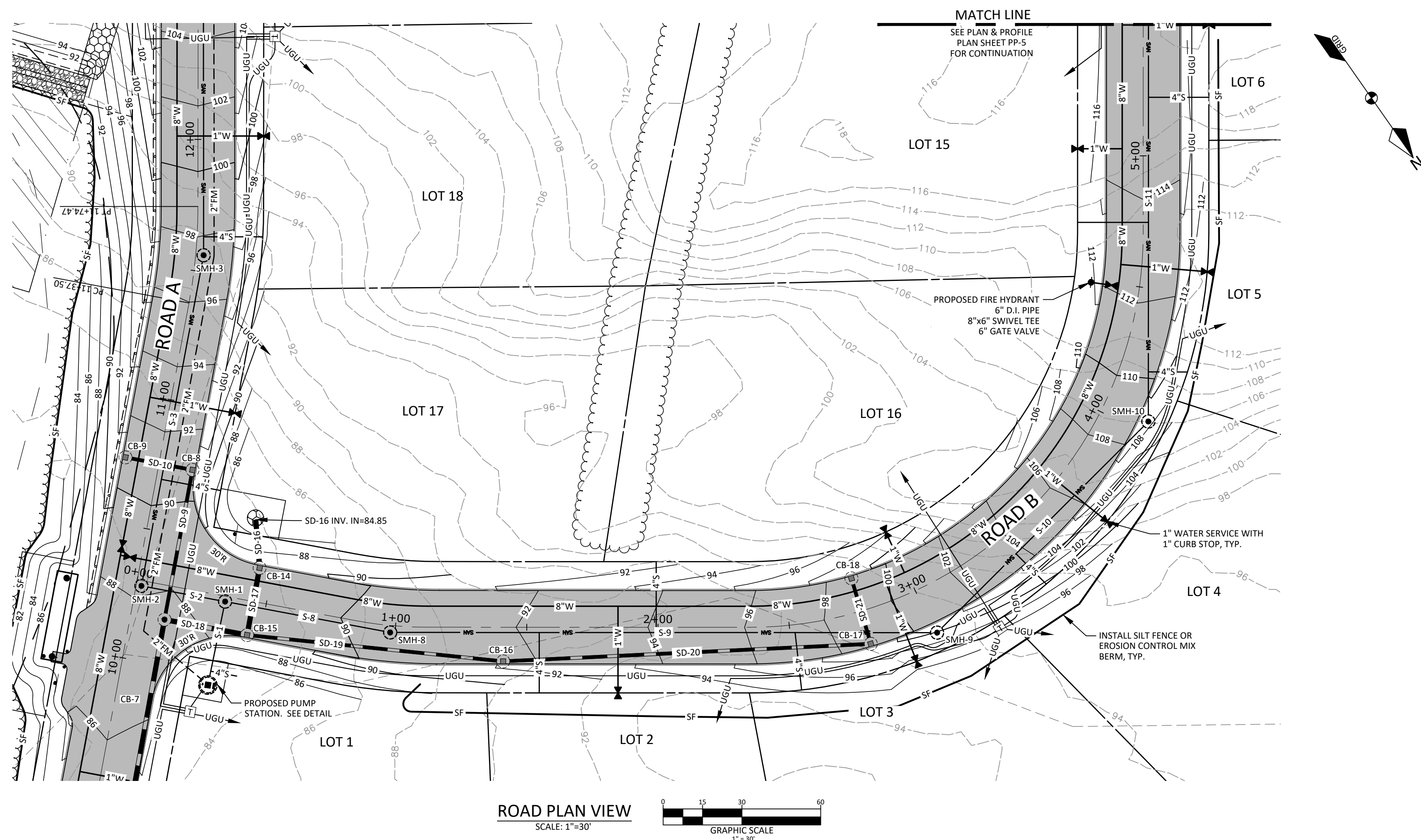
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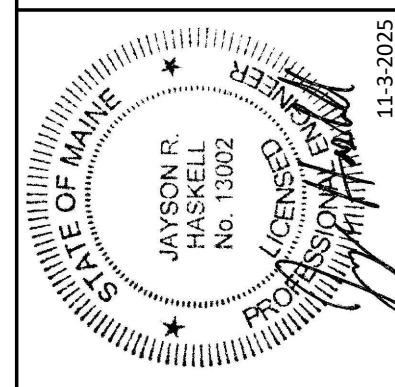
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SHEET 9 OF 19

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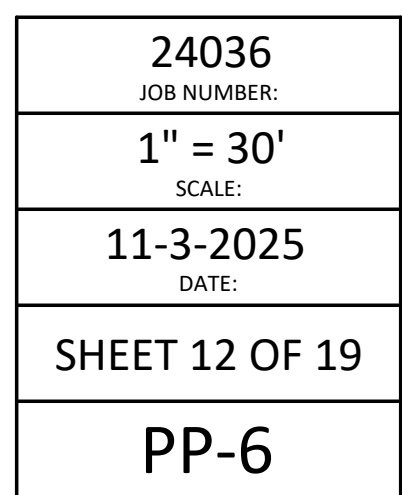
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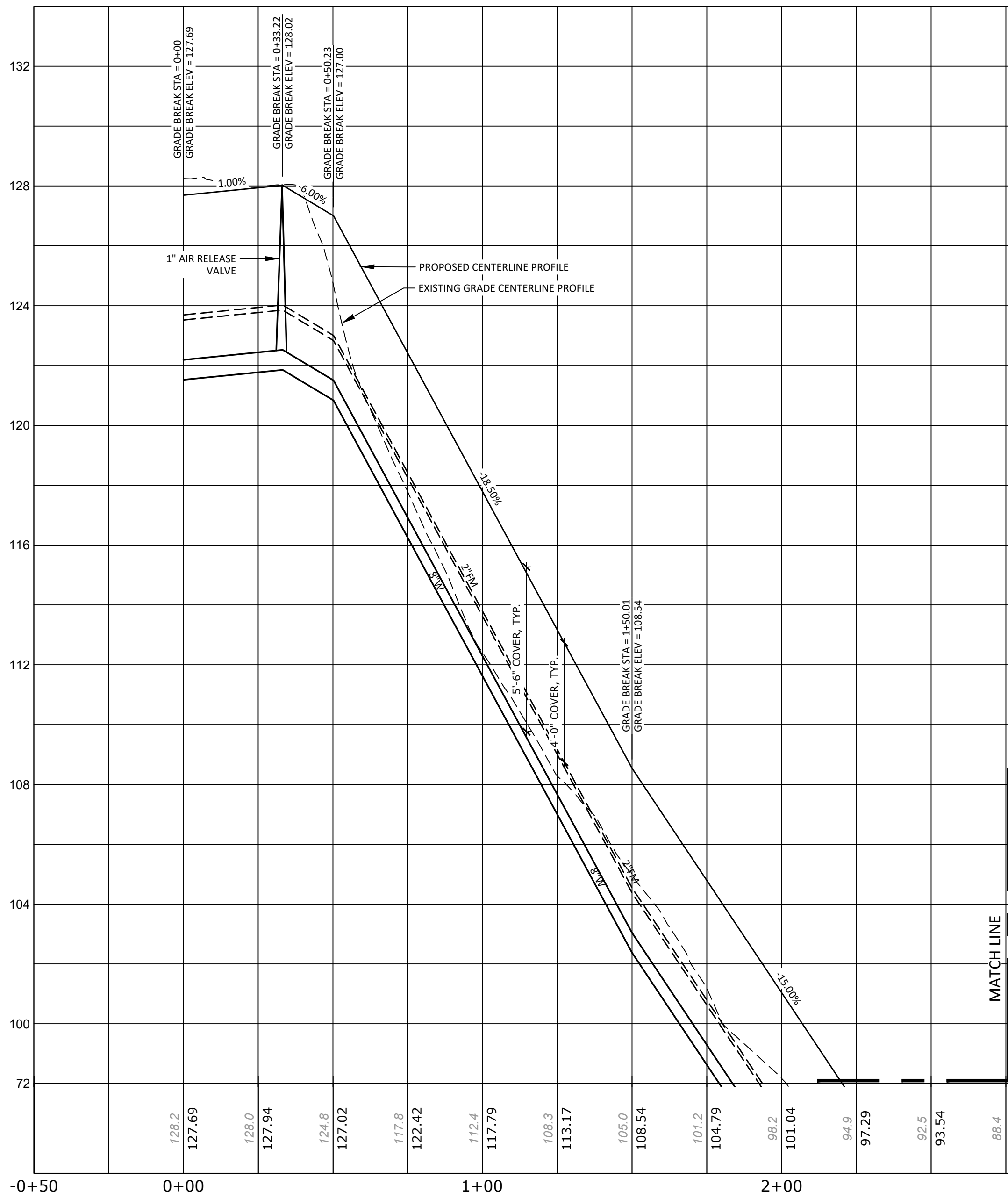
DM ROMA
CONSULTING ENGINEERS
P.O. BOX 11116
WINDHAM, ME 04062
(207) 591-5055

REV	DATE	BY	DESCRIPTION
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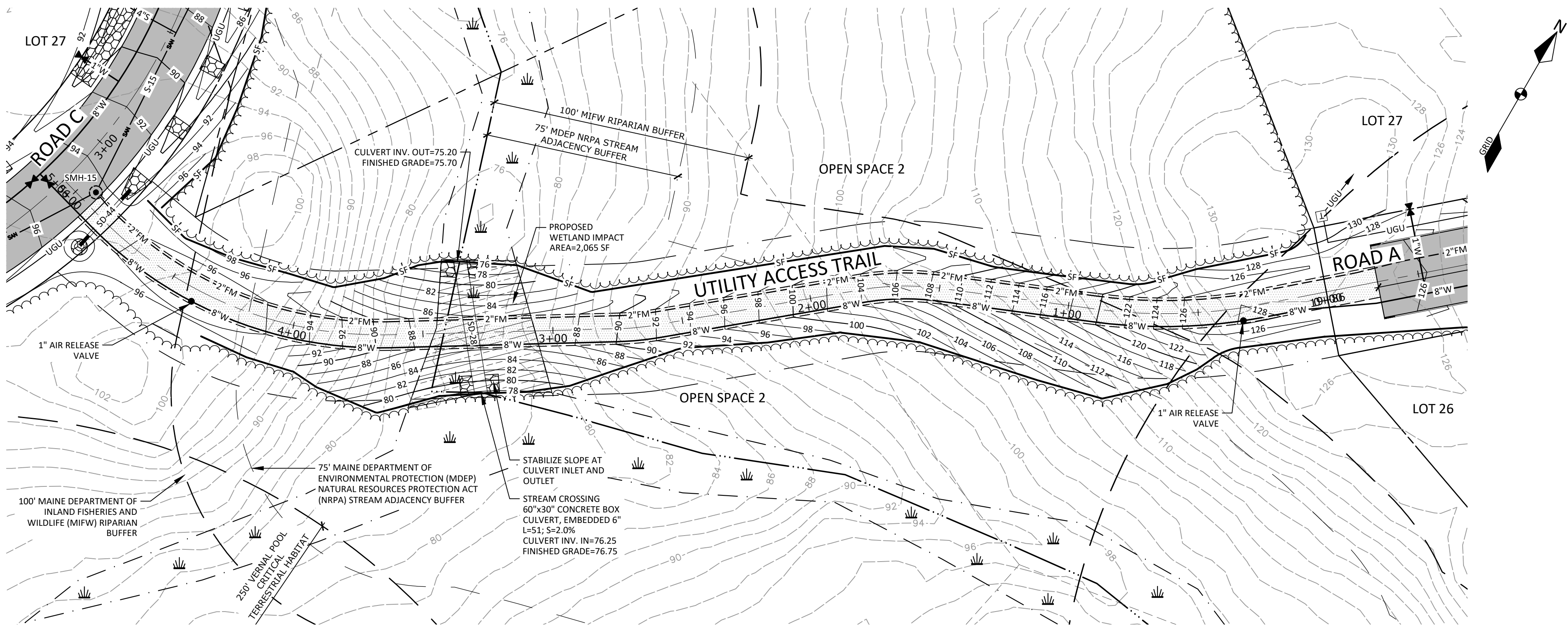
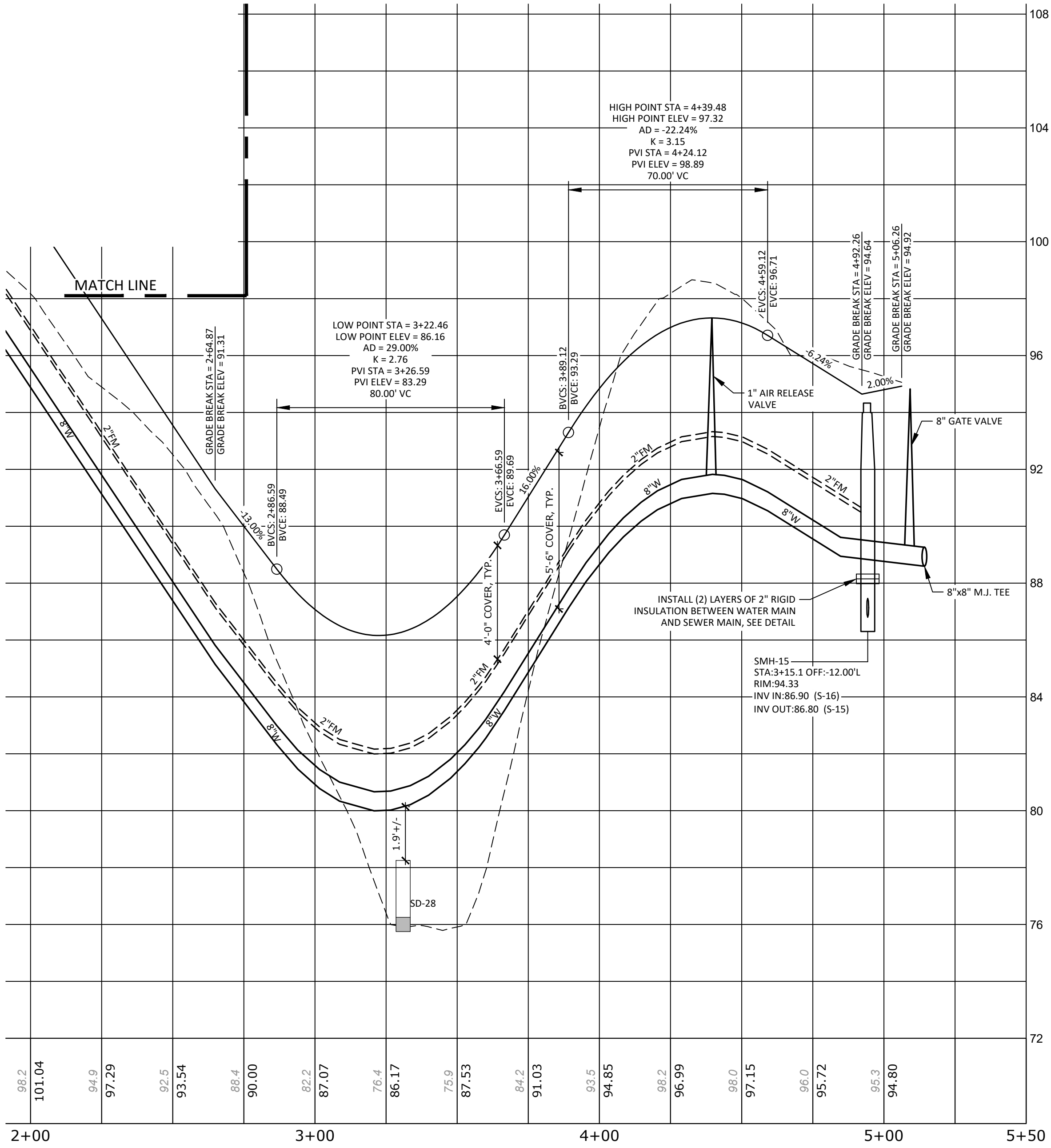
PLAN AND PROFILE: ROAD B
THE WOODLANDS RESERVE SUBDIVISION
POOL STREET AND PARKSIDE DRIVE
BIDDEFORD, MAINE
FOR RECORD OWNER:
BEDARD HOMES, LLC
PO BOX 481
BIDDEFORD, MAINE 04005



LEGEND	
EXISTING	PROPOSED
	PROPERTY LINE/R.O.W.
	ABUTTER PROPERTY LINE
	NATURAL RESOURCE SETBACK/BUFFER
	EASEMENT LINE
	CENTERLINE
	BUILDING
	EDGE OF PAVEMENT/CURB
	EDGE OF GRAVEL
	SIGN
	EDGE OF WETLANDS
	EDGE OF WATER
	CENTERLINE OF STREAM
	FLOODPLAIN
	CONTOUR LINE
	TREELINE
	STONE WALL
	RETAINING WALL
	TEST PIT
	CATCHBASIN
	DRAINAGE MANHOLE
	CULVERT/STORMDRAIN
	UNDERDRAIN
	SEWER MANHOLE
	SANITARY SEWER PIPE
	FORCE MAIN
	WATER MAIN
	WATER VALVE
	HYDRANT
	AIR RELEASE
	UTILITY POLE
	OVERHEAD UTILITIES
	UNDERGROUND UTILITIES
	TRANSFORMER PAD
	RIPRAP
	SILT FENCE



ROAD PROFILE
SCALE: HORIZ: 1"=30'
VERT: 1"=3'



ROAD PLAN VIEW
SCALE: 1"=30'
GRAPHIC SCALE
1"=30'

PLAN AND PROFILE: UTILITY ACCESS TRAIL

THE WOODLANDS RESERVE SUBDIVISION

POOL STREET AND PARKSIDE DRIVE
BIDDEFORD, MAINE

FOR RECORD OWNER:
BEDARD HOMES, LLC

PO BOX 483
BIDDEFORD, MAINE 04005

24036
JOB NUMBER:

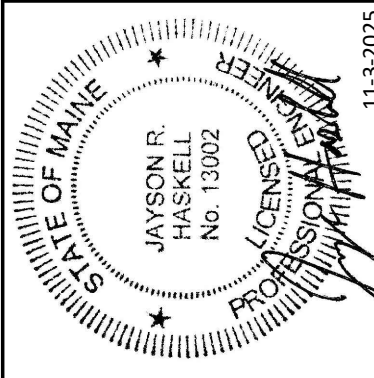
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11-3-2025
DATE:

SHEET 13 OF 19

PP-7

NOT FOR
CONSTRUCTION



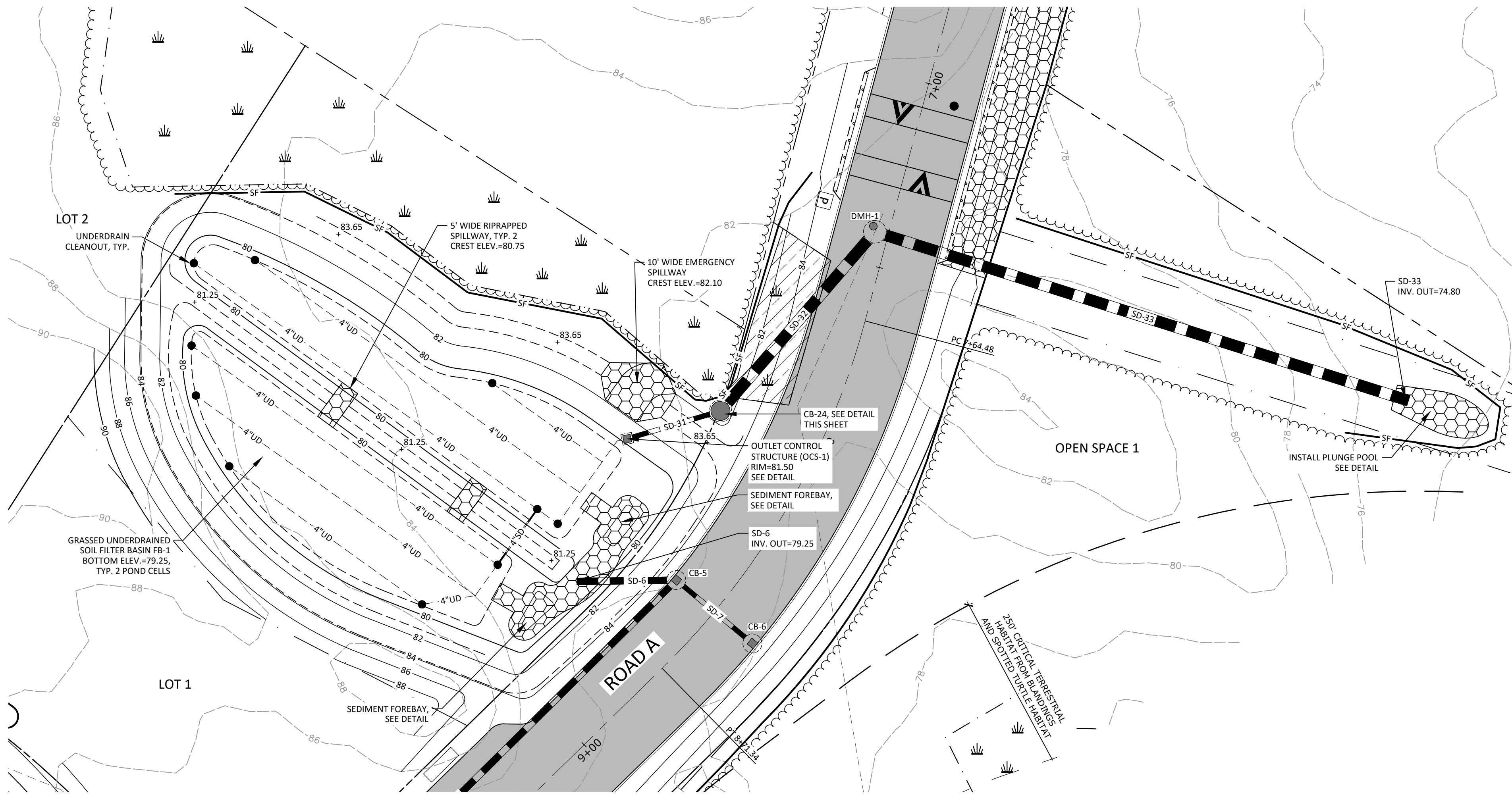
DM ROMA

CONSULTING ENGINEERS

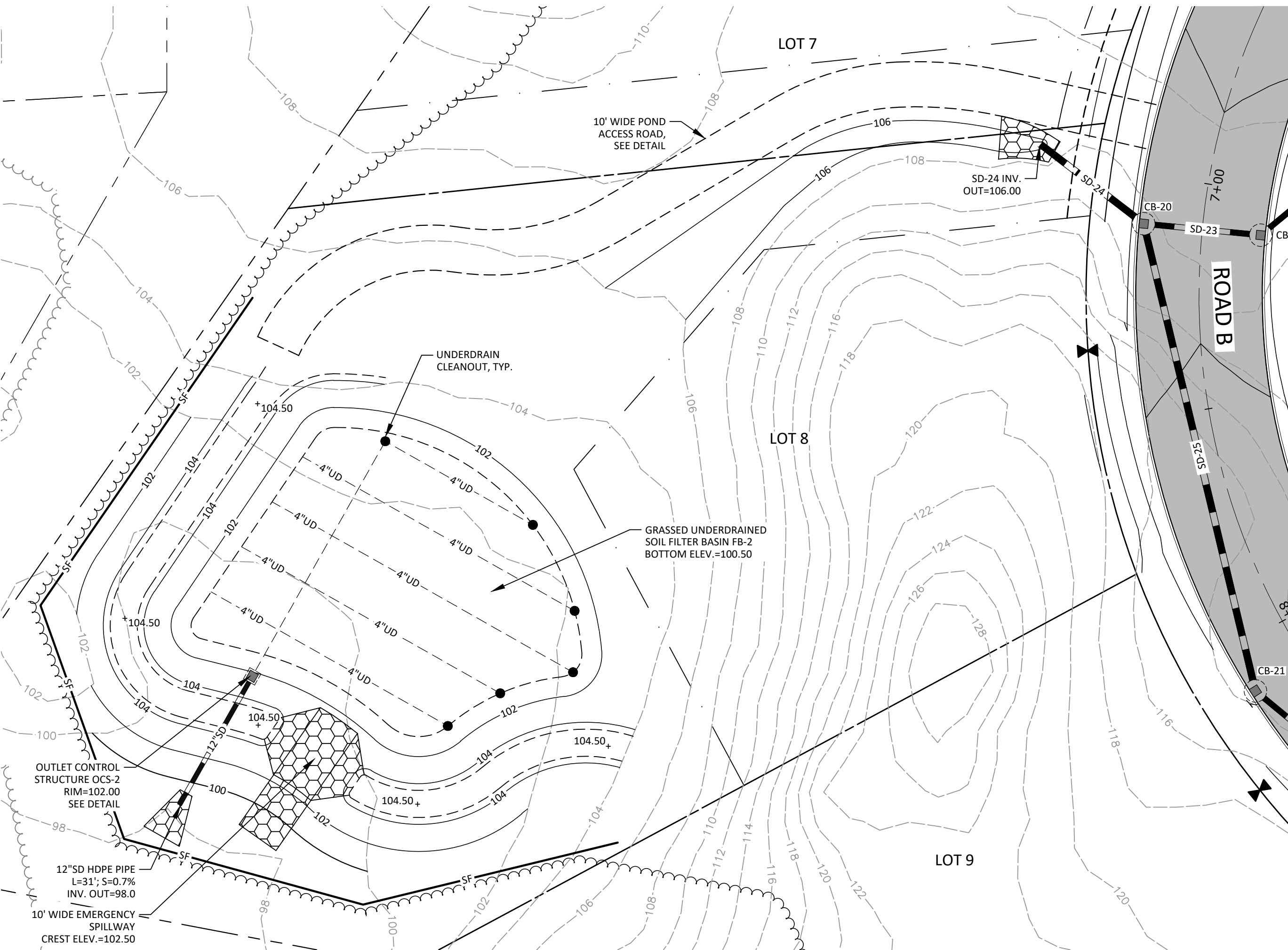
P.O. BOX 1116
WINDHAM, ME 04062

(207) 591-5055

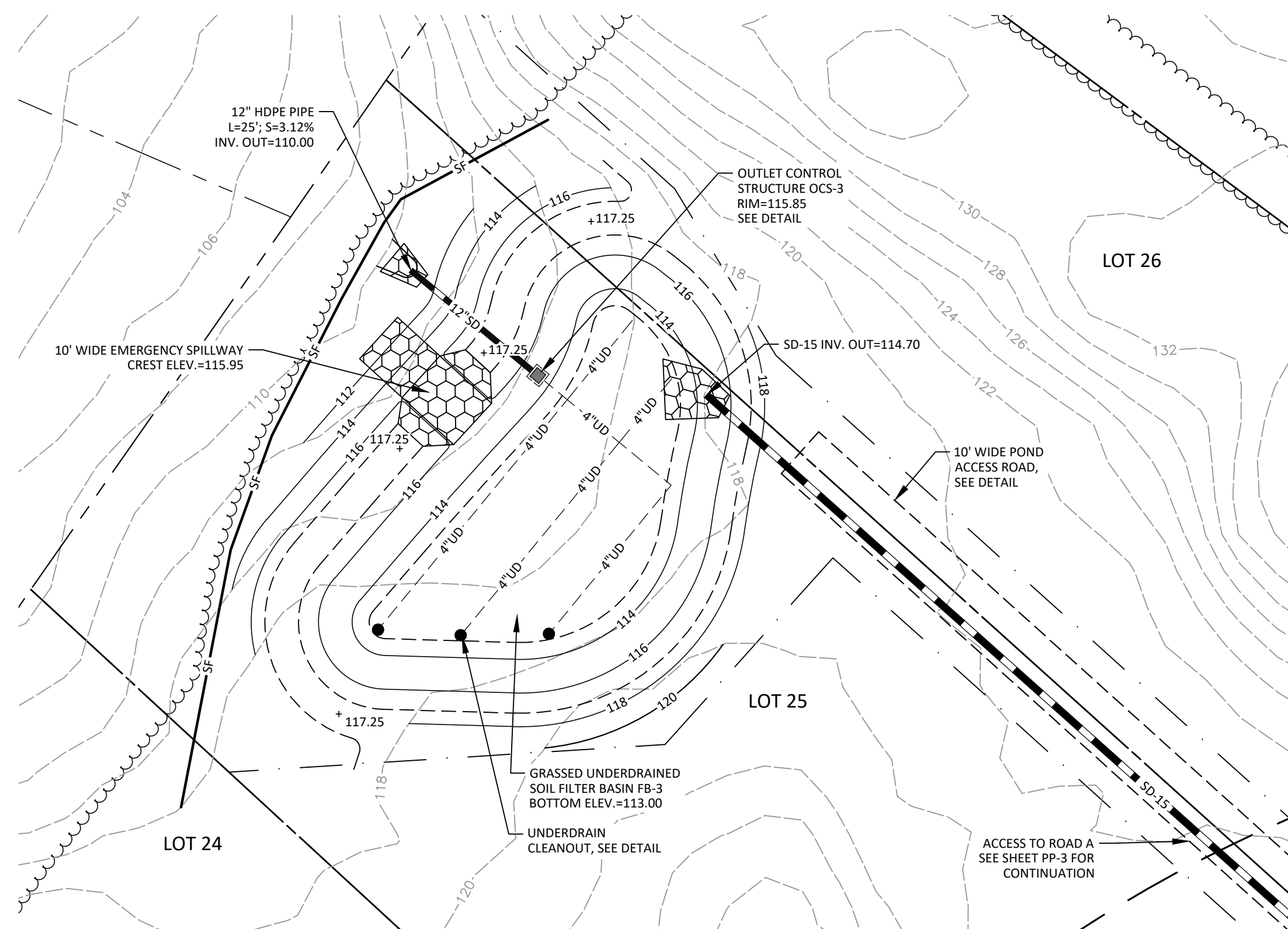
REV	DATE	BY	DESCRIPTION
A	11-3-25	JRH	ISSUED FOR PERMITTING



GRASSED UNDERDRAINED SOIL FILTER BASIN FB-1
SCALE: 1"=20'



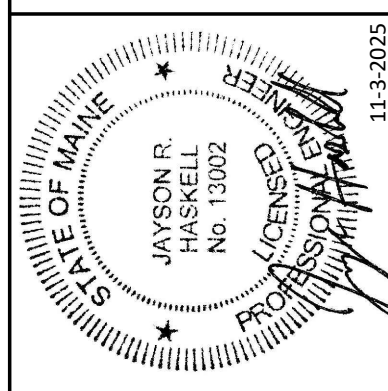
GRASSED UNDERDRAINED SOIL FILTER BASIN FB-2
SCALE: 1"=20'



GRASSED UNDERDRAINED SOIL FILTER BASIN FB-3
SCALE: 1"=20'

EXISTING	PROPOSED
PROPERTY LINE/R.O.W.	PROPERTY LINE/R.O.W.
ABUTTER PROPERTY LINE	ABUTTER PROPERTY LINE
SETBACK	SETBACK
EASEMENT LINE	EASEMENT LINE
CENTERLINE	CENTERLINE
BUILDING	BUILDING
EDGE OF PAVEMENT/CURB	EDGE OF PAVEMENT/CURB
EDGE OF GRAVEL	EDGE OF GRAVEL
EDGE OF CONCRETE	EDGE OF CONCRETE
SIGN	SIGN
EDGE OF WETLANDS	EDGE OF WETLANDS
CONTOUR LINE	CONTOUR LINE
TREELINE	TREELINE
STONE WALL	STONE WALL
TEST PIT	TEST PIT
CATCHBASIN	CATCHBASIN
DRAINAGE MANHOLE	DRAINAGE MANHOLE
CULVERT/STORMDRAIN	CULVERT/STORMDRAIN
UNDERDRAIN	UNDERDRAIN
SEWER MANHOLE	SEWER MANHOLE
SANITARY SEWER PIPE	SANITARY SEWER PIPE
FORCE MAIN	FORCE MAIN
WATER MAIN	WATER MAIN
WATER VALVE	WATER VALVE
HYDRANT	HYDRANT
AIR RELEASE	AIR RELEASE
UNDERGROUND UTILITIES	UNDERGROUND UTILITIES
TRANSFORMER PAD	TRANSFORMER PAD
GRASS	GRASS
RIPRAP	RIPRAP
SILT FENCE	SILT FENCE

NOT FOR
CONSTRUCTION



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REV	DATE	BY	DESCRIPTION
A	11-3-25	JRH	ISSUED FOR PERMITTING

STORMWATER POND PLAN

THE WOODLANDS RESERVE SUBDIVISION

POOL STREET AND PARKSIDE DRIVE
BIDDEFORD, MAINE

FOR RECORD OWNER:
BEDARD HOMES, LLC

PO BOX 481
BIDDEFORD, MAINE 04005

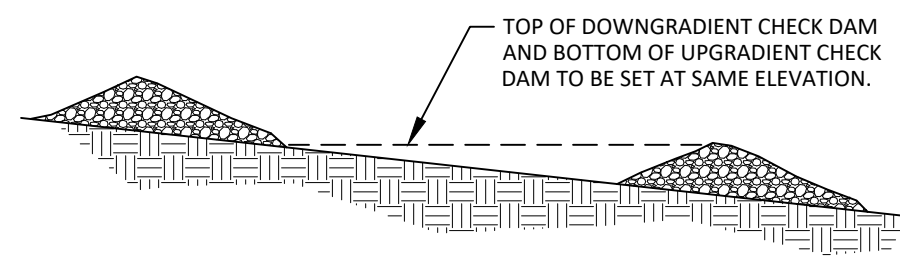
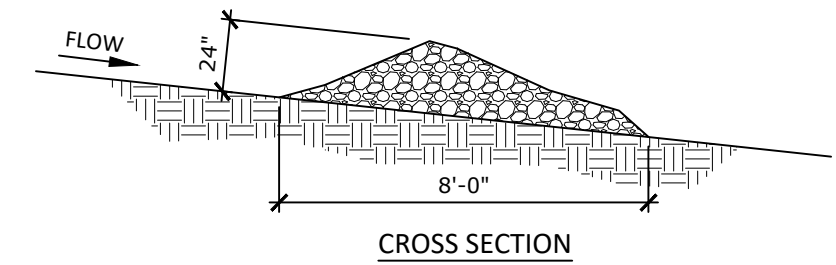
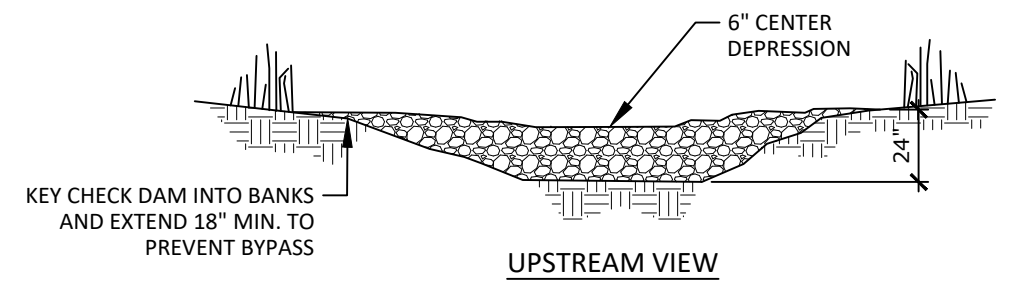
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JOB NUMBER:

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SCALE:

11-3-2025
DATE:

SHEET 14 OF 19

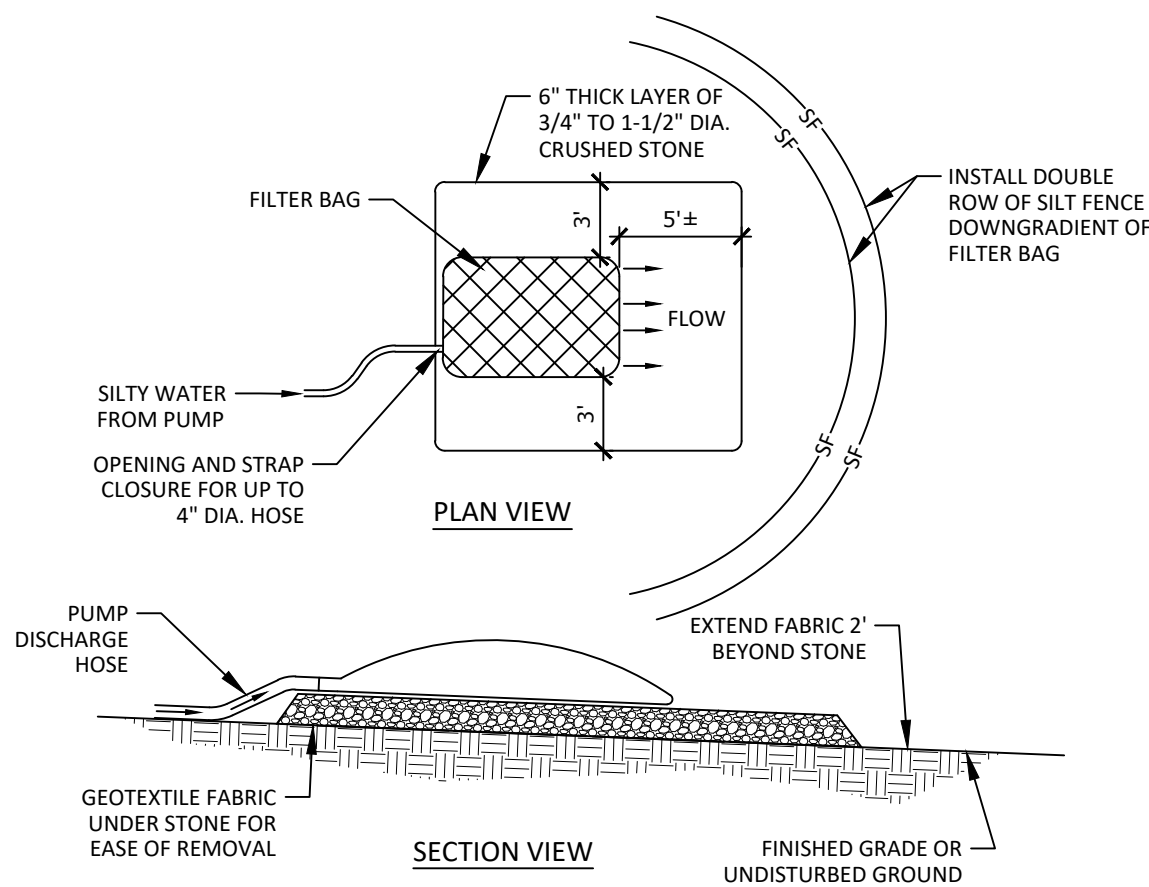
P-1



- NOTES:
- CHECK DAMS SHOULD BE INSTALLED BEFORE RUNOFF IS DIRECTED TO THE SWALE.
 - THE AREA AROUND THE CHECK DAM SHOULD BE FREE OF DEBRIS.
 - A STONE CHECK DAM SHOULD BE COMPRISED OF WELL-GRADED CRUSHED ROCK WITH A MAXIMUM SIZE OF 6" AND A MINIMUM STONE SIZE OF 1".
 - THE MAXIMUM HEIGHT OF A CHECK DAM SHOULD BE 2' WITH A 6" DEPRESSION AT ITS CENTER FOR OVERFLOW. THE EDGES OF THE DAM SHOULD BE KEED INTO THE EMBANKMENTS TO PREVENT SIDE EROSION.
 - MECHANICAL PLACEMENT FOLLOWED BY HAND PLACEMENT WILL BE NECESSARY TO ACHIEVE A TIGHT MASS WITHIN THE CHANNEL AND TO ENSURE THAT THE CENTER OF THE DAM IS LOWER THAN THE EDGES.
 - ANY EROSION DOWNGRADIENT OR AROUND THE EDGES OF STONE CHECK DAMS SHOULD BE CORRECTED IMMEDIATELY.
 - THE CHECK DAMS MAY BE REMOVED WHEN THE SWALE IS STABILIZED WITH VEGETATION (90% COVERAGE).

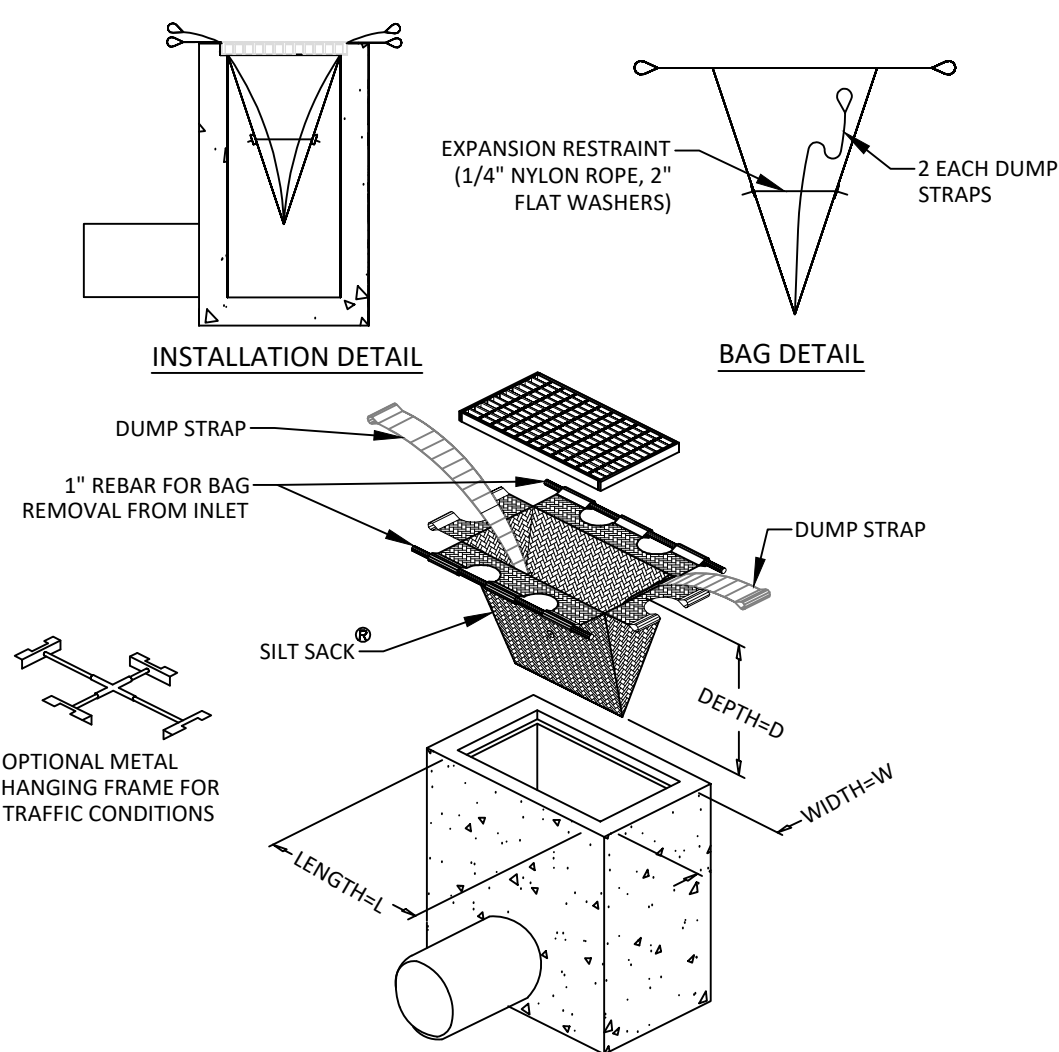
STONE CHECK DAM

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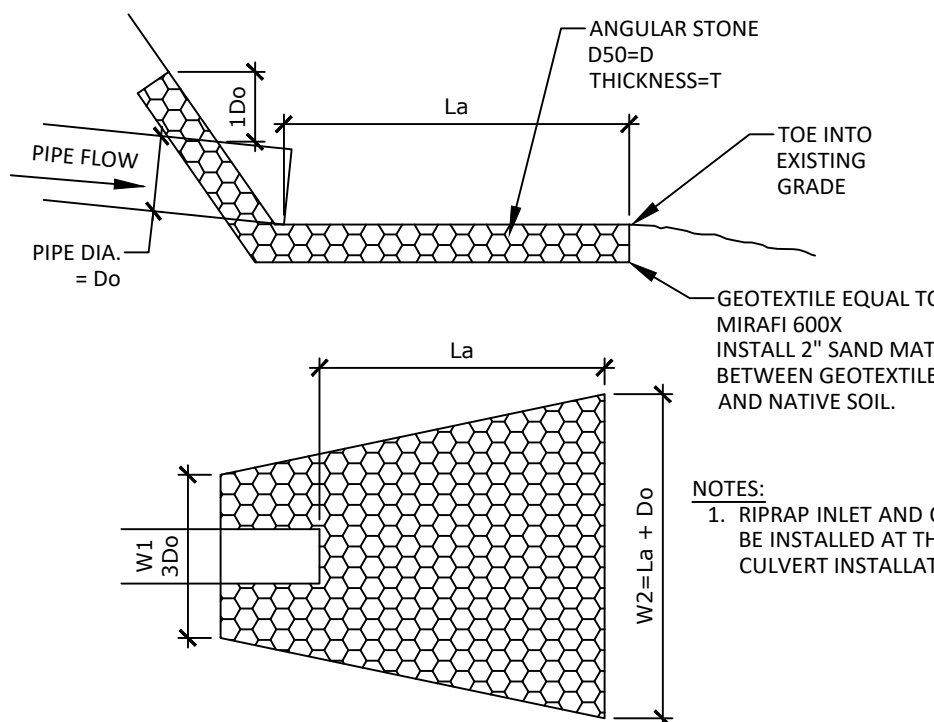
DEWATERING GEOTEXTILE FILTER BAG

NOT TO SCALE



CATCH BASIN INLET PROTECTION

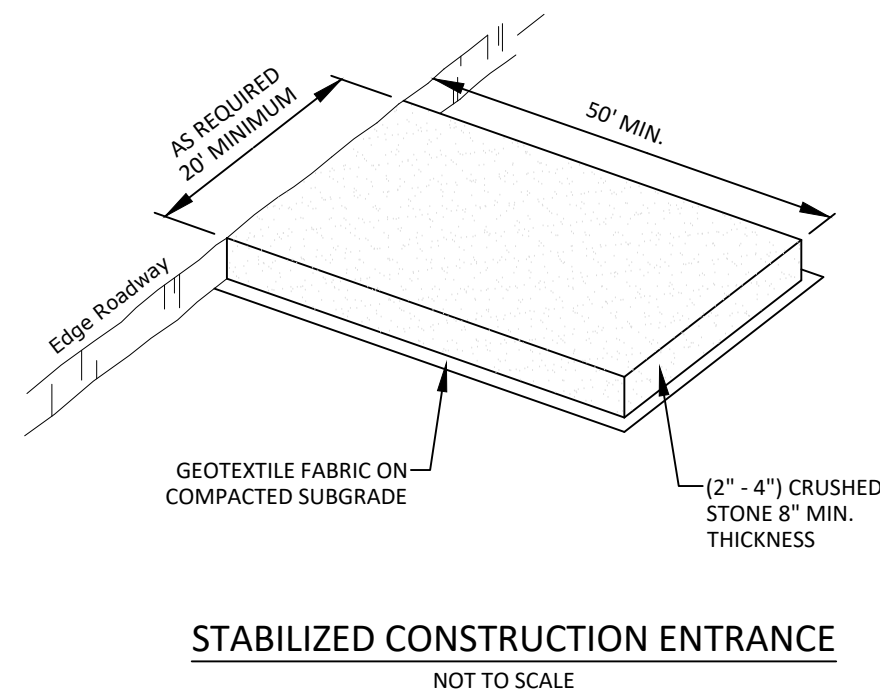
NOT TO SCALE



RIPRAP APRON DATA					
SD DIA.	W1	W2	La	D50	T
4"	1'	4'	4'	5"	12"
12"	3'	7'	6'	5"	12"
15"	4'	9'	8'	6"	14"
18"	5'	12'	10'	6"	14"
24"	6'	15'	13'	6"	14"
30"	8'	19'	16'	6"	14"
36"	9'	24'	20'	8"	18"

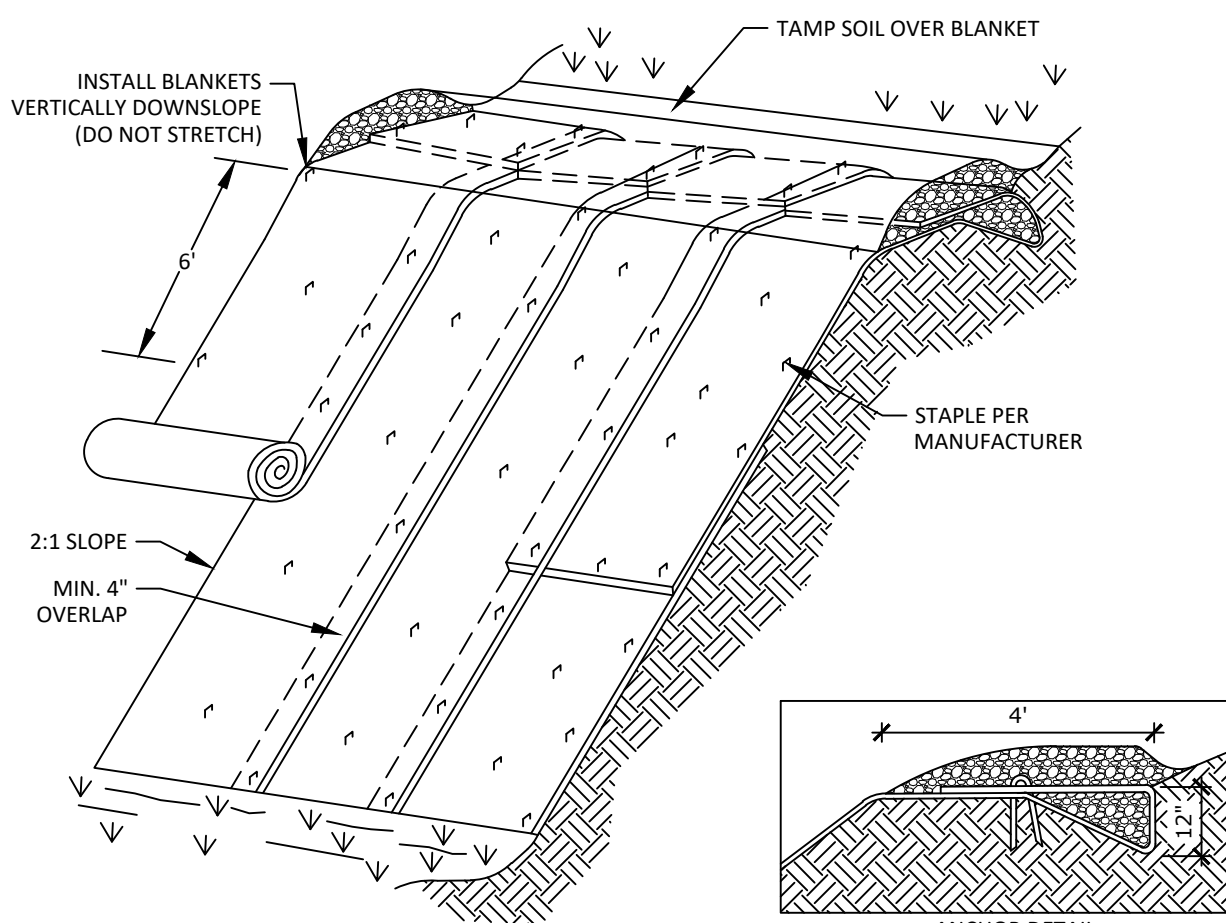
RIPRAP APRON AT PIPE

NOT TO SCALE



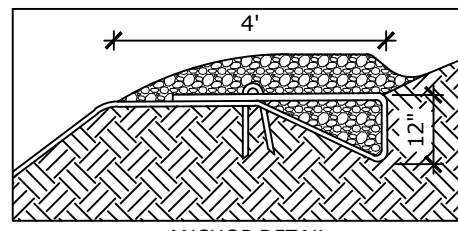
STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE



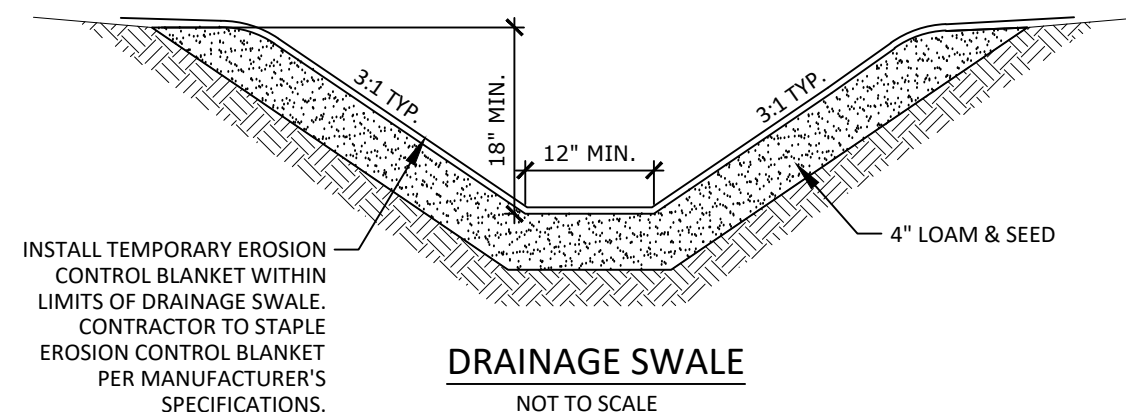
EROSION CONTROL BLANKET

NOT TO SCALE



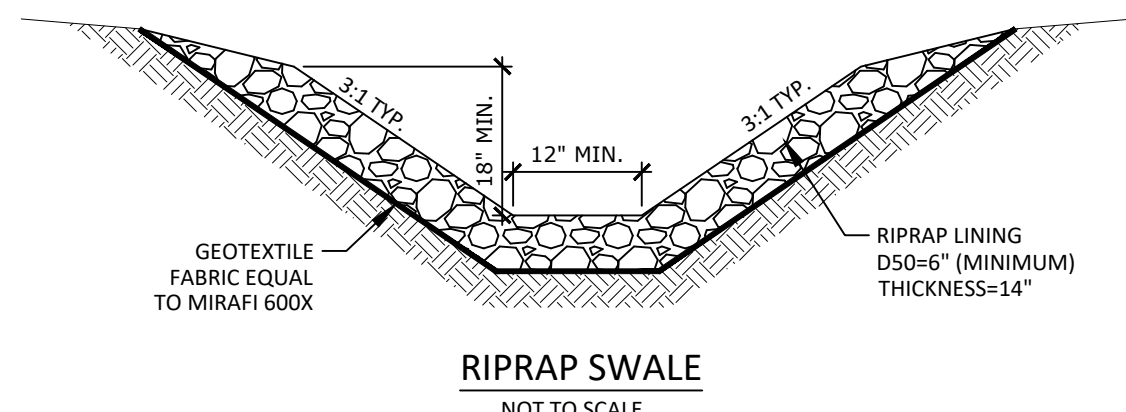
RIPRAP SLOPE

NOT TO SCALE



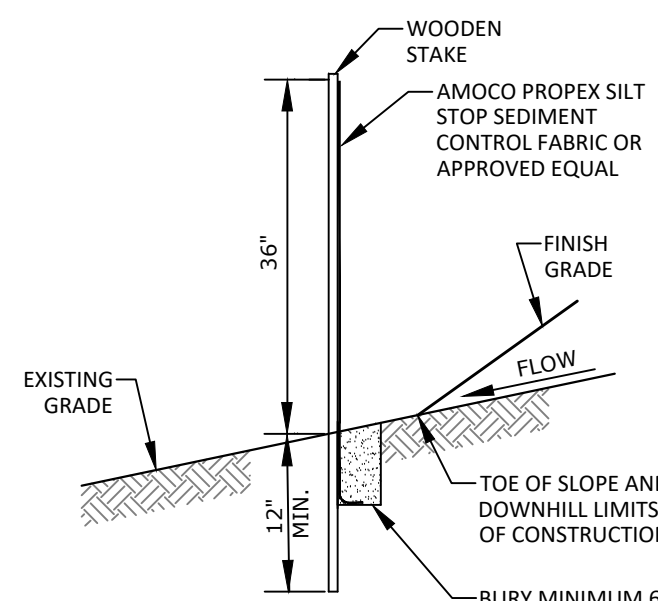
DRAINAGE SWALE

NOT TO SCALE



RIPRAP SWALE

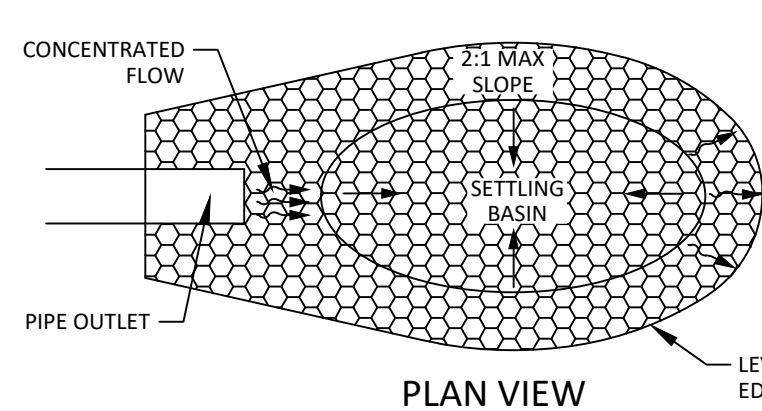
NOT TO SCALE



- NOTES:
- SEE PLAN SHEET PP-0, SECTION 3 OF THE EROSION AND SEDIMENTATION CONTROL NOTES FOR INSTALLATION LOCATION REQUIREMENTS AND ADDITIONAL DETAIL.

SEDIMENT FILTER FENCE

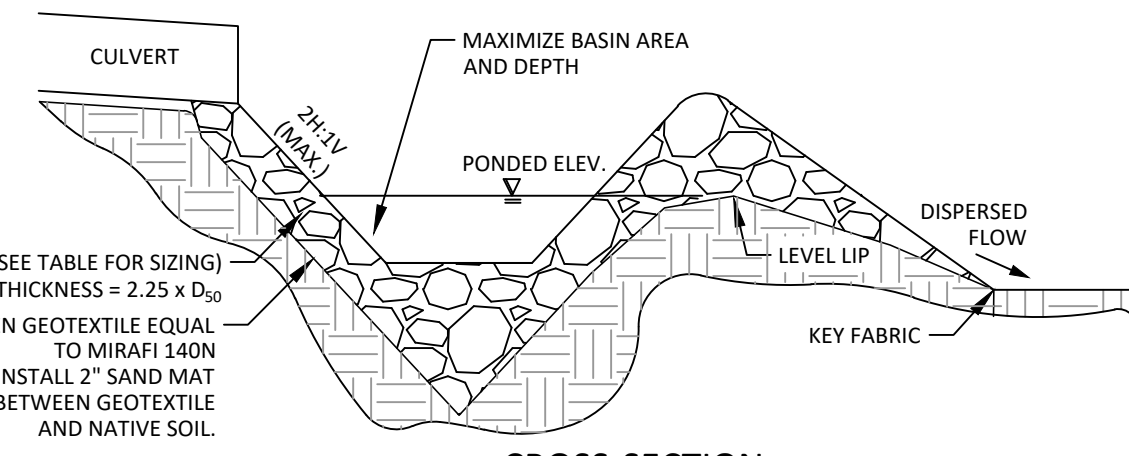
NOT TO SCALE



PLUNGE POOL

NOT TO SCALE

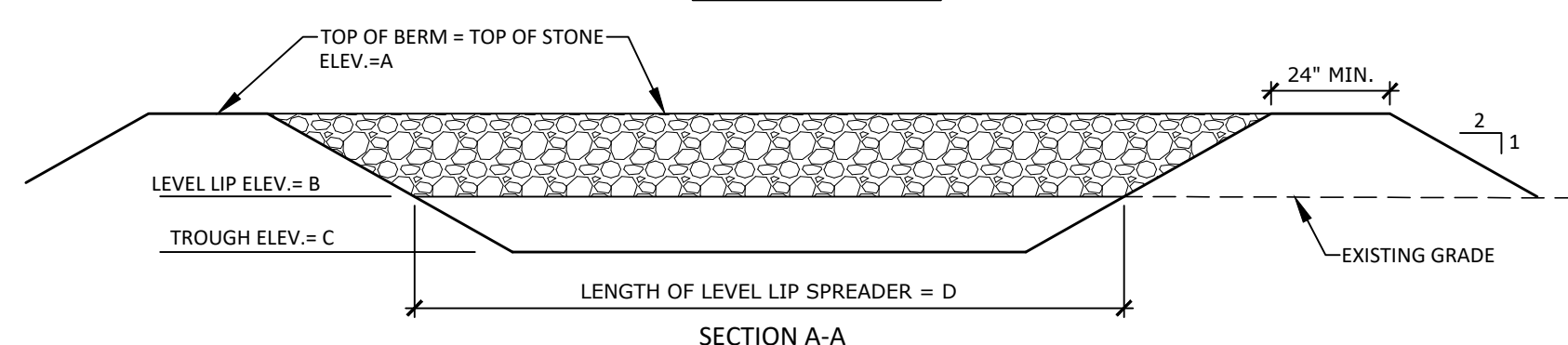
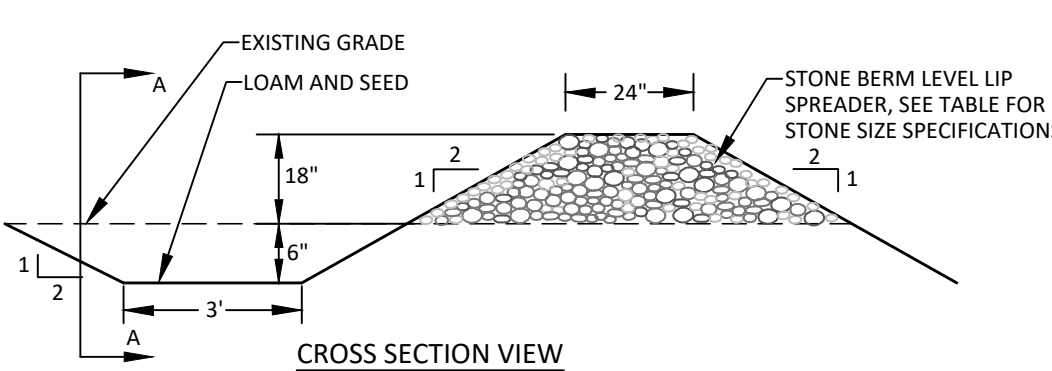
PLUNGE POOL SIZING				
RIPRAP SIZE	RIPRAP SIZING (D50)	WIDTH (AT PIPE OUTLET)	LENGTH (SLOW FLOWS ~ NO HEAD)	LENGTH (HIGH FLOWS ~ WITH HEAD)
12"	5"	3'-4"	4'-6"	8'-10'
18"	8"	4'-6"	6'-8"	12'-18'
24"	10"	6'-8"	8'-10'	18'-22'
30"	12"	8'-10'	12'-14'	22'-28'
36"	14"	10'-12'	14'-16'	28'-32'



CROSS-SECTION

NOT TO SCALE

PLUNGE POOL



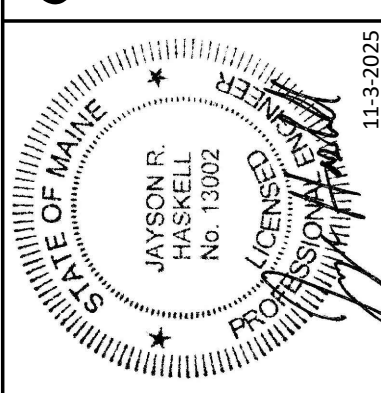
LEVEL SPREADER DATA				
ID	A	B	C	D
LS-1	93.00	91.50	91.00	61'
LS-2	93.70	92.20	91.70	60'
LS-3	80.50	79.00	78.50	25'
LS-4	77.50	76.00	75.50	25'

STORMWATER LEVEL LIP SPREADER

NOT TO SCALE

BERM STONE SIZE	
SIEVE SIZE	% PASSING BY WEIGHT
12"	100%
6"	84-100%
3"	68-83%
1"	42-55%
NO. 4	8-12%

NOT FOR CONSTRUCTION

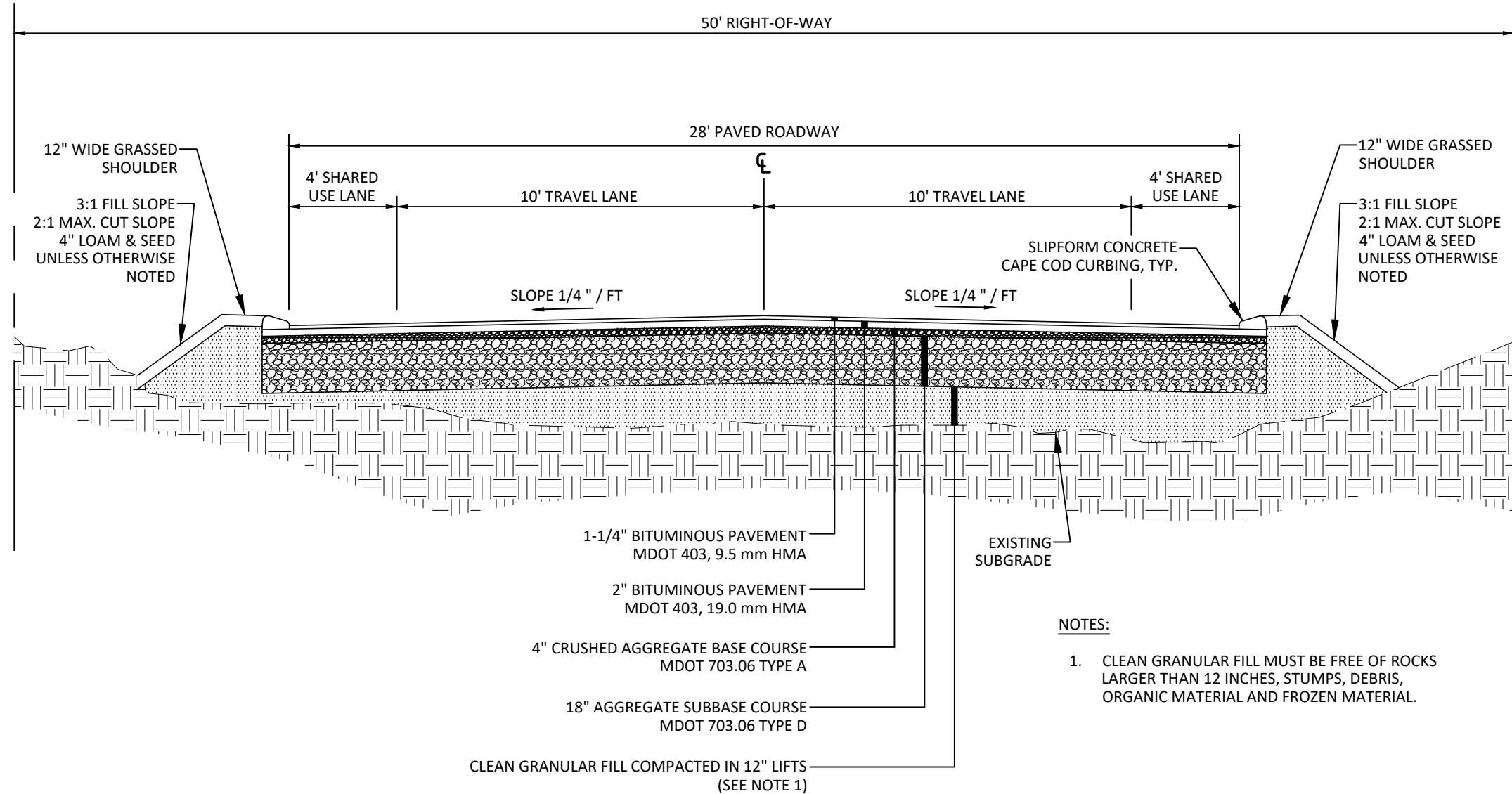


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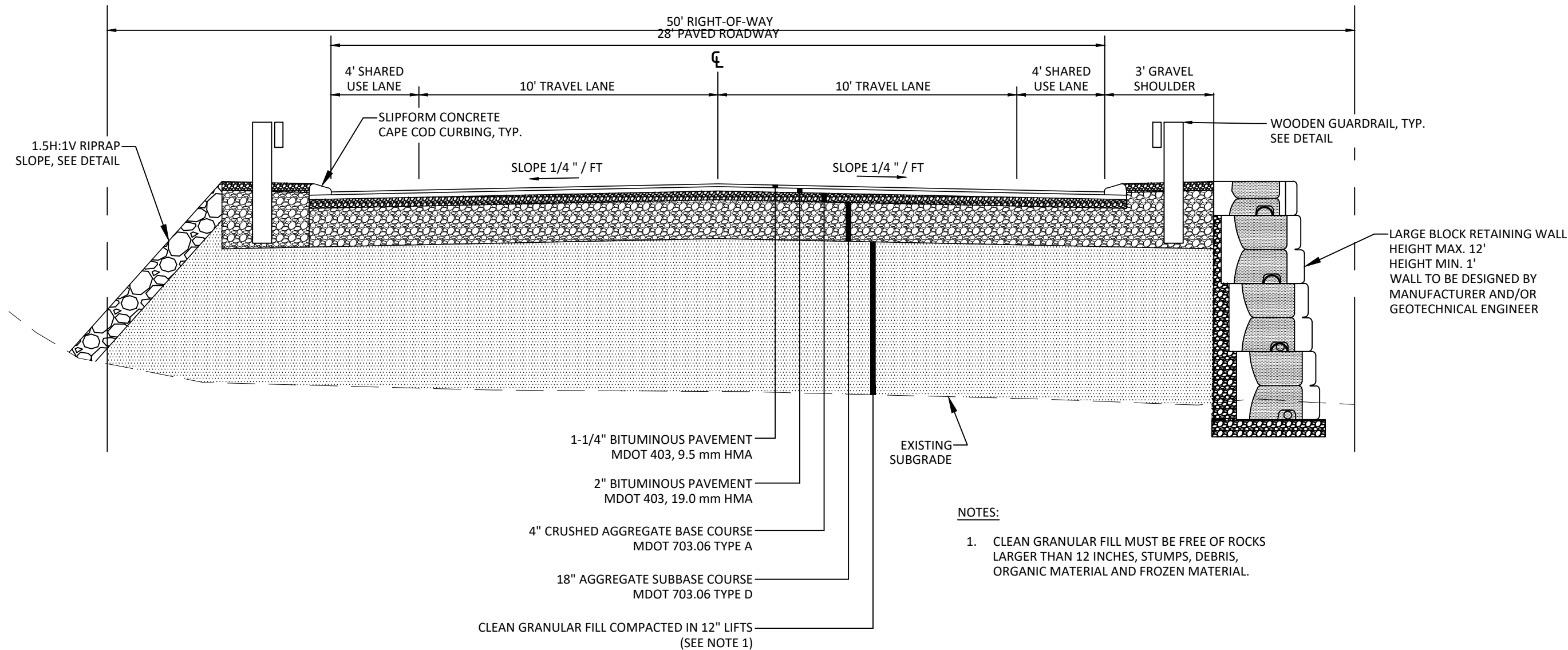
REV	DATE	BY	DESCRIPTION
A	11-3-25	JRH	ISSUED FOR PERMITTING

DETAILS
THE WOODLANDS RESERVE SUBDIVISION
POOL STREET AND PARKSIDE DRIVE
BIDDEFORD, MAINE
FOR RECORD OWNER:
BEDARD HOMES, LLC
PO BOX 483
BIDDEFORD, MAINE 04005

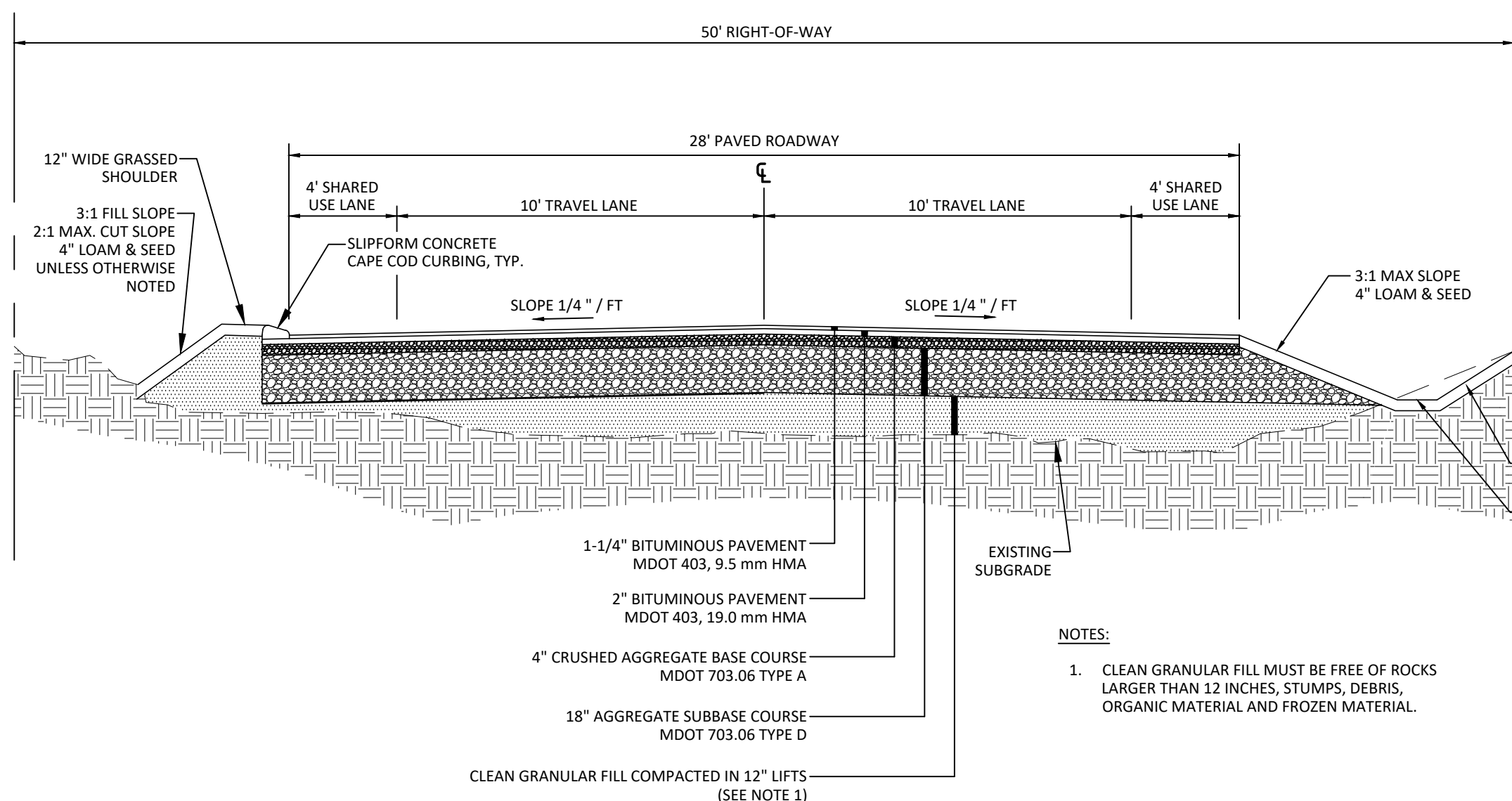
24036
JOB NUMBER:
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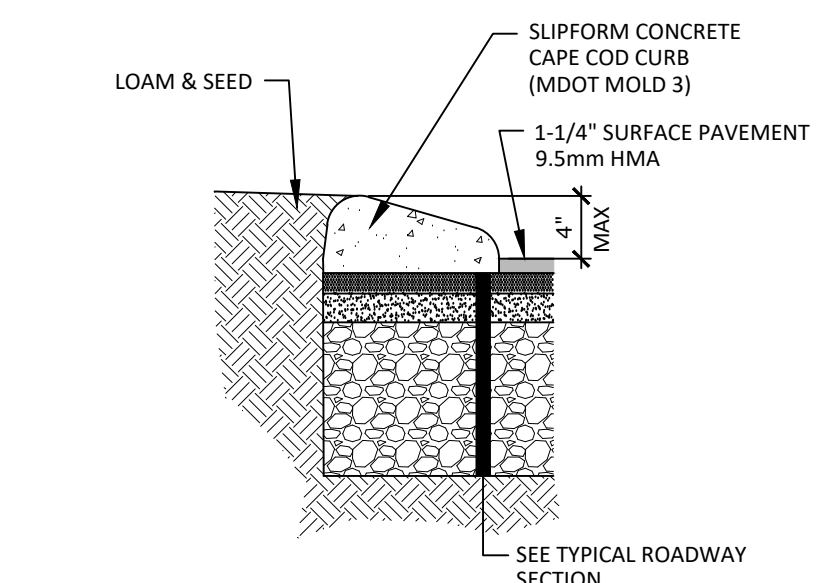
TYPICAL ROADWAY SECTION
(ROAD A & B)
NOT TO SCALE



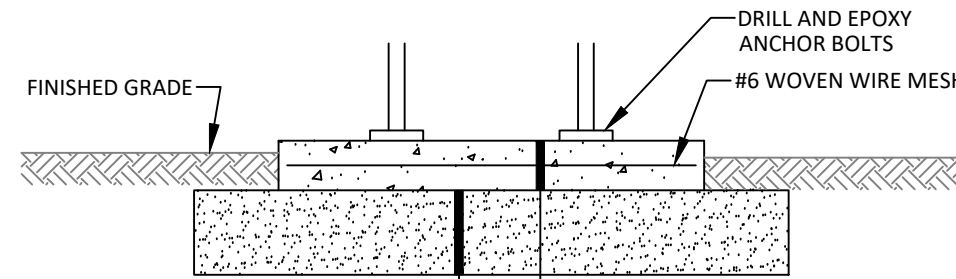
ROADWAY SECTION-WALL SECTION
(ROAD C - STA. 0+40 TO 1+60)
NOT TO SCALE



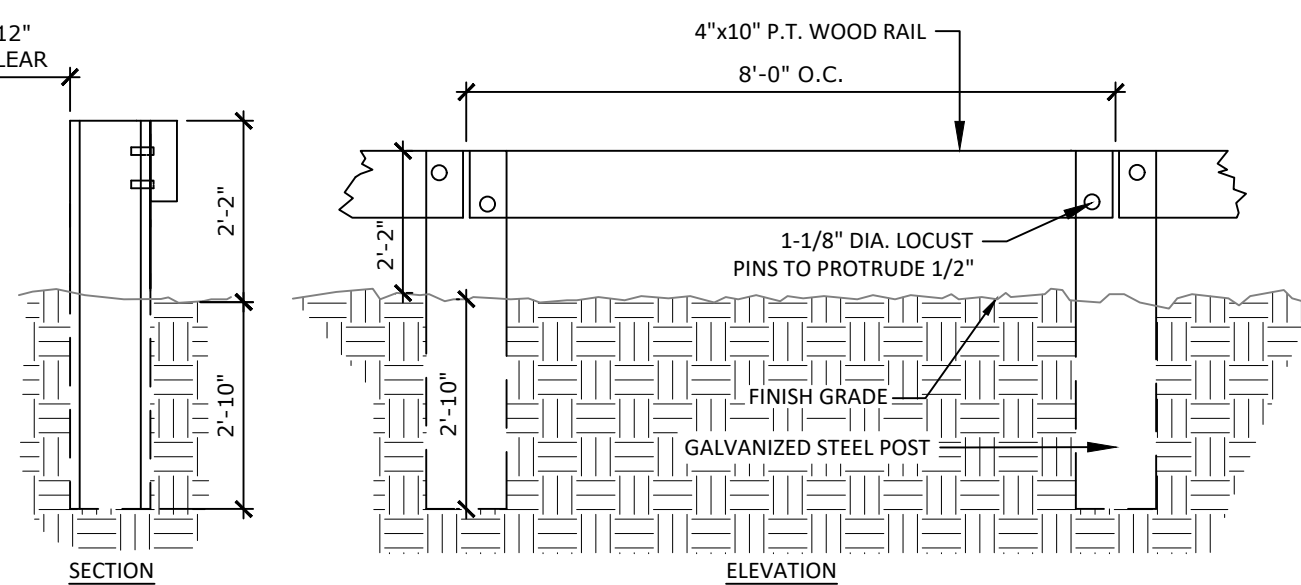
TYPICAL ROAD C SECTION
NOT TO SCALE



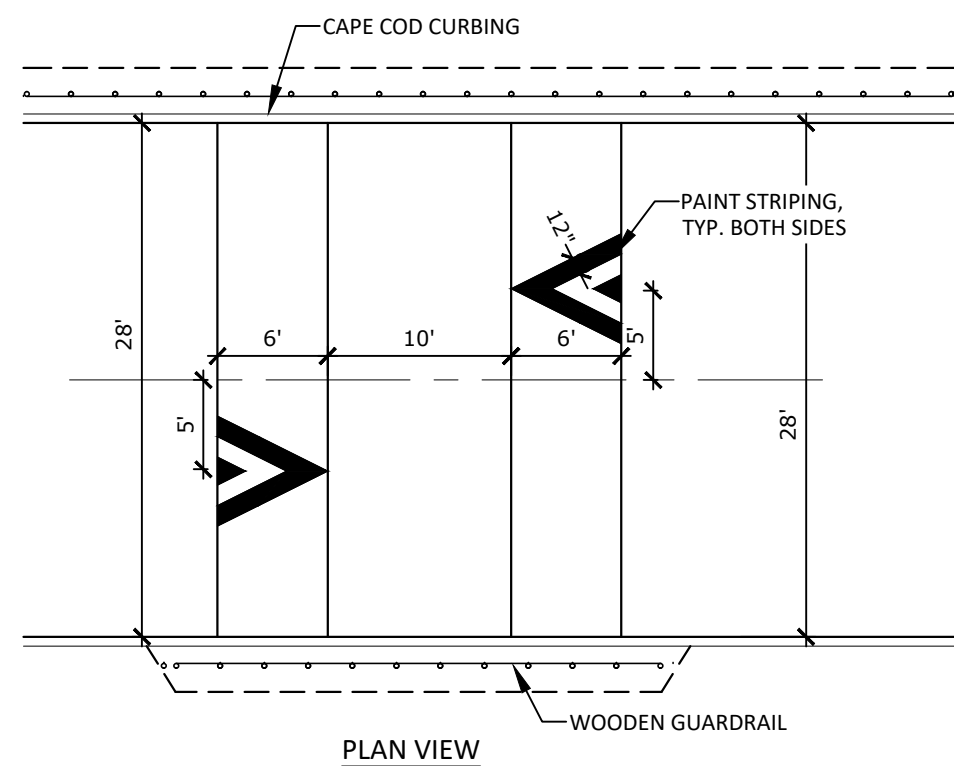
SLIPFORM CONCRETE CAPE COD CURB SECTION
NOT TO SCALE



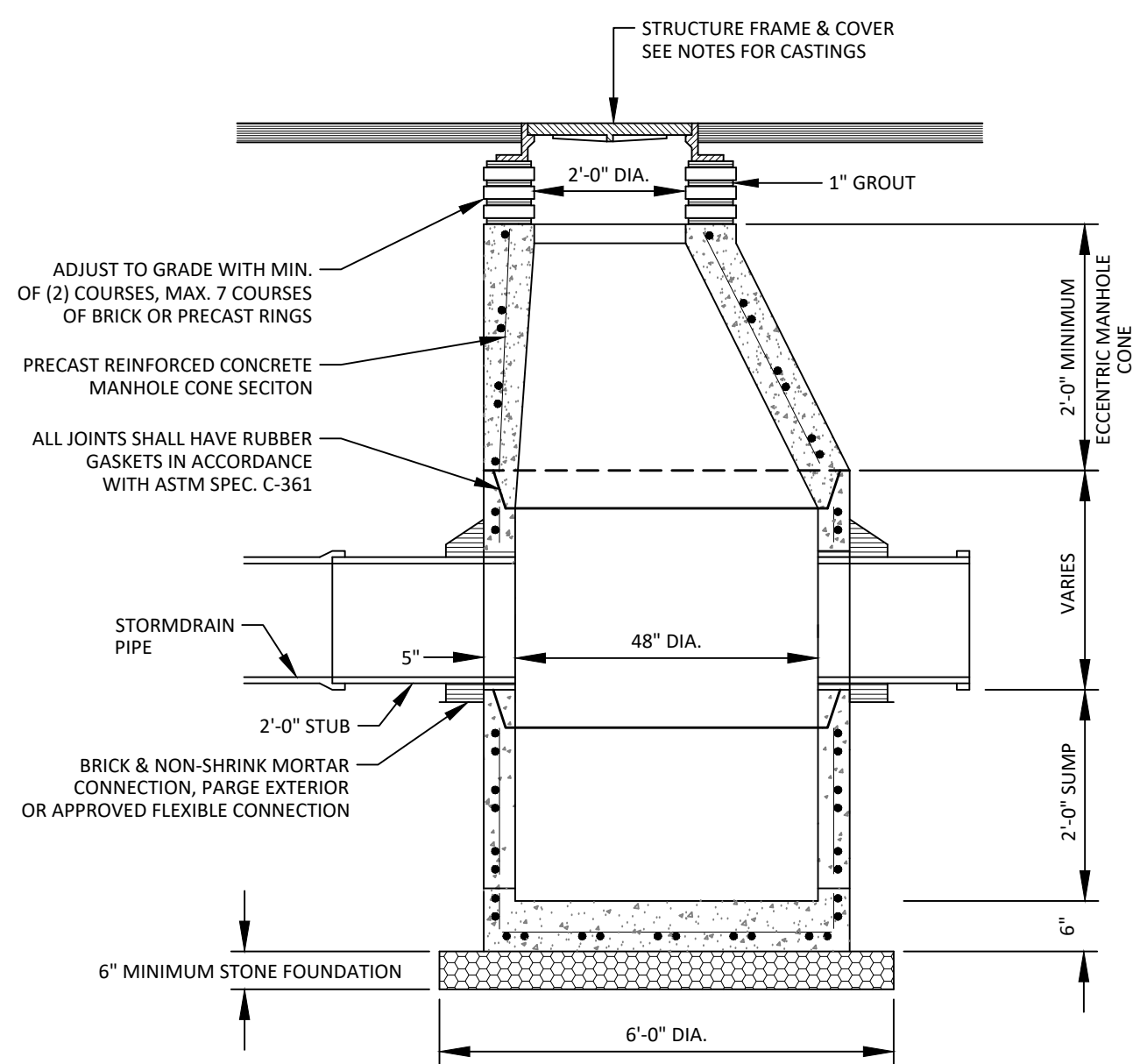
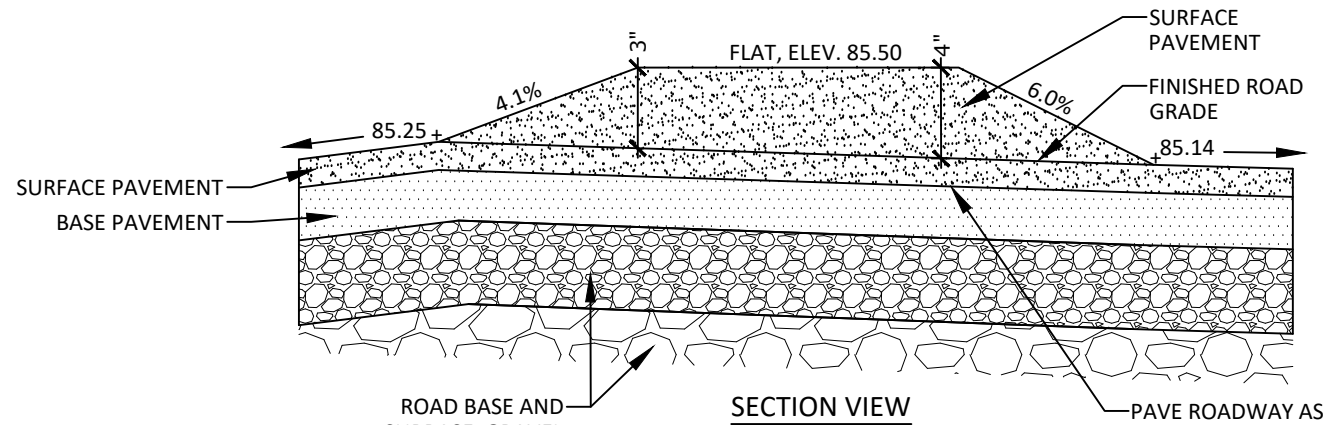
CLUSTER MAILBOX SLAB DETAIL
NOT TO SCALE



WOOD GUARDRAIL DETAIL
NOT TO SCALE

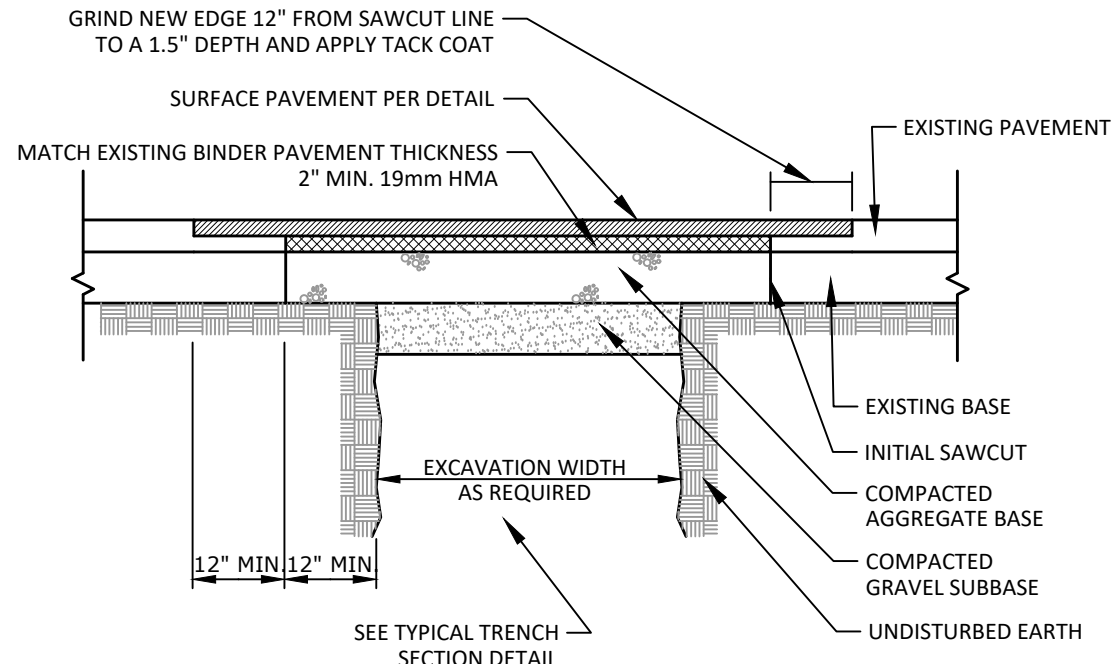


RAISED SPEED TABLE DETAIL
NOT TO SCALE



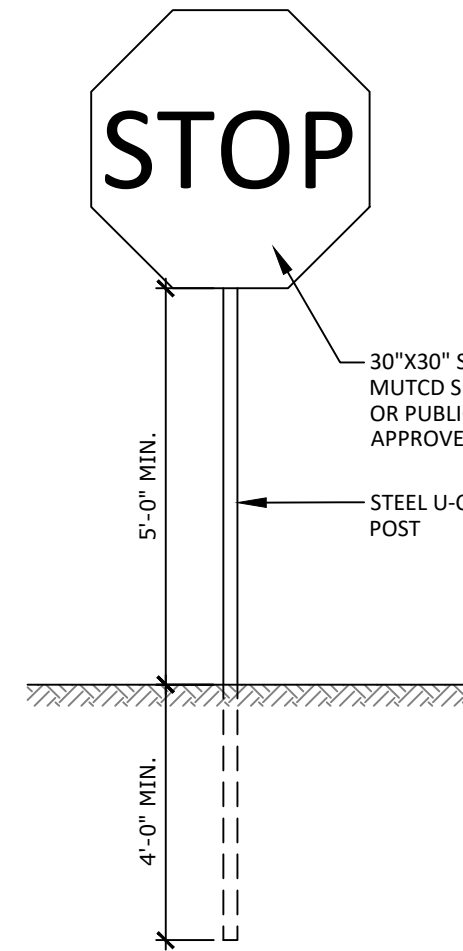
- NOTES:
- LARGER DIAMETER STRUCTURES MAY BE REQUIRED DUE TO SIZE OR GEOMETRY OF PIPE CONNECTIONS AT MANHOLE. WALL THICKNESS TO INCREASE BY 1" FOR EACH 1'-0" DIA. INCREASE. PROVIDE SHOP DRAWINGS.
 - DRAINAGE STRUCTURES TO BE DESIGNED FOR H-20 LOADING.
 - FRAME AND COVER CASTINGS
CATCH BASIN NEENAH FOUNDRY PRODUCT NO. R-3405, GUTTER INLET FRAME, GRATE
DRAIN MANHOLE NEENAH FOUNDRY PRODUCT NO. R-1568, MANHOLE FRAME "DRAIN"
OR ENGINEER APPROVED EQUAL. SUBMIT CATALOG SHEETS TO ENGINEER FOR APPROVAL.

PRECAST CONCRETE DRAINAGE STRUCTURE
NOT TO SCALE

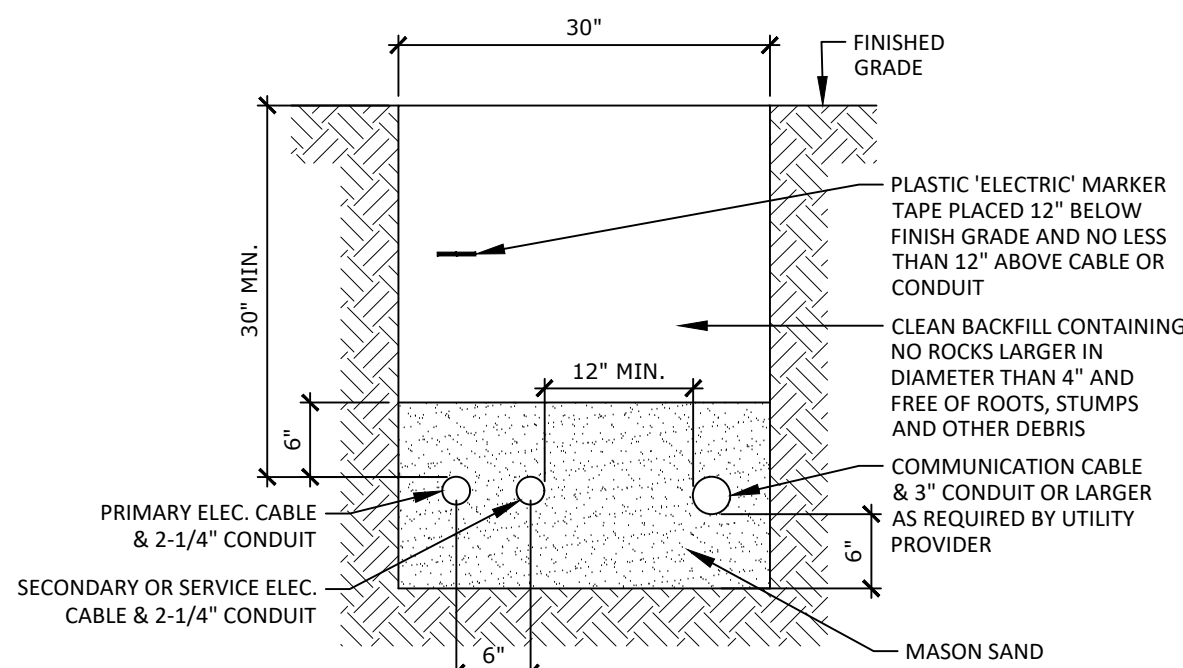


- NOTES:
- SEE TYPICAL ROAD SECTION FOR REQUIRED DEPTHS OF AGGREGATE AND PAVEMENT COURSES
 - CONTRACTOR TO NOTIFY TOWN PUBLIC WORKS DIRECTOR AND TOWN ENGINEER 48 HRS PRIOR TO ANY WORK IN BONNY EAGLE ROAD

PAVEMENT REPAIR DETAIL
NOT TO SCALE

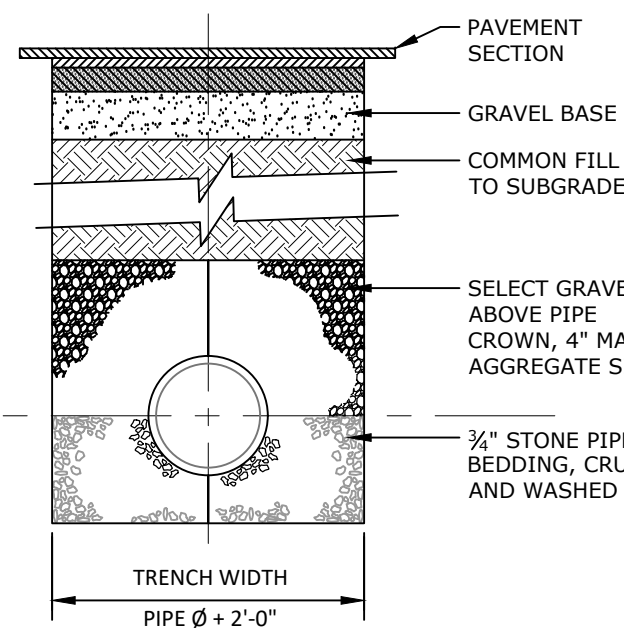


STOP SIGN INSTALLATION
NOT TO SCALE

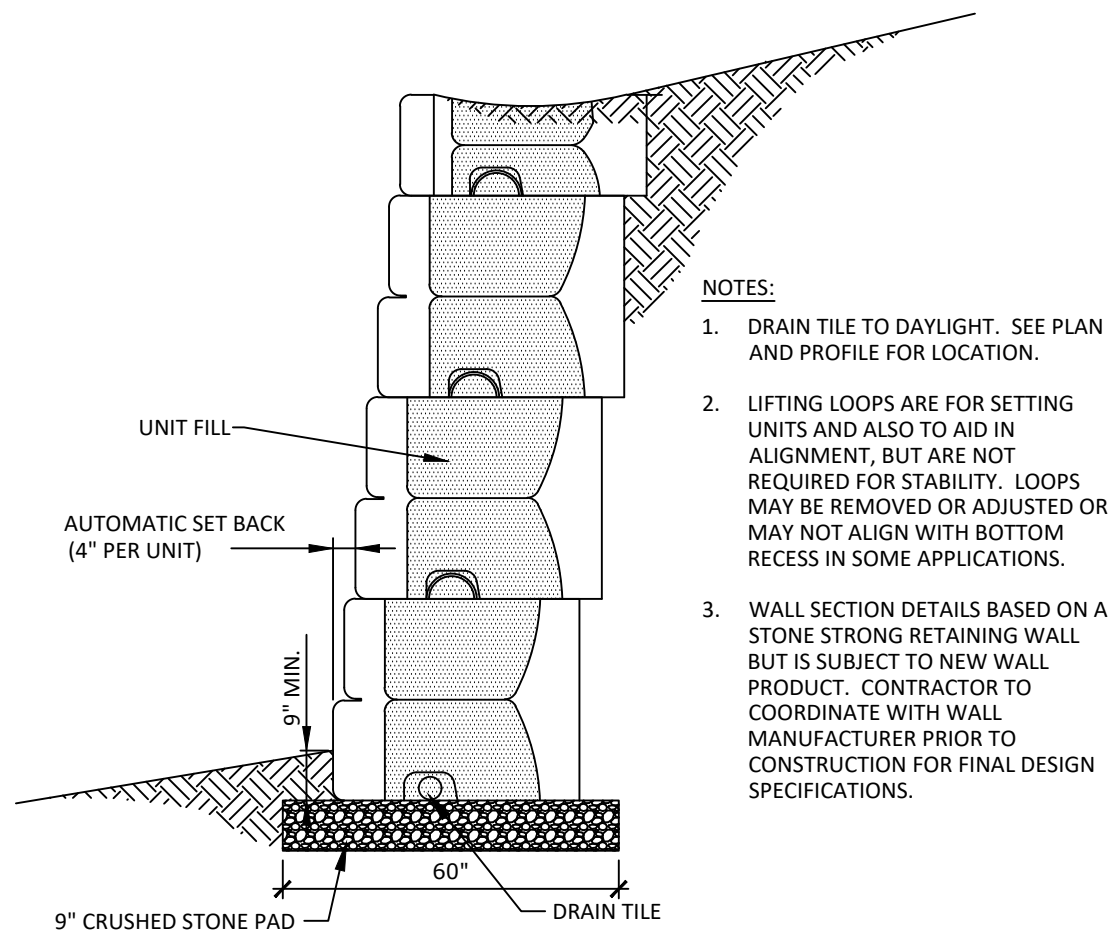


- NOTES:
- CONDUIT SIZE AND MATERIAL AS SPECIFIED BY THE UTILITY PROVIDER.
 - INSTALLATION SHOULD NOT ALLOW THE INTER-TWINGING OF CABLES.
 - BEDDING AND BACKFILL SHALL BE FREE OF ROOTS, STUMPS AND OTHER DEBRIS.
 - COMMUNICATION CABLE AND POWER CABLE SHALL HAVE NO LESS THAN 12 INCHES OF RADIAL SEPARATION.

