

Date February 14, 2019
To Town of Cumberland Planning Board
From Carla Nixon, Town Planner
Subject **Preliminary Plan Review: 20 Lot Major Subdivision –Christmas Creek**

I. REQUEST/OVERVIEW:

The Applicant is Beta Zeta Properties. The Applicant is requesting Preliminary Plan Review of a proposed 20 lot major subdivision. The lots will be served by public water and sewer and natural gas. The 50.58 acre parcel is located off Tuttle Road in the Rural Residential 1 zoning district as shown on Tax Assessor Map R4, Lot 10. Thomas Perkins, P.E., of Dirigo Architectural Engineering is the Applicant’s representative.

II. PROJECT HISTORY:

Sketch Plan Review: 9/18/18 and 11/20/18

Site Walk: 11/3/18

III. DESCRIPTION:

Parcel size:	50.58 acres
Net Residential Density:	Allows for 20.11 lots.
Proposed number of lots:	20
Zoning:	Rural Residential 1
Development Type:	Clustered Subdivision Design
Min. Lot Size:	30,000 sf
Lot frontage:	100’
Setbacks:	Front: 50’, Rear: 75’, Side: 30’ (combined = 75’)
Water:	Public Water
Sewer:	Public Sewer (gravity drained)
Open Space:	14.96 acres (29.6 % of parcel)
Wetlands:	6.6 acres
Trails:	3’6” bark mulch trail.
Utilities:	Natural gas, underground electric, telephone, and cable from Tuttle Road.
Street Lighting:	None proposed.

Road: 26' pavement width; 2' gravel shoulder on one side and 4' paved shoulder on other side. Road will be constructed to municipal standards for a Residential Access Road and proposed for public acceptance.

Sidewalks: 4' paved shoulder on the westerly side of Vining Way.

Homeowners Association: Draft Declaration of Protective Covenants and Common Easements are on file.

Right, Title and Interest: Warranty Deed

Waiver Requests: See Section 1 (p.3) of application packet.

Outside Agency Approvals Required:

Agency	Type of Permit	Status
MDEP	Stormwater Permit/General Construction Permit	Pending
MDEP	SLODA	Outstanding
MDEP	NRPA Permit by Rule for stream crossing.	Pending
Army Corp of Engineers		
Maine Historic Preservation Commission		Letter on file
Maine Natural Areas Program	Rare & Exemplary Botanical Features. None documented.	Letter on file
Maine Inland Fisheries & Wildlife		Outstanding

IV. REVIEW COMMENTS:

DEPARTMENT HEAD REVIEWS:

William Longley, CEO: No comments.

Police Chief Charles Rumsey: No concerns.

Fire Chief Small: After reviewing the application for this subdivision I have the following comments:

- 1) The locations of the fire hydrants must be identified.
- 2) It is recommended, **but not required**, to have monitored fire alarm systems in each residence.
- 3) It is recommended, **but not required**, to have fire department approved key boxes on each residence.

TOWN PLANNER'S REVIEW:

1. Is a Phase 1 Prehistoric Archeological assessment planned?
2. Why has the vernal pool classification/location changed? Should a spring survey be conducted?
3. Confirm there will be no street lights.
4. Will there be a street light at intersection with Tuttle?
5. Has Fire Chief approved the length of dead-end road?
6. Is sight distance sufficient?
7. Should a traffic study be done? Is an MDOT Traffic Movement Permit required?
8. Has the Town Manager indicated if the necessary number of sewer user permits are available?

9. Applicant needs to submit proposed street name (Vining Way) to Town Assessor for approval for E-911 purposes.

NOTE: BELOW IS THE TOWN ENGINEER'S REVIEW WITH APPLICANT'S ENGINEER'S RESPONSES.

TOWN ENGINEER'S REVIEW:

Chapter 250: Subdivision of Land

SME has reviewed the applicable sections of Chapter 250 and has provided comments for those sections not found to be addressed by the Application. The remaining sections have been reviewed and found to comply with Chapter 250 requirements.

Section 250-1(C) – Municipal water supply

1. SME understands that the applicant has contacted the Portland Water District regarding their capacity to serve the project. A verification letter from the District should be provided prior to final approval.

Response: Dirigo has met with PWD and discussed the project. Minor adjustments are being made to the utility design and a capacity to serve letter will be provided for Final Approval.

Section 250-1(F) – Sewage disposal

2. SME recommends the Applicant obtain a verification letter from the Town prior to final approval to verify proposed development will not cause an unreasonable burden on existing municipal services.

Response: Capacity to serve letter to be provided prior to final approval.

Section 250-1(J) – Financial and technical capacity

3. SME recommends the Applicant demonstrate evidence of adequate financial capacity to complete the project.

Response: Please find letter from Katahdin Trust attached with stipulated financial commitment

Section 250-1(P) – River, stream or brook

4. SME recommends the Applicant submit additional detail regarding the proposed stream crossing prior to final approval, including any required State or Federal Permit approvals.