UTILITY TRENCH DETAIL
NOT TO SCALE



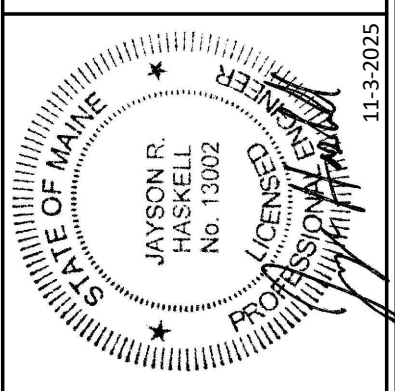
TYPICAL TRENCH SECTION
NOT TO SCALE



- NOTES:
- DRAIN TILE TO DAYLIGHT. SEE PLAN AND PROFILE FOR LOCATION.
 - LIFTING LOOPS ARE FOR SETTING UNITS AND ALSO TO AID IN ALIGNMENT, BUT ARE NOT REQUIRED FOR STABILITY. LOOPS MAY BE REMOVED OR ADJUSTED OR MAY NOT ALIGN WITH BOTTOM RECESS IN SOME APPLICATIONS.
 - WALL SECTION DETAILS BASED ON A STONE STRONG RETAINING WALL BUT IS SUBJECT TO NEW WALL PRODUCT. CONTRACTOR TO COORDINATE WITH WALL MANUFACTURER PRIOR TO CONSTRUCTION FOR FINAL DESIGN SPECIFICATIONS.

GRAVITY WALL CROSS SECTION
NOT TO SCALE

NOT FOR
CONSTRUCTION

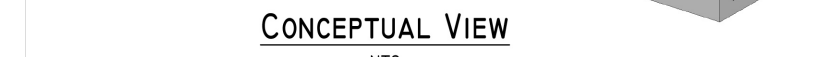
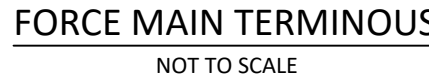


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REV	DATE	BY	DESCRIPTION
A	11-3-25	JRH	ISSUED FOR PERMITTING

DETAILS
THE WOODLANDS RESERVE SUBDIVISION
POOL STREET AND PARKSIDE DRIVE
BIDDEFORD, MAINE
FOR RECORD OWNER:
BEDARD HOMES, LLC
PO BOX 483
BIDDEFORD, MAINE 04005

24036
JOB NUMBER:
AS NOTED
SCALE:
11-3-2025
DATE:
SHEET 16 OF 19
D-2



Note: Some details not shown for clarity SCALE: 3/16" = 1'-0" Unless Noted Otherwise		
STRUCTURE NAME:		
10,000 GAL FIRE CISTERN		
JOB NAME:		
LOCATION:		
CUSTOMER:		
DRAWN BY:	DATE DRAWN:	PROJECT MGR:
JWP	03/15/2023	T.B.
REV. #:	REV. DATE:	SHEET:
0.00	00/00/00	1 OF



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DETAILS

THE WOODLANDS RESERVE SUBDIVISION

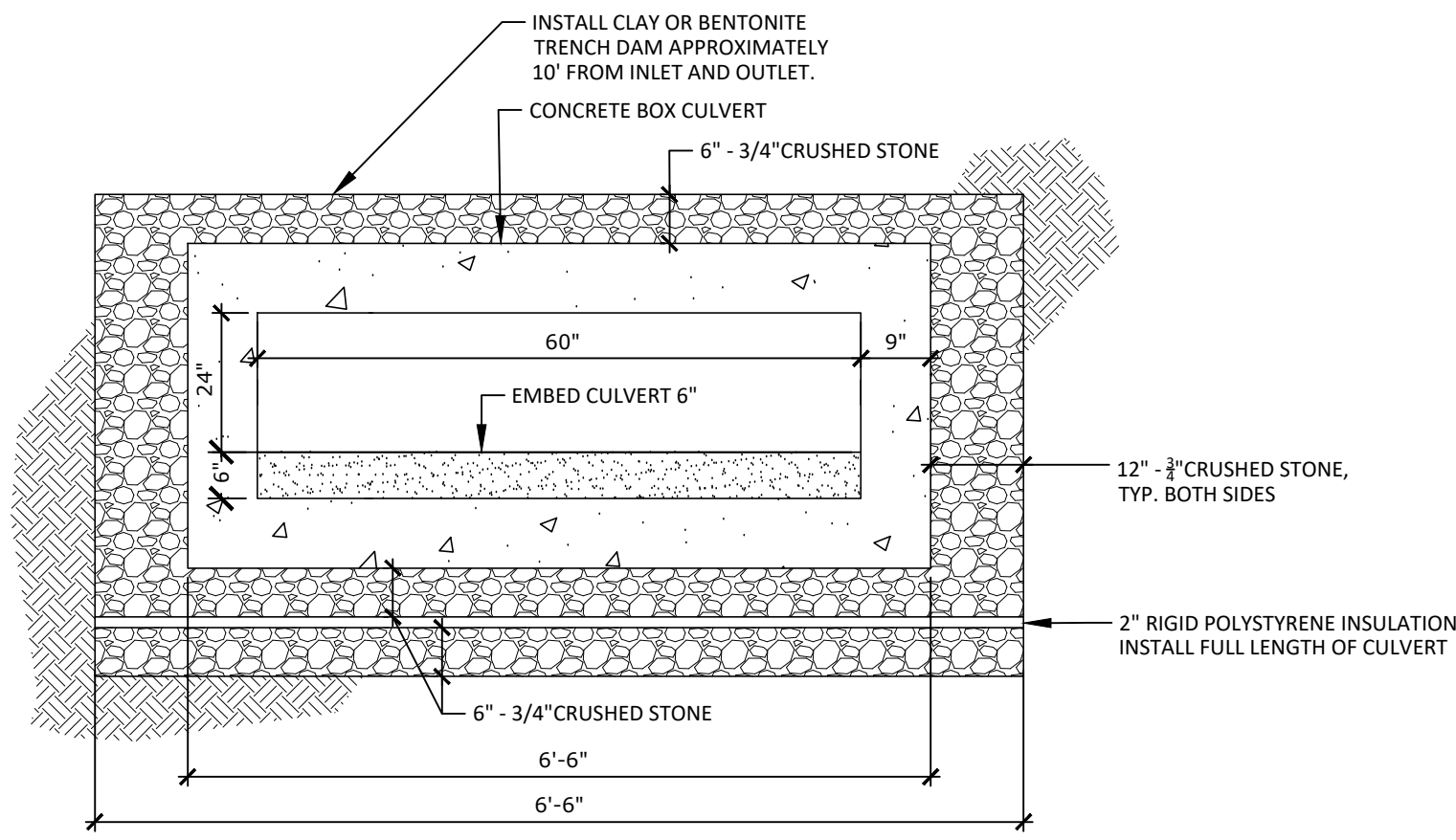
POOL STREET AND PARKSIDE DRIVE
BIDDEFORD, MAINE

FOR RECORD OWNER:

BEDARD HOMES, LLC

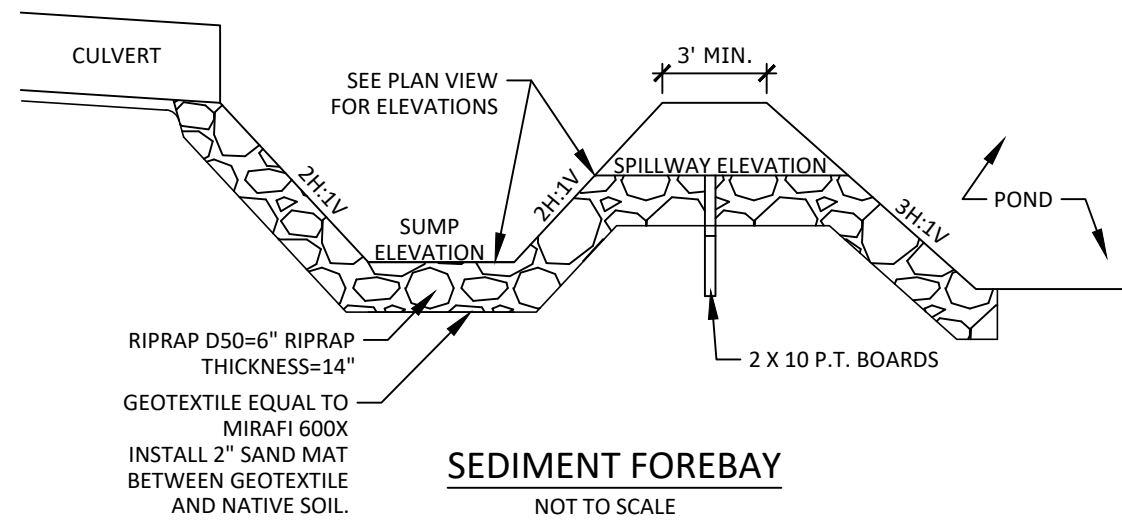
PO BOX 481
BIDDEFORD, MAINE 04005

24036 JOB NUMBER:
AS NOTED SCALE:
11-3-2025 DATE:
SHEET 17 OF 19
D-3

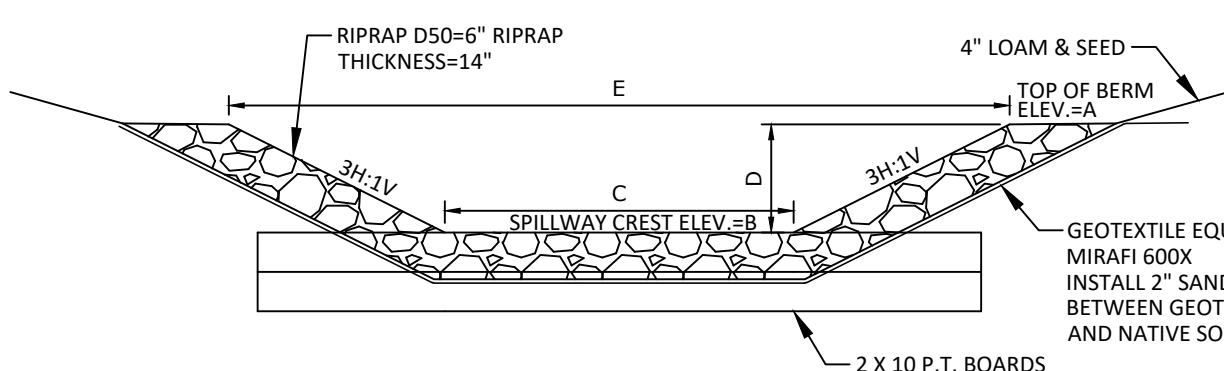


- NOTES:
1. SHOP PLANS FOR THE BOX CULVERT SHALL BE SUBMITTED FOR REVIEW AND APPROVAL BY ENGINEER.
 2. REINFORCEMENT SHALL BE WELDED WIRE FABRIC AND DETAILED IN THE SHOP DRAWINGS.
 3. MINIMUM CONCRETE STRENGTH SHALL BE 5,000 PSI AFTER 28 DAYS.
 4. THE JOINTS OF THE PRECAST BOX SECTIONS SHALL BE SEALED AND SEALANT SPECIFIED IN THE SHOP DRAWINGS.
 5. LIFTING HOLES SHALL BE FILLED WITH CONCRETE PLUGS AND MASTIC AFTER THE BOX SECTIONS ARE IN PLACE.

TYPICAL STREAM CROSSING
NOT TO SCALE

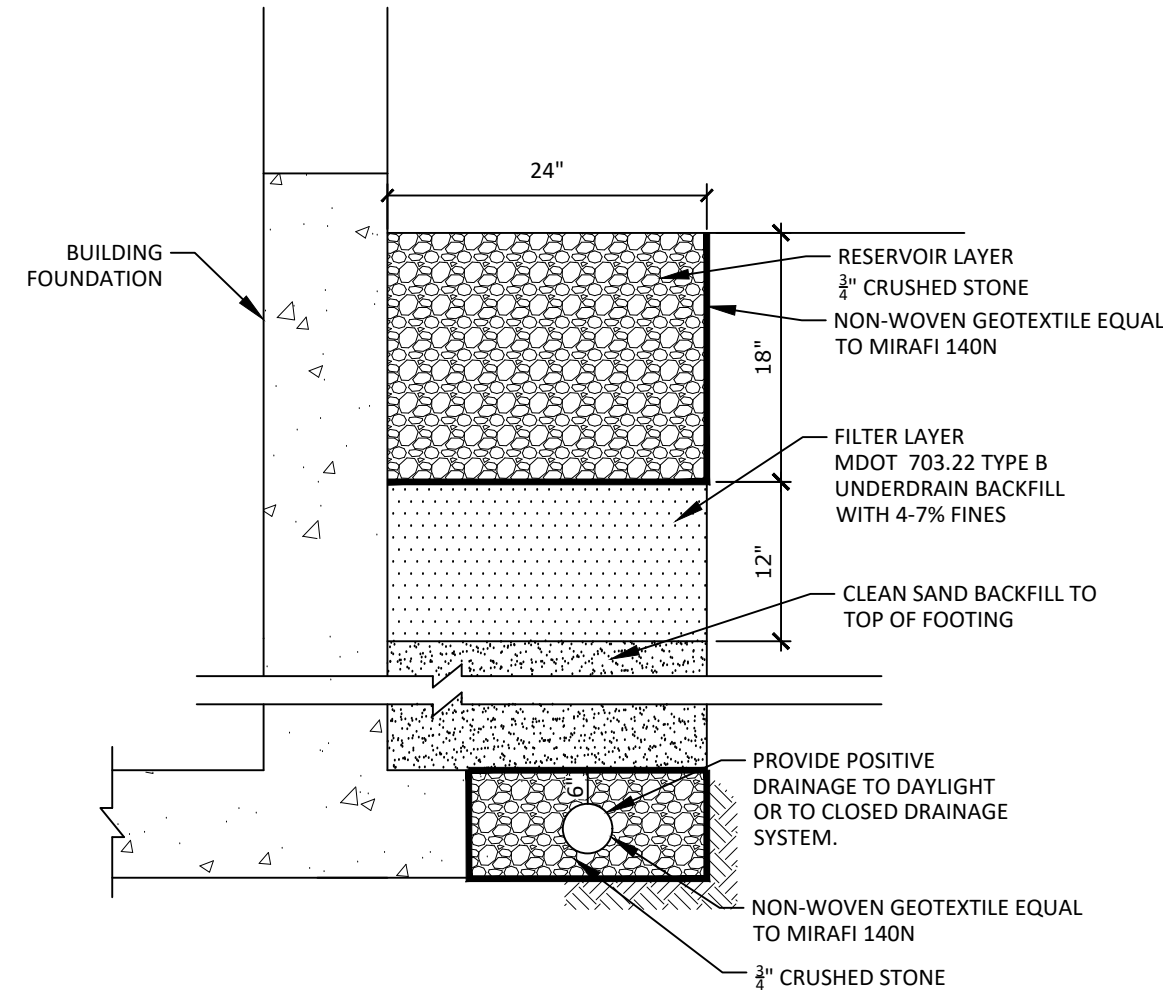


SEDIMENT FOREBAY
NOT TO SCALE

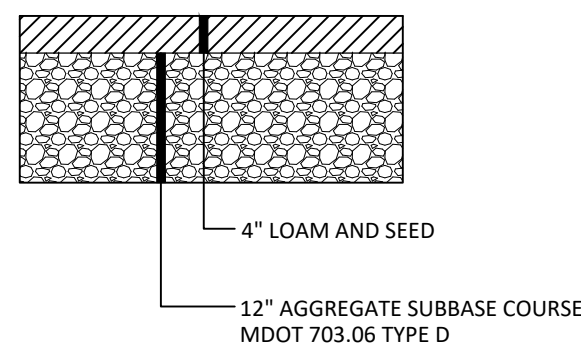


SPILLWAY DATA					
POND ID	A	B	C	D	E
FB-1	83.65	82.10	10'	1.55'	19.3'
FB-2	104.50	102.50	10'	2.00'	22.0'
FB-3	117.25	115.95	10'	1.30'	17.8'

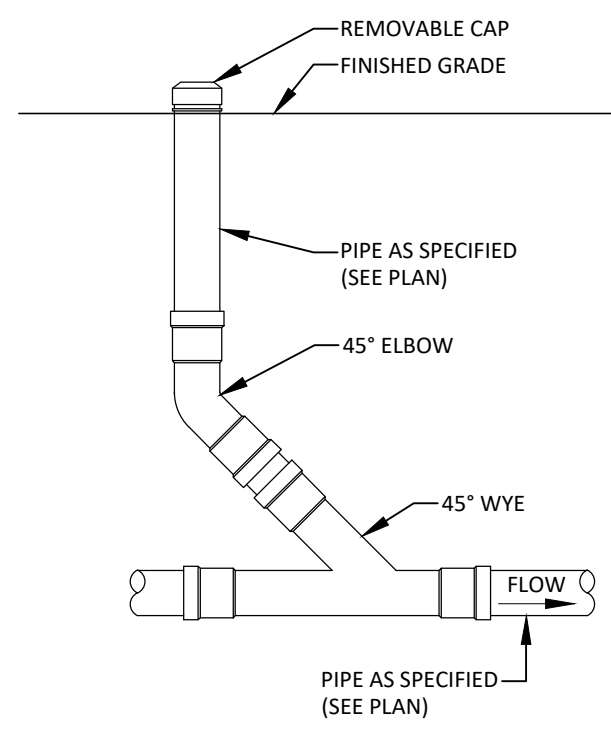
RIPRAP SPILLWAY DETAIL
NOT TO SCALE



ROOF DRIP EDGE
NOT TO SCALE



TYPICAL POND ACCESS ROAD SECTION
NOT TO SCALE



UNDERDRAIN CLEANOUT DETAIL
NOT TO SCALE

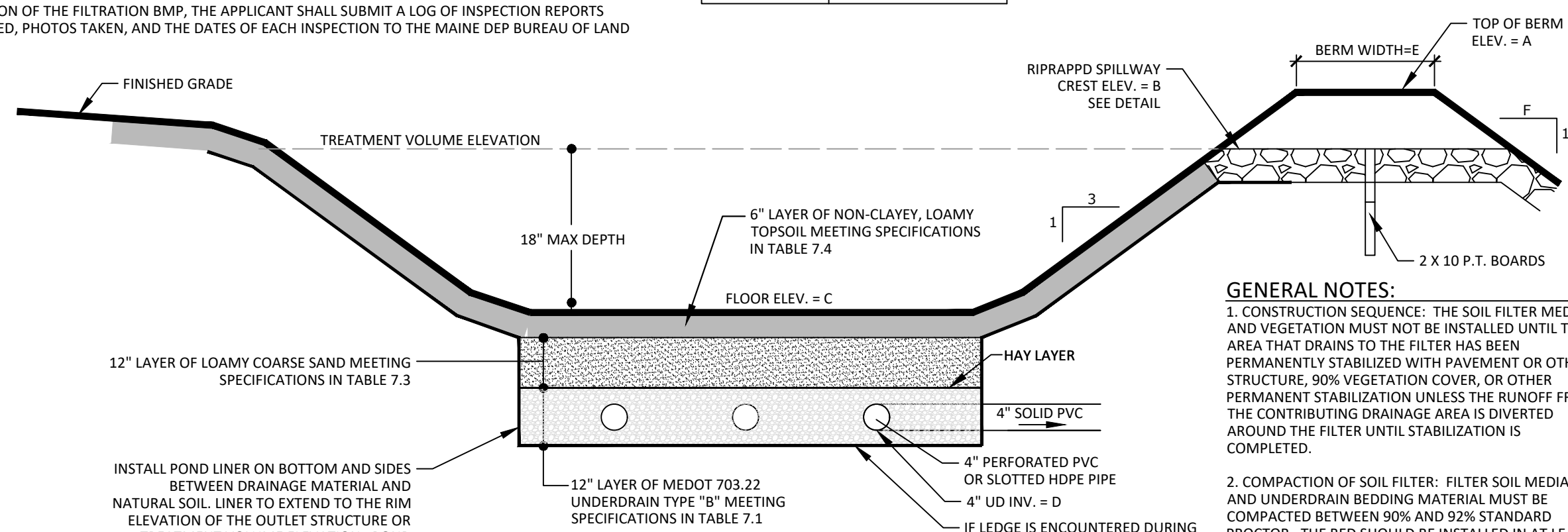
FILTRATION BMPs CONSTRUCTION OVERSIGHT NOTES:

1. INSPECTION BY THE DESIGN ENGINEER OR SUITABLE THIRD PARTY WILL OCCUR AT A MINIMUM:
 - A) AFTER THE PRELIMINARY CONSTRUCTION OF THE FILTER GRADES AND ONCE THE UNDERDRAIN PIPES ARE INSTALLED BUT NOT BACKFILLED.
 - B) AFTER THE DRAINAGE LAYER IS CONSTRUCTED AND PRIOR TO THE INSTALLATION OF THE FILTER MEDIA.
 - C) AFTER THE FILTER MEDIA HAS BEEN INSTALLED AND SEEDED.
 - D) AFTER ONE YEAR TO INSPECT HEALTH OF THE VEGETATION AND MAKE CORRECTIONS.
 E) ALL THE MATERIAL USED FOR THE CONSTRUCTION OF THE FILTER BASIN MUST BE CONFIRMED AS SUITABLE BY THE DESIGN ENGINEER. TESTING MUST BE DONE BY A CERTIFIED LABORATORY TO SHOW THAT THEY ARE PASSING MDEP SPECIFICATIONS.
2. 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:
 - A) 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 A COMPOSITE OF THREE DIFFERENT LOCATIONS (GRABS) FROM THE STOCKPILE OR PIT FACE. SAMPLE SIZE REQUIRED WILL BE DETERMINED BY THE TESTING LABORATORY.
 - B) PERFORM A SIEVE ANALYSIS CONFORMING TO STM C136 (STANDARD TEST 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 #200 SIEVE, A CLAY CONTENT OF LESS THAN 2% (DETERMINED BY HYDROMETER GRAIN SIZE ANALYSIS) AND HAVE 10% DRY WEIGHT OF ORGANIC MATTER.
 - C) 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
3. WITHIN 30 DAYS OF COMPLETION OF THE FILTRATION BMP, THE APPLICANT SHALL SUBMIT A LOG OF INSPECTION REPORTS DETAILING THE ITEMS INSPECTED, PHOTOS TAKEN, AND THE DATES OF EACH INSPECTION TO THE MAINE DEP BUREAU OF LAND RESOURCES FOR REVIEW.

TABLE 7.1 UNDERDRAIN 703.22 TYPE "B"		
SIEVE SIZE	% PASSING BY WEIGHT	
1"	90-100	
1/2"	75-100	
#4	50-100	
#20	15-80	
#50	0-15	
#200	0-5	

TABLE 7.3 LOAMY COARSE SAND		
SIEVE SIZE	% PASSING BY WEIGHT	
#10	85-100	
#20	70-100	
#60	15-40	
#200	8-15	
200 CLAY	<2.0	

TABLE 7.4 SANDY LOAM		
SIEVE SIZE	% PASSING BY WEIGHT	
#4	75-95	
#10	60-90	
#40	35-85	
#200	20-70	
200 CLAY	<2.0	

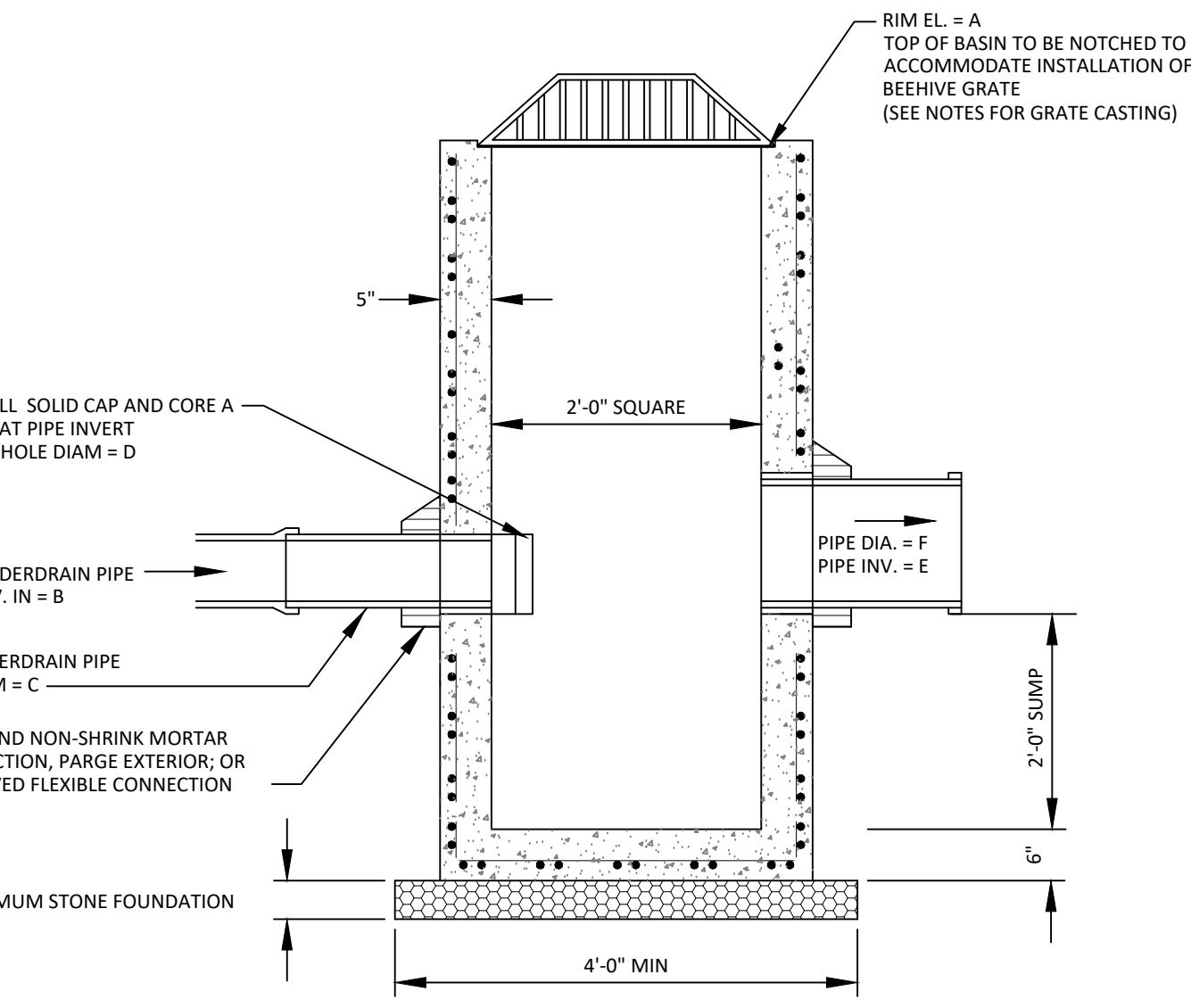


GENERAL NOTES:

1. CONSTRUCTION SEQUENCE: THE SOIL/FILTER MEDIA AND VEGETATION 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 COMPLETED.

2. COMPACTION OF SOIL/FILTER: FILTER SOIL/MEDIA AND UNDERDRAIN BEDDING MATERIAL MUST BE COMPACTED BETWEEN 90% AND 92% STANDARD PROCTOR. THE BED SHOULD BE INSTALLED IN AT LEAST TWO LIFTS TO PREVENT POCKETS OF LOOSE MEDIA.

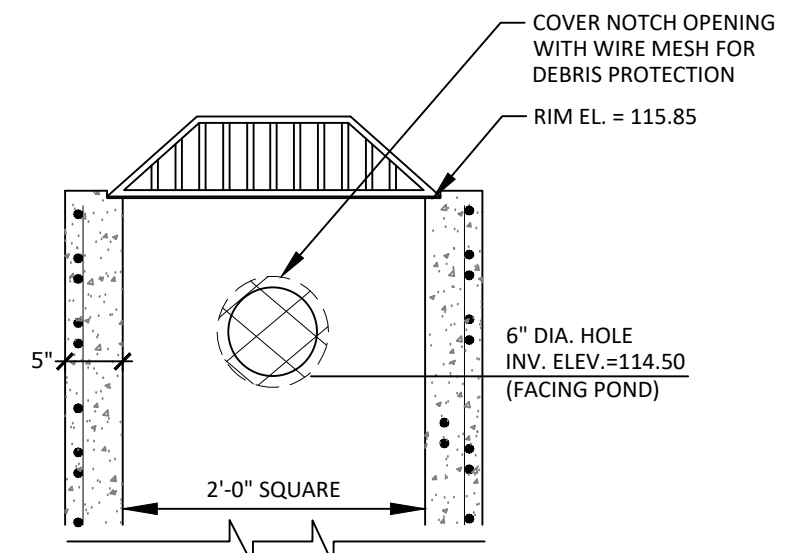
FILTER BASIN DATA						
POND ID	A	B	C	D	E	F
FB-1	83.65	82.10	79.25	77.08	4'	2
FB-2	104.50	102.50	100.50	98.33	6'	3
FB-3	117.25	115.95	113.00	110.83	6'	2



NOTES:

1. SEE OUTLET CONTROL STRUCTURE DETAIL FOR ADDITIONAL INFORMATION.

NOTCH OPENING IN OUTLET CONTROL STRUCTURE OCS-1
NOT TO SCALE



NOTES:

1. SEE OUTLET CONTROL STRUCTURE DETAIL FOR ADDITIONAL INFORMATION.

ROUND OPENING IN OUTLET CONTROL STRUCTURE OCS-3
NOT TO SCALE

STRUCTURE DATA						
STRUCTURE ID	A	B	C	D	E	F
OCS-1*	81.45	77.08	4"	1-3/4"	76.98	12"
OCS-2	102.00	98.33	4"	1-3/8"	98.23	12"
OCS-3	115.85	110.83	4"	1"	110.73	12"

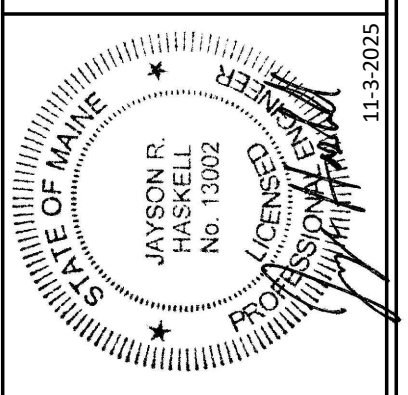
*OCS-1 TO BE INSTALLED WITH A NOTCH ON THE SIDE OF THE STRUCTURE AND OCS-3 TO BE INSTALLED WITH A ROUND HOLE ON THE SIDE OF THE STRUCTURE. SEE DETAILS.

NOTES:

1. OUTLET CONTROL STRUCTURE SHALL BE CONSTRUCTED UTILIZING A PRECAST CATCH BASIN (24"x 24" ~TYPE F).
2. CAST IRON GRATE SHALL BE EQUAL TO NEENAH FOUNDRY, PRODUCT NO. R-4345, BEEHIVE LIGHT DUTY GRATE, OR APPROVED EQUIVALENT.
3. SUBMIT SHOP DRAWINGS AND CASTING SPECIFICATIONS TO ENGINEER FOR APPROVAL.

OUTLET CONTROL STRUCTURE
NOT TO SCALE

NOT FOR CONSTRUCTION



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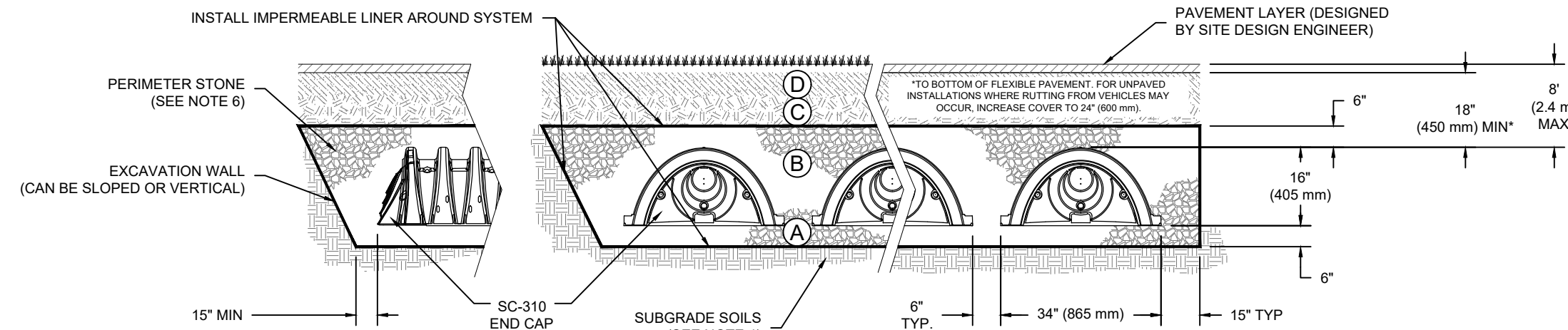
REV	DATE	BY	DESCRIPTION
A	11-3-25	JRH	ISSUED FOR PERMITTING

DETAILS
THE WOODLANDS RESERVE SUBDIVISION
POOL STREET AND PARKSIDE DRIVE
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BIDDEFORD, MAINE 04005

24036
JOB NUMBER:
AS NOTED
SCALE:
11-3-2025
DATE:
SHEET 18 OF 19
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	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('F' LAYER) TO 18" (460 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145 ¹ A-1, A-2-4, A-3 OR AASHTO M43 ¹ 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL-GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43 ¹ 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43 ¹ 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. ^{2, 3}

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.



NOTES:

- SC-310 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS", OR ASTM F2922 "STANDARD SPECIFICATION FOR POLYETHYLENE (PE) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- SC-310 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
- THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
- PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
- ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.

STORMTECH SC-310 CROSS SECTION

NOT TO SCALE

INSPECTION & MAINTENANCE

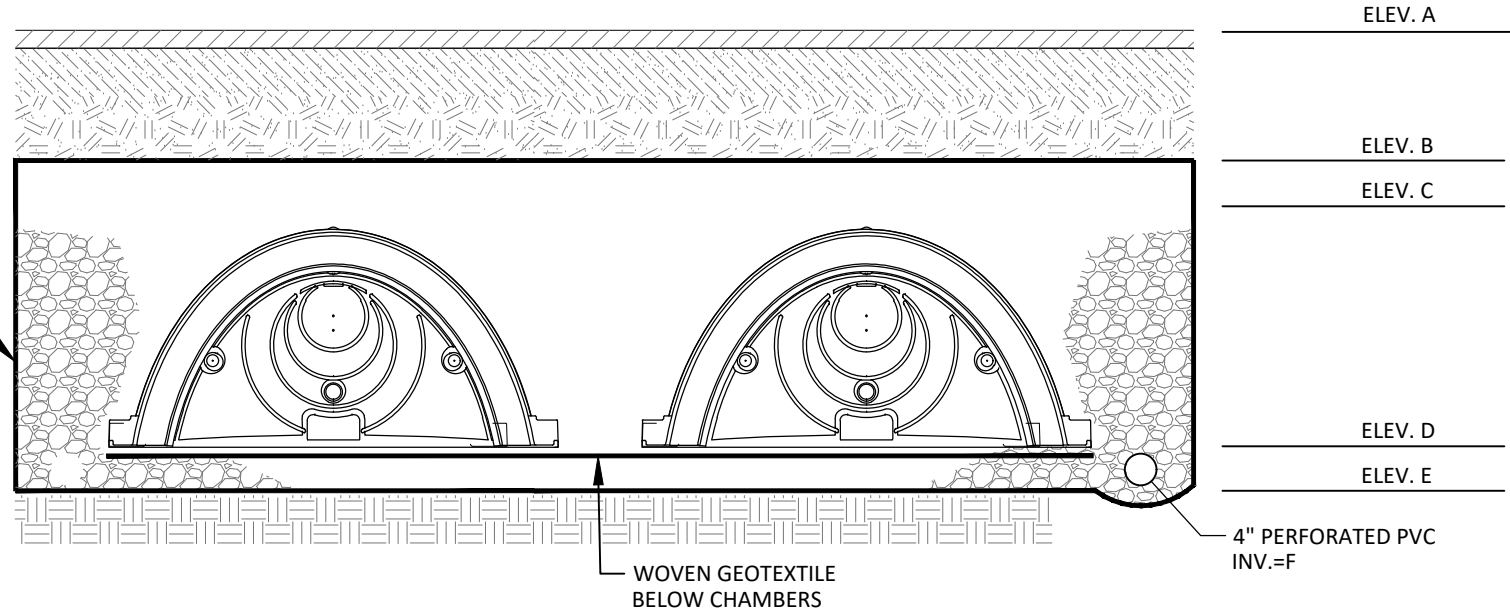
- STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
- INSPECTION PORTS (IF PRESENT)
 - REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
 - REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
 - USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
 - LOWER A CAMERA INTO ISOLATOR ROW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

NOTES:

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

MANUFACTURER'S GENERAL NOTES

- STORMTECH REQUIRES INSTALLING CONTRACTORS TO USE AND UNDERSTAND STORMTECH'S LATEST INSTALLATION INSTRUCTIONS PRIOR TO BEGINNING SYSTEM INSTALLATION.
- OUR TECHNICAL SERVICES DEPARTMENT OFFERS INSTALLATION CONSULTATIONS TO INSTALLING CONTRACTORS. CONTACT OUR TECHNICAL SERVICES REPRESENTATIVE AT LEAST 30 DAYS PRIOR TO SYSTEM INSTALLATION TO ARRANGE A PRE-INSTALLATION CONSULTATION. OUR REPRESENTATIVES CAN THEN ANSWER QUESTIONS OR ADDRESS COMMENTS ON THE STORMTECH CHAMBER SYSTEM AND INFORM THE INSTALLING CONTRACTOR OF THE MINIMUM INSTALLATION REQUIREMENTS BEFORE BEGINNING THE SYSTEM'S CONSTRUCTION. CALL 1-888-892-2694 TO SPEAK TO A TECHNICAL SERVICES REPRESENTATIVE OR VISIT WWW.STORMTECH.COM TO RECEIVE A COPY OF OUR INSTALLATION INSTRUCTIONS.
- STORMTECH'S REQUIREMENTS FOR SYSTEMS WITH PAVEMENT DESIGN (ASPHALT, CONCRETE PAVERS, ETC.) MINIMUM COVER IS 18" (457 mm) NOT INCLUDING PAVEMENT; MAXIMUM COVER IS 96" (2438 mm) INCLUDING PAVEMENT. FOR INSTALLATIONS THAT DO NOT INCLUDE PAVEMENT, WHERE RUTTING FROM VEHICLES MAY OCCUR, MINIMUM REQUIRED COVER IS 24" (610 mm), MAXIMUM COVER IS 96" (2,438 m).
- THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE DESIGN ENGINEER.
- AASHTO M288 CLASS 2 NON-WOVEN GEOTEXTILE (FILTER FABRIC) MUST BE USED AS INDICATED IN THE PROJECT PLANS.
- STONE PLACEMENT BETWEEN CHAMBERS ROWS AND AROUND PERIMETER MUST FOLLOW INSTRUCTIONS AS INDICATED IN THE MOST CURRENT VERSION OF STORMTECH'S INSTALLATION INSTRUCTIONS.
- BACKFILLING OVER THE CHAMBERS MUST FOLLOW REQUIREMENTS AS INDICATED IN THE MOST CURRENT VERSION OF STORMTECH'S INSTALLATION INSTRUCTIONS.
- THE CONTRACTOR MUST REFER TO STORMTECH'S INSTALLATION INSTRUCTIONS FOR A TABLE OF ACCEPTABLE VEHICLE LOADS AT VARIOUS DEPTHS OF COVER. THIS INFORMATION IS ALSO AVAILABLE AT STORMTECH'S WEBSITE: WWW.STORMTECH.COM. THE CONTRACTOR IS RESPONSIBLE FOR PREVENTING VEHICLES THAT EXCEED STORMTECH'S REQUIREMENTS FROM TRAVELING ACROSS OR PARKING OVER THE STORMWATER SYSTEM. TEMPORARY FENCING, WARNING TAPE AND APPROPRIATELY LOCATED SIGNS ARE COMMONLY USED TO PREVENT UNAUTHORIZED VEHICLES FROM ENTERING SENSITIVE CONSTRUCTION AREAS.
- THE CONTRACTOR MUST APPLY EROSION AND SEDIMENT CONTROL MEASURES TO PROTECT THE STORMWATER SYSTEM DURING ALL PHASES OF SITE CONSTRUCTION PER LOCAL CODES AND DESIGN ENGINEER'S SPECIFICATIONS.
- STORMTECH PRODUCT WARRANTY IS LIMITED. SEE CURRENT PRODUCT WARRANTY FOR DETAILS. TO ACQUIRE A COPY CALL STORMTECH AT 1-888-892-2694 OR VISIT WWW.STORMTECH.COM



DURING CONSTRUCTION INSPECTION NOTES:

- CONSTRUCTION OVERSIGHT: THE CHAMBER SYSTEM MUST BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS FOR INSTALLATION. INSPECTION DURING AND AFTER CONSTRUCTION AND UNTIL THE SITE IS STABILIZED MUST BE PERFORMED BY THE MANUFACTURER'S REPRESENTATIVE.

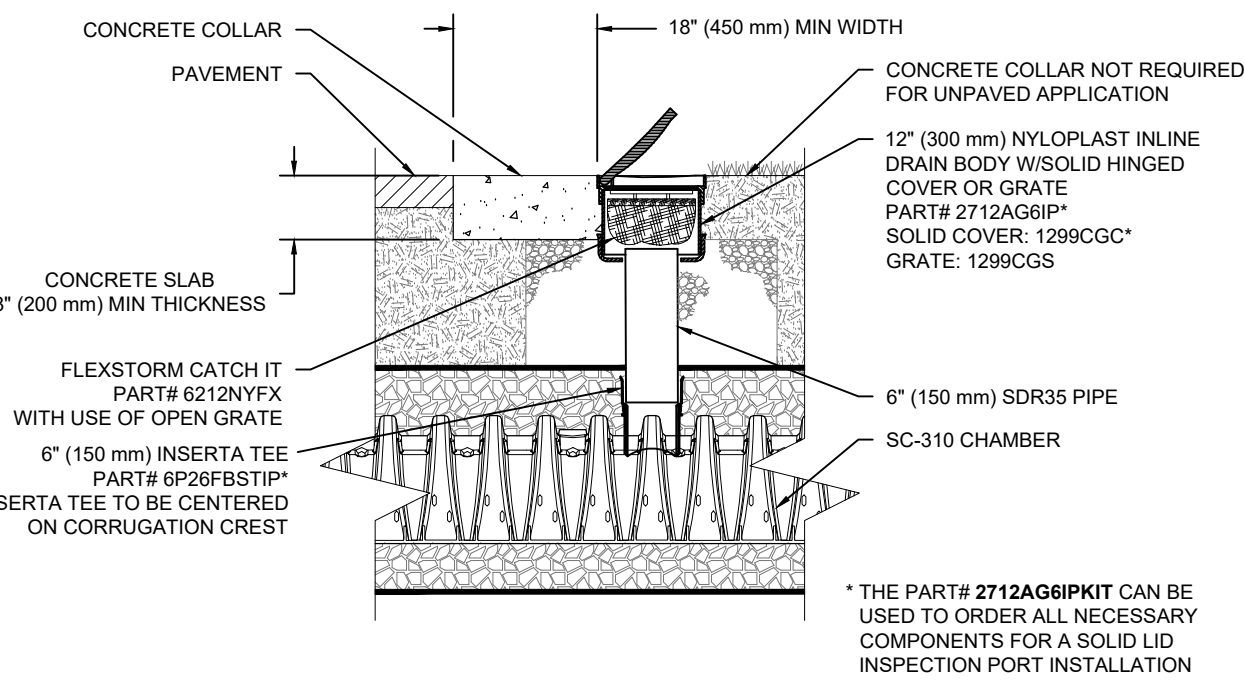
POST CONSTRUCTION INSPECTION NOTES:

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

STORMTECH ELEVATION DATA						
SSD#	A	B	C	D	E	F
SSD-1	75.2 TO 76.2	73.28	72.68	71.35	70.85	70.85
SSD-2	79.8 TO 80.9	77.23	76.73	75.40	74.90	74.90

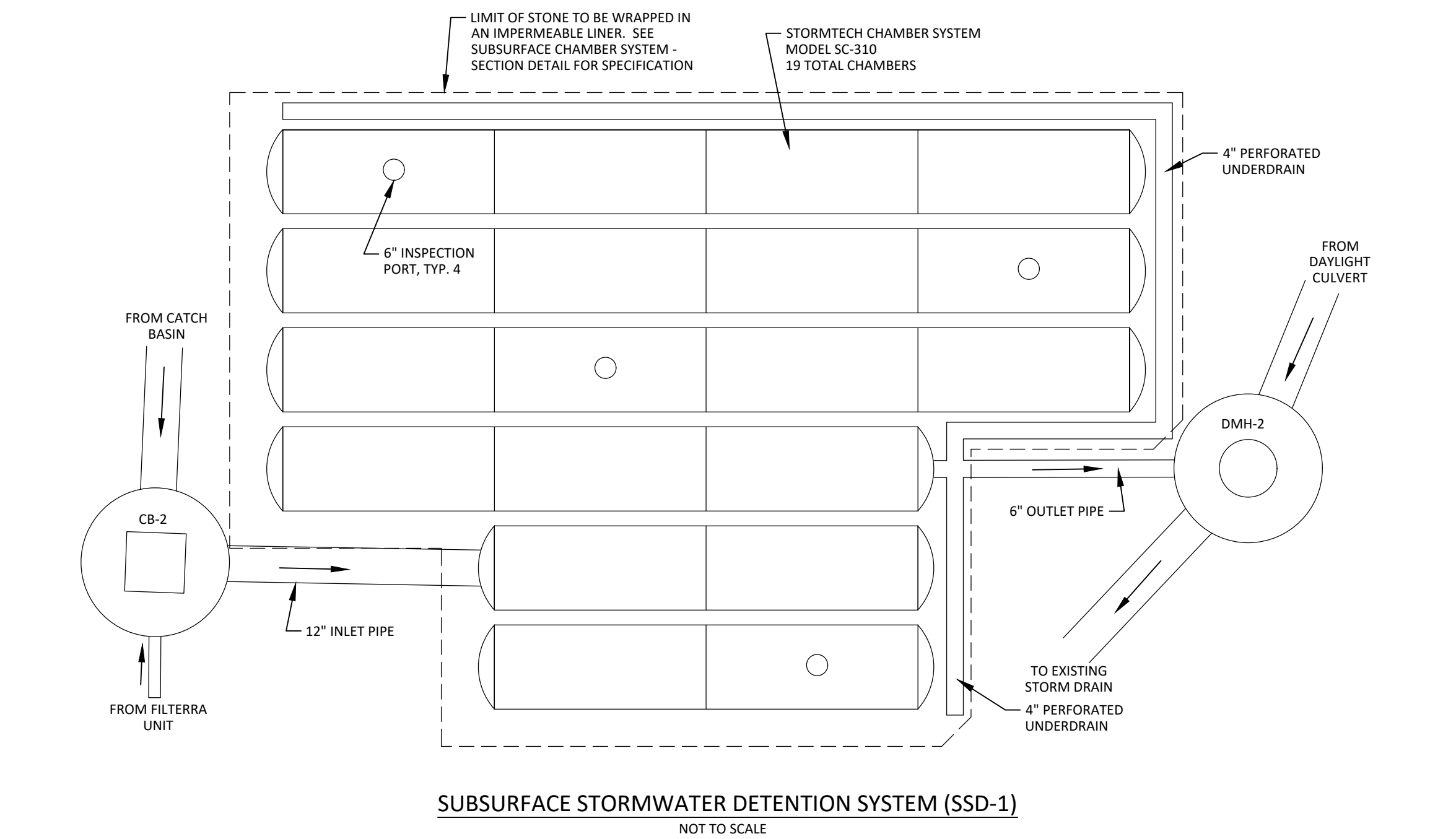
SUBSURFACE CHAMBER SYSTEM - SECTION DETAIL

NOT TO SCALE



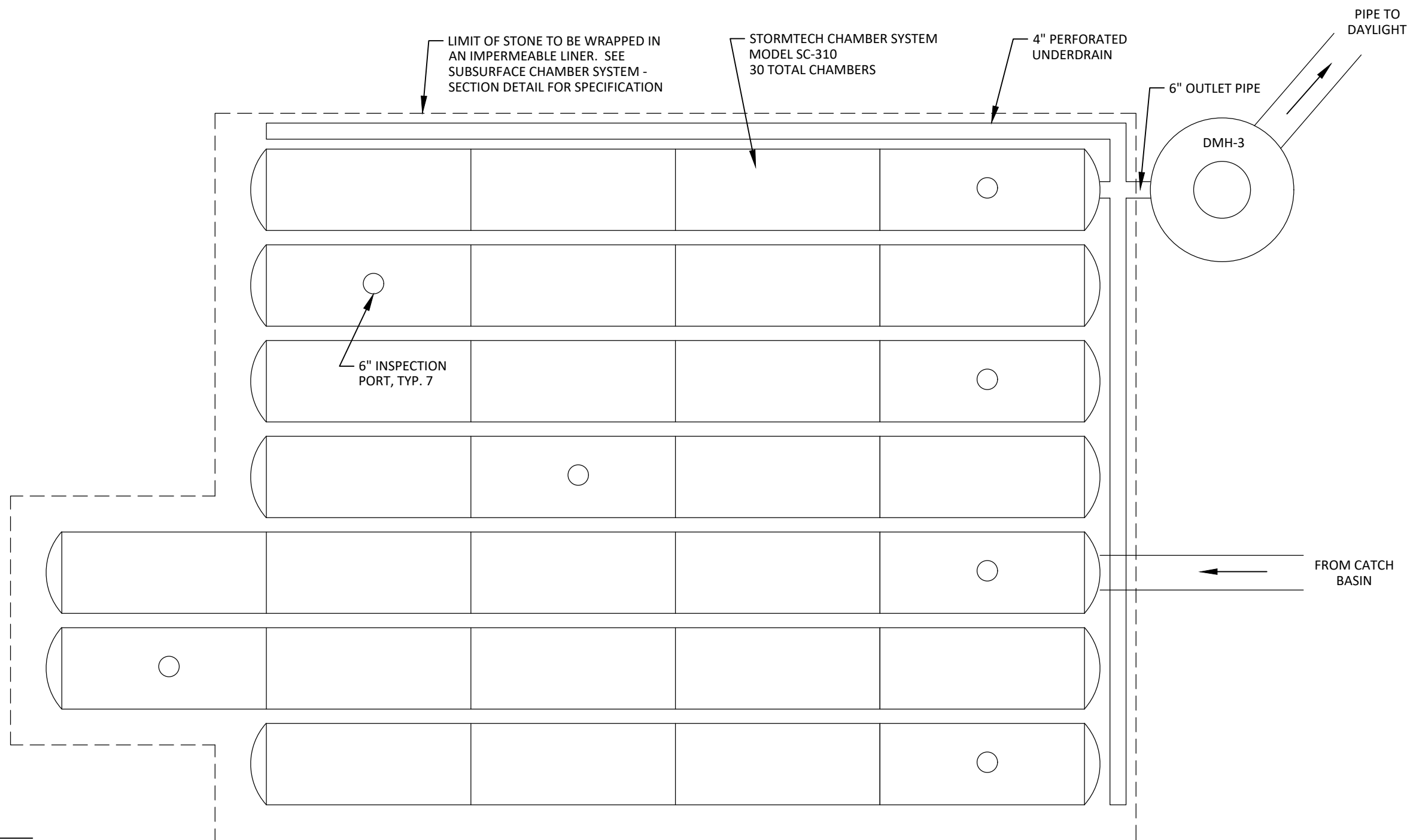
SC-310 6" INSPECTION PORT DETAIL

NOT TO SCALE



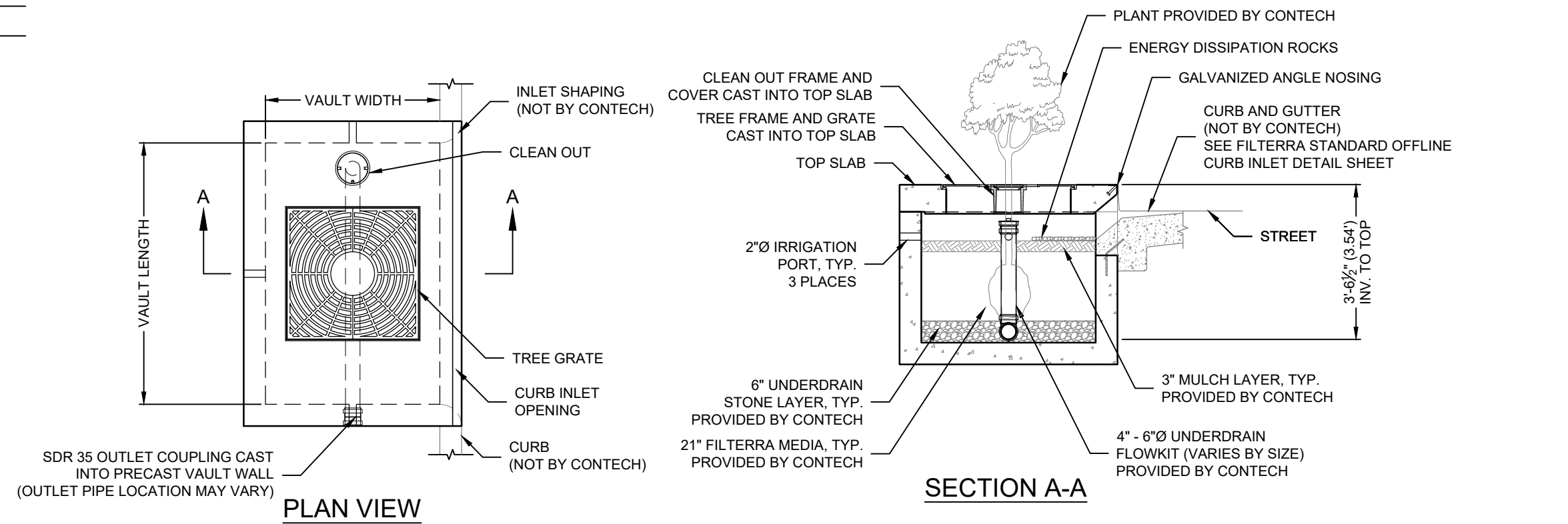
SUBSURFACE STORMWATER DETENTION SYSTEM (SSD-1)

NOT TO SCALE



SUBSURFACE STORMWATER DETENTION SYSTEM (SSD-2)

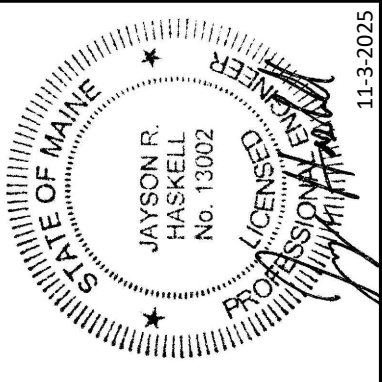
NOT TO SCALE



TYPICAL FILTERRA DETAIL

NOT TO SCALE

NOT FOR CONSTRUCTION



DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 591-5055

REV	DATE	BY	DESCRIPTION
A	11-3-25	JRH	ISSUED FOR PERMITTING

DETAILS
THE WOODLANDS RESERVE SUBDIVISION
POOL STREET AND PARKSIDE DRIVE
BIDDEFORD, MAINE
FOR RECORD OWNER:
BEDARD HOMES, LLC
PO BOX 483
BIDDEFORD, MAINE 04005

24036 JOB NUMBER:
AS NOTED SCALE:
11-3-2025 DATE:
SHEET 19 OF 19
D-5

- PLAN NOTES:**
1. BASE PLAN PREPARED BY DM ROMA CONSULTING ENGINEERS.
 2. SOIL PROFILES AND SOIL SAMPLES (SS#) SHOWN HEREON ARE AS INDICATED IN REPORT TITLED "SOIL NARRATIVE REPORT FOR 90 BONNY EAGLE ROAD, STANDISH, MAINE" PREPARED BY MARK HAMPTON ASSOCIATES, INC. SIGNED ON AUGUST 29, 2023.
 3. HIGH INTENSITY SOIL SURVEY HAS BEEN PREPARED BY MARK HAMPTON ASSOCIATES, INC. IN ACCORDANCE WITH THE STANDARDS ADOPTED BY THE MAINE ASSOCIATION OF PROFESSIONAL SOIL SCIENTISTS AND THE MAINE BOARD OF CERTIFICATION OF GEOLOGISTS AND SOIL SCIENTISTS.
 4. THIS SOIL SURVEY WAS PREPARED FOR A RESIDENTIAL DEVELOPMENT UTILIZING SUBSURFACE WASTEWATER DISPOSAL SYSTEMS.

LEGEND

- PROPERTY LINE/R.O.W.
- - - ABUTTER PROPERTY LINE
- - - SETBACK
- - - EASEMENT LINE
- GRANITE MONUMENT
- IRON PIN/DRILL HOLE
- - - CENTERLINE
- ===== BUILDING
- ===== EDGE OF PAVEMENT/CURB
- - - EDGE OF GRAVEL
- - - SIGN
- - - EDGE OF WETLANDS
- ===== EDGE OF WATER
- - - CONTOUR LINE
- - - WATER MAIN
- SS# SOIL SAMPLE
- MARK HAMPTON ASSOC.
- ===== LIMIT OF SOIL PROFILE

SLOPE DESIGNATIONS:

- 0-3% A
- 3-8% B
- 8-15% C
- 15-25% D
- >25% E

DRAINAGE CLASS:

- EXCESSIVELY WELL DRAINED EWD
- WELL DRAINED WD
- MODERATELY WELL DRAINED MWD
- SOMEWHAT POORLY DRAINED SPD
- POORLY DRAINED PD
- VERY POORLY DRAINED VPD

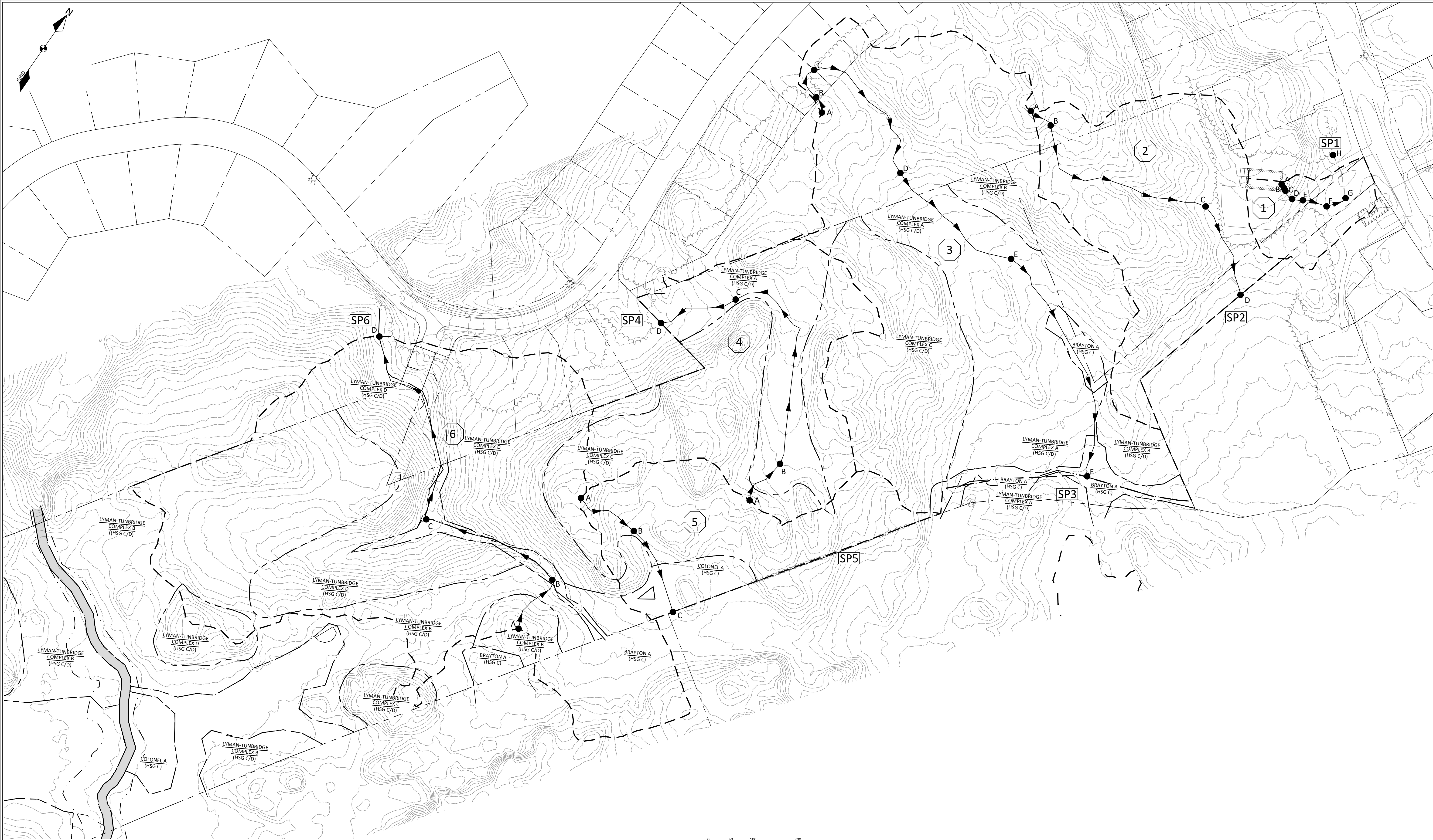


DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 591-5055

REV	DATE	BY	DESCRIPTION	
			ISSUED FOR REVIEW	
A	9/16/25	JRC		

CLASS B - HIGH INTENSITY SOIL SURVEY
POOL STREET RESIDENTIAL SUBDIVISION
268 POOL STREET
BIDDEFORD, MAINE
FOR: BEDARD HOMES, LLC
PO BOX 483
BIDDEFORD, MAINE 04005

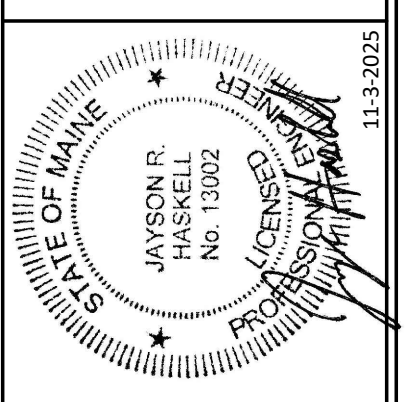
24036
JOB NUMBER:
1" = 120'
SCALE:
9-16-2025
DATE:
SHEET 1 OF 1
HISS-1



WATERSHED MAP LEGEND

- 1 WATERSHED NO.
- SP1 REACH/STUDY POINT
- P1 POND
- WATERSHED BOUNDARY
- TIME OF CONCENTRATION
- REACH PATH
- SOIL BOUNDARY

NOT FOR
CONSTRUCTION
PRELIMINARY
PLAN

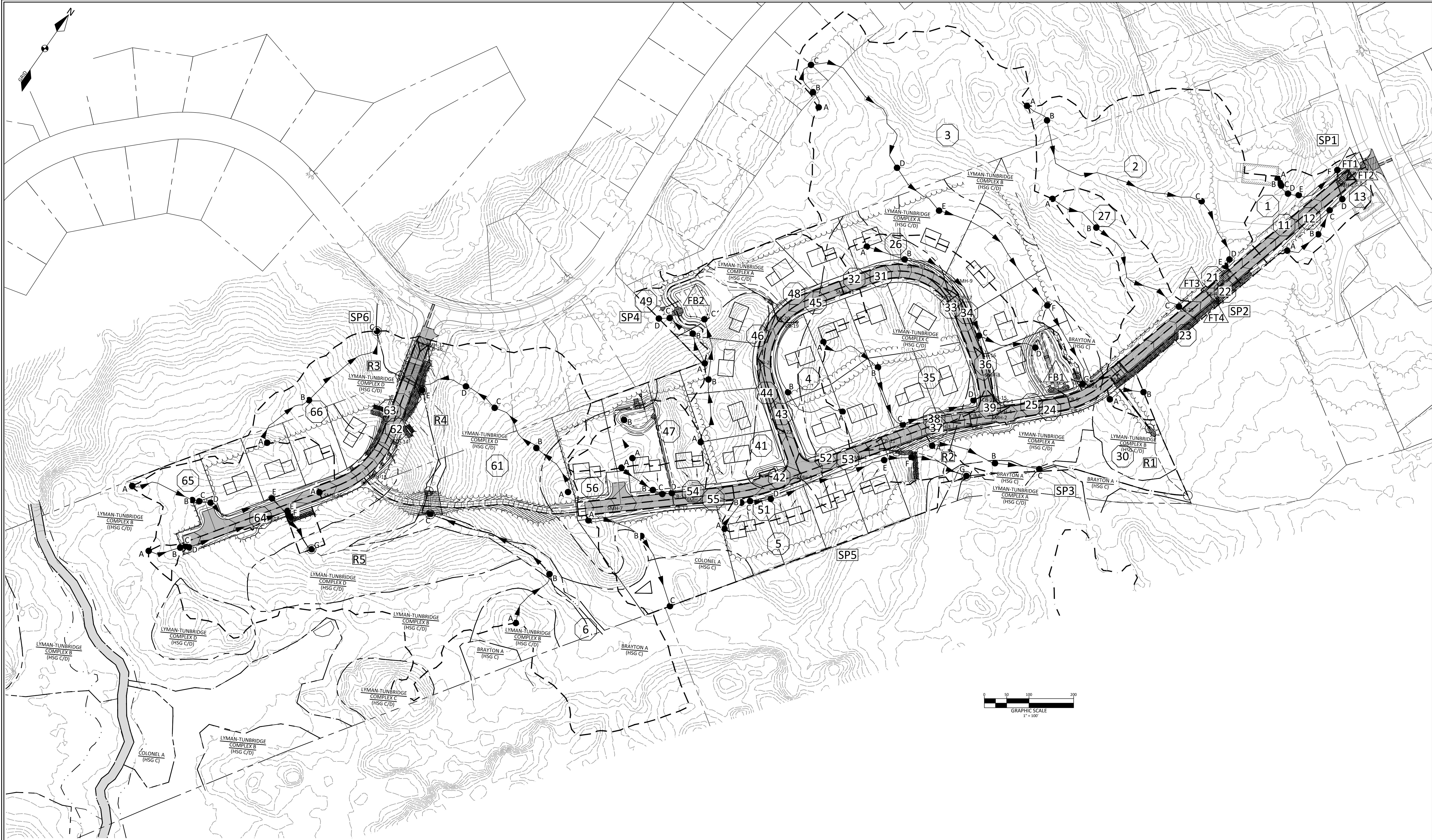


DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 591-5055

REV	DATE	BY	DESCRIPTION
A	3/26/25	JRH	ISSUED FOR SUBMITTAL FOR FINAL REVIEW

WATERSHED MAP: EXISTING CONDITIONS
THE WOODLANDS RESERVE SUBDIVISION
POOL STREET AND PARKSIDE DRIVE
BIDDEFORD, MAINE
FOR RECORD OWNER:
BEDARD HOMES, LLC
PO BOX 483
BIDDEFORD, MAINE 04005

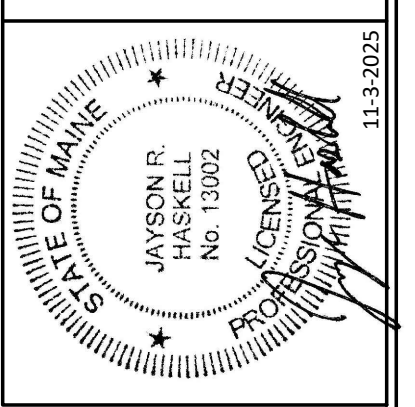
24036
JOB NUMBER:
1" = 100'
SCALE:
11-3-2025
DATE:
SHEET 1 OF 2
WM-1



WATERSHED MAP LEGEND

- 1 WATERSHED NO.
- SP1 REACH/STUDY POINT
- P1 POND
- WATERSHED BOUNDARY
- TIME OF CONCENTRATION
- REACH PATH
- SOIL BOUNDARY

NOT FOR
CONSTRUCTION
PRELIMINARY
PLAN



DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 591-5055

DESCRIPTION	
REV	ISSUED FOR PERMITTING
DATE	BY
11-3-25	JRH
A	

WATERSHED MAP: DEVELOPED CONDITIONS

THE WOODLANDS RESERVE SUBDIVISION
POOL STREET AND PARKSIDE DRIVE
BIDDEFORD, MAINE
FOR RECORD OWNER:
BEDARD HOMES, LLC
PO BOX 483
BIDDEFORD, MAINE 04005

24036
JOB NUMBER:
1" = 100'
SCALE:
11-3-2025
DATE:
SHEET 2 OF 2
WS-2

Preliminary Subdivision Application

To the City of Biddeford, Maine

The Woodlands Reserve Subdivision

**Pool Street and Parkside Drive
Biddeford, Maine**

**Applicant:
Bedard Homes, LLC
PO Box 481
Biddeford, Maine 04005**

**Prepared By:
DM Roma Consulting Engineers
PO Box 1116
Windham, Maine 04062**



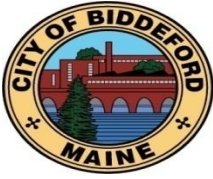
TABLE OF CONTENTS

PRELIMINARY SUBDIVISION APPLICATION SUBMISSION
THE WOODLANDS RESERVE SUBDIVISION
BIDDEFORD, MAINE

SECTION 1	APPLICATION FORM & CHECKLIST
SECTION 2	PROJECT NARRATIVE
SECTION 3	RIGHT, TITLE OR INTEREST DOCUMENTS
SECTION 4	FINANCIAL CAPACITY
SECTION 5	TECHNICAL CAPACITY
SECTION 6	HIGH INTENSITY SOIL SURVEY
SECTION 7	STORMWATER MANAGEMENT REPORT
SECTION 8	UTILITIES
SECTION 9	DRAFT COVENANTS & EASEMENTS
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SECTION 11	SOLID WASTE
SECTION 12	STATE AGENCY REVIEW LETTERS
SECTION 13	WILDLIFE STUDY
SECTION 14	FEMA FLOOD MAP
SECTION 15	BLASTING
SECTION 16	OTHER REGULATORY REVIEW

SECTION 1

APPLICATION FORM & CHECKLIST

**City of Biddeford – Planning Department****Planning Board Application**

P.O. Box 586, 205 Main Street Biddeford, Maine 04005
207-284-9115

Type of Application:

☐ Shoreland Zoning Permit ☐ Site Plan Review (Please include checklist) ☐ Extraction
☐ Conditional Use Permit ☒ Subdivision ☐ Private Way
☐ Other: _____

Applicant Information:

Name: Bedard Homes, LLC c/o Kevin Bedard
 Mailing Address: PO Box 481, Biddeford, ME 04005
 Telephone: 207-423-3564
 Email: kbbc1990@gmail.com

What is your legal interest in the property?

☒ Owner ☐ Potential Buyer with Contract ☐ Lease/Rental Agreement

Owner's Information:

Name: Same as applicant
 Mailing Address: _____
 Telephone: _____
 Email: _____

Agent's Information:

Name: DM Roma Consulting Engineers c/o Jayson Haskell
 Mailing Address: PO Box 1116, Windham, ME 04062
 Telephone: 207-591-5055
 Email: jayson@dmroma.com

Engineer/Surveyor's Information:

Name: Survey, Inc.
 Mailing Address: PO Box 210, Windham, ME 04062
 Telephone: 207-892-2556
 Email: wshippen@surveyincorporated.com

Project Location and Lot Information:

Street Address: Pool Street and Parkside Drive Drainage Watershed: West Brook
Tax Map: 8 Lot: 52-1
Current Zoning: Suburban Residential Zone Shoreland Zoning: Stream Protection Overlay Zone
 Size of Lot: 46.5 (X)acres ()s.f. Lot Frontage: 62.4' Pool St & 50' Parkside Dr
 Existing Use of Property: Undeveloped Woodland

Property currently serviced by:

☒ City Road ☐ Public Sewer ☐ Public Water ☐ Public Trash
☐ Private Road ☐ Septic System ☐ Private Well ☐ Private Hauler

Slope Conditions in Area of Construction (if applicable):

☐ Flat (0-3% slope) ☒ Rolling (3-8% slope) ☒ Hilly (8-15% slope) ☒ Steep (15%+ Slope)

Are there any wetlands or waterbodies on the site? ☒ (Yes) ☐ (No) if yes attach information

Is the project within the 100-year floodplain? ☒ (Yes) ☐ (No) if yes attach information

Do you plan to bring fill onto the lot? ☒ (Yes) ☐ (No) If yes attach information

Description of proposed use of property:

Project/Proposed Use:

30 lot residential subdivision

Property to be Serviced by:

☐ City Road ☒ Public Sewer ☒ Public Water ☐ Public Trash

☒ Private Road ☐ Septic System ☐ Private Well ☒ Private Hauler

Limits of Disturbance: 16.19 (X)acres ()s.f.

Net change in impervious cover: 4.73 (including lots) (X)acres ()s.f.

Is this project part of a larger project? ☐ (Yes) ☒ (No)

Is the project proposing a new Private or Public Road? ☒ (Yes, Private) ☐ (Yes, Public) ☐ (No)

Is this project within the Urbanized Area/MS4 (see [City Drainage Map](#)) ☐ (Yes) ☒ (No)

Is the project proposing any Stormwater facilities/BMPs? ☒ (Yes) ☐ (No)

Will a Traffic Movement Permit (TMP) be required?: ☐ (Yes) ☒ (No)

X If in a Shoreland Zone:

Percent of residential lot coverage (Max 20%): 0%

Percent of structure expansion (Max 30%): 0%

X If Subdivision Review, number of lots proposed: 30 lots

X If a Private Way is proposed, number of lots served: Road A&B=26 lots Road C=4 lots

If Site Plan Review, you must provide the following information:

Total new square feet footprint of structure: _____

Total new square feet paving/parking: _____

Waiver Requests (attach details):

1. _____
2. _____
3. _____
4. _____
5. _____

Required Submittal Attachments:

A. Letters of Approval

PENDING Fire Department – Contact Chief or Deputy Chief – 282-9986

PENDING Ability to Serve for Water Service – Maine Water – 282-1543

☒ Ability to Serve for Sewer Service – Engineering Department – Tom Milligan 284-9118

☐ Police Department – e-911 Road Name Designation – Contact Joanne Fisk 282-5127

SEE SEC.8 Ability to Serve for Electrical Service-CMP-1-866-225-4200

☒ Letter to Planning Board describing project, Waiver requests, proposed improvements, addressing permit requirements, etc.

X B. Photographs of Site.

TBD C. Architectural renderings/drawings of proposed buildings, as required.

X D. Engineering Plans, as required.

X E. Stormwater Management Report, as required.

Fees (Due at time of Submission):

- \$75 Nonrefundable Administration Fee is required for every application.
- Refer to “Attachment A Fees and Charges” of the Land Development Regulations for more information. Consult with Planning Staff if you have questions.

Required Signatures:

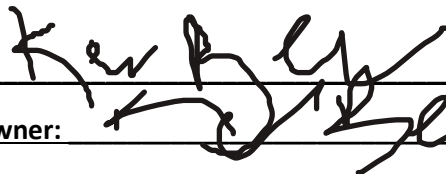
By signing this application, as the foresaid applicant or authorized agent:

- I certify that I have read and completely understand the application;
- I certify that the information contained in this application and its attachments are true and correct;
- I understand that all information provided on this form and all other documents submitted as part of my proposal is a matter of public record;
- I understand that copies of this information may be supplied upon request to an interested party.
- I understand that additional funds may be required through the course of the review for special studies, legal review costs, and/or engineering review.
- I understand that by submitting an application I am not guaranteed a place on any particular agenda. I further understand that the City Planner will place me on an agenda for review when the application is deemed substantially complete.

Will the proposed project cause 1 acre or more of site disturbance? X (Yes) ___ (No)

- **If Yes, applicant is responsible for any required Maine Construction General Permits and shall comply with the requirements of DEP Chapter 500 Stormwater Regulations, as they apply.**

Signature of Applicant:



Date 10/31/25

Signature of Property Owner:



Date 10/31/25

DIGITAL SUBMITTAL REQUIREMENTS FOR ALL SUBMITTALS:

A) PDF OF SIGNED APPLICATION

B) PDFs OF ALL DRAWING SETS AND OTHER REQUIRED SUBMITTAL ATTACHMENTS NOTED ABOVE

HARD-COPY SUBMITTAL REQUIREMENTS FOR PLANNING BOARD APPLICATIONS:

A) SEVEN (7) FULL-SIZE PAPER COPIES OF DRAWING SETS

DIGITAL SUBMITTAL REQUIREMENTS FOR FINAL APPROVAL:

A) INDIVIDUALLY NAMED PDFs OF EACH DRAWING (NOT A COMBINED PDF SET)

- *Individual Drawing PDF Naming Format: 'PROJECT/SHEETSET NAME_INDIVIDUAL DRAWING NAME.pdf'*

B) PDF COPIES OF ALL PERMIT APPROVALS, APPLICATIONS, REPORTS, NARRATIVES, LETTERS, ETC.

C) FINAL CAD REFERENCE FILES IN DWG FORMAT (SURVEY & PROPOSED DESIGN LINEWORK)

- *All drawings & CAD reference files must be to-scale and within the following coordinate systems:*

- *MAINE STATE PLANE WEST NAD83 (Horizontal Datum) & NAVD88 (Vertical Datum)*

HARD-COPY SUBMITTAL REQUIREMENTS FOR FINAL APPROVAL:

A) THREE (3) FULL-SIZE PAPER COPIES OF INDIVIDUAL DRAWINGS REQUIRING BOARD SIGNATURE

B) ONE (1) FULL-SIZE PAPER COPY OF ENTIRE DRAWING SET FOR ENGINEERING RECORDS

PLEASE CONFIRM WITH PLANNING STAFF FOR CLARIFICATION

SUBDIVISIONS

66 Attachment 2

City of Biddeford

Appendix B Required Information Checklist [Ord. of 6-20-1995]

In order for any application to be considered complete the following information must be provided at least two weeks prior to the Planning Board meeting. All plans for subdivisions shall contain the following information:

	Yes	No	N/A	Remarks
(1) Name of subdivision, owner and engineer or surveyor	×			
(2) Graphic scale, date, drawn, North point and its date, and whether it is true or magnetic	×			
(3) Boundaries of the tract	×			
(4) Existing zoning	×			
(5) Ownership and location of abutting properties	×			
(6) Name, location, width, profile, cross-section, radius of curves, angles of change in direction and center line length of all angles of change in direction and center line length of all proposed streets; other public ways, building lines and easements in the subdivision; intersection of existing streets	×			
(7) Type, location, profile and cross-section of all existing and/or proposed surface water drainage	×			
(8) Location of all existing and/or proposed utilities	×			
(9) Location of all existing and/or proposed sanitary sewers showing size, profile, and cross-section, or description, plan, location of other means of sewage disposal with evidence of successful soil evaluation	×			
(10) Topography at two-foot contour intervals, unless otherwise prescribed by the Board. In addition the location of existing natural or man-made features influencing the layout of the proposed subdivision shall be shown.	×			

BIDDEFORD CODE

	Yes	No	N/A	Remarks
(11) Lot lines and approximate dimensions	×			
(12) Proposed uses of property	×			
(13) Proposed public areas, if any	×			
(14) Copy of deed, or option for purchase, for land being subdivided	×			
(15) Reserved fire lane areas	×			
(16) Location of soil evaluation test pits for each lot on plan			×	
(17) Location of well or water supply for each lot	×			
(18) Aesthetics; trees, berms, shrubs, green strips, parks, etc.	×			
(19) Location and details for sedimentation and erosion control measures	×			
The preliminary of a subdivision shall be drawn at a scale no smaller than 100 feet (1 cm = 12 m) to the inch	×			
A preliminary plan shall include a location map insert, showing the relationship of the proposed subdivision to adjacent properties and public access, and drawn at no smaller scale than 2,000 feet (1 cm = 240 m) to the inch. It is suggested that reduced sections of City maps be used for this purpose.	×			

In addition to the above plat information, the Subdivider shall provide the following documents:

	Yes	No	N/A	Remarks
Valid deed or option indicating an interest held by the subdivider in the parcel of land	×			
Completed application form	×			
Narrative of the proposed project briefly describing the general nature of the project i.e., type of project; residential or commercial; number of lots intended to create	×			
Draft covenants and deeds for each lot proposed				PENDING
Easement documents for proposed rights-of-way for utilities, drainage ways, roadways and other				PENDING

SUBDIVISIONS

	Yes	No	N/A	Remarks
travelways or public amenities				
Statement of financial capability of subdivider to undertake the proposed project	×			
Statement identifying principals involved in the project	×			
Statement demonstrating that the subdividers have the technical capability to complete the proposed project as presented	×			
Copies of such covenants or deed restrictions as are intended to all or part of the tracts	×			
Review by water company, power company and City Engineering, Police and Fire Departments	×			PENDING APPROVAL



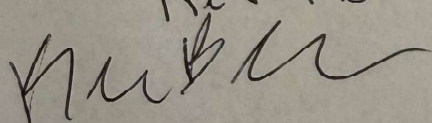
October 6, 2025

City of Biddeford
205 Main Street
Biddeford, Maine 04005

**Re: Agent Authorization
Land Development Permitting
Pool Street Subdivision, Biddeford**

I am the owner of a parcel of land located on Pool Street in Biddeford, Maine. The property is a 46.5-acre parcel identified as Lot 52-1 on City of Biddeford Assessor's Map 8. I have retained the services of Jayson Haskell and DM Roma Consulting Engineers to act as my agent to apply for land use permits associated with the development of the property.

Sincerely,

Kevin Bedard


Kevin Bedard
Bedard Homes, LLC
P.O. Box 481
Biddeford, Maine 04005

SECTION 2

PROJECT NARRATIVE

SECTION 2 – PROJECT NARRATIVE

Zoning:	Suburban Residential Zone
Overlay Zoning:	Stream Protection Overlay Zone
Acreage:	46.5 acres
Tax Map/Lot:	Map 8 Lot 52-1
Existing Use:	Undeveloped Woodland
Proposed Use:	30 Single Family Lot Residential Subdivision

Bedard Homes, LLC, the applicant and current landowner, is proposing to develop property located along Pool Street and Parkside Drive in Biddeford, Maine.

Existing Conditions

The property is currently undeveloped woodland.

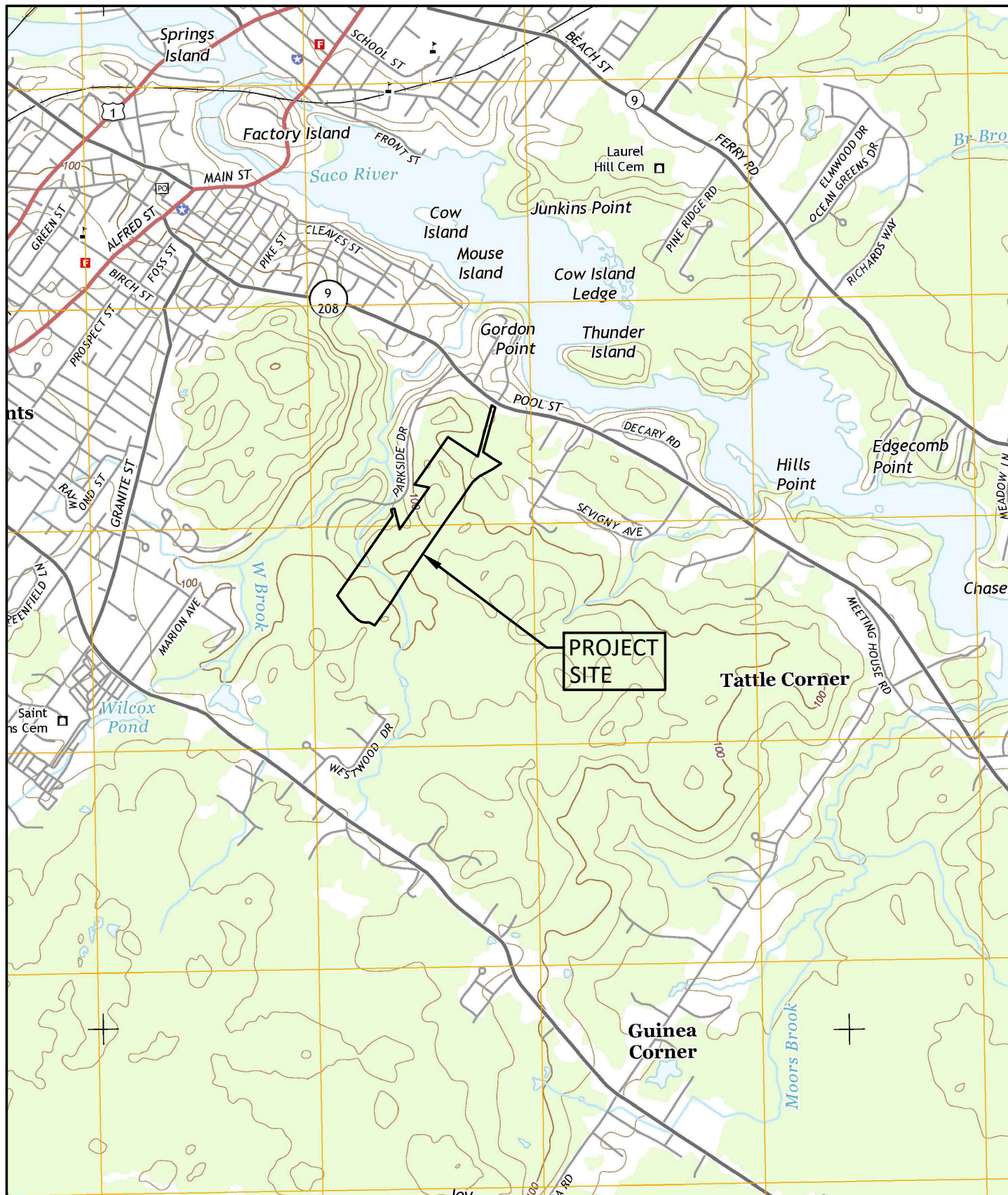
Proposed Development

The applicant intends to create a 30-lot residential subdivision. The lots will consist of single-family residential lots served by three separate paved roads accessed by Pool Street and Parkside Drive totaling approximately 3,800 linear feet. In addition an approximately 490 linear foot utility and trail gravel road will be installed to connect the two project areas.

The roadways will be located within a 50-foot (minimum) right of way. The proposed roadway cross section for all roads will consist of a 20-foot-wide paved travel way with 4-foot-wide bike lanes/walkways on both sides of the road, for a total paved width of 28 feet. This road standard was provided to us by City Staff. Based on additional conversations with the Engineering and Public Works departments, these roads will remain private due to the stormwater infrastructure proposed beneath the roadway. A homeowner association will be created for maintenance of the roadway and other utility and stormwater infrastructure maintenance.

The development also provides to open space areas for natural resources and passive recreation with the use of the existing trails. This conservation area will include the habitat for endangered turtle species and a significant vernal pool. This is not a requirement of Chapter 66 Subdivisions, but due to the sensitivity of the natural features of the site and the use of the existing trail system, this area is in open space. The total open space is 27.74 acres, approximately 60% of the overall parcel. The intent of the developer is to convey this open space to the City of Biddeford for public use. Since the roads are to remain private, requiring maintenance of the roads within the subdivision the responsibility of the residents, the developer does not intend to provide public access through the proposed roads to avoid a significant amount of traffic and accelerating the degradation of the roadways.

Further information about the project is included in the following sections of the submission.



SITE LOCATION MAP

POOL STREET RESIDENTIAL SUBDIVISION
BIDDEFORD, MAINE

FOR:
BEDARD HOMES, LLC
PO BOX 481
BIDDEFORD, MAINE 04005

USGS QUADRANGLE
BIDDEFORD

SCALE: 1"=2,000'
DATE: 12-5-2024
JOB NUMBER: 24036

DM ROMA

CONSULTING ENGINEERS

P.O. BOX 1116
WINDHAM, ME 04062
(207) 591-5055



PHOTO 1 – LOOKING FROM POOL STREET SOUTHERLY AT NEW ROAD LOCATION.



PHOTO 2 – LOOKING LEFT ON POOL STREET FROM PROPOSED INTERSECTION.



PHOTO 3 – LOOKING RIGHT ON POOL STREET FROM PROPOSED INTERSECTION.



PHOTO 4 – PHOTO INTERNALLY IN SITE.



PHOTO 5 – PHOTO INTERNALLY OF SITE.



PHOTO 6 - INTERNALLY OF SITE.



PHOTO 7 – EXISTING PUMP STATION ON PARKSIDE DRIVE.



PHOTO 8 – LOOKING AT PUMP STATION AND PARKSIDE DRIVE DRIVEWAY.

SECTION 3

RIGHT, TITLE OR INTEREST DOCUMENTS

SECTION 3 – RIGHT, TITLE OR INTEREST DOCUMENTS

The project site is owned by the applicant, Bedard Homes, LLC, by deed from Deborah D. May, Kristen A. DeRyck and Jennifer L. DeRyck recorded in the York County Registry of Deeds Book 19506 Page 846 on June 6, 2024. A copy of the property deed has been included in this section for review.

In addition to the ownership of the property, a 30 foot access, utility and grading easement from the project parcel to Parkside Drive was granted to the DeRycks by E and R Development Corporation in 2013 over Lot D as identified on plan titled "Parkside Addition to Phase 1 – Final Subdivision Plan, Parkside Drive, Biddeford, Maine for E and R Development Corp. as prepared by BH2M Engineers and Surveyors dated November 2012 and revised through March 1, 2013, recorded in the York County Registry of Deeds Plan Book 359 Page 47". Since the easement continues with the land, Bedard Homes, LLC has the right to build within this easement. As indicated on the design plans, no roadway and utilities will be installed within this easement, but the fill slope associated with Road C will extend approximately 11 feet into the easement and a level spreader to reduce erosion of the slope and the stream, will be approximately 25 feet in one location. There will be a significant tree buffer remaining between the land development and the residence on Lot D. Included in this section is the property deed between E and R Development Corporation and Raymond Deryck and a reduced copy of the recorded plan referenced above.

WARRANTY DEED
Maine Statutory Short Form

KNOW ALL BY THESE PRESENTS, that we, **Deborah D. May** of Dearborn, Michigan, **Kristen A. DeRyck** of Grosse Pointe, Michigan and **Jennifer L. DeRyck** of Grosse Pointe Woods, Michigan for consideration paid, **GRANT** to **Bedard Homes, LLC**, a Maine limited liability company with a mailing address of PO Box 481, Biddeford, ME 04005, with **WARRANTY COVENANTS**, the real property commonly known as 268 Pool Street, and located in the City of Biddeford, County of York and State of Maine, described as follows:

SEE SCHEDULE A ATTACHED HERETO AND MADE A PART HEREOF.

Meaning and intending to convey, and hereby conveying, the same premises set forth in a deed from Raymond DeRyck to Raymond DeRyck, Deborah D. May, Kristen A. DeRyck and Jennifer L. DeRyck dated February 1, 2019 and recorded in the York County Registry of Deeds in Book 17894, Page 169. Raymond DeRyck died January 18, 2021 therefore leaving Debra D. May, Kristen A. DeRyck and Jennifer L. DeRyck as the surviving joint tenants.

WITNESS my hand and seal this 31st day of August, 2024

SIGNED, SEALED AND DELIVERED
IN THE PRESENCE OF

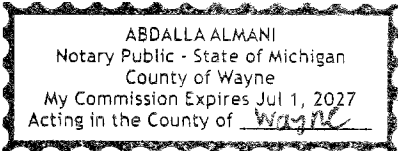
[Signature]
WITNESS

[Signature]
Deborah D. May

State of Michigan
County of Wayne, ss.

August 31st, 2024

Then personally appeared the above named Deborah D. May and acknowledged the foregoing instrument to be her free act and deed, before me,



[Signature]
Notary Public
My commission expires 07/01/2027

Maine R.E. Transfer Tax Paid

WITNESS our hands and seals this 30 day of August, 2024

SIGNED, SEALED AND DELIVERED
IN THE PRESENCE OF

[Signature]
WITNESS AMBER GENNA

D'Ann Landon
WITNESS D'Ann Landon

[Signature]
Kristen A. DeRyck

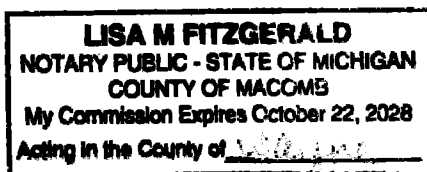
[Signature]
Jennifer L. DeRyck

State of Michigan

County of Wayne, ss.

August 30, 2024

Then personally appeared the above named Kristen A. DeRyck and Jennifer L. DeRyck and acknowledged the foregoing instrument to be their free act and deed, before me,



[Signature]
Notary Public
My commission expires 10-22-2028

SCHEDULE A

PARCEL ONE:

That real estate situated at and near the Pool Road, so-called, in Biddeford, York County, Maine, as described in deed of BIDDEFORD CHURCH OF CHRIST to Raymond Deryck dated September 1, 1987, and recorded in York Registry of Deeds in Book 4443, page 288, to which deed and the record thereof, reference is made for a more particular description of the within conveyed premises.

EXCEPTING, THEREFROM, HOWEVER, that portion of the above-described premises described in deed of Raymond Deryck to E & R Development Corporation dated March 18, 2013, and recorded in York Registry of Deeds in Book 16554, page 568.

PARCEL TWO:

That real estate and interests in real estate situated on the southerly sideline of Parkside Drive, so-called, in Biddeford, York County, Maine, as described in deed of E & R Development Corporation to Raymond Deryck dated March 18, 2013, and recorded in York Registry of Deeds in Book 16554, page 570, to which deed and the record thereof, reference is made for a more particular description of the within conveyed premises, SUBJECT, HOWEVER, to those reserved interests and restrictions set forth therein.

(the space above is reserved for recording information)

WARRANTY DEED
Maine Statutory Short Form

KNOW ALL MEN BY THESE PRESENTS, That **E & R DEVELOPMENT CORPORATION**, a Maine corporation having a mailing address of P.O. Box 444, Biddeford, ME 04005, for consideration paid, grant to **RAYMOND DERYCK**, having a mailing address of 1009 Harvard Road, Grosse Pointe, MI 48230, with **WARRANTY COVENANTS**, the land in Biddeford, in the County of York and State of Maine, described as follows:

A certain lot or parcel of land located on the southerly sideline of the existing turnaround located on the southerly sideline of Parkside Drive, so-called, in the City of Biddeford, County of York and State of Maine and shown on the Plan titled "Parkside Addition to Phase I, Final Subdivision Plan, Parkside Drive, Biddeford, Maine" for E & R Development Corp., dated November 2012 as revised through 3/1/13, by BH2M, Inc., to be recorded herewith; said parcel being more particularly described as follows:

BEGINNING at a capped iron rod found (PLS #2190) at the southwesterly corner of said turnaround and on the easterly sideline of remaining land of E & R Development Corp. as shown on aforesaid plan;

THENCE S 87°-51'-02" E along the southerly sideline of said turnaround a distance of 50.00 feet to a capped iron rod to be set (PLS #2190) and the westerly sideline of Lot D as shown on aforesaid plan;

THENCE S 02°-22'-08" W along said Lot D a distance of 51.81 feet to a capped iron rod to be set (PLS #2190) and land of Raymond DeRyck (Grantee);

THENCE S 51°-37'-45" W along the land of Raymond DeRyck a distance of 65.99 feet to a point and remaining land of E & R Development Corp.;

THENCE N 02°-22'-08" E along the remaining land of E & R Development Corp. a distance of 94.68 feet to the point of beginning.

The above described parcel contains 3,662 s.f.. All bearings refer to magnetic north as observed in 1988.

ALSO granting herewith a perpetual right of way and easement to be used for the benefit of the above described premises and other land of Raymond Deryck as described in deed recorded in the York County Registry of Deeds in Book 4443, Page 288, (jointly and severally the "Benefitted Parcel") in common with E & R Development Corporation, Raymond DeRyck and all others who may now have or may hereinafter be granted rights in and to the use of the same by E & R Development Corporation, its successors and assigns

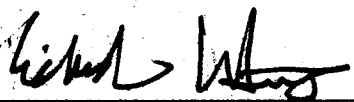
for the benefit of other parcels of land determined from time to time by E & R Development Corporation in, on, over and under the surface of the hereinafter described parcel of land for purposes of the use, introduction, maintenance, repair and replacement of all utility services and for purposes of grading, installation, maintenance, repair and replacement of culverts, pipes, manhole structures and appurtenances, construction of drainage ways for the benefit of and access to the Benefitted Parcel, together with a right of entry by persons which such machinery and equipment as may be reasonably necessary to accomplish the purposes of this grant. The area encumbered by this right of way and easement is a strip of land Thirty (30) feet in width and is more particularly shown and depicted as "30' Future Access, Grading and Utility Easement See Note 16" on the above plan.

EXCEPTING AND RESERVING herefrom a perpetual right of way and easement for the benefit of remaining land of E & R Development Corporation or any adjacent land currently owned by E & R Development Corporation or nearby land it may hereinafter acquire (the "Benefitted Parcels") for purposes of ingress and egress and for the use, installation, maintenance, repair and replacement of all utilities in, on, over and under the surface of the above described parcel of land, together with a right of entry by persons with such machinery and equipment as may be reasonably necessary to accomplish the purposes of this grant.

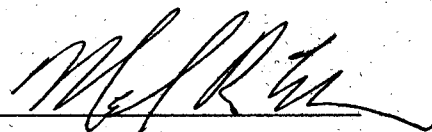
The above described premises are to be used exclusively for the purposes of the creation of a roadway to be used for all the normal purposes of a roadway for access and use of and access to all utility services to benefit both adjacent land of the within Grantee, the within Grantor and their respective heirs, successors and assigns. To that end Grantee shall improve the same to the standards for a public street of the City of Biddeford in the event any improvements shall be undertaken by him, his heirs and assigns. If so constructed, the within Grantee, his heirs and assigns shall be obligated to offer the same to the City of Biddeford as a public street. In the event the with Grantee shall not undertake and complete such improvements at a time or in a fashion acceptable to the within Grantor, the within Grantor, its successors and assigns may undertake such action and the within Grantee, his heirs and assigns shall be obligated execute and deliver such documents as may be reasonably required by the City of Biddeford to evidence the creation of a public street on the within conveyed premises.

IN WITNESS WHEREOF, E & R DEVELOPMENT CORPORATION has caused this instrument to be signed and sealed in its corporate name and behalf by Michael R. Eon, its President, thereunto duly authorized this 18th day of March, 2013.

SIGNED, SEALED AND DELIVERED
IN PRESENCE OF:



E & R DEVELOPMENT
CORPORATION

By: 

STATE OF MAINE
YORK, ss.

Its: President
Michael R. Eon

March 18, 2013

Personally appeared the above named Michael R. Eon, President of said E & R DEVELOPMENT CORPORATION 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

Printed Name:

Richard A. Hull II

After recording return to:

Raymond DeRyck

1009 Harvard Road

Grosse Pointe, MI 48230

Go Hull Law Office
409 Alfred St
Bldg. #204005

ldrive/deedtoDeRyck/1022-102/tmg/revised3/11/13

3p-7

End of Document

DESIGNED W. Thompson	DATE Nov. 2012
DRAWN W. Pelkey	SCALE As Noted
CHECKED W. Thompson	JOB. NO. 12104

SHEET

1

REPRODUCTION OF VALUE OF THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF B&B INC. IS PROHIBITED.



SECTION 4

FINANCIAL CAPACITY

SECTION 4 – FINANCIAL CAPACITY

The following is a list of the sitework to be completed for the project as currently proposed.

• Clearing and Grubbing:	\$70,000
• Rock Excavation:	\$150,000
• Install gravel road base and utility trail:	\$350,000
• Bituminous Pavement:	\$275,000
• Curbing:	\$100,000
• Retaining Wall:	\$75,000
• Other Road Improvements:	\$100,000
• Water Main and Fixtures:	\$300,000
• Fire Cisterns:	\$75,000
• Wastewater System:	\$300,000
• Electrical Utilities:	\$200,000
• Storm Drain and Structures:	\$260,000
• Stormwater BMPs:	\$200,000
• Erosion Control:	\$150,000
Total Site Construction Cost Estimate:	\$2,605,000

Enclosed is a letter from Maine Community Bank indicating the applicant has the financial capacity to complete the project.



October 29, 2025

City of Biddeford Planning & Development
205 Main Street
Biddeford, ME 04005

Re: Bedard Homes, LLC Financial Capacity Letter
The Woodlands Reserve-268 Pool Street, Biddeford

To Whom it May Concern,

Maine Community Bank assisted Kevin & Victoria Bedard of Bedard Homes, LLC with the financing to purchase the parcel of land at 268 Pool Street in September 2024. The subject property was purchased by the Borrower with the intent of future residential development. Based on the Borrower's existing relationship with Maine Community Bank and proven capability on past projects, it is believed that Bedard Homes, LLC, has the ability and financial capacity to complete the development of the project known as The Woodlands Reserve. Any formal commitment to lend by the Bank will be contingent upon full underwriting, due diligence, and Bank approval.

Should you require additional information, please do not hesitate to contact me directly at 207-571-5620 or lhughes@maine.bank.

Sincerely,

Lisa M. Hughes

Lisa M. Hughes
Vice President

SECTION 5

TECHNICAL CAPACITY

SECTION 5 - TECHNICAL CAPACITY

Bedard Homes, LLC is the developer of the project and intend to either sell the undeveloped lots or construct the houses under their Bedard Custom Homes building company. The Bedards have decades of experience in construction and real estate. They have done several renovations and new construction house builds in Biddeford and currently constructing their new office location in Saco.

DM Roma Consulting Engineers has been retained to provide civil engineering and regulatory permitting assistance on the project. Jayson Haskell, authorized agent, is a Maine licensed Professional Civil Engineer with a bachelor's degree in Civil Engineering from the University of Maine. He has over 18 years of experience in site, roadway and utility design. He also has experience in GIS software.

Survey, Inc. has been retained to provide boundary and topographic survey services on the project. Bill Shippen is a Licensed Professional Land Surveyor.

Mark Hampton Associates, Inc. has been retained to provide the original wetland delineation and soil analysis services related to the High Intensity Soils Survey for the project. Mark Hampton, is a Licensed Site Evaluator and Certified Soil Scientist.

FB Environmental Associates has been retained to provide wildlife habitat investigation services. Elliott Boardman is a project manager and ecologist at FB Environmental and has his bachelor's degree in Environmental Science from the University of New England.

SECTION 6

HIGH INTENSITY SOILS SURVEY

SECTION 6 – HIGH INTENSITY SOIL SURVEY

A Class-B High Intensity Soil Survey was performed on the property by Mark Hampton Associates, Inc. and is attached as part of the design plans. The Soil Narrative Report has been included in this section with associated test pit data and soil classifications.



MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

8094

268 Pool Street
Biddeford ME
Bedard Homes LLC

Soil Narrative Report

DATE: Soil Profiles observed on November 16, 2024

BASE MAP: Base plan provided by DM Roma Consulting Engineers, Scale 1 inch equals 120 feet and two foot contours.

GROUND CONTROL: Soil survey boundaries located by Mark Hampton Associates, Inc. for Class B Soil Survey

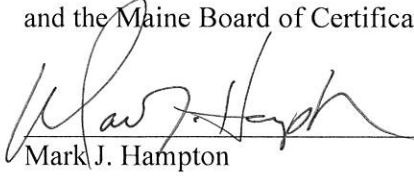
Class B-High Intensity Soil Survey (Minimum Standards)

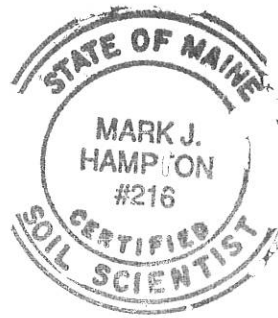
Mapping units of 1 acre or less.
Scale of 1"= 200 feet or larger.
Up to 25% inclusions in mapping units of which no more than 15% may be dissimilar soils.
Ground Control – test pits located by means of compass by chaining, pacing, or taping from known survey control points
Base Map –5 foot contour intervals

Provided:

Mapping units of 1 acre or less
Scale of 1"= 120 feet.
Up to 25 percent inclusions in mapping units of which no more than 15 percent is dissimilar soils.
Baseline information and test pits located by pacing and taping from known survey control points.
Ground topographic survey with one foot contours and ground control provided.

The accompanying soil profile descriptions, soil map, and this soil narrative report were done in accordance with the standards adopted by the Maine Association of Professional Soil Scientists, and the Maine Board of Certification of Geologists and Soil Scientists.

 C.S.S. #216, L.S.E. #263 11/24/24
Mark J. Hampton Date





MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

8094

268 Pool Street
Biddeford, ME
Bedard Homes LLC

LYMAN-TUNBRIDGE COMPLEX

SETTING

PARENT MATERIAL:	Loamy glacial till
LANDFORM:	Glaciated uplands
POSITION IN LANDSCAPE:	Uppermost locations, sideslopes, shoulders and crests
SLOPE GRADIENT RANGES:	(A) 0-3%, (B) 3-8%, (C) 8-15%, (D) 15-25%

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS: Excessively well drained Lyman (10-20 inches to bedrock) and Tunbridge (20-40 inches to bedrock)
These soils occur in a nonrepeating pattern with exposed bedrock outcrops and cannot be separated.

TYPICAL PROFILE:	<u>Surface Layer:</u>	Reddish brown fine sandy loam, 0-4 inches
	<u>Subsurface Layer:</u>	Red brown fine sandy loam 4-12"
	<u>Subsoil Layer:</u>	Dark red fine sandy loam 12-18"
	<u>Substratum:</u>	Brown fine sandy loam 18-36"

HYDROLOGIC GROUP:	Group C/D
PERMEABILITY:	Slow to rapid, depending on slope and bedrock outcrops.
DEPTH TO BEDROCK:	Shallow (Lyman 10-20 inches) to moderately deep (Tunbridge 20-40 inches).
HAZARD TO FLOODING:	None

INCLUSIONS (Within Mapping Unit)

CONTRASTING: Colonel, Brayton

USE AND MANAGEMENT

Development: The limiting factor for building site development is depth to bedrock which ranges from 0 to 40 inches within this complex. Tunbridge and Lyman (deeper than 11 inches) soils are suitable for subsurface wastewater disposal.





MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

8094

268 Pool Street
Biddeford, ME
Bedard Homes LLC

Colonel
(Aquic Haplorthods)

SETTING

PARENT MATERIAL:	Derived from dense, loamy glacial till
LANDFORM:	Drumlins and Sideslopes of glaciated uplands
POSITION IN LANDSCAPE:	Mid-positions on landform
SLOPE GRADIENT RANGES:	(A) 0-3%

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS:	Somewhat poorly drained with a perched watertable from 1.0 to 2.0 feet below the surface at some time from October to May or during periods of heavy precipitation.	
TYPICAL PROFILE:	<u>Surface Layer:</u>	Dk gray brown, stony sandy loam 0-3"
	<u>Subsurface Layer:</u>	Dark Brown, stony sandy loam, 3-12"
	<u>Subsoil Layer:</u>	Olive Brown, stony sandy loam, 12-18"
	<u>Substratum:</u>	Olive, stony, sandy loam, 18-65"
HYDROLOGIC GROUP:	Group C	
SURFACE RUNOFF:	Moderate to moderately slow	
PERMEABILITY:	Moderate and moderately slow	
DEPTH TO BEDROCK:	Greater than 65 inches	
HAZARD TO FLOODING:	None	

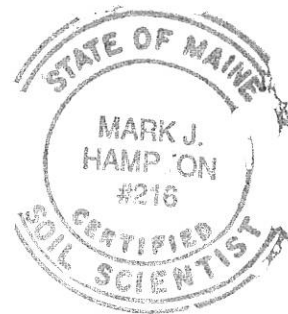
INCLUSIONS

(Within Mapping Unit)

CONTRASTING: Lyman-Tunbridge, Brayton

USE AND MANAGEMENT

Development: The limiting factor for building site development is wetness due to the presence of a high watertable for a portion of the year. Proper foundation drainage or site modification is recommended.





MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

8094

268 Pool Street
Biddeford, ME
Bedard Homes LLC

Brayton
(Aeric Epiaquepts)

SETTING

PARENT MATERIAL: Derived from dense glacial till
LANDFORM: Toeslopes and depressions in glaciated uplands
POSITION IN LANDSCAPE: Lower positions on landform
SLOPE GRADIENT RANGES: (A) 0-3%

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS: Poorly drained with a perched watertable from 0.0 to 1.0 feet below the surface at some time from October to May or during periods of heavy precipitation.

TYPICAL PROFILE: Surface Layer: Dk gray, fine sandy loam 0-5",
Subsurface Layer: Gray fine sandy loam, 5-15",
Subsoil Layer: Grayish brown fine sandy loam, 15-24"
Substratum: Olive fine sandy loam, 24-65",

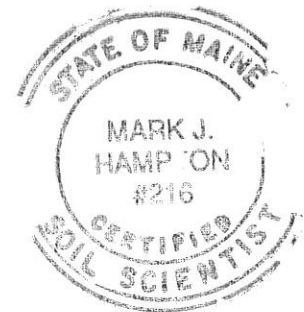
HYDROLOGIC GROUP: Group C
SURFACE RUNOFF: Moderate to moderately slow
PERMEABILITY: Moderate and moderately slow
DEPTH TO BEDROCK: Greater than 65 inches
HAZARD TO FLOODING: None

INCLUSIONS
(Within Mapping Unit)

CONTRASTING: Lyman-Tunbridge

USE AND MANAGEMENT

Development: The limiting factor for building site development is wetness due to the presence of an extremely high watertable for a portion of the year. This soil is not suitable for development without alteration, which may require additional permitting.



SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION
OF SOIL CONDITIONS AT PROJECT SITESProject Name:
Pool Street SubdivisionApplicant Name:
Bedard Homes LLCProject Location (municipality):
Biddeford

Exploration Symbol # SS-1 ☐ Test Pit ☒ Boring ☐ Probe
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox	
0	O/E	Dark Brown	F. Sandy Loam	Grand	Very Friable	None
10	Bs1	Brown	Sandy Loam	Weak Sub Ang Blocky	Friable	Noted
20	R		LEDGE			
30						
40						
50						
60						

Soil Series/Phase Name: Lyman-Tunbridge Limiting Factor 18 " ☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
 Depth
 Drainage Class ☐ ED ☐ SED ☒ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD Slope 4 Percent Hydric Soil ☒ No ☐ Yes Hydrologic Soil Group

Exploration Symbol # SS-2 ☐ Test Pit ☒ Boring ☐ Probe
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox	
0	O/E	Dark Brown	Sandy Loam	Weak Angular	Very Friable	None
10	Bs1	Brown	Sandy Loam	Sub Ang Blocky	Friable	Noted
20	R		LEDGE			
30						
40						
50						
60						

Soil Series/Phase Name: Lyman-Tunbridge Limiting Factor 15 " ☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
 Depth
 Drainage Class ☐ ED ☐ SED ☒ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD Slope 8 Percent Hydric Soil ☒ No ☐ Yes Hydrologic Soil Group

Exploration Symbol # SS-3 ☐ Test Pit ☒ Boring ☐ Probe
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox	
0	O/E	Dark Brown	F. Sandy Loam	Fine Grandul	Friable	
10	Bs1	Brown	Sandy Loam	Weak Sub Ang Blocky	Friable	None Noted
20	R		LEDGE			
30						
40						
50						
60						

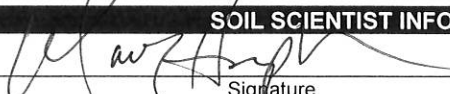
Soil Series/Phase Name: Lyman-Tunbridge Limiting Factor 18 " ☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
 Depth
 Drainage Class ☐ ED ☐ SED ☒ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD Slope 3 Percent Hydric Soil ☒ No ☐ Yes Hydrologic Soil Group

Exploration Symbol # SS-4 ☐ Test Pit ☒ Boring ☐ Probe
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth: ☐ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox	
0	O/A	Black	Sandy Loam	Grand	Friable	
10	Bg	Gray	Sandy Loam	Fine Grandul	Friable	Common and Distinct
20	BC	Olive Brown	Sandy Loam	Fine Grandul	Firm	
30	Cd	Olive Gray	Sandy Loam	Platy	Very Firm	
40						
50						
60						

Soil Series/Phase Name: Brayton Limiting Factor 6 " ☒ Groundwater ☒ Restrictive Layer ☒ Bedrock
 Depth
 Drainage Class ☐ ED ☐ SED ☐ WD ☐ MWD ☐ SPD ☒ PD ☐ VPD Slope 2 Percent Hydric Soil ☐ No ☒ Yes Hydrologic Soil Group

SOIL SCIENTIST INFORMATION AND SIGNATURE

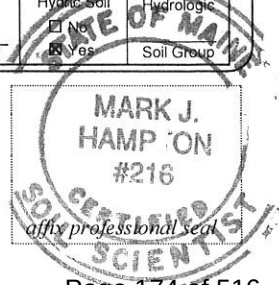

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SOIL PROFILE / CLASSIFICATION INFORMATION**SOIL SCIENTIST DESCRIPTION
OF SOIL CONDITIONS AT PROJECT SITES**Project Name:
Pool Street SubdivisionApplicant Name:
Bedard Homes LLCProject Location (municipality):
Biddeford

Exploration Symbol # SS-5 ☐ Test Pit ☒ Boring ☐ Probe
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox	
0	O/E	Dark Brown	F. Sandy Loam	Grand	Very Friable	None
10	Bs1	Brown	Sandy Loam	Weak Sub Ang Blocky	Friable	Noted
20	R		LEDGE			
30						
40						
50						
60						

Soil Series/Phase Name: Lyman-Tunbridge Limiting Factor 18 " ☐ Groundwater
 Depth 18 " ☐ Restrictive Layer ☒ Bedrock

Drainage Class ☐ ED ☐ SED ☒ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD Slope 2 Percent ☒ No ☐ Yes Hydric Soil ☐ Yes ☐ No Hydrologic Soil Group

Exploration Symbol # SS-6 ☐ Test Pit ☒ Boring ☐ Probe
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox	
0	O/E	Dark Brown	Sandy Loam	Weak Angular	Very Friable	None
10	Bs1	Brown	Sandy Loam	Sub Ang Blocky	Friable	Noted
20	R		LEDGE			
30						
40						
50						
60						

Soil Series/Phase Name: Lyman-Tunbridge Limiting Factor 14 " ☐ Groundwater
 Depth 14 " ☐ Restrictive Layer ☒ Bedrock

Drainage Class ☐ ED ☐ SED ☒ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD Slope 12 Percent ☒ No ☐ Yes Hydric Soil ☐ Yes ☐ No Hydrologic Soil Group

Exploration Symbol # SS-7 ☐ Test Pit ☒ Boring ☐ Probe
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox	
0	O/E	Dark Brown	F. Sandy Loam	Fine Grandul	Friable	
10	Bs1	Brown	Sandy Loam	Weak Sub Ang Blocky	Friable	None Noted
20	R		LEDGE			
30						
40						
50						
60						

Soil Series/Phase Name: Lyman-Tunbridge Limiting Factor 18 " ☐ Groundwater
 Depth 18 " ☐ Restrictive Layer ☒ Bedrock

Drainage Class ☐ ED ☐ SED ☒ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD Slope 3 Percent ☒ No ☐ Yes Hydric Soil ☐ Yes ☐ No Hydrologic Soil Group

Exploration Symbol # SS-8 ☐ Test Pit ☒ Boring ☐ Probe
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth: ☐ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox	
0	O/E	Dark Brown	Sandy Loam	Grand	Friable	
10	Bs1	Brown	Sandy Loam	Weak Sub Ang Blocky	Friable	Common and Distinct
20	R		LEDGE			
30						
40						
50						
60						

Soil Series/Phase Name: Lyman-Tunbridge Limiting Factor 12 " ☐ Groundwater
 Depth 12 " ☐ Restrictive Layer ☒ Bedrock

Drainage Class ☐ ED ☐ SED ☒ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD Slope 12 Percent ☒ No ☐ Yes Hydric Soil ☐ Yes ☐ No Hydrologic Soil Group

SOIL SCIENTIST INFORMATION AND SIGNATURE

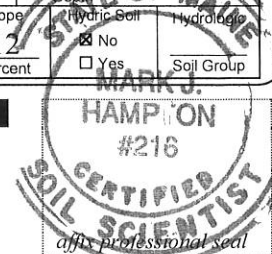

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SOIL PROFILE / CLASSIFICATION INFORMATION**SOIL SCIENTIST DESCRIPTION
OF SOIL CONDITIONS AT PROJECT SITES**Project Name:
Pool Street SubdivisionApplicant Name:
Bedard Homes LLCProject Location (municipality):
Biddeford

Exploration Symbol # SS-9 ☐ Test Pit ☒ Boring ☐ Probe
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
0	O/A	Dark Brown	F. Sandy Loam	Grand	Very Friable
10	Bs1	Brown	Sandy Loam	Weak Sub Ang Blocky	Friable
20	BC	Olive Brown	Sandy Loam	Weak fine granular	Firm
30	Cd	Olive	Sandy Loam	Platy	Massive

Soil Series/Phase Name: Colonel Limiting Factor 12 " ☒ Groundwater ☒ Restrictive Layer ☐ Bedrock
 Depth
 Drainage Class ☐ ED ☐ SED ☐ WD ☐ MWD ☒ SPD ☐ PD ☐ VPD Slope 2 Percent Hydric Soil ☒ No ☐ Yes Hydrologic Soil Group

Exploration Symbol # SS-10 ☐ Test Pit ☒ Boring ☐ Probe
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
0	O/A	Black	Sandy Loam	Weak Angular	Very Friable
10	Bg	Gray	Sandy Loam	Sub Ang Blocky	Friable
20	BC	Olive Brown	Sandy Loam	Fine Granular	Firm
30	Cd	Olive Gray	Sandy Loam	Platy	Very Firm

Soil Series/Phase Name: Brayton Limiting Factor 6 " ☒ Groundwater ☒ Restrictive Layer ☐ Bedrock
 Depth
 Drainage Class ☐ ED ☐ SED ☐ WD ☐ MWD ☒ SPD ☐ PD ☐ VPD Slope 2 Percent Hydric Soil ☒ No ☐ Yes Hydrologic Soil Group

Exploration Symbol # SS-11 ☐ Test Pit ☒ Boring ☐ Probe
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
0	O/E	Dark Brown	F. Sandy Loam	Fine Granular	Friable
10	Bs1	Brown	Sandy Loam	Weak Sub Ang Blocky	Friable
20	R	LEDGE			

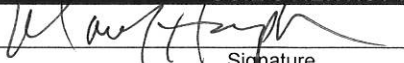
Soil Series/Phase Name: Lyman-Tunbridge Limiting Factor 15 " ☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
 Depth
 Drainage Class ☐ ED ☐ SED ☒ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD Slope 18 Percent Hydric Soil ☒ No ☐ Yes Hydrologic Soil Group

Exploration Symbol # SS-12 ☐ Test Pit ☒ Boring ☐ Probe
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth: ☐ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
0	O/A	Black	Sandy Loam	Grand	Friable
10	Bg	Gray	Sandy Loam	Weak Sub Ang Blocky	Friable
20	BC	Olive Brown	Sandy Loam	Fine Granular	Firm
30	Cd	Olive Gray	Sandy Loam	Platy	Very Firm

Soil Series/Phase Name: Brayton Limiting Factor 2 " ☒ Groundwater ☒ Restrictive Layer ☐ Bedrock
 Depth
 Drainage Class ☐ ED ☐ SED ☐ WD ☐ MWD ☒ SPD ☐ PD ☐ VPD Slope 2 Percent Hydric Soil ☒ No ☐ Yes Hydrologic Soil Group

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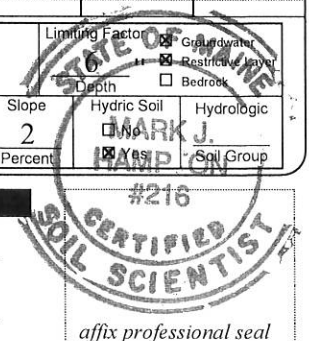

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SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES

Project Name:
Pool Street Subdivision

Applicant Name:
Bedard Homes LLC

Project Location (municipality):
Biddeford

Exploration Symbol # SS-13 ☐ Test Pit ☒ Boring ☐ Probe
____ " Organic horizon thickness Ground surface elev. ____
____ " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
0	O/E	Dark Brown	F. Sandy Loam	Grand	Very Friable
10	Bg	Brown	Sandy Loam	Weak Sub Ang Blocky	Friable
20	R		LEDGE		None Noted
30					
40					
50					
60					

Soil Series/Phase Name: Lyman-Tunbridge Limiting Factor 16 " ☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
Depth
Drainage Class ☐ ED ☐ SED ☒ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD Slope 4 Percent Hydric Soil ☒ No ☐ Yes Hydrologic Soil Group

Exploration Symbol # SS-14 ☐ Test Pit ☒ Boring ☐ Probe
____ " Organic horizon thickness Ground surface elev. ____
____ " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
0	O/A	Dark Brown	Sandy Loam	Weak Angular	Very Friable
10	Bg	Brown	Sandy Loam	Sub Ang Blocky	Friable
20	R		LEDGE		None Noted
30					
40					
50					
60					

Soil Series/Phase Name: Lyman-Tunbridge Limiting Factor 12 " ☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
Depth
Drainage Class ☐ ED ☐ SED ☒ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD Slope 12 Percent Hydric Soil ☒ No ☐ Yes Hydrologic Soil Group

Exploration Symbol # SS-15 ☐ Test Pit ☒ Boring ☐ Probe
____ " Organic horizon thickness Ground surface elev. ____
____ " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
0	O/A	Black	F. Sandy Loam	Fine Grandul	Friable
10	Bg	Gray	Sandy Loam	Weak Sub Ang Blocky	Friable
20	BC	Olive Brown	Sandy Loam	Fine Grandular	Firm
30	Cd	Olive Gray	Sandy Loam	Platy	Very Firm
40					
50					
60					

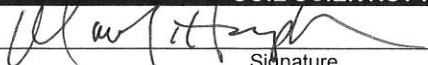
Soil Series/Phase Name: Brayton Limiting Factor 6 " ☒ Groundwater ☐ Restrictive Layer ☐ Bedrock
Depth
Drainage Class ☐ ED ☐ SED ☐ WD ☐ MWD ☐ SPD ☒ PD ☐ VPD Slope 2 Percent Hydric Soil ☐ No ☒ Yes Hydrologic Soil Group

Exploration Symbol # SS-16 ☐ Test Pit ☒ Boring ☐ Probe
____ " Organic horizon thickness Ground surface elev. ____
____ " Depth: ☐ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
0	O/E	Dark Brown	Sandy Loam	Grand	Friable
10	Bs1	Brown	Sandy Loam	Weak Sub Ang Blocky	Friable
20	R		LEDGE		None Noted
30					
40					
50					
60					

Soil Series/Phase Name: Lyman-Tunbridge Limiting Factor 10 " ☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
Depth
Drainage Class ☐ ED ☐ SED ☒ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD Slope 18 Percent Hydric Soil ☐ No ☒ Yes Hydrologic Soil Group

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SOIL PROFILE / CLASSIFICATION INFORMATION**SOIL SCIENTIST DESCRIPTION
OF SOIL CONDITIONS AT PROJECT SITES**Project Name:
Pool Street SubdivisionApplicant Name:
Bedard Homes LLCProject Location (municipality):
Biddeford

Exploration Symbol # SS-17 ☐ Test Pit ☒ Boring ☐ Probe
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox	
0	O/E	Dark Brown	F. Sandy Loam	Grand	Very Friable	
10	Bg	Brown	Sandy Loam	Weak Sub Ang Blocky	Friable	None Noted
20	R		LEDGE			
30						
40						
50						
60						

Soil Series/Phase Name: **Lyman-Tunbridge** Limiting Factor 16 " Depth ☐ Groundwater ☐ Restrictive Layer ☒ Bedrock

Drainage Class ☐ ED ☐ SED ☒ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD Slope 4 Percent Hydric Soil ☒ No ☐ Yes Hydrologic Soil Group

Exploration Symbol # SS-18 ☐ Test Pit ☒ Boring ☐ Probe
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox	
0	O/A	Dark Brown	Sandy Loam	Weak Angular	Very Friable	
10	Bg	Brown	Sandy Loam	Sub Ang Blocky	Friable	None Noted
20	R		LEDGE			
30						
40						
50						
60						

Soil Series/Phase Name: **Lyman-Tunbridge** Limiting Factor 12 " Depth ☐ Groundwater ☐ Restrictive Layer ☒ Bedrock

Drainage Class ☐ ED ☐ SED ☒ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD Slope 16 Percent Hydric Soil ☒ No ☐ Yes Hydrologic Soil Group

Exploration Symbol # SS-19 ☐ Test Pit ☒ Boring ☐ Probe
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox	
0	O/A	Dark Brown	F. Sandy Loam	Fine Grandul	Friable	
10	Bs	Brown	Sandy Loam	Weak Sub Ang Blocky	Friable	
20	BC	Olive Brown	Sandy Loam	Fine Grandular	Firm	Common and Distinct
30	Cd	Olive	Sandy Loam	Platy	Very Firm	
40						
50						
60						

Soil Series/Phase Name: **Colonel** Limiting Factor 12 " Depth ☒ Groundwater ☒ Restrictive Layer ☐ Bedrock

Drainage Class ☐ ED ☐ SED ☐ WD ☐ MWD ☒ SPD ☐ PD ☐ VPD Slope 2 Percent Hydric Soil ☒ No ☐ Yes Hydrologic Soil Group

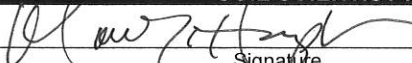
Exploration Symbol # SS-20 ☐ Test Pit ☒ Boring ☐ Probe
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth: ☐ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox	
0	O/E	Dark Brown	Sandy Loam	Grand	Friable	None Noted
10	Bs1	Brown	Sandy Loam	Weak Sub Ang Blocky	Friable	
20	R		LEDGE			
30						
40						
50						
60						

Soil Series/Phase Name: **Lyman-Tunbridge** Limiting Factor 10 " Depth ☐ Groundwater ☐ Restrictive Layer ☒ Bedrock

Drainage Class ☐ ED ☐ SED ☒ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD Slope 6 Percent Hydric Soil ☒ No ☐ Yes Hydrologic Soil Group

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SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION
OF SOIL CONDITIONS AT PROJECT SITESProject Name:
Pool Street SubdivisionApplicant Name:
Bedard Homes LLCProject Location (municipality):
Biddeford

Exploration Symbol # SS-21 ☐ Test Pit ☒ Boring ☐ Probe
 ____ " Organic horizon thickness Ground surface elev. ____
 ____ " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
0	O/E	Dark Brown	F. Sandy Loam	Very Friable	
10	Bg	Brown	Sandy Loam	Weak Sub Ang Blocky	Friable
20	R		LEDGE		

Soil Series/Phase Name: Lyman-Tunbridge Limiting Factor 12 " ☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
 Depth
 Drainage Class ☐ ED ☐ SED ☒ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD Slope 14 Percent Hydric Soil ☒ No ☐ Yes Hydrologic Soil Group

Exploration Symbol # SS-22 ☐ Test Pit ☒ Boring ☐ Probe
 ____ " Organic horizon thickness Ground surface elev. ____
 ____ " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
0	O/E	Dark Brown	Sandy Loam	Weak Angular	Very Friable
10	Bg	Brown	Sandy Loam	Sub Ang Blocky	Friable
20	BC	Brown	Sandy Loam	Fine Granular	Firm
30	Cd	Brown	Sandy Loam	Platy	Very Firm

Soil Series/Phase Name: Brayton Limiting Factor 6 " ☒ Groundwater ☐ Restrictive Layer ☐ Bedrock
 Depth
 Drainage Class ☐ ED ☐ SED ☐ WD ☐ MWD ☐ SPD ☒ PD ☐ VPD Slope 2 Percent Hydric Soil ☐ No ☒ Yes Hydrologic Soil Group

Exploration Symbol # SS-23 ☐ Test Pit ☒ Boring ☐ Probe
 ____ " Organic horizon thickness Ground surface elev. ____
 ____ " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
0	O/A	Dark Brown	F. Sandy Loam	Fine Granular	Friable
10	Bs	Brown	Sandy Loam	Weak Sub Ang Blocky	Friable
20	R		LEDGE		

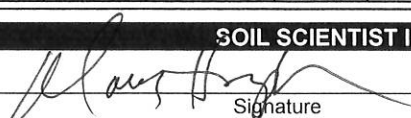
Soil Series/Phase Name: Lyman-Tunbridge Limiting Factor 10 " ☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
 Depth
 Drainage Class ☐ ED ☐ SED ☒ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD Slope 18 Percent Hydric Soil ☒ No ☐ Yes Hydrologic Soil Group

Exploration Symbol # SS-24 ☐ Test Pit ☒ Boring ☐ Probe
 ____ " Organic horizon thickness Ground surface elev. ____
 ____ " Depth: ☐ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
0	O/E	Dark Brown	Sandy Loam	Grand	Friable
10	Bs1	Brown	Sandy Loam	Weak Sub Ang Blocky	Friable
20	R		LEDGE		

Soil Series/Phase Name: Lyman-Tunbridge Limiting Factor 10 " ☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
 Depth
 Drainage Class ☐ ED ☐ SED ☒ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD Slope 12 Percent Hydric Soil ☐ No ☒ Yes Hydrologic Soil Group

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Legend for Soil Maps

1. Drainage Class

Excessively Well Drained	EWD
Well Drained	WD
Moderately Well Drained	MWD
Somewhat Poorly Drained	SPD
Poorly Drained	PD
Very Poorly Drained	VPD

2. Slope Designation

0-3%	A
3-8%	B
8-15%	C
15-25%	D
>25%	E

3. Note: High Intensity Soil Survey has been prepared by Mark Hampton Associates, Inc. in accordance with the standards adopted by the Maine Association of Professional Soil Scientists, and the Maine Board of Certification of Geologists and Soil Scientists.

SECTION 7

STORMWATER MANAGEMENT REPORT

STORMWATER MANAGEMENT REPORT
THE WOODLANDS RESERVE SUBDIVISION
BIDDEFORD, MAINE

A. Narrative

Bedard Homes, LLC, the applicant and current landowner, is proposing to develop property located along Pool Street and Parkside Drive in Biddeford, Maine.

The project site is identified as Lot 52-1 on the City of Biddeford Assessor's Map 8, and is located in the Suburban Residential Zone and Stream Protection Overlay District. The property is currently undeveloped woodland and is bounded by undeveloped woodland, and predominantly single-family residential lots. The site has access from Pool Street and Parkside Drive.

The applicant intends to create a 30-lot residential subdivision with two open space lots. The lots will consist of single-family residential lots served by three separate roads accessed by Pool Street and Parkside Drive totaling approximately 3,800 linear feet.

The roadways will be located within a 50-foot (minimum) right of way. The proposed roadway cross section for all roads will consist of a 20-foot-wide paved travel way with 4-foot-wide bike lanes/walkways on both sides of the road, for a total paved width of 28 feet. Based on conversations with the Engineering and Public Works departments, these roads will remain private due to the stormwater infrastructure proposed beneath the roadway. A homeowner association will be created for maintenance of the roadway and other utility and stormwater infrastructure maintenance.

The development also provides an open space area for preservation of natural resources and passive recreation with the use of the existing trails. This conservation area will include the habitat for endangered turtle species and a significant vernal pool.

B. Existing Conditions

The 46.5± acre project site is currently undeveloped with the exception of existing trails. Topography of the site varies, generally the site consists of gently to moderate sloping land at the Pool Street south into in the central portion of the site with slopes ranging from 2 to 25%. The area being developed in the vicinity of Park Side Drive, the site consists of moderate to steeply sloping land with slopes ranging from 5 to 50%. Three streams have been identified within the limit of the project property. The area adjacent to the northerly stream consists of gently sloped land with slopes ranging from 2 to 15%, the area adjacent to the central stream being steeply sloped with slopes ranging from 15 to 50%, and the area to the larger stream in the southerly portion of the site consisting of a gently sloping flood plain and wetland area bordered moderate to steeply sloped land ranging from 5 to 50%.

The site generally drains to the northeast or the west. The northerly and northeasterly portion of the site drains to an unnamed stream that drains across the northeasterly property corner. The stream continues overland in a northeasterly direction and ultimately discharging into the Saco River near Ledgemere Drive.

The middle of the property drains to an unnamed tributary of the West Brook, which continues in a northerly direction from the project site beneath Parkside Drive, and ultimately discharges into the West Brook. The southern most portion of the site drains to a much larger unnamed tributary of West Brook, which flows in a northerly direction under Parkside Drive, and confluences with the West Brook. West Brook then flows northeasterly, beneath Pool Street and ultimately discharging into the Saco River.

A Class B High Intensity Soil Report and Map were prepared by Mark Hampton Associates, Inc. and utilized in the stormwater analysis. The report has been included in Section 6 - High Intensity Soil Survey of the Preliminary Subdivision Application and the map has been included in the project design plan set.

C. Alterations to Land Cover

Based on the construction of the proposed roadways and approximated lot development, the project will generate approximately 206,152± square feet (4.73± acres) of impervious surfaces. The project will also generate approximately 499,262± square feet (11.46± acres) of lawn, landscaping, and best management practices, resulting in a total project developed area of 705,414± square feet (16.19± acres).

Since the project will create more than 15 lots on a property more than 30 acres, the project will require a Site Location of Development Act (SLODA) permit. The Maine Department of Environmental Protection (MDEP) will typically review these permits, but the City of Biddeford has review capacity for a SLODA permit. In addition, the project will require City of Subdivision approval. Since the project will require both approvals, the regulatory agencies will require the project to meet the Basic, General and Flooding Standards of MDEP Chapter 500 Stormwater Management regulations.

D. Methodology and Modeling Assumptions

The proposed stormwater management system has been designed utilizing Best Management Practices to maintain existing drainage patterns while providing stormwater quality improvement measures. The goal of the storm drainage system design is to remove potential stormwater pollutants from runoff generated by the development while providing attenuation of the peak rates of runoff leaving the site. The method utilized to predict the surface water runoff rates in this analysis is a computer program entitled HydroCAD, which is based on the same methods that were originally developed by the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service, and utilized in the TR-20 modeling program. Peak rates of runoff are forecasted based upon land use, hydrologic soil conditions, vegetative cover, contributing watershed area, time of concentration, rainfall data, storage volumes of detention basins and the hydraulic capacity of structures. The computer model predicts the amount of runoff as a function of time, with the ability to include the attenuation effect due to dams, lakes, large wetlands, floodplains, and constructed stormwater management basins. The input data for rainfalls with statistical recurrence frequencies of 2-, 10- and 25 years was obtained from Appendix H of the MDEP, Chapter 500 Stormwater Management, last revised in 2015. The National Weather Service developed four synthetic storm types to simulate rainfall patterns around the country. For analysis in York County, Maine, the type III rainfall pattern with a 24-hour duration is appropriate.

E. Basic Standards

The project is required by the MDEP and the City to provide permanent and temporary Erosion Control Best Management Practices. These methods are outlined in detail in the plan set.

F. General Standard

The proposed project is required to meet the General Standard outlined in the MDEP Chapter 500 to provide water quality treatment for portions of the site development. Based on the calculation provided in Section 4C(2)(a) related to the amount of the property being developed and its corresponding treatment standards in Table 1 in Chapter 500, the project will require the treatment of more than 90% of the site's impervious area and more than 75% of the total developed area. The treatment requirement calculation is included as Attachment 1 to this report.

According to the Section 4C(5) *Exceptions from the general standards*, the portion of the road crossing a wetland is not required to meet the General Standards if the design provides for passage of flow beneath the roadway. This exception removes approximately 1,979± square feet of impervious surface and approximately 2,325± square feet of landscaped/lawn area from requiring stormwater treatment. Therefore, the impervious area used to calculate the required treatment area totals approximately 204,173± square feet (4.69± acres) and the developed area used to calculate the required developed area treatment totals approximately 701,110± square feet (16.10± acres). These totals were utilized in the General Standard Calculation.

The General Standard will be met by incorporating the construction of three (3) grassed underdrained soil filters, two (2) forested stormwater treatment buffers with stone bermed level lip spreaders, four (4) Filterra Bioretention Systems with Stormtech chambers for storage, and roofline drip edges on each of the buildings into the project's stormwater infrastructure.

As a result of the proposed stormwater infrastructure, treatment is provided for over 90% of the project's impervious surface and over 75% of the site's developed area. Calculations can be found enclosed as Attachment 2 in this report.

Included as Attachment 3 of this report are the sizing calculations for the proposed grassed underdrained soil filter basins. These calculations include:

- Storage Volume and Basin Floor surface area meeting *Chapter 7.1 Grassed Underdrained Soil Filter BMP* sizing criteria included in Volume III. BMP Technical Design Manual prepared by the MDEP.
- Sediment pre-treatment calculations
- Spillway sizing calculations demonstrating one foot of freeboard to the top of berm during the 25-year storm event assuming failure of the other discharge devices.
- Hydrograph tables demonstrating the outlet controls to release the stormwater from the basin between 24 and 48 hours.

Attachment 4 includes sizing calculations for the Filterra Bioretention Systems and associated underground channel protection volume storage. Attachment 5 includes calculations to demonstrate the vegetated stormwater buffers are sized adequately. Assuming a typical house size (subject to change), the roofline drip edges were sized. Sizing calculations are included as Attachment 6 of this report.

G. Flooding Standard

The project is required to meet Flooding Standard outlined in MDEP Chapter 500 indicating the project must detain, retain, or result in the infiltration of stormwater from the 24-hour storms of the 2-year, 10-year and 25-year frequencies such that the peak flows of stormwater generated by the project site do not exceed the peak flows of stormwater prior to undertaking the project. To maintain the existing flow rates, the site

design will include the grassed underdrained soil filters, the Filterra Bioretention Systems with subsurface stormwater detention systems and forested stormwater treatment buffers have been integrated into the project’s stormwater infrastructure. To demonstrate compliance with the Flooding Standard, six (6) study points were analyzed.

Study Point 1 (“SP1”) represents the inlet to an existing culvert near Pool Street that conveys runoff northerly and beneath the adjacent property’s driveway (Biddeford Church of Christ). The stormwater is collected in a wetland and conveyed offsite and discharged into the Saco River.

Study Point 2 (“SP2”) represents area in the northerly portion of the site, within the narrow right of way connecting to Pool Street, that drains in an easterly direction and crosses the easterly property limits. This study point also accepts a relatively large offsite watershed. Once off the property, flow is then directed overland to a wetland complex that accepts runoff from this study point and an unnamed stream that flows from the subject parcel to the wetland from the west. The stream continues overland in a northeasterly direction, eventually crossing beneath Pool Street around Ledge mere Drive and ultimately discharging into the Saco River.

Study Point 3 (“SP3”) represents the area in the middle of the site that drains northeasterly and collected in an unnamed stream, referenced in the SP2 description, prior to leaving the site in a northeasterly direction. Stormwater continues overland where it is then combined with flow from SP2 in the same wetland. The flow then continues the same direction and final discharge point as SP2.

Study Point 4 (“SP4”) represents the westerly area of the site discharges off the property along the westerly property limit. Stormwater continues overland offsite thru neighboring house lots along Parkside Drive, and is then conveyed to the north, crosses Parkside Drive and ultimately is conveyed to West Brook.

Study Point 5 (“SP5”) represents the easterly portion of the middle of the site that drains easterly across the easterly property boundary. Stormwater continues overland through a drainage channel/wetland in a northerly direction, eventually returning to the project site as the unnamed stream identified in SP3. From SP3 it will continue in the same flow path as SP2 and SP3.

Study Point 6 (“SP6”) represents the location the runoff generated by the southerly portion of the site is collected in an unnamed stream located on the project parcel and crosses the westerly property boundary. The flow is then collected and conveyed beneath Parkside Drive, discharging into West Brook.

The results of the stormwater model incorporating the stormwater detention best management practices are summarized in Table 1 on the following page:

Table 1 – Peak Rates of Stormwater Runoff						
Study Point	2-Year (cfs)		10-Year (cfs)		25-Year (cfs)	
	Pre	Post	Pre	Post	Pre	Post
SP-1	1.87	1.58	3.26	2.58	4.43	3.42
SP-2	7.03	6.84	13.45	12.70	18.93	17.67
SP-3	11.66	9.41	24.77	22.86	36.39	33.90
SP-4	4.24	3.53	9.62	9.32	14.49	14.38
SP-5	2.63	2.15	5.95	4.66	8.95	6.90
SP-6	11.78	11.62	26.41	25.39	39.60	37.59

As illustrated in Table 1 on the previous page, the proposed project's design, including the integration of the proposed BMPs, reduces the peak rates of runoff at all study points in all the modeled storm events.

The watershed maps showing pre-development and post-development drainage patterns are included in the plan set and the computations performed with the HydroCAD software program are included as Attachment 7 of this report.

Storm drains and culverts were designed to convey the 25-year 24-hour storm event without surcharging upstream or downstream structures. Storm drain culverts at the two stream crossings have been designed to be 1.2 times the bank full width of the existing stream and will be reviewed by the US Army Corp. of Engineers ("USACE") for compliance with all Federal requirements. To satisfy the conditions of the USACE permit for the stream crossings, two box culverts 5' wide and 2.5' tall embedded 6" when installed are proposed.

H. Maintenance of common facilities or property

The applicant will be responsible for the maintenance of the stormwater facilities until a homeowner's association is created. The responsibility will then be conveyed to the association. An Inspection, Maintenance and Housekeeping Plan for the project has been created and has been included as Attachment 8 of this report.

Prepared by:

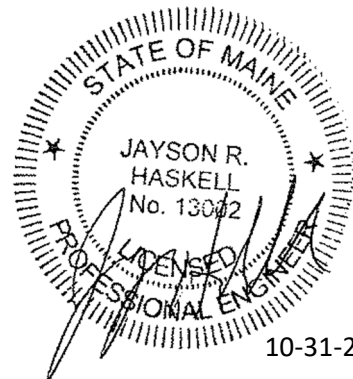
DM ROMA CONSULTING ENGINEERS



J.P. Connolly
Senior Project Engineer



Jayson R. Haskell P.E.
Southern Maine Regional Manager



ATTACHMENT 1

Stormwater Treatment Requirements

Stormwater Treatment Requirements

Percentage of Developed Area to Land Available for Development

Total Land Area=	2,027,223	sf
Deductions		
Area Slopes Steeper than 25%	13,466	sf
Area Protected Natural Resources	307,486	sf
Total Available Land for Development	1,706,271	sf
 Total Developed Area	 688,289	 sf

% of Developed Area to Land Available for Development=	40%
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From Table 1 Stormwater Treatment Based on Percentage of Parcel Developed of Chapter 500 Stormwater Management Rules for <60% of site developed

Percentage of Total Impervious Area Requiring Treatment=	90%
Percentage of Total Developed Area Requiring Treatment=	75%

ATTACHMENT 2

GENERAL STANDARDS CALCULATIONS

Stormwater Treatment Table

	Total Watershed Area (SF)	New Roof Area (SF) **	New Paved/Gravel Area (SF)	New Landscaped Area (SF)	Existing/Offsite Impervious Area (SF)*	Existing/Offsite Landscaping Area (SF)*	Existing Undeveloped Area (SF)	Treatment Provided	New Impervious Area Treated (SF)	New Landscaped Area Treated (SF)	Treatment Device
WS-1	19,106	0	656	1,266	7,667	9,495	21.06	No	0	0	None
WS-11	4,137	0	3,873	264	0	0	0.00	Yes	3,873	264	Filtterra-1
WS-12	4,114	0	3,851	264	0	0	0.00	Yes	3,851	264	Filtterra-2
WS-13	15,810	0	594	2,545	1,555	7,292	3,823.35	No	0	0	None
WS-2	149,295	0	0	3,203	8,908	13,717	123,467.84	No	0	0	None
WS-21	6,143	0	5,754	389	0	0	0.01	Yes	5,754	389	Filtterra-3
WS-22	6,850	0	6,631	219	0	0	0.00	Yes	6,631	219	Filtterra-4
WS-23	11,475	0	0	5,884	0	0	5,590.92	No	0	0	None
WS-24	6,503	0	6,201	302	0	0	-0.14	Yes	6,201	302	Filter Basin -FB1
WS-25	4,461	0	4,189	272	0	0	0.00	Yes	4,189	272	Filter Basin -FB1
WS-26	54,325	0	5,207	48,967	0	0	150.32	Yes	5,207	48,967	Filter Basin -FB1
WS-26B**	6,300	6,300	0	0	0	0	0.00	Dripedge	6,300	0	Dripedge Only
WS-27	36,820	0	0	3,708			33,112.32	No	0	0	None
WS-3	302,059	0	0	37,018	0	7,374	257,667.25	No	0	0	None
WS-3B**	2,988	2,988	0	0	0	0	0.00	Dripedge	2,988	0	Dripedge Only
WS-30	67,963	0	0	8,943	0	0	59,019.49	No	0	0	None
WS-31	3,689	0	3,475	215	0	0	0.00	Yes	3,475	215	Filter Basin -FB1
WS-32	4,227	0	3,994	233	0	0	0.00	Yes	3,994	233	Filter Basin -FB1
WS-33	3,875	0	3,670	205	0	0	0.00	Yes	3,670	205	Filter Basin -FB1
WS-34	2,241	0	2,121	121	0	0	0.00	Yes	2,121	121	Filter Basin -FB1
WS-35	82,849	0	4,085	78,764	0	0	0.00	Yes	4,085	78,764	Filter Basin -FB1
WS-35B**	9,636	9,636	0	0	0	0	0.00	Dripedge	9,636	0	Dripedge Only
WS-36	1,516	0	1,439	78	0	0	-0.03	Yes	1,439	78	Filter Basin -FB1
WS-37	3,460	0	3,369	91	0	0	0.00	Yes	3,369	91	Filter Basin -FB1
WS-38	3,387	0	3,009	377	0	0	0.00	Yes	3,009	377	Filter Basin -FB1
WS-39	2,941	0	2,845	96	0	0	0.00	Yes	2,845	96	Filter Basin -FB1
WS-4	37,346	0	4,184	33,162	0	0	0.00	Yes	4,184	33,162	Filter Basin -FB2
WS-4B**	4,764	4,764	0	0	0	0	0.00	Dripedge	4,764	0	Dripedge Only
WS-41	94,341	0	6,119	81,822	0	0	6,399.91	Yes	6,119	81,822	Filter Basin -FB2
WS-41B**	10,512	10,512	0	0	0	0	0.00	Dripedge	10,512	0	Dripedge Only
WS-42	4,181	0	4,004	177	0	0	0.01	Yes	4,004	177	Filter Basin -FB2
WS-43	4,996	0	4,704	292	0	0	0.00	Yes	4,704	292	Filter Basin -FB2
WS-44	2,508	0	2,370	138	0	0	0.00	Yes	2,370	138	Filter Basin -FB2
WS-45	2,402	0	2,272	130	0	0	0.00	Yes	2,272	130	Filter Basin -FB2
WS-46	1,649	0	1,577	71	0	0	0.00	Yes	1,577	71	Filter Basin -FB2
WS-47	28,489	0	0	28,482	0	0	7.35	Yes	0	28,482	Rain Garden - BR1
WS-47B**	2,700	2,700	0	0	0	0	0.00	Dripedge	2,700	0	Dripedge Only
WS-48	2,525	0	2,390	135	0	0	0.00	Yes	2,390	135	Filter Basin -FB2
WS-49	27,160	0	0	15,402	0	958	10,799.73	No	0	0	None

WS-5	100,905	0	0	30,222	0	0	70,683.47	No	0	0	None
WS-5B**	3,600	3,600	0	0	0	0	0.00	Dripedge	3,600	0	Dripedge Only
WS-51	35,408	0	4,097	23,917	0	0	7,392.79	Yes	4,097	23,917	Buffer
WS-51B**	3,600	3,600	0	0	0	0	0.00	Dripedge	3,600	0	Dripedge Only
WS-52	3,294	0	3,127	167	0	0	0.00	Yes	3,127	167	Buffer
WS-53	5,223	0	4,950	274	0	0	0.00	Yes	4,950	274	Buffer
WS-54	5,431	0	5,085	346	0	0	0.00	Yes	5,085	346	Filter Basin -FB3
WS-55	5,439	0	5,005	434	0	0	0.00	Yes	5,005	434	Filter Basin -FB3
WS-56	16,904	0	4,158	12,745	0	0	-0.01	Yes	4,158	12,745	Filter Basin -FB3
WS-56B**	2,700	2,700	0	0	0	0	0.00	Dripedge	2,700	0	Dripedge Only
WS-6	311,865	0	0	15,654	0	0	296,210.73	No	0	0	None
WS-61***	145,088	0	6,066	13,915	7,115	23,580	92,858.19	No	0	0	None
WS-62***	6,431	0	5,756	0	0	0	0.0000	No	0	0	None
WS-63***	6,423	0	4,741	274	0	0	-41.17	No	0	0	None
WS-64	14,659	0	4,792	1,079	0	0	8,787.23	Yes	4,792	1,079	Buffer-2
WS-65	54,888	0	8,458	27,737	0	0	18,693.56	Yes	8,458	27,737	Buffer-2
WS-65B**	5,112	5,112	0	0	0	0	0.00	Dripedge	5,112	0	Dripedge Only
WS-66***	68,484	0	1,354	16,937	0	1,001	48,792.58	None	0	0	None
WS-66B**	2,088	2,088	0	0	0	0	0.00	Dripedge	2,088	0	Dripedge Only
Total		54,000	150,173	496,937					185,005	341,966	

* The project is not taking credit for the Existing / Offsite impervious and landscaped areas, but are included in the BMP sizing calculations for each treatment device.

** All buildings shall install a roofline drip edge to provide treatment for the rooftop impervious surface.

The building's impervious area is included in the watershed and overall treatment calculations below, but not included in the BMP sizing calculations for the wet pond or the underdrained filter basins.

*** Development associated with wetland & stream road crossings are exempt from the Chapter 500 General Standards:

WS-6 - 903± sf Grass
 WS-61 - 466± sf Gravel; 1087± sf Grass
 WS-62 - 658± sf Pavement; 116± sf Gravel
 WS-63 - 632± sf Pavement; 43± sf Gravel
 WS-65- 64± sf Gravel; 335± sf Grass

New Impervious Area = 204,173
 New Impervious Area Requiring Treatment (90%) 183,756
 Provided New Impervious Treatment= 185,005
 91% New Impervious Area Treated

New Developed Area = 701,110
 New Developed Area Requiring Treatment (75%)= 525,833
 New Developed Area Treated= 526,971
 75% New Developed Area Treated

ATTACHMENT 3

GRASS UNDERDRAINED FILTER BASINS SIZING CALCULATIONS

Underdrained Filter Basin Sizing Calculations

Filter Basin 1

Tributary Impervious Area= 39,934 sf (WS-24, 25, 26, & 31-39 Impervious Area)
Tributary Landscaped Area= 129,720 sf (WS-24, 25, 26, & 31-39 Landscaped Area)

Water Quality Volume (WQV) Calculation

WQV (Required) = 1"xImpervious Area + 0.4"xLandscaped Area

WQV (Required) = 7,652 cf

Stage Storage Volume

Elevation	Area (sf)	Storage (cf)
79.25	4,823	0
80.75	7,810	9,730
83.65	11,920	38,702

Outlet Elevation = 80.75
Storage Volume Provided= 9,730 cf > Required

Filter Bottom Calculation

Filter Area (Required) = 5% x Impervious Area + 2% x Landscaped Area

Filter Area Required = 4,591 sf

Filter Area Provided = 4,823 sf > Required

Sediment Forebay Sizing

Tributary Impervious Area Requiring Sanding: 39,934 sf

Required Sediment Forebay Volume :

10 storms/year x sanded area (acres) x 500lbs/acre-storm / 90 lbs/cf

Sediment Volume (Required) 50.9 cf

Sediment Volume (Provided): 366.3 cf > Required

Runoff is collected in ten (10) CB's, and discharged into sediment forebay:

CB/DMH with 2' sump = 25.13 cf of storage; Type F CB with 2' sump = 8 cf of storage

Total storage provided:

(10 x 25.13) + (115+) = **366.3 cf**

FILTER BASIN FB-1: SPILLWAY RUN

24036 - POST-SP1-5

Prepared by DM ROMA CONSULTING ENGINEERS

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Type III 24-hr 25-YR Rainfall=6.20"

Printed 10/31/2025

Summary for Pond FB1: Filter Basin

[80] Warning: Exceeded Pond CB5 by 2.71' @ 25.74 hrs (11.87 cfs 1,113,416 cf)

Inflow Area = 189,411 sf, 31.21% Impervious, Inflow Depth = 4.32" for 25-YR event
 Inflow = 13.70 cfs @ 12.15 hrs, Volume= 68,219 cf
 Outflow = 9.52 cfs @ 12.40 hrs, Volume= 46,473 cf, Atten= 31%, Lag= 14.5 min
 Primary = 9.52 cfs @ 12.40 hrs, Volume= 46,473 cf
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs

Peak Elev= 82.62' @ 12.40 hrs Surf.Area= 10,618 sf Storage= 27,116 cf

Flood Elev= 83.65' Surf.Area= 11,920 sf Storage= 38,702 cf

Plug-Flow detention time= 191.6 min calculated for 46,473 cf (68% of inflow)

Center-of-Mass det. time= 90.4 min (887.8 - 797.4)

PEAK WS ELEV. = 82.62
 TOP OF BERM = 183.65
 FREEBOARD =
 83.65-82.62= 1.03' >1.0'

Volume	Invert	Avail.Storage	Storage Description
#1	79.25'	38,702 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
79.25	4,823	517.3	0	0	4,823
80.00	6,690	600.6	4,298	4,298	12,245
82.00	9,868	399.0	16,455	20,754	28,313
83.65	11,920	410.8	17,948	38,702	29,325

Device	Routing	Invert	Outlet Devices
#1	Primary	82.10'	10.0' long x 15.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#2	Secondary	76.98'	12.0" Round SD-31 X 0.00 L= 22.4' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 76.98' / 76.80' S= 0.0080 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	77.08'	1.7" Vert. 1-3/4" DRILL HOLE C= 0.600
#4	Device 3	77.08'	4.0" Vert. 4" Underdrain C= 0.600
#5	Device 4	79.25'	2.410 in/hr Exfiltration over Surface area
#6	Device 2	80.75'	18.0" W x 9.0" H Vert. Notch 18" w x 9" h C= 0.600
#7	Device 2	81.50'	Neenah R4345 Beehive Grate Light Duty-req. structure Head (feet) 0.00 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.50 0.60 0.70 0.80 0.90 1.00 Disch. (cfs) 0.000 0.900 1.600 2.500 3.500 4.000 4.600 5.300 6.800 7.500 8.100 8.600 9.100 9.600

24036 - POST-SP1-5

Prepared by DM ROMA CONSULTING ENGINEERS

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Type III 24-hr 25-YR Rainfall=6.20"

Printed 10/31/2025

Primary OutFlow Max=9.68 cfs @ 12.40 hrs HW=82.62' TW=82.21' (Dynamic Tailwater)

↑ **1=Broad-Crested Rectangular Weir** (Weir Controls 9.68 cfs @ 1.87 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=79.25' TW=76.70' (Dynamic Tailwater)

↑ **2=SD-31** (Controls 0.00 cfs)

↑ **3=1-3/4" DRILL HOLE** (Passes 0.00 cfs of 0.11 cfs potential flow)

↑ **4=4" Underdrain** (Passes 0.00 cfs of 0.59 cfs potential flow)

↑ **5=Exfiltration** (Passes 0.00 cfs of 0.27 cfs potential flow)

↑ **6=Notch 18" w x 9" h** (Controls 0.00 cfs)

↑ **7=Neenah R4345 Beehive Grate Light Duty-reg. structure** (Controls 0.00 cfs)

FILTER BASIN FB-1: DRAWDOWN

24036 - POST-SP1-5

Type III 24-hr FB-1 - WQ Event Rainfall=2.29'

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Hydrograph for Pond FB1: Filter Basin

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	79.25	0.00	0.00	0.00
1.80	0.00	0	79.25	0.00	0.00	0.00
3.60	0.01	0	79.25	0.01	0.00	0.01
5.40	0.02	0	79.25	0.02	0.00	0.02
7.20	0.04	0	79.25	0.04	0.00	0.04
9.00	0.09	0	79.25	0.09	0.00	0.09
10.80	0.19	146	79.28	0.11	0.00	0.11
12.60	1.25	6,688	80.34	0.13	0.00	0.13
14.40	0.31	9,007	80.66	0.14	0.00	0.14
16.20	0.18	9,652	80.74	0.14	0.00	0.14
18.00	0.12	9,676	80.74	0.14	0.00	0.14
19.80	0.10	9,422	80.71	0.14	0.00	0.14
21.60	0.08	9,063	80.66	0.14	0.00	0.14
23.40	0.07	8,623	80.61	0.14	0.00	0.14
25.20	0.00	7,915	80.51	0.14	0.00	0.14
27.00	0.00	7,025	80.39	0.14	0.00	0.14
28.80	0.00	6,149	80.27	0.13	0.00	0.13
30.60	0.00	5,290	80.15	0.13	0.00	0.13
32.40	0.00	4,447	80.02	0.13	0.00	0.13
34.20	0.00	3,623	79.90	0.13	0.00	0.13
36.00	0.00	2,818	79.77	0.12	0.00	0.12
37.80	0.00	2,033	79.64	0.12	0.00	0.12
39.60	0.00	1,268	79.50	0.12	0.00	0.12
41.40	0.00	526	79.36	0.11	0.00	0.11
43.20	0.00	0	79.25	0.00	0.00	0.00
45.00	0.00	0	79.25	0.00	0.00	0.00
46.80	0.00	0	79.25	0.00	0.00	0.00
48.60	0.00	0	79.25	0.00	0.00	0.00
50.40	0.00	0	79.25	0.00	0.00	0.00
52.20	0.00	0	79.25	0.00	0.00	0.00
54.00	0.00	0	79.25	0.00	0.00	0.00
55.80	0.00	0	79.25	0.00	0.00	0.00
57.60	0.00	0	79.25	0.00	0.00	0.00
59.40	0.00	0	79.25	0.00	0.00	0.00
61.20	0.00	0	79.25	0.00	0.00	0.00
63.00	0.00	0	79.25	0.00	0.00	0.00
64.80	0.00	0	79.25	0.00	0.00	0.00
66.60	0.00	0	79.25	0.00	0.00	0.00
68.40	0.00	0	79.25	0.00	0.00	0.00
70.20	0.00	0	79.25	0.00	0.00	0.00
72.00	0.00	0	79.25	0.00	0.00	0.00

POND AT CPV AT 16.2 HRS
EMPTY AT 43.2 HRS
DRAWDOWN TIME = 43.2-16.2 = 27 HRS

Underdrained Filter Basin Sizing Calculations

Filter Basin 2

Tributary Impervious Area= 27,620 sf (WS-4, 41-46, & 48 Impervious Area)
Tributary Landscaped Area= 115,929 sf (WS-4, 41-46, & 48 Landscaped Area)

Water Quality Volume (WQV) Calculation

WQV (Required) = 1"xImpervious Area + 0.4"xLandscaped Area

WQV (Required) = 6,166 cf

Stage Storage Volume

Elevation	Area (sf)	Storage (cf)
100.5	3,709	0
102	4,810	6,371
104.5	8,091	22,579

Outlet Elevation = 398.50
Storage Volume Provided= 6,371 cf > Required

Filter Bottom Calculation

Filter Area (Required) = 5% x Impervious Area + 2% x Landscaped Area

Filter Area Required = 3,700 sf

Filter Area Provided = 3,709 sf > Required

Sediment Forebay Sizing

Tributary Impervious Area Requiring Sanding: 27,620 sf

Required Sediment Forebay Volume :

10 storms/year x sanded area (acres) x 500lbs/acre-storm / 90 lbs/cf

Sediment Volume (Required) 35.2 cf

Sediment Volume (Provided): 100.5 cf > Required

Runoff is collected in four (4) CB's, two (2) DMH's and one (1) Type F CB's:

CB/DMH with 2' sump = 25.13 cf of storage; Type F CB with 2' sump = 8 cf of storage

Total storage provided:

(4x 25.13) = **100.52 cf**

FILTER BASIN FB-2: SPILLWAY RUN

24036 - POST-SP1-5

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Type III 24-hr 25-YR Rainfall=6.20"

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Summary for Pond FB2: Filter Basin

Inflow Area = 165,223 sf, 25.96% Impervious, Inflow Depth = 4.02" for 25-YR event
Inflow = 11.86 cfs @ 12.16 hrs, Volume= 55,394 cf
Outflow = 10.71 cfs @ 12.23 hrs, Volume= 46,461 cf, Atten= 10%, Lag= 4.6 min
Primary = 10.71 cfs @ 12.23 hrs, Volume= 46,461 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs

Peak Elev= 103.04' @ 12.23 hrs Surf.Area= 6.174 sf Storage= 12.068 cf

Flood Elev= 104.50' Surf.Area= 8.091 sf Storage= 22.579 cf

Plug-Flow detention time= 122.9 min calculated for 46,461 cf (84% of inflow)
Center-of-Mass det. time= 52.5 min (855.0 - 802.5)

PEAK WS ELEV. = 103.04
TOP OF BERM = 104.5
FREEBOARD =
104.5-103.04 = 1.0' >1.0'

Volume	Invert	Avail.Storage	Storage Description
#1	100.50'	22,579 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
100.50	3,709	236.5	0	0	3,709
102.00	4,810	264.2	6,371	6,371	4,875
104.00	7,584	333.4	12,289	18,661	8,219
104.50	8,091	342.7	3,918	22,579	8,748

Device	Routing	Invert	Outlet Devices
#1	Primary	102.50'	10.0' long x 15.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#2	Secondary	98.23'	12.0" Round CULVERT X 0.00 L= 31.3' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 98.23' / 98.00' S= 0.0073 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	98.33'	1.4" Vert. 4" END CAP W/ 1-3/8" DRILL HOLE C= 0.600
#4	Device 3	98.33'	4.0" Vert. 4" Underdrain C= 0.600
#5	Device 4	100.50'	2.410 in/hr Exfiltration over Surface area
#6	Device 2	102.00'	Neenah R4345 Beehive Grate Light Duty-req. structure Head (feet) 0.00 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.50 0.60 0.70 0.80 0.90 1.00 Disch. (cfs) 0.000 0.900 1.600 2.500 3.500 4.000 4.600 5.300 6.800 7.500 8.100 8.600 9.100 9.600

Primary OutFlow Max=10.63 cfs @ 12.23 hrs HW=103.04' TW=0.00' (Dynamic Tailwater)

1=Broad-Crested Rectangular Weir (Weir Controls 10.63 cfs @ 1.98 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=100.50' TW=0.00' (Dynamic Tailwater)

2=CULVERT (Controls 0.00 cfs)

3=4" END CAP W/ 1-3/8" DRILL HOLE (Passes 0.00 cfs of 0.07 cfs potential flow)

4=4" Underdrain (Passes 0.00 cfs of 0.59 cfs potential flow)

5=Exfiltration (Passes 0.00 cfs of 0.21 cfs potential flow)

6=Neenah R4345 Beehive Grate Light Duty-req. structure(Controls 0.00 cfs)

FILTER BASIN FB-2: DRAWDOWN

24036 - POST-SP1-5

Type III 24-hr FB-2 - WQ Event Rainfall=2.16"

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Hydrograph for Pond FB2: Filter Basin

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	100.50	0.00	0.00	0.00
1.80	0.00	0	100.50	0.00	0.00	0.00
3.60	0.01	0	100.50	0.01	0.00	0.01
5.40	0.02	0	100.50	0.02	0.00	0.02
7.20	0.03	0	100.50	0.03	0.00	0.03
9.00	0.06	0	100.50	0.06	0.00	0.06
10.80	0.12	95	100.53	0.08	0.00	0.08
12.60	0.85	4,349	101.56	0.09	0.00	0.09
14.40	0.22	5,933	101.91	0.10	0.00	0.10
16.20	0.13	6,388	102.00	0.13	0.00	0.13
18.00	0.08	6,358	102.00	0.10	0.00	0.10
19.80	0.07	6,212	101.97	0.10	0.00	0.10
21.60	0.06	5,992	101.92	0.10	0.00	0.10
23.40	0.05	5,714	101.86	0.10	0.00	0.10
25.20	0.00	5,229	101.76	0.09	0.00	0.09
27.00	0.00	4,623	101.63	0.09	0.00	0.09
28.80	0.00	4,029	101.49	0.09	0.00	0.09
30.60	0.00	3,448	101.36	0.09	0.00	0.09
32.40	0.00	2,880	101.23	0.09	0.00	0.09
34.20	0.00	2,324	101.09	0.08	0.00	0.08
36.00	0.00	1,783	100.96	0.08	0.00	0.08
37.80	0.00	1,255	100.83	0.08	0.00	0.08
39.60	0.00	741	100.70	0.08	0.00	0.08
41.40	0.00	241	100.56	0.08	0.00	0.08
43.20	0.00	0	100.50	0.00	0.00	0.00
45.00	0.00	0	100.50	0.00	0.00	0.00
46.80	0.00	0	100.50	0.00	0.00	0.00
48.60	0.00	0	100.50	0.00	0.00	0.00
50.40	0.00	0	100.50	0.00	0.00	0.00
52.20	0.00	0	100.50	0.00	0.00	0.00
54.00	0.00	0	100.50	0.00	0.00	0.00
55.80	0.00	0	100.50	0.00	0.00	0.00
57.60	0.00	0	100.50	0.00	0.00	0.00
59.40	0.00	0	100.50	0.00	0.00	0.00
61.20	0.00	0	100.50	0.00	0.00	0.00
63.00	0.00	0	100.50	0.00	0.00	0.00
64.80	0.00	0	100.50	0.00	0.00	0.00
66.60	0.00	0	100.50	0.00	0.00	0.00
68.40	0.00	0	100.50	0.00	0.00	0.00
70.20	0.00	0	100.50	0.00	0.00	0.00
72.00	0.00	0	100.50	0.00	0.00	0.00

POND AT CPV AT 16.2 HRS
EMPTY AT 43.2 HRS
DRAWDOWN TIME = 43.2-16.2 = 27 HRS

Underdrained Filter Basin Sizing Calculations

Filter Basin 3

Tributary Impervious Area= 14,249 sf (WS-54, 55, 56 & 57 Impervious Area)
Tributary Landscaped Area= 42,007 sf (WS-54, 55, 56 & 57 Landscaped Area)

Water Quality Volume (WQV) Calculation

WQV (Required) = 1"xImpervious Area + 0.4"xLandscaped Area

WQV (Required) = 2,588 cf

Stage Storage Volume

Elevation	Area (sf)	Storage (cf)
113	1,625	0
114.5	2,617	3,167
116	3,762	11,371

Outlet Elevation = 114.50
Storage Volume Provided= 3,167 cf > Required

Filter Bottom Calculation

Filter Area (Required) = 5% x Impervious Area + 2% x Landscaped Area

Filter Area Required = 1,553 sf

Filter Area Provided = 1,625 sf > Required

Sediment Forebay Sizing

Tributary Impervious Area Requiring Sanding: 14,249 sf

Required Sediment Forebay Volume :

10 storms/year x sanded area (acres) x 500lbs/acre-storm / 90 lbs/cf

Sediment Volume (Required) 18.2 cf

Sediment Volume (Provided): 50.3 cf > Required

Runoff is collected in two (2) CB's:

CB/DMH with 2' sump = 25.13 cf of storage; Type F CB with 2' sump = 8 cf of storage

Total storage provided:

(2x 25.13) = **50.26 cf**

FILTER BASIN FB-3: SPILLWAY RUN

24036 - POST-SP1-5

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Type III 24-hr 25-YR Rainfall=6.20"

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Summary for Pond FB3: Filter Basin

[80] Warning: Exceeded Pond CB13 by 0.25' @ 24.75 hrs (0.10 cfs 5,767 cf)

Inflow Area = 61,654 sf, 31.50% Impervious, Inflow Depth = 4.18" for 25-YR event
 Inflow = 5.38 cfs @ 12.13 hrs, Volume= 21,495 cf
 Outflow = 4.31 cfs @ 12.27 hrs, Volume= 13,756 cf, Atten= 20%, Lag= 8.3 min
 Primary = 4.31 cfs @ 12.27 hrs, Volume= 13,756 cf
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs

Peak Elev= 116.25' @ 12.27 hrs Surf.Area= 3,965 sf Storage= 8,909 cf

Plug-Flow detention time= 198.4 min calculated for 13,739 cf (64% of inflow)
 Center-of-Mass det. time= 93.0 min (885.5 - 792.4)

PEAK WS ELEV. = 116.25
 TOP OF BERM = 117.25
 FREEBOARD =
 117.25-116.25 = 1.0' >1.0'

Volume	Invert	Avail.Storage	Storage Description			
#1	113.00'	11,415 cf	Custom Stage Data (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
113.00	1,625	209.2	0.0	0	0	1,625
114.00	2,281	228.0	100.0	1,944	1,944	2,315
116.00	3,762	265.7	100.0	5,982	7,925	3,876
116.85	4,460	281.8	100.0	3,490	11,415	4,615

Device	Routing	Invert	Outlet Devices
#1	Primary	115.95'	10.0' long x 12.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#2	Secondary	110.78'	12.0" Round Culvert X 0.00 L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 110.78' / 110.00' S= 0.0312 ' /' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	110.83'	1.0" Vert. 4" END CAP W/ 1" DRILL HOLE C= 0.600
#4	Device 3	110.83'	4.0" Vert. 4" Underdrain C= 0.600
#5	Device 4	113.00'	2.410 in/hr Exfiltration over Surface area
#6	Device 2	114.50'	6.0" Vert. Orifice - 6" diam opening C= 0.600
#7	Device 2	115.85'	Neenah R4345 Beehive Grate Light Duty-req. structure Head (feet) 0.00 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.50 0.60 0.70 0.80 0.90 1.00 Disch. (cfs) 0.000 0.900 1.600 2.500 3.500 4.000 4.600 5.300 6.800 7.500 8.100 8.600 9.100 9.600

24036 - POST-SP1-5

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Type III 24-hr 25-YR Rainfall=6.20"

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Primary OutFlow Max=3.93 cfs @ 12.27 hrs HW=116.23' TW=0.00' (Dynamic Tailwater)

↑ **1=Broad-Crested Rectangular Weir** (Weir Controls 3.93 cfs @ 1.38 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=113.00' TW=0.00' (Dynamic Tailwater)

↑ **2=Culvert** (Controls 0.00 cfs)

↑ **3=4" END CAP W/ 1" DRILL HOLE** (Passes 0.00 cfs of 0.04 cfs potential flow)

↑ **4=4" Underdrain** (Passes 0.00 cfs of 0.59 cfs potential flow)

↑ **5=Exfiltration** (Passes 0.00 cfs of 0.09 cfs potential flow)

— **6=Orifice - 6" diam opening** (Controls 0.00 cfs)

— **7=Neenah R4345 Beehive Grate Light Duty-req. structure** (Controls 0.00 cfs)

FILTER BASIN FB-3: DRAWDOWN

24036 - POST-SP1-5

Type III 24-hr FB-3 - WQ Event Rainfall=2.41"

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Hydrograph for Pond FB3: Filter Basin

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	113.00	0.00	0.00	0.00
1.80	0.00	0	113.00	0.00	0.00	0.00
3.60	0.00	0	113.00	0.00	0.00	0.00
5.40	0.01	0	113.00	0.01	0.00	0.01
7.20	0.02	0	113.00	0.02	0.00	0.02
9.00	0.03	0	113.00	0.03	0.00	0.03
10.80	0.07	56	113.03	0.04	0.00	0.04
12.60	0.32	2,307	114.16	0.05	0.00	0.05
14.40	0.10	2,958	114.42	0.05	0.00	0.05
16.20	0.06	3,146	114.49	0.05	0.00	0.05
18.00	0.04	3,133	114.49	0.05	0.00	0.05
19.80	0.03	3,033	114.45	0.05	0.00	0.05
21.60	0.03	2,900	114.40	0.05	0.00	0.05
23.40	0.02	2,739	114.33	0.05	0.00	0.05
25.20	0.00	2,481	114.23	0.05	0.00	0.05
27.00	0.00	2,172	114.10	0.05	0.00	0.05
28.80	0.00	1,869	113.97	0.05	0.00	0.05
30.60	0.00	1,573	113.83	0.05	0.00	0.05
32.40	0.00	1,284	113.70	0.04	0.00	0.04
34.20	0.00	1,001	113.56	0.04	0.00	0.04
36.00	0.00	726	113.41	0.04	0.00	0.04
37.80	0.00	459	113.27	0.04	0.00	0.04
39.60	0.00	199	113.12	0.04	0.00	0.04
41.40	0.00	0	113.00	0.00	0.00	0.00
43.20	0.00	0	113.00	0.00	0.00	0.00
45.00	0.00	0	113.00	0.00	0.00	0.00
46.80	0.00	0	113.00	0.00	0.00	0.00
48.60	0.00	0	113.00	0.00	0.00	0.00
50.40	0.00	0	113.00	0.00	0.00	0.00
52.20	0.00	0	113.00	0.00	0.00	0.00
54.00	0.00	0	113.00	0.00	0.00	0.00
55.80	0.00	0	113.00	0.00	0.00	0.00
57.60	0.00	0	113.00	0.00	0.00	0.00
59.40	0.00	0	113.00	0.00	0.00	0.00
61.20	0.00	0	113.00	0.00	0.00	0.00
63.00	0.00	0	113.00	0.00	0.00	0.00
64.80	0.00	0	113.00	0.00	0.00	0.00
66.60	0.00	0	113.00	0.00	0.00	0.00
68.40	0.00	0	113.00	0.00	0.00	0.00
70.20	0.00	0	113.00	0.00	0.00	0.00
72.00	0.00	0	113.00	0.00	0.00	0.00

POND AT CPV AT 16.2 HRS
EMPTY AT 41.4 HRS
DRAWDOWN TIME = 41.4-16.2 = 25.2 HRS

ATTACHMENT 4

FILTERRA BIORETENTIONS SYSTEMS SIZING CALCULATIONS

Filterra Unit Sizing

Filterra ID	Watershed ID	Trib. Area (acres)	Req. Filterra Model
Filterra 1	WS-11	0.0950	4x4
Filterra 2	WS-12	0.0945	4x4
Filterra 3	WS-21	0.1410	4x12
Filterra 4	WS-22	0.1572	4x12

Channel Protection Volume Sizing - Filterra

Subsurface Stormwater System - Filterra 1 & 2

CPV (Required) = 1.0"xImpervious Area + 0.4"xLandscaped Area

CPV=Channel Protection Volume

Tributary Watersheds = WS-11 and WS-12
Tributary Impervious Area= 7,724 sf
Tributary Landscaped Area= 528 sf
CPV (Required)= 661 cf

Specified Chamber= Stormtech SC-310
CPV (Provided)= 679 cf
See Stage Storage Table from HydroCAD

Channel Protection Volume Sizing - Filterra

Subsurface Stormwater System - Filterra 3 & 4

CPV (Required) = 1.0"xImpervious Area + 0.4"xLandscaped Area

CPV=Channel Protection Volume

Tributary Watersheds = WS-21 and WS-22
Tributary Impervious Area= 12,385 sf
Tributary Landscaped Area= 608 sf
CPV (Required)= 1,052 cf

Specified Chamber= Stormtech SC-310
CPV (Provided)= 1,144 cf
See Stage Storage Table from HydroCAD

ATTACHMENT 6

VEGETATED STORMWATER BUFFERS SIZING CALCULATIONS

Stormwater Treatment Buffer Sizing

BUFFER 1

Forested Stormwater Treatment Buffer With Level Spreader

Test Pit: ---

Soil: Lyman-Tunbidge (High Intensity Soil Map)

HSG: C/D

Watershed: WS-51, 52 & 53

Buffer Length= 75 ft

Buffer Slope= 5%

Berm Length Per Acre Impervious = 125 ft

Berm Length Per Acre Landscape = 35 ft

Tributary Impervious Area = 12,173 (WS-51, 52, & 53 Impervious Area)

Tributary Landscaped Area = 24,358 (WS-51, 52, & 53 Landscaped Area)

Required Berm Length: 55 ft

Provided Berm Length: 60 ft

BUFFER 2

Forested Stormwater Treatment Buffer With Level Spreader

Test Pit: ---

Soil: Lyman-Tunbidge (High Intensity Soil Map)

HSG: C/D

Watershed: WS-63, 64 & 65

Buffer Length= 75 ft

Buffer Slope= 5%

Berm Length Per Acre Impervious = 125 ft

Berm Length Per Acre Landscape = 35 ft

Tributary Impervious Area = 13,251 (WS-63 & 64 Impervious Area)

Tributary Landscaped Area = 28,816 (WS-63 & 64 Landscaped Area)

Required Berm Length: 61 ft

Provided Berm Length: 61 ft

ATTACHMENT 5

ROOFLINE DRIPEDGE SIZING CALCULATIONS

Drip Edge Sizing Calculations

WQV (Required) = 1.0"xImpervious Area + 0.4"xLandscaped Area

Void Ratio of Reservoir Layer 40%

Void Ratio of Filter Layer 30%

SINGLE-FAMILY UNITS:

Roof Watershed	Tributary Roof Area (sf)	WQV (Required)	Dripedge Surface Area (sf)	Reservoir Layer Depth (ft)	Filter Layer Depth (ft)	WQV (Provided)
1	900	75.00	95.00	1.50	1.00	85.50
2	900	75.00	90.00	1.50	1.00	81.00

ATTACHMENT 7

HYDROCAD MODEL OUTPUT

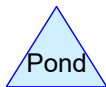
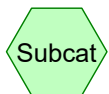
WS-5

WS-4

WS-3

WS-2

WS-1



Routing Diagram for 24036 - PRE - SP1-5

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24036 - PRE - SP1-5*Type III 24-hr 2-YR Rainfall=3.30"*

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Time span=0.00-72.00 hrs, dt=0.09 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment WS-1:	Runoff Area=45,372 sf 27.31% Impervious Runoff Depth=1.90" Flow Length=270' Tc=9.5 min CN=WQ Runoff=1.87 cfs 7,168 cf
Subcatchment WS-2:	Runoff Area=209,950 sf 2.70% Impervious Runoff Depth=1.46" Flow Length=719' Tc=8.3 min CN=WQ Runoff=7.03 cfs 25,567 cf
Subcatchment WS-3:	Runoff Area=580,038 sf 0.00% Impervious Runoff Depth=1.15" Flow Length=1,378' Tc=19.0 min CN=WQ Runoff=11.66 cfs 55,495 cf
Subcatchment WS-4:	Runoff Area=239,058 sf 0.00% Impervious Runoff Depth=0.99" Flow Length=790' Tc=16.8 min CN=WQ Runoff=4.24 cfs 19,777 cf
Subcatchment WS-5:	Runoff Area=144,842 sf 0.00% Impervious Runoff Depth=0.99" Flow Length=354' Tc=15.6 min CN=WQ Runoff=2.63 cfs 11,977 cf

Time span=0.00-72.00 hrs, dt=0.09 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment WS-1:	Runoff Area=45,372 sf 27.31% Impervious Runoff Depth=3.29" Flow Length=270' Tc=9.5 min CN=WQ Runoff=3.26 cfs 12,440 cf
Subcatchment WS-2:	Runoff Area=209,950 sf 2.70% Impervious Runoff Depth=2.77" Flow Length=719' Tc=8.3 min CN=WQ Runoff=13.45 cfs 48,537 cf
Subcatchment WS-3:	Runoff Area=580,038 sf 0.00% Impervious Runoff Depth=2.34" Flow Length=1,378' Tc=19.0 min CN=WQ Runoff=24.77 cfs 113,189 cf
Subcatchment WS-4:	Runoff Area=239,058 sf 0.00% Impervious Runoff Depth=2.12" Flow Length=790' Tc=16.8 min CN=WQ Runoff=9.62 cfs 42,269 cf
Subcatchment WS-5:	Runoff Area=144,842 sf 0.00% Impervious Runoff Depth=2.12" Flow Length=354' Tc=15.6 min CN=WQ Runoff=5.95 cfs 25,603 cf

Time span=0.00-72.00 hrs, dt=0.09 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment WS-1:	Runoff Area=45,372 sf 27.31% Impervious Runoff Depth=4.48" Flow Length=270' Tc=9.5 min CN=WQ Runoff=4.43 cfs 16,946 cf
Subcatchment WS-2:	Runoff Area=209,950 sf 2.70% Impervious Runoff Depth=3.92" Flow Length=719' Tc=8.3 min CN=WQ Runoff=18.93 cfs 68,624 cf
Subcatchment WS-3:	Runoff Area=580,038 sf 0.00% Impervious Runoff Depth=3.42" Flow Length=1,378' Tc=19.0 min CN=WQ Runoff=36.39 cfs 165,195 cf
Subcatchment WS-4:	Runoff Area=239,058 sf 0.00% Impervious Runoff Depth=3.16" Flow Length=790' Tc=16.8 min CN=WQ Runoff=14.49 cfs 62,919 cf
Subcatchment WS-5:	Runoff Area=144,842 sf 0.00% Impervious Runoff Depth=3.16" Flow Length=354' Tc=15.6 min CN=WQ Runoff=8.95 cfs 38,112 cf

24036 - PRE - SP1-5

Type III 24-hr 25-YR Rainfall=6.20"

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Summary for Subcatchment WS-1:

Runoff = 4.43 cfs @ 12.14 hrs, Volume= 16,946 cf, Depth= 4.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

	Area (sf)	CN	Description
*	10,201	98	Paved areas
	2,191	98	Roofs
	21,396	80	>75% Grass cover, Good, HSG D
	11,584	79	Woods/grass comb., Good, HSG D
	45,372		Weighted Average
	32,980		72.69% Pervious Area
	12,392		27.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	10	0.0324	0.09		Sheet Flow, Seg A to B Grass: Dense n= 0.240 P2= 3.30"
0.1	6	0.0233	0.85		Sheet Flow, Seg B to C Smooth surfaces n= 0.011 P2= 3.30"
1.8	25	0.2094	0.23		Sheet Flow, Seg C to D Grass: Dense n= 0.240 P2= 3.30"
0.6	25	0.1213	0.65		Sheet Flow, Seg D to E Fallow n= 0.050 P2= 3.30"
4.7	55	0.0949	0.20		Sheet Flow, Seg E to F Grass: Dense n= 0.240 P2= 3.30"
0.2	48	0.0538	3.73		Shallow Concentrated Flow, Seg F to G Unpaved Kv= 16.1 fps
0.3	101	0.0166	5.84	4.59	Pipe Channel, Seg G to H 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
9.5	270	Total			

Summary for Subcatchment WS-2:

Runoff = 18.93 cfs @ 12.13 hrs, Volume= 68,624 cf, Depth= 3.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

	Area (sf)	CN	Description
*	5,367	98	Paved areas
	294	98	Roofs
	13,861	80	>75% Grass cover, Good, HSG D
	190,428	79	Woods/grass comb., Good, HSG D
	209,950		Weighted Average
	204,289		97.30% Pervious Area
	5,661		2.70% Impervious Area

24036 - PRE - SP1-5

Type III 24-hr 25-YR Rainfall=6.20"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	57	0.1139	0.14		Sheet Flow, Seg A to B Woods: Light underbrush n= 0.400 P2= 3.30"
1.0	444	0.0766	7.39	294.87	Channel Flow, Seg B to C Area= 39.9 sf Perim= 80.0' r= 0.50' n= 0.035 Earth, dense weeds
0.6	218	0.0494	5.94	349.94	Channel Flow, Seg C to D Area= 58.9 sf Perim= 117.9' r= 0.50' n= 0.035 Earth, dense weeds
8.3	719	Total			

Summary for Subcatchment WS-3:

Runoff = 36.39 cfs @ 12.27 hrs, Volume= 165,195 cf, Depth= 3.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
*	0	98 Paved areas
0	98	Roofs
0	74	>75% Grass cover, Good, HSG C
7,374	80	>75% Grass cover, Good, HSG D
366,027	72	Woods/grass comb., Good, HSG C
206,637	79	Woods/grass comb., Good, HSG D
580,038		Weighted Average
580,038		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	38	0.1040	0.13		Sheet Flow, Seg A to B Woods: Light underbrush n= 0.400 P2= 3.30"
9.1	80	0.0376	0.15		Sheet Flow, Seg A to B Grass: Dense n= 0.240 P2= 3.30"
1.8	356	0.0155	3.33	175.71	Channel Flow, Seg C to D Area= 52.8 sf Perim= 105.7' r= 0.50' n= 0.035 Earth, dense weeds
1.1	356	0.0430	5.55	470.32	Channel Flow, Seg D to E Area= 84.8 sf Perim= 169.6' r= 0.50' n= 0.035 Earth, dense weeds
2.0	548	0.0301	4.64	332.25	Channel Flow, Seg E to F Area= 71.6 sf Perim= 143.2' r= 0.50' n= 0.035 Earth, dense weeds
19.0	1,378	Total			

Summary for Subcatchment WS-4:

Runoff = 14.49 cfs @ 12.25 hrs, Volume= 62,919 cf, Depth= 3.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
*	0	98 Paved areas
	0	98 Roofs
958	74	>75% Grass cover, Good, HSG C
0	80	>75% Grass cover, Good, HSG D
238,100	72	Woods/grass comb., Good, HSG C
0	79	Woods/grass comb., Good, HSG D
239,058		Weighted Average
239,058		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	114	0.0745	0.14		Sheet Flow, Seg A to B Woods: Light underbrush n= 0.400 P2= 3.30"
2.4	493	0.0162	3.40	238.07	Channel Flow, Seg B to C Area= 70.0 sf Perim= 140.2' r= 0.50' n= 0.035 Earth, dense weeds
0.5	183	0.0491	5.92	288.43	Channel Flow, Seg C to D Area= 48.7 sf Perim= 97.5' r= 0.50' n= 0.035 Earth, dense weeds
16.8	790	Total			

Summary for Subcatchment WS-5:

Runoff = 8.95 cfs @ 12.23 hrs, Volume= 38,112 cf, Depth= 3.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
*	0	98 Paved areas
	0	98 Roofs
0	74	>75% Grass cover, Good, HSG C
0	80	>75% Grass cover, Good, HSG D
144,842	72	Woods/grass comb., Good, HSG C
0	79	Woods/grass comb., Good, HSG D
144,842		Weighted Average
144,842		100.00% Pervious Area

24036 - PRE - SP1-5*Type III 24-hr 25-YR Rainfall=6.20"*

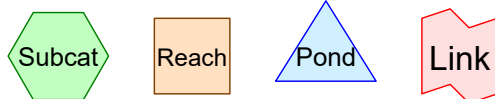
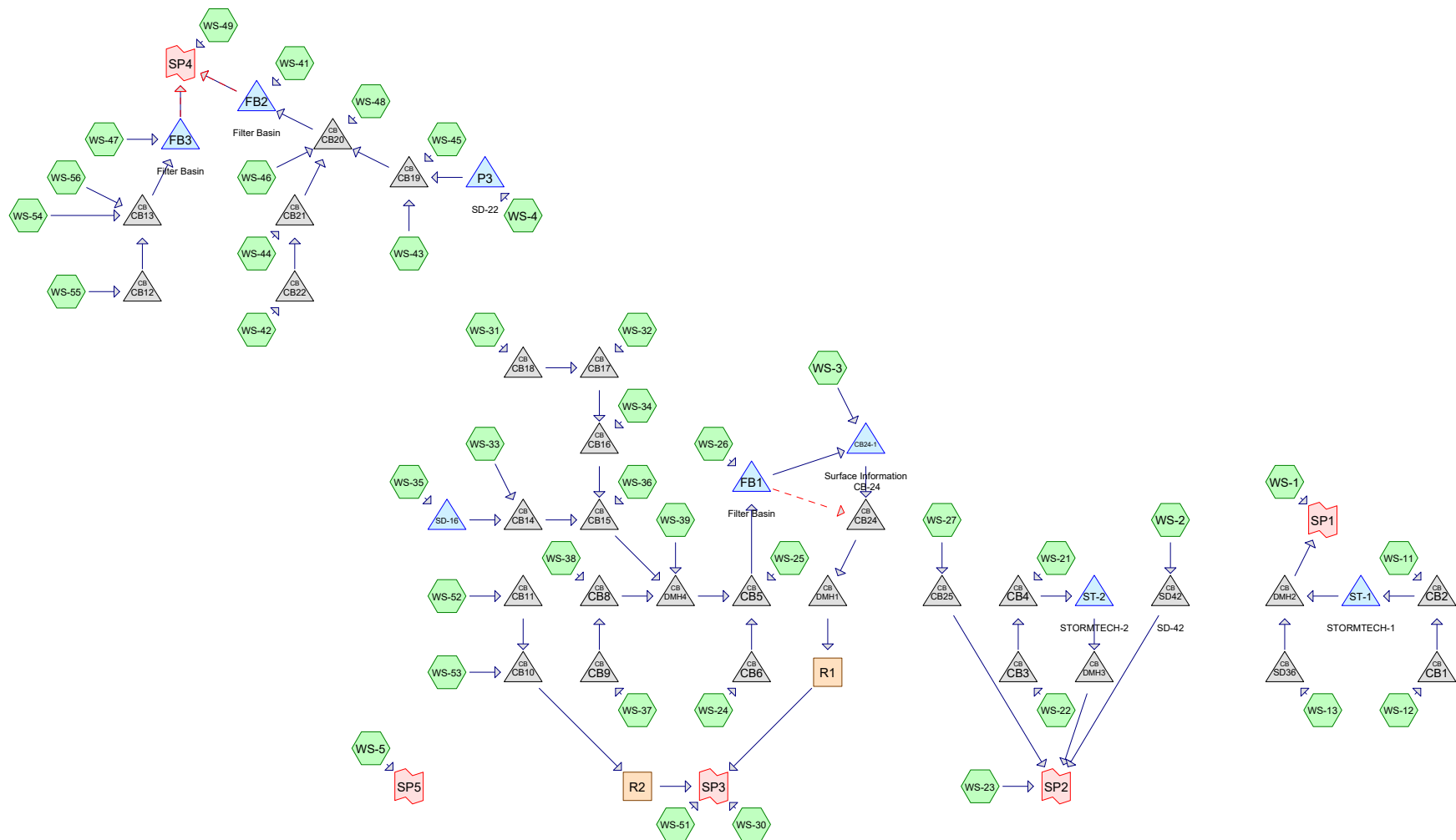
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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.8	149	0.1075	0.17		Sheet Flow, Seg A to B Woods: Light underbrush n= 0.400 P2= 3.30"
0.8	205	0.0244	4.17	185.64	Channel Flow, Seg B to C Area= 44.5 sf Perim= 89.2' r= 0.50' n= 0.035 Earth, dense weeds
15.6	354	Total			



Routing Diagram for 24036 - POST
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Type III 24-hr 2-YR Rainfall=3.30"

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Time span=0.00-72.00 hrs, dt=0.09 hrs, 801 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment WS-1:	Runoff Area=19,105 sf 43.56% Impervious Runoff Depth=2.17" Flow Length=279' Tc=7.8 min CN=WQ Runoff=0.89 cfs 3,456 cf
Subcatchment WS-11:	Runoff Area=4,137 sf 93.62% Impervious Runoff Depth=2.97" Tc=6.0 min CN=WQ Runoff=0.27 cfs 1,022 cf
Subcatchment WS-12:	Runoff Area=4,115 sf 93.58% Impervious Runoff Depth=2.97" Tc=6.0 min CN=WQ Runoff=0.27 cfs 1,017 cf
Subcatchment WS-13:	Runoff Area=15,809 sf 13.59% Impervious Runoff Depth=1.68" Flow Length=346' Tc=20.8 min CN=WQ Runoff=0.45 cfs 2,212 cf
Subcatchment WS-2:	Runoff Area=149,296 sf 5.97% Impervious Runoff Depth=1.52" Flow Length=666' Tc=8.2 min CN=WQ Runoff=5.16 cfs 18,893 cf
Subcatchment WS-21:	Runoff Area=6,143 sf 93.67% Impervious Runoff Depth=2.97" Tc=6.0 min CN=WQ Runoff=0.41 cfs 1,519 cf
Subcatchment WS-22:	Runoff Area=6,850 sf 96.80% Impervious Runoff Depth=3.02" Tc=6.0 min CN=WQ Runoff=0.46 cfs 1,722 cf
Subcatchment WS-23:	Runoff Area=11,475 sf 0.00% Impervious Runoff Depth=1.45" Flow Length=85' Slope=0.0812 '/' Tc=10.6 min CN=WQ Runoff=0.37 cfs 1,383 cf
Subcatchment WS-24:	Runoff Area=6,503 sf 95.36% Impervious Runoff Depth=2.98" Tc=6.0 min CN=WQ Runoff=0.43 cfs 1,613 cf
Subcatchment WS-25:	Runoff Area=4,461 sf 93.90% Impervious Runoff Depth=2.95" Tc=6.0 min CN=WQ Runoff=0.29 cfs 1,096 cf
Subcatchment WS-26:	Runoff Area=60,624 sf 18.98% Impervious Runoff Depth=1.78" Flow Length=491' Tc=10.6 min CN=WQ Runoff=2.33 cfs 8,995 cf
Subcatchment WS-27:	Runoff Area=36,820 sf 0.00% Impervious Runoff Depth=1.42" Flow Length=400' Tc=17.1 min CN=WQ Runoff=0.98 cfs 4,354 cf
Subcatchment WS-3:	Runoff Area=305,047 sf 0.98% Impervious Runoff Depth=1.33" Flow Length=1,143' Tc=18.2 min CN=WQ Runoff=7.36 cfs 33,749 cf
Subcatchment WS-30:	Runoff Area=67,962 sf 0.00% Impervious Runoff Depth=1.01" Flow Length=250' Tc=20.6 min CN=WQ Runoff=1.13 cfs 5,703 cf
Subcatchment WS-31:	Runoff Area=3,690 sf 94.17% Impervious Runoff Depth=2.95" Tc=6.0 min CN=WQ Runoff=0.24 cfs 908 cf
Subcatchment WS-32:	Runoff Area=4,227 sf 94.49% Impervious Runoff Depth=2.96" Tc=6.0 min CN=WQ Runoff=0.28 cfs 1,042 cf

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Type III 24-hr 2-YR Rainfall=3.30"

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SubcatchmentWS-33:	Runoff Area=3,875 sf 94.71% Impervious Runoff Depth=2.96" Tc=6.0 min CN=WQ Runoff=0.26 cfs 957 cf
SubcatchmentWS-34:	Runoff Area=2,242 sf 94.60% Impervious Runoff Depth=2.96" Tc=6.0 min CN=WQ Runoff=0.15 cfs 553 cf
SubcatchmentWS-35:	Runoff Area=92,485 sf 14.84% Impervious Runoff Depth=1.40" Flow Length=467' Tc=18.1 min CN=WQ Runoff=2.25 cfs 10,753 cf
SubcatchmentWS-36:	Runoff Area=1,517 sf 94.86% Impervious Runoff Depth=2.97" Tc=6.0 min CN=WQ Runoff=0.10 cfs 375 cf
SubcatchmentWS-37:	Runoff Area=3,460 sf 85.00% Impervious Runoff Depth=2.99" Tc=6.0 min CN=WQ Runoff=0.23 cfs 862 cf
SubcatchmentWS-38:	Runoff Area=3,386 sf 88.87% Impervious Runoff Depth=2.85" Tc=6.0 min CN=WQ Runoff=0.22 cfs 804 cf
SubcatchmentWS-39:	Runoff Area=2,941 sf 96.74% Impervious Runoff Depth=3.00" Tc=6.0 min CN=WQ Runoff=0.20 cfs 736 cf
SubcatchmentWS-4:	Runoff Area=42,110 sf 21.25% Impervious Runoff Depth=1.52" Flow Length=328' Tc=14.3 min CN=WQ Runoff=1.18 cfs 5,338 cf
SubcatchmentWS-41:	Runoff Area=104,853 sf 15.86% Impervious Runoff Depth=1.41" Flow Length=288' Tc=12.5 min CN=WQ Runoff=2.91 cfs 12,307 cf
SubcatchmentWS-42:	Runoff Area=4,181 sf 95.77% Impervious Runoff Depth=2.98" Tc=6.0 min CN=WQ Runoff=0.28 cfs 1,040 cf
SubcatchmentWS-43:	Runoff Area=4,996 sf 94.16% Impervious Runoff Depth=2.95" Tc=6.0 min CN=WQ Runoff=0.33 cfs 1,229 cf
SubcatchmentWS-44:	Runoff Area=2,508 sf 94.50% Impervious Runoff Depth=2.96" Tc=6.0 min CN=WQ Runoff=0.17 cfs 618 cf
SubcatchmentWS-45:	Runoff Area=2,402 sf 94.59% Impervious Runoff Depth=2.96" Tc=6.0 min CN=WQ Runoff=0.16 cfs 593 cf
SubcatchmentWS-46:	Runoff Area=1,648 sf 95.69% Impervious Runoff Depth=2.98" Tc=6.0 min CN=WQ Runoff=0.11 cfs 410 cf
SubcatchmentWS-47:	Runoff Area=31,189 sf 8.66% Impervious Runoff Depth=1.27" Flow Length=95' Slope=0.0763 '/' Tc=7.9 min CN=WQ Runoff=0.87 cfs 3,311 cf
SubcatchmentWS-48:	Runoff Area=2,525 sf 94.65% Impervious Runoff Depth=2.96" Tc=6.0 min CN=WQ Runoff=0.17 cfs 623 cf
SubcatchmentWS-49:	Runoff Area=27,160 sf 0.00% Impervious Runoff Depth=1.06" Flow Length=163' Tc=13.8 min CN=WQ Runoff=0.55 cfs 2,398 cf
SubcatchmentWS-5:	Runoff Area=104,505 sf 3.44% Impervious Runoff Depth=1.10" Flow Length=299' Tc=13.8 min CN=WQ Runoff=2.15 cfs 9,545 cf

Subcatchment WS-51:	Runoff Area=39,007 sf 19.73% Impervious Runoff Depth=1.47" Flow Length=668' Tc=35.0 min CN=WQ Runoff=0.75 cfs 4,779 cf
Subcatchment WS-52:	Runoff Area=3,294 sf 94.93% Impervious Runoff Depth=2.97" Tc=6.0 min CN=WQ Runoff=0.22 cfs 815 cf
Subcatchment WS-53:	Runoff Area=5,224 sf 94.75% Impervious Runoff Depth=2.96" Tc=6.0 min CN=WQ Runoff=0.35 cfs 1,290 cf
Subcatchment WS-54:	Runoff Area=5,420 sf 91.44% Impervious Runoff Depth=2.94" Tc=6.0 min CN=WQ Runoff=0.36 cfs 1,327 cf
Subcatchment WS-55:	Runoff Area=5,440 sf 90.17% Impervious Runoff Depth=2.91" Tc=6.0 min CN=WQ Runoff=0.35 cfs 1,318 cf
Subcatchment WS-56:	Runoff Area=19,605 sf 34.98% Impervious Runoff Depth=1.79" Flow Length=131' Tc=12.0 min CN=WQ Runoff=0.69 cfs 2,926 cf
Reach R1:	Avg. Flow Depth=0.37' Max Vel=2.78 fps Inflow=7.51 cfs 62,272 cf n=0.035 L=196.0' S=0.0403 ' Capacity=649.78 cfs Outflow=7.36 cfs 62,272 cf
Reach R2:	Avg. Flow Depth=0.28' Max Vel=0.35 fps Inflow=0.56 cfs 2,105 cf n=0.400 L=169.2' S=0.1241 ' Capacity=84.89 cfs Outflow=0.45 cfs 2,105 cf
Pond CB1:	Peak Elev=72.04' Inflow=0.27 cfs 1,017 cf 12.0" Round Culvert n=0.013 L=22.0' S=0.0068 ' Outflow=0.27 cfs 1,017 cf
Pond CB10:	Peak Elev=102.93' Inflow=0.56 cfs 2,105 cf 12.0" Round Culvert n=0.013 L=25.0' S=0.0200 ' Outflow=0.56 cfs 2,105 cf
Pond CB11:	Peak Elev=103.07' Inflow=0.22 cfs 815 cf 12.0" Round Culvert n=0.013 L=22.0' S=0.0091 ' Outflow=0.22 cfs 815 cf
Pond CB12:	Peak Elev=116.44' Inflow=0.35 cfs 1,318 cf 12.0" Round Culvert n=0.013 L=22.0' S=0.0091 ' Outflow=0.35 cfs 1,318 cf
Pond CB13:	Peak Elev=116.39' Inflow=1.28 cfs 5,570 cf 12.0" Round Culvert n=0.013 L=175.4' S=0.0057 ' Outflow=1.28 cfs 5,570 cf
Pond CB14:	Peak Elev=85.32' Inflow=2.24 cfs 11,572 cf 18.0" Round Culvert n=0.013 L=22.0' S=0.0091 ' Outflow=2.24 cfs 11,572 cf
Pond CB15:	Peak Elev=84.16' Inflow=2.59 cfs 14,450 cf 18.0" Round Culvert n=0.013 L=28.0' S=0.0214 ' Outflow=2.59 cfs 14,450 cf
Pond CB16:	Peak Elev=87.07' Inflow=0.67 cfs 2,503 cf 12.0" Round Culvert n=0.013 L=94.1' S=0.0324 ' Outflow=0.67 cfs 2,503 cf
Pond CB17:	Peak Elev=93.91' Inflow=0.52 cfs 1,950 cf 12.0" Round Culvert n=0.013 L=136.2' S=0.0499 ' Outflow=0.52 cfs 1,950 cf