Response: Maine DEP SLODA application submitted for review 2/4/19, and included Permit By Rule applications for both stream crossings.

Section 250-19 – Review and approval by other agencies

5. SME understands that stormwater permitting is underway for the project. Please confirm if additional permitting is required to address potential wetland impacts, stream crossing, and/or activity adjacent to a protected natural resource. The Applicant should be aware that where review and approval of any subdivision or site plan by any other governmental agency is required, approvals shall be submitted to the Planning Board in writing prior to the submission of the final plan.

Response: The MDEP SLODA permit application process did engage several other government entities who have reviewed and responded on the project. Any additional governmental agency review that may come from MDEP's review of the application will be done as and if needed.

Section 250-23 – Preservation of natural and historical features

6. The Applicant has requested a waiver from the requirement to provide a plan outlining preservation of existing trees (10 inches in diameter or more). SME supports this waiver request. SME recommends the Applicant outline clearing limits for the proposed development in the project plan set.

Response: Dirigo to provide a clearing plan prior to final approval.

Section 250-27 – Utilities

7. SME recommends Water Detail sheets be amended to reflect specific project requirements, signed, and stamped by a registered Professional Engineer.
8. SME recommends that the location of underground natural gas lines be added to the plan. A capacity to serve letter should be provided with the final plan application.

Response: Project specific utility detail sheets to be provided prior to final approval. Capacity to serve letter to be provided prior to final approval.

Section 250-28 – Water Supply

9. SME recommends the Applicant provide connection details to the existing main in Tuttle Road prior to final approval.
10. NFPA spacing requirements for fire hydrants for detached one-and two-family dwellings include a maximum distance to a fire hydrant from the closest point on the building of 600 ft, and a maximum distance between fire hydrants of 800 ft. Please provide additional detail demonstrating that these requirements are met.

Response: Dirigo will verify distances prior to final approval submission package, and additional hydrant(s) will be added if found deficient with these requirements.

Section 250-29 – Sewage disposal

11. SME recommends the Applicant provide connection details to the existing main in Tuttle Road prior to final approval.

Response: Utility plan to be updated prior to final approval.

Section 250-32(C) – Minimum sight distance

12. SME recommends the Applicant add minimum sight distance measurements to the plan set prior to final approval.

Response: Sight distance has been field measured and will added to the documents prior to final approval.

Section 250-32(D) – Dead-end streets

13. The Applicant has requested a waiver from the maximum length requirement of 2,000 feet. SME recommends the Applicant review street and cul-de-sac dimensions with emergency services for equipment accessibility prior to recommending approval for this waiver request.
14. SME recommends the Applicant add dimensions of the cul-de-sac to the plan set prior to final approval.

Response: Cul-de-sac has been designed to Town of Cumberland standards. Dimensions to be added prior to final approval.

Section 250-34 – Construction specifications

15. The Ordinance outlines that Type 1 curbing shall be used for radii at all intersections. Maine Department of Transportation Standard Specifications, Section 609 outlines Type 1 as stone curbing of quarried granite stone. SME recommends the Applicant update the plan set to reflect this detail or request a waiver prior to final approval.

Response: Curbing at entrance to match new curbing installed on Tuttle Road in 2018. If waiver is required it will be requested at final approval.

Section 250-35 – Monuments

16. The Ordinance outlines that granite or precast reinforced Portland cement concrete monuments four inches square and four feet long with a flat top shall be set at all street corners, all points where the street line intersects the exterior of the subdivision, and all angle points or all points of horizontal curvature in each street. SME recommends the Applicant add monument types and locations to the project plan set prior to final approval.

Response: Dirigo and Sebago Technics will install monuments once the ground thaws and add details to drawing package prior to final approval.

Section 250-39 – Storm Drainage Performance Standards

17. Performance standards outline peak discharge for the developed site shall not exceed the peak discharge for the undeveloped site for the two- and twenty-five-year storms. The stormwater management report included in the application indicates substantial increases in peak flow based on proposed development, including as much as 18 cfs in the 10-year storm at Analysis Point 1. SME recommends the Applicant design stormwater detention to control the peak flows prior to final approval.

Response: Dirigo and BH2M will address the stormwater aspects of the project following MDEP stormwater review and prior to final approval.

Section 250-49 – Waivers and modifications

18. The Applicant has requested a waiver from the requirement that the maximum street length for a dead-end street. SME recommends the Applicant review street and cul-de-sac dimensions with emergency services for equipment accessibility prior to approving the waiver request.
19. The Applicant has requested a waiver from providing a high intensity soil survey. SME recommends approval of this waiver.
20. The applicant has requested a waiver from the requirement to locate 10-inch diameter or more trees on the property. SME recommends approval of this waiver.
21. The applicant has requested a waiver from the requirement to show street signs for preliminary approval only. SME takes no exception to the requested waiver and recommends that the signs be included in the final plan application.
22. The applicant has requested a waiver from the requirement to provide capacity to serve letters from selected utility providers for preliminary approval only. SME takes no exception to the requested waiver and recommends that the capacity to serve letters be provided with the final plan application.