Pond CB18:	Peak Elev=94.08' Inflow=0.24 cfs 908 cf 12.0" Round Culvert n=0.013 L=22.0' S=0.0091 ' Outflow=0.24 cfs 908 cf
Pond CB19:	Peak Elev=107.46' Inflow=1.29 cfs 7,160 cf 12.0" Round Culvert n=0.013 L=22.0' S=0.0091 ' Outflow=1.29 cfs 7,160 cf
Pond CB2:	Peak Elev=71.94' Inflow=0.55 cfs 2,039 cf 12.0" Round Culvert n=0.013 L=8.9' S=0.0112 ' Outflow=0.55 cfs 2,039 cf
Pond CB20:	Peak Elev=107.16' Inflow=1.81 cfs 9,851 cf 15.0" Round Culvert n=0.013 L=27.0' S=0.0148 ' Outflow=1.81 cfs 9,851 cf
Pond CB21:	Peak Elev=108.60' Inflow=0.44 cfs 1,658 cf 15.0" Round Culvert n=0.013 L=102.0' S=0.0172 ' Outflow=0.44 cfs 1,658 cf
Pond CB22:	Peak Elev=112.42' Inflow=0.28 cfs 1,040 cf 12.0" Round Culvert n=0.013 L=157.5' S=0.0230 ' Outflow=0.28 cfs 1,040 cf
Pond CB24:	Peak Elev=77.81' Inflow=7.51 cfs 62,272 cf 30.0" Round Culvert n=0.013 L=59.0' S=0.0186 ' Outflow=7.51 cfs 62,272 cf
Pond CB24-1: Surface Information CB-24	Peak Elev=81.80' Storage=340 cf Inflow=7.36 cfs 33,749 cf Outflow=7.38 cfs 33,712 cf
Pond CB25:	Peak Elev=76.71' Inflow=0.98 cfs 4,354 cf 12.0" Round Culvert n=0.013 L=49.7' S=0.0060 ' Outflow=0.98 cfs 4,354 cf
Pond CB3:	Peak Elev=76.23' Inflow=0.46 cfs 1,722 cf 12.0" Round Culvert n=0.013 L=20.0' S=0.0100 ' Outflow=0.46 cfs 1,722 cf
Pond CB4:	Peak Elev=76.14' Inflow=0.87 cfs 3,240 cf 12.0" Round Culvert n=0.013 L=27.8' S=0.0054 ' Outflow=0.87 cfs 3,240 cf
Pond CB5:	Peak Elev=81.15' Inflow=3.46 cfs 19,562 cf 18.0" Round Culvert n=0.013 L=24.0' S=0.0063 ' Outflow=3.46 cfs 19,562 cf
Pond CB6:	Peak Elev=81.15' Inflow=0.43 cfs 1,613 cf 12.0" Round Culvert n=0.013 L=22.0' S=0.0091 ' Outflow=0.43 cfs 1,615 cf
Pond CB8:	Peak Elev=86.58' Inflow=0.45 cfs 1,665 cf 12.0" Round Culvert n=0.013 L=54.0' S=0.0602 ' Outflow=0.45 cfs 1,665 cf
Pond CB9:	Peak Elev=86.77' Inflow=0.23 cfs 862 cf 12.0" Round Culvert n=0.013 L=22.0' S=0.0091 ' Outflow=0.23 cfs 862 cf
Pond DMH1:	Peak Elev=76.83' Inflow=7.51 cfs 62,272 cf 30.0" Round Culvert n=0.013 L=144.0' S=0.0049 ' Outflow=7.51 cfs 62,272 cf
Pond DMH2:	Peak Elev=71.30' Inflow=0.77 cfs 4,251 cf 12.0" Round Culvert n=0.013 L=25.1' S=0.0060 ' Outflow=0.77 cfs 4,251 cf
Pond DMH3:	Peak Elev=75.14' Inflow=0.54 cfs 3,240 cf 12.0" Round Culvert n=0.013 L=32.2' S=0.0062 ' Outflow=0.54 cfs 3,240 cf

24036 - POST-SP1-5*Type III 24-hr 2-YR Rainfall=3.30"*

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Pond DMH4:	Peak Elev=81.24' Inflow=2.92 cfs 16,851 cf 18.0" Round Culvert n=0.013 L=161.0' S=0.0050 ' ' Outflow=2.92 cfs 16,851 cf
Pond FB1: Filter Basin	Peak Elev=81.14' Storage=12,867 cf Inflow=5.78 cfs 28,557 cf Primary=0.00 cfs 0 cf Secondary=1.30 cfs 28,560 cf Outflow=1.30 cfs 28,560 cf
Pond FB2: Filter Basin	Peak Elev=102.22' Storage=7,465 cf Inflow=4.70 cfs 22,158 cf Primary=0.00 cfs 0 cf Secondary=3.01 cfs 22,167 cf Outflow=3.01 cfs 22,167 cf
Pond FB3: Filter Basin	Peak Elev=114.83' Storage=4,063 cf Inflow=2.16 cfs 8,881 cf Primary=0.00 cfs 0 cf Secondary=0.32 cfs 8,884 cf Outflow=0.32 cfs 8,884 cf
Pond SD16:	Peak Elev=85.65' Storage=517 cf Inflow=2.25 cfs 10,753 cf 18.0" Round Culvert n=0.013 L=16.3' S=0.0153 ' ' Outflow=2.09 cfs 10,615 cf
Pond SD22:	Peak Elev=108.11' Storage=284 cf Inflow=1.18 cfs 5,338 cf 12.0" Round Culvert n=0.013 L=25.0' S=0.0400 ' ' Outflow=1.07 cfs 5,338 cf
Pond SD36:	Peak Elev=72.10' Inflow=0.45 cfs 2,212 cf 12.0" Round Culvert n=0.013 L=37.8' S=0.0053 ' ' Outflow=0.45 cfs 2,212 cf
Pond SD42: SD-42	Peak Elev=77.57' Inflow=5.16 cfs 18,893 cf 24.0" Round Culvert n=0.013 L=52.5' S=0.0086 ' ' Outflow=5.16 cfs 18,893 cf
Pond ST-1: STORMTECH-1	Peak Elev=71.47' Storage=181 cf Inflow=0.55 cfs 2,039 cf 6.0" Round Culvert n=0.013 L=10.7' S=0.0093 ' ' Outflow=0.39 cfs 2,039 cf
Pond ST-2: STORMTECH-2	Peak Elev=75.68' Storage=378 cf Inflow=0.87 cfs 3,240 cf 6.0" Round Culvert n=0.013 L=2.3' S=0.0435 ' ' Outflow=0.54 cfs 3,240 cf
Link SP1:	Inflow=1.58 cfs 7,707 cf Primary=1.58 cfs 7,707 cf
Link SP2:	Inflow=6.84 cfs 27,871 cf Primary=6.84 cfs 27,871 cf
Link SP3:	Inflow=9.41 cfs 74,859 cf Primary=9.41 cfs 74,859 cf
Link SP4:	Inflow=3.53 cfs 33,449 cf Primary=3.53 cfs 33,449 cf
Link SP5:	Inflow=2.15 cfs 9,545 cf Primary=2.15 cfs 9,545 cf

24036 - POST-SP1-5*Type III 24-hr 10-YR Rainfall=4.90"*

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Time span=0.00-72.00 hrs, dt=0.09 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment WS-1:	Runoff Area=19,105 sf 43.56% Impervious Runoff Depth=3.61" Flow Length=279' Tc=7.8 min CN=WQ Runoff=1.49 cfs 5,755 cf
Subcatchment WS-11:	Runoff Area=4,137 sf 93.62% Impervious Runoff Depth=4.54" Tc=6.0 min CN=WQ Runoff=0.41 cfs 1,567 cf
Subcatchment WS-12:	Runoff Area=4,115 sf 93.58% Impervious Runoff Depth=4.54" Tc=6.0 min CN=WQ Runoff=0.41 cfs 1,558 cf
Subcatchment WS-13:	Runoff Area=15,809 sf 13.59% Impervious Runoff Depth=3.04" Flow Length=346' Tc=20.8 min CN=WQ Runoff=0.82 cfs 4,000 cf
Subcatchment WS-2:	Runoff Area=149,296 sf 5.97% Impervious Runoff Depth=2.84" Flow Length=666' Tc=8.2 min CN=WQ Runoff=9.74 cfs 35,360 cf
Subcatchment WS-21:	Runoff Area=6,143 sf 93.67% Impervious Runoff Depth=4.55" Tc=6.0 min CN=WQ Runoff=0.62 cfs 2,327 cf
Subcatchment WS-22:	Runoff Area=6,850 sf 96.80% Impervious Runoff Depth=4.60" Tc=6.0 min CN=WQ Runoff=0.69 cfs 2,628 cf
Subcatchment WS-23:	Runoff Area=11,475 sf 0.00% Impervious Runoff Depth=2.76" Flow Length=85' Slope=0.0812 '/' Tc=10.6 min CN=WQ Runoff=0.71 cfs 2,641 cf
Subcatchment WS-24:	Runoff Area=6,503 sf 95.36% Impervious Runoff Depth=4.55" Tc=6.0 min CN=WQ Runoff=0.65 cfs 2,467 cf
Subcatchment WS-25:	Runoff Area=4,461 sf 93.90% Impervious Runoff Depth=4.52" Tc=6.0 min CN=WQ Runoff=0.44 cfs 1,680 cf
Subcatchment WS-26:	Runoff Area=60,624 sf 18.98% Impervious Runoff Depth=3.16" Flow Length=491' Tc=10.6 min CN=WQ Runoff=4.16 cfs 15,955 cf
Subcatchment WS-27:	Runoff Area=36,820 sf 0.00% Impervious Runoff Depth=2.72" Flow Length=400' Tc=17.1 min CN=WQ Runoff=1.92 cfs 8,361 cf
Subcatchment WS-3:	Runoff Area=305,047 sf 0.98% Impervious Runoff Depth=2.59" Flow Length=1,143' Tc=18.2 min CN=WQ Runoff=14.72 cfs 65,905 cf
Subcatchment WS-30:	Runoff Area=67,962 sf 0.00% Impervious Runoff Depth=2.14" Flow Length=250' Tc=20.6 min CN=WQ Runoff=2.53 cfs 12,135 cf
Subcatchment WS-31:	Runoff Area=3,690 sf 94.17% Impervious Runoff Depth=4.52" Tc=6.0 min CN=WQ Runoff=0.37 cfs 1,391 cf
Subcatchment WS-32:	Runoff Area=4,227 sf 94.49% Impervious Runoff Depth=4.53" Tc=6.0 min CN=WQ Runoff=0.42 cfs 1,596 cf

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Type III 24-hr 10-YR Rainfall=4.90"

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SubcatchmentWS-33:	Runoff Area=3,875 sf 94.71% Impervious Runoff Depth=4.54" Tc=6.0 min CN=WQ Runoff=0.39 cfs 1,465 cf
SubcatchmentWS-34:	Runoff Area=2,242 sf 94.60% Impervious Runoff Depth=4.53" Tc=6.0 min CN=WQ Runoff=0.22 cfs 847 cf
SubcatchmentWS-35:	Runoff Area=92,485 sf 14.84% Impervious Runoff Depth=2.64" Flow Length=467' Tc=18.1 min CN=WQ Runoff=4.40 cfs 20,328 cf
SubcatchmentWS-36:	Runoff Area=1,517 sf 94.86% Impervious Runoff Depth=4.54" Tc=6.0 min CN=WQ Runoff=0.15 cfs 574 cf
SubcatchmentWS-37:	Runoff Area=3,460 sf 85.00% Impervious Runoff Depth=4.57" Tc=6.0 min CN=WQ Runoff=0.35 cfs 1,318 cf
SubcatchmentWS-38:	Runoff Area=3,386 sf 88.87% Impervious Runoff Depth=4.40" Tc=6.0 min CN=WQ Runoff=0.33 cfs 1,241 cf
SubcatchmentWS-39:	Runoff Area=2,941 sf 96.74% Impervious Runoff Depth=4.59" Tc=6.0 min CN=WQ Runoff=0.30 cfs 1,124 cf
SubcatchmentWS-4:	Runoff Area=42,110 sf 21.25% Impervious Runoff Depth=2.79" Flow Length=328' Tc=14.3 min CN=WQ Runoff=2.23 cfs 9,791 cf
SubcatchmentWS-41:	Runoff Area=104,853 sf 15.86% Impervious Runoff Depth=2.65" Flow Length=288' Tc=12.5 min CN=WQ Runoff=5.69 cfs 23,173 cf
SubcatchmentWS-42:	Runoff Area=4,181 sf 95.77% Impervious Runoff Depth=4.56" Tc=6.0 min CN=WQ Runoff=0.42 cfs 1,590 cf
SubcatchmentWS-43:	Runoff Area=4,996 sf 94.16% Impervious Runoff Depth=4.52" Tc=6.0 min CN=WQ Runoff=0.50 cfs 1,884 cf
SubcatchmentWS-44:	Runoff Area=2,508 sf 94.50% Impervious Runoff Depth=4.53" Tc=6.0 min CN=WQ Runoff=0.25 cfs 947 cf
SubcatchmentWS-45:	Runoff Area=2,402 sf 94.59% Impervious Runoff Depth=4.53" Tc=6.0 min CN=WQ Runoff=0.24 cfs 908 cf
SubcatchmentWS-46:	Runoff Area=1,648 sf 95.69% Impervious Runoff Depth=4.56" Tc=6.0 min CN=WQ Runoff=0.17 cfs 626 cf
SubcatchmentWS-47:	Runoff Area=31,189 sf 8.66% Impervious Runoff Depth=2.49" Flow Length=95' Slope=0.0763 '/' Tc=7.9 min CN=WQ Runoff=1.76 cfs 6,473 cf
SubcatchmentWS-48:	Runoff Area=2,525 sf 94.65% Impervious Runoff Depth=4.54" Tc=6.0 min CN=WQ Runoff=0.25 cfs 954 cf
SubcatchmentWS-49:	Runoff Area=27,160 sf 0.00% Impervious Runoff Depth=2.22" Flow Length=163' Tc=13.8 min CN=WQ Runoff=1.20 cfs 5,024 cf
SubcatchmentWS-5:	Runoff Area=104,505 sf 3.44% Impervious Runoff Depth=2.26" Flow Length=299' Tc=13.8 min CN=WQ Runoff=4.66 cfs 19,647 cf

Subcatchment WS-51:	Runoff Area=39,007 sf 19.73% Impervious Runoff Depth=2.72" Flow Length=668' Tc=35.0 min CN=WQ Runoff=1.43 cfs 8,852 cf
Subcatchment WS-52:	Runoff Area=3,294 sf 94.93% Impervious Runoff Depth=4.54" Tc=6.0 min CN=WQ Runoff=0.33 cfs 1,247 cf
Subcatchment WS-53:	Runoff Area=5,224 sf 94.75% Impervious Runoff Depth=4.54" Tc=6.0 min CN=WQ Runoff=0.52 cfs 1,976 cf
Subcatchment WS-54:	Runoff Area=5,420 sf 91.44% Impervious Runoff Depth=4.51" Tc=6.0 min CN=WQ Runoff=0.54 cfs 2,035 cf
Subcatchment WS-55:	Runoff Area=5,440 sf 90.17% Impervious Runoff Depth=4.47" Tc=6.0 min CN=WQ Runoff=0.54 cfs 2,026 cf
Subcatchment WS-56:	Runoff Area=19,605 sf 34.98% Impervious Runoff Depth=3.12" Flow Length=131' Tc=12.0 min CN=WQ Runoff=1.23 cfs 5,092 cf
Reach R1:	Avg. Flow Depth=0.53' Max Vel=3.51 fps Inflow=18.67 cfs 115,725 cf n=0.035 L=196.0' S=0.0403 ' Capacity=649.78 cfs Outflow=18.65 cfs 115,725 cf
Reach R2:	Avg. Flow Depth=0.33' Max Vel=0.39 fps Inflow=0.85 cfs 3,223 cf n=0.400 L=169.2' S=0.1241 ' Capacity=84.89 cfs Outflow=0.69 cfs 3,223 cf
Pond CB1:	Peak Elev=72.15' Inflow=0.41 cfs 1,558 cf 12.0" Round Culvert n=0.013 L=22.0' S=0.0068 ' Outflow=0.41 cfs 1,558 cf
Pond CB10:	Peak Elev=103.04' Inflow=0.85 cfs 3,223 cf 12.0" Round Culvert n=0.013 L=25.0' S=0.0200 ' Outflow=0.85 cfs 3,223 cf
Pond CB11:	Peak Elev=103.16' Inflow=0.33 cfs 1,247 cf 12.0" Round Culvert n=0.013 L=22.0' S=0.0091 ' Outflow=0.33 cfs 1,247 cf
Pond CB12:	Peak Elev=116.72' Inflow=0.54 cfs 2,026 cf 12.0" Round Culvert n=0.013 L=22.0' S=0.0091 ' Outflow=0.54 cfs 2,026 cf
Pond CB13:	Peak Elev=116.70' Inflow=2.12 cfs 9,154 cf 12.0" Round Culvert n=0.013 L=175.4' S=0.0057 ' Outflow=2.12 cfs 9,154 cf
Pond CB14:	Peak Elev=85.69' Inflow=4.16 cfs 21,655 cf 18.0" Round Culvert n=0.013 L=22.0' S=0.0091 ' Outflow=4.16 cfs 21,655 cf
Pond CB15:	Peak Elev=84.54' Inflow=4.69 cfs 26,065 cf 18.0" Round Culvert n=0.013 L=28.0' S=0.0214 ' Outflow=4.69 cfs 26,065 cf
Pond CB16:	Peak Elev=87.20' Inflow=1.01 cfs 3,835 cf 12.0" Round Culvert n=0.013 L=94.1' S=0.0324 ' Outflow=1.01 cfs 3,835 cf
Pond CB17:	Peak Elev=94.02' Inflow=0.79 cfs 2,988 cf 12.0" Round Culvert n=0.013 L=136.2' S=0.0499 ' Outflow=0.79 cfs 2,988 cf

Pond CB18:	Peak Elev=94.17' Inflow=0.37 cfs 1,391 cf 12.0" Round Culvert n=0.013 L=22.0' S=0.0091 ' Outflow=0.37 cfs 1,391 cf
Pond CB19:	Peak Elev=107.98' Inflow=2.21 cfs 12,583 cf 12.0" Round Culvert n=0.013 L=22.0' S=0.0091 ' Outflow=2.21 cfs 12,583 cf
Pond CB2:	Peak Elev=72.06' Inflow=0.83 cfs 3,125 cf 12.0" Round Culvert n=0.013 L=8.9' S=0.0112 ' Outflow=0.83 cfs 3,125 cf
Pond CB20:	Peak Elev=107.44' Inflow=2.98 cfs 16,700 cf 15.0" Round Culvert n=0.013 L=27.0' S=0.0148 ' Outflow=2.98 cfs 16,700 cf
Pond CB21:	Peak Elev=108.68' Inflow=0.67 cfs 2,537 cf 15.0" Round Culvert n=0.013 L=102.0' S=0.0172 ' Outflow=0.67 cfs 2,537 cf
Pond CB22:	Peak Elev=112.49' Inflow=0.42 cfs 1,590 cf 12.0" Round Culvert n=0.013 L=157.5' S=0.0230 ' Outflow=0.42 cfs 1,590 cf
Pond CB24:	Peak Elev=78.72' Inflow=18.67 cfs 115,725 cf 30.0" Round Culvert n=0.013 L=59.0' S=0.0186 ' Outflow=18.67 cfs 115,725 cf
Pond CB24-1: Surface Information CB-24	Peak Elev=81.99' Storage=508 cf Inflow=14.72 cfs 65,905 cf Outflow=14.71 cfs 65,869 cf
Pond CB25:	Peak Elev=77.03' Inflow=1.92 cfs 8,361 cf 12.0" Round Culvert n=0.013 L=49.7' S=0.0060 ' Outflow=1.92 cfs 8,361 cf
Pond CB3:	Peak Elev=76.39' Inflow=0.69 cfs 2,628 cf 12.0" Round Culvert n=0.013 L=20.0' S=0.0100 ' Outflow=0.69 cfs 2,628 cf
Pond CB4:	Peak Elev=76.31' Inflow=1.31 cfs 4,955 cf 12.0" Round Culvert n=0.013 L=27.8' S=0.0054 ' Outflow=1.31 cfs 4,955 cf
Pond CB5:	Peak Elev=81.92' Inflow=5.98 cfs 33,895 cf 18.0" Round Culvert n=0.013 L=24.0' S=0.0063 ' Outflow=5.98 cfs 33,895 cf
Pond CB6:	Peak Elev=81.92' Inflow=0.65 cfs 2,467 cf 12.0" Round Culvert n=0.013 L=22.0' S=0.0091 ' Outflow=0.65 cfs 2,467 cf
Pond CB8:	Peak Elev=86.67' Inflow=0.68 cfs 2,559 cf 12.0" Round Culvert n=0.013 L=54.0' S=0.0602 ' Outflow=0.68 cfs 2,559 cf
Pond CB9:	Peak Elev=86.84' Inflow=0.35 cfs 1,318 cf 12.0" Round Culvert n=0.013 L=22.0' S=0.0091 ' Outflow=0.35 cfs 1,318 cf
Pond DMH1:	Peak Elev=77.66' Inflow=18.67 cfs 115,725 cf 30.0" Round Culvert n=0.013 L=144.0' S=0.0049 ' Outflow=18.67 cfs 115,725 cf
Pond DMH2:	Peak Elev=71.49' Inflow=1.28 cfs 7,125 cf 12.0" Round Culvert n=0.013 L=25.1' S=0.0060 ' Outflow=1.28 cfs 7,125 cf
Pond DMH3:	Peak Elev=75.21' Inflow=0.72 cfs 4,955 cf 12.0" Round Culvert n=0.013 L=32.2' S=0.0062 ' Outflow=0.72 cfs 4,955 cf

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Type III 24-hr 10-YR Rainfall=4.90"

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Pond DMH4:	Peak Elev=82.32' Inflow=5.17 cfs 29,748 cf 18.0" Round Culvert n=0.013 L=161.0' S=0.0050 ' ' Outflow=5.17 cfs 29,748 cf
Pond FB1: Filter Basin	Peak Elev=81.68' Storage=17,692 cf Inflow=10.14 cfs 49,850 cf Primary=0.00 cfs 0 cf Secondary=6.22 cfs 49,856 cf Outflow=6.22 cfs 49,856 cf
Pond FB2: Filter Basin	Peak Elev=102.53' Storage=9,113 cf Inflow=8.64 cfs 39,873 cf Primary=0.13 cfs 73 cf Secondary=7.16 cfs 39,804 cf Outflow=7.29 cfs 39,878 cf
Pond FB3: Filter Basin	Peak Elev=115.64' Storage=6,633 cf Inflow=3.89 cfs 15,627 cf Primary=0.00 cfs 0 cf Secondary=0.95 cfs 15,629 cf Outflow=0.95 cfs 15,629 cf
Pond SD16:	Peak Elev=86.12' Storage=901 cf Inflow=4.40 cfs 20,328 cf 18.0" Round Culvert n=0.013 L=16.3' S=0.0153 ' ' Outflow=4.00 cfs 20,190 cf
Pond SD22:	Peak Elev=108.40' Storage=654 cf Inflow=2.23 cfs 9,791 cf 12.0" Round Culvert n=0.013 L=25.0' S=0.0400 ' ' Outflow=1.85 cfs 9,791 cf
Pond SD36:	Peak Elev=72.27' Inflow=0.82 cfs 4,000 cf 12.0" Round Culvert n=0.013 L=37.8' S=0.0053 ' ' Outflow=0.82 cfs 4,000 cf
Pond SD42: SD-42	Peak Elev=78.12' Inflow=9.74 cfs 35,360 cf 24.0" Round Culvert n=0.013 L=52.5' S=0.0086 ' ' Outflow=9.74 cfs 35,360 cf
Pond ST-1: STORMTECH-1	Peak Elev=71.83' Storage=334 cf Inflow=0.83 cfs 3,125 cf 6.0" Round Culvert n=0.013 L=10.7' S=0.0093 ' ' Outflow=0.50 cfs 3,125 cf
Pond ST-2: STORMTECH-2	Peak Elev=76.13' Storage=660 cf Inflow=1.31 cfs 4,955 cf 6.0" Round Culvert n=0.013 L=2.3' S=0.0435 ' ' Outflow=0.72 cfs 4,955 cf
Link SP1:	Inflow=2.58 cfs 12,880 cf Primary=2.58 cfs 12,880 cf
Link SP2:	Inflow=12.70 cfs 51,317 cf Primary=12.70 cfs 51,317 cf
Link SP3:	Inflow=22.86 cfs 139,934 cf Primary=22.86 cfs 139,934 cf
Link SP4:	Inflow=9.32 cfs 60,530 cf Primary=9.32 cfs 60,530 cf
Link SP5:	Inflow=4.66 cfs 19,647 cf Primary=4.66 cfs 19,647 cf

24036 - POST-SP1-5*Type III 24-hr 25-YR Rainfall=6.20"*

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Time span=0.00-72.00 hrs, dt=0.09 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment WS-1:	Runoff Area=19,105 sf 43.56% Impervious Runoff Depth=4.83" Flow Length=279' Tc=7.8 min CN=WQ Runoff=1.98 cfs 7,695 cf
Subcatchment WS-11:	Runoff Area=4,137 sf 93.62% Impervious Runoff Depth=5.83" Tc=6.0 min CN=WQ Runoff=0.53 cfs 2,011 cf
Subcatchment WS-12:	Runoff Area=4,115 sf 93.58% Impervious Runoff Depth=5.83" Tc=6.0 min CN=WQ Runoff=0.53 cfs 2,000 cf
Subcatchment WS-13:	Runoff Area=15,809 sf 13.59% Impervious Runoff Depth=4.21" Flow Length=346' Tc=20.8 min CN=WQ Runoff=1.15 cfs 5,545 cf
Subcatchment WS-2:	Runoff Area=149,296 sf 5.97% Impervious Runoff Depth=4.00" Flow Length=666' Tc=8.2 min CN=WQ Runoff=13.63 cfs 49,715 cf
Subcatchment WS-21:	Runoff Area=6,143 sf 93.67% Impervious Runoff Depth=5.84" Tc=6.0 min CN=WQ Runoff=0.78 cfs 2,987 cf
Subcatchment WS-22:	Runoff Area=6,850 sf 96.80% Impervious Runoff Depth=5.90" Tc=6.0 min CN=WQ Runoff=0.88 cfs 3,367 cf
Subcatchment WS-23:	Runoff Area=11,475 sf 0.00% Impervious Runoff Depth=3.91" Flow Length=85' Slope=0.0812 '/' Tc=10.6 min CN=WQ Runoff=1.01 cfs 3,741 cf
Subcatchment WS-24:	Runoff Area=6,503 sf 95.36% Impervious Runoff Depth=5.84" Tc=6.0 min CN=WQ Runoff=0.83 cfs 3,165 cf
Subcatchment WS-25:	Runoff Area=4,461 sf 93.90% Impervious Runoff Depth=5.80" Tc=6.0 min CN=WQ Runoff=0.57 cfs 2,157 cf
Subcatchment WS-26:	Runoff Area=60,624 sf 18.98% Impervious Runoff Depth=4.34" Flow Length=491' Tc=10.6 min CN=WQ Runoff=5.70 cfs 21,933 cf
Subcatchment WS-27:	Runoff Area=36,820 sf 0.00% Impervious Runoff Depth=3.87" Flow Length=400' Tc=17.1 min CN=WQ Runoff=2.71 cfs 11,872 cf
Subcatchment WS-3:	Runoff Area=305,047 sf 0.98% Impervious Runoff Depth=3.71" Flow Length=1,143' Tc=18.2 min CN=WQ Runoff=21.10 cfs 94,360 cf
Subcatchment WS-30:	Runoff Area=67,962 sf 0.00% Impervious Runoff Depth=3.18" Flow Length=250' Tc=20.6 min CN=WQ Runoff=3.81 cfs 18,029 cf
Subcatchment WS-31:	Runoff Area=3,690 sf 94.17% Impervious Runoff Depth=5.81" Tc=6.0 min CN=WQ Runoff=0.47 cfs 1,786 cf
Subcatchment WS-32:	Runoff Area=4,227 sf 94.49% Impervious Runoff Depth=5.82" Tc=6.0 min CN=WQ Runoff=0.54 cfs 2,049 cf

SubcatchmentWS-33:	Runoff Area=3,875 sf 94.71% Impervious Runoff Depth=5.82" Tc=6.0 min CN=WQ Runoff=0.49 cfs 1,881 cf
SubcatchmentWS-34:	Runoff Area=2,242 sf 94.60% Impervious Runoff Depth=5.82" Tc=6.0 min CN=WQ Runoff=0.29 cfs 1,088 cf
SubcatchmentWS-35:	Runoff Area=92,485 sf 14.84% Impervious Runoff Depth=3.74" Flow Length=467' Tc=18.1 min CN=WQ Runoff=6.29 cfs 28,830 cf
SubcatchmentWS-36:	Runoff Area=1,517 sf 94.86% Impervious Runoff Depth=5.83" Tc=6.0 min CN=WQ Runoff=0.19 cfs 737 cf
SubcatchmentWS-37:	Runoff Area=3,460 sf 85.00% Impervious Runoff Depth=5.86" Tc=6.0 min CN=WQ Runoff=0.44 cfs 1,691 cf
SubcatchmentWS-38:	Runoff Area=3,386 sf 88.87% Impervious Runoff Depth=5.67" Tc=6.0 min CN=WQ Runoff=0.42 cfs 1,600 cf
SubcatchmentWS-39:	Runoff Area=2,941 sf 96.74% Impervious Runoff Depth=5.88" Tc=6.0 min CN=WQ Runoff=0.38 cfs 1,440 cf
SubcatchmentWS-4:	Runoff Area=42,110 sf 21.25% Impervious Runoff Depth=3.91" Flow Length=328' Tc=14.3 min CN=WQ Runoff=3.15 cfs 13,714 cf
SubcatchmentWS-41:	Runoff Area=104,853 sf 15.86% Impervious Runoff Depth=3.76" Flow Length=288' Tc=12.5 min CN=WQ Runoff=8.12 cfs 32,814 cf
SubcatchmentWS-42:	Runoff Area=4,181 sf 95.77% Impervious Runoff Depth=5.85" Tc=6.0 min CN=WQ Runoff=0.53 cfs 2,039 cf
SubcatchmentWS-43:	Runoff Area=4,996 sf 94.16% Impervious Runoff Depth=5.81" Tc=6.0 min CN=WQ Runoff=0.63 cfs 2,419 cf
SubcatchmentWS-44:	Runoff Area=2,508 sf 94.50% Impervious Runoff Depth=5.82" Tc=6.0 min CN=WQ Runoff=0.32 cfs 1,216 cf
SubcatchmentWS-45:	Runoff Area=2,402 sf 94.59% Impervious Runoff Depth=5.82" Tc=6.0 min CN=WQ Runoff=0.31 cfs 1,165 cf
SubcatchmentWS-46:	Runoff Area=1,648 sf 95.69% Impervious Runoff Depth=5.85" Tc=6.0 min CN=WQ Runoff=0.21 cfs 803 cf
SubcatchmentWS-47:	Runoff Area=31,189 sf 8.66% Impervious Runoff Depth=3.58" Flow Length=95' Slope=0.0763 '/' Tc=7.9 min CN=WQ Runoff=2.55 cfs 9,303 cf
SubcatchmentWS-48:	Runoff Area=2,525 sf 94.65% Impervious Runoff Depth=5.82" Tc=6.0 min CN=WQ Runoff=0.32 cfs 1,225 cf
SubcatchmentWS-49:	Runoff Area=27,160 sf 0.00% Impervious Runoff Depth=3.28" Flow Length=163' Tc=13.8 min CN=WQ Runoff=1.79 cfs 7,414 cf
SubcatchmentWS-5:	Runoff Area=104,505 sf 3.44% Impervious Runoff Depth=3.31" Flow Length=299' Tc=13.8 min CN=WQ Runoff=6.90 cfs 28,834 cf

Subcatchment WS-51:	Runoff Area=39,007 sf 19.73% Impervious Runoff Depth=3.83" Flow Length=668' Tc=35.0 min CN=WQ Runoff=2.03 cfs 12,454 cf
Subcatchment WS-52:	Runoff Area=3,294 sf 94.93% Impervious Runoff Depth=5.83" Tc=6.0 min CN=WQ Runoff=0.42 cfs 1,600 cf
Subcatchment WS-53:	Runoff Area=5,224 sf 94.75% Impervious Runoff Depth=5.82" Tc=6.0 min CN=WQ Runoff=0.66 cfs 2,536 cf
Subcatchment WS-54:	Runoff Area=5,420 sf 91.44% Impervious Runoff Depth=5.79" Tc=6.0 min CN=WQ Runoff=0.69 cfs 2,615 cf
Subcatchment WS-55:	Runoff Area=5,440 sf 90.17% Impervious Runoff Depth=5.75" Tc=6.0 min CN=WQ Runoff=0.69 cfs 2,606 cf
Subcatchment WS-56:	Runoff Area=19,605 sf 34.98% Impervious Runoff Depth=4.27" Flow Length=131' Tc=12.0 min CN=WQ Runoff=1.70 cfs 6,970 cf
Reach R1:	Avg. Flow Depth=0.61' Max Vel=3.86 fps Inflow=27.57 cfs 162,547 cf n=0.035 L=196.0' S=0.0403 ' Capacity=649.78 cfs Outflow=27.86 cfs 162,547 cf
Reach R2:	Avg. Flow Depth=0.36' Max Vel=0.42 fps Inflow=1.08 cfs 4,136 cf n=0.400 L=169.2' S=0.1241 ' Capacity=84.89 cfs Outflow=0.89 cfs 4,136 cf
Pond CB1:	Peak Elev=72.24' Inflow=0.53 cfs 2,000 cf 12.0" Round Culvert n=0.013 L=22.0' S=0.0068 ' Outflow=0.53 cfs 2,000 cf
Pond CB10:	Peak Elev=103.12' Inflow=1.08 cfs 4,136 cf 12.0" Round Culvert n=0.013 L=25.0' S=0.0200 ' Outflow=1.08 cfs 4,136 cf
Pond CB11:	Peak Elev=103.23' Inflow=0.42 cfs 1,600 cf 12.0" Round Culvert n=0.013 L=22.0' S=0.0091 ' Outflow=0.42 cfs 1,600 cf
Pond CB12:	Peak Elev=117.20' Inflow=0.69 cfs 2,606 cf 12.0" Round Culvert n=0.013 L=22.0' S=0.0091 ' Outflow=0.69 cfs 2,606 cf
Pond CB13:	Peak Elev=117.18' Inflow=2.83 cfs 12,191 cf 12.0" Round Culvert n=0.013 L=175.4' S=0.0057 ' Outflow=2.83 cfs 12,191 cf
Pond CB14:	Peak Elev=85.94' Inflow=5.49 cfs 30,572 cf 18.0" Round Culvert n=0.013 L=22.0' S=0.0091 ' Outflow=5.49 cfs 30,572 cf
Pond CB15:	Peak Elev=84.90' Inflow=6.18 cfs 36,232 cf 18.0" Round Culvert n=0.013 L=28.0' S=0.0214 ' Outflow=6.18 cfs 36,232 cf
Pond CB16:	Peak Elev=87.29' Inflow=1.29 cfs 4,923 cf 12.0" Round Culvert n=0.013 L=94.1' S=0.0324 ' Outflow=1.29 cfs 4,923 cf
Pond CB17:	Peak Elev=94.09' Inflow=1.01 cfs 3,836 cf 12.0" Round Culvert n=0.013 L=136.2' S=0.0499 ' Outflow=1.01 cfs 3,836 cf

Pond CB18:	Peak Elev=94.23' Inflow=0.47 cfs 1,786 cf 12.0" Round Culvert n=0.013 L=22.0' S=0.0091 ' Outflow=0.47 cfs 1,786 cf
Pond CB19:	Peak Elev=108.49' Inflow=2.96 cfs 17,297 cf 12.0" Round Culvert n=0.013 L=22.0' S=0.0091 ' Outflow=2.96 cfs 17,297 cf
Pond CB2:	Peak Elev=72.21' Inflow=1.05 cfs 4,012 cf 12.0" Round Culvert n=0.013 L=8.9' S=0.0112 ' Outflow=1.05 cfs 4,012 cf
Pond CB20:	Peak Elev=107.74' Inflow=3.99 cfs 22,580 cf 15.0" Round Culvert n=0.013 L=27.0' S=0.0148 ' Outflow=3.99 cfs 22,580 cf
Pond CB21:	Peak Elev=108.75' Inflow=0.85 cfs 3,255 cf 15.0" Round Culvert n=0.013 L=102.0' S=0.0172 ' Outflow=0.85 cfs 3,255 cf
Pond CB22:	Peak Elev=112.55' Inflow=0.53 cfs 2,039 cf 12.0" Round Culvert n=0.013 L=157.5' S=0.0230 ' Outflow=0.53 cfs 2,039 cf
Pond CB24:	Peak Elev=79.62' Inflow=27.57 cfs 162,547 cf 30.0" Round Culvert n=0.013 L=59.0' S=0.0186 ' Outflow=27.57 cfs 162,547 cf
Pond CB24-1: Surface Information CB-24	Peak Elev=82.11' Storage=666 cf Inflow=21.10 cfs 95,109 cf Outflow=21.06 cfs 95,073 cf
Pond CB25:	Peak Elev=77.43' Inflow=2.71 cfs 11,872 cf 12.0" Round Culvert n=0.013 L=49.7' S=0.0060 ' Outflow=2.71 cfs 11,872 cf
Pond CB3:	Peak Elev=76.67' Inflow=0.88 cfs 3,367 cf 12.0" Round Culvert n=0.013 L=20.0' S=0.0100 ' Outflow=0.88 cfs 3,367 cf
Pond CB4:	Peak Elev=76.67' Inflow=1.67 cfs 6,354 cf 12.0" Round Culvert n=0.013 L=27.8' S=0.0054 ' Outflow=1.67 cfs 6,354 cf
Pond CB5:	Peak Elev=82.66' Inflow=8.01 cfs 46,281 cf 18.0" Round Culvert n=0.013 L=24.0' S=0.0063 ' Outflow=8.01 cfs 46,281 cf
Pond CB6:	Peak Elev=82.67' Inflow=0.83 cfs 3,165 cf 12.0" Round Culvert n=0.013 L=22.0' S=0.0091 ' Outflow=0.83 cfs 3,160 cf
Pond CB8:	Peak Elev=86.74' Inflow=0.87 cfs 3,291 cf 12.0" Round Culvert n=0.013 L=54.0' S=0.0602 ' Outflow=0.87 cfs 3,291 cf
Pond CB9:	Peak Elev=86.90' Inflow=0.44 cfs 1,691 cf 12.0" Round Culvert n=0.013 L=22.0' S=0.0091 ' Outflow=0.44 cfs 1,691 cf
Pond DMH1:	Peak Elev=78.43' Inflow=27.57 cfs 162,547 cf 30.0" Round Culvert n=0.013 L=144.0' S=0.0049 ' Outflow=27.57 cfs 162,547 cf
Pond DMH2:	Peak Elev=71.64' Inflow=1.71 cfs 9,556 cf 12.0" Round Culvert n=0.013 L=25.1' S=0.0060 ' Outflow=1.71 cfs 9,556 cf
Pond DMH3:	Peak Elev=75.27' Inflow=0.87 cfs 6,353 cf 12.0" Round Culvert n=0.013 L=32.2' S=0.0062 ' Outflow=0.87 cfs 6,353 cf

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Pond DMH4: Peak Elev=83.53' Inflow=6.94 cfs 40,963 cf
18.0" Round Culvert n=0.013 L=161.0' S=0.0050 ' ' Outflow=6.94 cfs 40,963 cf

Pond FB1: Filter Basin Peak Elev=82.21' Storage=22,897 cf Inflow=13.70 cfs 68,214 cf
Primary=1.04 cfs 749 cf Secondary=7.14 cfs 67,474 cf Outflow=7.66 cfs 68,223 cf

Pond FB2: Filter Basin Peak Elev=102.71' Storage=10,122 cf Inflow=11.86 cfs 55,394 cf
Primary=2.62 cfs 2,367 cf Secondary=7.55 cfs 53,038 cf Outflow=10.17 cfs 55,405 cf

Pond FB3: Filter Basin Peak Elev=116.01' Storage=7,972 cf Inflow=5.38 cfs 21,495 cf
Primary=0.38 cfs 170 cf Secondary=2.92 cfs 21,324 cf Outflow=3.30 cfs 21,495 cf

Pond SD16: Peak Elev=86.56' Storage=1,482 cf Inflow=6.29 cfs 28,830 cf
18.0" Round Culvert n=0.013 L=16.3' S=0.0153 ' ' Outflow=5.29 cfs 28,691 cf

Pond SD22: Peak Elev=108.80' Storage=1,452 cf Inflow=3.15 cfs 13,714 cf
12.0" Round Culvert n=0.013 L=25.0' S=0.0400 ' ' Outflow=2.61 cfs 13,714 cf

Pond SD36: Peak Elev=72.39' Inflow=1.15 cfs 5,545 cf
12.0" Round Culvert n=0.013 L=37.8' S=0.0053 ' ' Outflow=1.15 cfs 5,545 cf

Pond SD42: SD-42 Peak Elev=78.74' Inflow=13.63 cfs 49,715 cf
24.0" Round Culvert n=0.013 L=52.5' S=0.0086 ' ' Outflow=13.63 cfs 49,715 cf

Pond ST-1: STORMTECH-1 Peak Elev=72.17' Storage=471 cf Inflow=1.05 cfs 4,012 cf
6.0" Round Culvert n=0.013 L=10.7' S=0.0093 ' ' Outflow=0.61 cfs 4,011 cf

Pond ST-2: STORMTECH-2 Peak Elev=76.62' Storage=912 cf Inflow=1.67 cfs 6,354 cf
6.0" Round Culvert n=0.013 L=2.3' S=0.0435 ' ' Outflow=0.87 cfs 6,353 cf

Link SP1: Inflow=3.42 cfs 17,251 cf
Primary=3.42 cfs 17,251 cf

Link SP2: Inflow=17.67 cfs 71,681 cf
Primary=17.67 cfs 71,681 cf

Link SP3: Inflow=33.90 cfs 197,166 cf
Primary=33.90 cfs 197,166 cf

Link SP4: Inflow=14.38 cfs 84,314 cf
Primary=14.38 cfs 84,314 cf

Link SP5: Inflow=6.90 cfs 28,834 cf
Primary=6.90 cfs 28,834 cf

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Type III 24-hr 25-YR Rainfall=6.20"

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Summary for Subcatchment WS-1:

Runoff = 1.98 cfs @ 12.12 hrs, Volume= 7,695 cf, Depth= 4.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

	Area (sf)	CN	Description
*	7,034	98	Ex. paved areas
*	656	98	Prop. paved areas
*	633	98	Ex. Roofs
	10,761	80	>75% Grass cover, Good, HSG D
	21	79	Woods/grass comb., Good, HSG D
	19,105		Weighted Average
	10,782		56.44% Pervious Area
	8,323		43.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	10	0.0324	0.09		Sheet Flow, Seg A to B Grass: Dense n= 0.240 P2= 3.30"
0.1	6	0.0233	0.85		Sheet Flow, Seg B to C Smooth surfaces n= 0.011 P2= 3.30"
1.8	25	0.2094	0.23		Sheet Flow, Seg C to D Grass: Dense n= 0.240 P2= 3.30"
0.6	25	0.1213	0.65		Sheet Flow, Seg D to E Fallow n= 0.050 P2= 3.30"
3.0	32	0.0949	0.18		Sheet Flow, Seg E to F Grass: Dense n= 0.240 P2= 3.30"
0.2	80	0.0502	8.70	48.96	Trap/Vee/Rect Channel Flow, Seg F to G Bot.W=0.00' D=1.50' Z= 2.0 & 3.0 ' Top.W=7.50' n= 0.030 Earth, grassed & winding
0.3	101	0.0166	5.84	4.59	Pipe Channel, Seg G to H 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
7.8	279	Total			

Summary for Subcatchment WS-11:

Runoff = 0.53 cfs @ 12.08 hrs, Volume= 2,011 cf, Depth= 5.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

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Type III 24-hr 25-YR Rainfall=6.20"

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	Area (sf)	CN	Description
*	3,873	98	Paved areas
	0	98	Roofs
	264	80	>75% Grass cover, Good, HSG D
	0	79	Woods/grass comb., Good, HSG D
	4,137		Weighted Average
	264		6.38% Pervious Area
	3,873		93.62% Impervious Area

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

Summary for Subcatchment WS-12:

Runoff = 0.53 cfs @ 12.08 hrs, Volume= 2,000 cf, Depth= 5.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

	Area (sf)	CN	Description
*	3,851	98	Paved areas
	0	98	Roofs
	264	80	>75% Grass cover, Good, HSG D
	0	79	Woods/grass comb., Good, HSG D
	4,115		Weighted Average
	264		6.42% Pervious Area
	3,851		93.58% Impervious Area

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

Summary for Subcatchment WS-13:

Runoff = 1.15 cfs @ 12.28 hrs, Volume= 5,545 cf, Depth= 4.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

	Area (sf)	CN	Description
*	1,078	98	Ex. paved areas
*	594	98	Prop. paved areas
*	477	98	Ex. roofs
*	7,292	80	Ex. >75% Grass cover, Good, HSG D
*	2,545	80	>75% Grass cover, Good, HSG D
	3,823	79	Woods/grass comb., Good, HSG D
	15,809		Weighted Average
	13,660		86.41% Pervious Area
	2,149		13.59% Impervious Area

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Type III 24-hr 25-YR Rainfall=6.20"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	86	0.0494	0.11		Sheet Flow, Seg A to B Woods: Light underbrush n= 0.400 P2= 3.30"
0.1	6	0.0233	0.85		Sheet Flow, Seg B to C Smooth surfaces n= 0.011 P2= 3.30"
1.8	25	0.2094	0.23		Sheet Flow, Seg C to D Grass: Dense n= 0.240 P2= 3.30"
0.6	25	0.1213	0.65		Sheet Flow, Seg D to E Fallow n= 0.050 P2= 3.30"
4.7	55	0.0949	0.20		Sheet Flow, Seg E to F Grass: Dense n= 0.240 P2= 3.30"
0.2	48	0.0538	3.73		Shallow Concentrated Flow, Seg F to G Unpaved Kv= 16.1 fps
0.3	101	0.0166	5.84	4.59	Pipe Channel, Seg G to H 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
20.8	346	Total			

Summary for Subcatchment WS-2:

Runoff = 13.63 cfs @ 12.13 hrs, Volume= 49,715 cf, Depth= 4.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
* 7,532	98	Ex. paved areas
* 1,376	98	Ex. roofs
* 13,717	80	Ex. >75% Grass cover, Good, HSG D
* 3,203	80	Prop. >75% Grass cover, Good, HSG D
123,468	79	Woods/grass comb., Good, HSG D
149,296		Weighted Average
140,388		94.03% Pervious Area
8,908		5.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	57	0.1136	0.14		Sheet Flow, Seg A to B Woods: Light underbrush n= 0.400 P2= 3.30"
1.0	444	0.0766	7.39	294.87	Channel Flow, Seg B to C Area= 39.9 sf Perim= 80.0' r= 0.50' n= 0.035 Earth, dense weeds
0.5	150	0.0400	5.35	314.89	Channel Flow, Seg C to D Area= 58.9 sf Perim= 117.9' r= 0.50' n= 0.035 Earth, dense weeds
0.0	15	0.2335	16.01	56.03	Trap/Vee/Rect Channel Flow, Seg D to E Bot.W=1.00' D=1.00' Z= 2.0 & 3.0 ' Top.W=6.00' n= 0.030 Earth, grassed & winding
8.2	666	Total			

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Type III 24-hr 25-YR Rainfall=6.20"

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Summary for Subcatchment WS-21:

Runoff = 0.78 cfs @ 12.08 hrs, Volume= 2,987 cf, Depth= 5.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

	Area (sf)	CN	Description
*	5,754	98	Paved areas
	0	98	Roofs
	389	80	>75% Grass cover, Good, HSG D
	0	79	Woods/grass comb., Good, HSG D
	6,143		Weighted Average
	389		6.33% Pervious Area
	5,754		93.67% Impervious Area

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

Summary for Subcatchment WS-22:

Runoff = 0.88 cfs @ 12.08 hrs, Volume= 3,367 cf, Depth= 5.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

	Area (sf)	CN	Description
*	6,631	98	Paved areas
	0	98	Roofs
	219	80	>75% Grass cover, Good, HSG D
	0	79	Woods/grass comb., Good, HSG D
	6,850		Weighted Average
	219		3.20% Pervious Area
	6,631		96.80% Impervious Area

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

Summary for Subcatchment WS-23:

Runoff = 1.01 cfs @ 12.16 hrs, Volume= 3,741 cf, Depth= 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

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Type III 24-hr 25-YR Rainfall=6.20"

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Area (sf)	CN	Description
* 0	98	Paved areas
0	98	Roofs
5,884	80	>75% Grass cover, Good, HSG D
5,591	79	Woods/grass comb., Good, HSG D
11,475		Weighted Average
11,475		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	85	0.0812	0.13		Sheet Flow, Seg A to B Woods: Light underbrush n= 0.400 P2= 3.30"

Summary for Subcatchment WS-24:

Runoff = 0.83 cfs @ 12.08 hrs, Volume= 3,165 cf, Depth= 5.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
* 6,201	98	Paved areas
0	98	Roofs
302	74	>75% Grass cover, Good, HSG C
0	79	Woods/grass comb., Good, HSG D
6,503		Weighted Average
302		4.64% Pervious Area
6,201		95.36% Impervious Area

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

Summary for Subcatchment WS-25:

Runoff = 0.57 cfs @ 12.08 hrs, Volume= 2,157 cf, Depth= 5.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
* 4,189	98	Paved areas
0	98	Roofs
272	74	>75% Grass cover, Good, HSG C
0	79	Woods/grass comb., Good, HSG D
4,461		Weighted Average
272		6.10% Pervious Area
4,189		93.90% Impervious Area

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Type III 24-hr 25-YR Rainfall=6.20"

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

Summary for Subcatchment WS-26:

Runoff = 5.70 cfs @ 12.15 hrs, Volume= 21,933 cf, Depth= 4.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
* 5,207	98	Paved areas
6,300	98	Roofs
48,967	80	>75% Grass cover, Good, HSG D
150	79	Woods/grass comb., Good, HSG D
60,624		Weighted Average
49,117		81.02% Pervious Area
11,507		18.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	89	0.0425	0.16		Sheet Flow, Seg A to B Grass: Dense n= 0.240 P2= 3.30"
0.6	268	0.0522	8.06	40.28	Trap/Vee/Rect Channel Flow, Seg B to C Bot.W=2.00' D=1.00' Z= 3.0 ' Top.W=8.00' n= 0.030 Earth, grassed & winding
0.5	134	0.0655	4.12		Shallow Concentrated Flow, Seg C to D Unpaved Kv= 16.1 fps
10.6	491	Total			

Summary for Subcatchment WS-27:

Runoff = 2.71 cfs @ 12.24 hrs, Volume= 11,872 cf, Depth= 3.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
* 0	98	Ex. paved areas
* 0	98	Ex. roofs
* 0	80	Ex. >75% Grass cover, Good, HSG D
* 3,708	80	Prop. >75% Grass cover, Good, HSG D
33,112	79	Woods/grass comb., Good, HSG D
36,820		Weighted Average
36,820		100.00% Pervious Area

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Type III 24-hr 25-YR Rainfall=6.20"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.6	121	0.0537	0.12		Sheet Flow, Seg A to B Woods: Light underbrush n= 0.400 P2= 3.30"
0.5	279	0.1147	8.89	366.41	Channel Flow, Seg B to C Area= 41.2 sf Perim= 84.7' r= 0.49' n= 0.035 Earth, dense weeds
17.1	400	Total			

Summary for Subcatchment WS-3:

Runoff = 21.10 cfs @ 12.26 hrs, Volume= 94,360 cf, Depth= 3.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
*		
0	98	Paved areas
2,988	98	Roofs
37,018	74	>75% Grass cover, Good, HSG C
7,374	80	>75% Grass cover, Good, HSG D
47,254	72	Woods/grass comb., Good, HSG C
210,413	79	Woods/grass comb., Good, HSG D
305,047		Weighted Average
302,059		99.02% Pervious Area
2,988		0.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	38	0.1040	0.13		Sheet Flow, Seg A to B Woods: Light underbrush n= 0.400 P2= 3.30"
9.1	80	0.0376	0.15		Sheet Flow, Seg A to B Grass: Dense n= 0.240 P2= 3.30"
1.8	356	0.0155	3.33	175.71	Channel Flow, Seg C to D Area= 52.8 sf Perim= 105.7' r= 0.50' n= 0.035 Earth, dense weeds
0.4	137	0.0584	6.46	548.11	Channel Flow, Seg D to E Area= 84.8 sf Perim= 169.6' r= 0.50' n= 0.035 Earth, dense weeds
0.8	275	0.0291	6.02	30.08	Trap/Vee/Rect Channel Flow, Seg E to F Bot.W=2.00' D=1.00' Z= 3.0 ' / ' Top.W=8.00' n= 0.030 Earth, grassed & winding
1.1	257	0.0222	3.99	285.33	Channel Flow, Seg F to G Area= 71.6 sf Perim= 143.2' r= 0.50' n= 0.035 Earth, dense weeds
18.2	1,143	Total			

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Type III 24-hr 25-YR Rainfall=6.20"

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Summary for Subcatchment WS-30:

Runoff = 3.81 cfs @ 12.29 hrs, Volume= 18,029 cf, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
*	0	98 Paved areas
	0	98 Roofs
8,943	74	>75% Grass cover, Good, HSG C
0	80	>75% Grass cover, Good, HSG D
59,019	72	Woods/grass comb., Good, HSG C
0	79	Woods/grass comb., Good, HSG D
67,962		Weighted Average
67,962		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.3	150	0.0647	0.14		Sheet Flow, Seg A to B Woods: Light underbrush n= 0.400 P2= 3.30"
2.3	100	0.0219	0.74		Shallow Concentrated Flow, Seg B to C Woodland Kv= 5.0 fps
20.6	250	Total			

Summary for Subcatchment WS-31:

Runoff = 0.47 cfs @ 12.08 hrs, Volume= 1,786 cf, Depth= 5.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
*	3,475	98 Paved areas
	0	98 Roofs
215	74	>75% Grass cover, Good, HSG C
0	79	Woods/grass comb., Good, HSG D
3,690		Weighted Average
215		5.83% Pervious Area
3,475		94.17% Impervious Area

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

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Type III 24-hr 25-YR Rainfall=6.20"

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Summary for Subcatchment WS-32:

Runoff = 0.54 cfs @ 12.08 hrs, Volume= 2,049 cf, Depth= 5.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

	Area (sf)	CN	Description
*	3,994	98	Paved areas
	0	98	Roofs
	233	74	>75% Grass cover, Good, HSG C
	0	79	Woods/grass comb., Good, HSG D
	4,227		Weighted Average
	233		5.51% Pervious Area
	3,994		94.49% Impervious Area

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

Summary for Subcatchment WS-33:

Runoff = 0.49 cfs @ 12.08 hrs, Volume= 1,881 cf, Depth= 5.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

	Area (sf)	CN	Description
*	3,670	98	Paved areas
	0	98	Roofs
	205	74	>75% Grass cover, Good, HSG C
	0	79	Woods/grass comb., Good, HSG D
	3,875		Weighted Average
	205		5.29% Pervious Area
	3,670		94.71% Impervious Area

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

Summary for Subcatchment WS-34:

Runoff = 0.29 cfs @ 12.08 hrs, Volume= 1,088 cf, Depth= 5.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

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Type III 24-hr 25-YR Rainfall=6.20"

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	Area (sf)	CN	Description
*	2,121	98	Paved areas
	0	98	Roofs
	121	74	>75% Grass cover, Good, HSG C
	0	79	Woods/grass comb., Good, HSG D
	2,242		Weighted Average
	121		5.40% Pervious Area
	2,121		94.60% Impervious Area

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

Summary for Subcatchment WS-35:

Runoff = 6.29 cfs @ 12.26 hrs, Volume= 28,830 cf, Depth= 3.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

	Area (sf)	CN	Description
*	4,085	98	Paved areas
	9,636	98	Roofs
	78,764	74	>75% Grass cover, Good, HSG C
	0	72	Woods/grass comb., Good, HSG C
	92,485		Weighted Average
	78,764		85.16% Pervious Area
	13,721		14.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.3	150	0.0267	0.14		Sheet Flow, Seg A to B Grass: Dense n= 0.240 P2= 3.30"
0.5	147	0.0818	4.60		Shallow Concentrated Flow, Seg B to C Unpaved Kv= 16.1 fps
0.3	170	0.0951	10.21	40.82	Trap/Vee/Rect Channel Flow, Seg C to D Bot.W=1.00' D=1.00' Z= 3.0 ' Top.W=7.00' n= 0.030 Earth, grassed & winding
18.1	467	Total			

Summary for Subcatchment WS-36:

Runoff = 0.19 cfs @ 12.08 hrs, Volume= 737 cf, Depth= 5.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

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Type III 24-hr 25-YR Rainfall=6.20"

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	Area (sf)	CN	Description
*	1,439	98	Paved areas
	0	98	Roofs
	78	74	>75% Grass cover, Good, HSG C
	0	79	Woods/grass comb., Good, HSG D
	1,517		Weighted Average
	78		5.14% Pervious Area
	1,439		94.86% Impervious Area

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

Summary for Subcatchment WS-37:

Runoff = 0.44 cfs @ 12.08 hrs, Volume= 1,691 cf, Depth= 5.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

	Area (sf)	CN	Description
*	2,941	98	Paved areas
*	428	96	Gravel areas
	0	98	Roofs
	91	74	>75% Grass cover, Good, HSG C
	0	79	Woods/grass comb., Good, HSG D
	3,460		Weighted Average
	519		15.00% Pervious Area
	2,941		85.00% Impervious Area

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

Summary for Subcatchment WS-38:

Runoff = 0.42 cfs @ 12.08 hrs, Volume= 1,600 cf, Depth= 5.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

	Area (sf)	CN	Description
*	3,009	98	Paved areas
*	0	96	Gravel areas
	0	98	Roofs
	377	74	>75% Grass cover, Good, HSG C
	0	79	Woods/grass comb., Good, HSG D
	3,386		Weighted Average
	377		11.13% Pervious Area
	3,009		88.87% Impervious Area

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Type III 24-hr 25-YR Rainfall=6.20"

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

Summary for Subcatchment WS-39:

Runoff = 0.38 cfs @ 12.08 hrs, Volume= 1,440 cf, Depth= 5.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
* 2,845	98	Paved areas
* 0	96	Gravel areas
0	98	Roofs
96	74	>75% Grass cover, Good, HSG C
0	79	Woods/grass comb., Good, HSG D
2,941		Weighted Average
96		3.26% Pervious Area
2,845		96.74% Impervious Area

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

Summary for Subcatchment WS-4:

Runoff = 3.15 cfs @ 12.20 hrs, Volume= 13,714 cf, Depth= 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
* 4,184	98	Paved areas
4,764	98	Roofs
33,162	74	>75% Grass cover, Good, HSG C
0	80	>75% Grass cover, Good, HSG D
0	72	Woods/grass comb., Good, HSG C
0	79	Woods/grass comb., Good, HSG D
42,110		Weighted Average
33,162		78.75% Pervious Area
8,948		21.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0536	0.19		Sheet Flow, Seg A to B Grass: Dense n= 0.240 P2= 3.30"
1.2	178	0.0224	2.41		Shallow Concentrated Flow, Seg B to C Unpaved Kv= 16.1 fps
14.3	328	Total			

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Type III 24-hr 25-YR Rainfall=6.20"

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Summary for Subcatchment WS-41:

Runoff = 8.12 cfs @ 12.18 hrs, Volume= 32,814 cf, Depth= 3.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

	Area (sf)	CN	Description
*	6,119	98	Paved areas
	10,512	98	Roofs
*	81,822	74	Prop. >75% Grass cover, Good, HSG C
*	0	74	Ex. >75% Grass cover, Good, HSG C
	6,400	72	Woods/grass comb., Good, HSG C
	0	79	Woods/grass comb., Good, HSG D
	104,853		Weighted Average
	88,222		84.14% Pervious Area
	16,631		15.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	150	0.0633	0.20		Sheet Flow, Seg A to B Grass: Dense n= 0.240 P2= 3.30"
0.2	138	0.1524	13.77	68.83	Trap/Vee/Rect Channel Flow, Seg B to C Bot.W=2.00' D=1.00' Z= 3.0 ' Top.W=8.00' n= 0.030 Earth, grassed & winding
12.5	288	Total			

Summary for Subcatchment WS-42:

Runoff = 0.53 cfs @ 12.08 hrs, Volume= 2,039 cf, Depth= 5.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

	Area (sf)	CN	Description
*	4,004	98	Paved areas
	0	98	Roofs
*	177	74	Prop. >75% Grass cover, Good, HSG C
*	0	74	Ex. >75% Grass cover, Good, HSG C
	0	72	Woods/grass comb., Good, HSG C
	0	79	Woods/grass comb., Good, HSG D
	4,181		Weighted Average
	177		4.23% Pervious Area
	4,004		95.77% Impervious Area

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

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Type III 24-hr 25-YR Rainfall=6.20"

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Summary for Subcatchment WS-43:

Runoff = 0.63 cfs @ 12.08 hrs, Volume= 2,419 cf, Depth= 5.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

	Area (sf)	CN	Description
*	4,704	98	Paved areas
	0	98	Roofs
*	292	74	Prop. >75% Grass cover, Good, HSG C
*	0	74	Ex. >75% Grass cover, Good, HSG C
	0	72	Woods/grass comb., Good, HSG C
	0	79	Woods/grass comb., Good, HSG D
	4,996		Weighted Average
	292		5.84% Pervious Area
	4,704		94.16% Impervious Area

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

Summary for Subcatchment WS-44:

Runoff = 0.32 cfs @ 12.08 hrs, Volume= 1,216 cf, Depth= 5.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

	Area (sf)	CN	Description
*	2,370	98	Paved areas
	0	98	Roofs
*	138	74	Prop. >75% Grass cover, Good, HSG C
*	0	74	Ex. >75% Grass cover, Good, HSG C
	0	72	Woods/grass comb., Good, HSG C
	0	79	Woods/grass comb., Good, HSG D
	2,508		Weighted Average
	138		5.50% Pervious Area
	2,370		94.50% Impervious Area

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

Summary for Subcatchment WS-45:

Runoff = 0.31 cfs @ 12.08 hrs, Volume= 1,165 cf, Depth= 5.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

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Type III 24-hr 25-YR Rainfall=6.20"

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	Area (sf)	CN	Description
*	2,272	98	Paved areas
	0	98	Roofs
*	130	74	Prop. >75% Grass cover, Good, HSG C
*	0	74	Ex. >75% Grass cover, Good, HSG C
	0	72	Woods/grass comb., Good, HSG C
	0	79	Woods/grass comb., Good, HSG D
	2,402		Weighted Average
	130		5.41% Pervious Area
	2,272		94.59% Impervious Area

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

Summary for Subcatchment WS-46:

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 803 cf, Depth= 5.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

	Area (sf)	CN	Description
*	1,577	98	Paved areas
	0	98	Roofs
*	71	74	Prop. >75% Grass cover, Good, HSG C
*	0	74	Ex. >75% Grass cover, Good, HSG C
	0	72	Woods/grass comb., Good, HSG C
	0	79	Woods/grass comb., Good, HSG D
	1,648		Weighted Average
	71		4.31% Pervious Area
	1,577		95.69% Impervious Area

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

Summary for Subcatchment WS-47:

Runoff = 2.55 cfs @ 12.13 hrs, Volume= 9,303 cf, Depth= 3.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

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Type III 24-hr 25-YR Rainfall=6.20"

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	Area (sf)	CN	Description
*	0	98	Paved areas
	2,700	98	Roofs
*	28,482	74	Prop. >75% Grass cover, Good, HSG C
*	0	74	Ex. >75% Grass cover, Good, HSG C
	7	72	Woods/grass comb., Good, HSG C
	0	79	Woods/grass comb., Good, HSG D
	31,189		Weighted Average
	28,489		91.34% Pervious Area
	2,700		8.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	95	0.0763	0.20		Sheet Flow, Seg A to B Grass: Dense n= 0.240 P2= 3.30"

Summary for Subcatchment WS-48:

Runoff = 0.32 cfs @ 12.08 hrs, Volume= 1,225 cf, Depth= 5.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

	Area (sf)	CN	Description
*	2,390	98	Paved areas
	0	98	Roofs
*	135	74	Prop. >75% Grass cover, Good, HSG C
*	0	74	Ex. >75% Grass cover, Good, HSG C
	0	72	Woods/grass comb., Good, HSG C
	0	79	Woods/grass comb., Good, HSG D
	2,525		Weighted Average
	135		5.35% Pervious Area
	2,390		94.65% Impervious Area

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

Summary for Subcatchment WS-49:

Runoff = 1.79 cfs @ 12.20 hrs, Volume= 7,414 cf, Depth= 3.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

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Type III 24-hr 25-YR Rainfall=6.20"

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Area (sf)	CN	Description
* 0	98	Paved areas
0	98	Roofs
* 15,402	74	Prop. >75% Grass cover, Good, HSG C
* 958	74	Ex. >75% Grass cover, Good, HSG C
10,800	72	Woods/grass comb., Good, HSG C
0	79	Woods/grass comb., Good, HSG D
27,160		Weighted Average
27,160		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	70	0.2586	0.20		Sheet Flow, Seg A to B Woods: Light underbrush n= 0.400 P2= 3.30"
7.9	78	0.0510	0.16		Sheet Flow, Seg B to C Grass: Dense n= 0.240 P2= 3.30"
0.2	15	0.0417	1.02		Shallow Concentrated Flow, Seg C to D Woodland Kv= 5.0 fps
13.8	163	Total			

Summary for Subcatchment WS-5:

Runoff = 6.90 cfs @ 12.20 hrs, Volume= 28,834 cf, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
* 0	98	Paved areas
3,600	98	Roofs
30,222	74	>75% Grass cover, Good, HSG C
0	80	>75% Grass cover, Good, HSG D
70,683	72	Woods/grass comb., Good, HSG C
0	79	Woods/grass comb., Good, HSG D
104,505		Weighted Average
100,905		96.56% Pervious Area
3,600		3.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	128	0.1113	0.16		Sheet Flow, Seg A to B Woods: Light underbrush n= 0.400 P2= 3.30"
0.8	171	0.0176	3.51	69.44	Channel Flow, Seg B to C Area= 19.8 sf Perim= 40.3' r= 0.49' n= 0.035 Earth, dense weeds
13.8	299	Total			

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Type III 24-hr 25-YR Rainfall=6.20"

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Summary for Subcatchment WS-51:

Runoff = 2.03 cfs @ 12.49 hrs, Volume= 12,454 cf, Depth= 3.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

	Area (sf)	CN	Description
*	4,097	98	Paved areas
	3,600	98	Roofs
*	23,917	74	Prop. >75% Grass cover, Good, HSG C
*	0	74	Ex. >75% Grass cover, Good, HSG C
	7,393	72	Woods/grass comb., Good, HSG C
	0	79	Woods/grass comb., Good, HSG D
	39,007		Weighted Average
	31,310		80.27% Pervious Area
	7,697		19.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	72	0.0223	0.12		Sheet Flow, Seg A to B Grass: Dense n= 0.240 P2= 3.30"
0.3	20	0.0212	1.04		Sheet Flow, Seg B to C Smooth surfaces n= 0.011 P2= 3.30"
7.3	48	0.0239	0.11		Sheet Flow, Seg C to D Grass: Dense n= 0.240 P2= 3.30"
0.7	333	0.0518	8.03	40.13	Trap/Vee/Rect Channel Flow, Seg D to E Bot.W=2.00' D=1.00' Z= 3.0 ' Top.W=8.00' n= 0.030 Earth, grassed & winding
0.1	62	0.2728	8.41		Shallow Concentrated Flow, Seg E to F Unpaved Kv= 16.1 fps
16.3	133	0.0677	0.14		Sheet Flow, Seg F to G Woods: Light underbrush n= 0.400 P2= 3.30"
35.0	668	Total			

Summary for Subcatchment WS-52:

Runoff = 0.42 cfs @ 12.08 hrs, Volume= 1,600 cf, Depth= 5.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

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Type III 24-hr 25-YR Rainfall=6.20"

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	Area (sf)	CN	Description
*	3,127	98	Paved areas
	0	98	Roofs
*	167	74	Prop. >75% Grass cover, Good, HSG C
*	0	74	Ex. >75% Grass cover, Good, HSG C
	0	72	Woods/grass comb., Good, HSG C
	0	79	Woods/grass comb., Good, HSG D
	3,294		Weighted Average
	167		5.07% Pervious Area
	3,127		94.93% Impervious Area

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

Summary for Subcatchment WS-53:

Runoff = 0.66 cfs @ 12.08 hrs, Volume= 2,536 cf, Depth= 5.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

	Area (sf)	CN	Description
*	4,950	98	Paved areas
	0	98	Roofs
*	274	74	Prop. >75% Grass cover, Good, HSG C
*	0	74	Ex. >75% Grass cover, Good, HSG C
	0	72	Woods/grass comb., Good, HSG C
	0	79	Woods/grass comb., Good, HSG D
	5,224		Weighted Average
	274		5.25% Pervious Area
	4,950		94.75% Impervious Area

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

Summary for Subcatchment WS-54:

Runoff = 0.69 cfs @ 12.08 hrs, Volume= 2,615 cf, Depth= 5.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

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Type III 24-hr 25-YR Rainfall=6.20"

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	Area (sf)	CN	Description
*	4,956	98	Paved areas
*	118	96	Gravel areas
	0	98	Roofs
*	346	74	Prop. >75% Grass cover, Good, HSG C
*	0	74	Ex. >75% Grass cover, Good, HSG C
	0	72	Woods/grass comb., Good, HSG C
	0	79	Woods/grass comb., Good, HSG D
	5,420		Weighted Average
	464		8.56% Pervious Area
	4,956		91.44% Impervious Area

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

Summary for Subcatchment WS-55:

Runoff = 0.69 cfs @ 12.08 hrs, Volume= 2,606 cf, Depth= 5.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

	Area (sf)	CN	Description
*	4,905	98	Paved areas
*	101	96	Gravel areas
	0	98	Roofs
*	434	74	Prop. >75% Grass cover, Good, HSG C
*	0	74	Ex. >75% Grass cover, Good, HSG C
	0	72	Woods/grass comb., Good, HSG C
	0	79	Woods/grass comb., Good, HSG D
	5,440		Weighted Average
	535		9.83% Pervious Area
	4,905		90.17% Impervious Area

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

Summary for Subcatchment WS-56:

Runoff = 1.70 cfs @ 12.17 hrs, Volume= 6,970 cf, Depth= 4.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
Type III 24-hr 25-YR Rainfall=6.20"

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Type III 24-hr 25-YR Rainfall=6.20"

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	Area (sf)	CN	Description
*	4,158	98	Paved areas
	2,700	98	Roofs
*	12,747	74	Prop. >75% Grass cover, Good, HSG C
*	0	74	Ex. >75% Grass cover, Good, HSG C
	0	72	Woods/grass comb., Good, HSG C
	0	79	Woods/grass comb., Good, HSG D
	19,605		Weighted Average
	12,747		65.02% Pervious Area
	6,858		34.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.5	86	0.0243	0.12		Sheet Flow, Seg A to B Grass: Dense n= 0.240 P2= 3.30"
0.4	23	0.0213	1.07		Sheet Flow, Seg B to C Smooth surfaces n= 0.011 P2= 3.30"
0.1	22	0.0083	4.09	25.65	Trap/Vee/Rect Channel Flow, Seg C to D Bot.W=0.00' D=0.50' Z= 50.0 & 0.2 ' Top.W=25.10' n= 0.013 Asphalt, smooth
12.0	131	Total			

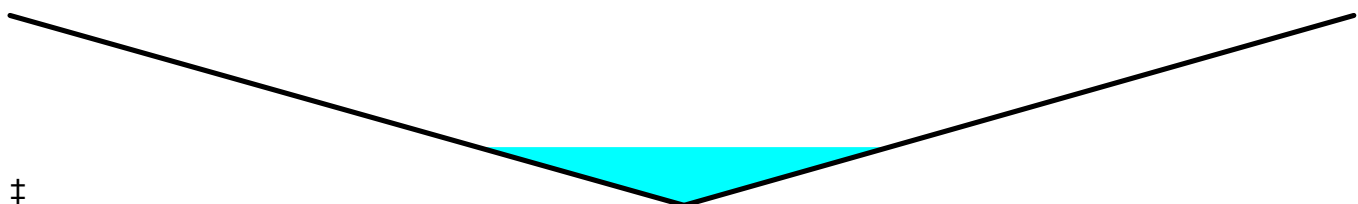
Summary for Reach R1:

Inflow Area = 494,458 sf, 12.56% Impervious, Inflow Depth = 3.94" for 25-YR event
 Inflow = 27.57 cfs @ 12.26 hrs, Volume= 162,547 cf
 Outflow = 27.86 cfs @ 12.27 hrs, Volume= 162,547 cf, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
 Max. Velocity= 3.86 fps, Min. Travel Time= 0.8 min
 Avg. Velocity= 1.28 fps, Avg. Travel Time= 2.5 min

Peak Storage= 1,409 cf @ 12.27 hrs
 Average Depth at Peak Storage= 0.61'
 Bank-Full Depth= 2.00' Flow Area= 76.3 sf, Capacity= 649.78 cfs

Custom cross-section, Length= 196.0' Slope= 0.0403 '/'
 Constant n= 0.035 Earth, dense weeds
 Inlet Invert= 75.70', Outlet Invert= 67.80'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	72.00	0.00
38.27	70.00	2.00
76.30	72.00	0.00

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Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
2.00	76.3	76.4	14,955	649.78

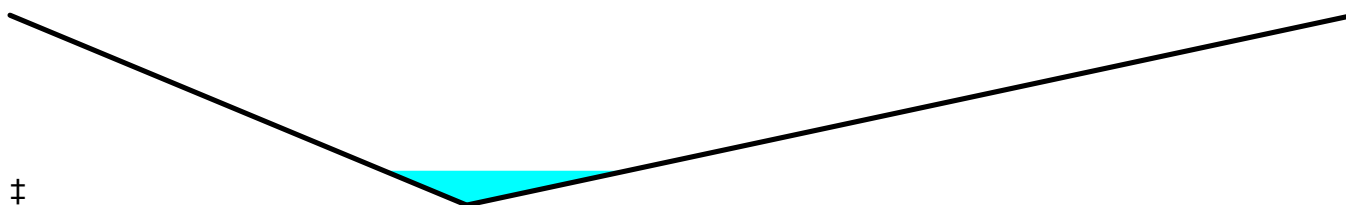
Summary for Reach R2:

Inflow Area = 8,518 sf, 94.82% Impervious, Inflow Depth = 5.83" for 25-YR event
 Inflow = 1.08 cfs @ 12.08 hrs, Volume= 4,136 cf
 Outflow = 0.89 cfs @ 12.16 hrs, Volume= 4,136 cf, Atten= 18%, Lag= 4.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
 Max. Velocity= 0.42 fps, Min. Travel Time= 6.7 min
 Avg. Velocity = 0.16 fps, Avg. Travel Time= 17.8 min

Peak Storage= 361 cf @ 12.16 hrs
 Average Depth at Peak Storage= 0.36'
 Bank-Full Depth= 2.00' Flow Area= 65.0 sf, Capacity= 84.89 cfs

Custom cross-section, Length= 169.2' Slope= 0.1241 '/'
 Constant n= 0.400 Sheet flow: Woods+light brush
 Inlet Invert= 75.70', Outlet Invert= 54.70'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	84.00	0.00
22.07	82.00	2.00
64.95	84.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
2.00	65.0	65.1	10,990	84.89

Summary for Pond CB1:

Inflow Area = 4,115 sf, 93.58% Impervious, Inflow Depth = 5.83" for 25-YR event
 Inflow = 0.53 cfs @ 12.08 hrs, Volume= 2,000 cf
 Outflow = 0.53 cfs @ 12.08 hrs, Volume= 2,000 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.53 cfs @ 12.08 hrs, Volume= 2,000 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs

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Peak Elev= 72.24' @ 12.14 hrs

Flood Elev= 75.02'

Device	Routing	Invert	Outlet Devices
#1	Primary	71.70'	12.0" Round SD-1 L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 71.70' / 71.55' S= 0.0068 ' / Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.28 cfs @ 12.08 hrs HW=72.18' TW=72.13' (Dynamic Tailwater)↑**1=SD-1** (Outlet Controls 0.28 cfs @ 1.08 fps)**Summary for Pond CB10:**

Inflow Area = 8,518 sf, 94.82% Impervious, Inflow Depth = 5.83" for 25-YR event
Inflow = 1.08 cfs @ 12.08 hrs, Volume= 4,136 cf
Outflow = 1.08 cfs @ 12.08 hrs, Volume= 4,136 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.08 cfs @ 12.08 hrs, Volume= 4,136 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs

Peak Elev= 103.12' @ 12.08 hrs

Flood Elev= 107.03'

Device	Routing	Invert	Outlet Devices
#1	Primary	102.50'	12.0" Round SD-11 L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 102.50' / 102.00' S= 0.0200 ' / Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.03 cfs @ 12.08 hrs HW=103.10' TW=76.04' (Dynamic Tailwater)↑**1=SD-11** (Inlet Controls 1.03 cfs @ 2.08 fps)**Summary for Pond CB11:**

Inflow Area = 3,294 sf, 94.93% Impervious, Inflow Depth = 5.83" for 25-YR event
Inflow = 0.42 cfs @ 12.08 hrs, Volume= 1,600 cf
Outflow = 0.42 cfs @ 12.08 hrs, Volume= 1,600 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.42 cfs @ 12.08 hrs, Volume= 1,600 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs

Peak Elev= 103.23' @ 12.14 hrs

Flood Elev= 107.03'

Device	Routing	Invert	Outlet Devices
#1	Primary	102.80'	12.0" Round SD-12 L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 102.80' / 102.60' S= 0.0091 ' / Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.27 cfs @ 12.08 hrs HW=103.19' TW=103.10' (Dynamic Tailwater)↑**1=SD-12** (Outlet Controls 0.27 cfs @ 1.39 fps)

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Summary for Pond CB12:

Inflow Area = 5,440 sf, 90.17% Impervious, Inflow Depth = 5.75" for 25-YR event
 Inflow = 0.69 cfs @ 12.08 hrs, Volume= 2,606 cf
 Outflow = 0.69 cfs @ 12.08 hrs, Volume= 2,606 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.69 cfs @ 12.08 hrs, Volume= 2,606 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
 Peak Elev= 117.20' @ 12.23 hrs
 Flood Elev= 120.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	116.00'	12.0" Round SD-14 L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 116.00' / 115.80' S= 0.0091 ' S= 0.0091 ' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.08 hrs HW=116.69' TW=116.98' (Dynamic Tailwater)
 ↑1=SD-14 (Controls 0.00 cfs)

Summary for Pond CB13:

Inflow Area = 30,465 sf, 54.88% Impervious, Inflow Depth = 4.80" for 25-YR event
 Inflow = 2.83 cfs @ 12.13 hrs, Volume= 12,191 cf
 Outflow = 2.83 cfs @ 12.13 hrs, Volume= 12,191 cf, Atten= 0%, Lag= 0.0 min
 Primary = 2.83 cfs @ 12.13 hrs, Volume= 12,191 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
 Peak Elev= 117.18' @ 12.14 hrs
 Flood Elev= 120.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	115.70'	12.0" Round SD-15 L= 175.4' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 115.70' / 114.70' S= 0.0057 ' S= 0.0057 ' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=2.76 cfs @ 12.13 hrs HW=117.12' TW=115.56' (Dynamic Tailwater)
 ↑1=SD-15 (Barrel Controls 2.76 cfs @ 3.52 fps)

Summary for Pond CB14:

Inflow Area = 96,360 sf, 18.05% Impervious, Inflow Depth = 3.81" for 25-YR event
 Inflow = 5.49 cfs @ 12.32 hrs, Volume= 30,572 cf
 Outflow = 5.49 cfs @ 12.32 hrs, Volume= 30,572 cf, Atten= 0%, Lag= 0.0 min
 Primary = 5.49 cfs @ 12.32 hrs, Volume= 30,572 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
 Peak Elev= 85.94' @ 12.32 hrs
 Flood Elev= 88.70'

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Device	Routing	Invert	Outlet Devices
#1	Primary	84.50'	18.0" Round SD-17 L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 84.50' / 84.30' S= 0.0091 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=5.48 cfs @ 12.32 hrs HW=85.94' TW=84.87' (Dynamic Tailwater)↑**1=SD-17** (Barrel Controls 5.48 cfs @ 4.03 fps)**Summary for Pond CB15:**

Inflow Area = 108,036 sf, 26.31% Impervious, Inflow Depth = 4.02" for 25-YR event
Inflow = 6.18 cfs @ 12.26 hrs, Volume= 36,232 cf
Outflow = 6.18 cfs @ 12.26 hrs, Volume= 36,232 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.18 cfs @ 12.26 hrs, Volume= 36,232 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs

Peak Elev= 84.90' @ 12.26 hrs

Flood Elev= 88.73'

Device	Routing	Invert	Outlet Devices
#1	Primary	83.30'	18.0" Round SD-18 L= 28.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 83.30' / 82.70' S= 0.0214 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=6.14 cfs @ 12.26 hrs HW=84.89' TW=83.42' (Dynamic Tailwater)↑**1=SD-18** (Inlet Controls 6.14 cfs @ 3.47 fps)**Summary for Pond CB16:**

Inflow Area = 10,159 sf, 94.40% Impervious, Inflow Depth = 5.82" for 25-YR event
Inflow = 1.29 cfs @ 12.08 hrs, Volume= 4,923 cf
Outflow = 1.29 cfs @ 12.08 hrs, Volume= 4,923 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.29 cfs @ 12.08 hrs, Volume= 4,923 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs

Peak Elev= 87.29' @ 12.08 hrs

Flood Elev= 91.59'

Device	Routing	Invert	Outlet Devices
#1	Primary	86.60'	12.0" Round SD-19 L= 94.1' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 86.60' / 83.55' S= 0.0324 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.23 cfs @ 12.08 hrs HW=87.27' TW=84.62' (Dynamic Tailwater)↑**1=SD-19** (Inlet Controls 1.23 cfs @ 2.20 fps)

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Type III 24-hr 25-YR Rainfall=6.20"

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Summary for Pond CB17:

Inflow Area = 7,917 sf, 94.34% Impervious, Inflow Depth = 5.81" for 25-YR event
 Inflow = 1.01 cfs @ 12.08 hrs, Volume= 3,836 cf
 Outflow = 1.01 cfs @ 12.08 hrs, Volume= 3,836 cf, Atten= 0%, Lag= 0.0 min
 Primary = 1.01 cfs @ 12.08 hrs, Volume= 3,836 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
 Peak Elev= 94.09' @ 12.08 hrs
 Flood Elev= 98.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	93.50'	12.0" Round SD-20 L= 136.2' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 93.50' / 86.70' S= 0.0499 ' S= 0.0499 ' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.95 cfs @ 12.08 hrs HW=94.08' TW=87.27' (Dynamic Tailwater)
 ↑1=SD-20 (Inlet Controls 0.95 cfs @ 2.04 fps)

Summary for Pond CB18:

Inflow Area = 3,690 sf, 94.17% Impervious, Inflow Depth = 5.81" for 25-YR event
 Inflow = 0.47 cfs @ 12.08 hrs, Volume= 1,786 cf
 Outflow = 0.47 cfs @ 12.08 hrs, Volume= 1,786 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.47 cfs @ 12.08 hrs, Volume= 1,786 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
 Peak Elev= 94.23' @ 12.13 hrs
 Flood Elev= 98.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	93.80'	12.0" Round SD-21 L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 93.80' / 93.60' S= 0.0091 ' S= 0.0091 ' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.33 cfs @ 12.08 hrs HW=94.20' TW=94.08' (Dynamic Tailwater)
 ↑1=SD-21 (Outlet Controls 0.33 cfs @ 1.64 fps)

Summary for Pond CB19:

Inflow Area = 49,508 sf, 32.16% Impervious, Inflow Depth = 4.19" for 25-YR event
 Inflow = 2.96 cfs @ 12.35 hrs, Volume= 17,297 cf
 Outflow = 2.96 cfs @ 12.35 hrs, Volume= 17,297 cf, Atten= 0%, Lag= 0.0 min
 Primary = 2.96 cfs @ 12.35 hrs, Volume= 17,297 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
 Peak Elev= 108.49' @ 12.16 hrs
 Flood Elev= 111.54'

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Type III 24-hr 25-YR Rainfall=6.20"

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Device	Routing	Invert	Outlet Devices
#1	Primary	106.70'	12.0" Round SD-23 L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 106.70' / 106.50' S= 0.0091 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=2.55 cfs @ 12.35 hrs HW=108.26' TW=107.54' (Dynamic Tailwater)↑**1=SD-23** (Inlet Controls 2.55 cfs @ 3.24 fps)**Summary for Pond CB2:**

Inflow Area = 8,252 sf, 93.60% Impervious, Inflow Depth = 5.83" for 25-YR event
Inflow = 1.05 cfs @ 12.08 hrs, Volume= 4,012 cf
Outflow = 1.05 cfs @ 12.08 hrs, Volume= 4,012 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.05 cfs @ 12.08 hrs, Volume= 4,012 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs

Peak Elev= 72.21' @ 12.33 hrs

Flood Elev= 75.02'

Device	Routing	Invert	Outlet Devices
#1	Primary	71.50'	12.0" Round SD-2 L= 8.9' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 71.50' / 71.40' S= 0.0112 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.00 cfs @ 12.08 hrs HW=72.13' TW=71.83' (Dynamic Tailwater)↑**1=SD-2** (Barrel Controls 1.00 cfs @ 2.75 fps)**Summary for Pond CB20:**

Inflow Area = 60,370 sf, 43.51% Impervious, Inflow Depth = 4.49" for 25-YR event
Inflow = 3.99 cfs @ 12.11 hrs, Volume= 22,580 cf
Outflow = 3.99 cfs @ 12.11 hrs, Volume= 22,580 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.99 cfs @ 12.11 hrs, Volume= 22,580 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs

Peak Elev= 107.74' @ 12.12 hrs

Flood Elev= 111.54'

Device	Routing	Invert	Outlet Devices
#1	Primary	106.40'	15.0" Round SD-24 L= 27.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 106.40' / 106.00' S= 0.0148 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=3.80 cfs @ 12.11 hrs HW=107.69' TW=102.56' (Dynamic Tailwater)↑**1=SD-24** (Inlet Controls 3.80 cfs @ 3.10 fps)

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Summary for Pond CB21:

Inflow Area = 6,689 sf, 95.29% Impervious, Inflow Depth = 5.84" for 25-YR event
 Inflow = 0.85 cfs @ 12.08 hrs, Volume= 3,255 cf
 Outflow = 0.85 cfs @ 12.08 hrs, Volume= 3,255 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.85 cfs @ 12.08 hrs, Volume= 3,255 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
 Peak Elev= 108.75' @ 12.08 hrs
 Flood Elev= 113.46'

Device	Routing	Invert	Outlet Devices
#1	Primary	108.25'	15.0" Round SD-25 L= 102.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 108.25' / 106.50' S= 0.0172 ' / ' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=0.81 cfs @ 12.08 hrs HW=108.73' TW=107.67' (Dynamic Tailwater)
 ↑1=SD-25 (Inlet Controls 0.81 cfs @ 1.86 fps)

Summary for Pond CB22:

Inflow Area = 4,181 sf, 95.77% Impervious, Inflow Depth = 5.85" for 25-YR event
 Inflow = 0.53 cfs @ 12.08 hrs, Volume= 2,039 cf
 Outflow = 0.53 cfs @ 12.08 hrs, Volume= 2,039 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.53 cfs @ 12.08 hrs, Volume= 2,039 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
 Peak Elev= 112.55' @ 12.08 hrs
 Flood Elev= 117.24'

Device	Routing	Invert	Outlet Devices
#1	Primary	112.13'	12.0" Round SD-26 L= 157.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 112.13' / 108.50' S= 0.0230 ' / ' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.51 cfs @ 12.08 hrs HW=112.53' TW=108.73' (Dynamic Tailwater)
 ↑1=SD-26 (Inlet Controls 0.51 cfs @ 1.71 fps)

Summary for Pond CB24:

Inflow Area = 494,458 sf, 12.56% Impervious, Inflow Depth = 3.94" for 25-YR event
 Inflow = 27.57 cfs @ 12.26 hrs, Volume= 162,547 cf
 Outflow = 27.57 cfs @ 12.26 hrs, Volume= 162,547 cf, Atten= 0%, Lag= 0.0 min
 Primary = 27.57 cfs @ 12.26 hrs, Volume= 162,547 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
 Peak Elev= 79.62' @ 12.32 hrs
 Flood Elev= 81.75'

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Device	Routing	Invert	Outlet Devices
#1	Primary	76.70'	30.0" Round SD-32 L= 59.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 76.70' / 75.60' S= 0.0186 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=24.19 cfs @ 12.26 hrs HW=79.43' TW=78.38' (Dynamic Tailwater)↑**1=SD-32** (Inlet Controls 24.19 cfs @ 4.93 fps)**Summary for Pond CB24-1: Surface Information CB-24**

Inflow Area = 494,458 sf, 12.56% Impervious, Inflow Depth = 2.31" for 25-YR event
 Inflow = 21.10 cfs @ 12.26 hrs, Volume= 95,109 cf
 Outflow = 21.06 cfs @ 12.26 hrs, Volume= 95,073 cf, Atten= 0%, Lag= 0.5 min
 Primary = 21.06 cfs @ 12.26 hrs, Volume= 95,073 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs

Peak Elev= 82.11' @ 12.26 hrs Surf.Area= 1,577 sf Storage= 666 cf

Flood Elev= 81.80' Surf.Area= 824 sf Storage= 338 cf

Plug-Flow detention time= 1.1 min calculated for 94,954 cf (100% of inflow)

Center-of-Mass det. time= 1.0 min (829.3 - 828.3)

Volume	Invert	Avail.Storage	Storage Description
#1	81.00'	8,500 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
81.00	20	0	0
82.00	1,025	523	523
83.00	6,025	3,525	4,048
83.65	7,675	4,453	8,500

Device	Routing	Invert	Outlet Devices
#1	Primary	81.25'	32.0" W x 6.0" H Vert. Orifice/Grate X 2.00 C= 0.600
#2	Primary	81.75'	60.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=20.55 cfs @ 12.26 hrs HW=82.10' TW=79.44' (Dynamic Tailwater)↑**1=Orifice/Grate** (Orifice Controls 9.88 cfs @ 3.70 fps)↑**2=Orifice/Grate** (Weir Controls 10.67 cfs @ 1.94 fps)**Summary for Pond CB25:**

Inflow Area = 36,820 sf, 0.00% Impervious, Inflow Depth = 3.87" for 25-YR event
 Inflow = 2.71 cfs @ 12.24 hrs, Volume= 11,872 cf
 Outflow = 2.71 cfs @ 12.24 hrs, Volume= 11,872 cf, Atten= 0%, Lag= 0.0 min
 Primary = 2.71 cfs @ 12.24 hrs, Volume= 11,872 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs

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Peak Elev= 77.43' @ 12.24 hrs

Flood Elev= 80.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	76.10'	12.0" Round SD-41 L= 49.7' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 76.10' / 75.80' S= 0.0060 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=2.71 cfs @ 12.24 hrs HW=77.42' TW=0.00' (Dynamic Tailwater)↑**1=SD-41** (Inlet Controls 2.71 cfs @ 3.44 fps)**Summary for Pond CB3:**

Inflow Area = 6,850 sf, 96.80% Impervious, Inflow Depth = 5.90" for 25-YR event
Inflow = 0.88 cfs @ 12.08 hrs, Volume= 3,367 cf
Outflow = 0.88 cfs @ 12.08 hrs, Volume= 3,367 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.88 cfs @ 12.08 hrs, Volume= 3,367 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs

Peak Elev= 76.67' @ 12.43 hrs

Flood Elev= 79.59'

Device	Routing	Invert	Outlet Devices
#1	Primary	75.75'	12.0" Round SD-4 L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 75.75' / 75.55' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.21 cfs @ 12.08 hrs HW=76.42' TW=76.40' (Dynamic Tailwater)↑**1=SD-4** (Outlet Controls 0.21 cfs @ 0.53 fps)**Summary for Pond CB4:**

Inflow Area = 12,993 sf, 95.32% Impervious, Inflow Depth = 5.87" for 25-YR event
Inflow = 1.67 cfs @ 12.08 hrs, Volume= 6,354 cf
Outflow = 1.67 cfs @ 12.08 hrs, Volume= 6,354 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.67 cfs @ 12.08 hrs, Volume= 6,354 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs

Peak Elev= 76.67' @ 12.34 hrs

Flood Elev= 79.59'

Device	Routing	Invert	Outlet Devices
#1	Primary	75.55'	12.0" Round SD-5 L= 27.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 75.55' / 75.40' S= 0.0054 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.47 cfs @ 12.08 hrs HW=76.40' TW=76.09' (Dynamic Tailwater)↑**1=SD-5** (Outlet Controls 1.47 cfs @ 2.77 fps)

Summary for Pond CB5:

Inflow Area = 128,787 sf, 36.96% Impervious, Inflow Depth = 4.31" for 25-YR event
 Inflow = 8.01 cfs @ 12.15 hrs, Volume= 46,281 cf
 Outflow = 8.01 cfs @ 12.15 hrs, Volume= 46,281 cf, Atten= 0%, Lag= 0.0 min
 Primary = 8.01 cfs @ 12.15 hrs, Volume= 46,281 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs

Peak Elev= 82.66' @ 12.42 hrs

Flood Elev= 84.07'

Device	Routing	Invert	Outlet Devices
#1	Primary	79.40'	18.0" Round SD-6 L= 24.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 79.40' / 79.25' S= 0.0063 ' S= 0.0063 ' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=6.53 cfs @ 12.15 hrs HW=82.28' TW=81.69' (Dynamic Tailwater)

↑1=SD-6 (Inlet Controls 6.53 cfs @ 3.69 fps)

Summary for Pond CB6:

Inflow Area = 6,503 sf, 95.36% Impervious, Inflow Depth = 5.84" for 25-YR event
 Inflow = 0.83 cfs @ 12.08 hrs, Volume= 3,165 cf
 Outflow = 0.83 cfs @ 12.08 hrs, Volume= 3,160 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.83 cfs @ 12.08 hrs, Volume= 3,160 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs

Peak Elev= 82.67' @ 12.51 hrs

Flood Elev= 84.07'

Device	Routing	Invert	Outlet Devices
#1	Primary	79.60'	12.0" Round SD-7 L= 22.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 79.60' / 79.40' S= 0.0091 ' S= 0.0091 ' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.08 hrs HW=81.37' TW=81.95' (Dynamic Tailwater)

↑1=SD-7 (Controls 0.00 cfs)

Summary for Pond CB8:

Inflow Area = 6,846 sf, 86.91% Impervious, Inflow Depth = 5.77" for 25-YR event
 Inflow = 0.87 cfs @ 12.08 hrs, Volume= 3,291 cf
 Outflow = 0.87 cfs @ 12.08 hrs, Volume= 3,291 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.87 cfs @ 12.08 hrs, Volume= 3,291 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs

Peak Elev= 86.74' @ 12.08 hrs

Flood Elev= 90.83'

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Device	Routing	Invert	Outlet Devices
#1	Primary	86.20'	12.0" Round SD-9 L= 54.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 86.20' / 82.95' S= 0.0602 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.82 cfs @ 12.08 hrs HW=86.73' TW=82.24' (Dynamic Tailwater)↑**1=SD-9** (Inlet Controls 0.82 cfs @ 1.95 fps)**Summary for Pond CB9:**

Inflow Area = 3,460 sf, 85.00% Impervious, Inflow Depth = 5.86" for 25-YR event
Inflow = 0.44 cfs @ 12.08 hrs, Volume= 1,691 cf
Outflow = 0.44 cfs @ 12.08 hrs, Volume= 1,691 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.44 cfs @ 12.08 hrs, Volume= 1,691 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs

Peak Elev= 86.90' @ 12.13 hrs

Flood Elev= 90.83'

Device	Routing	Invert	Outlet Devices
#1	Primary	86.50'	12.0" Round SD-10 L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 86.50' / 86.30' S= 0.0091 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.33 cfs @ 12.08 hrs HW=86.88' TW=86.73' (Dynamic Tailwater)↑**1=SD-10** (Outlet Controls 0.33 cfs @ 1.78 fps)**Summary for Pond DMH1:**

Inflow Area = 494,458 sf, 12.56% Impervious, Inflow Depth = 3.94" for 25-YR event
Inflow = 27.57 cfs @ 12.26 hrs, Volume= 162,547 cf
Outflow = 27.57 cfs @ 12.26 hrs, Volume= 162,547 cf, Atten= 0%, Lag= 0.0 min
Primary = 27.57 cfs @ 12.26 hrs, Volume= 162,547 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs

Peak Elev= 78.43' @ 12.26 hrs

Flood Elev= 85.22'

Device	Routing	Invert	Outlet Devices
#1	Primary	75.50'	30.0" Round SD-33 L= 144.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 75.50' / 74.80' S= 0.0049 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=27.08 cfs @ 12.26 hrs HW=78.38' TW=76.31' (Dynamic Tailwater)↑**1=SD-33** (Barrel Controls 27.08 cfs @ 6.01 fps)

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Summary for Pond DMH2:

Inflow Area = 24,061 sf, 41.03% Impervious, Inflow Depth = 4.77" for 25-YR event
 Inflow = 1.71 cfs @ 12.26 hrs, Volume= 9,556 cf
 Outflow = 1.71 cfs @ 12.26 hrs, Volume= 9,556 cf, Atten= 0%, Lag= 0.0 min
 Primary = 1.71 cfs @ 12.26 hrs, Volume= 9,556 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
 Peak Elev= 71.64' @ 12.26 hrs
 Flood Elev= 76.17'

Device	Routing	Invert	Outlet Devices
#1	Primary	70.75'	12.0" Round SD-38 L= 25.1' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 70.75' / 70.60' S= 0.0060 ' S= 0.0060 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.69 cfs @ 12.26 hrs HW=71.63' TW=0.00' (Dynamic Tailwater)
 ↑1=SD-38 (Barrel Controls 1.69 cfs @ 3.06 fps)

Summary for Pond DMH3:

Inflow Area = 12,993 sf, 95.32% Impervious, Inflow Depth = 5.87" for 25-YR event
 Inflow = 0.87 cfs @ 12.25 hrs, Volume= 6,353 cf
 Outflow = 0.87 cfs @ 12.25 hrs, Volume= 6,353 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.87 cfs @ 12.25 hrs, Volume= 6,353 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
 Peak Elev= 75.27' @ 12.25 hrs
 Flood Elev= 80.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	74.70'	12.0" Round SD-13 L= 32.2' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 74.70' / 74.50' S= 0.0062 ' S= 0.0062 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.87 cfs @ 12.25 hrs HW=75.27' TW=0.00' (Dynamic Tailwater)
 ↑1=SD-13 (Barrel Controls 0.87 cfs @ 2.69 fps)

Summary for Pond DMH4:

Inflow Area = 117,823 sf, 31.59% Impervious, Inflow Depth = 4.17" for 25-YR event
 Inflow = 6.94 cfs @ 12.19 hrs, Volume= 40,963 cf
 Outflow = 6.94 cfs @ 12.19 hrs, Volume= 40,963 cf, Atten= 0%, Lag= 0.0 min
 Primary = 6.94 cfs @ 12.19 hrs, Volume= 40,963 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
 Peak Elev= 83.53' @ 12.38 hrs
 Flood Elev= 87.48'

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Device	Routing	Invert	Outlet Devices
#1	Primary	80.20'	18.0" Round SD-8 L= 161.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 80.20' / 79.40' S= 0.0050 '/ Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=5.80 cfs @ 12.19 hrs HW=83.17' TW=82.36' (Dynamic Tailwater)

↑**1=SD-8** (Outlet Controls 5.80 cfs @ 3.28 fps)

Summary for Pond FB1: Filter Basin

Inflow Area = 189,411 sf, 31.21% Impervious, Inflow Depth = 4.32" for 25-YR event
 Inflow = 13.70 cfs @ 12.15 hrs, Volume= 68,214 cf
 Outflow = 7.66 cfs @ 12.55 hrs, Volume= 68,223 cf, Atten= 44%, Lag= 23.5 min
 Primary = 1.04 cfs @ 12.52 hrs, Volume= 749 cf
 Secondary = 7.14 cfs @ 12.87 hrs, Volume= 67,474 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
 Peak Elev= 82.21' @ 12.52 hrs Surf.Area= 10,124 sf Storage= 22,897 cf
 Flood Elev= 83.65' Surf.Area= 11,920 sf Storage= 38,702 cf

Plug-Flow detention time= 237.1 min calculated for 68,138 cf (100% of inflow)
 Center-of-Mass det. time= 238.5 min (1,035.8 - 797.4)

Volume	Invert	Avail.Storage	Storage Description		
#1	79.25'	38,702 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
79.25	4,823	517.3	0	0	4,823
80.00	6,690	600.6	4,298	4,298	12,245
82.00	9,868	399.0	16,455	20,754	28,313
83.65	11,920	410.8	17,948	38,702	29,325

Device	Routing	Invert	Outlet Devices
#1	Primary	82.10'	10.0' long x 15.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#2	Secondary	76.98'	12.0" Round SD-31 L= 22.4' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 76.98' / 76.80' S= 0.0080 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	77.08'	1.7" Vert. 1-3/4" DRILL HOLE C= 0.600
#4	Device 3	77.08'	4.0" Vert. 4" Underdrain C= 0.600
#5	Device 4	79.25'	2.410 in/hr Exfiltration over Surface area
#6	Device 2	80.75'	18.0" W x 9.0" H Vert. Notch 18" w x 9" h C= 0.600
#7	Device 2	81.50'	Neenah R4345 Beehive Grate Light Duty-req. structure Head (feet) 0.00 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.50 0.60 0.70 0.80 0.90 1.00 Disch. (cfs) 0.000 0.900 1.600 2.500 3.500 4.000 4.600 5.300 6.800 7.500 8.100 8.600 9.100 9.600

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Type III 24-hr 25-YR Rainfall=6.20"

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Primary OutFlow Max=1.00 cfs @ 12.52 hrs HW=82.21' TW=81.96' (Dynamic Tailwater)

1=Broad-Crested Rectangular Weir (Weir Controls 1.00 cfs @ 0.89 fps)

Secondary OutFlow Max=7.24 cfs @ 12.87 hrs HW=81.89' TW=78.22' (Dynamic Tailwater)

2=SD-31 (Inlet Controls 7.24 cfs @ 9.22 fps)

3=1-3/4" DRILL HOLE (Passes < 0.15 cfs potential flow)

4=4" Underdrain (Passes < 0.80 cfs potential flow)

5=Exfiltration (Passes < 0.54 cfs potential flow)

6=Notch 18" w x 9" h (Passes < 4.68 cfs potential flow)

7=Neenah R4345 Beehive Grate Light Duty-req. structure (Passes < 5.11 cfs potential flow)

Summary for Pond FB2: Filter Basin

Inflow Area = 165,223 sf, 25.96% Impervious, Inflow Depth = 4.02" for 25-YR event

Inflow = 11.86 cfs @ 12.16 hrs, Volume= 55,394 cf

Outflow = 10.17 cfs @ 12.26 hrs, Volume= 55,405 cf, Atten= 14%, Lag= 6.4 min

Primary = 2.62 cfs @ 12.26 hrs, Volume= 2,367 cf

Secondary = 7.55 cfs @ 12.26 hrs, Volume= 53,038 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs

Peak Elev= 102.71' @ 12.26 hrs Surf.Area= 5,727 sf Storage= 10,122 cf

Flood Elev= 104.50' Surf.Area= 8,091 sf Storage= 22,579 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 168.5 min (971.1 - 802.5)

Volume	Invert	Avail.Storage	Storage Description		
#1	100.50'	22,579 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
100.50	3,709	236.5	0	0	3,709
102.00	4,810	264.2	6,371	6,371	4,875
104.00	7,584	333.4	12,289	18,661	8,219
104.50	8,091	342.7	3,918	22,579	8,748

Device	Routing	Invert	Outlet Devices
#1	Primary	102.50'	10.0' long x 15.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#2	Secondary	98.23'	12.0" Round CULVERT L= 31.3' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 98.23' / 98.00' S= 0.0073 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	98.33'	1.4" Vert. 4" END CAP W/ 1-3/8" DRILL HOLE C= 0.600
#4	Device 3	98.33'	4.0" Vert. 4" Underdrain C= 0.600
#5	Device 4	100.50'	2.410 in/hr Exfiltration over Surface area
#6	Device 2	102.00'	Neenah R4345 Beehive Grate Light Duty-req. structure Head (feet) 0.00 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.50 0.60 0.70 0.80 0.90 1.00 Disch. (cfs) 0.000 0.900 1.600 2.500 3.500 4.000 4.600 5.300

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Type III 24-hr 25-YR Rainfall=6.20"

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6.800 7.500 8.100 8.600 9.100 9.600

Primary OutFlow Max=2.45 cfs @ 12.26 hrs HW=102.70' TW=0.00' (Dynamic Tailwater)

1=Broad-Crested Rectangular Weir (Weir Controls 2.45 cfs @ 1.21 fps)

Secondary OutFlow Max=7.54 cfs @ 12.26 hrs HW=102.70' TW=0.00' (Dynamic Tailwater)

2=CULVERT (Inlet Controls 7.54 cfs @ 9.60 fps)

3=4" END CAP W/ 1-3/8" DRILL HOLE (Passes < 0.11 cfs potential flow)

4=4" Underdrain (Passes < 0.86 cfs potential flow)

5=Exfiltration (Passes < 0.32 cfs potential flow)

6=Neenah R4345 Beehive Grate Light Duty-req. structure (Passes < 8.11 cfs potential flow)

Summary for Pond FB3: Filter Basin

Inflow Area = 61,654 sf, 31.50% Impervious, Inflow Depth = 4.18" for 25-YR event

Inflow = 5.38 cfs @ 12.13 hrs, Volume= 21,495 cf

Outflow = 3.30 cfs @ 12.35 hrs, Volume= 21,495 cf, Atten= 39%, Lag= 13.0 min

Primary = 0.38 cfs @ 12.34 hrs, Volume= 170 cf

Secondary = 2.92 cfs @ 12.35 hrs, Volume= 21,324 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs

Peak Elev= 116.01' @ 12.35 hrs Surf.Area= 3,772 sf Storage= 7,972 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 251.5 min (1,044.0 - 792.4)

Volume	Invert	Avail.Storage	Storage Description			
#1	113.00'	11,415 cf	Custom Stage Data (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
113.00	1,625	209.2	0.0	0	0	1,625
114.00	2,281	228.0	100.0	1,944	1,944	2,315
116.00	3,762	265.7	100.0	5,982	7,925	3,876
116.85	4,460	281.8	100.0	3,490	11,415	4,615

Device	Routing	Invert	Outlet Devices
#1	Primary	115.95'	10.0' long x 12.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#2	Secondary	110.73'	12.0" Round Culvert L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 110.73' / 110.00' S= 0.0292 ' /' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	110.83'	1.0" Vert. 4" END CAP W/ 1" DRILL HOLE C= 0.600
#4	Device 3	110.83'	4.0" Vert. 4" Underdrain C= 0.600
#5	Device 4	113.00'	2.410 in/hr Exfiltration over Surface area
#6	Device 2	114.50'	6.0" Vert. Orifice - 6" diam opening C= 0.600
#7	Device 2	115.85'	Neenah R4345 Beehive Grate Light Duty-req. structure Head (feet) 0.00 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.50 0.60 0.70 0.80 0.90 1.00 Disch. (cfs) 0.000 0.900 1.600 2.500 3.500 4.000 4.600 5.300

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Type III 24-hr 25-YR Rainfall=6.20"

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6.800 7.500 8.100 8.600 9.100 9.600

Primary OutFlow Max=0.34 cfs @ 12.34 hrs HW=116.01' TW=0.00' (Dynamic Tailwater)↑**1=Broad-Crested Rectangular Weir** (Weir Controls 0.34 cfs @ 0.61 fps)**Secondary OutFlow** Max=2.79 cfs @ 12.35 hrs HW=116.00' TW=0.00' (Dynamic Tailwater)↑**2=Culvert** (Passes 2.79 cfs of 6.52 cfs potential flow)↑**3=4" END CAP W/ 1" DRILL HOLE** (Orifice Controls 0.06 cfs @ 10.91 fps)↑**4=4" Underdrain** (Passes 0.06 cfs of 0.94 cfs potential flow)↑**5=Exfiltration** (Passes 0.06 cfs of 0.21 cfs potential flow)↑**6=Orifice - 6" diam opening** (Orifice Controls 1.06 cfs @ 5.39 fps)↑**7=Neenah R4345 Beehive Grate Light Duty-reg. structure**(Custom Controls 1.67 cfs)**Summary for Pond SD16:**

Inflow Area = 92,485 sf, 14.84% Impervious, Inflow Depth = 3.74" for 25-YR event

Inflow = 6.29 cfs @ 12.26 hrs, Volume= 28,830 cf

Outflow = 5.29 cfs @ 12.34 hrs, Volume= 28,691 cf, Atten= 16%, Lag= 5.2 min

Primary = 5.29 cfs @ 12.34 hrs, Volume= 28,691 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs

Peak Elev= 86.56' @ 12.37 hrs Surf.Area= 1,589 sf Storage= 1,482 cf

Flood Elev= 89.23' Surf.Area= 5,169 sf Storage= 11,306 cf

Plug-Flow detention time= 12.3 min calculated for 28,691 cf (100% of inflow)

Center-of-Mass det. time= 7.6 min (826.6 - 819.0)

Volume	Invert	Avail.Storage	Storage Description		
#1	84.00'	11,306 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
84.00	60	36.0	0	0	60
86.00	894	134.3	790	790	1,403
88.00	4,252	299.1	4,730	5,521	7,103
89.23	5,169	332.7	5,785	11,306	8,837

Device	Routing	Invert	Outlet Devices
#1	Primary	84.85'	18.0" Round SD-16 L= 16.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 84.85' / 84.60' S= 0.0153 '/ Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=5.24 cfs @ 12.34 hrs HW=86.54' TW=85.94' (Dynamic Tailwater)↑**1=SD-16** (Inlet Controls 5.24 cfs @ 2.96 fps)

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Type III 24-hr 25-YR Rainfall=6.20"

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Summary for Pond SD22:

Inflow Area = 42,110 sf, 21.25% Impervious, Inflow Depth = 3.91" for 25-YR event
 Inflow = 3.15 cfs @ 12.20 hrs, Volume= 13,714 cf
 Outflow = 2.61 cfs @ 12.35 hrs, Volume= 13,714 cf, Atten= 17%, Lag= 9.0 min
 Primary = 2.61 cfs @ 12.35 hrs, Volume= 13,714 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
 Peak Elev= 108.80' @ 12.36 hrs Surf.Area= 2,414 sf Storage= 1,452 cf

Plug-Flow detention time= 5.6 min calculated for 13,696 cf (100% of inflow)
 Center-of-Mass det. time= 5.6 min (813.9 - 808.2)

Volume	Invert	Avail.Storage	Storage Description
#1	107.50'	5,831 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
107.50	10	0	0
108.00	735	186	186
110.00	4,910	5,645	5,831

Device	Routing	Invert	Outlet Devices
#1	Primary	107.50'	12.0" Round SD-22 L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 107.50' / 106.50' S= 0.0400 ' S Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=2.17 cfs @ 12.35 hrs HW=108.79' TW=108.26' (Dynamic Tailwater)
 ↑1=SD-22 (Inlet Controls 2.17 cfs @ 2.76 fps)

Summary for Pond SD36:

Inflow Area = 15,809 sf, 13.59% Impervious, Inflow Depth = 4.21" for 25-YR event
 Inflow = 1.15 cfs @ 12.28 hrs, Volume= 5,545 cf
 Outflow = 1.15 cfs @ 12.28 hrs, Volume= 5,545 cf, Atten= 0%, Lag= 0.0 min
 Primary = 1.15 cfs @ 12.28 hrs, Volume= 5,545 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
 Peak Elev= 72.39' @ 12.28 hrs
 Flood Elev= 76.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	71.70'	12.0" Round SD-36 L= 37.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 71.70' / 71.50' S= 0.0053 ' S Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.12 cfs @ 12.28 hrs HW=72.38' TW=71.63' (Dynamic Tailwater)
 ↑1=SD-36 (Barrel Controls 1.12 cfs @ 2.78 fps)

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Type III 24-hr 25-YR Rainfall=6.20"

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Summary for Pond SD42: SD-42

Inflow Area = 149,296 sf, 5.97% Impervious, Inflow Depth = 4.00" for 25-YR event
 Inflow = 13.63 cfs @ 12.13 hrs, Volume= 49,715 cf
 Outflow = 13.63 cfs @ 12.13 hrs, Volume= 49,715 cf, Atten= 0%, Lag= 0.0 min
 Primary = 13.63 cfs @ 12.13 hrs, Volume= 49,715 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs

Peak Elev= 78.74' @ 12.13 hrs

Flood Elev= 81.18'

Device	Routing	Invert	Outlet Devices
#1	Primary	76.45'	24.0" Round SD-42 L= 52.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 76.45' / 76.00' S= 0.0086 ' S= 0.0086 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=13.13 cfs @ 12.13 hrs HW=78.66' TW=0.00' (Dynamic Tailwater)

↑1=SD-42 (Inlet Controls 13.13 cfs @ 4.18 fps)

Summary for Pond ST-1: STORMTECH-1

Inflow Area = 8,252 sf, 93.60% Impervious, Inflow Depth = 5.83" for 25-YR event
 Inflow = 1.05 cfs @ 12.08 hrs, Volume= 4,012 cf
 Outflow = 0.61 cfs @ 12.18 hrs, Volume= 4,011 cf, Atten= 42%, Lag= 5.9 min
 Primary = 0.61 cfs @ 12.18 hrs, Volume= 4,011 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs

Peak Elev= 72.17' @ 12.25 hrs Surf.Area= 630 sf Storage= 471 cf

Plug-Flow detention time= 16.6 min calculated for 4,011 cf (100% of inflow)

Center-of-Mass det. time= 15.1 min (762.7 - 747.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	70.85'	290 cf	12.00'W x 32.18'L x 2.33'H Field A 901 cf Overall - 177 cf Embedded = 724 cf x 40.0% Voids
#2A	71.35'	177 cf	ADS_StormTech SC-310 +Cap x 12 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 12 Chambers in 3 Rows
#3D	70.85'	107 cf	5.33'W x 25.06'L x 2.33'H Field D 312 cf Overall - 44 cf Embedded = 268 cf x 40.0% Voids
#4C	70.85'	80 cf	6.17'W x 17.94'L x 2.33'H Field C 258 cf Overall - 59 cf Embedded = 199 cf x 40.0% Voids
#5C	71.35'	59 cf	ADS_StormTech SC-310 +Cap x 4 Inside #4 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 4 Chambers in 2 Rows
#6D	71.35'	44 cf	ADS_StormTech SC-310 +Cap x 3 Inside #3 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap
		756 cf	Total Available Storage

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Type III 24-hr 25-YR Rainfall=6.20"

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Storage Group A created with Chamber Wizard
 Storage Group D created with Chamber Wizard
 Storage Group C created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	70.85'	6.0" Round Discharge to Existing Pipe L= 10.7' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 70.85' / 70.75' S= 0.0093 ' S= 0.0093 ' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf

Primary OutFlow Max=0.54 cfs @ 12.18 hrs HW=72.11' TW=71.59' (Dynamic Tailwater)

↑ **1=Discharge to Existing Pipe** (Inlet Controls 0.54 cfs @ 2.75 fps)

Summary for Pond ST-2: STORMTECH-2

Inflow Area = 12,993 sf, 95.32% Impervious, Inflow Depth = 5.87" for 25-YR event
 Inflow = 1.67 cfs @ 12.08 hrs, Volume= 6,354 cf
 Outflow = 0.87 cfs @ 12.25 hrs, Volume= 6,353 cf, Atten= 48%, Lag= 10.1 min
 Primary = 0.87 cfs @ 12.25 hrs, Volume= 6,353 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs
 Peak Elev= 76.62' @ 12.26 hrs Surf.Area= 941 sf Storage= 912 cf

Plug-Flow detention time= 18.1 min calculated for 6,353 cf (100% of inflow)
 Center-of-Mass det. time= 16.6 min (763.4 - 746.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	74.90'	443 cf	18.67'W x 32.18'L x 2.33'H Field A 1,402 cf Overall - 295 cf Embedded = 1,107 cf x 40.0% Voids
#2A	75.40'	295 cf	ADS_StormTech SC-310 +Cap x 20 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 20 Chambers in 5 Rows
#3B	74.90'	259 cf	8.67'W x 39.30'L x 2.33'H Field B 795 cf Overall - 147 cf Embedded = 647 cf x 40.0% Voids
#4B	75.40'	147 cf	ADS_StormTech SC-310 +Cap x 10 Inside #3 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 10 Chambers in 2 Rows
		1,144 cf	Total Available Storage

Storage Group A created with Chamber Wizard
 Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	74.90'	6.0" Round SD-27 L= 2.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 74.90' / 74.80' S= 0.0435 ' S= 0.0435 ' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf

Primary OutFlow Max=0.86 cfs @ 12.25 hrs HW=76.61' TW=75.27' (Dynamic Tailwater)

↑1=SD-27 (Inlet Controls 0.86 cfs @ 4.39 fps)

Summary for Link SP1:

Inflow Area = 43,166 sf, 42.15% Impervious, Inflow Depth = 4.80" for 25-YR event
 Inflow = 3.42 cfs @ 12.15 hrs, Volume= 17,251 cf
 Primary = 3.42 cfs @ 12.15 hrs, Volume= 17,251 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs

Summary for Link SP2:

Inflow Area = 210,584 sf, 10.11% Impervious, Inflow Depth = 4.08" for 25-YR event
 Inflow = 17.67 cfs @ 12.14 hrs, Volume= 71,681 cf
 Primary = 17.67 cfs @ 12.14 hrs, Volume= 71,681 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs

Summary for Link SP3:

Inflow Area = 609,945 sf, 12.77% Impervious, Inflow Depth = 3.88" for 25-YR event
 Inflow = 33.90 cfs @ 12.27 hrs, Volume= 197,166 cf
 Primary = 33.90 cfs @ 12.27 hrs, Volume= 197,166 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs

Summary for Link SP4:

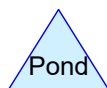
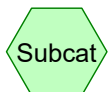
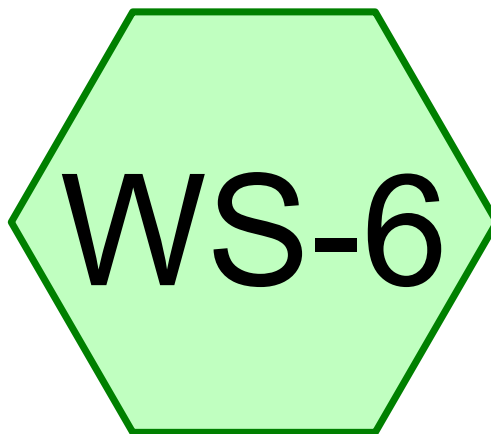
Inflow Area = 254,037 sf, 24.53% Impervious, Inflow Depth = 3.98" for 25-YR event
 Inflow = 14.38 cfs @ 12.31 hrs, Volume= 84,314 cf
 Primary = 14.38 cfs @ 12.31 hrs, Volume= 84,314 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs

Summary for Link SP5:

Inflow Area = 104,505 sf, 3.44% Impervious, Inflow Depth = 3.31" for 25-YR event
 Inflow = 6.90 cfs @ 12.20 hrs, Volume= 28,834 cf
 Primary = 6.90 cfs @ 12.20 hrs, Volume= 28,834 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.09 hrs



Routing Diagram for 24036 - PRE - SP6
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24036 - PRE - SP6*Type III 24-hr 2-YR Rainfall=3.30"*

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Time span=0.00-72.00 hrs, dt=0.10 hrs, 721 points

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

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment WS-6:

Runoff Area=618,044 sf 1.15% Impervious Runoff Depth=1.02"

Flow Length=890' Tc=14.8 min CN=WQ Runoff=11.78 cfs 52,575 cf

24036 - PRE - SP6*Type III 24-hr 10-YR Rainfall=4.90"*

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Time span=0.00-72.00 hrs, dt=0.10 hrs, 721 points

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

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment WS-6:

Runoff Area=618,044 sf 1.15% Impervious Runoff Depth=2.16"

Flow Length=890' Tc=14.8 min CN=WQ Runoff=26.41 cfs 111,104 cf

24036 - PRE - SP6*Type III 24-hr 25-YR Rainfall=6.20"*

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Time span=0.00-72.00 hrs, dt=0.10 hrs, 721 points

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

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment WS-6:

Runoff Area=618,044 sf 1.15% Impervious Runoff Depth=3.20"

Flow Length=890' Tc=14.8 min CN=WQ Runoff=39.60 cfs 164,708 cf

24036 - PRE - SP6

Type III 24-hr 25-YR Rainfall=6.20"

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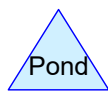
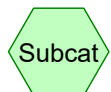
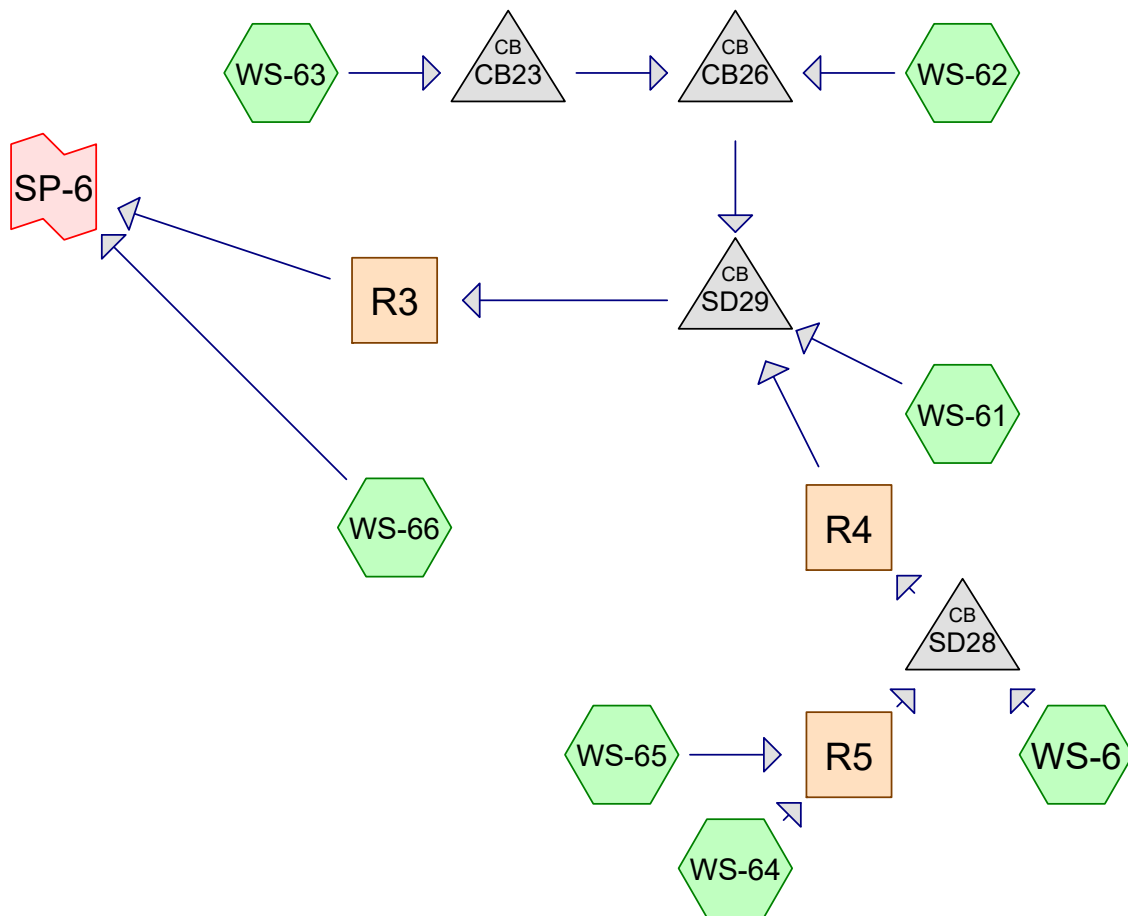
Summary for Subcatchment WS-6:

Runoff = 39.60 cfs @ 12.22 hrs, Volume= 164,708 cf, Depth= 3.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.10 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
* 199	98	Paved areas
6,921	98	Roofs
25,566	74	>75% Grass cover, Good, HSG C
0	80	>75% Grass cover, Good, HSG D
585,358	72	Woods/grass comb., Good, HSG C
0	79	Woods/grass comb., Good, HSG D
618,044		Weighted Average
610,924		98.85% Pervious Area
7,120		1.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	135	0.1307	0.18		Sheet Flow, Seg A to B Woods: Light underbrush n= 0.400 P2= 3.30"
0.7	305	0.0753	7.29	158.29	Channel Flow, Seg B to C Area= 21.7 sf Perim= 43.8' r= 0.50' n= 0.035
1.4	450	0.0393	5.28	151.12	Channel Flow, Seg C to D Area= 28.6 sf Perim= 57.5' r= 0.50' n= 0.035
14.8	890	Total			



Routing Diagram for 24036 - POST-SP6
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24036 - POST-SP6*Type III 24-hr 2-YR Rainfall=3.30"*

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Time span=0.00-72.00 hrs, dt=0.10 hrs, 721 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment WS-6: Runoff Area=311,865 sf 0.00% Impervious Runoff Depth=1.00"
 Flow Length=454' Tc=13.4 min CN=WQ Runoff=6.02 cfs 25,934 cf

Subcatchment WS-61: Runoff Area=145,087 sf 4.90% Impervious Runoff Depth=1.21"
 Flow Length=486' Tc=16.8 min CN=WQ Runoff=3.05 cfs 14,596 cf

Subcatchment WS-62: Runoff Area=6,431 sf 94.22% Impervious Runoff Depth=3.05"
 Tc=6.0 min CN=WQ Runoff=0.44 cfs 1,637 cf

Subcatchment WS-63: Runoff Area=6,423 sf 93.88% Impervious Runoff Depth=3.01"
 Tc=6.0 min CN=WQ Runoff=0.43 cfs 1,610 cf

Subcatchment WS-64: Runoff Area=14,658 sf 32.69% Impervious Runoff Depth=1.68"
 Flow Length=435' Tc=24.8 min CN=WQ Runoff=0.37 cfs 2,051 cf

Subcatchment WS-65: Runoff Area=56,723 sf 22.85% Impervious Runoff Depth=1.52"
 Flow Length=500' Tc=34.5 min CN=WQ Runoff=1.12 cfs 7,174 cf

Subcatchment WS-66: Runoff Area=73,850 sf 5.27% Impervious Runoff Depth=1.14"
 Flow Length=385' Tc=17.7 min CN=WQ Runoff=1.44 cfs 7,009 cf

Reach R3: Avg. Flow Depth=0.60' Max Vel=2.58 fps Inflow=10.37 cfs 53,002 cf
 n=0.035 L=126.4' S=0.0186 ' Capacity=1,537.13 cfs Outflow=10.18 cfs 53,002 cf

Reach R4: Avg. Flow Depth=0.46' Max Vel=3.24 fps Inflow=6.87 cfs 35,159 cf
 n=0.035 L=243.0' S=0.0428 ' Capacity=6,228.93 cfs Outflow=6.83 cfs 35,159 cf

Reach R5: Avg. Flow Depth=0.25' Max Vel=1.78 fps Inflow=1.45 cfs 9,225 cf
 n=0.035 L=294.8' S=0.0285 ' Capacity=380.34 cfs Outflow=1.44 cfs 9,225 cf

Pond CB23: Peak Elev=71.07' Inflow=0.43 cfs 1,610 cf
 12.0" Round Culvert n=0.022 L=23.0' S=0.0087 ' Outflow=0.43 cfs 1,610 cf

Pond CB26: Peak Elev=70.94' Inflow=0.87 cfs 3,247 cf
 12.0" Round Culvert n=0.022 L=36.7' S=0.0082 ' Outflow=0.87 cfs 3,247 cf

Pond SD28: Peak Elev=77.42' Inflow=6.87 cfs 35,159 cf
 60.0" x 30.0" Box Culvert w/ 6.0" inside fill n=0.022 L=51.3' S=0.0205 ' Outflow=6.87 cfs 35,159 cf

Pond SD29: Peak Elev=66.18' Inflow=10.37 cfs 53,002 cf
 60.0" x 30.0" Box Culvert w/ 6.0" inside fill n=0.022 L=58.6' S=0.0205 ' Outflow=10.37 cfs 53,002 cf

Link SP-6: Inflow=11.62 cfs 60,011 cf
 Primary=11.62 cfs 60,011 cf

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Type III 24-hr 10-YR Rainfall=4.90"

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Time span=0.00-72.00 hrs, dt=0.10 hrs, 721 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment WS-6: Runoff Area=311,865 sf 0.00% Impervious Runoff Depth=2.13"
 Flow Length=454' Tc=13.4 min CN=WQ Runoff=13.58 cfs 55,339 cf

Subcatchment WS-61: Runoff Area=145,087 sf 4.90% Impervious Runoff Depth=2.39"
 Flow Length=486' Tc=16.8 min CN=WQ Runoff=6.46 cfs 28,938 cf

Subcatchment WS-62: Runoff Area=6,431 sf 94.22% Impervious Runoff Depth=4.65"
 Tc=6.0 min CN=WQ Runoff=0.66 cfs 2,492 cf

Subcatchment WS-63: Runoff Area=6,423 sf 93.88% Impervious Runoff Depth=4.60"
 Tc=6.0 min CN=WQ Runoff=0.65 cfs 2,460 cf

Subcatchment WS-64: Runoff Area=14,658 sf 32.69% Impervious Runoff Depth=2.96"
 Flow Length=435' Tc=24.8 min CN=WQ Runoff=0.67 cfs 3,621 cf

Subcatchment WS-65: Runoff Area=56,723 sf 22.85% Impervious Runoff Depth=2.78"
 Flow Length=500' Tc=34.5 min CN=WQ Runoff=2.12 cfs 13,128 cf

Subcatchment WS-66: Runoff Area=73,850 sf 5.27% Impervious Runoff Depth=2.31"
 Flow Length=385' Tc=17.7 min CN=WQ Runoff=3.07 cfs 14,207 cf

Reach R3: Avg. Flow Depth=0.81' Max Vel=3.13 fps Inflow=22.34 cfs 105,978 cf
 n=0.035 L=126.4' S=0.0186 '/' Capacity=1,537.13 cfs Outflow=22.29 cfs 105,978 cf

Reach R4: Avg. Flow Depth=0.62' Max Vel=3.98 fps Inflow=15.21 cfs 72,088 cf
 n=0.035 L=243.0' S=0.0428 '/' Capacity=6,228.93 cfs Outflow=15.19 cfs 72,088 cf

Reach R5: Avg. Flow Depth=0.31' Max Vel=2.08 fps Inflow=2.72 cfs 16,749 cf
 n=0.035 L=294.8' S=0.0285 '/' Capacity=380.34 cfs Outflow=2.70 cfs 16,749 cf

Pond CB23: Peak Elev=71.22' Inflow=0.65 cfs 2,460 cf
 12.0" Round Culvert n=0.022 L=23.0' S=0.0087 '/' Outflow=0.65 cfs 2,460 cf

Pond CB26: Peak Elev=71.11' Inflow=1.31 cfs 4,952 cf
 12.0" Round Culvert n=0.022 L=36.7' S=0.0082 '/' Outflow=1.31 cfs 4,952 cf

Pond SD28: Peak Elev=77.88' Inflow=15.21 cfs 72,088 cf
 60.0" x 30.0" Box Culvert w/ 6.0" inside fill n=0.022 L=51.3' S=0.0205 '/' Outflow=15.21 cfs 72,088 cf

Pond SD29: Peak Elev=66.76' Inflow=22.34 cfs 105,978 cf
 60.0" x 30.0" Box Culvert w/ 6.0" inside fill n=0.022 L=58.6' S=0.0205 '/' Outflow=22.34 cfs 105,978 cf

Link SP-6: Inflow=25.39 cfs 120,185 cf
 Primary=25.39 cfs 120,185 cf

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Type III 24-hr 25-YR Rainfall=6.20"

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Time span=0.00-72.00 hrs, dt=0.10 hrs, 721 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment WS-6: Runoff Area=311,865 sf 0.00% Impervious Runoff Depth=3.17"
 Flow Length=454' Tc=13.4 min CN=WQ Runoff=20.40 cfs 82,317 cf

Subcatchment WS-61: Runoff Area=145,087 sf 4.90% Impervious Runoff Depth=3.46"
 Flow Length=486' Tc=16.8 min CN=WQ Runoff=9.45 cfs 41,869 cf

Subcatchment WS-62: Runoff Area=6,431 sf 94.22% Impervious Runoff Depth=5.95"
 Tc=6.0 min CN=WQ Runoff=0.84 cfs 3,188 cf

Subcatchment WS-63: Runoff Area=6,423 sf 93.88% Impervious Runoff Depth=5.89"
 Tc=6.0 min CN=WQ Runoff=0.83 cfs 3,152 cf

Subcatchment WS-64: Runoff Area=14,658 sf 32.69% Impervious Runoff Depth=4.09"
 Flow Length=435' Tc=24.8 min CN=WQ Runoff=0.93 cfs 4,994 cf

Subcatchment WS-65: Runoff Area=56,723 sf 22.85% Impervious Runoff Depth=3.89"
 Flow Length=500' Tc=34.5 min CN=WQ Runoff=2.99 cfs 18,381 cf

Subcatchment WS-66: Runoff Area=73,850 sf 5.27% Impervious Runoff Depth=3.37"
 Flow Length=385' Tc=17.7 min CN=WQ Runoff=4.53 cfs 20,732 cf

Reach R3: Avg. Flow Depth=0.94' Max Vel=3.46 fps Inflow=33.07 cfs 153,901 cf
 n=0.035 L=126.4' S=0.0186 '/' Capacity=1,537.13 cfs Outflow=33.01 cfs 153,901 cf

Reach R4: Avg. Flow Depth=0.72' Max Vel=4.40 fps Inflow=22.73 cfs 105,693 cf
 n=0.035 L=243.0' S=0.0428 '/' Capacity=6,228.93 cfs Outflow=22.73 cfs 105,693 cf

Reach R5: Avg. Flow Depth=0.36' Max Vel=2.26 fps Inflow=3.83 cfs 23,375 cf
 n=0.035 L=294.8' S=0.0285 '/' Capacity=380.34 cfs Outflow=3.81 cfs 23,375 cf

Pond CB23: Peak Elev=71.35' Inflow=0.83 cfs 3,152 cf
 12.0" Round Culvert n=0.022 L=23.0' S=0.0087 '/' Outflow=0.83 cfs 3,152 cf

Pond CB26: Peak Elev=71.25' Inflow=1.66 cfs 6,340 cf
 12.0" Round Culvert n=0.022 L=36.7' S=0.0082 '/' Outflow=1.66 cfs 6,340 cf

Pond SD28: Peak Elev=78.23' Inflow=22.73 cfs 105,693 cf
 60.0" x 30.0" Box Culvert w/ 6.0" inside fill n=0.022 L=51.3' S=0.0205 '/' Outflow=22.73 cfs 105,693 cf

Pond SD29: Peak Elev=67.20' Inflow=33.07 cfs 153,901 cf
 60.0" x 30.0" Box Culvert w/ 6.0" inside fill n=0.022 L=58.6' S=0.0205 '/' Outflow=33.07 cfs 153,901 cf

Link SP-6: Inflow=37.59 cfs 174,633 cf
 Primary=37.59 cfs 174,633 cf

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Type III 24-hr 25-YR Rainfall=6.20"

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Summary for Subcatchment WS-6:

Runoff = 20.40 cfs @ 12.20 hrs, Volume= 82,317 cf, Depth= 3.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.10 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
* 0	98	Paved areas
0	98	Roofs
15,654	74	>75% Grass cover, Good, HSG C
0	80	>75% Grass cover, Good, HSG D
296,211	72	Woods/grass comb., Good, HSG C
0	79	Woods/grass comb., Good, HSG D
311,865		Weighted Average
311,865		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	135	0.1307	0.18		Sheet Flow, Seg A to B Woods: Light underbrush n= 0.400 P2= 3.30"
0.7	319	0.0753	7.29	158.29	Channel Flow, Seg B to C Area= 21.7 sf Perim= 43.8' r= 0.50' n= 0.035
13.4	454	Total			

Summary for Subcatchment WS-61:

Runoff = 9.45 cfs @ 12.24 hrs, Volume= 41,869 cf, Depth= 3.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.10 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
* 194	98	Ex. paved areas
* 0	98	Prop. paved areas
* 6,532	96	Prop. gravel surfaces
* 6,921	98	Ex. roofs
* 0	98	Prop. roofs
* 23,580	74	Ex. >75% Grass cover, Good, HSG C
15,002	74	>75% Grass cover, Good, HSG C
92,858	72	Woods/grass comb., Good, HSG C
145,087		Weighted Average
137,972		95.10% Pervious Area
7,115		4.90% Impervious Area

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Type III 24-hr 25-YR Rainfall=6.20"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	150	0.1200	0.18		Sheet Flow, Seg A to B Woods: Light underbrush n= 0.400 P2= 3.30"
1.2	137	0.1458	1.91		Shallow Concentrated Flow, Seg B to C Woodland Kv= 5.0 fps
0.3	81	0.0821	4.61		Shallow Concentrated Flow, Seg C to D Unpaved Kv= 16.1 fps
1.0	118	0.1591	1.99		Shallow Concentrated Flow, Seg D to E Woodland Kv= 5.0 fps
16.8	486	Total			

Summary for Subcatchment WS-62:

Runoff = 0.84 cfs @ 12.09 hrs, Volume= 3,188 cf, Depth= 5.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.10 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
* 6,059	98	Paved areas
* 372	96	Gravel surface
0	98	Roofs
0	80	>75% Grass cover, Good, HSG D
0	79	Woods/grass comb., Good, HSG D
6,431		Weighted Average
372		5.78% Pervious Area
6,059		94.22% Impervious Area

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

Summary for Subcatchment WS-63:

Runoff = 0.83 cfs @ 12.09 hrs, Volume= 3,152 cf, Depth= 5.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.10 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
* 6,030	98	Paved areas
* 180	96	Gravel surface
0	98	Roofs
213	80	>75% Grass cover, Good, HSG D
0	79	Woods/grass comb., Good, HSG D
6,423		Weighted Average
393		6.12% Pervious Area
6,030		93.88% Impervious Area

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Type III 24-hr 25-YR Rainfall=6.20"

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

Summary for Subcatchment WS-64:

Runoff = 0.93 cfs @ 12.34 hrs, Volume= 4,994 cf, Depth= 4.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.10 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
*	0	98 Ex. paved areas
*	4,792	98 Prop. paved areas
*	0	96 Prop. gravel surfaces
*	0	98 Ex. roofs
*	0	98 Prop. roofs
*	0	74 Ex. >75% Grass cover, Good, HSG C
	1,079	74 >75% Grass cover, Good, HSG C
	8,787	72 Woods/grass comb., Good, HSG C
14,658		Weighted Average
9,866		67.31% Pervious Area
4,792		32.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	74	0.0672	0.12		Sheet Flow, Seg A to B Woods: Light underbrush n= 0.400 P2= 3.30"
1.7	12	0.0569	0.12		Sheet Flow, Seg B to C Grass: Dense n= 0.240 P2= 3.30"
0.2	9	0.0229	0.91		Sheet Flow, Seg C to D Smooth surfaces n= 0.011 P2= 3.30"
0.6	235	0.0195	6.27	39.32	Trap/Vee/Rect Channel Flow, Seg D to E Bot.W=0.00' D=0.50' Z= 50.0 & 0.2 ' Top.W=25.10' n= 0.013 Asphalt, smooth
0.1	17	0.0299	2.49	7.48	Trap/Vee/Rect Channel Flow, Seg E to F Bot.W=1.00' D=1.00' Z= 2.0 ' Top.W=5.00' n= 0.069 Riprap, 6-inch
12.0	88	0.0632	0.12		Sheet Flow, Seg F to G Woods: Light underbrush n= 0.400 P2= 3.30"
24.8	435	Total			

Summary for Subcatchment WS-65:

Runoff = 2.99 cfs @ 12.48 hrs, Volume= 18,381 cf, Depth= 3.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.10 hrs
Type III 24-hr 25-YR Rainfall=6.20"

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Type III 24-hr 25-YR Rainfall=6.20"

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Area (sf)	CN	Description
* 0	98	Ex. paved areas
* 8,459	98	Prop. paved areas
* 0	96	Prop. gravel surfaces
* 0	98	Ex. roofs
* 4,500	98	Prop. roofs
* 0	74	Ex. >75% Grass cover, Good, HSG C
26,135	74	>75% Grass cover, Good, HSG C
17,629	72	Woods/grass comb., Good, HSG C
56,723		Weighted Average
43,764		77.15% Pervious Area
12,959		22.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.6	150	0.0483	0.12		Sheet Flow, Seg A to B Woods: Light underbrush n= 0.400 P2= 3.30"
0.2	16	0.0645	1.27		Shallow Concentrated Flow, Seg B to C Woodland Kv= 5.0 fps
0.1	26	0.0645	4.09		Shallow Concentrated Flow, Seg C to D Unpaved Kv= 16.1 fps
0.5	160	0.0235	5.07	20.29	Trap/Vee/Rect Channel Flow, Seg D to E Bot.W=1.00' D=1.00' Z= 3.0 ' Top.W=7.00' n= 0.030 Earth, grassed & winding
0.2	54	0.0056	3.94	4.83	Pipe Channel, SD-12 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
12.9	94	0.0612	0.12		Sheet Flow, Seg F to G Woods: Light underbrush n= 0.400 P2= 3.30"
34.5	500	Total			

Summary for Subcatchment WS-66:

Runoff = 4.53 cfs @ 12.25 hrs, Volume= 20,732 cf, Depth= 3.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.10 hrs
Type III 24-hr 25-YR Rainfall=6.20"

Area (sf)	CN	Description
* 0	98	Ex. paved areas
* 1,192	98	Prop. paved areas
* 226	96	Prop. gravel surfaces
* 0	98	Ex. roofs
* 2,700	98	Prop. roofs
* 1,001	74	Ex. >75% Grass cover, Good, HSG C
19,920	74	>75% Grass cover, Good, HSG C
48,811	72	Woods/grass comb., Good, HSG C
73,850		Weighted Average
69,958		94.73% Pervious Area
3,892		5.27% Impervious Area

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Type III 24-hr 25-YR Rainfall=6.20"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.6	150	0.0967	0.16		Sheet Flow, Seg A to B
					Woods: Light underbrush n= 0.400 P2= 3.30"
2.1	235	0.1372	1.85		Shallow Concentrated Flow, Seg B to C
					Woodland Kv= 5.0 fps
17.7	385	Total			

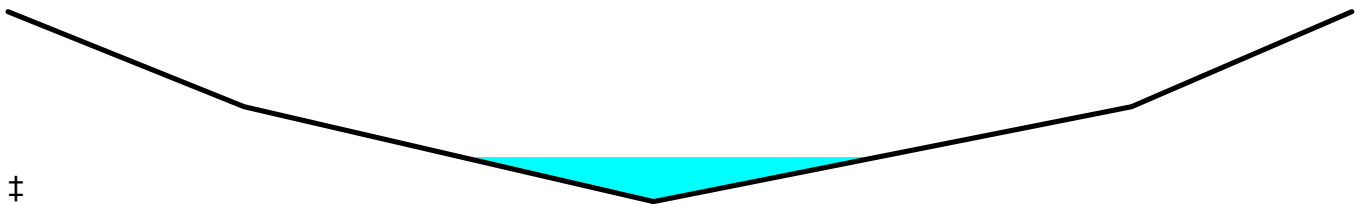
Summary for Reach R3:

Inflow Area = 541,187 sf, 6.83% Impervious, Inflow Depth = 3.41" for 25-YR event
 Inflow = 33.07 cfs @ 12.22 hrs, Volume= 153,901 cf
 Outflow = 33.01 cfs @ 12.23 hrs, Volume= 153,901 cf, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.10 hrs
 Max. Velocity= 3.46 fps, Min. Travel Time= 0.6 min
 Avg. Velocity = 1.26 fps, Avg. Travel Time= 1.7 min

Peak Storage= 1,200 cf @ 12.23 hrs
 Average Depth at Peak Storage= 0.94'
 Bank-Full Depth= 4.00' Flow Area= 152.3 sf, Capacity= 1,537.13 cfs

Custom cross-section, Length= 126.4' Slope= 0.0186 '/'
 Constant n= 0.035 Earth, dense weeds
 Inlet Invert= 64.10', Outlet Invert= 61.75'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	66.00	0.00
11.53	64.00	2.00
31.52	62.00	4.00
54.87	64.00	2.00
65.63	66.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
2.00	43.3	43.5	5,478	250.19
4.00	152.3	66.2	19,252	1,537.13

24036 - POST-SP6

Type III 24-hr 25-YR Rainfall=6.20"

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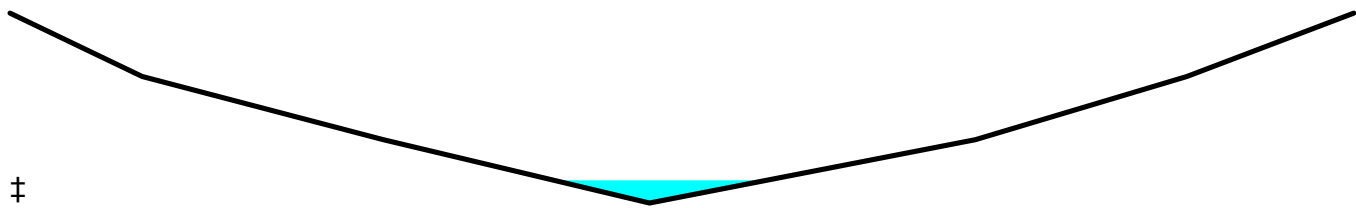
Summary for Reach R4:

Inflow Area = 383,246 sf, 4.63% Impervious, Inflow Depth = 3.31" for 25-YR event
 Inflow = 22.73 cfs @ 12.21 hrs, Volume= 105,693 cf
 Outflow = 22.73 cfs @ 12.22 hrs, Volume= 105,693 cf, Atten= 0%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.10 hrs
 Max. Velocity= 4.40 fps, Min. Travel Time= 0.9 min
 Avg. Velocity= 1.63 fps, Avg. Travel Time= 2.5 min

Peak Storage= 1,252 cf @ 12.23 hrs
 Average Depth at Peak Storage= 0.72'
 Bank-Full Depth= 6.00' Flow Area= 313.4 sf, Capacity= 6,228.93 cfs

Custom cross-section, Length= 243.0' Slope= 0.0428 '/' (102 Elevation Intervals)
 Constant n= 0.035 Earth, dense weeds
 Inlet Invert= 75.70', Outlet Invert= 65.30'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	82.00	0.00
8.97	80.00	2.00
25.33	78.00	4.00
43.40	76.00	6.00
65.52	78.00	4.00
79.87	80.00	2.00
91.20	82.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
2.00	40.2	40.4	9,766	351.84
4.00	151.3	71.4	36,761	2,192.77
6.00	313.4	92.1	76,151	6,228.93

Summary for Reach R5:

Inflow Area = 71,381 sf, 24.87% Impervious, Inflow Depth = 3.93" for 25-YR event
 Inflow = 3.83 cfs @ 12.44 hrs, Volume= 23,375 cf
 Outflow = 3.81 cfs @ 12.47 hrs, Volume= 23,375 cf, Atten= 1%, Lag= 1.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.10 hrs
 Max. Velocity= 2.26 fps, Min. Travel Time= 2.2 min
 Avg. Velocity= 0.93 fps, Avg. Travel Time= 5.3 min

24036 - POST-SP6

Type III 24-hr 25-YR Rainfall=6.20"

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Peak Storage= 496 cf @ 12.47 hrs

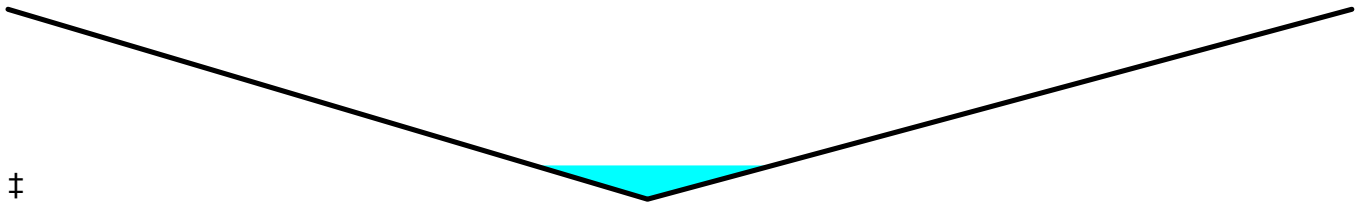
Average Depth at Peak Storage= 0.36'

Bank-Full Depth= 2.00' Flow Area= 53.2 sf, Capacity= 380.34 cfs

Custom cross-section, Length= 294.8' Slope= 0.0285 '/'

Constant n= 0.035 Earth, dense weeds

Inlet Invert= 85.15', Outlet Invert= 76.75'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	86.00	0.00
25.30	84.00	2.00
53.17	86.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
2.00	53.2	53.3	15,675	380.34

Summary for Pond CB23:

Inflow Area = 6,423 sf, 93.88% Impervious, Inflow Depth = 5.89" for 25-YR event
 Inflow = 0.83 cfs @ 12.09 hrs, Volume= 3,152 cf
 Outflow = 0.83 cfs @ 12.09 hrs, Volume= 3,152 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.83 cfs @ 12.09 hrs, Volume= 3,152 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.10 hrs

Peak Elev= 71.35' @ 12.16 hrs

Flood Elev= 74.62'

Device	Routing	Invert	Outlet Devices
#1	Primary	70.60'	12.0" Round SD-48 L= 23.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 70.60' / 70.40' S= 0.0087 '/' Cc= 0.900 n= 0.022 Earth, clean & straight, Flow Area= 0.79 sf

Primary OutFlow Max=0.35 cfs @ 12.09 hrs HW=71.29' TW=71.24' (Dynamic Tailwater)

↑1=SD-48 (Outlet Controls 0.35 cfs @ 0.87 fps)

Summary for Pond CB26:

Inflow Area = 12,854 sf, 94.05% Impervious, Inflow Depth = 5.92" for 25-YR event
 Inflow = 1.66 cfs @ 12.09 hrs, Volume= 6,340 cf
 Outflow = 1.66 cfs @ 12.09 hrs, Volume= 6,340 cf, Atten= 0%, Lag= 0.0 min
 Primary = 1.66 cfs @ 12.09 hrs, Volume= 6,340 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.10 hrs
 Peak Elev= 71.25' @ 12.09 hrs
 Flood Elev= 74.62'

Device	Routing	Invert	Outlet Devices
#1	Primary	70.30'	12.0" Round SD-49 L= 36.7' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 70.30' / 70.00' S= 0.0082 ' / ' Cc= 0.900 n= 0.022 Earth, clean & straight, Flow Area= 0.79 sf

Primary OutFlow Max=1.63 cfs @ 12.09 hrs HW=71.24' TW=66.83' (Dynamic Tailwater)
 ↑1=SD-49 (Barrel Controls 1.63 cfs @ 2.76 fps)

Summary for Pond SD28:

Inflow Area = 383,246 sf, 4.63% Impervious, Inflow Depth = 3.31" for 25-YR event
 Inflow = 22.73 cfs @ 12.21 hrs, Volume= 105,693 cf
 Outflow = 22.73 cfs @ 12.21 hrs, Volume= 105,693 cf, Atten= 0%, Lag= 0.0 min
 Primary = 22.73 cfs @ 12.21 hrs, Volume= 105,693 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.10 hrs
 Peak Elev= 78.23' @ 12.21 hrs
 Flood Elev= 86.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	76.75'	60.0" W x 30.0" H Box SD-28 w/ 6.0" inside fill L= 51.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 76.25' / 75.20' S= 0.0205 ' / ' Cc= 0.900 n= 0.022 Earth, clean & straight, Flow Area= 10.00 sf

Primary OutFlow Max=22.27 cfs @ 12.21 hrs HW=78.21' TW=76.41' (Dynamic Tailwater)
 ↑1=SD-28 (Inlet Controls 22.27 cfs @ 3.06 fps)

Summary for Pond SD29:

Inflow Area = 541,187 sf, 6.83% Impervious, Inflow Depth = 3.41" for 25-YR event
 Inflow = 33.07 cfs @ 12.22 hrs, Volume= 153,901 cf
 Outflow = 33.07 cfs @ 12.22 hrs, Volume= 153,901 cf, Atten= 0%, Lag= 0.0 min
 Primary = 33.07 cfs @ 12.22 hrs, Volume= 153,901 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.10 hrs
 Peak Elev= 67.20' @ 12.23 hrs
 Flood Elev= 74.75'

24036 - POST-SP6

Type III 24-hr 25-YR Rainfall=6.20"

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Device	Routing	Invert	Outlet Devices
#1	Primary	65.30'	60.0" W x 30.0" H Box SD-29 w/ 6.0" inside fill L= 58.6' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 64.80' / 63.60' S= 0.0205 '/' Cc= 0.900 n= 0.022 Earth, clean & straight, Flow Area= 10.00 sf

Primary OutFlow Max=32.05 cfs @ 12.22 hrs HW=67.16' TW=65.02' (Dynamic Tailwater)↑**1=SD-29** (Inlet Controls 32.05 cfs @ 3.45 fps)**Summary for Link SP-6:**

Inflow Area = 615,037 sf, 6.64% Impervious, Inflow Depth = 3.41" for 25-YR event
Inflow = 37.59 cfs @ 12.23 hrs, Volume= 174,633 cf
Primary = 37.59 cfs @ 12.23 hrs, Volume= 174,633 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.10 hrs

ATTACHMENT 8

INSPECTION, MAINTENANCE AND HOUSEKEEPING PLAN



INSPECTION, MAINTENANCE, AND HOUSEKEEPING PLAN
(Prepared by Jayson Haskell, PE #13002)

THE WOODLANDS RESERVE SUBDIVISION
BIDDEFORD, MAINE

Responsible Party

Owner: Bedard Homes LLC
Kevin Bedard
P.O. Box 481
Biddeford, ME 04005

Prepared by

Engineer: **DM Roma Consulting Engineers**
Designer: Jayson Haskell, PE #13002
DEP Erosion Control Certification #4769

The land owner is responsible for the maintenance of all stormwater management structures and related site components and the keeping of a maintenance log book with service records until such time that a homeowner's association is created. Records of all inspections and maintenance work performed must be kept on file with the owner and retained for a minimum of five years. The maintenance log will be made available to the City and Maine Department of Environmental Protection (MDEP) upon request. At a minimum, the maintenance of stormwater management systems will be performed on the prescribed schedule.

The procedures outlined in this plan are provided as a general overview of the anticipated practices to be utilized on this site. In some instances, additional measures may be required due to unexpected conditions. *The Maine Erosion and Sedimentation Control BMP and Stormwater Management for Maine: Best Management Practices* Manuals published by the MDEP should be referenced for additional information.

During Construction

- 1. Inspection and Corrective Action:** It is the contractor's responsibility to comply with the inspection and maintenance procedures outlined in this section. Inspection shall occur on all disturbed and impervious areas, erosion control measures, material storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site. These areas shall be inspected, including winter work, at least once a week as well as 24 hours before and after a storm event generating more than 0.5 inch of rainfall over a 24-hour period and prior to completing permanent stabilization measures. A person with

knowledge of erosion and stormwater control, including the standards and conditions in the permit, shall conduct the inspections.

2. **Maintenance:** Erosion controls shall be maintained in effective operating condition until areas are permanently stabilized. If best management practices (BMPs) need to be repaired, the repair work should be initiated upon discovery of the problem but no later than the end of the next workday. If BMPs need to be maintained or modified, additional BMPs are necessary, or other corrective action is needed, implementation must be completed within seven calendar days and prior to any rainfall event.
3. **Construction vehicles and equipment:** Construction vehicles and equipment shall not be driven or stored within any proposed stormwater treatment pond or buffer. To ensure the buffer's natural condition and filtration capacity is maintained, prohibiting vehicles and equipment from these areas will limit the risk of inhibiting the function of the buffer due to compaction or vegetation impact.
4. **Snow Storage:** The proposed stormwater treatment ponds and forested stormwater buffers shall not be utilized for snow storage. Snow storage areas shall be not located within the basin, but snow storage areas are ideally adjacent to BMPs in areas that will direct snow melt runoff into one of the BMPs onsite.
5. **Documentation:** A report summarizing the inspections and any corrective action taken must be maintained on site. The log must include the name(s) and qualifications of the person making the inspections; the date(s) of the inspections; and the major observations about the operation and maintenance of erosion and sedimentation controls, materials storage areas, and vehicle access points to the parcel. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and location(s) where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made accessible to Town staff, and a copy must be provided upon request. The owner shall retain a copy of the log for a period of at least three years from the completion of permanent stabilization.

Housekeeping

1. **Spill prevention:** Controls must be used to prevent pollutants from construction and waste materials on site to enter stormwater, which includes storage practices to minimize exposure of the materials to stormwater. The site contractor or operator must develop, and implement as necessary, appropriate spill prevention, containment, and response planning measures.

- 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. Any project proposing infiltration of stormwater must provide adequate pre-treatment of stormwater prior to discharge of stormwater to the infiltration area, or provide for treatment within the infiltration area, in order to prevent the accumulation of fines, reduction in infiltration rate, and consequent flooding and destabilization.
- 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, but other water additives may be considered as needed. A stabilized construction entrance (SCE) should be included to minimize tracking of mud and sediment. If off-site tracking occurs, public roads should be swept immediately and no less than once a week and prior to significant storm events. Operations during dry months, that experience fugitive dust problems, should wet down unpaved access roads once a week or more frequently as needed with a water additive to suppress fugitive sediment and dust.
- 4. Debris and other materials:** Minimize the exposure of construction debris, building and landscaping materials, trash, fertilizers, pesticides, herbicides, detergents, sanitary waste and other materials to precipitation and stormwater runoff. These materials must be prevented from becoming a pollutant source.
- 5. Excavation de-watering:** Excavation de-watering is the removal of water from trenches, foundations, coffer dams, ponds, and other areas within the construction area that retain water after excavation. In most cases the collected water is heavily silted and hinders correct and safe construction practices. The collected water removed from the ponded area, either through gravity or pumping, must be spread through natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment possible, like a cofferdam sedimentation basin. Avoid allowing the water to flow over disturbed areas of the site. Equivalent measures may be taken if approved by the Department.
- 6. Authorized Non-stormwater discharges:** It is the contractor's responsibility to identify and prevent contamination by non-stormwater discharges. Where allowed non-stormwater 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. Authorized non-stormwater discharges are:

 - (a) Discharges from firefighting activity;

- (b) Fire hydrant flushings;
- (c) Vehicle washwater if detergents are not used and washing is limited to the exterior of vehicles (engine, undercarriage and transmission washing is prohibited);
- (d) Dust control runoff in accordance with permit conditions and Appendix (C)(3);
- (e) Routine external building washdown, not including surface paint removal, that does not involve detergents;
- (f) Pavement washwater (where spills/leaks of toxic or hazardous materials have not occurred, unless all spilled material had been removed) if detergents are not used;
- (g) Uncontaminated air conditioning or compressor condensate;
- (h) Uncontaminated groundwater or spring water;
- (i) Foundation or footer drain-water where flows are not contaminated;
- (j) Uncontaminated excavation dewatering (see requirements in Appendix C(5));
- (k) Potable water sources including waterline flushings; and
- (l) Landscape irrigation.

7. Unauthorized non-stormwater discharges: Approval from the Town does not authorize a discharge that is mixed with a source of non-stormwater, other than those discharges in compliance with Section 6 above. Specifically, the Town's approval does not authorize discharges of the following:

- (a) Wastewater from the washout or cleanout of concrete, stucco, paint, form release oils, curing compounds or other construction materials;
- (b) Fuels, oils or other pollutants used in vehicle and equipment operation and maintenance;
- (c) Soaps, solvents, or detergents used in vehicle and equipment washing; and
- (d) Toxic or hazardous substances from a spill or other release.

Post construction

1. Inspection and Corrective Action: All measures must be maintained by the owner in effective operating condition. A Qualified Post-Construction Stormwater Inspector hired by the owner shall at least annually inspect the stormwater management facilities. This person should have knowledge of erosion and stormwater control, including the standards and conditions of the site's approvals. The following areas, facilities, and measures must be inspected, and identified deficiencies must be corrected. Areas, facilities, and measures other than those listed below may also require inspection on a specific site.

A. Vegetated Areas: Inspect vegetated areas, particularly slopes and embankments, early in the growing season or after heavy rains to identify active or potential erosion problems. Replant bare areas or areas with sparse growth. Where rill is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows.

- B. Ditches, Swales, and Open Channels:** Inspect ditches, swales, and other open channels in the spring, late fall, and after heavy rains to remove any obstructions to flow, remove accumulated sediments and debris, control vegetative growth that could obstruct flow, and repair any erosion of the ditch lining. Vegetated ditches must be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity. Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable. If the ditch has a riprap lining, replace riprap on areas where any underlying filter fabric or underdrain gravel is showing through the stone or where stones have dislodged. The channel must receive adequate routine maintenance to maintain capacity and prevent or correct any erosion of the channel's bottom or side slopes.
- C. Culverts:** Inspect culverts in the spring, late fall, and after heavy rains to remove any obstructions to flow; remove accumulated sediments and debris at the riprap inlet, at the riprap outlet, and within the conduit; and to repair any erosion damage at the culvert's inlet and outlet.
- D. Catch Basins and Outlet Control Structures:** Inspect and, if required, clean out catch basins at least once a year, preferably in early spring. Clean out must include the removal and legal disposal of any accumulated sediments and debris at the bottom of the basin, at any inlet grates, at any inflow channels to the basin, and at any pipes between basins. If the basin outlet is designed to trap floatable materials, then remove the floating debris and any floating oils (using oil-absorptive pads).
- E. Underdrained Filter Basin:** The filter basins are not intended to function as snow storage areas. Inspector to verify that winter plowing operations are not dumping or pushing snow into the basins. The basins shall also not be used for vehicle or heavy equipment storage. Basins should be inspected after several major storm events (0.5 inches rainfall over 24 hours) to determine drawdown time during the first year. The basins to be inspected every six months thereafter with at least one inspection after a major storm event.

The basins should drain dry within 24 to 48 hours following a one-inch storm. If ponding exceeds 48 hours, the top of the filter bed must be rototilled to reestablish the soil's filtration capacity. If water ponds on the surface of the bed for more than 72 hours, the top several inches of the filter shall be replaced with fresh material. Inspect for debris and sediment build up in the forebays and basins and remove as needed. Mowing of the basins can only occur semi-annually to a height of no less than 6 inches utilizing a hand-held string trimmer or push-mower. Any bare areas or erosion rills shall be repaired with new filter media or sandy loam then seeded and mulched. The basins should also be inspected annually for destabilization of side slopes, embankment settling and other signs of structural failure.

- F. Emergency Spillway:** Spillways should be inspected semi-annually and following major storm events for the first year and every six months thereafter to remove any obstructions to flow. Any woody vegetation growing through riprap lining must be removed. Replace riprap on areas where any underlying filter fabric is showing through the stone or where stones have been dislodged.
- G. Roofline Drip edges:** The drip edges should be inspected semi-annually and following major storm events for the first year and every six months thereafter. The reservoir crushed stone should drain within 24 to 48 hours following a major storm event. If ponding exceeds 48 hours, the stone reservoir course shall be removed and the filter bed be rototilled to reestablish the soil's filtration capacity. If water ponds in the reservoir course for more than 72 hours, the top several inches of the filter shall be replaced with fresh material. Inspect for debris and sediment build up at surface and remove as needed. The drip edges are part of the stormwater management plan and cannot be paved over or altered in anyway.
- H. Forested Stormwater Treatment Buffer:** Wooded buffers must remain fully wooded and have no disturbance to the duff layer. Stormwater runoff should enter the buffer as sheet flow, and any observed channelization of flows or erosion should be corrected immediately. Activities that may result in disturbance of the duff layer are prohibited in a buffer. See Appendix A for further restrictions.
- I. Level Lip Spreader:** Inspect spreader at least once a year and following major storm events. The level spreader pool should be inspected for sand and accumulation and debris that may reduce its capacity. Sediment build-up within the pool should be removed when it has accumulated to approximately 25% of design volume or capacity. Dispose of sediment appropriately. Remove debris such as leaf litter, branches and tree growth from the spreader. Vegetated spreaders should be mowed regularly to maintain storage capacity. Do not store snow within the area of the level spreader. The reconstruction of the level spreader may be necessary when sheet flow from the spreader channelizes in the buffer.
- J. Filterra Bioretention Systems:** Once the site is fully stabilized, and paving complete the system can be activated. Once activated, inspection should occur annually thereafter, and should be observed for debris, trash and sediment accumulation, as well as general health of the plants or trees installed within the media. Maintenance protocols from the manufacture shall be followed. A copy of Filterra's Owner's Manual has been included as Appendix B.
- K. StormTech Chambers:** The manufacture recommends that at a minimum that annual inspections are conducted. Initially the system shall be inspected every 6 months for the first year of operation. If inspection indicates that sediment has accumulated, a measurement to determine the depth of sediment shall be performed. When an average depth of 3 inches is exceeded then clean-out shall be

performed. A copy of Stormtech's Operation and Maintenance Manual has been included as Appendix C.

- L. Regular Maintenance:** Clear accumulations of winter sand along roadway once a year, preferably in the spring. Accumulations on pavement may be removed by pavement sweeping. Accumulations of sand along pavement shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader.

Documentation: Keep a log (report) summarizing inspections, maintenance, and any corrective actions taken. The log must include the date on which each inspection or maintenance task was performed, a description of the inspection findings or maintenance completed, and the name of the inspector or maintenance personnel performing the task. If a maintenance task requires the clean-out of any sediments or debris, indicate where the sediment and debris was disposed after removal. The log must be made accessible to Town staff upon request. The permittee shall retain a copy of the log for a period of at least five years from the completion of permanent stabilization. Attached is a sample log.

Re-certification

As a requirement of the MDEP, a certification of the following items must be submitted within three months of the expiration of each five-year interval from the date of issuance of the permit.

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

(b) Inspection and repair of stormwater control system. All aspects of the stormwater control system have been inspected for damage, wear, and malfunction, and appropriate steps have been taken to repair or replace the system, or portions of the system.

(c) Maintenance. The erosion and stormwater maintenance plan for the site is being implemented as written, or modifications to the plan have been submitted to and approved by the Department, and the maintenance log is being maintained.

Duration of Maintenance

Perform maintenance as described.

MAINTENANCE LOG

THE WOODLANDS RESERVE SUBDIVISION

BIDDEFORD, MAINE

(GENERAL INSPECTION FORM PAGE 1 OF 3)

The following stormwater management and erosion control items shall be inspected and maintained as prescribed in the Maintenance Plan with recommended frequencies as identified below. The owner is responsible for keeping this maintenance log on file for a minimum of five years and shall provide a copy to the Town and MDEP upon request. Inspections are to be performed by a qualified third-party inspector and all corrective actions shall be performed by personnel familiar with stormwater management systems and erosion controls.

Maintenance Item	Maintenance Event	Date Performed	Responsible Personnel	Comments
Vegetated Areas	Inspect slopes and embankments early in Spring.			
Drainage Swales	Inspect after major rainfall event			
	Inspect for erosion or slumping & repair			
	Mowed at least annually.			
	Inspect and remove obstructions as necessary.			
	Remove woody vegetation.			
	Replace riprap as necessary.			
Culverts	Inspect semiannually and after major rainfall.			
	Repair erosion at inlet or outlet of pipe.			
	Repair displaced riprap within inlet and outlet aprons.			
	Clean accumulated sediment in culverts when >20% full.			
Catch Basins	Inspect to ensure that structure is properly draining.			
	Remove accumulated sediment semiannually.			
	Inspect grates/inlets and remove debris as needed.			

MAINTENANCE LOG

THE WOODLANDS RESERVE SUBDIVISION
BIDDEFORD, MAINE
 (GENERAL INSPECTION FORM PAGE 2 OF 3)

The following stormwater management and erosion control items shall be inspected and maintained as prescribed in the Maintenance Plan with recommended frequencies as identified below. The owner is responsible for keeping this maintenance log on file for a minimum of five years and shall provide a copy to the Town and MDEP upon request. Inspections are to be performed by a qualified third-party inspector and all corrective actions shall be performed by personnel familiar with stormwater management systems and erosion controls.

Maintenance Item	Maintenance Event	Date Performed	Responsible Personnel	Comments
Roofline Dripedges	Check after each rainfall event to ensure that the stone reservoir drains within 24-48 hours.			
	Replace top several inches of filter if reservoir does not drain within 72 hours.			
	Inspect and remove sediment or debris build up on the surface of the stone			
	Inspect semi-annually for erosion or sediment accumulation and repair as necessary.			
Level Lip Spreaders	Inspect for sand accumulation and remove when pool volume is reduced by 25%.			
	Remove leaf litter, branches and tree growth from spreader.			
	Inspect to verify spreader is not utilized for snow storage.			
	Inspect downstream buffer to ensure no channelization after spreader.			
Regular Maintenance	Clear accumulation of winter sand in paved areas annually.			

MAINTENANCE LOG

THE WOODLANDS RESERVE SUBDIVISION
BIDDEFORD, MAINE
 (GENERAL INSPECTION FORM PAGE 3 OF 3)

The following stormwater management and erosion control items shall be inspected and maintained as prescribed in the Maintenance Plan with recommended frequencies as identified below. The owner is responsible for keeping this maintenance log on file for a minimum of five years and shall provide a copy to the Town and MDEP upon request. Inspections are to be performed by a qualified third-party inspector and all corrective actions shall be performed by personnel familiar with stormwater management systems and erosion controls.

Maintenance Item	Maintenance Event	Date Performed	Responsible Personnel	Comments
Filterra Units	Inspect annually and after major rain events to ensure that unit drains within 24-48 hours			
	Inspect annually for erosion or sediment accumulation and repair as needed.			
Stormtech SC-310 Chambers	Inspect annually for significant sediment accumulation			
	If >3" sediment accumulation, clean out system per manufacturer recommendations			

MAINTENANCE LOG

THE WOODLANDS RESERVE DEVELOPMENT BIDDEFORD, MAINE (UNDERDRAINED FILTER BASIN FB-_____)

Maintenance Item	Maintenance Event	Date Performed	Responsible Personnel	Comments
Underdrained Filter Basin	Check after each rainfall event to ensure that pond drains within 24-48 hours.			
	Replace top several inches of filter if pond does not drain within 72 hours.			
	Mow grass no more than twice a year to no less than 6 inches in height.			
	Inspect semi-annually for erosion or sediment accumulation and repair as necessary.			
	Inspector to verify basin not utilized for snow storage			
	Inspector to verify basin not utilized for vehicle or heavy equipment storage.			
Outlet Control Structure	Inspect to ensure that structure is properly draining.			
	Remove accumulated sediment semiannually.			
	Inspect grates/inlets and remove debris as needed.			
Emergency Spillway	Inspect and remove obstructions as necessary.			
	Remove woody vegetation.			
	Replace riprap as necessary.			

MAINTENANCE LOG

**THE WOODLANDS RESERVE DEVELOPMENT
BIDDEFORD, MAINE**
(STORMWATER BUFFER# _____ INSPECTION FORM)

Maintenance Item	Maintenance Event	Date Performed	Responsible Personnel	Comments
Forested Stormwater Treatment Buffer	Inspect for erosion and channelized flow semiannually.			
	Remove accumulated sediment semiannually.			
	Inspect vegetation cover and reestablish as needed.			
	See Appendix A – Stormwater Management Forested Buffer Declaration of Restrictions for further restrictions and maintenance requirements.			

APPENDIX A

DRAFT – NO-DISTURB FORESTED STORMWATER TREATMENT BUFFER DECLARATION OF RESTRICTIONS

THIS DECLARATION OF RESTRICTIONS is made this _____ day of _____, 20____, by

_____, _____
(name) (street address)

_____, _____ County, Maine, _____, (herein referred to as the
(city or town) (county) (zip code)

"Declarant"), pursuant to a permit received from the Maine Department of Environmental Protection under the Stormwater Management Law, to preserve a buffer area on a parcel of land near

_____, _____
(road name) (known feature and/or town)

WHEREAS, the Declarant holds title to certain real property situated in _____, Maine
(town)

described in a deed from _____ to _____, dated
(name) (name of Declarant)

_____, 20____, and recorded in Book ____ Page ____ at the _____ County
Registry of Deeds, herein referred to as the "property"; and

WHEREAS, Declarant desires to place certain restrictions, under the terms and conditions herein, over a portion of said real property (hereinafter referred to as the "Restricted Buffer") as shown on the enclosed Stormwater Infrastructure Map.

WHEREAS, pursuant to the Stormwater Management Law, 38 M.R.S. Section 420-D and Chapter 500 of rules promulgated by the Maine Board of Environmental Protection ("Stormwater Management Rules"), Declarant has agreed to impose certain restrictions on the Restricted Buffer Area as more particularly set forth herein and has agreed that these restrictions may be enforced by the Maine Department of Environmental Protection or any successor (hereinafter the "MDEP"),

NOW, THEREFORE, the Declarant hereby declares that the Restricted Buffer Area is and shall forever be held, transferred, sold, conveyed, occupied and maintained subject to the conditions and restrictions set forth herein. The Restrictions shall run with the Restricted Buffer Area and shall be binding on all parties having any right, title or interest in and to the Restricted Buffer Area, or any portion thereof, and their heirs, personal representatives, successors, and assigns. Any present or future owner or occupant of the Restricted Buffer Area or any portion thereof, by the acceptance of a deed of conveyance of all or part of the Covenant Area or an instrument conveying any interest therein, whether or not the deed or

instrument shall so express, shall be deemed to have accepted the Restricted Buffer Area subject to the Restrictions and shall agree to be bound by, to comply with and to be subject to each and every one of the Restrictions hereinafter set forth.

1. **Restrictions on Restricted Buffer Area.** Unless the owner of the Restricted Buffer Area, or any successors or assigns, obtains the prior written approval of the MDEP, the Restricted Buffer Area must remain undeveloped in perpetuity. To maintain the ability of the Restricted Buffer Area to filter and absorb stormwater, and to maintain compliance with the Stormwater Management Law and the permit issued thereunder to the Declarant, the use of the Restricted Buffer Area is hereinafter limited as follows.

- a. No soil, loam, peat, sand, gravel, concrete, rock or other mineral substance, refuse, trash, vehicle bodies or parts, rubbish, debris, junk waste, pollutants or other fill material will be placed, stored or dumped on the Restricted Buffer Area, nor shall the topography of the area be altered or manipulated in any way;
- b. No trees may be cut or sprayed with biocides except for the normal maintenance of dead, windblown or damaged trees and for pruning of tree branches below a height of 12 feet provided two thirds of the tree's canopy is maintained;
- c. No undergrowth, ground cover vegetation, leaf litter, organic duff layer or mineral soil may be disturbed except that one winding path, that is no wider than six feet and that does not provide a downhill channel for runoff, is allowed through the area;
- d. No building or other temporary or permanent structure may be constructed, placed or permitted to remain on the Restricted Buffer Area, except for a sign, utility pole or fence (whether constructed of wood, steel or other materials) and appurtenant equipment such as guys and guy anchors;
- e. No trucks, cars, dirt bikes, ATVs, bulldozers, backhoes, or other motorized vehicles or mechanical equipment may be permitted on the Restricted Buffer Area;
- f. Any level lip spreader directing flow to the Restricted Buffer Area must be regularly inspected and adequately maintained to preserve the function of the level spreader.

Any activity on or use of the Restricted Buffer Area inconsistent with the purpose of these Restrictions is prohibited. Any future alterations or changes in use of the Restricted Buffer Area must receive prior approval in writing from the MDEP. The MDEP may approve such alterations and changes in use if such alterations and uses do not impede the stormwater control and treatment capability of the Restricted Buffer Area or if adequate and appropriate alternative means of stormwater control and treatment are provided.

2. **Enforcement.** The MDEP may enforce any of the Restrictions set forth in Section 1 above.

3. **Binding Effect.** The restrictions set forth herein shall be binding on any present or future owner of the Restricted Buffer Area. If the Restricted Buffer Area is at any time owned by more than one owner, each owner shall be bound by the foregoing restrictions to the extent that any of the Restricted Buffer Area is included within such owner's property.
4. **Amendment.** Any provision contained in this Declaration may be amended or revoked only by the recording of a written instrument or instruments specifying the amendment or the revocation signed by the owner or owners of the Restricted Buffer Area and by the MDEP.
5. **Effective Provisions of Declaration.** Each provision of this Declaration, and any agreement, promise, covenant and undertaking to comply with each provision of this Declaration, shall be deemed a land use restriction running with the land as a burden and upon the title to the Restricted Buffer Area.
6. **Severability.** Invalidity or unenforceability of any provision of this Declaration in whole or in part shall not affect the validity or enforceability of any other provision or any valid and enforceable part of a provision of this Declaration.
7. **Governing Law.** This Declaration shall be governed by and interpreted in accordance with the laws of the State of Maine.

(NAME)

STATE OF MAINE, _____, County, dated _____, 20__ .
(County)

Personally appeared before me the above named _____, who swore to the truth of the foregoing to the best of (his/her) knowledge, information and belief and acknowledged the foregoing instrument to be (his/her) free act and deed.

Notary Public

APPENDIX B

FILTERRA OWNER'S MANUAL

Filterra Owner's Manual



filterra®
Bioretention Systems

CNTECH®
ENGINEERED SOLUTIONS

This Owner's Manual applies to all precast Filterra Configurations, including Filterra Bioscape Vault.

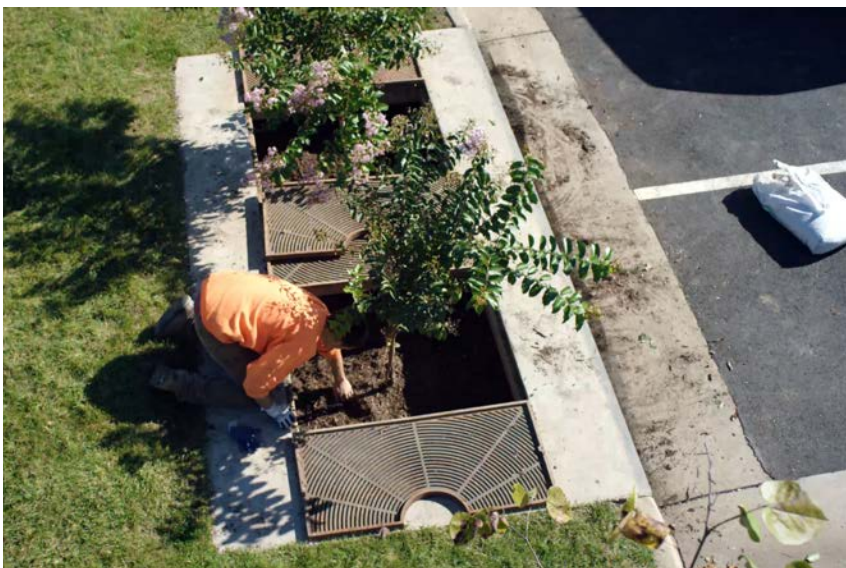




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Introduction

Thank you for your purchase of the Filterra® Bioretention System. Filterra is a specially engineered stormwater treatment system incorporating high performance biofiltration media to remove pollutants from stormwater runoff. The system's biota (vegetation and soil microorganisms) then further breakdown and absorb captured pollutants. All components of the system work together to provide a sustainable long-term solution for treating stormwater runoff.

The Filterra system has been delivered to you with protection in place to resist intrusion of construction related sediment which can contaminate the biofiltration media and result in inadequate system performance. These protection devices are intended as a best practice and cannot fully prevent contamination. It is the purchaser's responsibility to provide adequate measures to prevent construction related runoff from entering the Filterra system.

Included with your purchase is Activation of the Filterra system by the manufacturer as well as a 1-year warranty from delivery of the system and 1-year of routine maintenance (mulch replacement, debris removal, and pruning of vegetation) up to twice during the first year after activation.

Design and Installation

Each project presents different scopes for the use of Filterra systems. Information and help may be provided to the design engineer during the planning process. Correct Filterra box sizing (by rainfall region) is essential to predict pollutant removal rates for a given area. The engineer shall submit calculations for approval by the local jurisdiction. The contractor is responsible for the correct installation of Filterra units as shown in approved plans. A comprehensive installation manual is available at www.ContechES.com.

Activation Overview

Activation of the Filterra system is a procedure completed by the manufacturer to place the system into working condition. This involves the following items:

- Removal of construction runoff protection devices
- Planting of the system's vegetation
- Placement of pretreatment mulch layer using mulch certified for use in Filterra systems.

Activation MUST be provided by the manufacturer to ensure proper site conditions are met for Activation, proper installation of the vegetation, and use of pretreatment mulch certified for use in Filterra systems.



Minimum Requirements

The minimum requirements for Filterra Activation are as follows:

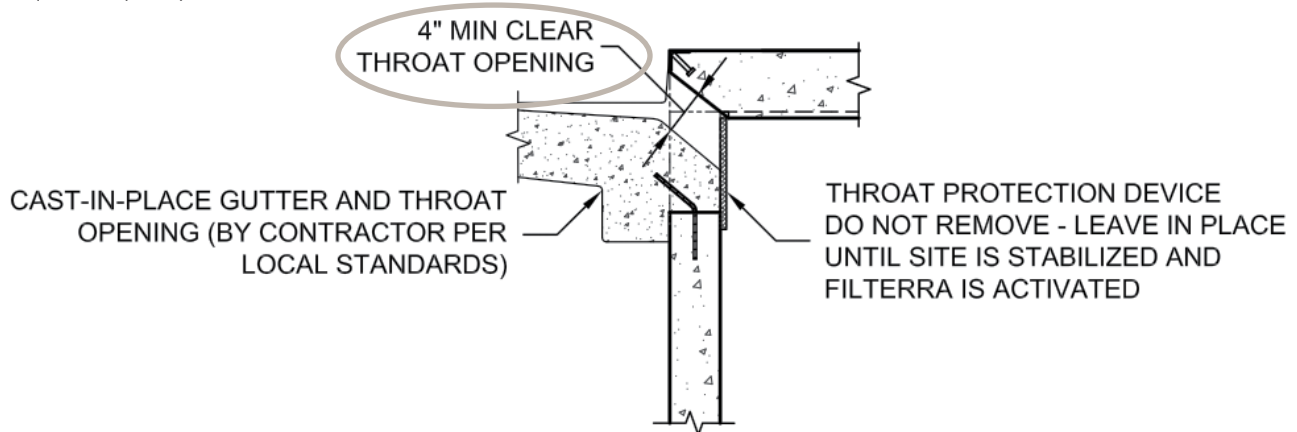
1. The site landscaping must be fully stabilized, i.e. full landscaping installed and some grass cover (not just straw and seed) is required to reduce sediment transport. Construction debris and materials should be removed from surrounding area.



2. Final paving must be completed. Final paving ensures that paving materials will not enter and contaminate the Filterra system during the paving process, and that the plant will receive runoff from the drainage area, assisting with plant survival for the Filterra system.



3. Where curb inlets are included as part of the Filterra system, Filterra throat opening should be at least 4" in order to ensure adequate capacity for inflow and debris.



An Activation Checklist is included on page 12 to ensure proper conditions are met for Contech to perform the Activation services. A charge of \$500.00 will be invoiced for each Activation visit requested by Customer where Contech determines that the site does not meet the conditions required for Activation.

Filterra Plant Selection Overview

A Plant List is available on the Contech website highlighting recommended plants for Filterra systems in your area. Keep in mind that plants are subject to availability due to seasonality and required minimum size for the Filterra system. Plants installed in the Filterra system are container plants (max 15 gallon) from nursery stock and will be immature in height and spread at Activation.

It is the responsibility of the owner to provide adequate irrigation when necessary to the plant of the Filterra system.

The “Planting Requirements for Filterra Systems” document is included as an appendix and discusses proper selection and care of the plants within Filterra systems.

Warranty Overview

Refer to the Contech Engineered Solutions LLC Stormwater Treatment System LIMITED WARRANTY for further information. The following conditions may void the Filterra system’s warranty and waive the manufacturer provided Activation and Maintenance services:

- Unauthorized activation or performance of any of the items listed in the activation overview
- Any tampering, modifications or damage to the Filterra system or runoff protection devices
- Removal of any Filterra system components
- Failure to prevent construction related runoff from entering the Filterra system
- Failure to properly store and protect any Filterra components (including media and underdrain stone) that may be shipped separately from the vault

Routine Maintenance Guidelines

With proper routine maintenance, the biofiltration media within the Filterra system should last as long as traditional bioretention media. Routine maintenance is included by the manufacturer on all Filterra systems for the first year after activation. This includes a maximum of 2 visits to remove debris, replace pretreatment mulch, and prune the vegetation. More information is provided in the Operations and Maintenance Guidelines. Some Filterra systems also contain pretreatment or outlet bays. Depending on site pollutant loading, these bays may require periodic removal of debris, however this is not included in the first year of maintenance, and would likely not be required within the first year of operation.

These services, as well as routine maintenance outside of the included first year, can be provided by certified maintenance providers listed on the Contech website. Training can also be provided to other stormwater maintenance or landscape providers.



Why Maintain?

All stormwater treatment systems require maintenance for effective operation. This necessity is often incorporated in your property's permitting process as a legally binding BMP maintenance agreement. Other reasons to maintain are:

- Avoiding legal challenges from your jurisdiction's maintenance enforcement program.
- Prolonging the expected lifespan of your Filterra media.
- Avoiding more costly media replacement.
- Helping reduce pollutant loads leaving your property.

Simple maintenance of the Filterra is required to continue effective pollutant removal from stormwater runoff before discharge into downstream waters. This procedure will also extend the longevity of the living biofilter system. The unit will recycle and accumulate pollutants within the biomass, but is also subjected to other materials entering the inlet. This may include trash, silt and leaves etc. which will be contained above the mulch layer. Too much silt may inhibit the Filterra's flow rate, which is the reason for site stabilization before activation. Regular replacement of the mulch stops accumulation of such sediment.

When to Maintain?

Contech includes a 1-year maintenance plan with each system purchase. Annual included maintenance consists of a maximum of two (2) scheduled visits. Additional maintenance may be necessary depending on sediment and trash loading (by Owner or at additional cost). The start of the maintenance plan begins when the system is activated.

Maintenance visits are typically scheduled seasonally; the spring visit aims to clean up after winter loads including salts and sands while the fall visit helps the system by removing excessive leaf litter.

It has been found that in regions which receive between 30-50 inches of annual rainfall, (2) two visits are generally required; regions with less rainfall often only require (1) one visit per annum. Varying land uses can affect maintenance frequency; e.g. some fast food restaurants require more frequent trash removal. Contributing drainage areas which are subject to new development wherein the recommended erosion and sediment control measures have not been implemented may require additional maintenance visits.

Some sites may be subjected to extreme sediment or trash loads, requiring more frequent maintenance visits. This is the reason for detailed notes of maintenance actions per unit, helping the Supplier and Owner predict future maintenance frequencies, reflecting individual site conditions.

Owners must promptly notify the maintenance provider of any damage to the plant(s), which constitute(s) an integral part of the bioretention technology. Owners should also advise other landscape or maintenance contractors to leave all maintenance to the Supplier (i.e. no pruning or fertilizing) during the first year.



Exclusion of Services

Clean up due to major contamination such as oils, chemicals, toxic spills, etc. will result in additional costs and are not covered under the Supplier maintenance contract. Should a major contamination event occur the Owner must block off the outlet pipe of the Filterra (where the cleaned runoff drains to, such as drop inlet) and block off the throat of the Filterra. The Supplier should be informed immediately.

Maintenance Visit Summary

Each maintenance visit consists of the following simple tasks (detailed instructions below).

1. Inspection of Filterra and surrounding area
2. Removal of tree grate (where applicable) and erosion control stones
3. Removal of debris, trash and mulch
4. Mulch replacement
5. Plant health evaluation and pruning or replacement as necessary
6. Clean area around Filterra
7. Complete paperwork

Maintenance Tools, Safety Equipment and Supplies

Ideal tools include: camera, bucket, shovel, broom, pruners, hoe/rake, and tape measure. Appropriate Personal Protective Equipment (PPE) should be used in accordance with local or company procedures. This may include impervious gloves where the type of trash is unknown, high visibility clothing and barricades when working in close proximity to traffic and also safety hats and shoes. A T-Bar or crowbar should be used for moving the tree grates, where applicable (up to 170 lbs each). If tree grate opening expansion is necessary, safety glasses/goggles and a 3lb or greater mini sledgehammer are required. Most visits require minor trash removal and a full replacement of mulch. See below for actual number of bagged mulch that is required in each media bay size. Mulch should be a double shredded, hardwood variety. Some visits may require additional Filterra engineered soil media available from the Supplier.

Media Bay Length	Media Bay Width	Filter Surface Area (ft ²)	Volume at 3" (ft ³)	# of 2 ft ³ Mulch Bags
4	4	16	4	2
6	4	24	6	3
8	4	32	8	4
6	6	36	9	5
8	6	48	12	6
10	6	60	15	8
12	6	72	18	9
13	7	91	23	12

Other sizes not listed - 1 bag per 8 ft² of media.

Maintenance Visit Procedure

Keep sufficient documentation of maintenance actions to predict location specific maintenance frequencies and needs. An example Maintenance Report is included in this manual.



1. Inspection of Filterra and surrounding area

- Record individual unit before maintenance with photograph (numbered). Record on Maintenance Report (see example in this document) the following:

Record on Maintenance Report the following:

Standing Water	yes	no
Damage to Box Structure	yes	no
Damage to Grate (if applicable)	yes	no
Is Bypass Clear	yes	no

If yes answered to any of these observations, record with close-up photograph (numbered).



2. Removal of tree grate (if applicable) and erosion control stones

- Remove cast iron grates for access into Filterra box (if applicable).
- Dig out silt (if any) and mulch and remove trash & foreign items.

3. Removal of debris, trash and mulch

Record on Maintenance Report the following:

Silt/Clay	yes	no
Cups/ Bags	yes	no
Leaves	yes	no
Buckets Removed		_____

- After removal of mulch and debris, measure distance from the top of the Filterra engineered media soil to the top of the top slab. Compare the measured distance to the distance shown on the approved Contract Drawings for the system. Add Filterra media (not top soil or other) to bring media up as needed to distance indicated on drawings.

Record on Maintenance Report the following:

Distance to Top of Top Slab (inches)	_____
Inches of Media Added	_____





4. Mulch replacement

- Add double shredded mulch evenly across the entire unit to a depth of 3".
- Refer to Filterra Mulch Specifications for information on acceptable sources.
- Ensure correct repositioning of erosion control stones by the Filterra inlet to allow for entry of trash during a storm event.
- Replace Filterra grates (if applicable) correctly using appropriate lifting or moving tools, taking care not to damage the plant.
- Where applicable, if 6" tree grate opening is too close to plant trunk, the grate opening may be expanded to 12" using a mini sledgehammer. Refer to instructions in Appendix 3.



5. Plant health evaluation and pruning or replacement as necessary

- Examine the plant's health and replace if necessary.
- Prune as necessary to encourage growth in the correct directions

Record on Maintenance Report the following:

Height above top of Filterra Unit	_____ (ft)
Width at Widest Point	_____ (ft)
Health	healthy unhealthy
Damage to Plant	yes no
Plant Replaced	yes no



6. Clean area around Filterra

- Clean area around unit and remove all refuse to be disposed of appropriately.



7. Complete paperwork

- Deliver Maintenance Report and photographs to appropriate location (normally Contech during maintenance contract period).
- Some jurisdictions may require submission of maintenance reports in accordance with approvals. It is the responsibility of the Owner to comply with local regulations.

Maintenance Checklist

Drainage System Failure	Problem	Conditions to Check	Condition that Should Exist	Actions
Inlet	Excessive sediment or trash accumulation.	Accumulated sediments or trash impair free flow of water into Filterra.	Inlet should be free of obstructions allowing free distributed flow of water into Filterra.	Sediments and/or trash should be removed.
Mulch Cover	Trash and floatable debris accumulation.	Excessive trash and/or debris accumulation.	Minimal trash or other debris on mulch cover.	Trash and debris should be removed and mulch cover raked level. Ensure bark nugget mulch is not used.
Mulch Cover	"Ponding" of water on mulch cover.	"Ponding" in unit could be indicative of clogging due to excessive fine sediment accumulation or spill of petroleum oils.	Stormwater should drain freely and evenly through mulch cover.	Recommend contact manufacturer and replace mulch as a minimum.
Vegetation	Plants not growing or in poor condition.	Soil/mulch too wet, evidence of spill. Incorrect plant selection. Pest infestation. Vandalism to plants.	Plants should be healthy and pest free.	Contact manufacturer for advice.
Vegetation	Plant growth excessive.	Plants should be appropriate to the species and location of Filterra.		Trim/prune plants in accordance with typical landscaping and safety needs.
Structure	Structure has visible cracks.	Cracks wider than 1/2 inch or evidence of soil particles entering the structure through the cracks.		Vault should be repaired.

Maintenance is ideally to be performed twice annually.

Filterra Inspection & Maintenance Log

Filterra System Size/Model: _____ Location: _____

Date	Mulch & Debris Removed	Depth of Mulch Added	Mulch Brand	Height of Vegetation Above Top of Vault	Vegetation Species	Issues with System	Comments
1/1/17	5 – 5 gal Buckets	3"	Lowe's Premium Brown Mulch	4'	Galaxy Magnolia	- Standing water in downstream structure	- Removed blockage in downstream structure

Appendix 1 – Filtterra® Activation Checklist



Project Name: _____ Company: _____

Site Contact Name: _____ Site Contact Phone/Email: _____

Site Owner/End User Name: _____ Site Owner/End User Phone/Email: _____

Preferred Activation Date: _____ (provide 2 weeks minimum from date this form is submitted)

Site Designation	System Size	Final Pavement / Top Coat Complete	Landscaping Complete / Grass Emerging	Construction materials / Piles / Debris Removed	Throat Opening Measures 4" Min. Height	Plant Species Requested
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	

Attach additional sheets as necessary.

NOTE: A charge of \$500.00 will be invoiced for each Activation visit requested by Customer where Contech determines that the site does not meet the conditions required for Activation. ONLY Contech authorized representatives can perform Activation of Filtterra systems; unauthorized Activations will void the system warranty and waive manufacturer supplied Activation and 1st Year Maintenance.

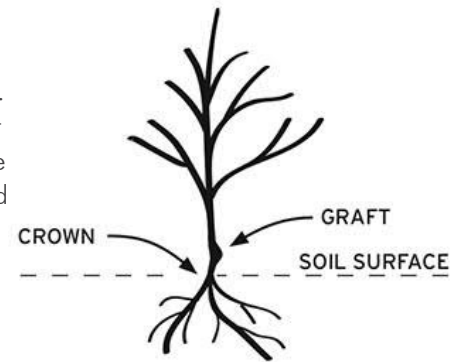
Signature _____

Date _____

Appendix 2 – Planting Requirements for Filterra® Systems

Plant Material Selection

- Select plant(s) as specified in the engineering plans and specifications.
- Select plant(s) with full root development but not to the point where root bound.
- Use local nursery container plants only. Ball and burlapped plants are not permitted.
- For precast Filterra systems with a tree grate, plant(s) must not have scaffold limbs at least 14 inches from the crown due to spacing between the top of the mulch and the tree grate. Lower branches can be pruned away provided there are sufficient scaffold branches for tree or shrub development.
- For precast Filterra systems with a tree grate, at the time of installation, it is required that plant(s) must be at least 6" above the tree grate opening at installation for all Filterra configurations. This DOES NOT apply to Full Grate Cover designs.
- Plant(s) shall not have a mature height greater than 25 feet.
- For standard 21" media depth, a 7 – 15 gallon container size shall be used. Media less than 21" (Filterra boxes only) may require smaller container plants.
- For precast Filterra systems, plant(s) should have a single trunk at installation, and pruning may be necessary at activation and maintenance for some with a tree grate of the faster growing species, or species known to produce basal sprouts.



Plant Installation

- During transport protect the plant foliage from wind and excessive jostling.
- Prior to removing the plant(s) from the container, ensure the soil moisture is sufficient to maintain the integrity of the root ball. If needed, pre-wet the container plant.
- Cut away any roots which are growing out of the container drain holes. Plants with excessive root growth from the drain holes should be rejected.
- Plant(s) should be carefully removed from the pot by gently pounding on the sides of the container with the fist to loosen root ball. Then carefully slide out. Do not lift plant(s) by trunk as this can break roots and cause soil to fall off. Extract the root ball in a horizontal position and support it to prevent it from breaking apart. Alternatively the pot can be cut away to minimize root ball disturbance.
- Remove any excess soil from above the root flare after removing plant(s) from container.
- Excavate a hole with a diameter 4" greater than the root ball, gently place the plant(s).
- If plant(s) have any circling roots from being pot bound, gently tease them loose without breaking them.
- If root ball has a root mat on the bottom, it should be shaved off with a knife just above the mat line.
- Plant the tree/shrub/grass with the top of the root ball 1" above surrounding media to allow for settling.
- All plants should have the main stem centered in the tree grate (where applicable) upon completion of installation.
- With all trees/shrubs, remove dead, diseased, crossed/rubbing, sharply crotched branches or branches growing excessively long or in wrong direction compared to majority of branches.
- To prevent transplant shock (especially if planting takes place in the hot season), it may be necessary to prune some of the foliage to compensate for reduced root uptake capacity. This is accomplished by pruning away some of the smaller secondary branches or a main scaffold branch if there are too many. Too much foliage relative to the root ball can dehydrate and damage the plant.
- Plant staking may be required.

Mulch Installation

- Only mulch that meets Contech Engineered Solutions' mulch specifications can be used in the Filterra system.
- Mulch must be applied to a depth of 3" evenly over the surface of the media.

Irrigation Requirements

- Each Filterra system must receive adequate irrigation to ensure survival of the living system during periods of drier weather.
- Irrigation sources include rainfall runoff from downspouts and/or gutter flow, applied water through the top/tree grate or in some cases from an irrigation system with emitters installed during construction.
- At Activation: Apply about one (cool climates) to two (warm climates) gallons of water per inch of trunk diameter over the root ball.
- During Establishment: In common with all plants, each Filterra plant will require more frequent watering during the establishment period. One inch of applied water per week for the first three months is recommended for cooler climates (2 to 3 inches for warmer climates). If the system is receiving rainfall runoff from the drainage area, then irrigation may not be needed. Inspection of the soil moisture content can be evaluated by gently brushing aside the mulch layer and feeling the soil. Be sure to replace the mulch when the assessment is complete. Irrigate as needed**.
- Established Plants: Established plants have fully developed root systems and can access the entire water column in the media. Therefore irrigation is less frequent but requires more applied water when performed. For a mature system assume 3.5 inches of available water within the media matrix. Irrigation demand can be estimated as 1" of irrigation demand per week. Therefore if dry periods exceed 3 weeks, irrigation may be required. It is also important to recognize that plants which are exposed to windy areas and reflected heat from paved surfaces may need more frequent irrigation. Long term care should develop a history which is more site specific.

** Five gallons per square yard approximates 1 inch of water Therefore for a 6' by 6' Filterra approximately 20-60 gallons of water is needed. To ensure even distribution of water it needs to be evenly sprinkled over the entire surface of the filter bed, with special attention to make sure the root ball is completely wetted. NOTE: if needed, measure the time it takes to fill a five gallon bucket to estimate the applied water flow rate then calculate the time needed to irrigate the Filterra. For example, if the flow rate of the sprinkler is 5 gallons/minute then it would take 12 minutes to irrigate a 6' by 6' filter.



Appendix 3 – Filterra® Tree Grate Opening Expansion Procedure

The standard grates used on all Filterra configurations that employ Tree Grates are fabricated with a 6" opening that is designed with a breakaway section that can be removed, allowing the grate opening to be expanded to 12" as the tree matures and the trunk widens.

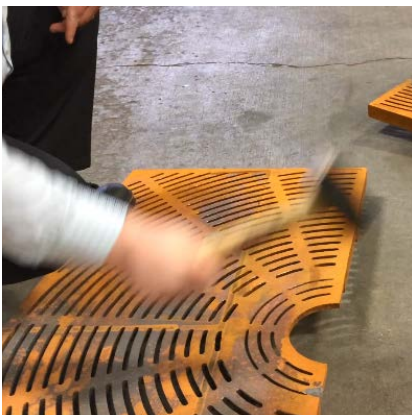
The following tools are required to expand the opening:

- Mini sledgehammer (3 lb. or greater)
- Safety Glasses / Goggles

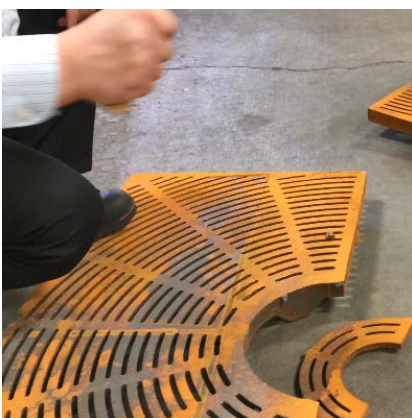
The following guidelines should be followed to properly expand the tree opening from 6" to 12":



1. Remove the grate from the Filterra frame, place it flat on a hard surface, and support the grate by stepping on the edge or using other weighted items such as a few mulch bags if this is being done during a Filterra maintenance event. Put on safety glasses/goggles. Align the mini sledgehammer as shown in the figure to the left. The head of the sledgehammer should be aimed just inside the wide cast iron bar between the larger grate section and the breakaway section.



2. Repeatedly hit the grate at this spot with the mini sledgehammer.



3. After several hits, the breakaway section should snap cleanly off of the larger grate section. Reinstall the grate into the Filterra grate frame. Recycle or dispose of the breakaway section per local guidelines.



9025 Centre Pointe Drive, Suite 400
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APPENDIX C

STORMTECH OWNER'S MANUAL

Isolator[®] Row O&M Manual



THE ISOLATOR[®] ROW

INTRODUCTION

An important component of any Stormwater Pollution Prevention Plan is inspection and maintenance. The StormTech Isolator Row is a technique to inexpensively enhance Total Suspended Solids (TSS) removal and provide easy access for inspection and maintenance.

THE ISOLATOR ROW

The Isolator Row is a row of StormTech chambers, either SC-160LP, SC-310, SC-310-3, SC-740, DC-780, MC-3500 or MC-4500 models, that is surrounded with filter fabric and connected to a closely located manhole for easy access. The fabric-wrapped chambers provide for settling and filtration of sediment as storm water rises in the Isolator Row and ultimately passes through the filter fabric. The open bottom chambers and perforated sidewalls (SC-310, SC-310-3 and SC-740 models) allow storm water to flow both vertically and horizontally out of the chambers. Sediments are captured in the Isolator Row protecting the storage areas of the adjacent stone and chambers from sediment accumulation.

Two different fabrics are used for the Isolator Row. A woven geotextile fabric is placed between the stone and the Isolator Row chambers. The tough geotextile provides a media for storm water filtration and provides a durable surface for maintenance operations. It is also designed to prevent scour of the underlying stone and remain intact during high pressure jetting. A non-woven fabric is placed over the chambers to provide a filter media for flows passing through the perforations in the sidewall of the chamber. The non-woven fabric is not required over the SC-160LP, DC-780, MC-3500 or MC-4500 models as these chambers do not have perforated side walls.

The Isolator Row is typically designed to capture the “first flush” and offers the versatility to be sized on a volume basis or flow rate basis. An upstream manhole not only provides access to the Isolator Row but typically includes a high flow weir such that storm water flowrates or volumes that exceed the capacity of the Isolator Row overtop the over flow weir and discharge through a manifold to the other chambers.

The Isolator Row may also be part of a treatment train. By treating storm water prior to entry into the chamber system, the service life can be extended and pollutants such as hydrocarbons can be captured. Pre-treatment best management practices can be as simple as deep sump catch basins, oil-water separators or can be innovative storm water treatment devices. The design of the treatment train and selection of pretreatment devices by the design engineer is often driven by regulatory requirements. Whether pretreatment is used or not, the Isolator Row is recommended by StormTech as an effective means to minimize maintenance requirements and maintenance costs.

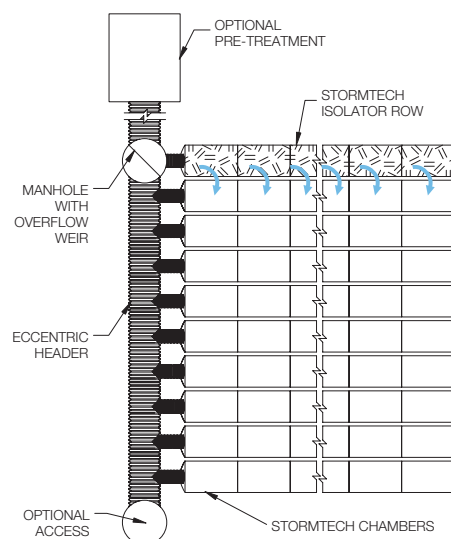
Note: See the StormTech Design Manual for detailed information on designing inlets for a StormTech system, including the Isolator Row.

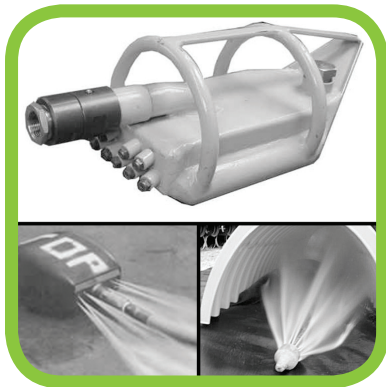


Looking down the Isolator Row from the manhole opening, woven geotextile is shown between the chamber and stone base.



StormTech Isolator Row with Overflow Spillway (not to scale)





ISOLATOR ROW INSPECTION/MAINTENANCE

INSPECTION

The frequency of inspection and maintenance varies by location. A routine inspection schedule needs to be established for each individual location based upon site specific variables. The type of land use (i.e. industrial, commercial, residential), anticipated pollutant load, percent imperviousness, climate, etc. all play a critical role in determining the actual frequency of inspection and maintenance practices.

At a minimum, StormTech recommends annual inspections. Initially, the Isolator Row should be inspected every 6 months for the first year of operation. For subsequent years, the inspection should be adjusted based upon previous observation of sediment deposition.

The Isolator Row incorporates a combination of standard manhole(s) and strategically located inspection ports (as needed). The inspection ports allow for easy access to the system from the surface, eliminating the need to perform a confined space entry for inspection purposes.

If upon visual inspection it is found that sediment has accumulated, a stadia rod should be inserted to determine the depth of sediment. When the average depth of sediment exceeds 3 inches throughout the length of the Isolator Row, clean-out should be performed.

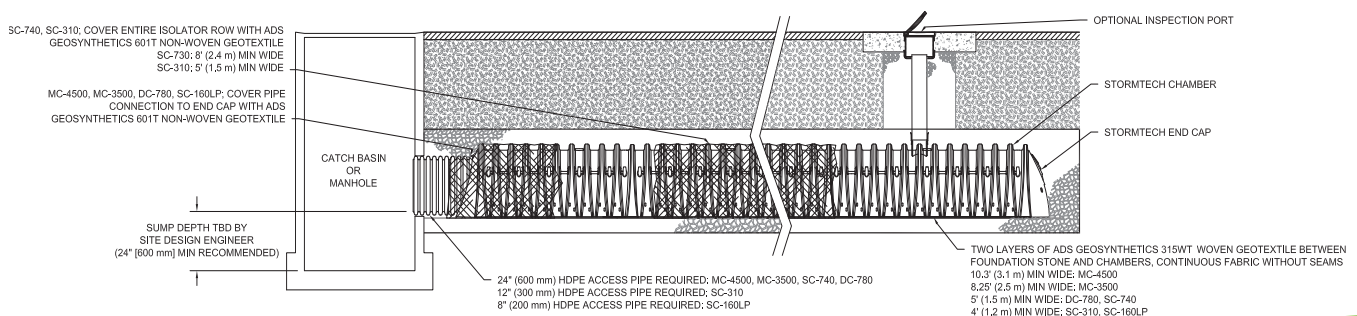
MAINTENANCE

The Isolator Row was designed to reduce the cost of periodic maintenance. By “isolating” sediments to just one row, costs are dramatically reduced by eliminating the need to clean out each row of the entire storage bed. If inspection indicates the potential need for maintenance, access is provided via a manhole(s) located on the end(s) of the row for cleanout. If entry into the manhole is required, please follow local and OSHA rules for a confined space entries.

Maintenance is accomplished with the JetVac process. The JetVac process utilizes a high pressure water nozzle to propel itself down the Isolator Row while scouring and suspending sediments. As the nozzle is retrieved, the captured pollutants are flushed back into the manhole for vacuuming. Most sewer and pipe maintenance companies have vacuum/JetVac combination vehicles. Selection of an appropriate JetVac nozzle will improve maintenance efficiency. Fixed nozzles designed for culverts or large diameter pipe cleaning are preferable. Rear facing jets with an effective spread of at least 45° are best. Most JetVac reels have 400 feet of hose allowing maintenance of an Isolator Row up to 50 chambers long. **The JetVac process shall only be performed on StormTech Isolator Rows that have AASHTO class 1 woven geotextile (as specified by StormTech) over their angular base stone.**

StormTech Isolator Row (not to scale)

Note: Non-woven fabric is only required over the inlet pipe connection into the end cap for SC-160LP, DC-780, MC-3500 and MC-4500 chamber models and is not required over the entire Isolator Row.



ISOLATOR ROW STEP BY STEP MAINTENANCE PROCEDURES

STEP 1

Inspect Isolator Row for sediment.

- A) Inspection ports (if present)
 - i. Remove lid from floor box frame
 - ii. Remove cap from inspection riser
 - iii. Using a flashlight and stadia rod, measure depth of sediment and record results on maintenance log.
 - iv. If sediment is at or above 3 inch depth, proceed to Step 2. If not, proceed to Step 3.
- B) All Isolator Rows
 - i. Remove cover from manhole at upstream end of Isolator Row
 - ii. Using a flashlight, inspect down Isolator Row through outlet pipe
 1. Mirrors on poles or cameras may be used to avoid a confined space entry
 2. Follow OSHA regulations for confined space entry if entering manhole
 - iii. If sediment is at or above the lower row of sidewall holes (approximately 3 inches), proceed to Step 2. If not, proceed to Step 3.

STEP 2

Clean out Isolator Row using the JetVac process.

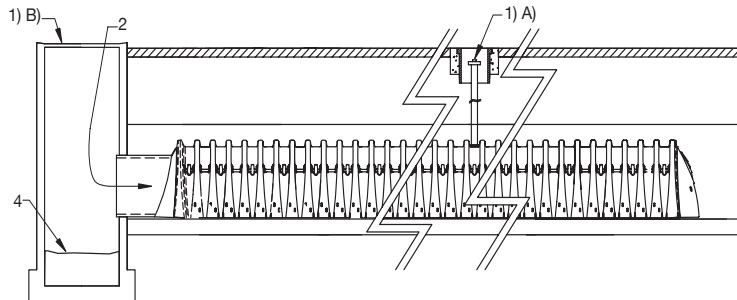
- A) A fixed floor cleaning nozzle with rear facing nozzle spread of 45 inches or more is preferable
- B) Apply multiple passes of JetVac until backflush water is clean
- C) Vacuum manhole sump as required

STEP 3

Replace all caps, lids and covers, record observations and actions.

STEP 4

Inspect & clean catch basins and manholes upstream of the StormTech system.



SAMPLE MAINTENANCE LOG

Date	Stadia Rod Readings		Sediment Depth (1)-(2)	Observations/Actions	Inspector
	Fixed point to chamber bottom (1)	Fixed point to top of sediment (2)			
3/15/11	6.3 ft	none		New installation. Fixed point is CI frame at grade	DJM
9/24/11		6.2	0.1 ft	Some grit felt	SM
6/20/13		5.8	0.5 ft	Mucky feel, debris visible in manhole and in Isolator Row, maintenance due	NV
7/7/13	6.3 ft		0	System jetted and vacuumed	DJM

SECTION 8

UTILITIES

SECTION 8 – UTILITIES

Potable Water – The public water in the area is located in both Pool Street and Parkside Drive. The existing mains are 8" diameter pipes. We have been working close with Maine Water Company on the design of the public main extension. Maine Water Company is requiring the connection of the Pool Street and Parkside Drive mains to create a looped system for redundancy in the infrastructure if repairs are ever needed. We are proposing to continue the 8" ductile iron water main through the development. Included in this section is our coordination with Maine Water Company and we will provide the design approval and Ability to Serve statement to the City upon receipt.

Fire Protection Water – The proposed intersection of Road A and Pool Street is located approximately 245 feet southeasterly of an existing hydrant and approximately 265 feet westerly of another hydrant. Both hydrants are located on the opposite side of Pool Street. In addition, the existing turnaround location on Parkside Drive, that will be utilized as part of the Road C construction, is located 430 feet southeasterly of an existing hydrant and approximately 305 feet southwesterly of another hydrant. Both hydrants are located on the opposite side of Parkside Drive.

To provide fire suppression services for the project, additional hydrants are required. We have been working with the Biddeford Fire Department about their standards and making the development safe for fire suppression. As part of the due-diligence of the project, pressure and flow tests were performed in the public water supply in the general area. Based on the results, there is adequate pressures, 63 psi to 86 psi, but the measured flow rates were below acceptable levels for the department's use. To supplement the required fire suppression volume, a total of 30,000 gallons of water will need to be stored onsite in the development, including the installation of new hydrants, spaced at no more than 800 linear feet apart.

The Pool Street side of the project will include the installation of 4 new hydrants and two 10,000-gallon subsurface fire cisterns for fire suppression. The Parkside Drive side of the project will require the installation of 2 new hydrants, including one closer to Parkside Drive to be utilized in a fire within the existing subdivision, and the installation of a 10,000-gallon subsurface fire cistern. We are still in coordination with the Fire Department on the final layout of the hydrants and cisterns.

Wastewater Disposal – As part of the Parkside Drive project, a public sewer pump station was installed. We are proposing to connect the subdivision into this pump station as it is the closest sewer connection in the area. The Pool Street side of the project will include the construction of a sanitary sewer gravity system, draining to a private sewer pump station. The discharge force main will be installed through Road A, extending into the open space with the construction of a 12' wide access drive. The force main will terminate at a sewer manhole in Road C and will continue as a gravity main connecting into the existing Parkside Drive pump station.

As part of the ability to serve process, we have been working with the City Engineer and Wastewater Divisions related to the condition of the existing system and the ability to serve the

project based on the current usage amounts. To determine the capacity of the system downstream of the proposed connection, the City contracted with an engineering firm to perform the analysis. As the investigation was performed for our project and for other developers potential projects, the applicants were financially responsible for a portion the study through coordination with the City. Based on our original design consisting of 36 lots, we assumed that the majority of the lots will be 3-bedrooms, but there is a 25% potential that the houses will be 4-bedrooms. Based on these assumptions and coordination with the City Engineer, the design flow totaled 10,530 gallons per day. Based on the analysis performed by the third party engineering firm and the proposed design flow, we have been provided with an Ability to Serve statement from the City of Biddeford Public Works Department. A copy of the letter has been included in this section of the submission.

Electrical Service – The development will be served by underground power and cable services, as required by the City’s ordinance. Throughout the plan set, we have included our proposed conduit and transformer layout. Once the project is approved, we will begin the design review process with Central Maine Power Company, who will perform the final electrical layout.

From: Marcus Knipp <Marcus.Knipp@MaineWater.com>
Sent: Tuesday, October 14, 2025 9:28 AM
To: jayson@dmroma.com; Patrick Gere
Cc: 'Kevin Bedard'; victoria.bedardrealty@gmail.com
Subject: RE: 268 Pool Street, Biddeford - Residential Development

Hi Jayson,

I am surprised to learn that there is resistance for the town to take over these roads. As long as this is still a subdivision with separate parcels – then the circumstances don't change on our end. We'll still want a public main, but require an easement from the underlying property owner which will turn into some sort of road/home association if the road remains private. The thing that really changes is hydrant ownership. These hydrants would most likely be privately owned and maintained by the association. There is a monthly cost to the utility in addition to normal metered domestic usage for private hydrants.

Also, yes, 8" will be acceptable on this section. I did both an 8" and 12" scenario and there was a small positive change in hydrant flows, but not substantial. The cisterns are not surprising and the fire protection will be more driven by those structures.

Are you still required to install fire hydrants throughout the development? In my opinion, they should still be required, as in the future, the flow will most likely increase and they are important for flushing and maintaining the distribution system.

Maine Water will allow water main across/under the utility access trail. This water main needs to be horizontally directionally drilled as a fused, continuous water main. The rest of the water main inside the development should be expected to be ductile iron. The HDPE transitions to the ductile with a fused M.J. hub, fused accessory pack, gland and grip rings.

Thank you,
Marcus

Marcus Knipp, PE
Manager of Engineering & Technical Services



93 Industrial Park Road
Saco, ME 04072
Direct: 207-294-6943
Office: 800-287-1643
Cell: 207-468-2089

From: jayson@dmroma.com <jayson@dmroma.com>
Sent: Tuesday, October 14, 2025 8:23 AM
To: Marcus Knipp <Marcus.Knipp@MaineWater.com>; Patrick Gere <Patrick.Gere@MaineWater.com>
Cc: 'Kevin Bedard' <kbbc1990@gmail.com>; victoria.bedardrealty@gmail.com
Subject: RE: 268 Pool Street, Biddeford - Residential Development

⚠ WARNING: This email originated from outside the organization. Be extra cautious with attachments and links in this email. ⚠

Hi Marcus,

Thank you for getting back to us. We have spoken with the fire department and they had concerns with the flow as well. We are proposing 3 10,000 gallon cisterns through the site. We will plan to loop the main, but will it be acceptable to Maine Water for a portion of the main to be run through the open space beneath a 12 foot wide road at a grade at 18%? We can provide Maine Water with a 30 foot easement through the open space.

Also, I wanted to confirm you are looking for an 8" main and not the 12" main you referenced in your email.

Based on the most recent conversations with the City, they will not allow the roads to be accepted as public roads. I do not know if this changes anything with Maine Water?

Attached is the updated Subdivision Plan with a straighter access road when compared to the previous layout. I will also forward you the emails from the Fire Department. Thank you again for your help and talk soon.

Jay

Jayson R. Haskell, P.E.

Southern Maine Regional Manager



<u>Mailing Address:</u>	<u>Office Location:</u>
P.O. Box 1116	850 Main Street
Windham, ME 04062	Westbrook, ME 04092

Office: (207) 591-5055

Cell: (207) 229-3295

From: Marcus Knipp <Marcus.Knipp@MaineWater.com>

Sent: Tuesday, October 14, 2025 6:44 AM

To: jayson@dmroma.com; Patrick Gere <Patrick.Gere@MaineWater.com>

Cc: 'Kevin Bedard' <kbbc1990@gmail.com>; victoria.bedardrealty@gmail.com

Subject: RE: 268 Pool Street, Biddeford - Residential Development

Hello Jayson and Kevin,

We have completed a preliminary analysis of the flow testing that was conducted earlier this summer near and around Parkside Drive.

The problem as I discussed initially was the low fire flow available for these developments. We have determined that there is approximately 450gpm to 500gpm of 'flow20' in that area. In other words, the fire department is interested in how much they can flow, without causing the distribution system to go below 20psi. In this case, it is sub 500, or right at the line. Even though the one test on Pool Road shows a flow of 650 and keeps everyone above 20psi, once the hydrants inside the development are running, that is a different analysis.

The proposed phase of your development has a higher elevation at the peak, approximately 120' to 130', while the existing Parkside drive peak elevation is around 105'. The new phase shows approximately the same conditions as a newer 12-inch water main would have slightly less friction losses.

The connection between Parkside Drive does increase fire flow, but not to a great extent. However, while flowing hydrants directly inside of Parkside Drive or the proposed new section, the looped connection would have the most impact. Especially if/when the pool street water main is replaced or upsized.

To approve this subdivision from our end and from a public fire protection standpoint – we would need a written confirmation (email is fine) that the fire department understands that there is possibly less than 500gpm available from those hydrants. If the Town will not accept this for future development, you may need to look into a fire pond or cistern type system for fire protection.

From a domestic water perspective, we can serve this development and are not concerned based on elevations or additional usages in this area. We will want to further review a finalized utility plan once available, but the plan should be to loop across the stream into Parkside Drive.

Happy to have a quick meeting to go over our findings in more detail.
Thank you,
Marcus

Marcus Knipp, PE
Manager of Engineering & Technical Services



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Cell: 207-468-2089

From: jayson@dmroma.com <jayson@dmroma.com>
Sent: Wednesday, September 17, 2025 9:54 AM
To: Marcus Knipp <Marcus.Knipp@MaineWater.com>; Patrick Gere <Patrick.Gere@MaineWater.com>
Cc: 'Kevin Bedard' <kbbc1990@gmail.com>; victoria.bedardrealty@gmail.com
Subject: RE: 268 Pool Street, Biddeford - Residential Development

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Thank you for getting back to us Marcus. Attached is the flow data done by EJ Prescott.

Jayson R. Haskell, P.E.
Southern Maine Regional Manager



Mailing Address: Office Location:
P.O. Box 1116 850 Main Street
Windham, ME 04062 Westbrook, ME 04092

Office: (207) 591-5055
Cell: (207) 229-3295

From: Marcus Knipp <Marcus.Knipp@MaineWater.com>
Sent: Wednesday, September 17, 2025 9:52 AM
To: jayson@dmroma.com; Patrick Gere <Patrick.Gere@MaineWater.com>
Cc: 'Kevin Bedard' <kbbc1990@gmail.com>; victoria.bedardrealty@gmail.com
Subject: RE: 268 Pool Street, Biddeford - Residential Development

Hi Jay,

Appreciate the follow up here. We are looking back into this and I want to make sure we are analyzing accurate data. Could you share the EJP Flow data form with us that they provided after the flow test. Apologies if it may have been sent previously.

We'll review on our end and get back in touch with you within a week or so with our recommendations.

Thanks for your patience,
Marcus

Marcus Knipp, PE
Manager of Engineering & Technical Services



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From: jayson@dmroma.com <jayson@dmroma.com>
Sent: Monday, September 15, 2025 3:47 PM
To: Marcus Knipp <Marcus.Knipp@MaineWater.com>; Patrick Gere <Patrick.Gere@MaineWater.com>
Cc: 'Kevin Bedard' <kbbc1990@gmail.com>; victoria.bedardrealty@gmail.com
Subject: RE: 268 Pool Street, Biddeford - Residential Development

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Good Afternoon,

I wanted to follow up with you on the Bedard project in Biddeford. If a call would be beneficial, please let us know when you are available. Thank you.

Jay

Jayson R. Haskell, P.E.
Southern Maine Regional Manager



Mailing Address: Office Location:
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Windham, ME 04062 Westbrook, ME 04092

Office: (207) 591-5055
Cell: (207) 229-3295

From: jayson@dmroma.com <jayson@dmroma.com>
Sent: Monday, September 8, 2025 1:14 PM
To: 'Marcus Knipp' <Marcus.Knipp@MaineWater.com>; 'Patrick Gere' <Patrick.Gere@MaineWater.com>
Cc: 'Kevin Bedard' <kbbc1990@gmail.com>; victoria.bedardrealty@gmail.com
Subject: RE: 268 Pool Street, Biddeford - Residential Development

Good Afternoon,

We wanted to circle back with you on the Pool Street project we discussed in May for Kevin Bedard. We finally have a layout that will attempt to keep everyone happy (mostly) and wanted to coordinate it with you. We are showing the majority of the lots accessing from Pool Street with a small private road serving 4 lots off Parkside Drive. We continue to need the utility access road connecting the two portions of the property to public sewer on Parkside.

With the data EJ Prescott collected for us, we want to hear your thoughts on the layout of the main. With the majority of the lots off Pool Street, we are anticipating an 8" tapping sleeve in Pool Street serving that side of the project. The primary question is will you require the main to be looped to Parkside Drive? This will require the main to be installed along the utility access road (we will plan to straighten its alignment) with an easement.

Once you have a chance to go over the updated plan, let us know your thoughts on the layout and we can include it on the permitting plans. Thanks.

Jay

Jayson R. Haskell, P.E.
Southern Maine Regional Manager



Mailing Address: Office Location:
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Office: (207) 591-5055
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From: jayson@dmroma.com <jayson@dmroma.com>
Sent: Wednesday, May 7, 2025 12:06 PM

To: 'Marcus Knipp' <Marcus.Knipp@MaineWater.com>; 'Patrick Gere' <Patrick.Gere@MaineWater.com>
Cc: 'Kevin Bedard' <kbbc1990@gmail.com>; victoria.bedardrealty@gmail.com; robbie.maheaux@ejprescott.com
Subject: RE: 268 Pool Street, Biddeford - Residential Development

Thank you, Marcus. We will schedule the test with Customer Service today.

Jayson R. Haskell, P.E.
Southern Maine Regional Manager



Mailing Address: Office Location:
P.O. Box 1116 850 Main Street
Windham, ME 04062 Westbrook, ME 04092

Office: (207) 591-5055
Cell: (207) 229-3295

From: Marcus Knipp <Marcus.Knipp@MaineWater.com>
Sent: Wednesday, May 7, 2025 11:51 AM
To: jayson@dmroma.com; Patrick Gere <Patrick.Gere@MaineWater.com>
Cc: 'Kevin Bedard' <kbbc1990@gmail.com>; victoria.bedardrealty@gmail.com; robbie.maheaux@ejprescott.com
Subject: RE: 268 Pool Street, Biddeford - Residential Development

Yes, I can make that work.

Please still follow the normal process and call the MWC Customer Service Office 800-287-1643 and schedule the flow test. I'll let the operations team know that I'll be involved and we'll have some extra oversight over this area during the test.

Thanks,
Marcus

Marcus Knipp, PE
Manager of Engineering & Technical Services



93 Industrial Park Road
Saco, ME 04072
Direct: 207-294-6943
Office: 800-287-1643
Cell: 207-468-2089

From: jayson@dmroma.com <jayson@dmroma.com>
Sent: Wednesday, May 7, 2025 10:18 AM
To: Patrick Gere <Patrick.Gere@MaineWater.com>
Cc: 'Kevin Bedard' <kbbc1990@gmail.com>; victoria.bedardrealty@gmail.com; Marcus Knipp

<Marcus.Knipp@MaineWater.com>; robbie.maheaux@ejprescott.com

Subject: RE: 268 Pool Street, Biddeford - Residential Development

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Good Morning Patrick,

I just got off the phone with Robbie at EJ Prescott on the flow tests on the Bedard property on Parkside and Pool St in Biddeford. He said they could be out there next Tuesday May 13. Does that give you enough lead time to get your inspectors out there? Thank you.

Jay

Jayson R. Haskell, P.E.

Southern Maine Regional Manager



Mailing Address: Office Location:
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From: Patrick Gere <Patrick.Gere@MaineWater.com>

Sent: Wednesday, April 30, 2025 1:56 PM

To: Jayson Haskell <jayson@dmroma.com>

Cc: 'Kevin Bedard' <kbbc1990@gmail.com>; victoria.bedardrealty@gmail.com; Marcus Knipp <Marcus.Knipp@MaineWater.com>

Subject: RE: 268 Pool Street, Biddeford - Residential Development

Hi Jay,

Yes, we are available this Friday, 5/2, for a virtual meeting anytime between 9:30AM and 1PM. Please send us a link for a time that works with your schedules.

Thanks,
Patrick

Patrick Gere, PE
Project Engineer



Cell: 207-468-8808

From: Jayson Haskell <jayson@dmroma.com>

Sent: Tuesday, April 29, 2025 7:10 PM

To: Patrick Gere <Patrick.Gere@MaineWater.com>; Marcus Knipp <Marcus.Knipp@MaineWater.com>

Cc: 'Kevin Bedard' <kbbc1990@gmail.com>; victoria.bedardrealty@gmail.com

Subject: RE: 268 Pool Street, Biddeford - Residential Development

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Good Evening Patrick and Marcus,

We wanted to follow up with you on the updated layout for the Bedard Homes project on Pool and Parkside Drive in Biddeford. If you have any availability this week or next to discuss (either zoom or in person) the revisions, please let us know. Thank you.

Jay

From: Jayson Haskell <jayson@dmroma.com>

Sent: Monday, April 21, 2025 9:59 AM

To: 'Patrick Gere' <Patrick.Gere@MaineWater.com>; 'Marcus Knipp' <Marcus.Knipp@MaineWater.com>

Cc: 'Kevin Bedard' <kbbc1990@gmail.com>; 'victoria.bedardrealty@gmail.com' <victoria.bedardrealty@gmail.com>

Subject: RE: 268 Pool Street, Biddeford - Residential Development

Good Morning,

We wanted to follow up with you on the proposed subdivision off Pool Street and Parkside Drive in Biddeford for Bedard Homes. We had our initial Sketch Plan meeting with the Planning Board at the beginning of the month. Prior to this meeting, we received several comments/concerns from the abutters on Parkside Drive, primarily related to traffic. The original design (Original Design – Pool Street.pdf), which we met on a few weeks ago at our in person meeting, included 38 lots accessed by a network of roads with a sole connection to Parkside Drive. The abutters have voiced their concerns with the traffic side of the project and the Board wanted us to look into other options, reducing the amount of potential traffic onto Parkside Drive. In addition, there is a potential protected vernal pool in the center of the property. The Planning Board had concerns with the amount of construction work we had proposed within the 250 habitat setback, primarily from the road construction.

We took all of this into account and have come up with an updated layout (Pool St-Sketch Plan-Conventional Sub (2025-4-3).pdf). This design includes a road connection to Pool Street to access a 29 lot development and a shorter road connection to serve 7 lots off Parkside. To reduce the amount of traffic from the 29 lots from entering Parkside Drive, we have eliminated the road connecting the two development areas. We have no objection to an updated plan like this, but wanted to discuss the utility work needed to serve the project.

Since the public sewer pump station and water main is within Parkside Drive, it will be relatively simple to serve Lot 1 thru 7, but more difficult to access the other 29 lots. Without the public road connection between both sides of the development, the only route would be through the open space. We are proposing a 12 foot wide utility road/trail, with easement, that meanders through the woods which will contain a forcemain and water main. Since this layout is unconventional, we wanted to discuss the potential of this design as an acceptable utility layout to Maine Water. Please let us know your thoughts and if you find it easier, we can set up a meeting to go over the options. Thank you and talk soon.

Jay

From: jayson@dmroma.com <jayson@dmroma.com>
Sent: Monday, January 27, 2025 1:32 PM
To: 'Patrick Gere' <Patrick.Gere@MaineWater.com>
Cc: 'Kevin Bedard' <kbbc1990@gmail.com>; victoria.bedardrealty@gmail.com; 'Marcus Knipp' <Marcus.Knipp@MaineWater.com>
Subject: RE: 268 Pool Street, Biddeford - Residential Development

Hi All,

Thursday (1/30) at 1:30pm works for us. We can definitely meet in person if that is better for you? Thanks.

Jay

Jayson R. Haskell, P.E.
Southern Maine Regional Manager



<u>Mailing Address:</u>	<u>Office Location:</u>
P.O. Box 1116	850 Main Street
Windham, ME 04062	Westbrook, ME 04092

Office: (207) 591-5055
Cell: (207) 229-3295

From: Patrick Gere <Patrick.Gere@MaineWater.com>
Sent: Monday, January 27, 2025 10:57 AM
To: Jayson Haskell <jayson@dmroma.com>
Cc: 'Kevin Bedard' <kbbc1990@gmail.com>; victoria.bedardrealty@gmail.com; Marcus Knipp <Marcus.Knipp@MaineWater.com>
Subject: RE: 268 Pool Street, Biddeford - Residential Development

Hi Jay,

We have the following availability:

- Thursday, 1/30, between 1 and 3 PM.
- Friday, 1/31, between 8 and 10 AM or between 1 and 3 PM.
- Friday, 2/7, free all day.

We can meet in person at our Saco office on Thursday, 1/30, if you prefer. Otherwise plan on a virtual meeting.

Let us know what works best for your schedules.

Thank you,
Patrick

Patrick Gere, PE
Project Engineer



Cell: 207-468-8808

From: Jayson Haskell <jayson@dmroma.com>

Sent: Saturday, January 25, 2025 7:06 AM

To: Patrick Gere <Patrick.Gere@MaineWater.com>; Marcus Knipp <Marcus.Knipp@MaineWater.com>

Cc: 'Kevin Bedard' <kbbc1990@gmail.com>; victoria.bedardrealty@gmail.com

Subject: 268 Pool Street, Biddeford - Residential Development

CAUTION: This email originated outside the SJWG organization.

Good Morning Marcus and Patrick,

We are working with Kevin and Victoria Bedard on another project , this one off Pool Street. The address is 268 Pool St, better identified as Lot 52-1 on Tax Map 8, and is located to the southeast of the Parkside by the Falls Subdivision. We are currently proposing 38 single family lots with associated roadway construction. Although the address is Pool Street, we are not proposing a connection to Pool Street and the site will be accessed via Parkside Drive.

We are planning on serving the development with public water, public sewer and underground power.

We were hoping to set up a meeting with you to discuss the existing infrastructure in the area and what you would look for related to the extension of the main. Please let me know what you have availability in the next couple weeks so that we can sit down to discuss. Thank you and look forward to working with you on the project.

Jay

Jayson R. Haskell, P.E.

Southern Maine Regional Manager



Mailing Address:

P.O. Box 1116

Windham, ME 04062

Office Location:

850 Main Street

Westbrook, ME 04092

Office Phone: (207) 591-5055

Cell Phone: (207) 229-3295



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HYDRANT FLOW TEST REPORT

Contractor: D.M.Roma

Date: 5/13/25

Job Site: Parkside Dr.

Time: 9:45AM

Hydrant #1 Location: Parkside Dr. H462

Hydrant #2 Location: Parkside Dr. H443

Hydrant #3 Location: Pool St. B486

Hydrant #4 Location: Pool St B208

Results

Hydrant	#1	#2	#3	#4
Static Pressure	<u>66</u> PSI	<u>63</u> PSI	<u>86</u> PSI	<u>75</u> PSI
Flow Rate	<u>530</u> GPM	<u> </u> GPM	<u>650</u> GPM	<u> </u> GPM
Shows Pressure	<u> </u> PSI	<u> </u> PSI	<u> </u> PSI	<u> </u> PSI
Residual Pressure (when flowing hydrant #1 & 3)	<u> </u> PSI	<u>20</u> PSI	<u> </u> PSI	<u>20</u> PSI

Nozzle Size 2.5 for all

Remarks: Flow 20

Test Made By: Adam Porter

Witnessed By: Evan - Maine Water



From: Crocker, Jason <Jason.Crocker@Biddefordmaine.org>
Sent: Wednesday, September 24, 2025 12:42 PM
To: jayson@dmroma.com
Cc: 'Kevin Bedard'; victoria.bedardrealty@gmail.com; Thorpe, Kenneth; Best, Lawrence
Subject: Re: Bedard Homes - Pool Street Subdivision

Good afternoon,

Thank you for reaching out reference the proposed projects on Pool Street and Parkside Drive. After reviewing the documents you provided, we have some concerns about the available water supply for firefighting operations in both of these areas. The flow tests you provided indicate flows ranging from 530gpm to 650 gpm. This is an inadequate water supply for firefighting operations. Please see below.

NFPA1(2018)18.4.5.1.1 The minimum fire flow and flow duration requirements for One- and Two-family dwellings having a fire flow area that does not exceed 5000 sqft shall be 1000 gpm for 1 hour. While this standard is not enforceable, it does show how inadequate the water supply is. There are a couple of options that could be utilized to offset this inadequacy.

Option 1) We would recommend two (2) or three (3) cisterns be placed. The first cistern would be 10,000 gallons of water in an underground cistern located on the 4 lot portion off of Parkside Drive. This would not omit the need for pressurized hydrants, but it would provide us with a reasonable supply of water to supplement the pressurized system. The second cistern would be located in the 29 lot portion off of Pool Street. We would ask for a larger, 20,000 gallons of water in an underground cistern. This could also be achieved with two (2) 10,000 gallon cisterns in two separate approved locations within the 29 lot portion. Again, this does not omit the need for pressurized hydrants. Cisterns are referenced in the City Of Biddeford Code of Ordinance and are primarily utilized in subdivisions outside of the pressurized municipal water supply, but could serve as an effective option for this project given the conditions.

Option 2) We would recommend that you consider an NFPA 13D Residential Sprinkler system for each of the homes. This would result in a reduction of the required fire flow to 500gpm.***(NFPA 1(2018)18.4.5.1.2 &18.4.5.1.5)***

Option 3) There is a potential for a reduction in the required fire flow based on separation of structures from their lot lines. We would need to see proposed building locations and set backs in order to explore this option further. Please note that the maximum reduction would be 40% dropping the required fire flow to 600gpm which your flow test shows cannot always be achieved. ***(NFPA 1(2018)18.4.5.1.4)***

Additionally, you mentioned that the proposed hydrant spacing was no greater than 1000 feet. Please see below.

NFPA 1(2018)18.5.2 Detached One- and Two-Family Dwellings Fire Hydrants shall be provided for detached One- and Two-family dwellings in accordance with both of the following: 1) The maximum distance to a fire hydrant from the closest point of the building shall not exceed 400 ft.

2) *The maximum distance between fire hydrants shall not exceed 800 ft.*

Please reach out with any questions, concerns, comments, or if you would like to schedule an in person meeting with us. Thank you.

Jason A. Crocker

Firefighter/Paramedic, CFI-I, CFPE
Biddeford Fire Department
Office of Fire Prevention



152 Alfred Street
Biddeford, Maine 04005
(207)282-6632
jason.crocker@biddefordmaine.org

From: jayson@dmroma.com <jayson@dmroma.com>
Sent: Wednesday, September 17, 2025 8:11 AM
To: Crocker, Jason <Jason.Crocker@Biddefordmaine.org>
Cc: 'Kevin Bedard' <kbbc1990@gmail.com>; victoria.bedardrealty@gmail.com <victoria.bedardrealty@gmail.com>
Subject: Bedard Homes - Pool Street Subdivision

Caution: This is an external email. Please take care when clicking links or opening attachments. When in doubt, contact the IT Department

Hi Jason,

Good talking with you yesterday about the Bedard Homes project off Pool Street and Parkside Drive. Attached is the most recent lot and road layout. We have also identified the existing (red) and proposed (blue) hydrant locations for initial review. We did not anticipate installing a hydrant on Road C since it was within 1,100 feet of the end of the road. Please let me know if this would be acceptable. Also attached are the flow test results of the hydrants on the two streets. Once you have a chance to review the plan and data, please let us know your initial comments and we can try to address them in the formal subdivision submission. Thank you for your time and talk soon.

Jay

Jayson R. Haskell, P.E.
Southern Maine Regional Manager





City of Biddeford, Maine
Public Works Department
371 Hill Street Biddeford, Maine 04005

June 26th, 2025

To: **Kevin Bedard; Bedard Homes**
Jayson Haskell; DM Roma
David Galbraith; City Planner

From: **Jeff Demers, Public Works Director**
Craig Chekan, City Engineer

Re: **268 Pool Street/Parkside Drive Subdivision – Ability-to-Serve Letter**

1. Project Description: 36-Lot Residential Subdivision
2. Estimated Flow Request: 10,530-gallons per day
3. Determination:
 - a. Sewer from this proposed residential development will tie into the City's existing sewer infrastructure within Parkside Drive and will flow from:
 - i. Parkside #2 Pump Station, to
 - ii. Parkside #1 Pump Station (@ Pool Street), to
 - iii. Lafayette Pump Station, to
 - iv. City's Wastewater Treatment Plant (Water Street)
 - b. Utilizing a private-consultant (Wright-Pierce) and their formal hydraulic sewer model, they have determined that there is limited capacity remaining in the Parkside #1 Pump Station (31,100-gpd).
 - i. Once capacity is reached at the Parkside #1 Pump Station, it would trigger major upgrades to both the Parkside #1 Pump Station and the Lafayette Pump Station (\$\$\$)
 - c. The City is aware of additional development being considered in the Parkside Drive sewershed; however, they have not begun the formal planning board process (which this 36-lot subdivision has)
 - d. Therefore, **the City will reserve 10,530-gpd sewer capacity for this 36-lot subdivision, pending the following:**
 - i. This ability-to-serve letter is only valid for one year from the date listed in the letterhead (06/26/2026)
 1. Final Planning Board Approval must be acquired & the first building permit must be pulled by this date
 - ii. Because sewer capacity is limited in this sewershed, no future Accessory Dwelling Units (ADUs) will be allowed on this subdivision
 - iii. No roof drains, existing or proposed, or other sources of non-sanitary wastewater shall be discharged into the sewer system
 - iv. A sewer permit utilizing this City's current impact fees ([Section 70-141](#)) will need to be paid prior to building permits

A handwritten signature in black ink, appearing to read "Jeff Demers".

Jeff Demers
Public Works Director

A handwritten signature in blue ink, appearing to read "Craig Chekan".

Craig Chekan, PE
City Engineer

SECTION 9

DRAFT COVENANTS & EASEMENTS

SECTION 9 – DRAFT COVENANTS & EASEMENTS

It is the applicant's intent to create a homeowner's association for the entire development. The intent is for the roads to remain private, requiring the maintenance and plowing activities to be the responsibility of the homeowner's association. The homeowner's association responsibility will include the private utility services and stormwater infrastructure.

These documents are currently being prepared by the applicants and their attorney and will be provided to the City as part of the Final Subdivision submission.

SECTION 10

TRAFFIC GENERATION

SECTION 10 – TRAFFIC

Trip Generation Calculations

The Institute of Transportation Engineers (ITE) Trip Generation handbook (11th edition) estimates that Single Family Detached Housing (Land Use Code #210) is expected to generate the following vehicle trips:

Weekday	= 9.43 trips per dwelling unit
AM Peak Hour	= 0.75 trips per dwelling unit
PM Peak Hour	= 0.99 trips per dwelling unit

The analysis was performed at two locations, one to estimate the additional trips onto Pool Street and the other at Parkside Drive. Both roads are public roadways. The results of this analysis are identified below.

Table 1 – Trip Generation Calculations – Pool Street			
Time Period	Dwelling Units	Trip Generation Rate (Trips/Dwelling Units)	Trips Generated
Weekday	26	9.43	245
AM Peak Hour	26	0.75	20
PM Peak Hour	26	0.99	26

Table 2 – Trip Generation Calculations – Parkside Drive			
Time Period	Dwelling Units	Trip Generation Rate (Trips/Dwelling Units)	Trips Generated
Weekday	4	9.43	38
AM Peak Hour	4	0.75	3
PM Peak Hour	4	0.99	4

Pool Street is defined by the Maine Department of Transportation (MDOT) as a Major Collector with an average daily trip estimate of 8,683 trips, as indicated in the Maine DOT Public Map Viewer database. The proposed additional trips will create a 3% increase in daily trips onto this road. Parkside Drive is a public roadway currently serving 64 single family lots, with an average daily trip estimate of 604 trips based on the rates listed above. The additional 38 daily trips will equate to a 6% increase in daily traffic.

Sight Distance Measurements – Pool Street

Pool Street is identified by MDOT as a State Aid roadway located within the urban compact, meaning the new road location will be reviewed and approved by the City of Biddeford under the sight distance requirements located in *Section 62-114 Sight Distance* of the City's land use ordinance. The Pool Street intersection location is relatively set due to the 60-foot-wide strip of land connecting Pool Street to the larger portions of the site. To ensure this location meets the minimum requirements, the available sight distance was measured at this location. Based on the

City's ordinance and the posted speed limit of 40 miles per hour is 400 feet. Based on the field measurements at the proposed road intersection, there is over 700 linear feet of sight distance looking in both directions, exceeding the requirements of the City's ordinance.

Sight Distance Measurements – Parkside Drive

The proposed private road is an extension of the previously constructed paved turnaround/future road extension location as part of the Parkside Drive Subdivision review. To verify the existing location meets the required sight distance, the same measurements were performed at this location. Based on Section 62-114, a roadway with a speed limit of 25 miles per hour requires 250 linear feet of sight distance. Based on the field measurements at the existing road intersection with Parkside Drive, there is over 300 feet of available sight distance in both direction, exceeding the requirements of the City's ordinance.

SECTION 12

WILDLIFE STUDIES

SECTION 12 – WILDLIFE STUDIES

As part of the due-diligence phase of the project, we contracted with Mark Hampton Associates to perform the initial natural resources delineation. This included locating wetlands, streams and vernal pools. As part of the investigation, a vernal pool was identified. A copy of the delineation report and vernal pool forms have been included in this section for reference.

As previously stated in this submission, there have been concerns related to the vicinity of the project site and endangered and/or threatened species, primarily concerning the Blandings Turtles (State Endangered) and Spotted Turtles (State Threatened). We have contracted with FB Environmental Associates on this investigation. The results of the study have been included in the *Pool Street Subdivision Rare Turtle Habitat Reconnaissance* report included in this section for review.



MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

8094

October 4, 2024

Mr. Brian Bedard
Bedard Homes, Inc.
P. O. Box 481
Biddeford, ME 04005

Re: Wetland Delineation, 46+ acre parcel, 268 Pool Street Biddeford, ME

Dear Brian,

I have completed a delineation of wetlands on the 46+ acre parcel located at 268 Pool Street Biddeford, ME. The wetland delineation was completed in accordance with the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual for the Northcentral and Northeast Regions dated January 2012. These manuals require the presence of three parameters for a wetland to be present, wetland hydrology, hydrophytic vegetation, and hydric soils.

The wetlands I found on the parcel were flagged with yellow flagging. The flagging was labeled in an alphanumeric sequence. The wetland flags were located by GPS equipment capable of locating a point to within three feet. The wetland data has been forwarded to Jay Haskell at DM Roma. The wetlands delineated onsite are forested wetlands. The wetlands located within 25 feet of the streams located on the parcel meet the definition for wetlands of special significance by the Maine Department of Environmental Protection.

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

Sincerely,

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



MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

8094

May 22, 2025

Mr. Jay Haskell
DM Roma Consulting Engineers
P. O. Box 1116
Windham, ME 04062

Re: Vernal pool assessment, 46-acre parcel at 268 Pool Street Biddeford, ME

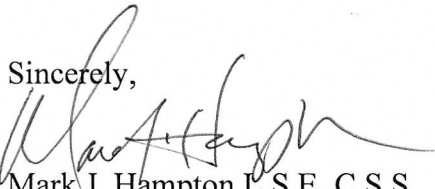
Dear Jay,

We have completed a vernal pool assessment on the 46+ acre parcel located at 268 Pool Street Biddeford, ME. The vernal pool assessment was conducted in accordance with Chapter 335 Significant Wildlife Habitat, Section 9 Significant Vernal Pools for the Maine Department of Environmental Protection. This section outlines the definition of a vernal pool as well as the requirements of a vernal pool to meet the definition of significance as related to the number of amphibian egg masses counted during the breeding season.

Two site visits were made to the property over the course of a six-week period beginning in the first week in April. One vernal pool was found on the property where egg masses were found. The number of egg masses for spotted salamanders did meet the threshold to be considered significant. Attached are the related IF&W data collection forms and photos. We have not submitted this information to IF&W but will on behalf of our client when asked to proceed.

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

Enc.



Maine State Vernal Pool Assessment Form



INSTRUCTIONS:

- Complete all 3 pages of form thoroughly. Most fields are required for pool registration.
- Clear photographs of a) the pool AND b) the indicators (one example of each species egg mass) are required for all observers.

Observer's Pool ID: 8094 Pool A

MDIFW Pool ID: _____

1. PRIMARY OBSERVER INFORMATION

a. Observer name: Mark Hampton

b. Contact and credentials previously provided? ☐ No (submit Addendum 1) ☒ Yes

2. PROJECT CONTACT INFORMATION

a. Contact name: ☒ same as observer ☐ other _____

b. Contact and credentials previously provided? ☐ No (submit Addendum 1) ☐ Yes

c. Project Name: Pool Street Project

3. LANDOWNER CONTACT INFORMATION

a. Are you the landowner? ☐ Yes ☒ No If no, was landowner permission obtained for survey? ☒ Yes ☐ No

b. Landowner's contact information (required)

Name: Bedard Homes LLC

Phone: 423-3564

E-mail: kbbc1990@gmail.com

Street Address: P. O. Box 481

City: Biddeford

State: ME

Zip: 04005

c. ☐ Large Projects: check if separate project landowner data file submitted

The Maine Department of Environmental Protection will e-mail official status letters to the project contact and landowner. Please check these data for completeness and accuracy to prevent delay in mailings. E-mail is the preferred method of notification; please provide e-mail addresses for the project contact and the landowner when available.

4. VERNAL POOL LOCATION INFORMATION

a. Location Township: York

Brief site directions to the pool (using mapped landmarks):

Pool Located 600 feet south of pump station located on Parkside Drive. There is a trail network on the parcel which passes adjacent to the pool

b. Mapping Requirements

i. USGS topographic map OR aerial photograph with pool clearly marked.

ii. GPS location of vernal pool (use Datum NAD83 / WGS84)

Longitude/Easting: 43.477694

Latitude/Northing: -70.441802

Coordinate system: NAD83

Check one: ☐ GIS shapefile

- send to VernalPool.MDIFW@maine.gov; observer has reviewed shape accuracy

☐ (Best) The pool perimeter is delineated by multiple GPS points. (Excellent)

- Include map or spreadsheet with coordinates.

☒ The above GPS point is at the center of the pool. (Good)

**5. VERNAL POOL HABITAT INFORMATION**

a. Habitat survey date (only if different from indicator survey dates on page 3): _____

b. Wetland habitat characterization

■ Choose the best descriptor for the landscape setting:

☐ Isolated depression

☒ Pool associated with larger wetland complex

☐ Floodplain depression

☐ Other: _____

■ Check all wetland types that best apply to this pool:

☐ Forested swamp

☒ Wet meadow

☐ Slow stream

☐ Dug pond or
borrow pit

☒ Shrub swamp

☐ Lake or pond cove

☐ Floodplain

☐ Peatland (fen or bog)

☐ Abandoned beaver flowage

☐ Mostly unvegetated pool

☐ Roadside ditch

☐ Emergent marsh

☐ Active beaver flowage

☐ ATV or skidder rut

☐ Other: _____

c. Vernal pool status under the Natural Resources Protection Act (NRPA)

i. Pool Origin: ☒ Natural ☐ Natural-Modified ☐ Unnatural ☐ Unknown

If modified, unnatural or unknown, describe any modern or historic human impacts to the pool (required):

ii. Pool Hydrology

■ Select the pool's estimated hydroperiod AND provide rationale in box (required):

☒ Permanent

☐ Semi-permanent
(drying partially in all years and
completely in drought years)

☐ Ephemeral
(drying out completely
in most years)

☐ Unknown

Explain:

Having visited the site in fall 2024 as well as spring 2025 depth of water in pool changed very little, pool is located at head of wetland complex

■ Maximum depth at survey: ☐ 0-12" (0-1 ft.) ☐ 12-36" (1-3 ft.) ☒ 36-60" (3-5 ft.) ☐ >60" (>5 ft.)

■ Approximate size of pool (at spring highwater): Width: ☐ m ☒ ft Length: ☐ m ☒ ft

■ Predominate substrate in order of increasing hydroperiod:

☐ Mineral soil (bare, leaf-litter bottom, or upland
mosses present)

☐ Organic matter (peat/muck) shallow or
restricted to deepest portion

☐ Mineral soil (sphagnum moss present)

☒ Organic matter (peat/muck) deep and widespread

■ Pool vegetation indicators in order of increasing hydroperiod (check all that apply):

☐ Terrestrial nonvascular spp. (e.g. haircap
moss, lycopodium spp.)

☐ Wet site ferns (e.g. royal fern, marsh fern)

☐ Dry site ferns (e.g. spinulose wood fern,
lady fern, bracken fern)

☐ Wet site shrubs (e.g. highbush blueberry, maleberry,
winterberry, mountain holly)

☐ Moist site ferns (e.g. sensitive fern, cinnamon
fern, interrupted fern, New York fern)

☒ Wet site graminoids (e.g. blue-joint grass, tussock
sedge, cattail, bulrushes)

☒ Moist site vasculars (e.g. skunk cabbage,
jewelweed, blue flag iris, swamp candle)

☐ Aquatic vascular spp. (e.g. pickerelweed, arrowhead)

☐ Sphagnum moss (anchored or suspended)

☐ Floating or submerged aquatics (e.g. water lily,
water shield, pond weed, bladderwort)

☐ No vegetation in pool

■ Faunal indicators (check all that apply):

☐ Fish

☐ Bullfrog or Green Frog tadpoles

☐ Other: _____

iii. Inlet/Outlet Flow Permanency

Type of inlet or outlet (a seasonal or permanent channel providing water flowing into or out of the pool):

☐ No inlet or outlet

☐ Permanent inlet or outlet (channel with well-defined banks and permanent flow)

☐ Intermittent inlet
or outlet

☒ Other or Unknown (explain):



Maine State Vernal Pool Assessment Form



6. VERNAL POOL INDICATOR INFORMATION

a. Indicator survey dates: 4/9/25 4/25/25

b. Indicator abundance criteria and pool survey effort

- Is pool depression bisected by 2 ownerships (straddler pool)? ☐ Yes ☒ No
- Was the entire pool surveyed for egg masses? ☒ Yes ☐ No; what % of entire pool surveyed? _____
- For each indicator species, indicate the exact number of egg masses, confidence level for species determination, and egg mass maturity. Separate cells are provided for separate survey dates.

INDICATOR SPECIES	Egg Masses (or adult Fairy Shrimp)						Tadpoles/Larvae ⁴					
	Visit #1	Visit #2	Visit #3	Confidence Level ¹			Egg Mass Maturity ²			Observed		Confidence Level ¹
Wood Frog	15	28		3	3		F	M		X		3
Spotted Salamander	10	35		3	3		F	M				
Blue-spotted Salamander												
Fairy Shrimp ³												

1-Confidence level: 1 = <60%, 2 = 60-95%, 3 = >95%

2-Egg mass maturity: F= Fresh (<24 hrs), M= Mature (round embryos), A= Advanced (loose matrix, curved embryos), H= Hatched or Hatching

3-Fairy shrimp: X = present

4-Tadpoles/larvae: X = present

c. Rarity criteria

- Note any rare species associated with vernal pools. Observations should be accompanied by photographs.

SPECIES	Method of Verification*			CL**	SPECIES	Method of Verification*			CL**
	P	H	S			P	H	S	
Blanding's Turtle	☐	☐	☐		Wood Turtle	☐	☐	☐	
Spotted Turtle	☐	☐	☐		Ribbon Snake	☐	☐	☐	
Ringed Boghaunter	☐	☐	☐		Other:	☐	☐	☐	

*Method of verification: P = Photographed, H = Handled, S = Seen

**CL - Confidence level in species determination: 1= <60%, 2= 60-95%, 3= >95%

d. Optional observer recommendation:

- ☒ SVP ☐ Potential SVP ☐ Non Significant VP ☐ Indicator Breeding Area

e. General vernal pool comments and/or observations of other wildlife:

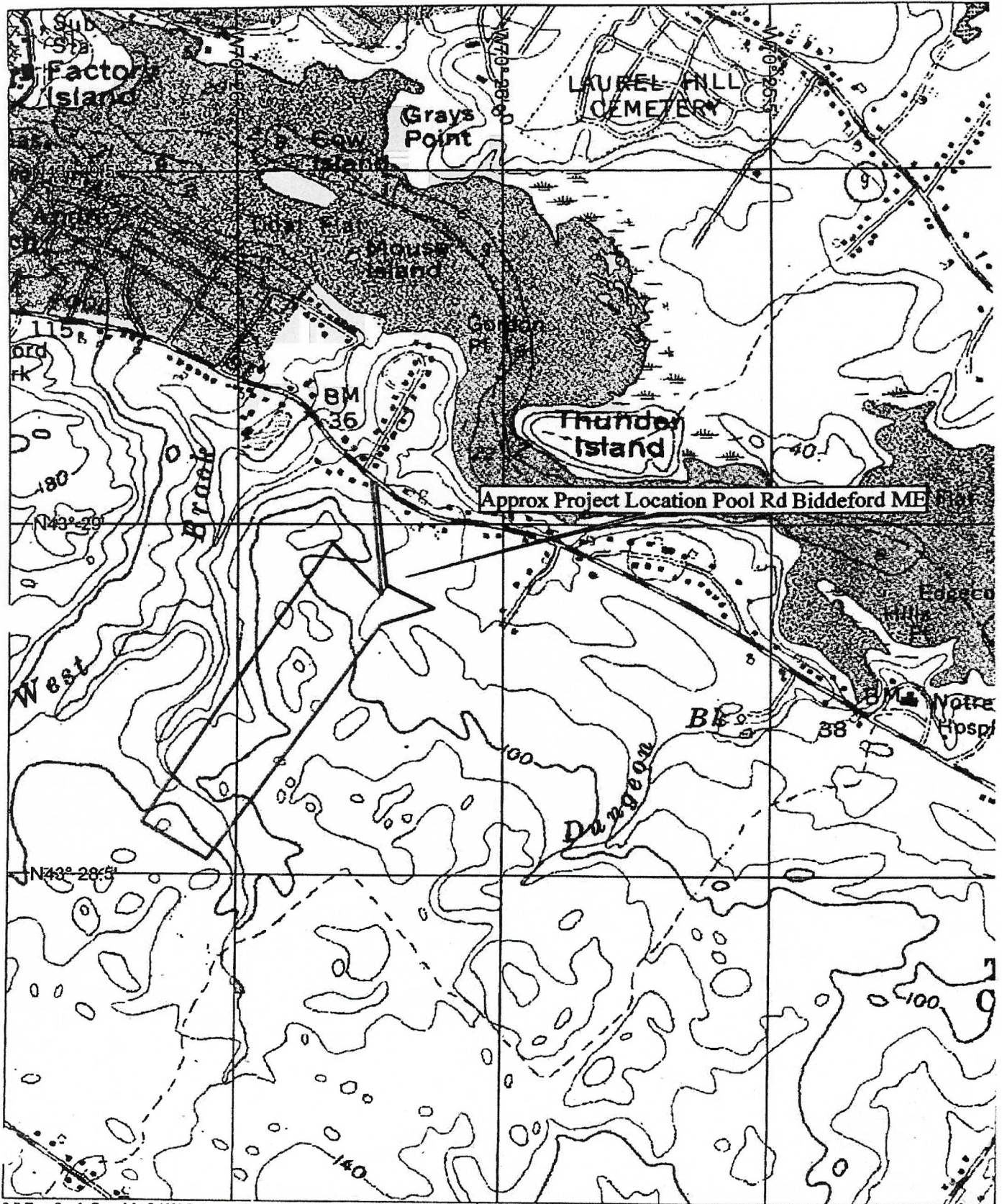
Send completed form and supporting documentation to: VernalPool.MDIFW@maine.gov

NOTE: Digital submissions are preferred but if not possible, please mail to: Maine Department of Inland Fisheries and Wildlife
Attn: Vernal Pools
106 Hogan Road, Suite 1
Bangor, ME 04401

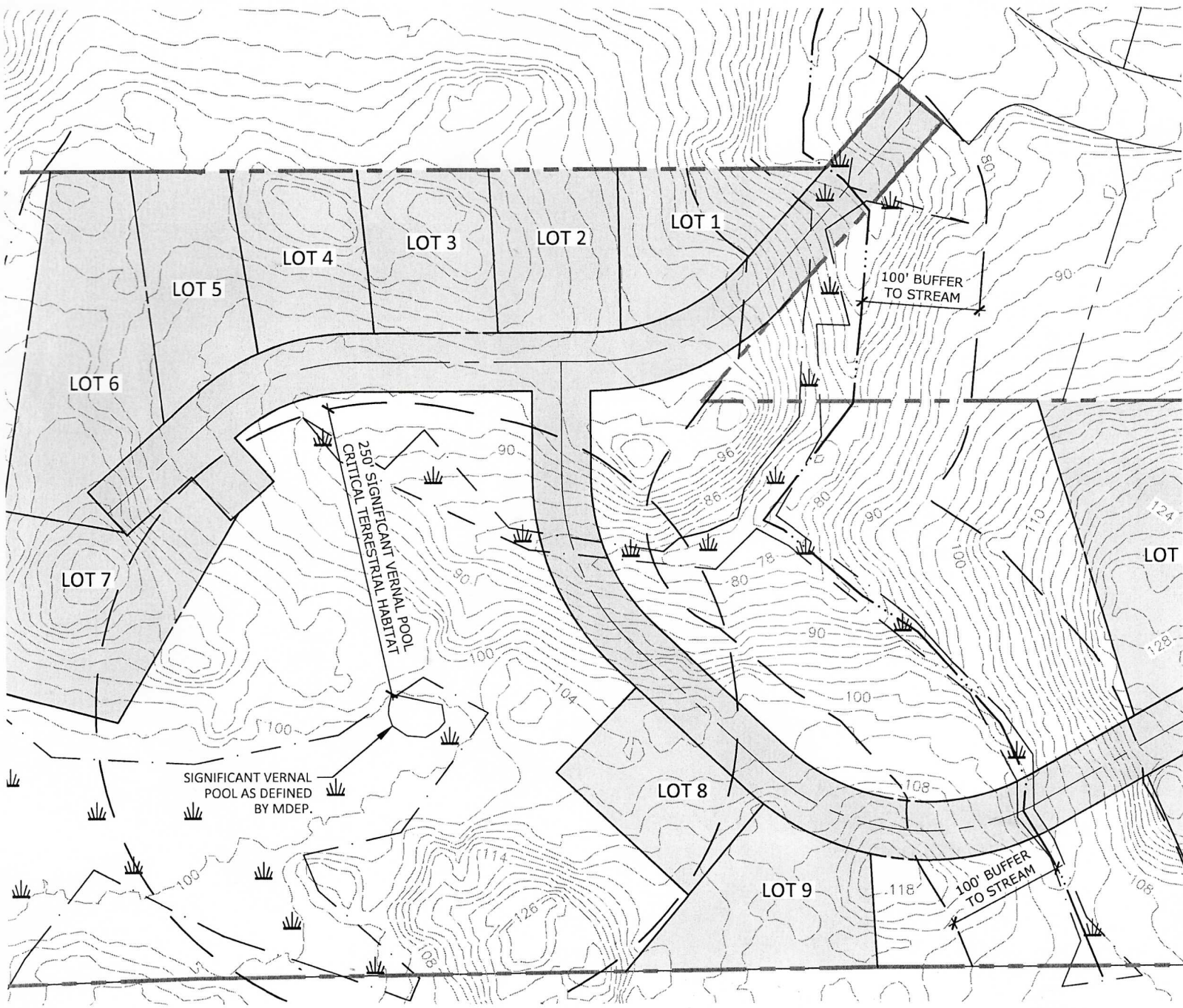
For MDIFW use only Reviewed by MDIFW Date: _____ Initials: _____

This pool is: ☐ Significant ☐ Potentially Significant but lacking critical data ☐ Not Significant due to: ☐ does not meet biological criteria. ☐ does not meet MDEP vernal pool criteria.

Comments:



3-D TopoQuads Copyright © 1999 DeLorme Yarmouth, ME 04096 Source Data: USGS 500 ft Scale: 1 : 12,800 Detail: 13-0 Datum: WGS84







Spotted Salamander Egg Mass



Spotted Salamander Egg Mass





TO: Jayson Haskell (DM Roma Consulting Engineers); Andy Wood, Phillip DeMaynadier, and Derek Yorks (Maine Department of Inland Fisheries and Wildlife)

FROM: Kevin Ryan, FB Environmental Associates

SUBJECT: Rare Turtle Habitat Reconnaissance – Pool Street Subdivision, Biddeford, Maine

DATE: June 25, 2025

CC: Forrest Bell and Elliott Boardman (FB Environmental Associates)

Attachments: 1) Soil Map; 2) Photopoint map; 3) Photographs; 4) Rare Turtle Ecology Summaries

EXECUTIVE SUMMARY

FB Environmental Associates conducted a reconnaissance-level habitat survey for rare turtles at the site of a proposed subdivision in Biddeford, Maine. The field investigation confirmed the presence of both Blanding's (*Emydoidea blandingii*, State Endangered) and spotted turtles (*Clemmys guttata*, State Threatened) within a northeastern wetland complex and identified other wetland and upland areas that may serve as suitable habitat. While the primary focus was on rare turtle use, general habitat conditions and incidental bird observations were also documented. Development at this site may require state and federal wetland permitting, and consultation with MDIFW will be important to determine appropriate measures to avoid or minimize impacts to state-listed species. Additional permitting thresholds, including Site Law applicability, may also influence project planning.

INTRODUCTION

At the request of DM Roma, FB Environmental Associates (FBE) conducted a reconnaissance-level habitat survey focused on identifying potential habitat for rare turtles, specifically Blanding's turtle, spotted turtle, and wood turtle (*Glyptemys insculpta*), at the site of a proposed residential subdivision in Biddeford, Maine. The approximately 47-acre Survey Area is accessible from Parkside Road.

Although the primary objective was to assess the site's potential to support rare turtle species, FBE also documented general habitat characteristics, including natural community types present. Additionally, birds observed or heard during the field investigation were noted to help inform an overall understanding of site conditions.

Prior to the site visit, FBE reviewed existing information relevant to the property, including an existing conditions plan provided by DM Roma, a shapefile of wetland boundaries within the Survey Area (delineated by Mark Hampton Associates, Inc.), aerial imagery, National Wetlands Inventory (NWI) maps, USDA soil survey data, and Maine Department of Inland Fisheries and Wildlife (MDIFW) Beginning with Habitat maps.

Included with this memo are a soils map, a site map showing wetland boundaries and photopoint locations, representative site photographs, and brief summaries of the ecology of the three turtle species of concern.

DESKTOP ASSESSMENT

The Survey Area is approximately 47 acres in size, situated generally southeast of Parkside Drive and south of Pool Street in Biddeford, Maine. Beginning with Habitat maps indicate that the Survey Area is part of a larger, 930-acre undeveloped habitat block.

Soils

According to the USDA Web Soil Survey, the Survey Area includes eight mapped soil types, with the Lyman-Rock outcrop complex (LyC and LyE) comprising approximately 63% of the site. These soils are typically shallow, well-drained to somewhat excessively drained, and occur on upland slopes. The Rock outcrop–Lyman complex (RoE), also well to somewhat excessively drained, accounts for approximately 12% of the area. Scantic silt loam (Sc), a poorly drained soil typically associated with low-lying areas and wetlands, covers approximately 17% of the site. Other mapped soils include Naumburg sand (Na; somewhat poorly drained), Buxton silt loam (BuD; moderately well drained), and Lyman loam (LnB; well drained), along with a small area of Naumburg sand (Na) and Lyman-Rock outcrop complex (LyB) on gentler slopes. The distribution of these soils suggests a landscape dominated by rocky, well-drained uplands interspersed with pockets of wetter, potentially hydric soils in the lower-lying areas.

Topography

The Survey Area features a mix of upland and lowland terrain, with generally rolling topography. Slopes range from gentle to steep in places, particularly within upland areas characterized by shallow, rocky soils. Interspersed throughout the site are flatter, lower-lying areas that support wetlands and watercourses. Elevations within the site range from approximately 64 to 136 feet above sea level.

FIELD INVESTIGATION

Terrestrial Natural Communities

Upland (non-wetland) areas within the Survey Area generally correspond to two natural community types as defined by Gawler and Cutko (2010). The northern portion of the site most closely aligns with the Oak-Pine Forest type, while the southern portion is characterized primarily as Hemlock Forest.

Oak-Pine Forest (Photopoints 3, 4, 17, 20)

Oak-Pine Forest typically occurs in well-drained, sandy, or rocky upland settings and is dominated by a mix of oak species—primarily red oak (*Quercus rubra*)—and pine species, chiefly white pine (*Pinus strobus*). In the Survey Area, this community is most prevalent in the northern portion and is characterized by a canopy of red oak with shagbark hickory (*Carya ovata*) also present and an occasional mature pitch pine (*Pinus rigida*). The understory includes smaller white pine, red maple (*Acer rubrum*), and eastern hemlock (*Tsuga canadensis*). Observed shrubby and herbaceous vegetation included lowbush blueberry (*Vaccinium angustifolium*), wood anemone (*Anemone quinquefolia*), bracken fern (*Pteridium aquilinum*), wild sarsaparilla (*Aralia nudicaulis*), wintergreen (*Gaultheria procumbens*), starflower (*Lysimachia borealis*), and yellow trout lily (*Erythronium americanum*).

Hemlock Forest (Photopoints 1, 2, 10, 13)

Hemlock Forest is a shaded, mesic¹ upland community dominated by eastern hemlock, typically found on cool, north-facing slopes, ravines, and well-drained lowlands. These forests are characterized by a dense canopy that limits light penetration, resulting in a sparse understory.

Within the Survey Area, this community is dominated by eastern hemlock, with white pine and red maple present in lesser amounts. In one area at the north end of the site, several large paper birch (*Betula papyrifera*) trees were observed in a dead or declining state—likely the result of natural forest succession and shading by the surrounding hemlocks.

Wetlands and Watercourses

Wetlands are primarily concentrated in the central and southwestern portions of the Survey Area, with additional wetland areas located along and extending beyond the eastern boundary. A mapped stream enters the Survey Area from the southeast and flows through a central wetland complex before continuing beyond the site's western boundary. These features are described in greater detail below. For orientation purposes, wetland locations are referenced using general location descriptions and photopoint numbers.

Central Wetland Complex (Photopoints 1, 5)

The central wetland complex consists of a small stream flowing through a ravine within hemlock forest. During the field investigation, the stream exhibited steadily flowing water with a wetted width ranging from approximately 1 to 4 feet and depths of several inches.

¹ *Mesic* refers to sites with moderate moisture conditions—neither excessively wet nor excessively dry. In forest types, mesic conditions typically support a diverse mix of plant species adapted to well-balanced soil moisture availability.

Eastern Wetland Area (Photopoint 6)

This wetland complex extends beyond the Survey Area boundary but is considered “isolated” in that it lacks a permanent inlet or outlet and is not embedded within a larger wetland system. It is a scrub-shrub wetland dominated by dense highbush blueberries (*Vaccinium corymbosum*) in the interior, with small patches of marsh vegetation, including sedges (*Carex* spp.) and cattail (*Typha latifolia*), along the edges. During the field investigation, standing water exceeded 3 feet in depth. Several spotted salamander (*Ambystoma maculatum*) egg masses were observed within the wetland.

Unnamed Tributary Stream to West Brook (Photopoints 8, 9, 10, 11)

An unnamed stream traverses the Survey Area, flowing from the southeast to the northwest. The watercourse is a tributary of West Brook, which ultimately discharges to the Saco River. Within the Survey Area, the stream channel is approximately 10 to 15 feet wide, with a predominantly sandy bottom. During the field investigation, the stream exhibited steady flowing water with depths up to approximately 3 feet. The canopy above the stream is open in some areas and is predominantly bordered by red maple. Sections of active floodplain adjacent to the stream contain sensitive fern (*Onoclea sensibilis*), with some sedges also present. Beyond the Survey Area to the northwest, the stream transitions to a cobble-gravel substrate with rocks and boulders also present.

A pair of wood ducks (*Aix sponsa*) was observed using the stream near photopoint 10; they were seen in the water and flushed upon approach.

Southwestern Wetland Area (Photopoints 7, 12, 14)

This area is a forested wetland complex. At photopoint 7, red maple is dominant in the canopy with some white pine also present. The wetland has hummock-hollow microtopography with small white pines, starflower (*Lysimachia borealis*), Canada mayflower (*Maianthemum canadense*), and Carolina rose (*Rosa carolina*) growing from hummocks. Wetter portions of the wetland contain white meadowsweet (*Spiraea alba*), arrowwood (*Viburnum dentatum*), winterberry (*Ilex verticillata*), and highbush blueberry.

At Photopoint 12, the wetland is primarily forested with a scrub-shrub component. The area is generally flat, with very shallow standing water in spots, typically less than 1 inch in depth. Red maple dominates the canopy, with some white pine, gray birch (*Betula populifolia*), and occasional hop-hornbeam (*Ostrya virginiana*) also present. The scrub-shrub layer includes common winterberry, speckled alder (*Alnus incana*), white meadowsweet, and highbush blueberry. Sedges can be dense in the herb layer, with some sensitive fern and small arrowwoods also present. In areas with greater canopy cover and reduced light penetration, mats of Sphagnum moss are present.

At photopoint 14, a small stream enters the wetland complex. The stream originates from an offsite wetland and was observed during the field investigation to be approximately 10 to 15 feet wide, with flowing water up to about 6 inches deep.

Forested Pool (Photopoint 16)

The wetland at Photopoint 16 appears to be a natural pool that has been modified by human activity, as the pool is located within a trail. During the field investigation, the pool contained approximately 18 inches of standing water, and several spotted salamander egg masses were observed.

Northeastern Wetland Complex (Photopoints 18 and 19)

The wetland complex at the northeastern end of the Survey Area extends beyond the property to both the north and east. At Photopoint 18, this portion of the system is a forested wetland characterized by a red maple canopy and a sparse shrub layer composed of highbush blueberry and small white pines. The herb layer includes scattered clumps of cinnamon fern (*Osmundastrum cinnamomeum*).

Two small streams in this area serve as outlets to wetland sections just outside the Survey Area, one of which is an open water/scrub-shrub wetland where a spotted turtle (State-Threatened) and two Blanding's turtles (State Endangered) were observed. Numerous spotted salamander egg masses and hundreds of wood frog tadpoles were also documented within this portion of the wetland complex.

RARE TURTLE HABITAT

Based on the field investigation, both Blanding's and spotted turtles are confirmed to use the wetland complex at the northeastern end of the Survey Area (i.e., the wetland complex associated with photopoint 18). The presence of these species was not unexpected as both are known to occur in the vicinity of the planned subdivision. The scrub-shrub wetland referred to herein as the Eastern Wetland Area (photopoint 6) also appears to provide suitable habitat for both species, as such wetlands are utilized for feeding during the turtles' active season. It is also possible that either species may utilize the unnamed tributary to West Brook and the forested wetland complex it traverses.

While both Blanding's and spotted turtles are closely associated with wetlands, they use a variety of habitat types throughout the year. Females typically nest in sandy, well-drained upland areas, and individuals may travel overland between wetlands. Both species also aestivate in upland forest during the summer. Therefore, although turtles were observed using a particular wetland within the Survey Area, it is possible that other wetland and non-wetland areas of the site are also utilized by these species.

Regarding wood turtles, although the unnamed tributary to West Brook possesses qualities that could be suitable for wood turtles, the stretch of seemingly suitable habitat is relatively short. A formal wood turtle survey—typically requiring multiple site visits—was not conducted; however, the field investigation took place under ideal conditions for wood turtle detection. No wood turtles were observed during the survey.

BIRDS

Although the primary focus of the field investigation was to assess habitat for rare turtles, bird species encountered incidentally during the survey were documented. The survey took place prior to the peak of the breeding season, and no formal avian survey was conducted; therefore, the species list presented here is limited. A more robust inventory of bird species would likely result from targeted surveys conducted later in the season.

Bird species observed during the field investigation included American goldfinch (*Spinus tristis*), black-capped chickadee (*Parus atricapillus*), ovenbird (*Seiurus aurocapilla*), brown creeper (*Certhia americana*), black-throated green warbler (*Setophaga virens*), and wood duck. Black-throated green warblers and brown creepers are commonly associated with hemlock and mixed coniferous forests, while ovenbirds typically inhabit mature deciduous or mixed hardwood stands. American goldfinch was observed near forest edges or open areas, and wood ducks were observed using the unnamed tributary to West Brook.

DEVELOPMENT IMPLICATIONS

Ideally, when a given site is to be developed, all wetlands on that site can be avoided. However, it is sometimes deemed necessary to fill a portion of, or all of, a given wetland area. Such activity requires permitting from the Maine Department of Environmental Protection and the US Army Corps of Engineers if the wetland is considered to be Waters of the United States. For state permitting, any alteration of wetlands over 15,000 square feet in size generally requires mitigation activity or payment into the Maine In Lieu Fee Compensation Program.²

Previous conversations with MDIFW indicate that the department typically recommends that wetlands providing rare turtle habitat remain unimpacted and that a 250-foot no disturbance buffer be implemented surrounding habitat for state-listed species such as the spotted turtle and Blanding's turtle. Such buffers can sometimes reduce the total developable area at a given site.

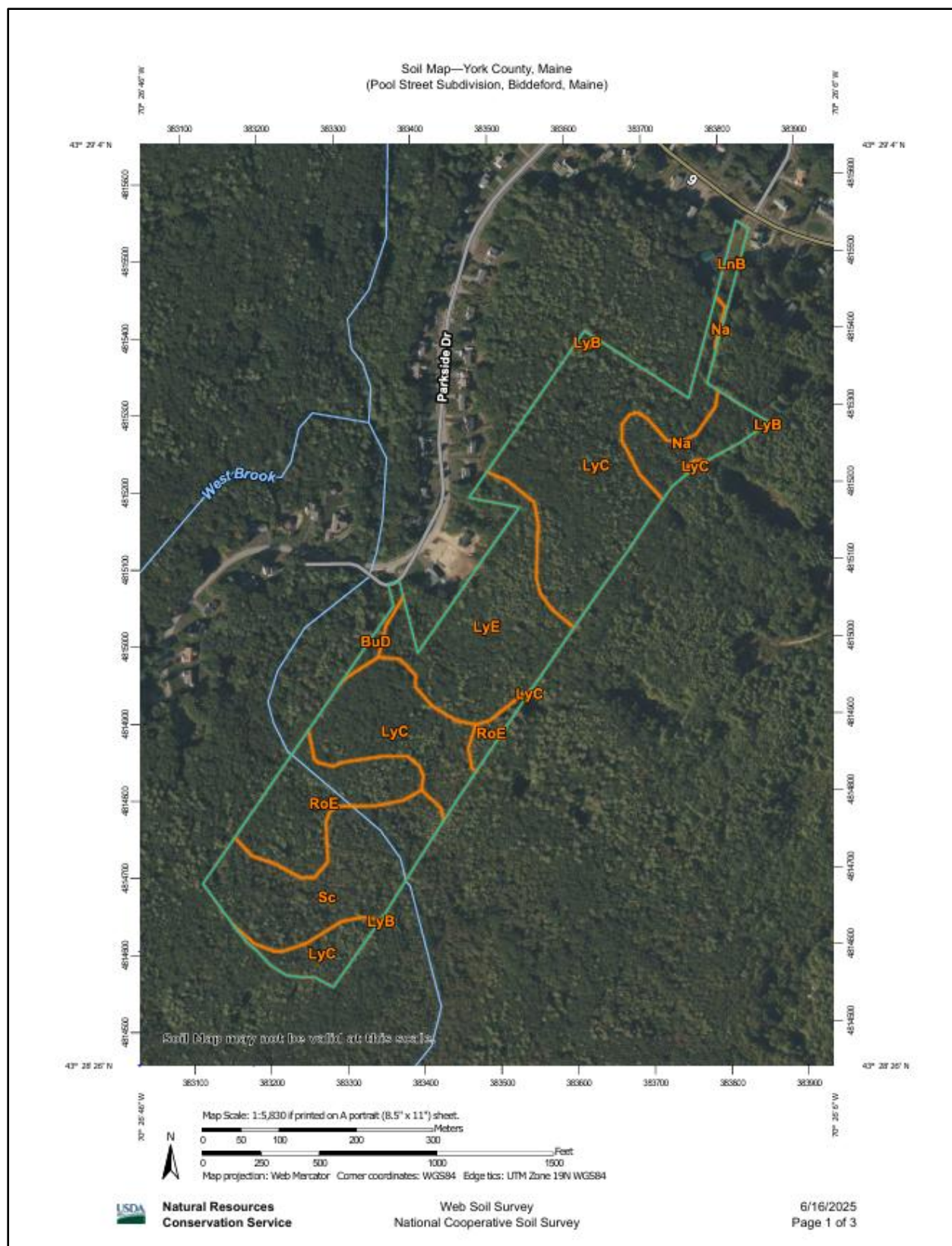
Development resulting in three or more acres of impervious area will generally trigger the need for Site Location of Development (Site Law) permitting through the Maine Department of Environmental Protection. Other common triggers for Site Law permitting include the creation of 20 or more acres of developed area, subdivisions with 15 or more lots or units, or development within protected natural areas. If the Site Law regulations are triggered, scrutiny of the project by applicable regulatory agencies will be increased. For example, Section 7 of the Site Law application requires a plan to minimize harm to wildlife and fisheries, including species listed as Special Concern, in addition to those listed as

² Information on the in lieu fee program is available at https://www.maine.gov/dep/land/nrpa/ILF_and_NRCP/ILF/fs-in-lieu-fee.pdf.

Threatened or Endangered. Also, under Site Law, migration areas between blocks of suitable habitat are protected.

The Maine Department of Inland Fisheries and Wildlife (MDIFW) will be able to provide additional guidance regarding the presence of rare species at the site and any recommended measures to avoid or minimize impacts. Coordination with MDIFW is important to ensure that any future development activities are planned with consideration for the habitat needs and seasonal movements of state-listed species, such as Blanding's and spotted turtles.

ATTACHMENT 1: SOIL MAP



Soil Map—York County, Maine
(Pool Street Subdivision, Biddeford, Maine)

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 |

-  Spiral Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features

Water Features

-
- Streams and Canals

Transportation

- | | |
|---|---------------------|
|  | Rails |
|  | Interstate Highways |
|  | US Routes |
|  | Major Roads |
|  | Local Roads |

Background

-
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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

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

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

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: York County, Maine

Survey Area Data: Version 23, Aug 26, 2024

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

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

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

Soil Map—York County, Maine

Pool Street Subdivision, Biddeford,
Maine

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BuD	Buxton silt loam, 15 to 25 percent slopes	0.4	0.9%
LnB	Lyman loam, 3 to 8 percent slopes, rocky	0.5	1.0%
LyB	Lyman-Rock outcrop complex, 3 to 8 percent slopes	0.1	0.2%
LyC	Lyman-Rock outcrop complex, 8 to 15 percent slopes	20.4	43.7%
LyE	Lyman-Rock outcrop complex, 15 to 80 percent slopes	8.9	19.1%
Na	Naumburg sand	2.6	5.6%
RoE	Rock outcrop-Lyman complex, 15 to 80 percent slopes	5.7	12.2%
Sc	Scantic silt loam, 0 to 3 percent slopes	8.1	17.3%
Totals for Area of Interest		46.6	100.0%

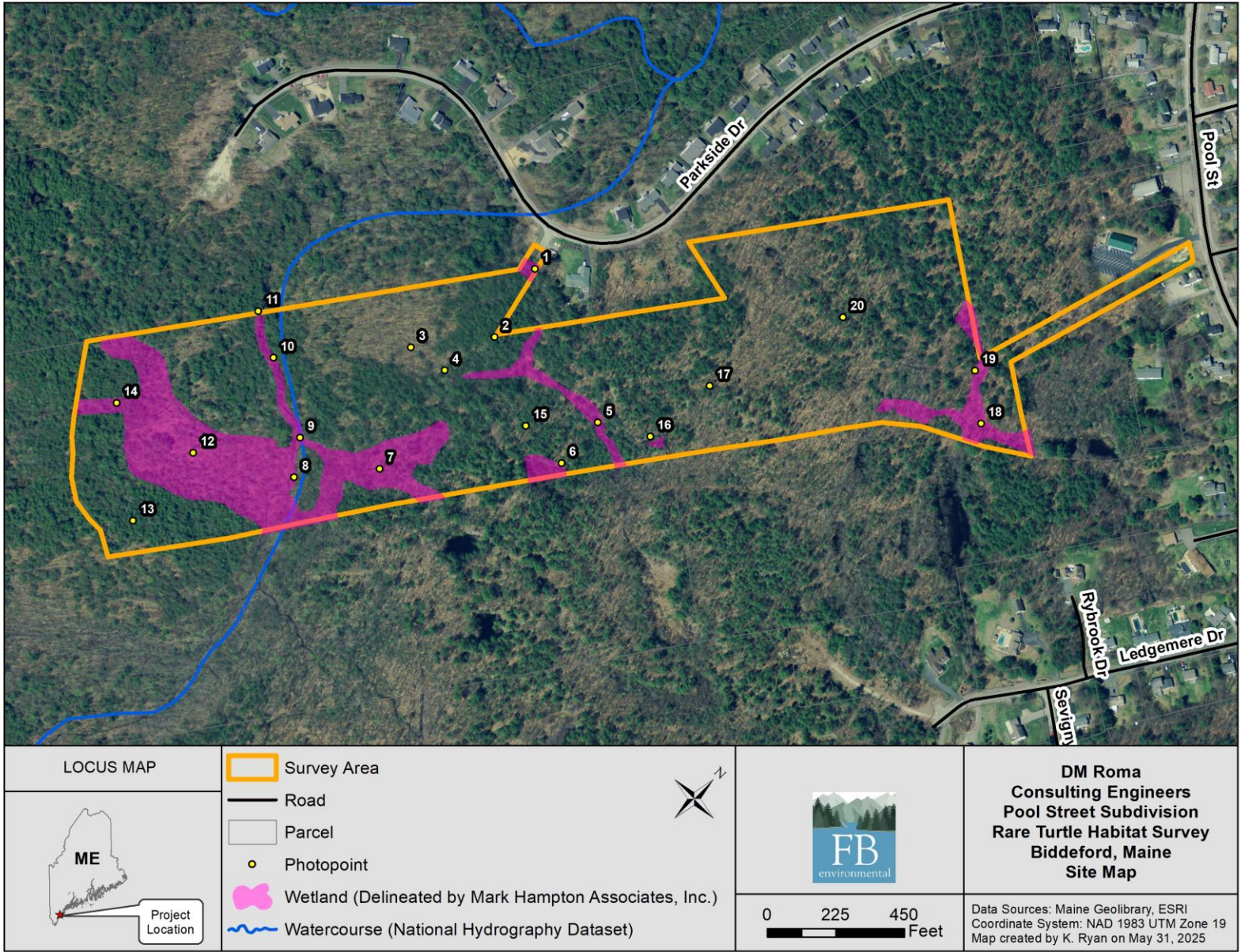


Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

6/16/2025
Page 3 of 3

ATTACHMENT 2. PHOTOPOINT MAP



ATTACHMENT 3. SITE PHOTOGRAPHS



Photopoint 1. A small stream flows through hemlock forest as it traverses the entire Survey Area from southeast to northwest.



Photopoint 2. A representative view of the Hemlock Forest community present within the Survey Area.



Photopoint 3. A representative view of Oak-Pine Forest in the southwestern half of the Survey Area.



Photopoint 4. Though near the northeastern limit of its range, shagbark hickory (*Carya ovata*) is present within the Survey Area and is relatively common in the Biddeford area.



Photopoint 5. The same stream as shown in Photopoint 1, viewed further upstream where it crosses an ATV trail.



Photopoint 6. Isolated scrub-shrub wetland with deep standing water and dense highbush blueberry (*Vaccinium corymbosum*). Such wetlands are used by Blanding's turtles (*Emydoidea blandingii*) and spotted turtles (*Clemmys guttata*).



Photopoint 7. The southwestern wetland area is a forested wetland with red maple (*Acer rubrum*) dominant in the canopy.



Photopoint 8. The unnamed tributary to West Brook meanders through the Survey Area and has a predominantly sandy bottom.



Photopoint 9. View slightly downstream from the previous photopoint of the tributary to West Brook.



Photopoint 10. Further downstream from the previous photo. The stream enters a patch of Hemlock Forest prior to flowing beyond the Survey Area boundary.



Photopoint 11. The substrate of the unnamed tributary to West Brook transitions from sand to rock, cobble, and gravel just beyond the Survey Area boundary.



Photopoint 12. The southwestern portion of the southwestern wetland area has a scrub-shrub component including speckled alder (*Alnus incana*) and winterberry (*Ilex verticillata*).



Photopoint 13. Representative view of Hemlock Forest in the southwestern corner of the Survey Area.



Photopoint 14. A tributary stream to the southwestern wetland area originates from a wetland complex located beyond the Survey Area boundary.



Photopoint 15. A trail within Hemlock Forest near the center of the Survey Area.



Photopoint 16. A small pool modified by human activity contained several spotted salamander (*Ambystoma maculatum*) egg masses.



Photopoint 17. A representative view of Oak-Pine Forest in the northeastern portion of the Survey Area.



Photopoint 18. A small stream within the wetland complex in the northeastern corner of the Survey Area, serving as the outlet of an open water/scrub-shrub wetland located just beyond the site to the northeast.



Photopoint 19. The narrow access corridor within the Survey Area extending eastward toward Pool Street.



Photopoint 20. The Oak-Pine Forest in the northeastern portion of the site also includes pitch pine (*Pinus rigida*).



Photo 21. A spotted turtle (*Clemmys guttata*) observed in the open water/scrub-shrub portion of the northeastern wetland complex.



Photo 22. A Blanding's turtle (*Emydoidea blandingii*) observed in the open water/scrub-shrub portion of the northeastern wetland complex.



Photo 23. Another Blanding's turtle (circled in red) observed in the open water/scrub-shrub portion of the northeastern wetland complex.

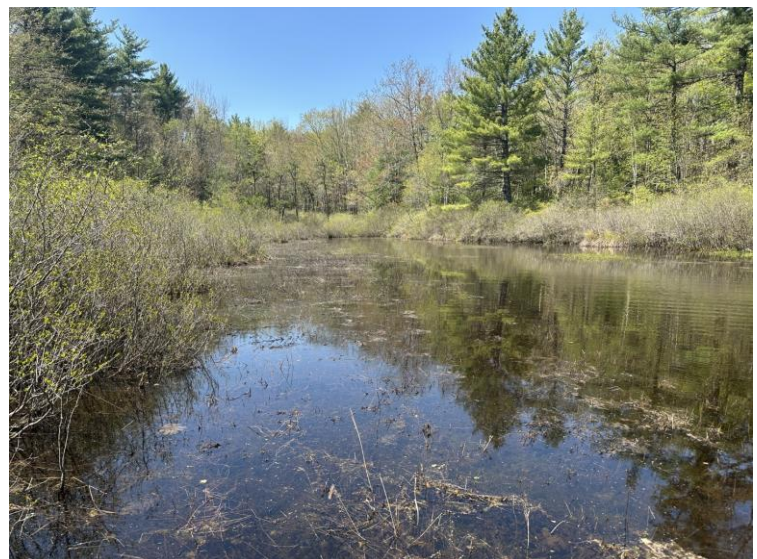


Photo 24. A representative photo of the open water/scrub-shrub portion of the northeastern wetland complex.

ATTACHMENT 4. RARE TURTLE ECOLOGY SUMMARIES

Spotted Turtle

Spotted turtles may be found in a wide variety of permanent and temporary shallow water habitats. In New England, they inhabit muddy-bottomed slow-moving streams, marshy areas associated with lakes, river floodplains, fens, drainage ditches, forested or scrub-shrub swamps, vernal pools, quarry pools, bogs, small ponds, and tidal creeks (Klemens 1993, Hunter et al. 1999). The omnivorous turtles eat spotted salamander and wood frog egg masses, tadpoles, worms, slugs, snails, insects, small crustaceans, and aquatic vegetation (Klemens, 1993; Gibbs et al., 2007). Female turtles nest on well-drained embankments and pastures, dirt-filled cracks in bedrock, sphagnum mats in fens and forested wetlands, and in the tops of tussocks in fens and bogs (Klemens 1993, Hunter et al., 1999). Terrestrial habitat is used extensively while searching for mates or suitable nesting sites, traveling among wetland habitats, and when moving to terrestrial (i.e., non-wetland) aestivation sites during periods of high temperatures (Klemens, 1993; Gibbs et al., 2007). (Aestivation is a prolonged state of inactivity during periods of drought or high temperatures.)



An adult spotted turtle (*Clemmys guttata*) in Connecticut.
Photo courtesy of Kevin Ryan.

Spotted turtles may be locally common in some areas of New England, though they have become rare in urbanized areas. Over-collection of these turtles for pets poses a threat to populations in close proximity to humans. As with other species of turtles that make extensive overland movements, loss and fragmentation of habitat is the primary conservation problem negatively affecting this species' survival (Klemens 1993).

Blanding's Turtle

The Blanding's turtle is primarily a Midwestern species, ranging from southwestern Quebec and southern Ontario west to Minnesota and Nebraska, and south to central Illinois. Blanding's turtles' range in the east is characterized by disjunct populations in Nova Scotia, southern Maine, eastern Massachusetts, and southeastern New Hampshire (Gibbs et al. 2007).

Highly mobile relative to other turtle species, Blanding's turtles traverse and/or use a wide variety of wetland and terrestrial habitats throughout the year. Utilized wetland habitats include those with permanent shallow water and emergent vegetation such as marshes, swamps, bogs, and ponds. The turtles also use vernal pools extensively in spring and while traveling through the landscape (NHFG³). The drying of shallow water habitat in summer induces some individuals to move over land to other bodies of water, while others will burrow under roots, mud, or on land under leaf litter and aestivate until conditions improve (Harding 1997). Gravid females can travel more than a kilometer (0.6 miles) from water to find suitable nesting sites, which are typically open, sunny spots with moist but well-drained sandy or loamy soil (Harding 1997).

The turtles are long-lived and may reach 50–70 years of age. Long-term studies of a Blanding's turtle population in Michigan (Congdon et al. 1993, cited in Harding 1997) found that sexual maturity was not reached until age 14–20. Investigators calculated that greater than 93% of adults and 72% of juveniles greater than one year of age needed to survive each year to maintain a stable population.



An adult Blanding's turtle showing the species' distinctive yellow throat. Photo courtesy of Mike Marchand.

³ NHFG information on Blanding's turtle available at <https://wildlife.state.nh.us/wildlife/profiles/blandings-turtle.html>.

Wood Turtle

The wood turtle is a relatively large species, with a maximum carapace length of 9.2 inches (average 5.5 to 8 inches) (Gibbs et al., 2007). Individuals tend to have a strongly keeled, sculpted, brown or black carapace with flared rear marginal scutes (Klemens, 1993). The plastron is yellow with a black blotch at the rear outer corner of each scute and has a V-shaped notch at the tail (Harding, 1997). The limbs and head are dark brown or black. In New England, wood turtles typically have bright orange throats and front limbs (Klemens, 1993).

Wood turtles take over ten years to reach sexual maturity, have low reproductive output, and are long-lived (Klemens 1993). Oliver (1955, cited in Klemens, 1993) reported the species living 58 years in captivity, and Klemens (1993) rarely found turtles younger than 15 to 20 years old.

Wood turtles require riparian habitats bordered by floodplain, woodland, or meadows (Klemens, 1993; Compton et al. 2002, Arvisais 2002, 2004, cited in Gibbs et al, 2007). Individuals may have large home ranges, with terrestrial activity ranging up to 1,000 feet of streams and rivers (Kaufmann 1992, Arvisais et al. 2002, Remsberg et al. 2006), however the species typically inhabits open sites close to water with low canopy cover (Compton et al. 2002). They are also known to use agricultural land (Parham and Feldman, 2000 cited in Gibbs et al., 2007). Wood turtles hibernate in streams in either deep pools or lodged below undercut banks (Klemens, 1993). In Maine, spring emergence typically occurs in April and May.



An adult wood turtle. Photo courtesy of Kevin Ryan.

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DM ROMA, BIDDEFORD, WETLAND & HABITAT DELINEATION



TO: Jayson Haskell, DM Roma Consulting Engineers
FROM: Elliott Boardman, FB Environmental Associates (FBE)
SUBJECT: **Wetland and Habitat Delineation; Pool Street, Biddeford, ME**
DATE: September 9, 2025
CC: Forrest Bell, FBE
ATTACHMENTS: 1) Wetland Delineation Map; 2) Cowardin Wetland Classification System; 3) Site Photographs; 4) USACE Wetland Determination Data Forms

At the request of DM Roma Consulting Engineers (DM Roma), FB Environmental Associates (FBE) conducted wetland delineation and rare turtle habitat delineation at the site of a proposed subdivision accessible from Pool Street or Parkside Road in Biddeford, Maine. This delineation is the result of a request made by Maine Department of Inland Fisheries and Wildlife (MDIFW) staff members, Phillip DeMaynadier, Laura Hatmaker, and Ciara Wentworth to the project team during a site visit on 14 August 2025. This request was to delineate observed Blanding's turtle (*Emydoidea blandingii*, State Endangered) and spotted turtle (*Clemmys guttata*, State Threatened) habitat to the northeast of the proposed subdivision (Attachment 1).

During the site visit with MDIFW, a small area that had previously been delineated as wetland by Mark Hampton Associates, was called into question by Phillip DeMaynadier and FBE Wetland Scientist and Wildlife Specialist Elliott Boardman, NHCWS. Due to the project design implications of this small area, DM Roma requested that FBE delineate the wetland concurrently with the rare turtle habitat delineation. Results of this effort are presented below.

WETLAND DELINEATION METHODOLOGY

FBE identified and delineated wetlands in accordance with the *1987 US Army Corps of Engineers (USACE) Wetland Delineation Manual*¹ and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, Version 2.0*.² This methodology involves identifying wetlands based on three criteria: the presence of hydrophytic vegetation, hydric soils, and wetland hydrology. For a given area to be considered a wetland, all three of these parameters must be met, with some exceptions for disturbed areas.

¹ Environmental Laboratory. (1987). Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

² U.S. Army Corps of Engineers. (2012). Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0), ed. J. S. Wakeley, R. W. Lichvar, C. V. Noble, and J. F. Berkowitz. ERDC/EL TR-12-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center.



All delineated wetlands are classified using the *Classification of Wetlands and Deepwater Habitats of the United States*³ (Attachment 2). This water resource classification system was developed by the United States Fish and Wildlife Service (USFWS) and is commonly referred to as "Cowardin Classification". The Cowardin Classification is used to define wetlands and other aquatic resources by their landscape position, cover type, and hydrologic regime. Special modifiers can be added that describe water regime/chemistry, soil types, or disturbances.

FBE marks wetland boundaries in the field using pink flagging emblazoned with the words "WETLAND DELINEATION", and the top of bank for watercourses with blue survey flagging. For narrow watercourses less than 10-15 feet wide, the watercourse's centerline was flagged with blue survey flagging. Boundaries of wetlands delineated during field surveys are geo-located using a mapping-grade GPS unit (EOS Arrow-100) which is capable of sub-meter accuracy in ideal field conditions. The collected GPS data were used to create the attached wetland delineation map (Attachment 2).

In addition, USACE Wetland Determination Data Forms were completed for representative paired wetland and upland areas. Each "USACE plot" refers to a standardized sampling location where vegetation, soils, and hydrology are evaluated according to the delineation methodology described above. These forms are used to determine whether a given area meets USACE criteria of a wetland.

RESULTS AND DISCUSSION

The field investigation was conducted on 26 August 2025 by Elliott Boardman. Elliott identified and delineated two distinct wetlands that had been previously delineated by Mark Hampton Associates. Elliott also delineated suitable rare turtle habitat just beyond the northeastern extent of the property boundary in which FBE Ecological Services Lead, Kevin Ryan observed Blanding's turtles and a spotted turtle on 12 May 2025 (see FBE *Rare Turtle Habitat Reconnaissance* report submitted to DM Roma on 25 June 2025 for additional details). Wetlands and watercourses within the site are depicted on the attached delineation map and are described in detail in the sections below.

Wetlands

Wetland A (PFO1E)

Wetland A is located in the far eastern portion of the property. The forested wetland has a seasonally flooded/saturated hydrologic regime and contains broad-leaved deciduous vegetation. At the USACE plot⁴ location, red maple (*Acer rubrum*) is the sole component of the canopy layer. Red maple is also dominant in the shrub stratum. The herbaceous stratum is dominated by northern long sedge (*Carex folliculata*) and swamp dewberry (*Rubus hispidus*) with cinnamon fern (*Osmundastrum cinnamomeum*), highbush blueberry (*Vaccinium corymbosum*), wild sarsaparilla (*Aralia nudicaulis*), and white oak (*Quercus alba*) seedlings present to a lesser extent. The soil profile meets the criteria for hydric soil indicator S5 – *Sandy Redox* as the soil consists of a 12-inch layer of sand containing prominent redoximorphic features and starting within six-inches of the soil surface. The observed primary indicator of hydrology was B9 – *Water-Stained Leaves*. USACE Wetland Determination Data Forms are included in Attachment 4.

³Cowardin, L. M., V. Carter, F. C. Golet, E. T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. 131 pp.

⁴ The USACE plot refers to a standardized data point where vegetation, soils, and hydrology are evaluated in accordance with the U.S. Army Corps of Engineers Wetland Delineation Manual and applicable regional supplement.

Wetland B (PFO1E)

Wetland B is located in the northern corner of the property, adjacent to the property access path. The wetland contains a broad-leaved deciduous canopy and has a seasonally flooded/saturated hydrologic regime. Wetland B slopes gently to the east, conveying water down this slope before the topography settles in adjacent to the access path.

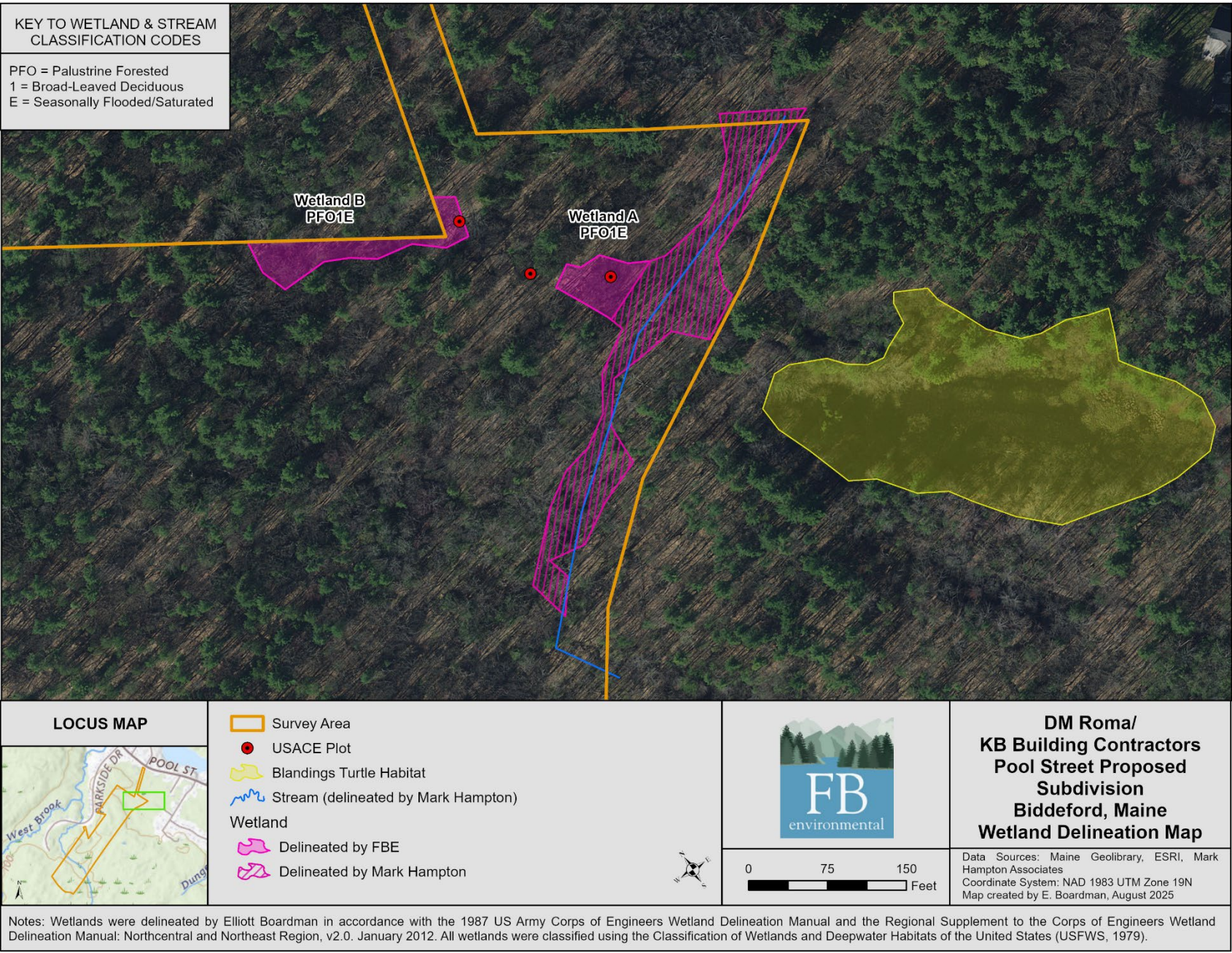
At the USACE plot location, red maple is dominant within the canopy with red oak (*Quercus rubra*) present to a much lesser extent. The shrub layer contains highbush blueberry and red oak saplings. The herbaceous stratum is relatively sparse, consisting of predominantly cinnamon fern and eastern marsh fern (*Thelypteris palustris*) with sensitive fern (*Onoclea sensibilis*), swamp dewberry, and speckled alder (*Alnus incana*) seedlings present to a lesser extent. The soil profile meets the criteria for hydric soil indicator S5 – *Sandy Redox* as the soil consists of a 11-inch layer of sand containing prominent redoximorphic features and starting within six-inches of the soil surface. Observed primary indicators of hydrology were A3 – *Saturation* and B9 – *Water-Stained Leaves*.

Blanding's and Spotted Turtle Habitat

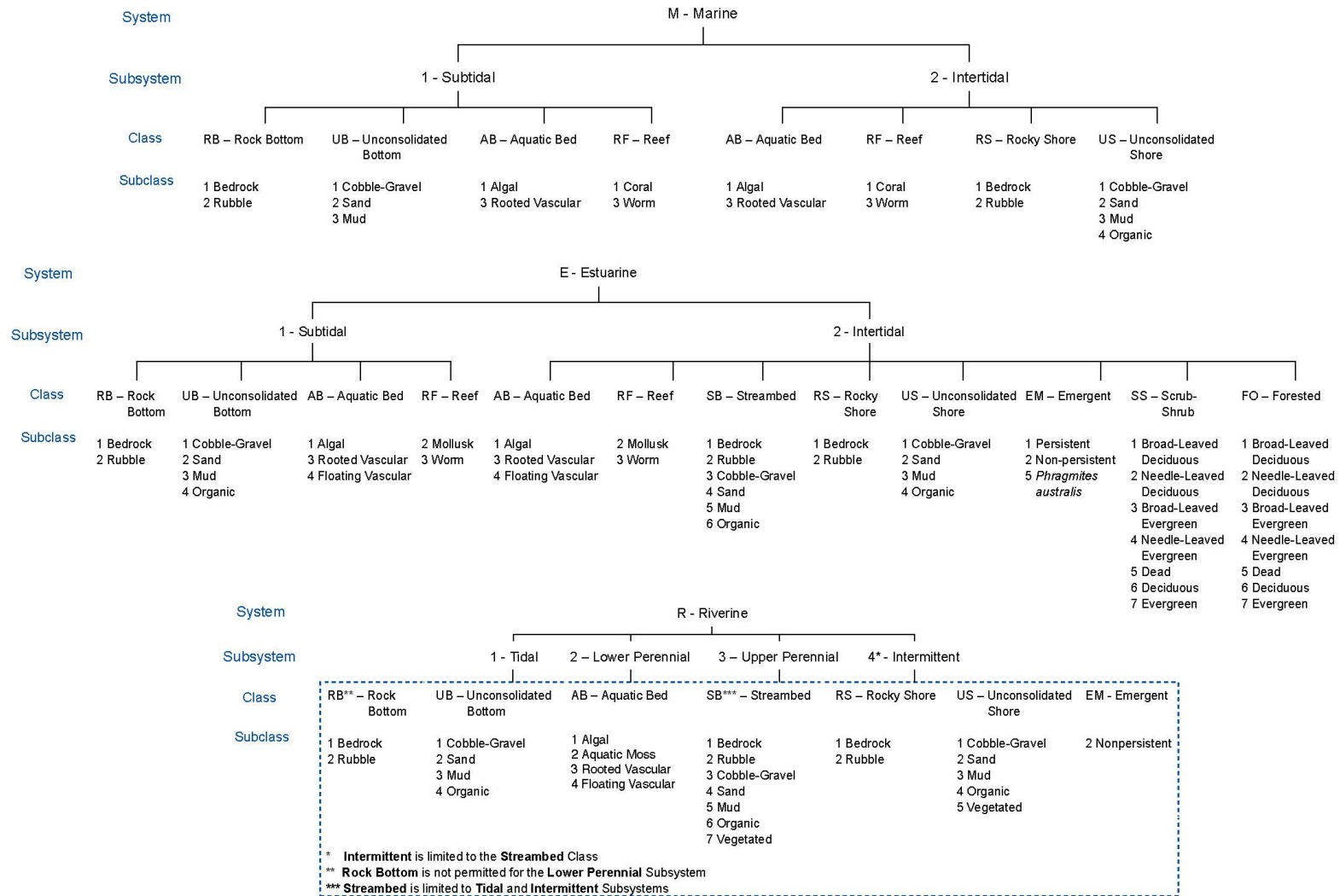
The wetland where both Blanding's and spotted turtles were observed lies just beyond the eastern corner of the property. It consists of a variably wide band of dense shrub swamp encircling a central area of seasonally inundated emergent wetland. Emergent vegetation observed within the wetland includes three-way sedge (*Dulichium arundinaceum*), broadleaf arrowhead (*Sagittaria latifolia*), soft rush (*Juncus effusus*), American bur-reed (*Sparganium americanum*), and marsh mermaid weed (*Proserpinaca palustris*). The surrounding shrub band supports common winterberry (*Ilex verticillata*), prairie willow (*Salix humilis*), and highbush blueberry.

Although not the primary focus of this investigation, a swamp darner (*Epiaeschna heros*, State Special Concern) was also observed within the emergent portion of the wetland.

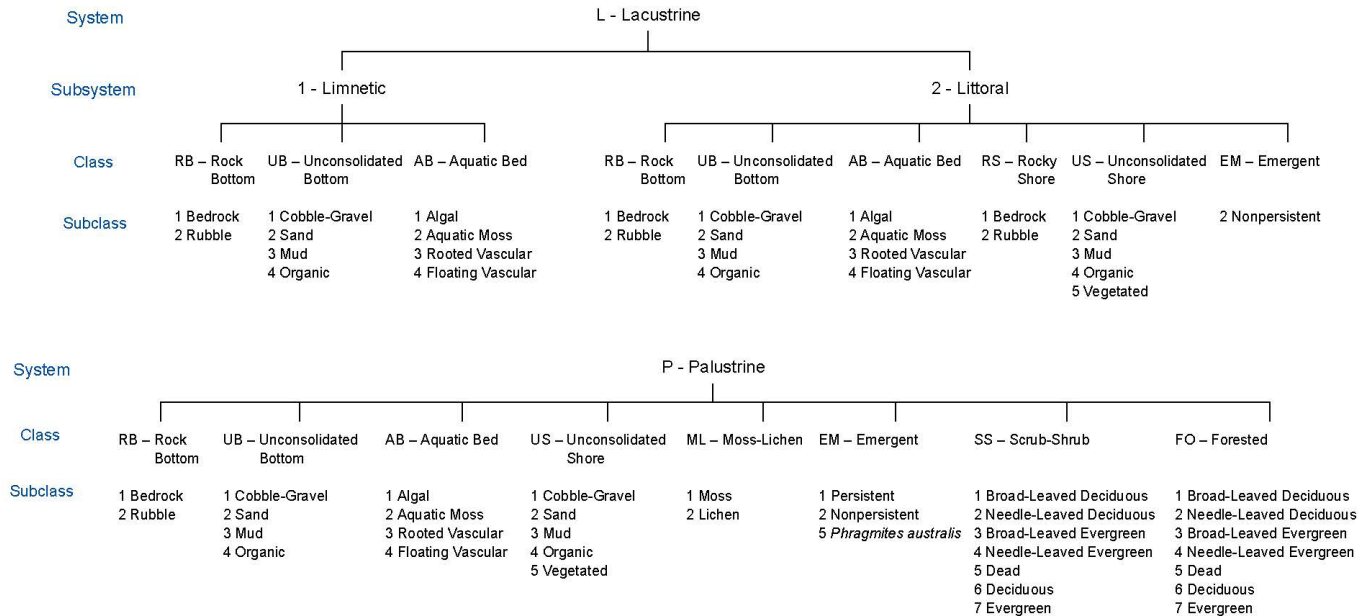
ATTACHMENT 1. WETLAND AND HABITAT DELINEATION MAP



WETLANDS AND DEEPWATER HABITATS CLASSIFICATION



WETLANDS AND DEEPWATER HABITATS CLASSIFICATION



MODIFIERS						
In order to more adequately describe the wetland and deepwater habitats, one each of the water regime, water chemistry, soil, or special modifiers may be applied at the class or lower level in the hierarchy.						
Water Regime			Special Modifiers	Water Chemistry		Soil
Nontidal	Saltwater Tidal	Freshwater Tidal		Halinity/Salinity	pH Modifiers for Fresh Water	
A Temporarily Flooded B Seasonally Saturated C Seasonally Flooded D Continuously Saturated E Seasonally Flooded / Saturated F Semipermanently Flooded G Intermittently Exposed H Permanently Flooded J Intermittently Flooded K Artificially Flooded	L Subtidal M Irregularly Exposed N Regularly Flooded P Irregularly Flooded	Q Regularly Flooded-Fresh Tidal R Seasonally Flooded-Fresh Tidal S Temporarily Flooded- Fresh Tidal T Semipermanently Flooded-Fresh Tidal V Permanently Flooded-Fresh Tidal	b Beaver d Partly Drained/Ditched f Farmed m Managed h Diked/Impounded r Artificial Substrate s Spoil x Excavated	1 Hyperhaline / Hypersaline 2 Euhaline / Eusaline 3 Mixohaline / Mixosaline (Brackish) 4 Polyhaline 5 Mesohaline 6 Oligohaline 0 Fresh	a Acid t Circumneutral i Alkaline	g Organic n Mineral

ATTACHMENT 3. SITE PHOTOGRAPHS



Photo 1. A representative view of Wetland A looking to the southeast from the USACE plot location.



Photo 2. The understory of Wetland A is variably dense and contains a dominant cover of northern long sedge (*Carex folliculata*).



Photo 3. Wetland B is a seasonally flooded/saturated palustrine forested wetland that contains broad-leaved deciduous vegetation.



Photo 4. A representative view of understory within Wetland B within the USACE plot location.



Photo 5. The portion of wetland where Blanding's turtle (*Emydoidea blandingii*) and spotted turtle (*Clemmys guttata*) were observed contains a central area of emergent vegetation bordered by dense shrub swamp.



Photo 6. Shrub swamp within the Blanding's and spotted turtle habitat contains dense common winterberry (*Ilex verticillata*) and highbush blueberry (*Vaccinium corymbosum*).



Photo 3. A representative view of the seasonally inundated emergent portion of the rare, threatened, or endangered (RTE) turtle habitat.



Photo 4. A swamp darner (*Epiaeschna heros*) was observed in the emergent portion of the RTE turtle habitat.

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Northcentral and Northeast Region See ERDC/EL TR-12-1; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 9/30/2027 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: Biddeford Residential Subdivision City/County: Biddeford/York Sampling Date: 26 August 2025

Applicant/Owner: DM Roma State: ME Sampling Point: A-1 Wet

Investigator(s): Elliott Boardman Section, Township, Range: _____

Landform (hillside, terrace, etc.): _____ Local relief (concave, convex, none): Concave Slope %: 0

Subregion (LRR or MLRA): LRR R Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Naumburg Sand NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ____ Surface Water (A1) <u>X</u> Water-Stained Leaves (B9) ____ High Water Table (A2) _____ Aquatic Fauna (B13) ____ Saturation (A3) _____ Marl Deposits (B15) ____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) ____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) ____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) ____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) ____ Iron Deposits (B5) _____ Thin Muck Surface (C7) ____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) ____ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ____ Surface Soil Cracks (B6) ____ Drainage Patterns (B10) ____ Moss Trim Lines (B16) ____ Dry-Season Water Table (C2) ____ Crayfish Burrows (C8) ____ Saturation Visible on Aerial Imagery (C9) ____ Stunted or Stressed Plants (D1) <u>X</u> Geomorphic Position (D2) ____ Shallow Aquitard (D3) ____ Microtopographic Relief (D4) <u>X</u> FAC-Neutral Test (D5)
--	--

Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION– Use scientific names of plants.

Sampling Point: A-1 Wet

Tree Stratum (Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Acer rubrum</u>	<u>75</u>	<u>Yes</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
		<u>75</u> =Total Cover																		
Sapling/Shrub Stratum (Plot size: <u>15</u>)				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>35</u></td> <td>x 1 = <u>35</u></td> </tr> <tr> <td>FACW species <u>37</u></td> <td>x 2 = <u>74</u></td> </tr> <tr> <td>FAC species <u>100</u></td> <td>x 3 = <u>300</u></td> </tr> <tr> <td>FACU species <u>12</u></td> <td>x 4 = <u>48</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>184</u> (A)</td> <td><u>457</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>2.48</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>35</u>	x 1 = <u>35</u>	FACW species <u>37</u>	x 2 = <u>74</u>	FAC species <u>100</u>	x 3 = <u>300</u>	FACU species <u>12</u>	x 4 = <u>48</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>184</u> (A)	<u>457</u> (B)	Prevalence Index = B/A = <u>2.48</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>35</u>	x 1 = <u>35</u>																			
FACW species <u>37</u>	x 2 = <u>74</u>																			
FAC species <u>100</u>	x 3 = <u>300</u>																			
FACU species <u>12</u>	x 4 = <u>48</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>184</u> (A)	<u>457</u> (B)																			
Prevalence Index = B/A = <u>2.48</u>																				
1. <u>Acer rubrum</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>																	
2. <u>Vaccinium corymbosum</u>	<u>5</u>	<u>No</u>	<u>FACW</u>																	
3. <u>Fraxinus pennsylvanica</u>	<u>2</u>	<u>No</u>	<u>FACW</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
		<u>32</u> =Total Cover																		
Herb Stratum (Plot size: <u>5</u>)				Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>X</u> <u>2</u> - Dominance Test is >50% <u>X</u> <u>3</u> - Prevalence Index is ≤3.0 ¹ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
1. <u>Osmundastrum cinnamomeum</u>	<u>10</u>	<u>No</u>	<u>FACW</u>																	
2. <u>Rubus hispidus</u>	<u>15</u>	<u>Yes</u>	<u>FACW</u>																	
3. <u>Vaccinium corymbosum</u>	<u>5</u>	<u>No</u>	<u>FACW</u>																	
4. <u>Carex folliculata</u>	<u>35</u>	<u>Yes</u>	<u>OBL</u>																	
5. <u>Aralia nudicaulis</u>	<u>10</u>	<u>No</u>	<u>FACU</u>																	
6. <u>Quercus alba</u>	<u>2</u>	<u>No</u>	<u>FACU</u>																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
		<u>77</u> =Total Cover																		
Woody Vine Stratum (Plot size: _____)				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.																
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
		_____ =Total Cover																		
Remarks: (Include photo numbers here or on a separate sheet.)				Hydrophytic Vegetation Present? Yes <u>X</u> No _____																

SOIL

Sampling Point: A-1 Wet

[illegible]

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Northcentral and Northeast Region See ERDC/EL TR-12-1; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 9/30/2027 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: Biddeford Subdivision City/County: Biddeford/York Sampling Date: 26 August 2025

Applicant/Owner: DM Roma State: ME Sampling Point: B-1 Wet

Investigator(s): Elliott Boardman Section, Township, Range: _____

Landform (hillside, terrace, etc.): Basin Local relief (concave, convex, none): Concave Slope %: 0

Subregion (LRR or MLRA): LRR R Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Lyman-Rock Outcrop Complex NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	

Remarks: (Explain alternative procedures here or in a separate report.)
Near drought conditions in southern ME.

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <u> </u> Surface Water (A1) <u>X</u> Water-Stained Leaves (B9) <u> </u> High Water Table (A2) <u> </u> Aquatic Fauna (B13) <u>X</u> Saturation (A3) <u> </u> Marl Deposits (B15) <u> </u> Water Marks (B1) <u> </u> Hydrogen Sulfide Odor (C1) <u> </u> Sediment Deposits (B2) <u> </u> Oxidized Rhizospheres on Living Roots (C3) <u> </u> Drift Deposits (B3) <u> </u> Presence of Reduced Iron (C4) <u> </u> Algal Mat or Crust (B4) <u> </u> Recent Iron Reduction in Tilled Soils (C6) <u> </u> Iron Deposits (B5) <u> </u> Thin Muck Surface (C7) <u> </u> Inundation Visible on Aerial Imagery (B7) <u> </u> Other (Explain in Remarks) <u> </u> Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> <u> </u> Surface Soil Cracks (B6) <u> </u> Drainage Patterns (B10) <u> </u> Moss Trim Lines (B16) <u> </u> Dry-Season Water Table (C2) <u> </u> Crayfish Burrows (C8) <u> </u> Saturation Visible on Aerial Imagery (C9) <u> </u> Stunted or Stressed Plants (D1) <u>X</u> Geomorphic Position (D2) <u> </u> Shallow Aquitard (D3) <u> </u> Microtopographic Relief (D4) <u>X</u> FAC-Neutral Test (D5)
---	---

Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>12</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
--	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION– Use scientific names of plants.

Sampling Point: B-1 Wet

Tree Stratum (Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Acer rubrum</u>	70	Yes	FAC	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
2. <u>Quercus rubra</u>	15	No	FACU																	
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
	85	=Total Cover		Prevalence Index worksheet: <table style="width: 100%;"> <thead> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> </thead> <tbody> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>55</u></td> <td>x 2 = <u>110</u></td> </tr> <tr> <td>FAC species <u>75</u></td> <td>x 3 = <u>225</u></td> </tr> <tr> <td>FACU species <u>15</u></td> <td>x 4 = <u>60</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>145</u> (A)</td> <td><u>395</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>2.72</u></td> </tr> </tbody> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>55</u>	x 2 = <u>110</u>	FAC species <u>75</u>	x 3 = <u>225</u>	FACU species <u>15</u>	x 4 = <u>60</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>145</u> (A)	<u>395</u> (B)	Prevalence Index = B/A = <u>2.72</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>55</u>	x 2 = <u>110</u>																			
FAC species <u>75</u>	x 3 = <u>225</u>																			
FACU species <u>15</u>	x 4 = <u>60</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>145</u> (A)	<u>395</u> (B)																			
Prevalence Index = B/A = <u>2.72</u>																				
Sapling/Shrub Stratum (Plot size: <u>15</u>)																				
1. <u>Vaccinium corymbosum</u>	25	Yes	FACW																	
2. <u>Acer rubrum</u>	5	No	FAC																	
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
	30	=Total Cover																		
Herb Stratum (Plot size: <u>5</u>)																				
1. <u>Onoclea sensibilis</u>	5	No	FACW	Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>X</u> <u>2</u> - Dominance Test is >50% <u>X</u> <u>3</u> - Prevalence Index is ≤3.0 ¹ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. <u>Thelypteris palustris</u>	10	Yes	FACW																	
3. <u>Rubus hispidus</u>	3	No	FACW																	
4. <u>Osmundastrum cinnamomeum</u>	10	Yes	FACW																	
5. <u>Alnus incana</u>	2	No	FACW																	
6. _____																				
7. _____																				
8. _____																				
9. _____																				
10. _____																				
11. _____																				
12. _____																				
	30	=Total Cover																		
Woody Vine Stratum (Plot size: _____)																				
1. _____				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.																
2. _____																				
3. _____																				
4. _____																				
		=Total Cover																		
Remarks: (Include photo numbers here or on a separate sheet.)				Hydrophytic Vegetation Present? Yes <u>X</u> No _____																

SOIL

Sampling Point: B-1 Wet

[illegible]

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Northcentral and Northeast Region See ERDC/EL TR-12-1; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 9/30/2027 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
--	---

Project/Site: Biddeford Subdivision City/County: Biddeford/York Sampling Date: 26 August 2025
Applicant/Owner: DM Roma State: ME Sampling Point: A-2 Up
Investigator(s): Elliott Boardman Section, Township, Range: _____
Landform (hillside, terrace, etc.): LRR-R Local relief (concave, convex, none): Concave Slope %: 1-2
Subregion (LRR or MLRA): LRR R Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: Lyman Rock Outcrop Complex NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc

Hydrophytic Vegetation Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	
Remarks: (Explain alternative procedures here or in a separate report.) Near drought conditions in southern ME.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ____ Surface Water (A1) ____ Water-Stained Leaves (B9) ____ High Water Table (A2) ____ Aquatic Fauna (B13) ____ Saturation (A3) ____ Marl Deposits (B15) ____ Water Marks (B1) ____ Hydrogen Sulfide Odor (C1) ____ Sediment Deposits (B2) ____ Oxidized Rhizospheres on Living Roots (C3) ____ Drift Deposits (B3) ____ Presence of Reduced Iron (C4) ____ Algal Mat or Crust (B4) ____ Recent Iron Reduction in Tilled Soils (C6) ____ Iron Deposits (B5) ____ Thin Muck Surface (C7) ____ Inundation Visible on Aerial Imagery (B7) ____ Other (Explain in Remarks) ____ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ____ Surface Soil Cracks (B6) ____ Drainage Patterns (B10) ____ Moss Trim Lines (B16) ____ Dry-Season Water Table (C2) ____ Crayfish Burrows (C8) ____ Saturation Visible on Aerial Imagery (C9) ____ Stunted or Stressed Plants (D1) ____ Geomorphic Position (D2) ____ Shallow Aquitard (D3) ____ Microtopographic Relief (D4) ____ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: A-2 Up

Tree Stratum (Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Acer rubrum</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33.3%</u> (A/B)																
2. <u>Quercus rubra</u>	<u>40</u>	<u>Yes</u>	<u>FACU</u>																	
3. <u>Tsuga canadensis</u>	<u>15</u>	<u>No</u>	<u>FACU</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
		<u>90</u>	=Total Cover	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>45</u></td> <td>x 3 = <u>135</u></td> </tr> <tr> <td>FACU species <u>90</u></td> <td>x 4 = <u>360</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>135</u> (A)</td> <td><u>495</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>3.67</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>45</u>	x 3 = <u>135</u>	FACU species <u>90</u>	x 4 = <u>360</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>135</u> (A)	<u>495</u> (B)	Prevalence Index = B/A = <u>3.67</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>0</u>	x 2 = <u>0</u>																			
FAC species <u>45</u>	x 3 = <u>135</u>																			
FACU species <u>90</u>	x 4 = <u>360</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>135</u> (A)	<u>495</u> (B)																			
Prevalence Index = B/A = <u>3.67</u>																				
		<u>20</u>	=Total Cover																	
Sapling/Shrub Stratum (Plot size: <u>15</u>)																				
1. <u>Acer rubrum</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>																	
2. <u>Tsuga canadensis</u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>																	
3. <u>Pinus strobus</u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
		<u>20</u>	=Total Cover	Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 ¹ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
Herb Stratum (Plot size: <u>5</u>)																				
1. <u>Aralia nudicaulis</u>	<u>25</u>	<u>Yes</u>	<u>FACU</u>																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
		<u>25</u>	=Total Cover	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.																
Woody Vine Stratum (Plot size: _____)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
		_____	=Total Cover																	
Hydrophytic Vegetation Present? Yes _____ No <u>X</u>																				
Remarks: (Include photo numbers here or on a separate sheet.)																				

SOIL

Sampling Point: A-2 Up

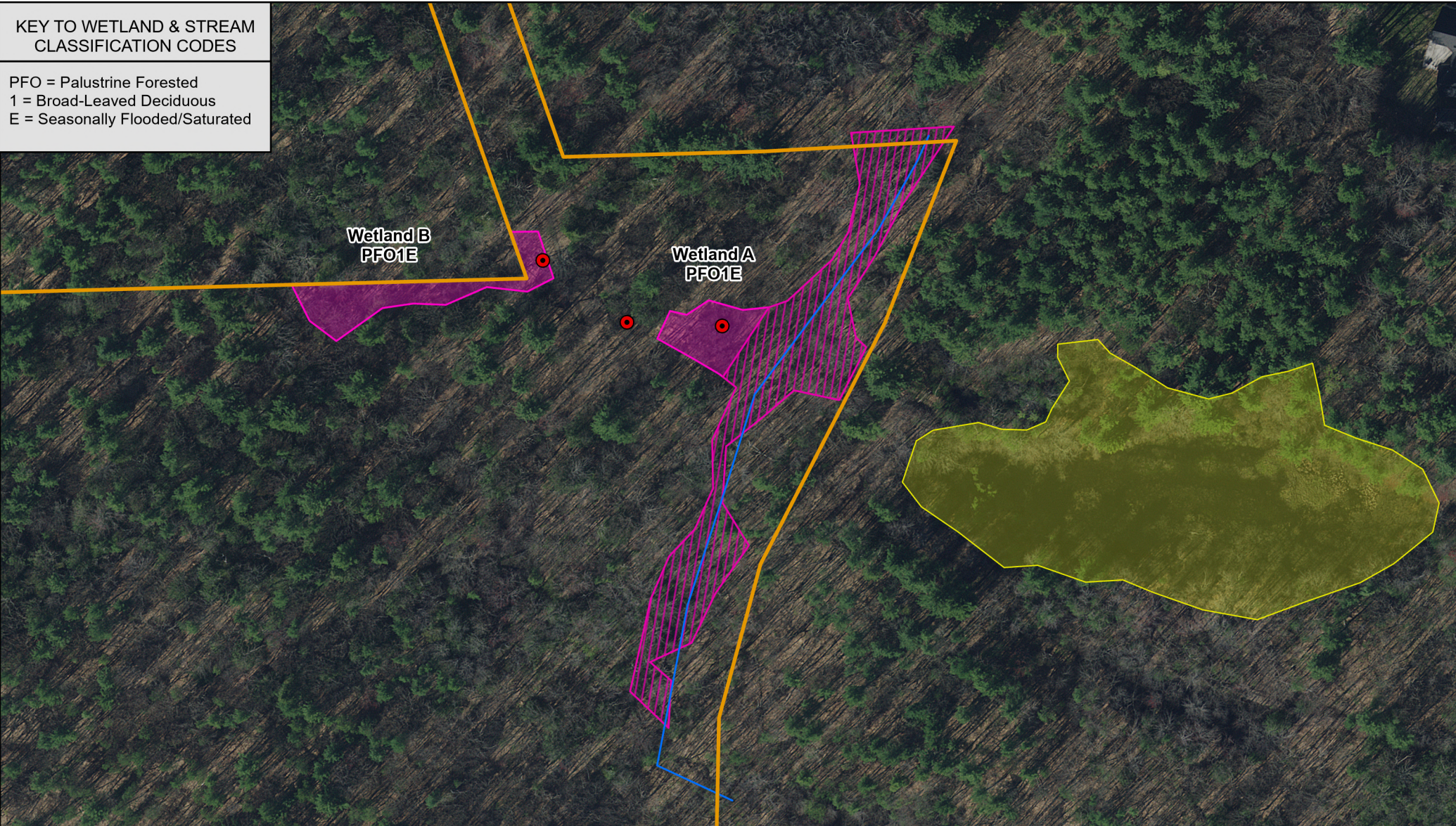
[illegible]

AGENCY DISCLOSURE NOTIFICATION

The public reporting burden for this collection of information, OMB Control Number 0710-0024, is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. **PLEASE DO NOT RETURN YOUR REQUEST TO THE ABOVE EMAIL.**

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and/or instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned. System of Record Notice (SORN). The information received is entered into our permit tracking database and a SORN has been completed (SORN #A1145b) and may be accessed at the following website: <http://dpcl.d.defense.gov/Privacy/SORNsIndex/DOD-wide-SORN-Article-View/Article/570115/a1145b-ce.aspx>

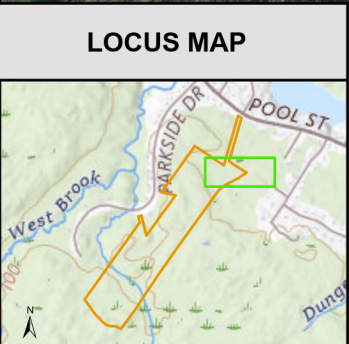


KEY TO WETLAND & STREAM CLASSIFICATION CODES

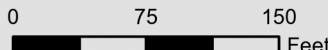
PFO = Palustrine Forested
 1 = Broad-Leaved Deciduous
 E = Seasonally Flooded/Saturated

Wetland B
PFO1E

Wetland A
PFO1E



- LOCUS MAP**
- Survey Area
 - USACE Plot
 - Blanding's Turtle Habitat (delineated by FBE)
 - Stream (delineated by Mark Hampton)
 - Wetland**
 - Delineated by FBE
 - Delineated by Mark Hampton


**DM Roma/
 KB Building Contractors
 Biddeford Pool Proposed
 Subdivision
 Biddeford, Maine
 Wetland Delineation Map**

Data Sources: Maine Geolibrary, ESRI, Mark Hampton Associates
 Coordinate System: NAD 1983 UTM Zone 19N
 Map created by E. Boardman, August 2025

SECTION 13

STATE AGENCY REVIEW LETTERS

SECTION 13 – STATE AGENCY REVIEW LETTERS

We have coordinated with several state agencies for their review of the proposed project.

Maine Historic Preservation Commission (MHPC)

Included in this section is a letter provided by MHPC indicating that there are no known National Register or known eligible properties on or adjacent to the proposed project site.

Maine Natural Areas Program (MNAP)

Included in this section is a letter provided by MNAP indicating that there are no rare botanical features documented within the project area.

Maine Native American Tribal Councils

As part of the review process with the Army Corps of Engineers related to the proposed wetland impact, we have coordinated with the Maine Native American Tribal Councils for their review of the project site. Of the 5 notified tribal councils, 3 responded stating they have no cultural impact concerns with the project. Copies of these responses have been included for review.

Maine Department of Inland Fisheries and Wildlife (MIFW)

We have been working closely with MIFW through the design process due to the sensitive wildlife on the property. We have met onsite with the MIFW department to review the existing conditions of the property and the previously prepared wetland delineation. After several design changes, including removing 3 lots from the design, we were provided a review letter with recommendations for development.

In the letter from MIFW, there were several items that required revisions to the overall design. These revisions were necessary as they reviewed the previous Sketch Plan dated September 3, 2025.

- *Endangered and Threatened Turtle Species – Section 1(d)* - Based on MIFW's site walk and review of the report prepared by FB Environmental, a small wetland located along the eastern property boundary was identified as a potential significant vernal pool. Their recommendation was to either wait until the 2026 vernal pool investigation season or to permit this area as if it was a "Significant" vernal pool, requiring permitting through the Maine Department of Environmental Protection (MDEP). Based on the Natural Resources Protection Act (NRPA) Permit by Rule standards for work in, on or over a significant vernal pool habitat, as long as the standards of this section are met, the MDEP can allow up to 25% of the 250-foot critical terrestrial habitat to be developed. To meet this standard, three (3) lots located at the end of Road A, to the east had to be removed from the subdivision plan. In the Spring of 2026, the developer intends to have a vernal pool investigation performed on this pool to determine if it is a significant vernal pool. If it is not classified as significant, the intent is to submit for an amendment to the subdivision to re-introduce the three (3) lots. This land will be retained by Bedard Homes, LLC until then.

- *Endangered and Threatened Turtle Species – Section 1(e) and Significant Vernal Pools Section 5* - During the initial vernal pool investigation in 2025, a vernal pool was identified by Mark Hampton Associates as “significant”. The data forms were provided to the MIFW for review. It was later determined by the MIFW that the pool be classified as a non-significant vernal pool. The MIFW statement continues to discuss the pool’s suitability for Blanding’s and Spotted Turtles. It is recommended from the MIFW to apply a 250-foot turtle habitat buffer around the depression.
- *Endangered and Threatened Turtle Species – Section 4* - The MIFW further commented on the vehicular hazards of the proposed Road A to the Blanding’s and Spotted Turtles. We have implemented their recommendations by:
 - Proposing a speed table where Road A enters the wider portion of the site where the proposed development is (approx. Sta. 7+15). This will slow traffic from the straight portion of Road A from Pool Street before entering the site and the potential location of the turtle crossing.
 - Instead of proposing a typical 6” vertical curbing along the roadways, we are proposing a sloped Cape Cod style curbing with a 4” reveal to allow for easier turtle movement across the paved road.

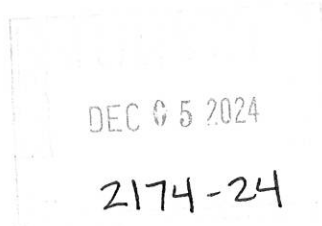
We will continue to work with the MIFW through the project for their continued guidance on the project.

DM ROMA

CONSULTING ENGINEERS

December 5, 2024

Mr. Kirk F. Mohney, Director
Maine Historic Preservation Commission
55 Capitol Street
65 State House Station
Augusta, ME 04333-0065



**Re: Review of Project Area
Residential Subdivision, Biddeford
Bedard Homes, LLC, Applicant**

Dear Mr. Mohney:

On behalf of our client Bedard Homes, LLC, DM Roma Consulting Engineers is submitting a request to have a proposed residential development off Parkside Drive and Pool Street in Biddeford be reviewed by the Maine Historic Preservation Commission for potential impacts to resources of historical significance.

The 47± acre property is identified as being Lot 52-1 on the City of Biddeford Assessors Map 8 and is located in the Suburban Residential zoning district. The proposed project consists of a 38-lot single-family residential subdivision with associated roadway, utility connections and stormwater infrastructure. The project will be served by public water, public sewer and underground power. The property is generally bounded by residential properties and undeveloped woodland.

Based on the current City of Biddeford Assessor's Data, there are two (2) properties in the vicinity of the project site that are over 50 years old. As noted on the attached map, the development will be several hundred feet away from these structures. Assessors' data and photographs of each of the properties with structures older than 50 years have been included for review.

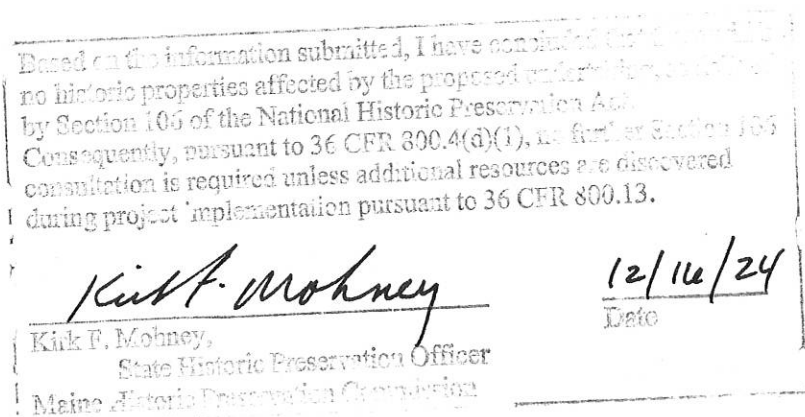
Enclosed is a vicinity map depicting the subject parcel, an exhibit indicating the locations of the abutting properties indicated above and the assessor data for each abutting property over 50 years old. Upon your review of the material, please provide a letter indicating the findings of your initial screening and do not hesitate to contact us with any questions.

Sincerely,

DM Roma Consulting Engineers

Jayson Haskell, PE
Southern Maine Regional Manager

Cc: Bedard Homes, LLC, Applicant
City of Biddeford
Maine Department of Environmental Protection
US Army Corps of Engineers





STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
177 STATE HOUSE STATION
AUGUSTA, MAINE 04333

JANET T. MILLS
GOVERNOR

AMANDA E. BEAL
COMMISSIONER

December 17, 2024

Jayson Haskell
DM Roma
PO Box 1116
Windham, ME 04062

Via email: jason@dmroma.com

Re: Rare and exemplary botanical features in proximity to: #24036, Residential Subdivision, Pool Street, Biddeford, Maine

Dear Jayson Haskell:

I have searched the Maine Natural Areas Program's Biological and Conservation Data System files in response to your request received December 5, 2024 for information on the presence of rare or unique botanical features documented from the vicinity of the project in Biddeford, Maine. Rare and unique botanical features include the habitat of rare, threatened, or endangered plant and unique or exemplary natural communities. Our review involves examining maps, manual and computerized records, other sources of information such as scientific articles or published references, and the personal knowledge of staff or cooperating experts.

Our official response covers only botanical features. For authoritative information and official response for zoological features you must make a similar request to the Maine Department of Inland Fisheries and Wildlife, 284 State Street, Augusta, Maine 04333.

According to the information currently in our Biological and Conservation Data System files, there are no rare botanical features documented specifically within the project area. This lack of data may indicate minimal survey efforts rather than confirm the absence of rare botanical features. You may want to have the site inventoried by a qualified field biologist to ensure that no undocumented rare features are inadvertently harmed.

If a field survey of the project area is conducted, please refer to the enclosed supplemental information regarding rare and exemplary botanical features documented to occur in the vicinity of the project site. The list may include information on features that have been known to occur historically in the area as well as recently field-verified information. While historic records have not been documented in several years, they may persist in the area if suitable habitat exists. The enclosed list identifies features with potential to occur in the area, and it should be considered if you choose to conduct field surveys.

This finding is available and appropriate for preparation and review of environmental assessments, but it is not a substitute for on-site surveys. Comprehensive field surveys do not exist for all natural areas in Maine, and in the absence of a specific field investigation, the Maine Natural Areas Program cannot provide a definitive statement on the presence or absence of unusual natural features at this site.

MOLLY DOCHERTY, DIRECTOR
MAINE NATURAL AREAS PROGRAM
90 BLOSSOM LANE, DEERING BUILDING



PHONE: (207) 287-8044
WWW.MAINE.GOV/DACF/MNAP

The Maine Natural Areas Program (MNAP) is continuously working to achieve a more comprehensive database of exemplary natural features in Maine. We would appreciate the contribution of any information obtained should you decide to do field work. MNAP welcomes coordination with individuals or organizations proposing environmental alteration or conducting environmental assessments. If, however, data provided by MNAP are to be published in any form, the Program should be informed at the outset and credited as the source.

The Maine Natural Areas Program has instituted a fee structure of \$75.00 an hour to recover the actual cost of processing your request for information. You will receive an invoice for \$150.00 for two hours of our services.

Thank you for using MNAP in the environmental review process. Please do not hesitate to contact me if you have further questions about the Natural Areas Program or about rare or unique botanical features on this site.

Sincerely,

Lisa St. Hilaire

Lisa St. Hilaire | Information Manager | Maine Natural Areas Program
207-287-8044 | lisa.st.hilaire@maine.gov

**Rare and Exemplary Botanical Features within 4 miles of
Project: #24036, Residential Subdivision, Pool Street, Biddeford, Maine**

Common Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
Beach Plum						
	E	S1	G4	2006-07-17	3	Rocky coastal (non-forested, upland)
	E	S1	G4	1933-06-21	9	Rocky coastal (non-forested, upland)
	E	S1	G4	1932-09	12	Rocky coastal (non-forested, upland)
	E	S1	G4	2017-06-07	22	Rocky coastal (non-forested, upland)
Beach Wormwood						
	SC	S1S2	G5T5	2011-10-28	6	
Brackish Tidal Marsh						
		S3	GNR	2009-07-29	1	
Butterfly Weed						
	PE	SX	G5	1986	1	Dry barrens (partly forested, upland)
Button Sedge						
	SC	S2	G5	1880-09-06	2	
	SC	S2	G5	2000-08-15	3	
Clothed Sedge						
	E	S1	G5	2006-06-07	7	Dry barrens (partly forested, upland)
	E	S1	G5	2006-06-16	8	Dry barrens (partly forested, upland)
Coastal Dune-marsh Ecosystem						
		S3	GNR	2009	1	
Creeping Spike-moss						
	E	S2	G5	1989-08-14	2	Open wetland, not coastal nor rivershore (non-forested,
	E	S2	G5	1920-07-30	6	Open wetland, not coastal nor rivershore (non-forested,
Dwarf Glasswort						
	T	S1	G5	1981-09-16	2	Tidal wetland (non-forested, wetland)
	T	S1	G5	2010-08-04	8	Tidal wetland (non-forested, wetland)

Estuary Bur-marigold						
	SC	S3	G4	2009-07-30	35	Tidal wetland (non-forested, wetland)
Freshwater Tidal Marsh						
		S2	G4?	2009-07-30	1	
Hollow Joe-pye Weed						
	SC	S2	G5	1989-08-21	1	Open wetland, not coastal nor rivershore (non-forested,
	SC	S2	G5	1989-08-14	2	Open wetland, not coastal nor rivershore (non-forested,
	SC	S2	G5	1989-08-22	3	Open wetland, not coastal nor rivershore (non-forested,
	SC	S2	G5	1994-06-06	6	Open wetland, not coastal nor rivershore (non-forested,
Horned Pondweed						
	SC	S2	G5	1907-08-18	10	Tidal wetland (non-forested, wetland)
	SC	S2	G5	2000-08-28	15	Tidal wetland (non-forested, wetland)
	SC	S2	G5	2007-07-05	19	Tidal wetland (non-forested, wetland)
Lilaeopsis						
	SC	S2	G5	2012-10-21	10	Tidal wetland (non-forested, wetland)
	SC	S2	G5	2007-07-05	11	Tidal wetland (non-forested, wetland)
	SC	S2	G5	2007-08-14	12	Tidal wetland (non-forested, wetland)
Long-spined Sandbur						
	PE	SH	G5	1984	1	Rocky coastal (non-forested, upland)
Mudwort						
	SC	S3	G5	2009-07-30	35	Tidal wetland (non-forested, wetland)
Parker's Pipewort						
	SC	S3	G3	2017-08-31	33	Tidal wetland (non-forested, wetland)
Pitch Pine Bog						
		S2	G3G5	2015-09-29	20	
Pitch Pine Dune Woodland						
		S1	G2	2014-05-08	8	
Pitch Pine Woodland						
		S3	G2	2016-08-09	30	

Pocket Swamp						
		S2	G5	2014-05-08	4	
		S2	G5	2020-06-12	18	
		S2	G5	2020-06-12	33	
Pygmyweed						
	SC	S2S3	G5	2009-07-29	25	Open water (non-forested, wetland)
	SC	S2S3	G5	2007-07-05	28	Open water (non-forested, wetland)
Red Maple Swamp						
		S5	G3G5	2007-06-05	17	
Salt-hay Saltmarsh						
		S3	G5	2010-10-14	12	
		S3	G5	2020-09-22	15	
		S3	G5	2009	27	
Saltmarsh False-foxglove						
	SC	S3	G5	2010-08-04	6	Tidal wetland (non-forested, wetland)
	SC	S3	G5	1982	9	Tidal wetland (non-forested, wetland)
	SC	S3	G5	1982	12	Tidal wetland (non-forested, wetland)
	SC	S3	G5	2006-07-17	18	Tidal wetland (non-forested, wetland)
Sassafras						
	SC	S2	G5	2006-07-17	16	Hardwood to mixed forest (forest, upland),Old field/
Schreber's Wood-aster						
	PE	SX	G4	1894-09	1	Rocky coastal (non-forested, upland)
Slender Blue Flag						
	T	S2	G4G5	1995-07-18	18	Tidal wetland (non-forested, wetland)
Small Reed Grass						
	SC	S3	G5	2000-08-15	12	Old field/roadside (non-forested, wetland or upland)
	SC	S3	G5	2006-08-08	14	Old field/roadside (non-forested, wetland or upland)
	SC	S3	G5	2010-09-07	15	Old field/roadside (non-forested, wetland or upland)
Smooth Winterberry Holly						
	SC	S3	G5	1979	13	Forested wetland

Smooth Winterberry Holly						
SC	S3	G5	2011-10-28	30	Forested wetland	
SC	S3	G5	2004	36	Forested wetland	
SC	S3	G5	2020-6-12	39	Forested wetland	
SC	S3	G5	2012-10	44	Forested wetland	
Southern Slender Ladies'-tresses						
PE	SH	G5T4T5	1918-08-27	1	Dry barrens (partly forested, upland)	
Spongy-leaved Arrowhead						
SC	S3	G5T4	2012-10-21	42	Tidal wetland (non-forested, wetland)	
Stiff Arrowhead						
SC	S2	G5	2006-06-16	15	Tidal wetland (non-forested, wetland)	
Sweet Pepper-bush						
SC	S2	G5	1917-09	9	Hardwood to mixed forest (forest, upland),Forested	
Tidal Marsh Estuary Ecosystem						
	S3	GNR	2010-10-14	4		
Water Pimpernel						
SC	S3	G5	2012-10-21	26	Tidal wetland (non-forested, wetland)	

Date Exported: 2024-12-17 15:15

Conservation Status Ranks

State and Global Ranks: This ranking system facilitates a quick assessment of a species' or habitat type's rarity and is the primary tool used to develop conservation, protection, and restoration priorities for individual species and natural habitat types. Each species or habitat is assigned both a state (S) and global (G) rank on a scale of critically imperiled (1) to secure (5). Factors such as range extent, the number of occurrences, intensity of threats, etc., contribute to the assignment of state and global ranks. The definitions for state and global ranks are comparable but applied at different geographic scales; something that is state imperiled may be globally secure.

The information supporting these ranks is developed and maintained by the Maine Natural Areas Program (state ranks) and NatureServe (global ranks).

Rank	Definition
S1 G1	Critically Imperiled – At very high risk of extinction or elimination due to very restricted range, very few populations or occurrences, very steep declines, very severe threats, or other factors.
S2 G2	Imperiled – At high risk of extinction or elimination due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.
S3 G3	Vulnerable – At moderate risk of extinction or elimination due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.
S4 G4	Apparently Secure – At fairly low risk of extinction or elimination due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.
S5 G5	Secure – At very low risk of extinction or elimination due to a very extensive range, abundant populations or occurrences, and little to no concern from declines or threats.
SX GX	Presumed Extinct – Not located despite intensive searches and virtually no likelihood of rediscovery.
SH GH	Possibly Extinct – Known from only historical occurrences but still some hope of rediscovery.
S#S# G#G#	Range Rank – A numeric range rank (e.g., S2S3 or S1S3) is used to indicate any range of uncertainty about the status of the species or ecosystem.
SU GU	Unrankable – Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
GNR SNR	Unranked – Global or subnational conservation status not yet assessed.
SNA GNA	Not Applicable – A conservation status rank is not applicable because the species or ecosystem is not a suitable target for conservation activities (e.g., non-native species or ecosystems).
Qualifier	Definition
S#? G#?	Inexact Numeric Rank – Denotes inexact numeric rank.
Q	Questionable taxonomy that may reduce conservation priority – Distinctiveness of this entity as a taxon or ecosystem type at the current level is questionable. The “Q” modifier is only used at a global level.
T#	Intraspecific Taxon (trinomial) – The status of intraspecific taxa (subspecies or varieties) are indicated by a "T-rank" following the species' global rank.

State Status: Endangered and Threatened are legal status designations authorized by statute. Please refer to MRSA Title 12, §544 and §544-B.

Status	Definition
E	Endangered – Any native plant species in danger of extinction throughout all or a significant portion of its range within the State or Federally listed as Endangered.
T	Threatened – Any native plant species likely to become endangered within the foreseeable future throughout all or a significant portion of its range in the State or Federally listed as Threatened.
SC	Special Concern – A native plant species that is rare in the State, but not rare enough to be considered Threatened or Endangered.
PE	Potentially Extirpated – A native plant species that has not been documented in the State in over 20 years, or loss of the last known occurrence.

Element Occurrence (EO) Ranks: Quality assessments that designate viability of a population or integrity of habitat. These ranks are based on size, condition, and landscape context. Range ranks (e.g., AB, BC) and uncertainty ranks (e.g., B?) are allowed. The Maine Natural Areas Program tracks all occurrences of rare plants and natural communities/ecosystems (S1-S3) as well as exemplary common natural community types (S4-S5 with EO ranks A/B).

Rank	Definition
A	Excellent – Excellent estimated viability/ecological integrity.
B	Good – Good estimated viability/ecological integrity.
C	Fair – Fair estimated viability/ecological integrity.
D	Poor – Poor estimated viability/ecological integrity.
E	Extant – Verified extant, but viability/ecological integrity not assessed.
H	Historical – Lack of field information within past 20 years verifying continued existence of the occurrence, but not enough to document extirpation.
X	Extirpated – Documented loss of population/destruction of habitat.
U	Unrankable – Occurrence unable to be ranked due to lack of sufficient information (e.g., possible mistaken identification).
NR	Not Ranked – An occurrence rank has not been assigned.

Visit the Maine Natural Areas Program website for more information
<http://www.maine.gov/dacf/mnap>



Jayson Haskell

From: Isaac St John <istjohn@maliseets.com>
Sent: Thursday, February 6, 2025 2:22 PM
To: 'Jayson Haskell'
Subject: RE: Project Review Request - Parkside Drive and Pool Street Subdivision Biddeford

Hello,

We do not have an immediate concern with your project or project site, and do not currently have the resources to fully investigate same. Should any human remains, archaeological properties or other items of historical importance be unearthed while working on this project, we recommend that you stop your project and report your findings to the appropriate authorities including the Houlton Band of Maliseet Indians.

Thank you,

Isaac St. John
Tribal Historic Preservation Officer
Houlton Band of Maliseet Indians
88 Bell Road
Littleton, ME 04730

From: Jayson Haskell [mailto:jayson@dmroma.com]
Sent: Thursday, December 5, 2024 4:47 PM
To: istjohn@maliseets.com
Cc: 'Kevin Bedard' <kbbc1990@gmail.com>; 'Victoria Bedard' <victoria.bedardrealty@gmail.com>
Subject: Project Review Request - Parkside Drive and Pool Street Subdivision Biddeford

Good Afternoon,

We are requesting your review of the potential impacts to resources of historical significance as a result of a proposed residential subdivision off Parkside Drive and Pool Street in Biddeford. The 47± acre property is identified as being Lot 52-1 on the City of Biddeford Assessors Map 8 and is located in the Suburban Residential zoning district. The proposed project consists of a 38-lot single-family residential subdivision with associated roadway, utility connections and stormwater infrastructure. The project will be served by public water, public sewer and underground power. The property is generally bounded by residential properties and undeveloped woodland.

The project will be under review by the City of Biddeford, Maine Department of Environmental Protection and Army Corps of Engineers. It is a requirement of the permitting that we coordinate with the Maine Tribal Councils related to potential impacts to historical resources and to provide us with a statement indicating your findings. Attached is a site location map and the Preliminary Subdivision Plan. If you have any questions or require additional information, please don't hesitate to contact us. Thank you for your time as always.

Jay

Jayson R. Haskell, P.E.
Southern Maine Regional Manager



PENOBSCOT NATION
CULTURAL & HISTORIC PRESERVATION
12 WABANAKI WAY, INDIAN ISLAND, ME 04468

CHRIS SOCKALEXIS – TRIBAL HISTORIC PRESERVATION OFFICER

E-MAIL: chris.sockalexis@penobscotnation.org

NAME	Jayson Haskell
ADDRESS	DM ROMA P.O. Box 1116 - 850 Main Street Windham, ME 04062
OWNER'S NAME	Bedard Homes LLC
TELEPHONE	(207) 591-5055
EMAIL	jayson@dmroma.com
PROJECT NAME	Parkside Drive & Pool Street Residential Subdivision
PROJECT SITE	Biddeford, ME
DATE OF REQUEST	December 5, 2024
DATE REVIEWED	July 17, 2025

Thank you for the opportunity to comment on the above referenced project. This project appears to have no impact on a structure or site of historic, architectural or archaeological significance to the Penobscot Nation as defined by the National Historic Preservation Act of 1966, as amended.

If there is an inadvertent discovery of Native American cultural materials during the course of the project, please contact my office at (207) 817-7471. Thank you for consulting with the Penobscot Nation Tribal Historic Preservation Office with this project.

A handwritten signature in black ink, appearing to read "Chris Sockalexis".

Chris Sockalexis, THPO
Penobscot Nation

Tribal Historic Preservation Office
Passamaquoddy Tribe
PO Box 159 Princeton, Me. 04668
207-214-4051

December 9, 2024

DM Roma

Mailing Address:

Office Location:

P.O. Box 1116

850 Main Street

Windham, ME 04062

Westbrook, ME 0409

- Re: Parkside Drive and Pool Street Subdivision Biddeford

Dear ***Jayson*** ;

The Passamaquoddy THPO has reviewed the following application regarding the historic properties and significant religious and cultural properties in accordance with NHPA, NEPA, AIRFA, NAGPRA, ARPA, Executive Order 13007 Indian Sacred Sites, Executive Order 13175 Consultation and Coordination with Indian Tribal Governments, and Executive Order 12898 Environmental Justice.

The Project listed above will not have an impact on cultural concerns. If any artifacts or human remains are uncovered please stop and notify this office and the State Historic Preservation Office.

Sincerely;

Donald Soctomah THPO
Soctomah@gmail.com



STATE OF MAINE
DEPARTMENT OF
INLAND FISHERIES & WILDLIFE
353 WATER STREET
41 STATE HOUSE STATION
AUGUSTA ME 04333-0041



October 22, 2025

Jayson Haskell
DM Roma Consulting Engineers
P.O. Box 1116
Windham, ME 04062

RE: Project Review - 268 Pool Street, Subdivision, Biddeford Project ID 8733-10096

Dear Jay:

On December 5, 2024, we received a request for review for current Maine Department of Inland Fisheries and Wildlife (MDIFW) information sources for known locations of Endangered, Threatened, and Special Concern (Rare) species; designated Essential and Significant Wildlife Habitats; inland fisheries and aquatic habitats; and other protected natural resource concerns within the vicinity of the **268 Pool Street, Subdivision, Biddeford** project, pursuant to MDIFW's authority. Since this original submission, MDIFW has exchanged information with the Applicant on several occasions and conducted a site visit on August 14, 2025. Updated site plans and an updated delineation map were provided to MDIFW on September 12, 2025. This letter takes into consideration the September 12, 2025, site plans as well as previously submitted reports and discussions between the Applicant and MDIFW.

Endangered and Threatened Turtle Species

Blanding's Turtle, a State Endangered species, and Spotted Turtle, a State Threatened species, were both documented immediately adjacent to the proposed project area in 2025 (*FB Environmental Report, Rare Turtle Habitat Reconnaissance – Pool Street Subdivision, Biddeford, Maine, dated 06/25/2025*).

Following submission of this report, MDIFW staff conducted a site visit with the Applicant on August 14, 2025. Following the site visit and discussions with MDIFW, the Applicant revised its mapping of turtle habitat to better reflect field observations of suitable habitat. The Applicant also redesigned the project and submitted an updated site plan to MDIFW on September 12, 2025 (*DM Roma, Sketch Plan, Revision C, dated 09/03/2025*).

Based on this revised site plan, MDIFW offers the following observations and recommendations, referencing wetland identifying labels provided to MDIFW on October 6, 2025 (*DM Roma, Existing Conditions Plan, dated 11/1/2024*):

1. Blanding's/Spotted Turtle wetland habitat, as confirmed by MDIFW's site visit, should be avoided and buffered with at least 250 feet of undisturbed natural vegetation with no new development or habitat conversion within this zone.

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Letter to Jayson Haskell, DM Roma Consulting Engineers

Comments RE: 268 Pool Street, Subdivision, Biddeford

- a. Wetland A: A riparian wetland present along an unnamed stream that crosses proposed Road C to the north of proposed Lot 1 and continues out of the parcel and reenters to the southwest of proposed Lot 5 where it crosses the proposed Utility Access Trail. FB Environmental's report assessed this as not potential turtle habitat (*Rare Turtle Habitat Reconnaissance – Pool Street Subdivision, Biddeford, Maine, dated 06/25/2025*). MDIFW concurs with FB Environmental's assessment that this wetland area is not suitable Blanding's/Spotted Turtle habitat. **MDIFW has no further recommendations on the Applicant's design for this wetland area.**
- b. Wetland B: An isolated palustrine scrub-shrub wetland with deep standing water. FB Environmental assessed this wetland as typical/suitable for Blanding's and Spotted Turtle use. The Applicant's design appears to incorporate a 250-foot buffer from this portion of the wetland. **The Applicant's design appears to meet MDIFW's recommendation for this wetland area.**
- c. Wetland C: A palustrine emergent wetland bounded by a palustrine scrub-shrub wetland complex located primarily off parcel (southeast of proposed Lots 18 and 27). Blanding's and Spotted Turtles were observed in this wetland complex, but only a portion of the wetland complex is suitable habitat for these species. The Applicant's design incorporates a 250-foot buffer from this portion of the wetland complex. **The Applicant's design meets MDIFW's recommendation for this wetland area.**
- d. Wetland D: An isolated wetland/pool present on proposed Lot 33. MDIFW believes that while this pool may provide a possible foraging location for Spotted Turtle, it is unlikely to provide high value habitat for either Blanding's or Spotted Turtle. Therefore, MDIFW does not recommend an undisturbed 250-foot buffer for this wetland; **however, based on incomplete information relating to pool-breeding amphibians, MDIFW recommends this area be treated as a Potentially Significant Vernal Pool. Refer to the Significant Vernal Pool section of this letter below for additional discussion.**
- e. Wetlands E, F, and G: This wetland complex is present on the parcel southeast of the proposed utility trail and south of proposed Lot 4 along the stream. A portion of this wetland also contains a pool (MDIFW Pool ID# 5709). MDIFW reviewed the data submission associated with this pool and recommended to the Maine Department of Environmental Protection (MDEP) this pool be considered Non-Significant based on the pool's permanent hydrology, which precludes it from treatment as a Significant Vernal Pool. However, based on the pool's suitability for Blanding's and Spotted Turtles and the fact that both species were documented in close proximity as part of the Project's due diligence, MDIFW recommends this pool be buffered with a 250-foot turtle habitat buffer. The Applicant's design avoids the entire 250-foot turtle habitat buffer. The Applicant also eliminated three proposed lots and flipped the end of a roadway hammerhead

October 22, 2025

Letter to Jayson Haskell, DM Roma Consulting Engineers

Comments RE: 268 Pool Street, Subdivision, Biddeford

to provide enhanced habitat connectivity from this wetland area to the Open Space area proposed for the southernmost portion of the subject parcel. **The Applicant's design meets MDIFW's recommendation for this wetland area.** For clarity, MDIFW recommends the Applicant renames the buffers associated with this wetland "Turtle Habitat Buffer."

2. To maintain on-site habitat connectivity for Blanding's and Spotted Turtles, MDIFW recommended the Applicant expand the Open Space areas to encompass the southern portions of the subject parcel, including lands around the stream to the south of proposed Lot 4. **The Applicant designed an expanded open space area that meets MDIFW's recommendation.**
3. To ensure the proposed Open Space areas are permanently protected and open to public access, MDIFW recommends the Applicant execute a conservation easement with a qualified conservation organization (e.g., land trust). **Currently, MDIFW has no knowledge of what conservation mechanism is intended for the Open Space lands.**
4. To reduce the likelihood of vehicle collision with Blanding's and Spotted Turtles, MDIFW recommends the following traffic calming measures along the proposed northern access road from Pool Street:
 - a. Installation of design features to reduce motorist speeds (e.g., speed bumps/humps, islands or median strips to narrow lanes, etc.).
 - b. If curbing is required by other permitting entities, MDIFW recommends installation of four-inch-high curbing or curbing modified/sloped to allow for easier turtle movement across the paved roadway.¹

Significant Vernal Pools

5. During project design, it appears the Applicant presumed that Pool #5709 associated with Wetland E/F would be treated as a Significant Vernal Pool. As mentioned above, MDIFW reviewed the data submission associated with this pool and recommended to MDEP that this pool be considered Non-Significant based on the pool's permanent hydrology, which precludes it from treatment as a Significant Vernal Pool. However, based on the pool's habitat suitability for Blanding's and Spotted Turtles and the fact that both species were documented in close proximity as part of this Project's due diligence, MDIFW recommends this pool be buffered with a 250-foot turtle habitat buffer. **The Applicant's design meets MDIFW's recommendation for this pool.** For clarity,

¹ Refer to Figure 10, Design Schematics for Road and Driveway Construction to Reduce Impacts on Pool-Breeding Amphibians from Calhoun, A. J. K. and M. W. Klemens. 2002. *Best development practices: Conserving pool-breeding amphibians in residential and commercial developments in the northeastern United States*. MCA Technical Paper No. 5, Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, New York. P. 35. Access:

<https://www.nae.usace.army.mil/Portals/74/docs/regulatory/VernalPools/BestDevelopmentPractices20Oct2014.pdf>

October 22, 2025

Letter to Jayson Haskell, DM Roma Consulting Engineers

Comments RE: 268 Pool Street, Subdivision, Biddeford

MDIFW recommends the Applicant renames the buffers associated with this wetland “Turtle Habitat Buffer.”

6. As mentioned above, an isolated wetland (Wetland D) is present on proposed Lot 33. During the vernal pool survey conducted April 9 and April 25, 2025, it was not explicitly noted as being a potential vernal pool or having pool-breeding amphibian egg masses (*Mark Hampton Associates, 05/22/2025*). However, during the FB Environmental turtle habitat survey, an unspecified quantity of spotted salamander (*Ambystoma maculatum*) egg masses were observed in this pool, as well as eighteen inches of standing water (*FB Environmental Report, Rare Turtle Habitat Reconnaissance – Pool Street Subdivision, Biddeford, Maine, 06/25/2025*). MDIFW was unable to locate the precise date that FB Environmental visited this wetland.

To clarify the situation, MDIFW requested additional information from the Applicant relating to the 2025 Vernal Pool surveys. The Applicant provided an updated letter (*Mark Hampton Associates, updated October 7, 2025*). In this letter, after providing details on Pool #5709, Mr. Hampton states: “All other potential pools were investigated during both site visits, but no egg masses were observed in any of the pools.”

MDIFW’s vernal pool verification process includes applicant submission of data forms for all potential pools, except for very specific situations, such as when the pool is clearly manmade/artificial *and* contains no pool-breeding amphibian egg masses.

MDIFW has no record of vernal pool data forms submitted by either Mark Hampton Associates or FB Environmental for this wetland location. One consultant observed egg masses, and the other did not. Therefore, MDIFW cannot definitively determine the pool’s significance absent corroborating field data collected during the appropriate survey season.

Further, MDIFW visited this area during our site visit and observed that a portion of the wetland appears to be a natural pool in origin, later modified by the trail that now bisects the feature. Accordingly, we cannot rule out the possibility that this may be a Significant Vernal Pool based on the information available to MDIFW at this time.

In summary, **MDIFW recommends this wetland be treated as a Potentially Significant Vernal Pool.** Options for the Applicant include:

- a. Redesigning the affected parts of the project to meet MDEP’s Permit-By-Rule standards for <25% impacts to the pool’s presumed Critical Terrestrial Habitat.
- b. Conducting follow up vernal pool surveys in 2026 to determine the pool’s significance.

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Letter to Jayson Haskell, DM Roma Consulting Engineers

Comments RE: 268 Pool Street, Subdivision, Biddeford

- c. Exploring options for phased development with permitting authorities that would allow other parts of the development not implicated by this pool and its potential buffer to proceed, while 2026 vernal pools surveys are pending.

Fish Habitat & Angler Access

The applicant's September 12, 2025, design appears to include two road-stream crossings: one for the proposed access road from Parkside Drive; one for the proposed Utility/Access Trail. MDIFW presumes tree clearing within the 100-foot riparian buffer would occur to construct these stream crossings. Our Department anticipates minimal fisheries and fish habitat impacts as a result of project activities *provided that the following recommendations are adhered to:*

7. Tree clearing for the two road-stream crossings is kept to the minimum necessary, including narrowing the utility access road to the extent practicable and limiting the buildable area for Lot 1.
8. Stream crossing structures are designed to provide full aquatic organism passage and sized to span at least 1.2 times the bankfull width of the stream with an open bottom (i.e., natural bottom) or backfilled with representative streambed material (i.e., built to StreamSmart standards).
9. Instream work occurs between July 15 and October 1.
10. Construction Best Management Practices are followed to avoid erosion, sedimentation, and alteration of stream flow.
11. Finally, MDIFW recommends the open space and associated stream access be maintained with informational signage and dedicated public parking offered to ensure public access.

We appreciate the opportunity to comment on this project. Please feel free to contact my office if you have any questions regarding this information, or if I can be of any further assistance.

Respectfully,



Andrew J. Wood

Environmental Review Coordinator / Senior Resource Biologist

Attachments:

1. MDIFW Recommendations for Vernal Pool Determinations: Pool ID #5709
2. DM Roma, Sketch Plan, Revision C, dated 09/03/2025
3. DM Roma, Existing Conditions Plan, dated 11/1/2024

October 22, 2025

Letter to Jayson Haskell, DM Roma Consulting Engineers

Comments RE: 268 Pool Street, Subdivision, Biddeford

CC: Laura Hatmaker, MDIFW Environmental Review Biologist
John Perry, MDIFW Environmental Review Program Supervisor
Ciara Wentworth, MDIFW Environmental Review Biologist
Phillip deMaynadier, MDIFW Wildlife Diversity Section Supervisor
John Veale, MDIFW Region A Wildlife Biologist
Josh Matijas, MDIFW Region A Wildlife Biologist
Scott Lindsay, MDIFW Region A Wildlife Supervisor
Nick Kalejs, MDIFW Region A Fisheries Biologist
Jim Pellerin, MDIFW Region A Fisheries Supervisor
Elliott Boardman, FB Environmental

ATTACHMENT 1

IFW Recommendations for Significant Vernal Pool Determinations

The following is a list of pools and IFW's recommendations for whether or not they qualify as Significant Vernal Pools, one of Maine's Significant Wildlife Habitats.

Data current as of: Monday, August 25, 2025

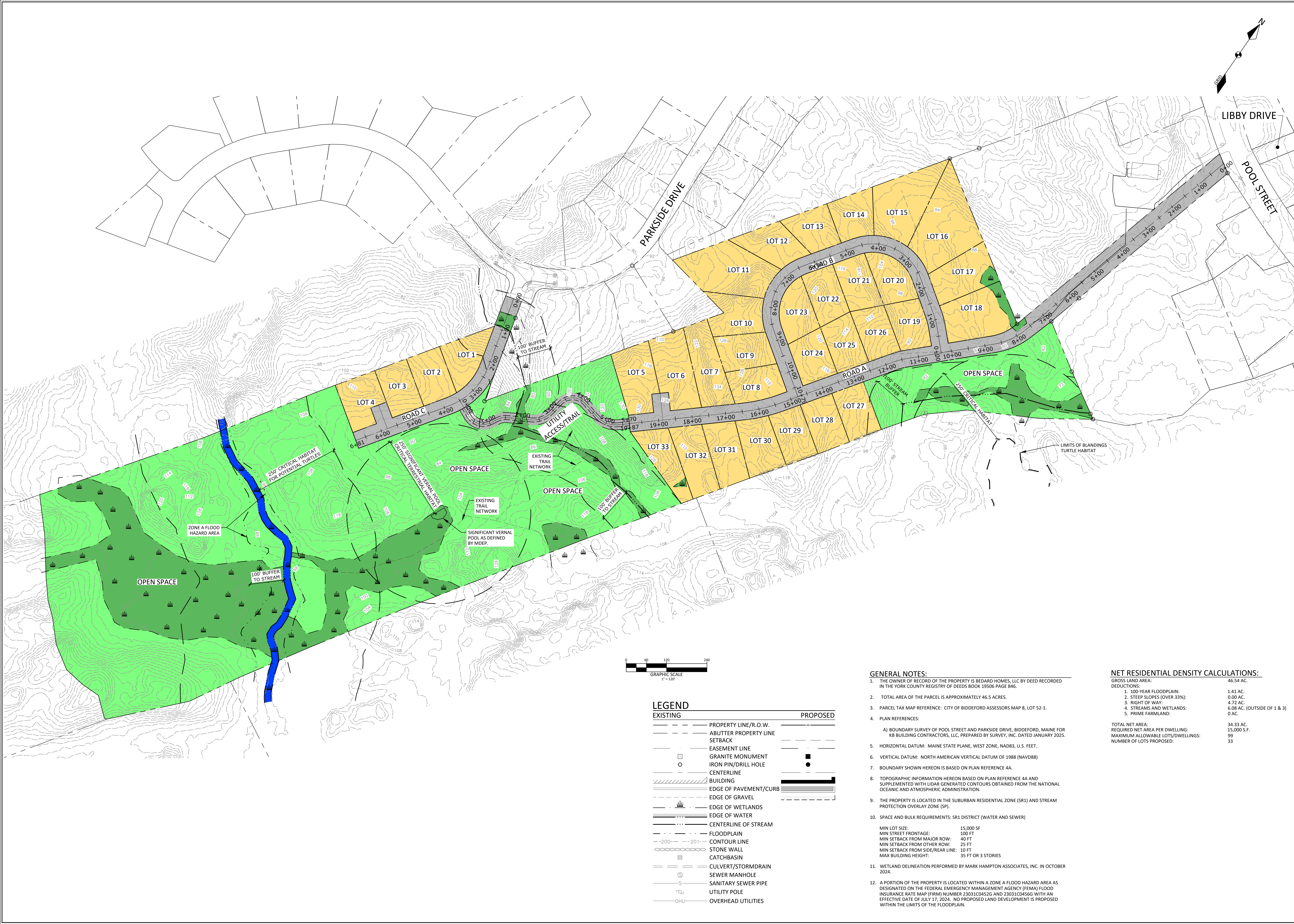
IFW's Pool ID: 5709	Twp: Biddeford	UTM Coordinates of Pool Center: 383395 E, 4814874 N
Observer's ID: 8094	Pool A	ProjectType: Pool Street Project
Landowner: Bedard Homes LLC	Contact: Mark Hampton - Mark Hampton Associates, Inc	
P.O. Box 481	PO Box 1931	
Biddeford, ME 04005	Portland, ME 04102	
() 423-3564 kbbc1990@gmail.com	(207) 756-2900 mhampto1@maine.rr.com	

Survey Date: 4/9/2025 Additional Survey Dates: 04/25/2025

IFW's Recommendation: RED: NOT SIGNIFICANT, does not meet the vernal pool definition

IFW Comments: Pool provides significant habitat for spotted salamander and some habitat for wood frog, but does not meet the MDEP vernal pool definition (permanent hydrology). Note: Blanding's turtles (State Endangered) and Spotted turtles (State Threatened) have been documented in close proximity to this pool.

ATTACHMENT 2



LEGEND	
EXISTING	PROPOSED
	PROPERTY LINE/R.O.W.
	ABUTTER PROPERTY LINE
	SETBACK
	EASEMENT LINE
	GRANITE MONUMENT
	IRON PIN/DRILL HOLE
	CENTERLINE
	BUILDING
	EDGE OF PAVEMENT/CURB
	EDGE OF GRAVEL
	EDGE OF WETLANDS
	EDGE OF WATER
	CENTERLINE OF STREAM
	FLOODPLAIN
	CONTOUR LINE
	STONE WALL
	CATCHBASIN
	CULVERT/STORMDRAIN
	SEWER MANHOLE
	SANITARY SEWER PIPE
	UTILITY POLE
	OVERHEAD UTILITIES

GENERAL NOTES:

- THE OWNER OF RECORD OF THE PROPERTY IS BEDARD HOMES, LLC BY DEED RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS BOOK 19506 PAGE 846.
- TOTAL AREA OF THE PARCEL IS APPROXIMATELY 46.5 ACRES.
- PARCEL TAX MAP REFERENCE: CITY OF BIDDEFORD ASSESSORS MAP 8, LOT 52-1.
- PLAN REFERENCES:
 - A) BOUNDARY SURVEY OF POOL STREET AND PARKSIDE DRIVE, BIDDEFORD, MAINE FOR KB BUILDING CONTRACTORS, LLC, PREPARED BY SURVEY, INC. DATED JANUARY 2025.
- HORIZONTAL DATUM: MAINE STATE PLANE, WEST ZONE, NAD83, U.S. FEET.
- VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)
- BOUNDARY SHOWN HEREON IS BASED ON PLAN REFERENCE 4A.
- TOPOGRAPHIC INFORMATION HEREON BASED ON PLAN REFERENCE 4A AND SUPPLEMENTED WITH LIDAR GENERATED CONTOURS OBTAINED FROM THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION.
- THE PROPERTY IS LOCATED IN THE SUBURBAN RESIDENTIAL ZONE (SR1) AND STREAM PROTECTION OVERLAY ZONE (SP).
- SPACE AND BULK REQUIREMENTS: SR1 DISTRICT (WATER AND SEWER)
 - MIN LOT SIZE: 15,000 SF
 - MIN STREET FRONTAGE: 100 FT
 - MIN SETBACK FROM MAJOR ROW: 40 FT
 - MIN SETBACK FROM OTHER ROW: 25 FT
 - MIN SETBACK FROM SIDE/REAR LINE: 10 FT
 - MAX BUILDING HEIGHT: 35 FT OR 3 STORIES
- WETLAND DELINEATION PERFORMED BY MARK HAMPTON ASSOCIATES, INC. IN OCTOBER 2024.
- A PORTION OF THE PROPERTY IS LOCATED WITHIN A ZONE A FLOOD HAZARD AREA AS DESIGNATED ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) NUMBER 23031C04526 AND 23031C04566 WITH AN EFFECTIVE DATE OF JULY 17, 2024. NO PROPOSED LAND DEVELOPMENT IS PROPOSED WITHIN THE LIMITS OF THE FLOODPLAIN.

NET RESIDENTIAL DENSITY CALCULATIONS:	
GROSS LAND AREA:	46.54 AC.
DEDUCTIONS:	
1. 100-YEAR FLOODPLAIN:	1.41 AC.
2. STEEP SLOPES (OVER 33%):	0.00 AC.
3. RIGHT OF WAY:	4.72 AC.
4. STREAMS AND WETLANDS:	6.08 AC. (OUTSIDE OF 1 & 3)
5. PRIME FARMLAND:	0 AC.
TOTAL NET AREA:	34.33 AC.
REQUIRED NET AREA PER DWELLING:	15,000 S.F.
MAXIMUM ALLOWABLE LOTS/DWELLINGS:	99
NUMBER OF LOTS PROPOSED:	33

PRELIMINARY
NOT FOR
CONSTRUCTION

DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 591-5055

REV	DATE	BY	DESCRIPTION
A	2-13-25	JRH	ISSUED TO CITY FOR SKETCH PLAN REVIEW
B	5-7-25	JRH	REVISED SKETCH PLAN BASED ON CITY REVIEW
C	9-3-25	JRH	REVISED SKETCH PLAN BASED ON CITY REVIEW

SKETCH PLAN
POOL STREET RESIDENTIAL SUBDIVISION
POOL STREET AND PARKSIDE DRIVE
BIDDEFORD, MAINE
FOR RECORD OWNER:
BEDARD HOMES, LLC
PO BOX 483
BIDDEFORD, MAINE 04005

24036
JOB NUMBER:
1" = 120'
SCALE:
9-3-2025
DATE:
SHEET 1 OF 1
SK-3

ATTACHMENT 3

- GENERAL NOTES:
- THE OWNER OF RECORD OF THE PROPERTY IS BEDARD HOMES, LLC BY DEED RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS BOOK 19506 PAGE 846.
 - TOTAL AREA OF THE PARCEL IS APPROXIMATELY 46.5 ACRES.
 - PARCEL TAX MAP REFERENCE: CITY OF BIDDEFORD ASSESSORS MAP 8, LOT 52-1.
 - PLAN REFERENCES:
 - BOUNDARY SURVEY OF POOL STREET AND PARKSIDE DRIVE, BIDDEFORD, MAINE FOR KB BUILDING CONTRACTORS, LLC, PREPARED BY SURVEY, INC. DATED JANUARY 2025.
 - HORIZONTAL DATUM: MAINE STATE PLANE, WEST ZONE, NAD83, U.S. FEET.
 - VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)
 - BOUNDARY SHOWN HEREON IS BASED ON PLAN REFERENCE 4A.
 - TOPOGRAPHIC INFORMATION HEREON BASED ON PLAN REFERENCE 4A AND SUPPLEMENTED WITH LIDAR GENERATED CONTOURS OBTAINED FROM THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION.
 - THE PROPERTY IS LOCATED IN THE SUBURBAN RESIDENTIAL DISTRICT (SR1) AND STREAM PROTECTION OVERLAY DISTRICT (SP).
 - SPACE AND BULK REQUIREMENTS: SR1 DISTRICT (WATER AND SEWER)

MIN LOT SIZE:

15,000 SF

MIN STREET FRONTAGE:

100 FT

MIN SETBACK FROM MAJOR ROW:

40 FT

MIN SETBACK FROM OTHER ROW:

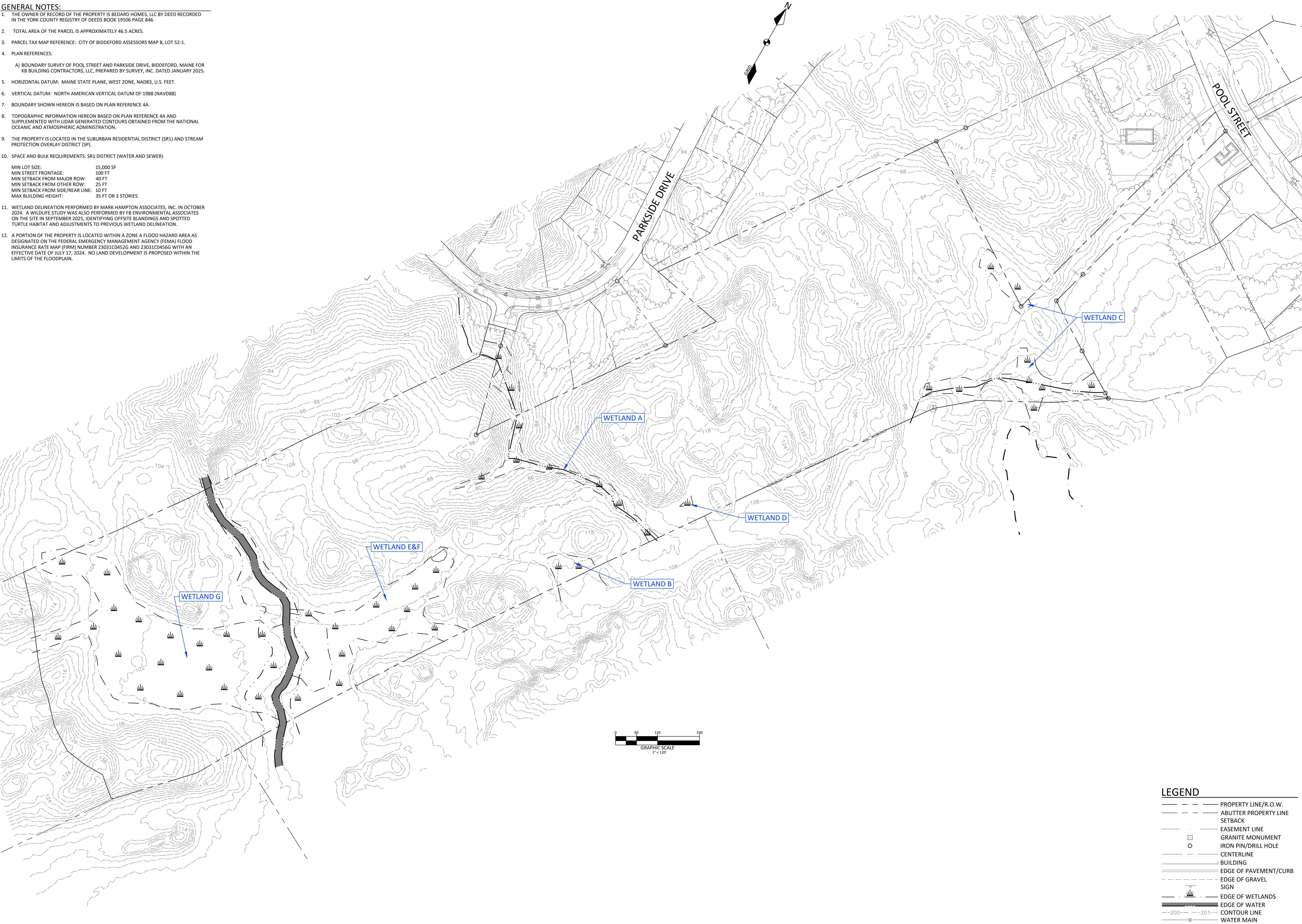
25 FT

MIN SETBACK FROM SIDE/REAR LINE:

10 FT

MAX BUILDING HEIGHT:

35 FT OR 3 STORIES
 - WETLAND DELINEATION PERFORMED BY MARK HAMPTON ASSOCIATES, INC. IN OCTOBER 2024. A WILDLIFE STUDY WAS ALSO PERFORMED BY FB ENVIRONMENTAL ASSOCIATES ON THE SITE IN SEPTEMBER 2025, IDENTIFYING OFFSITE BLANDINGS AND SPOTTED TURTLE HABITAT AND ADJUSTMENTS TO PREVIOUS WETLAND DELINEATION.
 - A PORTION OF THE PROPERTY IS LOCATED WITHIN A ZONE A FLOOD HAZARD AREA AS DESIGNATED ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) NUMBER 23031C0452G AND 23031C0456G WITH AN EFFECTIVE DATE OF JULY 17, 2024. NO LAND DEVELOPMENT IS PROPOSED WITHIN THE LIMITS OF THE FLOODPLAIN.



LEGEND	
---	PROPERTY LINE/R.O.W.
---	ABUTTER PROPERTY LINE
---	SETBACK
---	EASEMENT LINE
□	GRANITE MONUMENT
○	IRON PIN/DRILL HOLE
---	CENTERLINE
---	BUILDING
---	EDGE OF PAVEMENT/CURB
---	EDGE OF GRAVEL
---	SIGN
---	EDGE OF WETLANDS
---	EDGE OF WATER
---	CONTOUR LINE
---	WATER MAIN

EXISTING CONDITIONS PLAN

POOL STREET RESIDENTIAL SUBDIVISION

288 POOL STREET
BIDDEFORD, MAINE

FOR:
BEDARD HOMES, LLC
PO BOX 483
BIDDEFORD, MAINE 04005

24036
JOB NUMBER:

1" = 120'
SCALE:

11-1-2024
DATE:

SHEET 1 OF 1

EC-1

DM ROMA
CONSULTING ENGINEERS

P.O. BOX 1116
WINDHAM, ME 04062
(207) 591-5055

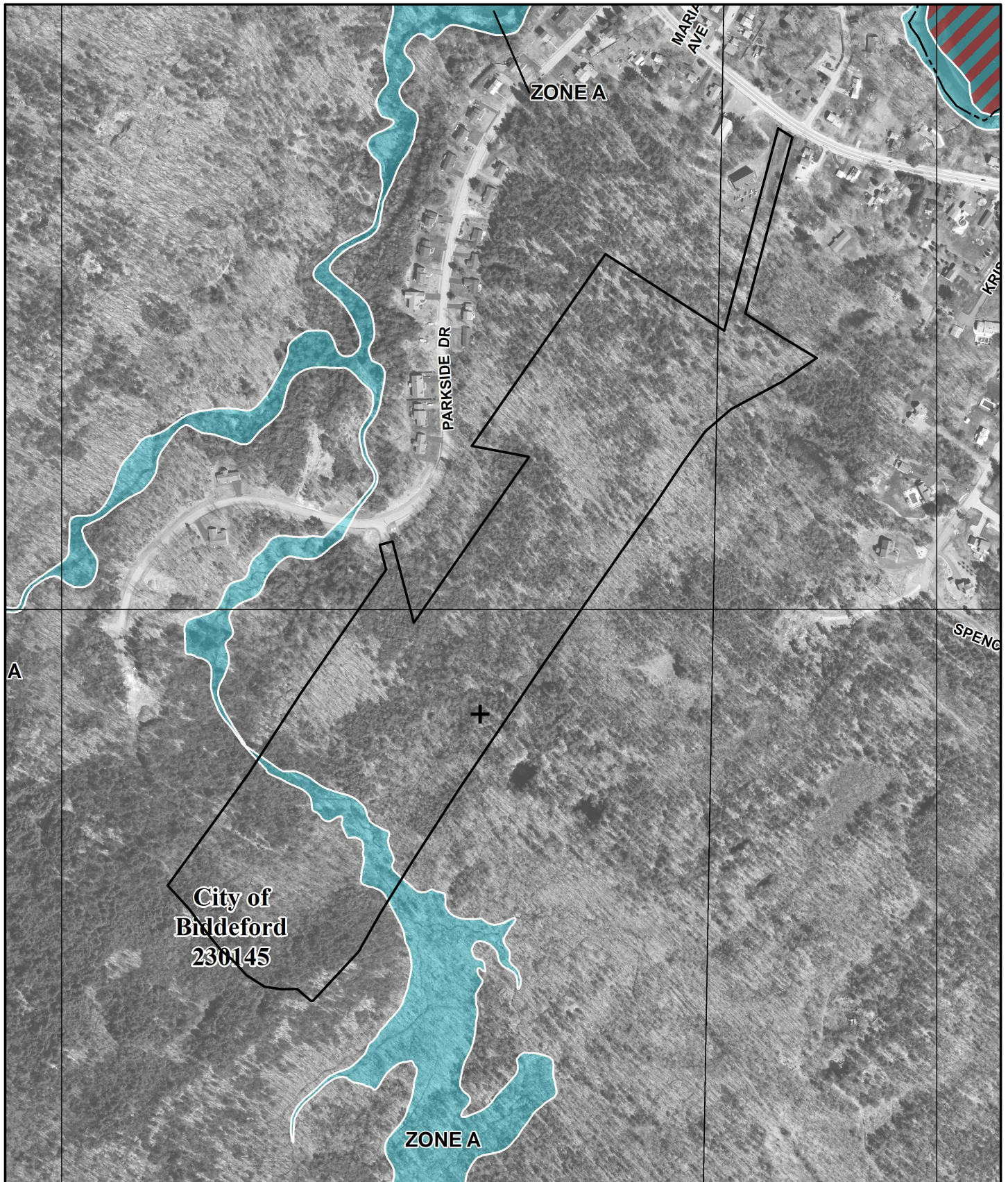
REV	DATE	BY	DESCRIPTION

SECTION 14

FEMA FLOOD MAP

SECTION 14 – FEMA FLOOD MAP

During the due-diligence phase of the project design, it was determined that the project site included a Zone A Flood Hazard Area as mapped by the Federal Emergency Management Agency. This flood plain is associated with the larger stream segment closer to the southern portion of the site. There is no proposed lot development within this flood plain and is included in the open space. A copy of Flood Insurance Rate Map Panels 23031C0452G and 23031C0456G has been included in this section for reference.



FEMA FLOOD INSURANCE RATE MAP EXHIBIT

POOL STREET SUBDIVISION
BIDDEFORD, MAINE

FOR RECORD OWNER:
BEDARD HOMES, LLC
PO BOX 481
BIDDEFORD, MAINE 04005

FEMA FIRM PANELS:
23031C0452G
23031C0456G

SCALE: 1"=500'
DATE: 2-12-2025
JOB NUMBER: 24036

DM ROMA
CONSULTING ENGINEERS

P.O. BOX 1116
WINDHAM, ME 04062
(207) 591-5055

SECTION 15

BLASTING

SECTION 15 – BLASTING

Based on site walks of the property, there is a significant amount of rock outcrops throughout the site, indicating that blasting will be required for the construction of both the roadways and lots. The majority of the roadways were designed to avoid as much rock as possible, but blasting will be necessary to complete the project. The selected blasting contractor will be responsible for preparing a blasting plan, pre-blast surveys and notifications based on local and state procedures.

SECTION 16

OTHER REGULATORY PERMITTING

SECTION 16 – OTHER REGULATORY REVIEW

The project will require Subdivision approval from the City of Biddeford Planning Board. In addition to this permitting, the proposed development will also anticipate the need to obtain additional land development permits. Copies of these applications will be provided to the City upon submission.

- Maine Department of Environmental Protection
 - Site Location of Development Act Permit.
Since the project contains more than 15 single family residential lots on over 30 acres of land, the development will require approval under the Site Location of Development Act. This submission is typically reviewed and approved by the MDEP, but the City of Biddeford has delegated review, meaning it will be reviewed by the City and not through the MDEP.
 - Maine Construction General Permit
Although the City has delegated review under Site Law, a Maine Construction General Permit (MCGP) will need to be obtained from the MDEP. This permit is for any land disturbance over 1 acre.
 - Natural Resources Protection Act (NRPA) Tier 1 Wetland Alteration permit.
Based on the proposed design, we anticipate the impact to approximately 5,705 square feet of wetland impact. Since the project will impact over 4,300 square feet of wetlands, the NRPA Tier 1 permit will be required.
 - Natural Resources Protection Act (NRPA) Permit by Rule
As part of the proposed design, Road C and the utility access trail will need to cross the smaller of the streams identified on the property. Stream crossings are regulated under the NRPA regulations and allow the submission of a Permit by Rule if the crossing meets the NRPA standards. The MDEP design standards will be adhered to and the application submitted shortly after the City's submission.

The Permit by Rule will also be for activities adjacent to a protected natural resource (stream) and activities in, or over significant vernal pool habitat. As indicated in Section 13 of this application, the Maine Inland Fisheries and Wildlife suspect a small and isolated wetland on the site to be a "Significant" vernal pool. Their recommendation is to permit the vernal pool as if it is significant, with verification in the Spring during the vernal pool investigation time period. As a result of this assumption, three lots were removed from the original design plan to reduce the amount of land disturbance within the 250-foot critical terrestrial habitat associated with the pool. The land disturbance has been reduced to less than 25% of the habitat, permissible with the submission of an NRPA Permit by Rule.

- US Army Corps of Engineers
 - Maine General Permit.

Since the project includes wetland impact, a Maine General Permit will be required through the US Army Corps of Engineers.

WARRANTY DEED
Maine Statutory Short Form

KNOW ALL BY THESE PRESENTS, that we, **Deborah D. May** of Dearborn, Michigan, **Kristen A. DeRyck** of Grosse Pointe, Michigan and **Jennifer L. DeRyck** of Grosse Pointe Woods, Michigan for consideration paid, **GRANT** to **Bedard Homes, LLC**, a Maine limited liability company with a mailing address of PO Box 481, Biddeford, ME 04005, with **WARRANTY COVENANTS**, the real property commonly known as 268 Pool Street, and located in the City of Biddeford, County of York and State of Maine, described as follows:

SEE SCHEDULE A ATTACHED HERETO AND MADE A PART HEREOF.

Meaning and intending to convey, and hereby conveying, the same premises set forth in a deed from Raymond DeRyck to Raymond DeRyck, Deborah D. May, Kristen A. DeRyck and Jennifer L. DeRyck dated February 1, 2019 and recorded in the York County Registry of Deeds in Book 17894, Page 169. Raymond DeRyck died January 18, 2021 therefore leaving Debra D. May, Kristen A. DeRyck and Jennifer L. DeRyck as the surviving joint tenants.

WITNESS my hand and seal this 31st day of August, 2024

SIGNED, SEALED AND DELIVERED
IN THE PRESENCE OF

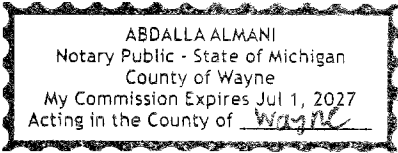
[Signature]
WITNESS

[Signature: Deborah D. May]
Deborah D. May

State of Michigan
County of Wayne, ss.

August 31st, 2024

Then personally appeared the above named Deborah D. May and acknowledged the foregoing instrument to be her free act and deed, before me,



[Signature]
Notary Public
My commission expires 07/01/2027

Maine R.E. Transfer Tax Paid

WITNESS our hands and seals this 30 day of August, 2024

SIGNED, SEALED AND DELIVERED
IN THE PRESENCE OF

[Signature]
WITNESS AMBER GENNA

D'Ann Landon
WITNESS D'Ann Landon

[Signature]
Kristen A. DeRyck

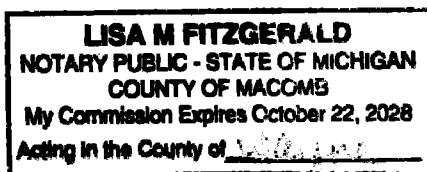
[Signature]
Jennifer L. DeRyck

State of Michigan

County of Wayne, ss.

August 30, 2024

Then personally appeared the above named Kristen A. DeRyck and Jennifer L. DeRyck and acknowledged the foregoing instrument to be their free act and deed, before me,



[Signature]
Notary Public
My commission expires 10-22-2028

SCHEDULE A

PARCEL ONE:

That real estate situated at and near the Pool Road, so-called, in Biddeford, York County, Maine, as described in deed of BIDDEFORD CHURCH OF CHRIST to Raymond Deryck dated September 1, 1987, and recorded in York Registry of Deeds in Book 4443, page 288, to which deed and the record thereof, reference is made for a more particular description of the within conveyed premises.

EXCEPTING, THEREFROM, HOWEVER, that portion of the above-described premises described in deed of Raymond Deryck to E & R Development Corporation dated March 18, 2013, and recorded in York Registry of Deeds in Book 16554, page 568.

PARCEL TWO:

That real estate and interests in real estate situated on the southerly sideline of Parkside Drive, so-called, in Biddeford, York County, Maine, as described in deed of E & R Development Corporation to Raymond Deryck dated March 18, 2013, and recorded in York Registry of Deeds in Book 16554, page 570, to which deed and the record thereof, reference is made for a more particular description of the within conveyed premises, SUBJECT, HOWEVER, to those reserved interests and restrictions set forth therein.

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Fee Total 5

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Maine Construction General Permit (MCGP) NOI

version 1.9

(Submission #: HQG-RKWE-RVT6T, version 1)

Details

Site: Woodlands Reserve - Biddeford
Submission ID HQG-RKWE-RVT6T
Status In Process

Fees

Fee \$191.00
Payments/Adjustments (\$191.00)
Balance Due \$0.00 (Paid)

Form Input

Project Scope

Is this project funded by an awarded DEP grant?
No
Is this a federal consistency project in the coastal zone?
No
Is this an after-the-fact application?
No

Operator

Operator

First Name	Last Name	
Kevin	Bedard	
Title		
Owner		
Organization Name		
Bedard Homes, LLC		
Phone Type	Number	Extension
Business	2074233564	
Email		
kbbc1990@gmail.com		
Address		
PO Box 481		
Biddeford, ME 04005		
York, United States		

Agent

Agent Information

Agents are individuals or consultants that serve as a point of contact for the submission.

Will an agent be representing you for this project?

Yes

Agent

First Name	Last Name	
Jayson	Haskell	
Organization Name		
DM Roma Consulting Engineers		
Phone Type	Number	Extension
Business	2075915055	
Email		
jayson@dmroma.com		
Mailing Address		
PO BOX 1116		
WINDHAM, ME 04062-1116		
United States		

Does the agent have an ownership interest in the project?

No

Agent Letter of Authorization

Agent Letter.jpg - 10/31/2025 01:04 PM
Comment
NONE PROVIDED

Project Summary

Project Name
The Woodlands Reserve

Project Long Description
30 lot residential subdivision

Detailed Project Description

Project Description.pdf - 10/31/2025 01:11 PM
Comment
NONE PROVIDED

Project Location

Project Site Name
Woodlands Reserve - Biddeford

Project Address
Pool Street and Parkside Drive
Biddeford, ME 04005
York

Directions and Site Identifiers

Take I-95 Exit 32 Biddeford. Turn left onto Rt 111 and continue for 1.3 miles, then bear left at the signal and then a right to continue on Rt 111. Then turn right onto Pool Street. The project site is approximately 1.1 miles on the right, across from Libby Drive.

Tax Map #
8

Tax Lot #
52-1

Place pin on map at the location of the project activity.

Project Location
43.48161759575377,-70.43789539944459

Size of Lot or Parcel

46.5

Size of Lot or Parcel

Acres

Deed**Deed Reference - Book #**

19506

Deed Reference - Page #

846

Proof of Ownership

[Bedard Deed.pdf - 10/31/2025 01:15 PM](#)

Comment

NONE PROVIDED

MCGP Notice of Intent**Size of disturbed area proposed (Acres)**

16.1

Creating a common plan of development or sale?

No

Name of waterbody(ies) to which disturbed area would drain (or municipality if area drains to MS4):

Unnamed stream, drains to West Brook, eventually discharging into the Saco River.

Does the site drain to an Impaired Waterbody?

No

Will any construction activity occur in essential habitat?

Yes

Construction Start Date

04/15/2026

Construction End Date

11/30/2026

Stormwater Pollution Prevention Plan (SWPPP)

[SWPPP.pdf - 11/03/2025 06:12 AM](#)

Comment

NONE PROVIDED

Site Photos

[PHOTO SHEETS.pdf - 10/31/2025 01:18 PM](#)

Comment

NONE PROVIDED

Provide written approval from the Dept. of Inland Fisheries & Wildlife due to construction activity that will occur in essential habitat.

Additional information and Environmental Review Request Form can be found at the [Department of Inland Fisheries and Wildlife Environmental Review Website](#)

Dept. of Inland Fisheries & Wildlife Approval

[MDIFW Pool Street Subdivision Review ERid8733_2025_10_22_FINAL.pdf - 10/31/2025 01:19 PM](#)

Comment

We have been working with the Maine IFW on the project due to the sensitivity of the surrounding areas related to potential significant vernal pool and Blanding and Spotted Turtle habitats.

Use of infiltration to control runoff

If the project involves the use of infiltration to control runoff, I have attached evidence that the project meets the license by rule standards in Appendix D of the Department's Chapter 500 Stormwater Management rules or evidence that I have obtained a waste discharge license under the Waste Discharge Law.

Does the project involve the use of infiltration to control runoff?
No

Landowner or Leaseholder Authorization

If you are not the **landowner or leaseholder**, you must attach documentation from the landowner or leaseholder showing authorization to sign on their behalf.

Are you the Landowner or Leaseholder?
Yes

Fee Total

Processing Fee
191.00

There will be a payment service fee of \$2.00 added to your total at checkout.

Are you applying for ongoing construction activity that received authorization under the expired Maine Construction General Permit (MCGP) and have not submitted a Notice of Termination (NOT)?

Please select your response to the above question
No

Attachments

Date	Attachment Name	Context	Confidential?	User
11/3/2025 6:12 AM	SWPPP.pdf	Attachment	No	Jayson Haskell
10/31/2025 1:19 PM	MDIFW_Pool_Street_Subdivision_Review_ERid8733_2025_10_22_FINAL.pdf	Attachment	No	Jayson Haskell
10/31/2025 1:18 PM	PHOTO SHEETS.pdf	Attachment	No	Jayson Haskell
10/31/2025 1:15 PM	Bedard Deed.pdf	Attachment	No	Jayson Haskell
10/31/2025 1:11 PM	Project Description.pdf	Attachment	No	Jayson Haskell
10/31/2025 1:04 PM	Agent Letter.jpg	Attachment	No	Jayson Haskell

Status History

	User	Processing Status
10/31/2025 1:01:21 PM	Jayson Haskell	Draft
11/3/2025 10:45:39 AM	Jayson Haskell	Payment Due
11/3/2025 10:47:12 AM	Jayson Haskell	Submitting
11/3/2025 10:47:18 AM	Jayson Haskell	Submitted
11/3/2025 10:47:22 AM	Jayson Haskell	In Process



STATE OF MAINE
DEPARTMENT OF
INLAND FISHERIES & WILDLIFE
353 WATER STREET
41 STATE HOUSE STATION
AUGUSTA ME 04333-0041



October 22, 2025

Jayson Haskell
DM Roma Consulting Engineers
P.O. Box 1116
Windham, ME 04062

RE: Project Review - 268 Pool Street, Subdivision, Biddeford Project ID 8733-10096

Dear Jay:

On December 5, 2024, we received a request for review for current Maine Department of Inland Fisheries and Wildlife (MDIFW) information sources for known locations of Endangered, Threatened, and Special Concern (Rare) species; designated Essential and Significant Wildlife Habitats; inland fisheries and aquatic habitats; and other protected natural resource concerns within the vicinity of the **268 Pool Street, Subdivision, Biddeford** project, pursuant to MDIFW's authority. Since this original submission, MDIFW has exchanged information with the Applicant on several occasions and conducted a site visit on August 14, 2025. Updated site plans and an updated delineation map were provided to MDIFW on September 12, 2025. This letter takes into consideration the September 12, 2025, site plans as well as previously submitted reports and discussions between the Applicant and MDIFW.

Endangered and Threatened Turtle Species

Blanding's Turtle, a State Endangered species, and Spotted Turtle, a State Threatened species, were both documented immediately adjacent to the proposed project area in 2025 (*FB Environmental Report, Rare Turtle Habitat Reconnaissance – Pool Street Subdivision, Biddeford, Maine, dated 06/25/2025*).

Following submission of this report, MDIFW staff conducted a site visit with the Applicant on August 14, 2025. Following the site visit and discussions with MDIFW, the Applicant revised its mapping of turtle habitat to better reflect field observations of suitable habitat. The Applicant also redesigned the project and submitted an updated site plan to MDIFW on September 12, 2025 (*DM Roma, Sketch Plan, Revision C, dated 09/03/2025*).

Based on this revised site plan, MDIFW offers the following observations and recommendations, referencing wetland identifying labels provided to MDIFW on October 6, 2025 (*DM Roma, Existing Conditions Plan, dated 11/1/2024*):

1. Blanding's/Spotted Turtle wetland habitat, as confirmed by MDIFW's site visit, should be avoided and buffered with at least 250 feet of undisturbed natural vegetation with no new development or habitat conversion within this zone.

October 22, 2025

Letter to Jayson Haskell, DM Roma Consulting Engineers

Comments RE: 268 Pool Street, Subdivision, Biddeford

- a. Wetland A: A riparian wetland present along an unnamed stream that crosses proposed Road C to the north of proposed Lot 1 and continues out of the parcel and reenters to the southwest of proposed Lot 5 where it crosses the proposed Utility Access Trail. FB Environmental's report assessed this as not potential turtle habitat (*Rare Turtle Habitat Reconnaissance – Pool Street Subdivision, Biddeford, Maine, dated 06/25/2025*). MDIFW concurs with FB Environmental's assessment that this wetland area is not suitable Blanding's/Spotted Turtle habitat. **MDIFW has no further recommendations on the Applicant's design for this wetland area.**
- b. Wetland B: An isolated palustrine scrub-shrub wetland with deep standing water. FB Environmental assessed this wetland as typical/suitable for Blanding's and Spotted Turtle use. The Applicant's design appears to incorporate a 250-foot buffer from this portion of the wetland. **The Applicant's design appears to meet MDIFW's recommendation for this wetland area.**
- c. Wetland C: A palustrine emergent wetland bounded by a palustrine scrub-shrub wetland complex located primarily off parcel (southeast of proposed Lots 18 and 27). Blanding's and Spotted Turtles were observed in this wetland complex, but only a portion of the wetland complex is suitable habitat for these species. The Applicant's design incorporates a 250-foot buffer from this portion of the wetland complex. **The Applicant's design meets MDIFW's recommendation for this wetland area.**
- d. Wetland D: An isolated wetland/pool present on proposed Lot 33. MDIFW believes that while this pool may provide a possible foraging location for Spotted Turtle, it is unlikely to provide high value habitat for either Blanding's or Spotted Turtle. Therefore, MDIFW does not recommend an undisturbed 250-foot buffer for this wetland; **however, based on incomplete information relating to pool-breeding amphibians, MDIFW recommends this area be treated as a Potentially Significant Vernal Pool. Refer to the Significant Vernal Pool section of this letter below for additional discussion.**
- e. Wetlands E, F, and G: This wetland complex is present on the parcel southeast of the proposed utility trail and south of proposed Lot 4 along the stream. A portion of this wetland also contains a pool (MDIFW Pool ID# 5709). MDIFW reviewed the data submission associated with this pool and recommended to the Maine Department of Environmental Protection (MDEP) this pool be considered Non-Significant based on the pool's permanent hydrology, which precludes it from treatment as a Significant Vernal Pool. However, based on the pool's suitability for Blanding's and Spotted Turtles and the fact that both species were documented in close proximity as part of the Project's due diligence, MDIFW recommends this pool be buffered with a 250-foot turtle habitat buffer. The Applicant's design avoids the entire 250-foot turtle habitat buffer. The Applicant also eliminated three proposed lots and flipped the end of a roadway hammerhead

October 22, 2025

Letter to Jayson Haskell, DM Roma Consulting Engineers

Comments RE: 268 Pool Street, Subdivision, Biddeford

to provide enhanced habitat connectivity from this wetland area to the Open Space area proposed for the southernmost portion of the subject parcel. **The Applicant's design meets MDIFW's recommendation for this wetland area.** For clarity, MDIFW recommends the Applicant renames the buffers associated with this wetland "Turtle Habitat Buffer."

2. To maintain on-site habitat connectivity for Blanding's and Spotted Turtles, MDIFW recommended the Applicant expand the Open Space areas to encompass the southern portions of the subject parcel, including lands around the stream to the south of proposed Lot 4. **The Applicant designed an expanded open space area that meets MDIFW's recommendation.**
3. To ensure the proposed Open Space areas are permanently protected and open to public access, MDIFW recommends the Applicant execute a conservation easement with a qualified conservation organization (e.g., land trust). **Currently, MDIFW has no knowledge of what conservation mechanism is intended for the Open Space lands.**
4. To reduce the likelihood of vehicle collision with Blanding's and Spotted Turtles, MDIFW recommends the following traffic calming measures along the proposed northern access road from Pool Street:
 - a. Installation of design features to reduce motorist speeds (e.g., speed bumps/humps, islands or median strips to narrow lanes, etc.).
 - b. If curbing is required by other permitting entities, MDIFW recommends installation of four-inch-high curbing or curbing modified/sloped to allow for easier turtle movement across the paved roadway.¹

Significant Vernal Pools

5. During project design, it appears the Applicant presumed that Pool #5709 associated with Wetland E/F would be treated as a Significant Vernal Pool. As mentioned above, MDIFW reviewed the data submission associated with this pool and recommended to MDEP that this pool be considered Non-Significant based on the pool's permanent hydrology, which precludes it from treatment as a Significant Vernal Pool. However, based on the pool's habitat suitability for Blanding's and Spotted Turtles and the fact that both species were documented in close proximity as part of this Project's due diligence, MDIFW recommends this pool be buffered with a 250-foot turtle habitat buffer. **The Applicant's design meets MDIFW's recommendation for this pool.** For clarity,

¹ Refer to Figure 10, Design Schematics for Road and Driveway Construction to Reduce Impacts on Pool-Breeding Amphibians from Calhoun, A. J. K. and M. W. Klemens. 2002. *Best development practices: Conserving pool-breeding amphibians in residential and commercial developments in the northeastern United States*. MCA Technical Paper No. 5, Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, New York. P. 35. Access:

<https://www.nae.usace.army.mil/Portals/74/docs/regulatory/VernalPools/BestDevelopmentPractices20Oct2014.pdf>

October 22, 2025

Letter to Jayson Haskell, DM Roma Consulting Engineers

Comments RE: 268 Pool Street, Subdivision, Biddeford

MDIFW recommends the Applicant renames the buffers associated with this wetland “Turtle Habitat Buffer.”

6. As mentioned above, an isolated wetland (Wetland D) is present on proposed Lot 33. During the vernal pool survey conducted April 9 and April 25, 2025, it was not explicitly noted as being a potential vernal pool or having pool-breeding amphibian egg masses (*Mark Hampton Associates, 05/22/2025*). However, during the FB Environmental turtle habitat survey, an unspecified quantity of spotted salamander (*Ambystoma maculatum*) egg masses were observed in this pool, as well as eighteen inches of standing water (*FB Environmental Report, Rare Turtle Habitat Reconnaissance – Pool Street Subdivision, Biddeford, Maine, 06/25/2025*). MDIFW was unable to locate the precise date that FB Environmental visited this wetland.

To clarify the situation, MDIFW requested additional information from the Applicant relating to the 2025 Vernal Pool surveys. The Applicant provided an updated letter (*Mark Hampton Associates, updated October 7, 2025*). In this letter, after providing details on Pool #5709, Mr. Hampton states: “All other potential pools were investigated during both site visits, but no egg masses were observed in any of the pools.”

MDIFW’s vernal pool verification process includes applicant submission of data forms for all potential pools, except for very specific situations, such as when the pool is clearly manmade/artificial *and* contains no pool-breeding amphibian egg masses.

MDIFW has no record of vernal pool data forms submitted by either Mark Hampton Associates or FB Environmental for this wetland location. One consultant observed egg masses, and the other did not. Therefore, MDIFW cannot definitively determine the pool’s significance absent corroborating field data collected during the appropriate survey season.

Further, MDIFW visited this area during our site visit and observed that a portion of the wetland appears to be a natural pool in origin, later modified by the trail that now bisects the feature. Accordingly, we cannot rule out the possibility that this may be a Significant Vernal Pool based on the information available to MDIFW at this time.

In summary, **MDIFW recommends this wetland be treated as a Potentially Significant Vernal Pool.** Options for the Applicant include:

- a. Redesigning the affected parts of the project to meet MDEP’s Permit-By-Rule standards for <25% impacts to the pool’s presumed Critical Terrestrial Habitat.
- b. Conducting follow up vernal pool surveys in 2026 to determine the pool’s significance.

October 22, 2025

Letter to Jayson Haskell, DM Roma Consulting Engineers

Comments RE: 268 Pool Street, Subdivision, Biddeford

- c. Exploring options for phased development with permitting authorities that would allow other parts of the development not implicated by this pool and its potential buffer to proceed, while 2026 vernal pools surveys are pending.

Fish Habitat & Angler Access

The applicant's September 12, 2025, design appears to include two road-stream crossings: one for the proposed access road from Parkside Drive; one for the proposed Utility/Access Trail. MDIFW presumes tree clearing within the 100-foot riparian buffer would occur to construct these stream crossings. Our Department anticipates minimal fisheries and fish habitat impacts as a result of project activities *provided that the following recommendations are adhered to:*

7. Tree clearing for the two road-stream crossings is kept to the minimum necessary, including narrowing the utility access road to the extent practicable and limiting the buildable area for Lot 1.
8. Stream crossing structures are designed to provide full aquatic organism passage and sized to span at least 1.2 times the bankfull width of the stream with an open bottom (i.e., natural bottom) or backfilled with representative streambed material (i.e., built to StreamSmart standards).
9. Instream work occurs between July 15 and October 1.
10. Construction Best Management Practices are followed to avoid erosion, sedimentation, and alteration of stream flow.
11. Finally, MDIFW recommends the open space and associated stream access be maintained with informational signage and dedicated public parking offered to ensure public access.

We appreciate the opportunity to comment on this project. Please feel free to contact my office if you have any questions regarding this information, or if I can be of any further assistance.

Respectfully,



Andrew J. Wood

Environmental Review Coordinator / Senior Resource Biologist

Attachments:

1. MDIFW Recommendations for Vernal Pool Determinations: Pool ID #5709
2. DM Roma, Sketch Plan, Revision C, dated 09/03/2025
3. DM Roma, Existing Conditions Plan, dated 11/1/2024

October 22, 2025

Letter to Jayson Haskell, DM Roma Consulting Engineers

Comments RE: 268 Pool Street, Subdivision, Biddeford

CC: Laura Hatmaker, MDIFW Environmental Review Biologist
John Perry, MDIFW Environmental Review Program Supervisor
Ciara Wentworth, MDIFW Environmental Review Biologist
Phillip deMaynadier, MDIFW Wildlife Diversity Section Supervisor
John Veale, MDIFW Region A Wildlife Biologist
Josh Matijas, MDIFW Region A Wildlife Biologist
Scott Lindsay, MDIFW Region A Wildlife Supervisor
Nick Kalejs, MDIFW Region A Fisheries Biologist
Jim Pellerin, MDIFW Region A Fisheries Supervisor
Elliott Boardman, FB Environmental

ATTACHMENT 1

IFW Recommendations for Significant Vernal Pool Determinations

The following is a list of pools and IFW's recommendations for whether or not they qualify as Significant Vernal Pools, one of Maine's Significant Wildlife Habitats.

Data current as of: Monday, August 25, 2025

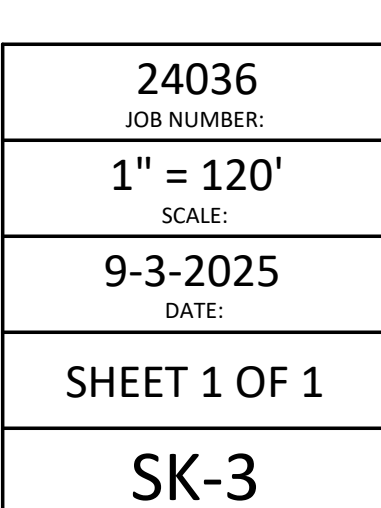
IFW's Pool ID: 5709	Twp: Biddeford	UTM Coordinates of Pool Center: 383395 E, 4814874 N
Observer's ID: 8094	Pool A	ProjectType: Pool Street Project
Landowner: Bedard Homes LLC	Contact: Mark Hampton - Mark Hampton Associates, Inc	
P.O. Box 481	PO Box 1931	
Biddeford, ME 04005	Portland, ME 04102	
() 423-3564 kbbc1990@gmail.com	(207) 756-2900 mhampto1@maine.rr.com	

Survey Date: 4/9/2025 Additional Survey Dates: 04/25/2025

IFW's Recommendation: RED: NOT SIGNIFICANT, does not meet the vernal pool definition

IFW Comments: Pool provides significant habitat for spotted salamander and some habitat for wood frog, but does not meet the MDEP vernal pool definition (permanent hydrology). Note: Blanding's turtles (State Endangered) and Spotted turtles (State Threatened) have been documented in close proximity to this pool.

ATTACHMENT 2



24036 JOB NUMBER:
1" = 120' SCALE:
9-3-2025 DATE:
SHEET 1 OF 1
SK-3

ATTACHMENT 3

- GENERAL NOTES:
- THE OWNER OF RECORD OF THE PROPERTY IS BEDARD HOMES, LLC BY DEED RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS BOOK 19506 PAGE 846.
 - TOTAL AREA OF THE PARCEL IS APPROXIMATELY 46.5 ACRES.
 - PARCEL TAX MAP REFERENCE: CITY OF BIDDEFORD ASSESSORS MAP 8, LOT 52-1.
 - PLAN REFERENCES:
 - BOUNDARY SURVEY OF POOL STREET AND PARKSIDE DRIVE, BIDDEFORD, MAINE FOR KB BUILDING CONTRACTORS, LLC, PREPARED BY SURVEY, INC. DATED JANUARY 2025.
 - HORIZONTAL DATUM: MAINE STATE PLANE, WEST ZONE, NAD83, U.S. FEET.
 - VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)
 - BOUNDARY SHOWN HEREON IS BASED ON PLAN REFERENCE 4A.
 - TOPOGRAPHIC INFORMATION HEREON BASED ON PLAN REFERENCE 4A AND SUPPLEMENTED WITH LIDAR GENERATED CONTOURS OBTAINED FROM THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION.
 - THE PROPERTY IS LOCATED IN THE SUBURBAN RESIDENTIAL DISTRICT (SR1) AND STREAM PROTECTION OVERLAY DISTRICT (SP).
 - SPACE AND BULK REQUIREMENTS: SR1 DISTRICT (WATER AND SEWER)

MIN LOT SIZE:

MIN STREET FRONTAGE:

MIN SETBACK FROM MAJOR ROW:

MIN SETBACK FROM OTHER ROW:

MIN SETBACK FROM SIDE/REAR LINE:

MAX BUILDING HEIGHT:

15,000 SF

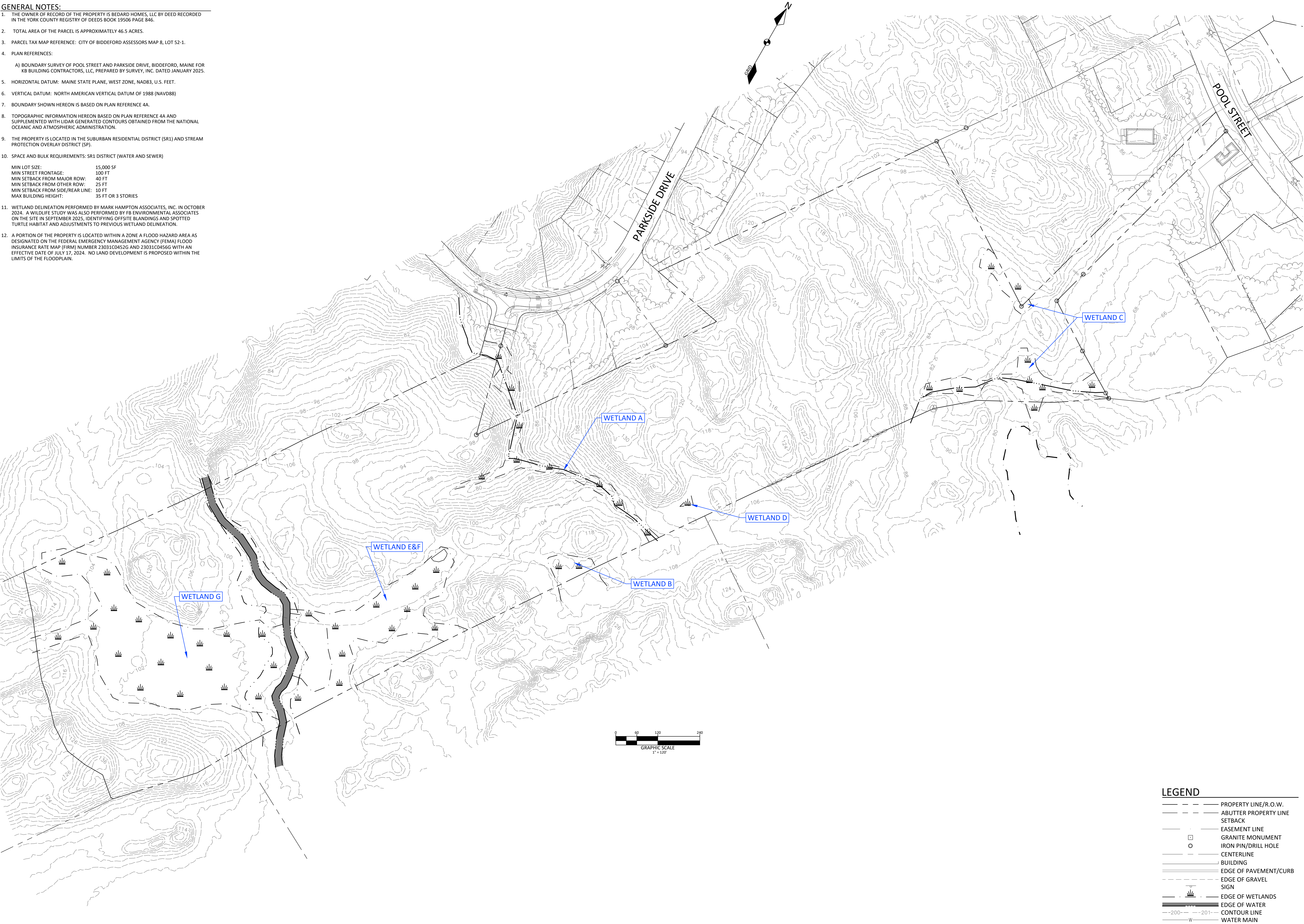
100 FT

40 FT

25 FT

10 FT

35 FT OR 3 STORIES
 - WETLAND DELINEATION PERFORMED BY MARK HAMPTON ASSOCIATES, INC. IN OCTOBER 2024. A WILDLIFE STUDY WAS ALSO PERFORMED BY FB ENVIRONMENTAL ASSOCIATES ON THE SITE IN SEPTEMBER 2025, IDENTIFYING OFFSITE BLANDINGS AND SPOTTED TURTLE HABITAT AND ADJUSTMENTS TO PREVIOUS WETLAND DELINEATION.
 - A PORTION OF THE PROPERTY IS LOCATED WITHIN A ZONE A FLOOD HAZARD AREA AS DESIGNATED ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) NUMBER 23031C0452G AND 23031C0456G WITH AN EFFECTIVE DATE OF JULY 17, 2024. NO LAND DEVELOPMENT IS PROPOSED WITHIN THE LIMITS OF THE FLOODPLAIN.



LEGEND	
	PROPERTY LINE/R.O.W.
	ABUTTER PROPERTY LINE
	SETBACK
	EASEMENT LINE
	GRANITE MONUMENT
	IRON PIN/DRILL HOLE
	CENTERLINE
	BUILDING
	EDGE OF PAVEMENT/CURB
	EDGE OF GRAVEL
	SIGN
	EDGE OF WETLANDS
	EDGE OF WATER
	CONTOUR LINE
	WATER MAIN

EXISTING CONDITIONS PLAN

POOL STREET RESIDENTIAL SUBDIVISION

288 POOL STREET
BIDDEFORD, MAINE

FOR:
BEDARD HOMES, LLC
PO BOX 483
BIDDEFORD, MAINE 04005

24036
JOB NUMBER:
1" = 120'
SCALE:
11-1-2024
DATE:
SHEET 1 OF 1
EC-1

REV	DATE	BY	DESCRIPTION

DM ROMA

CONSULTING ENGINEERS

P.O. BOX 1116
WINDHAM, ME 04062
(207) 591-5055



PHOTO 1 – LOOKING FROM POOL STREET SOUTHERLY AT NEW ROAD LOCATION.



PHOTO 2 – LOOKING LEFT ON POOL STREET FROM PROPOSED INTERSECTION.



PHOTO 3 – LOOKING RIGHT ON POOL STREET FROM PROPOSED INTERSECTION.



PHOTO 4 – PHOTO INTERNALLY IN SITE.



PHOTO 5 – PHOTO INTERNALLY OF SITE.



PHOTO 6 - INTERNALLY OF SITE.



PHOTO 7 – EXISTING PUMP STATION ON PARKSIDE DRIVE.



PHOTO 8 – LOOKING AT PUMP STATION AND PARKSIDE DRIVE DRIVEWAY.

PROJECT NARRATIVE

Zoning: Suburban Residential Zone
Overlay Zoning: Stream Protection Overlay Zone
Acreage: 46.5 acres
Tax Map/Lot: Map 8 Lot 52-1
Existing Use: Undeveloped Woodland
Proposed Use: 30 Single Family Lot Residential Subdivision

Bedard Homes, LLC, the applicant and current landowner, is proposing to develop property located along Pool Street and Parkside Drive in Biddeford, Maine.

Existing Conditions

The property is currently undeveloped woodland.

Proposed Development

The applicant intends to create a 30-lot residential subdivision. The lots will consist of single-family residential lots served by three separate paved roads accessed by Pool Street and Parkside Drive totaling approximately 3,800 linear feet. In addition an approximately 490 linear foot utility and trail gravel road will be installed to connect the two project areas.

The roadways will be located within a 50-foot (minimum) right of way. The proposed roadway cross section for all roads will consist of a 20-foot-wide paved travel way with 4-foot-wide bike lanes/walkways on both sides of the road, for a total paved width of 28 feet. This road standard was provided to us by City Staff. Based on additional conversations with the Engineering and Public Works departments, these roads will remain private due to the stormwater infrastructure proposed beneath the roadway. A homeowner association will be created for maintenance of the roadway and other utility and stormwater infrastructure maintenance.

The development also provides to open space areas for natural resources and passive recreation with the use of the existing trails. This conservation area will include the habitat for endangered turtle species and a significant vernal pool. This is not a requirement of Chapter 66 Subdivisions, but due to the sensitivity of the natural features of the site and the use of the existing trail system, this area is in open space. The total open space is 27.74 acres, approximately 60% of the overall parcel. The intent of the developer is to convey this open space to the City of Biddeford for public use. Since the roads are to remain private, requiring maintenance of the roads within the subdivision the responsibility of the residents, the developer does not intend to provide public access through the proposed roads to avoid a significant amount of traffic and accelerating the degradation of the roadways.

Due to the number of proposed lots on more than 30 acres of land, the project must obtain a Site Location of Development Act permit. The City of Biddeford has capacity to review these permits, but we are required to submit to the MDEP a Maine Construction General Permit. Based on the current project design, there will be approximately 4.68 acres of impervious area and

approximately 16.10 acres of total developed area. The totals are based on both the road infrastructure and the approximated lot development. The proposed stormwater infrastructure related to stormwater flooding control and treatment includes 3 grassed underdrain filter basins and 2 forested buffers with level lip spreaders.



INSPECTION, MAINTENANCE, AND HOUSEKEEPING PLAN
(Prepared by Jayson Haskell, PE #13002)

THE WOODLANDS RESERVE SUBDIVISION
BIDDEFORD, MAINE

Responsible Party

Owner: Bedard Homes LLC
Kevin Bedard
P.O. Box 481
Biddeford, ME 04005

Prepared by

Engineer: **DM Roma Consulting Engineers**
Designer: Jayson Haskell, PE #13002
DEP Erosion Control Certification #4769

The land owner is responsible for the maintenance of all stormwater management structures and related site components and the keeping of a maintenance log book with service records until such time that a homeowner's association is created. Records of all inspections and maintenance work performed must be kept on file with the owner and retained for a minimum of five years. The maintenance log will be made available to the City and Maine Department of Environmental Protection (MDEP) upon request. At a minimum, the maintenance of stormwater management systems will be performed on the prescribed schedule.

The procedures outlined in this plan are provided as a general overview of the anticipated practices to be utilized on this site. In some instances, additional measures may be required due to unexpected conditions. *The Maine Erosion and Sedimentation Control BMP and Stormwater Management for Maine: Best Management Practices* Manuals published by the MDEP should be referenced for additional information.

During Construction

- 1. Inspection and Corrective Action:** It is the contractor's responsibility to comply with the inspection and maintenance procedures outlined in this section. Inspection shall occur on all disturbed and impervious areas, erosion control measures, material storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site. These areas shall be inspected, including winter work, at least once a week as well as 24 hours before and after a storm event generating more than 0.5 inch of rainfall over a 24-hour period and prior to completing permanent stabilization measures. A person with

knowledge of erosion and stormwater control, including the standards and conditions in the permit, shall conduct the inspections.

2. **Maintenance:** Erosion controls shall be maintained in effective operating condition until areas are permanently stabilized. If best management practices (BMPs) need to be repaired, the repair work should be initiated upon discovery of the problem but no later than the end of the next workday. If BMPs need to be maintained or modified, additional BMPs are necessary, or other corrective action is needed, implementation must be completed within seven calendar days and prior to any rainfall event.
3. **Construction vehicles and equipment:** Construction vehicles and equipment shall not be driven or stored within any proposed stormwater treatment pond or buffer. To ensure the buffer's natural condition and filtration capacity is maintained, prohibiting vehicles and equipment from these areas will limit the risk of inhibiting the function of the buffer due to compaction or vegetation impact.
4. **Snow Storage:** The proposed stormwater treatment ponds and forested stormwater buffers shall not be utilized for snow storage. Snow storage areas shall be not located within the basin, but snow storage areas are ideally adjacent to BMPs in areas that will direct snow melt runoff into one of the BMPs onsite.
5. **Documentation:** A report summarizing the inspections and any corrective action taken must be maintained on site. The log must include the name(s) and qualifications of the person making the inspections; the date(s) of the inspections; and the major observations about the operation and maintenance of erosion and sedimentation controls, materials storage areas, and vehicle access points to the parcel. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and location(s) where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made accessible to Town staff, and a copy must be provided upon request. The owner shall retain a copy of the log for a period of at least three years from the completion of permanent stabilization.

Housekeeping

1. **Spill prevention:** Controls must be used to prevent pollutants from construction and waste materials on site to enter stormwater, which includes storage practices to minimize exposure of the materials to stormwater. The site contractor or operator must develop, and implement as necessary, appropriate spill prevention, containment, and response planning measures.

- 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. Any project proposing infiltration of stormwater must provide adequate pre-treatment of stormwater prior to discharge of stormwater to the infiltration area, or provide for treatment within the infiltration area, in order to prevent the accumulation of fines, reduction in infiltration rate, and consequent flooding and destabilization.
- 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, but other water additives may be considered as needed. A stabilized construction entrance (SCE) should be included to minimize tracking of mud and sediment. If off-site tracking occurs, public roads should be swept immediately and no less than once a week and prior to significant storm events. Operations during dry months, that experience fugitive dust problems, should wet down unpaved access roads once a week or more frequently as needed with a water additive to suppress fugitive sediment and dust.
- 4. Debris and other materials:** Minimize the exposure of construction debris, building and landscaping materials, trash, fertilizers, pesticides, herbicides, detergents, sanitary waste and other materials to precipitation and stormwater runoff. These materials must be prevented from becoming a pollutant source.
- 5. Excavation de-watering:** Excavation de-watering is the removal of water from trenches, foundations, coffer dams, ponds, and other areas within the construction area that retain water after excavation. In most cases the collected water is heavily silted and hinders correct and safe construction practices. The collected water removed from the ponded area, either through gravity or pumping, must be spread through natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment possible, like a cofferdam sedimentation basin. Avoid allowing the water to flow over disturbed areas of the site. Equivalent measures may be taken if approved by the Department.
- 6. Authorized Non-stormwater discharges:** It is the contractor's responsibility to identify and prevent contamination by non-stormwater discharges. Where allowed non-stormwater 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. Authorized non-stormwater discharges are:

 - (a) Discharges from firefighting activity;

- (b) Fire hydrant flushings;
- (c) Vehicle washwater if detergents are not used and washing is limited to the exterior of vehicles (engine, undercarriage and transmission washing is prohibited);
- (d) Dust control runoff in accordance with permit conditions and Appendix (C)(3);
- (e) Routine external building washdown, not including surface paint removal, that does not involve detergents;
- (f) Pavement washwater (where spills/leaks of toxic or hazardous materials have not occurred, unless all spilled material had been removed) if detergents are not used;
- (g) Uncontaminated air conditioning or compressor condensate;
- (h) Uncontaminated groundwater or spring water;
- (i) Foundation or footer drain-water where flows are not contaminated;
- (j) Uncontaminated excavation dewatering (see requirements in Appendix C(5));
- (k) Potable water sources including waterline flushings; and
- (l) Landscape irrigation.

7. Unauthorized non-stormwater discharges: Approval from the Town does not authorize a discharge that is mixed with a source of non-stormwater, other than those discharges in compliance with Section 6 above. Specifically, the Town's approval does not authorize discharges of the following:

- (a) Wastewater from the washout or cleanout of concrete, stucco, paint, form release oils, curing compounds or other construction materials;
- (b) Fuels, oils or other pollutants used in vehicle and equipment operation and maintenance;
- (c) Soaps, solvents, or detergents used in vehicle and equipment washing; and
- (d) Toxic or hazardous substances from a spill or other release.

Post construction

1. Inspection and Corrective Action: All measures must be maintained by the owner in effective operating condition. A Qualified Post-Construction Stormwater Inspector hired by the owner shall at least annually inspect the stormwater management facilities. This person should have knowledge of erosion and stormwater control, including the standards and conditions of the site's approvals. The following areas, facilities, and measures must be inspected, and identified deficiencies must be corrected. Areas, facilities, and measures other than those listed below may also require inspection on a specific site.

A. Vegetated Areas: Inspect vegetated areas, particularly slopes and embankments, early in the growing season or after heavy rains to identify active or potential erosion problems. Replant bare areas or areas with sparse growth. Where rill is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows.

- B. Ditches, Swales, and Open Channels:** Inspect ditches, swales, and other open channels in the spring, late fall, and after heavy rains to remove any obstructions to flow, remove accumulated sediments and debris, control vegetative growth that could obstruct flow, and repair any erosion of the ditch lining. Vegetated ditches must be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity. Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable. If the ditch has a riprap lining, replace riprap on areas where any underlying filter fabric or underdrain gravel is showing through the stone or where stones have dislodged. The channel must receive adequate routine maintenance to maintain capacity and prevent or correct any erosion of the channel's bottom or side slopes.
- C. Culverts:** Inspect culverts in the spring, late fall, and after heavy rains to remove any obstructions to flow; remove accumulated sediments and debris at the riprap inlet, at the riprap outlet, and within the conduit; and to repair any erosion damage at the culvert's inlet and outlet.
- D. Catch Basins and Outlet Control Structures:** Inspect and, if required, clean out catch basins at least once a year, preferably in early spring. Clean out must include the removal and legal disposal of any accumulated sediments and debris at the bottom of the basin, at any inlet grates, at any inflow channels to the basin, and at any pipes between basins. If the basin outlet is designed to trap floatable materials, then remove the floating debris and any floating oils (using oil-absorptive pads).
- E. Underdrained Filter Basin:** The filter basins are not intended to function as snow storage areas. Inspector to verify that winter plowing operations are not dumping or pushing snow into the basins. The basins shall also not be used for vehicle or heavy equipment storage. Basins should be inspected after several major storm events (0.5 inches rainfall over 24 hours) to determine drawdown time during the first year. The basins to be inspected every six months thereafter with at least one inspection after a major storm event.

The basins should drain dry within 24 to 48 hours following a one-inch storm. If ponding exceeds 48 hours, the top of the filter bed must be rototilled to reestablish the soil's filtration capacity. If water ponds on the surface of the bed for more than 72 hours, the top several inches of the filter shall be replaced with fresh material. Inspect for debris and sediment build up in the forebays and basins and remove as needed. Mowing of the basins can only occur semi-annually to a height of no less than 6 inches utilizing a hand-held string trimmer or push-mower. Any bare areas or erosion rills shall be repaired with new filter media or sandy loam then seeded and mulched. The basins should also be inspected annually for destabilization of side slopes, embankment settling and other signs of structural failure.

- F. Emergency Spillway:** Spillways should be inspected semi-annually and following major storm events for the first year and every six months thereafter to remove any obstructions to flow. Any woody vegetation growing through riprap lining must be removed. Replace riprap on areas where any underlying filter fabric is showing through the stone or where stones have been dislodged.
- G. Roofline Drip edges:** The drip edges should be inspected semi-annually and following major storm events for the first year and every six months thereafter. The reservoir crushed stone should drain within 24 to 48 hours following a major storm event. If ponding exceeds 48 hours, the stone reservoir course shall be removed and the filter bed be rototilled to reestablish the soil's filtration capacity. If water ponds in the reservoir course for more than 72 hours, the top several inches of the filter shall be replaced with fresh material. Inspect for debris and sediment build up at surface and remove as needed. The drip edges are part of the stormwater management plan and cannot be paved over or altered in anyway.
- H. Forested Stormwater Treatment Buffer:** Wooded buffers must remain fully wooded and have no disturbance to the duff layer. Stormwater runoff should enter the buffer as sheet flow, and any observed channelization of flows or erosion should be corrected immediately. Activities that may result in disturbance of the duff layer are prohibited in a buffer. See Appendix A for further restrictions.
- I. Level Lip Spreader:** Inspect spreader at least once a year and following major storm events. The level spreader pool should be inspected for sand and accumulation and debris that may reduce its capacity. Sediment build-up within the pool should be removed when it has accumulated to approximately 25% of design volume or capacity. Dispose of sediment appropriately. Remove debris such as leaf litter, branches and tree growth from the spreader. Vegetated spreaders should be mowed regularly to maintain storage capacity. Do not store snow within the area of the level spreader. The reconstruction of the level spreader may be necessary when sheet flow from the spreader channelizes in the buffer.
- J. Filterra Bioretention Systems:** Once the site is fully stabilized, and paving complete the system can be activated. Once activated, inspection should occur annually thereafter, and should be observed for debris, trash and sediment accumulation, as well as general health of the plants or trees installed within the media. Maintenance protocols from the manufacture shall be followed. A copy of Filterra's Owner's Manual has been included as Appendix B.
- K. StormTech Chambers:** The manufacture recommends that at a minimum that annual inspections are conducted. Initially the system shall be inspected every 6 months for the first year of operation. If inspection indicates that sediment has accumulated, a measurement to determine the depth of sediment shall be performed. When an average depth of 3 inches is exceeded then clean-out shall be

performed. A copy of Stormtech's Operation and Maintenance Manual has been included as Appendix C.

- L. Regular Maintenance:** Clear accumulations of winter sand along roadway once a year, preferably in the spring. Accumulations on pavement may be removed by pavement sweeping. Accumulations of sand along pavement shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader.

Documentation: Keep a log (report) summarizing inspections, maintenance, and any corrective actions taken. The log must include the date on which each inspection or maintenance task was performed, a description of the inspection findings or maintenance completed, and the name of the inspector or maintenance personnel performing the task. If a maintenance task requires the clean-out of any sediments or debris, indicate where the sediment and debris was disposed after removal. The log must be made accessible to Town staff upon request. The permittee shall retain a copy of the log for a period of at least five years from the completion of permanent stabilization. Attached is a sample log.

Re-certification

As a requirement of the MDEP, a certification of the following items must be submitted within three months of the expiration of each five-year interval from the date of issuance of the permit.

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

(b) Inspection and repair of stormwater control system. All aspects of the stormwater control system have been inspected for damage, wear, and malfunction, and appropriate steps have been taken to repair or replace the system, or portions of the system.

(c) Maintenance. The erosion and stormwater maintenance plan for the site is being implemented as written, or modifications to the plan have been submitted to and approved by the Department, and the maintenance log is being maintained.

Duration of Maintenance

Perform maintenance as described.

MAINTENANCE LOG

THE WOODLANDS RESERVE SUBDIVISION

BIDDEFORD, MAINE

(GENERAL INSPECTION FORM PAGE 1 OF 3)

The following stormwater management and erosion control items shall be inspected and maintained as prescribed in the Maintenance Plan with recommended frequencies as identified below. The owner is responsible for keeping this maintenance log on file for a minimum of five years and shall provide a copy to the Town and MDEP upon request. Inspections are to be performed by a qualified third-party inspector and all corrective actions shall be performed by personnel familiar with stormwater management systems and erosion controls.

Maintenance Item	Maintenance Event	Date Performed	Responsible Personnel	Comments
Vegetated Areas	Inspect slopes and embankments early in Spring.			
Drainage Swales	Inspect after major rainfall event			
	Inspect for erosion or slumping & repair			
	Mowed at least annually.			
	Inspect and remove obstructions as necessary.			
	Remove woody vegetation.			
	Replace riprap as necessary.			
Culverts	Inspect semiannually and after major rainfall.			
	Repair erosion at inlet or outlet of pipe.			
	Repair displaced riprap within inlet and outlet aprons.			
	Clean accumulated sediment in culverts when >20% full.			
Catch Basins	Inspect to ensure that structure is properly draining.			
	Remove accumulated sediment semiannually.			
	Inspect grates/inlets and remove debris as needed.			

MAINTENANCE LOG

THE WOODLANDS RESERVE SUBDIVISION
BIDDEFORD, MAINE
 (GENERAL INSPECTION FORM PAGE 2 OF 3)

The following stormwater management and erosion control items shall be inspected and maintained as prescribed in the Maintenance Plan with recommended frequencies as identified below. The owner is responsible for keeping this maintenance log on file for a minimum of five years and shall provide a copy to the Town and MDEP upon request. Inspections are to be performed by a qualified third-party inspector and all corrective actions shall be performed by personnel familiar with stormwater management systems and erosion controls.

Maintenance Item	Maintenance Event	Date Performed	Responsible Personnel	Comments
Roofline Dripedges	Check after each rainfall event to ensure that the stone reservoir drains within 24-48 hours.			
	Replace top several inches of filter if reservoir does not drain within 72 hours.			
	Inspect and remove sediment or debris build up on the surface of the stone			
	Inspect semi-annually for erosion or sediment accumulation and repair as necessary.			
Level Lip Spreaders	Inspect for sand accumulation and remove when pool volume is reduced by 25%.			
	Remove leaf litter, branches and tree growth from spreader.			
	Inspect to verify spreader is not utilized for snow storage.			
	Inspect downstream buffer to ensure no channelization after spreader.			
Regular Maintenance	Clear accumulation of winter sand in paved areas annually.			

MAINTENANCE LOG
THE WOODLANDS RESERVE SUBDIVISION
BIDDEFORD, MAINE
(GENERAL INSPECTION FORM PAGE 3 OF 3)

The following stormwater management and erosion control items shall be inspected and maintained as prescribed in the Maintenance Plan with recommended frequencies as identified below. The owner is responsible for keeping this maintenance log on file for a minimum of five years and shall provide a copy to the Town and MDEP upon request. Inspections are to be performed by a qualified third-party inspector and all corrective actions shall be performed by personnel familiar with stormwater management systems and erosion controls.

Maintenance Item	Maintenance Event	Date Performed	Responsible Personnel	Comments
Filterra Units	Inspect annually and after major rain events to ensure that unit drains within 24-48 hours			
	Inspect annually for erosion or sediment accumulation and repair as needed.			
Stormtech SC-310 Chambers	Inspect annually for significant sediment accumulation			
	If >3" sediment accumulation, clean out system per manufacturer recommendations			

MAINTENANCE LOG

THE WOODLANDS RESERVE DEVELOPMENT BIDDEFORD, MAINE (UNDERDRAINED FILTER BASIN FB-_____)

Maintenance Item	Maintenance Event	Date Performed	Responsible Personnel	Comments
Underdrained Filter Basin	Check after each rainfall event to ensure that pond drains within 24-48 hours.			
	Replace top several inches of filter if pond does not drain within 72 hours.			
	Mow grass no more than twice a year to no less than 6 inches in height.			
	Inspect semi-annually for erosion or sediment accumulation and repair as necessary.			
	Inspector to verify basin not utilized for snow storage			
	Inspector to verify basin not utilized for vehicle or heavy equipment storage.			
Outlet Control Structure	Inspect to ensure that structure is properly draining.			
	Remove accumulated sediment semiannually.			
	Inspect grates/inlets and remove debris as needed.			
Emergency Spillway	Inspect and remove obstructions as necessary.			
	Remove woody vegetation.			
	Replace riprap as necessary.			

MAINTENANCE LOG

**THE WOODLANDS RESERVE DEVELOPMENT
BIDDEFORD, MAINE**
(STORMWATER BUFFER# _____ INSPECTION FORM)

Maintenance Item	Maintenance Event	Date Performed	Responsible Personnel	Comments
Forested Stormwater Treatment Buffer	Inspect for erosion and channelized flow semiannually.			
	Remove accumulated sediment semiannually.			
	Inspect vegetation cover and reestablish as needed.			
	See Appendix A – Stormwater Management Forested Buffer Declaration of Restrictions for further restrictions and maintenance requirements.			

APPENDIX A

DRAFT – NO-DISTURB FORESTED STORMWATER TREATMENT BUFFER DECLARATION OF RESTRICTIONS

THIS DECLARATION OF RESTRICTIONS is made this _____ day of _____, 20____, by

_____, _____
(name) (street address)

_____, _____ County, Maine, _____, (herein referred to as the
(city or town) (county) (zip code)

"Declarant"), pursuant to a permit received from the Maine Department of Environmental Protection under the Stormwater Management Law, to preserve a buffer area on a parcel of land near

_____, _____
(road name) (known feature and/or town)

WHEREAS, the Declarant holds title to certain real property situated in _____, Maine
(town)

described in a deed from _____ to _____, dated
(name) (name of Declarant)

_____, 20____, and recorded in Book ____ Page ____ at the _____ County
Registry of Deeds, herein referred to as the "property"; and

WHEREAS, Declarant desires to place certain restrictions, under the terms and conditions herein, over a portion of said real property (hereinafter referred to as the "Restricted Buffer") as shown on the enclosed Stormwater Infrastructure Map.

WHEREAS, pursuant to the Stormwater Management Law, 38 M.R.S. Section 420-D and Chapter 500 of rules promulgated by the Maine Board of Environmental Protection ("Stormwater Management Rules"), Declarant has agreed to impose certain restrictions on the Restricted Buffer Area as more particularly set forth herein and has agreed that these restrictions may be enforced by the Maine Department of Environmental Protection or any successor (hereinafter the "MDEP"),

NOW, THEREFORE, the Declarant hereby declares that the Restricted Buffer Area is and shall forever be held, transferred, sold, conveyed, occupied and maintained subject to the conditions and restrictions set forth herein. The Restrictions shall run with the Restricted Buffer Area and shall be binding on all parties having any right, title or interest in and to the Restricted Buffer Area, or any portion thereof, and their heirs, personal representatives, successors, and assigns. Any present or future owner or occupant of the Restricted Buffer Area or any portion thereof, by the acceptance of a deed of conveyance of all or part of the Covenant Area or an instrument conveying any interest therein, whether or not the deed or

instrument shall so express, shall be deemed to have accepted the Restricted Buffer Area subject to the Restrictions and shall agree to be bound by, to comply with and to be subject to each and every one of the Restrictions hereinafter set forth.

1. **Restrictions on Restricted Buffer Area.** Unless the owner of the Restricted Buffer Area, or any successors or assigns, obtains the prior written approval of the MDEP, the Restricted Buffer Area must remain undeveloped in perpetuity. To maintain the ability of the Restricted Buffer Area to filter and absorb stormwater, and to maintain compliance with the Stormwater Management Law and the permit issued thereunder to the Declarant, the use of the Restricted Buffer Area is hereinafter limited as follows.

- a. No soil, loam, peat, sand, gravel, concrete, rock or other mineral substance, refuse, trash, vehicle bodies or parts, rubbish, debris, junk waste, pollutants or other fill material will be placed, stored or dumped on the Restricted Buffer Area, nor shall the topography of the area be altered or manipulated in any way;
- b. No trees may be cut or sprayed with biocides except for the normal maintenance of dead, windblown or damaged trees and for pruning of tree branches below a height of 12 feet provided two thirds of the tree's canopy is maintained;
- c. No undergrowth, ground cover vegetation, leaf litter, organic duff layer or mineral soil may be disturbed except that one winding path, that is no wider than six feet and that does not provide a downhill channel for runoff, is allowed through the area;
- d. No building or other temporary or permanent structure may be constructed, placed or permitted to remain on the Restricted Buffer Area, except for a sign, utility pole or fence (whether constructed of wood, steel or other materials) and appurtenant equipment such as guys and guy anchors;
- e. No trucks, cars, dirt bikes, ATVs, bulldozers, backhoes, or other motorized vehicles or mechanical equipment may be permitted on the Restricted Buffer Area;
- f. Any level lip spreader directing flow to the Restricted Buffer Area must be regularly inspected and adequately maintained to preserve the function of the level spreader.

Any activity on or use of the Restricted Buffer Area inconsistent with the purpose of these Restrictions is prohibited. Any future alterations or changes in use of the Restricted Buffer Area must receive prior approval in writing from the MDEP. The MDEP may approve such alterations and changes in use if such alterations and uses do not impede the stormwater control and treatment capability of the Restricted Buffer Area or if adequate and appropriate alternative means of stormwater control and treatment are provided.

2. **Enforcement.** The MDEP may enforce any of the Restrictions set forth in Section 1 above.

3. **Binding Effect.** The restrictions set forth herein shall be binding on any present or future owner of the Restricted Buffer Area. If the Restricted Buffer Area is at any time owned by more than one owner, each owner shall be bound by the foregoing restrictions to the extent that any of the Restricted Buffer Area is included within such owner's property.
4. **Amendment.** Any provision contained in this Declaration may be amended or revoked only by the recording of a written instrument or instruments specifying the amendment or the revocation signed by the owner or owners of the Restricted Buffer Area and by the MDEP.
5. **Effective Provisions of Declaration.** Each provision of this Declaration, and any agreement, promise, covenant and undertaking to comply with each provision of this Declaration, shall be deemed a land use restriction running with the land as a burden and upon the title to the Restricted Buffer Area.
6. **Severability.** Invalidity or unenforceability of any provision of this Declaration in whole or in part shall not affect the validity or enforceability of any other provision or any valid and enforceable part of a provision of this Declaration.
7. **Governing Law.** This Declaration shall be governed by and interpreted in accordance with the laws of the State of Maine.

(NAME)

STATE OF MAINE, _____, County, dated _____, 20__ .
(County)

Personally appeared before me the above named _____, who swore to the truth of the foregoing to the best of (his/her) knowledge, information and belief and acknowledged the foregoing instrument to be (his/her) free act and deed.

Notary Public

APPENDIX B

FILTERRA OWNER'S MANUAL

Filterra Owner's Manual



filterra®
Bioretention Systems

CNTECH®
ENGINEERED SOLUTIONS

This Owner's Manual applies to all precast Filterra Configurations, including Filterra Bioscape Vault.

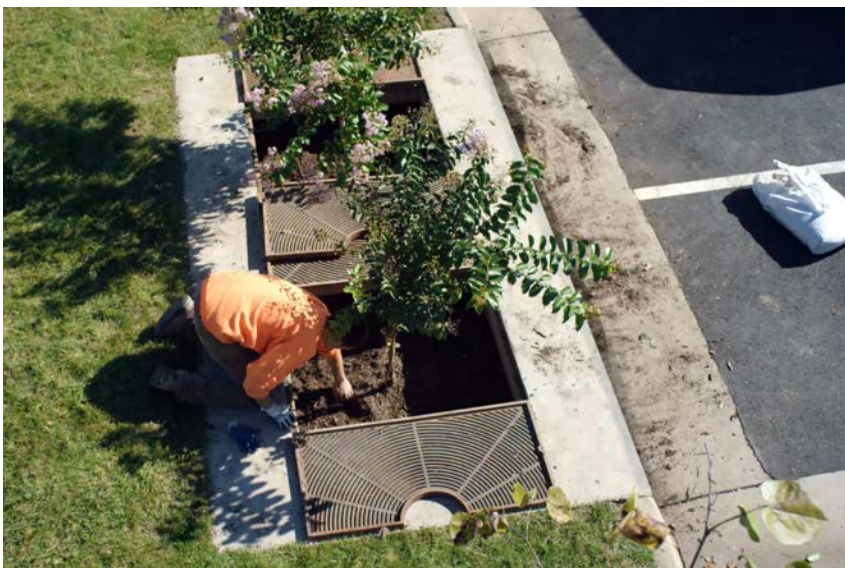




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Introduction

Thank you for your purchase of the Filterra® Bioretention System. Filterra is a specially engineered stormwater treatment system incorporating high performance biofiltration media to remove pollutants from stormwater runoff. The system's biota (vegetation and soil microorganisms) then further breakdown and absorb captured pollutants. All components of the system work together to provide a sustainable long-term solution for treating stormwater runoff.

The Filterra system has been delivered to you with protection in place to resist intrusion of construction related sediment which can contaminate the biofiltration media and result in inadequate system performance. These protection devices are intended as a best practice and cannot fully prevent contamination. It is the purchaser's responsibility to provide adequate measures to prevent construction related runoff from entering the Filterra system.

Included with your purchase is Activation of the Filterra system by the manufacturer as well as a 1-year warranty from delivery of the system and 1-year of routine maintenance (mulch replacement, debris removal, and pruning of vegetation) up to twice during the first year after activation.

Design and Installation

Each project presents different scopes for the use of Filterra systems. Information and help may be provided to the design engineer during the planning process. Correct Filterra box sizing (by rainfall region) is essential to predict pollutant removal rates for a given area. The engineer shall submit calculations for approval by the local jurisdiction. The contractor is responsible for the correct installation of Filterra units as shown in approved plans. A comprehensive installation manual is available at www.ContechES.com.

Activation Overview

Activation of the Filterra system is a procedure completed by the manufacturer to place the system into working condition. This involves the following items:

- Removal of construction runoff protection devices
- Planting of the system's vegetation
- Placement of pretreatment mulch layer using mulch certified for use in Filterra systems.

Activation MUST be provided by the manufacturer to ensure proper site conditions are met for Activation, proper installation of the vegetation, and use of pretreatment mulch certified for use in Filterra systems.



Minimum Requirements

The minimum requirements for Filterra Activation are as follows:

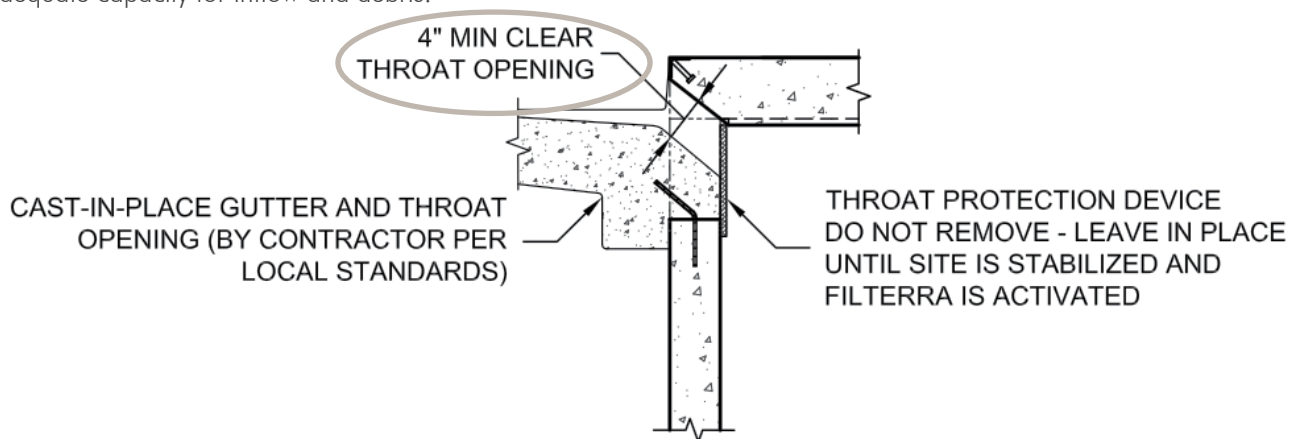
1. The site landscaping must be fully stabilized, i.e. full landscaping installed and some grass cover (not just straw and seed) is required to reduce sediment transport. Construction debris and materials should be removed from surrounding area.



2. Final paving must be completed. Final paving ensures that paving materials will not enter and contaminate the Filterra system during the paving process, and that the plant will receive runoff from the drainage area, assisting with plant survival for the Filterra system.



3. Where curb inlets are included as part of the Filterra system, Filterra throat opening should be at least 4" in order to ensure adequate capacity for inflow and debris.



An Activation Checklist is included on page 12 to ensure proper conditions are met for Contech to perform the Activation services. A charge of \$500.00 will be invoiced for each Activation visit requested by Customer where Contech determines that the site does not meet the conditions required for Activation.

Filterra Plant Selection Overview

A Plant List is available on the Contech website highlighting recommended plants for Filterra systems in your area. Keep in mind that plants are subject to availability due to seasonality and required minimum size for the Filterra system. Plants installed in the Filterra system are container plants (max 15 gallon) from nursery stock and will be immature in height and spread at Activation.

It is the responsibility of the owner to provide adequate irrigation when necessary to the plant of the Filterra system.

The “Planting Requirements for Filterra Systems” document is included as an appendix and discusses proper selection and care of the plants within Filterra systems.

Warranty Overview

Refer to the Contech Engineered Solutions LLC Stormwater Treatment System LIMITED WARRANTY for further information. The following conditions may void the Filterra system’s warranty and waive the manufacturer provided Activation and Maintenance services:

- Unauthorized activation or performance of any of the items listed in the activation overview
- Any tampering, modifications or damage to the Filterra system or runoff protection devices
- Removal of any Filterra system components
- Failure to prevent construction related runoff from entering the Filterra system
- Failure to properly store and protect any Filterra components (including media and underdrain stone) that may be shipped separately from the vault

Routine Maintenance Guidelines

With proper routine maintenance, the biofiltration media within the Filterra system should last as long as traditional bioretention media. Routine maintenance is included by the manufacturer on all Filterra systems for the first year after activation. This includes a maximum of 2 visits to remove debris, replace pretreatment mulch, and prune the vegetation. More information is provided in the Operations and Maintenance Guidelines. Some Filterra systems also contain pretreatment or outlet bays. Depending on site pollutant loading, these bays may require periodic removal of debris, however this is not included in the first year of maintenance, and would likely not be required within the first year of operation.

These services, as well as routine maintenance outside of the included first year, can be provided by certified maintenance providers listed on the Contech website. Training can also be provided to other stormwater maintenance or landscape providers.



Why Maintain?

All stormwater treatment systems require maintenance for effective operation. This necessity is often incorporated in your property's permitting process as a legally binding BMP maintenance agreement. Other reasons to maintain are:

- Avoiding legal challenges from your jurisdiction's maintenance enforcement program.
- Prolonging the expected lifespan of your Filterra media.
- Avoiding more costly media replacement.
- Helping reduce pollutant loads leaving your property.

Simple maintenance of the Filterra is required to continue effective pollutant removal from stormwater runoff before discharge into downstream waters. This procedure will also extend the longevity of the living biofilter system. The unit will recycle and accumulate pollutants within the biomass, but is also subjected to other materials entering the inlet. This may include trash, silt and leaves etc. which will be contained above the mulch layer. Too much silt may inhibit the Filterra's flow rate, which is the reason for site stabilization before activation. Regular replacement of the mulch stops accumulation of such sediment.

When to Maintain?

Contech includes a 1-year maintenance plan with each system purchase. Annual included maintenance consists of a maximum of two (2) scheduled visits. Additional maintenance may be necessary depending on sediment and trash loading (by Owner or at additional cost). The start of the maintenance plan begins when the system is activated.

Maintenance visits are typically scheduled seasonally; the spring visit aims to clean up after winter loads including salts and sands while the fall visit helps the system by removing excessive leaf litter.

It has been found that in regions which receive between 30-50 inches of annual rainfall, (2) two visits are generally required; regions with less rainfall often only require (1) one visit per annum. Varying land uses can affect maintenance frequency; e.g. some fast food restaurants require more frequent trash removal. Contributing drainage areas which are subject to new development wherein the recommended erosion and sediment control measures have not been implemented may require additional maintenance visits.

Some sites may be subjected to extreme sediment or trash loads, requiring more frequent maintenance visits. This is the reason for detailed notes of maintenance actions per unit, helping the Supplier and Owner predict future maintenance frequencies, reflecting individual site conditions.

Owners must promptly notify the maintenance provider of any damage to the plant(s), which constitute(s) an integral part of the bioretention technology. Owners should also advise other landscape or maintenance contractors to leave all maintenance to the Supplier (i.e. no pruning or fertilizing) during the first year.



Exclusion of Services

Clean up due to major contamination such as oils, chemicals, toxic spills, etc. will result in additional costs and are not covered under the Supplier maintenance contract. Should a major contamination event occur the Owner must block off the outlet pipe of the Filterra (where the cleaned runoff drains to, such as drop inlet) and block off the throat of the Filterra. The Supplier should be informed immediately.

Maintenance Visit Summary

Each maintenance visit consists of the following simple tasks (detailed instructions below).

1. Inspection of Filterra and surrounding area
2. Removal of tree grate (where applicable) and erosion control stones
3. Removal of debris, trash and mulch
4. Mulch replacement
5. Plant health evaluation and pruning or replacement as necessary
6. Clean area around Filterra
7. Complete paperwork

Maintenance Tools, Safety Equipment and Supplies

Ideal tools include: camera, bucket, shovel, broom, pruners, hoe/rake, and tape measure. Appropriate Personal Protective Equipment (PPE) should be used in accordance with local or company procedures. This may include impervious gloves where the type of trash is unknown, high visibility clothing and barricades when working in close proximity to traffic and also safety hats and shoes. A T-Bar or crowbar should be used for moving the tree grates, where applicable (up to 170 lbs each). If tree grate opening expansion is necessary, safety glasses/goggles and a 3lb or greater mini sledgehammer are required. Most visits require minor trash removal and a full replacement of mulch. See below for actual number of bagged mulch that is required in each media bay size. Mulch should be a double shredded, hardwood variety. Some visits may require additional Filterra engineered soil media available from the Supplier.

Media Bay Length	Media Bay Width	Filter Surface Area (ft ²)	Volume at 3" (ft ³)	# of 2 ft ³ Mulch Bags
4	4	16	4	2
6	4	24	6	3
8	4	32	8	4
6	6	36	9	5
8	6	48	12	6
10	6	60	15	8
12	6	72	18	9
13	7	91	23	12

Other sizes not listed - 1 bag per 8 ft² of media.

Maintenance Visit Procedure

Keep sufficient documentation of maintenance actions to predict location specific maintenance frequencies and needs. An example Maintenance Report is included in this manual.



1. Inspection of Filterra and surrounding area

- Record individual unit before maintenance with photograph (numbered). Record on Maintenance Report (see example in this document) the following:

Record on Maintenance Report the following:

Standing Water	yes	no
Damage to Box Structure	yes	no
Damage to Grate (if applicable)	yes	no
Is Bypass Clear	yes	no

If yes answered to any of these observations, record with close-up photograph (numbered).



2. Removal of tree grate (if applicable) and erosion control stones

- Remove cast iron grates for access into Filterra box (if applicable).
- Dig out silt (if any) and mulch and remove trash & foreign items.

3. Removal of debris, trash and mulch

Record on Maintenance Report the following:

Silt/Clay	yes	no
Cups/ Bags	yes	no
Leaves	yes	no
Buckets Removed		



- After removal of mulch and debris, measure distance from the top of the Filterra engineered media soil to the top of the top slab. Compare the measured distance to the distance shown on the approved Contract Drawings for the system. Add Filterra media (not top soil or other) to bring media up as needed to distance indicated on drawings.

Record on Maintenance Report the following:

Distance to Top of Top Slab (inches)	
Inches of Media Added	



4. Mulch replacement

- Add double shredded mulch evenly across the entire unit to a depth of 3".
- Refer to Filterra Mulch Specifications for information on acceptable sources.
- Ensure correct repositioning of erosion control stones by the Filterra inlet to allow for entry of trash during a storm event.
- Replace Filterra grates (if applicable) correctly using appropriate lifting or moving tools, taking care not to damage the plant.
- Where applicable, if 6" tree grate opening is too close to plant trunk, the grate opening may be expanded to 12" using a mini sledgehammer. Refer to instructions in Appendix 3.



5. Plant health evaluation and pruning or replacement as necessary

- Examine the plant's health and replace if necessary.
- Prune as necessary to encourage growth in the correct directions

Record on Maintenance Report the following:

Height above top of Filterra Unit	_____ (ft)
Width at Widest Point	_____ (ft)
Health	healthy unhealthy
Damage to Plant	yes no
Plant Replaced	yes no



6. Clean area around Filterra

- Clean area around unit and remove all refuse to be disposed of appropriately.



7. Complete paperwork

- Deliver Maintenance Report and photographs to appropriate location (normally Contech during maintenance contract period).
- Some jurisdictions may require submission of maintenance reports in accordance with approvals. It is the responsibility of the Owner to comply with local regulations.

Maintenance Checklist

Drainage System Failure	Problem	Conditions to Check	Condition that Should Exist	Actions
Inlet	Excessive sediment or trash accumulation.	Accumulated sediments or trash impair free flow of water into Filterra.	Inlet should be free of obstructions allowing free distributed flow of water into Filterra.	Sediments and/or trash should be removed.
Mulch Cover	Trash and floatable debris accumulation.	Excessive trash and/or debris accumulation.	Minimal trash or other debris on mulch cover.	Trash and debris should be removed and mulch cover raked level. Ensure bark nugget mulch is not used.
Mulch Cover	"Ponding" of water on mulch cover.	"Ponding" in unit could be indicative of clogging due to excessive fine sediment accumulation or spill of petroleum oils.	Stormwater should drain freely and evenly through mulch cover.	Recommend contact manufacturer and replace mulch as a minimum.
Vegetation	Plants not growing or in poor condition.	Soil/mulch too wet, evidence of spill. Incorrect plant selection. Pest infestation. Vandalism to plants.	Plants should be healthy and pest free.	Contact manufacturer for advice.
Vegetation	Plant growth excessive.	Plants should be appropriate to the species and location of Filterra.		Trim/prune plants in accordance with typical landscaping and safety needs.
Structure	Structure has visible cracks.	Cracks wider than 1/2 inch or evidence of soil particles entering the structure through the cracks.		Vault should be repaired.

Maintenance is ideally to be performed twice annually.

Filterra Inspection & Maintenance Log

Filterra System Size/Model: _____ Location: _____

Date	Mulch & Debris Removed	Depth of Mulch Added	Mulch Brand	Height of Vegetation Above Top of Vault	Vegetation Species	Issues with System	Comments
1/1/17	5 – 5 gal Buckets	3"	Lowe's Premium Brown Mulch	4'	Galaxy Magnolia	- Standing water in downstream structure	- Removed blockage in downstream structure

Appendix 1 – Filterra® Activation Checklist



Project Name: _____ Company: _____

Site Contact Name: _____ Site Contact Phone/Email: _____

Site Owner/End User Name: _____ Site Owner/End User Phone/Email: _____

Preferred Activation Date: _____ (provide 2 weeks minimum from date this form is submitted)

Site Designation	System Size	Final Pavement / Top Coat Complete	Landscaping Complete / Grass Emerging	Construction materials / Piles / Debris Removed	Throat Opening Measures 4" Min. Height	Plant Species Requested
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	

Attach additional sheets as necessary.

NOTE: A charge of \$500.00 will be invoiced for each Activation visit requested by Customer where Contech determines that the site does not meet the conditions required for Activation. ONLY Contech authorized representatives can perform Activation of Filterra systems; unauthorized Activations will void the system warranty and waive manufacturer supplied Activation and 1st Year Maintenance.

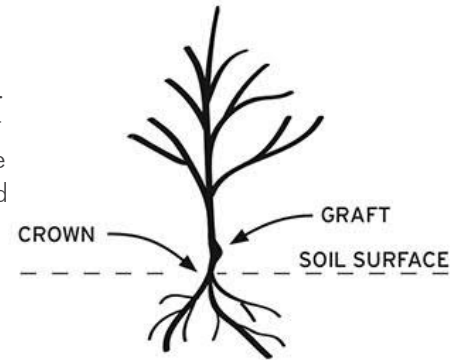
Signature _____

Date _____

Appendix 2 – Planting Requirements for Filterra® Systems

Plant Material Selection

- Select plant(s) as specified in the engineering plans and specifications.
- Select plant(s) with full root development but not to the point where root bound.
- Use local nursery container plants only. Ball and burlapped plants are not permitted.
- For precast Filterra systems with a tree grate, plant(s) must not have scaffold limbs at least 14 inches from the crown due to spacing between the top of the mulch and the tree grate. Lower branches can be pruned away provided there are sufficient scaffold branches for tree or shrub development.
- For precast Filterra systems with a tree grate, at the time of installation, it is required that plant(s) must be at least 6" above the tree grate opening at installation for all Filterra configurations. This DOES NOT apply to Full Grate Cover designs.
- Plant(s) shall not have a mature height greater than 25 feet.
- For standard 21" media depth, a 7 – 15 gallon container size shall be used. Media less than 21" (Filterra boxes only) may require smaller container plants.
- For precast Filterra systems, plant(s) should have a single trunk at installation, and pruning may be necessary at activation and maintenance for some with a tree grate of the faster growing species, or species known to produce basal sprouts.



Plant Installation

- During transport protect the plant foliage from wind and excessive jostling.
- Prior to removing the plant(s) from the container, ensure the soil moisture is sufficient to maintain the integrity of the root ball. If needed, pre-wet the container plant.
- Cut away any roots which are growing out of the container drain holes. Plants with excessive root growth from the drain holes should be rejected.
- Plant(s) should be carefully removed from the pot by gently pounding on the sides of the container with the fist to loosen root ball. Then carefully slide out. Do not lift plant(s) by trunk as this can break roots and cause soil to fall off. Extract the root ball in a horizontal position and support it to prevent it from breaking apart. Alternatively the pot can be cut away to minimize root ball disturbance.
- Remove any excess soil from above the root flare after removing plant(s) from container.
- Excavate a hole with a diameter 4" greater than the root ball, gently place the plant(s).
- If plant(s) have any circling roots from being pot bound, gently tease them loose without breaking them.
- If root ball has a root mat on the bottom, it should be shaved off with a knife just above the mat line.
- Plant the tree/shrub/grass with the top of the root ball 1" above surrounding media to allow for settling.
- All plants should have the main stem centered in the tree grate (where applicable) upon completion of installation.
- With all trees/shrubs, remove dead, diseased, crossed/rubbing, sharply crotched branches or branches growing excessively long or in wrong direction compared to majority of branches.
- To prevent transplant shock (especially if planting takes place in the hot season), it may be necessary to prune some of the foliage to compensate for reduced root uptake capacity. This is accomplished by pruning away some of the smaller secondary branches or a main scaffold branch if there are too many. Too much foliage relative to the root ball can dehydrate and damage the plant.
- Plant staking may be required.

Mulch Installation

- Only mulch that meets Contech Engineered Solutions' mulch specifications can be used in the Filterra system.
- Mulch must be applied to a depth of 3" evenly over the surface of the media.

Irrigation Requirements

- Each Filterra system must receive adequate irrigation to ensure survival of the living system during periods of drier weather.
- Irrigation sources include rainfall runoff from downspouts and/or gutter flow, applied water through the top/tree grate or in some cases from an irrigation system with emitters installed during construction.
- At Activation: Apply about one (cool climates) to two (warm climates) gallons of water per inch of trunk diameter over the root ball.
- During Establishment: In common with all plants, each Filterra plant will require more frequent watering during the establishment period. One inch of applied water per week for the first three months is recommended for cooler climates (2 to 3 inches for warmer climates). If the system is receiving rainfall runoff from the drainage area, then irrigation may not be needed. Inspection of the soil moisture content can be evaluated by gently brushing aside the mulch layer and feeling the soil. Be sure to replace the mulch when the assessment is complete. Irrigate as needed**.
- Established Plants: Established plants have fully developed root systems and can access the entire water column in the media. Therefore irrigation is less frequent but requires more applied water when performed. For a mature system assume 3.5 inches of available water within the media matrix. Irrigation demand can be estimated as 1" of irrigation demand per week. Therefore if dry periods exceed 3 weeks, irrigation may be required. It is also important to recognize that plants which are exposed to windy areas and reflected heat from paved surfaces may need more frequent irrigation. Long term care should develop a history which is more site specific.

** Five gallons per square yard approximates 1 inch of water Therefore for a 6' by 6' Filterra approximately 20-60 gallons of water is needed. To ensure even distribution of water it needs to be evenly sprinkled over the entire surface of the filter bed, with special attention to make sure the root ball is completely wetted. NOTE: if needed, measure the time it takes to fill a five gallon bucket to estimate the applied water flow rate then calculate the time needed to irrigate the Filterra. For example, if the flow rate of the sprinkler is 5 gallons/minute then it would take 12 minutes to irrigate a 6' by 6' filter.



Appendix 3 – Filterra® Tree Grate Opening Expansion Procedure

The standard grates used on all Filterra configurations that employ Tree Grates are fabricated with a 6" opening that is designed with a breakaway section that can be removed, allowing the grate opening to be expanded to 12" as the tree matures and the trunk widens.

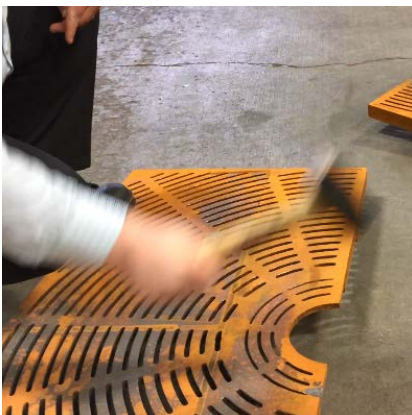
The following tools are required to expand the opening:

- Mini sledgehammer (3 lb. or greater)
- Safety Glasses / Goggles

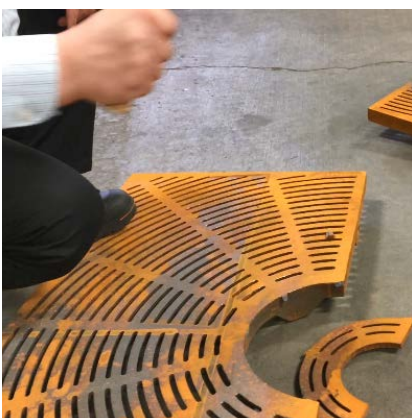
The following guidelines should be followed to properly expand the tree opening from 6" to 12":



1. Remove the grate from the Filterra frame, place it flat on a hard surface, and support the grate by stepping on the edge or using other weighted items such as a few mulch bags if this is being done during a Filterra maintenance event. Put on safety glasses/goggles. Align the mini sledgehammer as shown in the figure to the left. The head of the sledgehammer should be aimed just inside the wide cast iron bar between the larger grate section and the breakaway section.



2. Repeatedly hit the grate at this spot with the mini sledgehammer.



3. After several hits, the breakaway section should snap cleanly off of the larger grate section. Reinstall the grate into the Filterra grate frame. Recycle or dispose of the breakaway section per local guidelines.



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APPENDIX C

STORMTECH OWNER'S MANUAL

Isolator[®] Row O&M Manual



THE ISOLATOR[®] ROW

INTRODUCTION

An important component of any Stormwater Pollution Prevention Plan is inspection and maintenance. The StormTech Isolator Row is a technique to inexpensively enhance Total Suspended Solids (TSS) removal and provide easy access for inspection and maintenance.

THE ISOLATOR ROW

The Isolator Row is a row of StormTech chambers, either SC-160LP, SC-310, SC-310-3, SC-740, DC-780, MC-3500 or MC-4500 models, that is surrounded with filter fabric and connected to a closely located manhole for easy access. The fabric-wrapped chambers provide for settling and filtration of sediment as storm water rises in the Isolator Row and ultimately passes through the filter fabric. The open bottom chambers and perforated sidewalls (SC-310, SC-310-3 and SC-740 models) allow storm water to flow both vertically and horizontally out of the chambers. Sediments are captured in the Isolator Row protecting the storage areas of the adjacent stone and chambers from sediment accumulation.

Two different fabrics are used for the Isolator Row. A woven geotextile fabric is placed between the stone and the Isolator Row chambers. The tough geotextile provides a media for storm water filtration and provides a durable surface for maintenance operations. It is also designed to prevent scour of the underlying stone and remain intact during high pressure jetting. A non-woven fabric is placed over the chambers to provide a filter media for flows passing through the perforations in the sidewall of the chamber. The non-woven fabric is not required over the SC-160LP, DC-780, MC-3500 or MC-4500 models as these chambers do not have perforated side walls.

The Isolator Row is typically designed to capture the “first flush” and offers the versatility to be sized on a volume basis or flow rate basis. An upstream manhole not only provides access to the Isolator Row but typically includes a high flow weir such that storm water flowrates or volumes that exceed the capacity of the Isolator Row overtop the over flow weir and discharge through a manifold to the other chambers.

The Isolator Row may also be part of a treatment train. By treating storm water prior to entry into the chamber system, the service life can be extended and pollutants such as hydrocarbons can be captured. Pre-treatment best management practices can be as simple as deep sump catch basins, oil-water separators or can be innovative storm water treatment devices. The design of the treatment train and selection of pretreatment devices by the design engineer is often driven by regulatory requirements. Whether pretreatment is used or not, the Isolator Row is recommended by StormTech as an effective means to minimize maintenance requirements and maintenance costs.

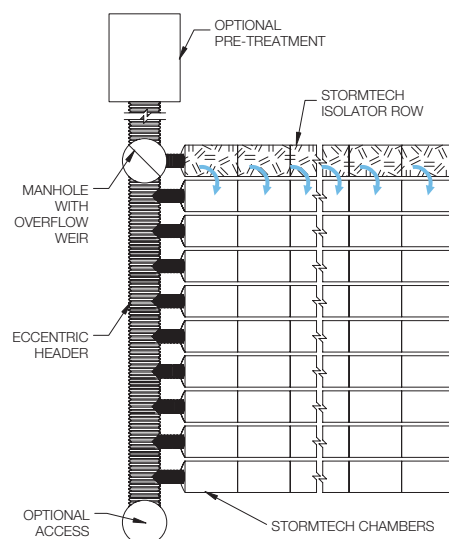
Note: See the StormTech Design Manual for detailed information on designing inlets for a StormTech system, including the Isolator Row.



Looking down the Isolator Row from the manhole opening, woven geotextile is shown between the chamber and stone base.



StormTech Isolator Row with Overflow Spillway (not to scale)





ISOLATOR ROW INSPECTION/MAINTENANCE

INSPECTION

The frequency of inspection and maintenance varies by location. A routine inspection schedule needs to be established for each individual location based upon site specific variables. The type of land use (i.e. industrial, commercial, residential), anticipated pollutant load, percent imperviousness, climate, etc. all play a critical role in determining the actual frequency of inspection and maintenance practices.

At a minimum, StormTech recommends annual inspections. Initially, the Isolator Row should be inspected every 6 months for the first year of operation. For subsequent years, the inspection should be adjusted based upon previous observation of sediment deposition.

The Isolator Row incorporates a combination of standard manhole(s) and strategically located inspection ports (as needed). The inspection ports allow for easy access to the system from the surface, eliminating the need to perform a confined space entry for inspection purposes.

If upon visual inspection it is found that sediment has accumulated, a stadia rod should be inserted to determine the depth of sediment. When the average depth of sediment exceeds 3 inches throughout the length of the Isolator Row, clean-out should be performed.

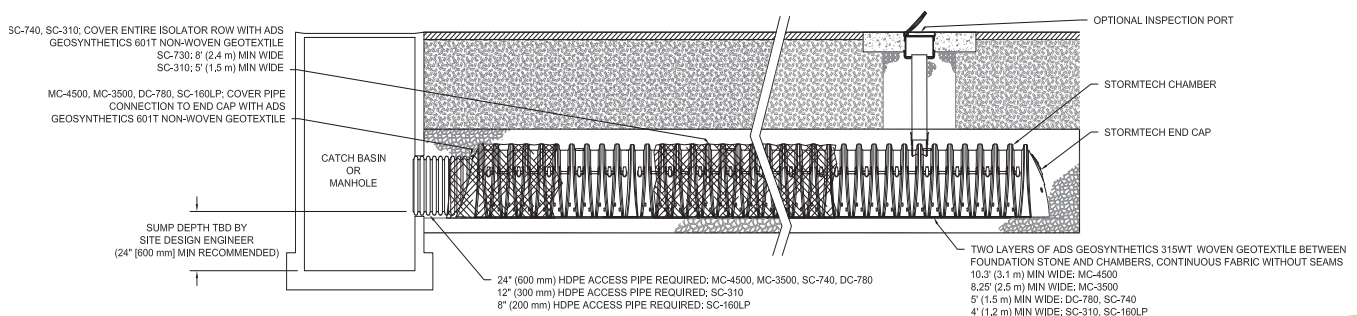
MAINTENANCE

The Isolator Row was designed to reduce the cost of periodic maintenance. By “isolating” sediments to just one row, costs are dramatically reduced by eliminating the need to clean out each row of the entire storage bed. If inspection indicates the potential need for maintenance, access is provided via a manhole(s) located on the end(s) of the row for cleanout. If entry into the manhole is required, please follow local and OSHA rules for a confined space entries.

Maintenance is accomplished with the JetVac process. The JetVac process utilizes a high pressure water nozzle to propel itself down the Isolator Row while scouring and suspending sediments. As the nozzle is retrieved, the captured pollutants are flushed back into the manhole for vacuuming. Most sewer and pipe maintenance companies have vacuum/JetVac combination vehicles. Selection of an appropriate JetVac nozzle will improve maintenance efficiency. Fixed nozzles designed for culverts or large diameter pipe cleaning are preferable. Rear facing jets with an effective spread of at least 45° are best. Most JetVac reels have 400 feet of hose allowing maintenance of an Isolator Row up to 50 chambers long. **The JetVac process shall only be performed on StormTech Isolator Rows that have AASHTO class 1 woven geotextile (as specified by StormTech) over their angular base stone.**

StormTech Isolator Row (not to scale)

Note: Non-woven fabric is only required over the inlet pipe connection into the end cap for SC-160LP, DC-780, MC-3500 and MC-4500 chamber models and is not required over the entire Isolator Row.



ISOLATOR ROW STEP BY STEP MAINTENANCE PROCEDURES

STEP 1

Inspect Isolator Row for sediment.

- A) Inspection ports (if present)
 - i. Remove lid from floor box frame
 - ii. Remove cap from inspection riser
 - iii. Using a flashlight and stadia rod, measure depth of sediment and record results on maintenance log.
 - iv. If sediment is at or above 3 inch depth, proceed to Step 2. If not, proceed to Step 3.
- B) All Isolator Rows
 - i. Remove cover from manhole at upstream end of Isolator Row
 - ii. Using a flashlight, inspect down Isolator Row through outlet pipe
 1. Mirrors on poles or cameras may be used to avoid a confined space entry
 2. Follow OSHA regulations for confined space entry if entering manhole
 - iii. If sediment is at or above the lower row of sidewall holes (approximately 3 inches), proceed to Step 2. If not, proceed to Step 3.

STEP 2

Clean out Isolator Row using the JetVac process.

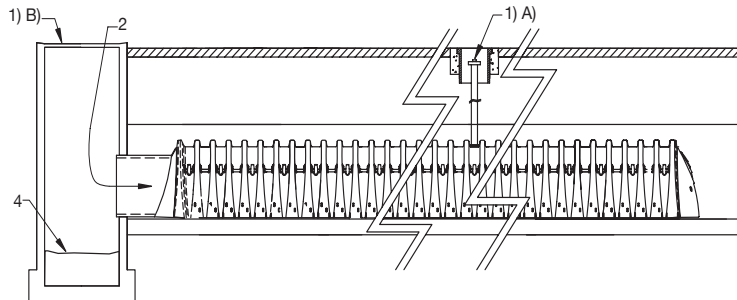
- A) A fixed floor cleaning nozzle with rear facing nozzle spread of 45 inches or more is preferable
- B) Apply multiple passes of JetVac until backflush water is clean
- C) Vacuum manhole sump as required

STEP 3

Replace all caps, lids and covers, record observations and actions.

STEP 4

Inspect & clean catch basins and manholes upstream of the StormTech system.



SAMPLE MAINTENANCE LOG

Date	Stadia Rod Readings		Sediment Depth (1)-(2)	Observations/Actions	Inspector
	Fixed point to chamber bottom (1)	Fixed point to top of sediment (2)			
3/15/11	6.3 ft	none		New installation. Fixed point is CI frame at grade	DJM
9/24/11		6.2	0.1 ft	Some grit felt	SM
6/20/13		5.8	0.5 ft	Mucky feel, debris visible in manhole and in Isolator Row, maintenance due	NV
7/7/13	6.3 ft		0	System jetted and vacuumed	DJM

City of Biddeford Code of Ordinances

Part III Land Use Development

Article VI Performance Standards

Section 49.1 Electric Vehicle Infrastructure

1. Purpose

The purpose of this ordinance is to facilitate and encourage the use of electric vehicles, to expedite the establishment of a convenient, cost-effective electric vehicle infrastructure, and to establish minimum requirements for such infrastructure to serve both long-term and short-term parking needs. This Ordinance is consistent with the goals of Biddeford's approved Climate Action Plan, including reducing greenhouse gas emissions 62.6% over 2019 baseline levels by 2030.

2. Definitions

Accessible electric vehicle charging station - an electric vehicle charging station, that can be readily used by those of all abilities, where the battery charging station is located within accessible reach of a barrier-free access aisle and the electric vehicle.

Battery charging station - an electrical component, assembly or cluster of components assemblies designed specifically to charge batteries within electric vehicles.

Battery electric vehicle - any vehicle that operates exclusively on electrical energy from an off-board source that is stored in the vehicle's batteries and produces zero tailpipe emissions or pollution when stationary or operating.

Charging levels - the standardized indicators of electrical force, or voltage, at which an electric vehicle's battery is recharged. The terms 1, 2, and DC fast charging are the most common charging levels, and include the following specifications:

- Level 1 provides charging through a 120 volt (V), alternating-current (AC) plug. Level 1 is considered as slow charging. Level 1 charging equipment is standard on vehicles and therefore does not require the installation of charging equipment. The most common place for Level 1 charging is at the vehicle owner's home and is typically conducted overnight.
- Level 2 charging is through a 240V, AC plug and requires installation of home charging or public charging equipment. These units require a dedicated 40-amp circuit. Level 2 chargers are commonly found in residential settings, public parking areas, places of employment and commercial settings.
- DC Fast Charging (DCFC) charging is through a 400 to 1000 V, direct-current (DC) plug. Due to their high cost and extremely high-power draw, Level 3 chargers are typically found in commercial or industrial locations rather than residential.

Electric Vehicle (EV) - a vehicle that operates, either partially or exclusively, on electrical energy from the electrical grid, or an off-grid source, that is stored on board for motive purposes.

“Electric vehicle” includes:

- Battery electric vehicle
- Plug-in hybrid electric vehicle

Electric vehicle charging station (EVCS) – battery charging equipment that has as its primary purpose the transfer of electric energy (by conductive or inductive means) to a battery or other energy storage device in an electric vehicle. A charging station must include a port that conforms to EV industry standards and can charge the vehicle, although an adapter may be required.

EVCS-installed - parking spaces equipped with electrified EVCS that are operational.

EVCS-ready - parking spaces with necessary conduit installed and electrical capacity available to connect to an EVCS to charge an electrical vehicle (either plug or hardwired).

Electric vehicle charging station, private restricted use - an electric vehicle charging station that is:

- Privately owned and restricted access (e.g., single-family home, executive parking, designated employee parking, assigned parking at multi-family residential buildings); or
- Publicly owned and restricted (e.g., fleet parking with no access to the general public).

Electric vehicle charging station – public use means an electric vehicle charging station that is:

- Publicly owned and publicly available (e.g., Park & Ride parking, public library parking lot, on-street parking); or
- Privately owned and available to visitors (e.g., shopping center parking).

Electric vehicle infrastructure - conduit/wiring, structures, machinery, and equipment necessary and integral to support an electric vehicle, including battery charging stations.

Electric vehicle parking space - any marked parking space that identifies the use to be exclusively for the parking of an electric vehicle.

Electric vehicle supply equipment (EVSE) - any equipment or electrical component used in charging electric vehicles at a specific location. EVSE does not include equipment located on the electric vehicles themselves.

Electrical capacity shall mean, at minimum:

- Electric Service Panel capacity to accommodate a dedicated branch circuit and service capacity to install a 208/240V outlet per charger;
- Conduit from an electric panel to future EVCS location(s).

Non-electric vehicle - any motor vehicle that is licensed and registered for operation on public and private highways, roads, and streets that does not meet the definition of an electric vehicle.

Plug-in hybrid electric vehicle - an electric vehicle that:

- Contains an internal combustion engine and also allows power to be delivered to drive wheels by an electric motor;
- Charges its battery primarily by connecting to the grid or other off-board electrical source;
- May additionally be able to sustain battery charge using an on-board internal-combustion-driven generator; and
- Has the ability to travel powered by battery-supplied electricity.

3. Applicability

3.1. This ordinance shall apply to all electric vehicle infrastructure installed, constructed, or modified after the effective date of this Ordinance.

3.2. Electric vehicle infrastructure in place prior to the effective date of this ordinance shall not be required to meet the requirements of this ordinance unless substantial modification to the infrastructure is proposed in accordance with the criteria identified in Section 5.1.

3.3. All electric vehicle infrastructure shall be designed, built, and installed in accordance with applicable local, state, and federal codes, regulations, and standards.

5. Required Facilities

5.1. All new or reconstructed parking structures or lots shall be required to install level-2 or higher EVCSs according to Table 5.1 when one of the following conditions is met:

The development includes a new off-street parking facility with more than 25 spaces; or

The parking capacity of an existing building, site, or parking facility is increased by 30 percent or more or 25 spaces, whichever is smaller (expressed as $[\text{number of additional spaces}] / [\text{number of existing spaces}] \times 100$), resulting in 25 or more total spaces after expansion.

5.1.1. The number of EV charging stations required to be installed at the time of development is stated as a percentage of the total number of parking spaces in Column A of Table 5.1. Requirements will be rounded up to closest whole number but will always be a value of at least one EVCS to be available at the time of development occupancy.

5.1.2. Electric capacity requirements for EVCS-ready are met by providing a cabinet, box or enclosure connected to a conduit linking parking spaces with 208/240V or higher voltage AC electrical service for the suitable for the number of charging stations. The wire may end in either a junction box, hardwired EVCS, or plug at the parking space.

5.1.3 Site design must provide electrical, associated ventilation, accessible parking, and wiring connection to electrical transformer to support electric vehicle charging.

Table 5.1

EV Charging Requirements for New and Reconstructed Parking Structures

Land use type	A. EVCS-installed parking spaces required (as % of total parking spaces)	B. EVCS-ready parking spaces required (as % of total parking spaces)
One or two family residential	-	1 per unit
Multi-family residential w/o dedicated spaces	5%	-
Multi-family residential w/ dedicated spaces	-	1 per unit
Non-residential	5% or one (1) space, whichever is greater	

5.1.3. DC Fast Charging equipment may be installed to partially or fully meet the above requirement at one third the rate prescribed by table 5.1.

5.1.4. These requirements may be revised upward or downward by the Planning Board as part of an application for a conditional use permit or planned unit development based on verifiable information pertaining to parking.

5.1.5. When the cost of installing EVSE required by this ordinance would exceed five percent of the total project cost, the property owner or applicant may request a reduction in the EVSE requirements and submit cost estimates for city consideration. When City Council approval of the project is not required, the Zoning Administrator may administratively approve a reduction the required amount of EVSE to limit the EVSE installation costs to not more than five percent of the total project cost.

5.1.6. Affordable housing projects (120% AMI in 33% of dwelling units) can reduce requirement in table 5.1 by 50% or two total EVCS-installed spaces, whichever is less.

5.1.7. Where meeting the requirements of this ordinance is not feasible an in-lieu fee to the City of Biddeford at a rate of \$5,000 per EVCS-installed parking space and \$1,000 per EVCS-ready parking space shall be collected. EVCS in-lieu fees collected by the City shall be used for supporting electric vehicle infrastructure in the City of Biddeford. These funds shall be used in accordance with the following:

- a. The funds shall be used for electric vehicle charging infrastructure within the City. More specifically, these funds may be used for equipment, and/or construction costs of electric vehicle charging infrastructure in existing or new City owned parking lots.
- b. A portion of these funds may also be used for administrative, legal, engineering, or other costs related to the planning, design, permitting, and property acquisition for electric vehicle charging.
- c. A portion of these funds may also be used to establish a grant or revolving loan program to provide direct financial assistance to offset the cost of retrofitting existing parking areas with electric vehicle charging infrastructure.
- d. These funds may be used in combination with other City funds and other private, non-profit, and government funding for expanding electric vehicle charging infrastructure within Biddeford.
- e. The in-lieu fees contributed by a development shall not be used by the same or other developments to fund the electric vehicle charging infrastructure that is required to meet the minimum standards described in Table 5.1.
- f. The in-lieu fees collected by the City shall not be utilized to fund electric vehicle charging infrastructure that is otherwise required to meet minimum zoning standards.

6. General Requirements for Electric Vehicle Infrastructure

6.1. Electric vehicle charging stations within single-family and two-family residences are exempt from the below general requirements. This does not exempt electrical or other permit obligations.

6.2. General station requirements

6.2.1. Size. A standard size parking space shall be used for an electric vehicle charging station where such a station is required or planned.

6.2.2. Equipment Standards and Protection. Where provided, parking for electric vehicle charging purposes shall meet the standards of subsections 6.2.2 (1) through (4) of this section.

1. Clearance. Charging station equipment mounted on pedestals, light posts, bollards or other devices shall be a minimum of 24 inches clear from the face of curb.
2. Charging Station Equipment. Charging station outlets and connector devices shall be no less than 36 inches or no higher than 48 inches from the top of surface where mounted, and shall be designed and located as to not impede pedestrian travel or create trip hazards on sidewalks.
3. Charging Station Equipment Protection. When the electric vehicle parking space is perpendicular or at an angle to curb face and charging equipment, adequate equipment protection, such as wheel stops or concrete-filled steel bollards shall be used.
4. Maintenance. Charging station equipment shall be maintained in all respects, including the functioning of the charging equipment. A phone number or other contact information shall be provided on the charging station equipment for reporting when the equipment is not functioning or other problems are encountered.

6.2.3. Signage. Electric vehicle charging stations, other than in residential use, shall have posted signage allowing only charging electric vehicles to park in such spaces. For the purposes of this subsection, “charging” means that an electric vehicle is parked at an electric vehicle charging station and is connected to the charging station equipment. Signage for parking of electric vehicles shall include:

- Information on the charging station to identify voltage and amperage levels and any time of use, fees, or safety information.
- Restrictions shall be included on the signage, if removal provisions are to be enforced by the property owner
- As appropriate, directional signs to effectively guide motorists to the charging station space(s).

6.2.4. Lighting. Site lighting shall be provided where EVCS is installed unless charging is for daytime purposes only. Lighting standards should be met pursuant to the Biddeford’s zoning ordinance.

6.2.5. Time limits may be placed on the number of hours that an electric vehicle is allowed to charge, prohibiting indefinite charging/parking. If applicable, warnings shall be posted to alert charging station users about hours of use and possible actions affecting EVCS that are not being used according to posted rules.

6.2.6. The EVCS must be operational during the normal business hours of the use(s) that it serves. EVCS may be de-energized or otherwise restricted after normal business hours of the use(s) it serves. If applicable, warnings shall be posted to alert charging station users about hours of use.

6.2.7. Usage Fees. The property owner or operator is not restricted from collecting a service fee for the use of an electric vehicle charging station made available to visitors of the property.

6.3. Accessible Facilities

6.3.1. Where 5 or more EVCS-installed spaces are required, at least one space must be accessible.

6.3.2. Accessible electric vehicle charging stations should be located in close proximity to the building or facility entrance and shall be connected to a barrier-free accessible route of travel. It is not necessary to designate the accessible electric vehicle charging station exclusively for the use of disabled persons.

6.4. Charging and Parking

6.4.1. EVCS parking spaces are to be included in the calculation for both the number of minimum and maximum parking spaces required, as provided by [Chapter and Section number for Parking Requirements].

6.4.2. EVCS parking spaces, where provided for public use, are reserved for charging electric vehicles only.

6.4.3. Electric vehicles may be parked in any space designated for public parking, subject to the restrictions that would apply to any other vehicle that would park in that space.

6.5. Parking Restrictions

6.5.1. No person shall stop, stand or park any non-electric vehicle in a space designated through signage as an electric vehicle charging station. Any non-electric vehicle is subject to removal by the property owner or the property owner's agent.

6.5.2. Any electric vehicle in an electric vehicle parking stall that is signed exclusively for electric vehicle charging and that is either (1) not electrically charging or (2) parked beyond the days and hours designated on regulatory signs posted at or near the space shall be subject to removal as posted by the property owner or the property owner's agent. For purposes of this subsection, "charging" means an electric vehicle is parked at an electric vehicle charging station and is connected to the charging station equipment.

6.6. Decommissioning

Unless otherwise directed by Biddeford, within ninety (90) days of cessation of use of the EVCS, the property owner or operator shall restore the site to its original condition.

Should the property owner or operator fail to complete said removal within ninety (90) days, Biddeford shall conduct the removal and disposal of improvements at the property owner or operator's sole cost and expense.

7. Effectiveness, Interpretation, Severability

7.1. This ordinance shall become effective January 1 after its adoption. Applications already in review at time of adoption shall not be subjected to the above requirements.

7.2. All other portions, parts, and provisions of the Zoning Ordinance of Biddeford as heretofore enacted and amended shall remain in force and effect.

7.3. The invalidity of any section or provision of the ordinance shall not be held to invalidate any other section or provision of this Ordinance.

7.4. If any part of this ordinance conflicts with any other applicable federal, state, or local regulation, the more restrictive regulation shall control.

8. Enforcement

All site plans submitted to the City for Planning Board review and permitting shall demonstrate that the provisions of this ordinance have been met. EVCS Installed chargers must be operational prior to the issuance of Occupancy Permit, and all conduit and electrical capacity for EVCS-ready installations shall be inspected prior to backfilling and landscaping.