Response: Agree

General Comments

23. SME recommends that reference information for the topographic and boundary survey, wetlands delineation, and vernal pool information be added to the Existing Conditions Plan. The plan should include the abutter at the northeast property line.
24. Wetlands delineation should extend to the property boundary on all plan sheets.
25. SME recommends the wetland impacts, monumentation, and abutter information be added to the Subdivision Plan to be recorded.
26. SME recommends that density calculations be added to the Subdivision Plan to be recorded.
27. SME recommends that grading, stormwater, trail, and transformer easements be labeled on the Subdivision Plan to be recorded.
28. SME recommends that a signature block for the Planning Board and recording block for the Registry be added to the Subdivision Plan to be recorded.

29. SME recommends that erosion control items be added to the erosion control plan, including silt fence/mulch berm location, check dams, stabilized construction entrance, and protection for construction proposed outside the right-of-way.
30. SME recommends the Applicant provide additional detail on the Grading+Drainage Plan and Profile Sheets prior to final approval, including contour labels, road dimensions, culvert inverts, right-of-way lines, easements, etc.
31. Road Section plans outline backslopes constructed to a 1:1 slope. This is generally not recommended without guardrail and slope stabilization. SME recommends the Applicant consider adjusting backslopes to a more stable profile.
32. SME recommends hydrant locations be added to the utility plan.

Response: Dirigo to address all comments and add as required to plans prior to final approval.

IV. PRELIMINARY MAJOR SUBDIVISION REVIEW:

NOTE: The following findings of fact have been met sufficiently for granting preliminary approval, provided the requested waivers are granted by the Planning Board.

PROPOSED FINDINGS OF FACT - Chapter 250 - Subdivision of Land

The purpose of these standards shall be to assure the comfort, convenience, safety, health and welfare of the people, to protect the environment and to promote the development of an economically sound and stable community. To this end, in approving subdivisions within the Town of Cumberland, Maine, the Board shall consider the following criteria and before granting approval shall determine that the proposed subdivision:

1. Pollution. The proposed subdivision will not result in undue water or air pollution. In making this determination, it shall at least consider:
 - A. The elevation of the land above sea level and its relation to the flood plains;
 - B. The nature of soils and subsoil and their ability to adequately support waste disposal;
 - C. The slope of the land and its effect on effluents;
 - D. The availability of streams for disposal of effluents; and
 - E. The applicable state and local health and water resource rules and regulations;

The 20 lot residential subdivision will be served by public water and sewer; it will not result in undue water or air pollution.

Based on the information provided, the standards of this section have been met.

2. Sufficient Water. The proposed subdivision has sufficient water available for the reasonable foreseeable needs of the subdivision;

The lots will be served by public water. A letter from the Portland Water District indicating capacity to serve is outstanding

Based on the information provided, the standards of this section have been met for preliminary approval.

3. Municipal Water Supply. The proposed subdivision will not cause an unreasonable burden on an existing water supply, if one is to be used;

The subdivision will not utilize public water. A letter from the Portland Water District indicating capacity to serve is outstanding. Applicant needs to provide required number of sewer user permit from Town Manager.

Based on the information provided, the standards of this section have been met for preliminary approval.

4. Erosion. The proposed subdivision will not cause unreasonable soil erosion or a reduction in the land's capacity to hold water so that a dangerous or unhealthy condition results;

The applicant has submitted an erosion and sedimentation control plan that has been reviewed by the Town Engineer. Several comments made by the Town Engineer need to be addressed for final approval.

Based on the information provided, the standards of this section have been met for preliminary approval.

5. Traffic. The proposed subdivision will not cause unreasonable highway or public road congestion or unsafe conditions with respect to the use of the highways or public roads existing or proposed;

Required site distance needs to be shown on the final plan. Is an MDOT Traffic Movement Permit required?

Based on the information provided, the standards of this section have not been met for preliminary approval.

6. Sewage disposal. The proposed subdivision will provide for adequate sewage waste disposal and will not cause an unreasonable burden on municipal services, if they are utilized;

The project will utilize public sewer. A capacity to serve letter from the PWD is outstanding.

Based on the information provided, the standards of this section have been met for preliminary approval.

7. Municipal solid waste disposal. The proposed subdivision will not cause an unreasonable burden on the municipality's ability to dispose of solid waste, if municipal services are to be utilized;

Cumberland provides curbside trash collection and recycling through a contracted waste hauler. The addition of 20 new homes will not cause a burden on the municipality's ability to dispose of solid waste.

Based on the information provided, the standards of this section have been met.

8. Aesthetic, cultural and natural values. The proposed subdivision will not have an undue adverse effect on the scenic or natural beauty of the area, aesthetics, historic sites, significant wildlife habitat identified by the Department of inland Fisheries and Wildlife or the municipality, or rare and irreplaceable natural areas or any public rights for physical or visual access to the shoreline;

Letters are on file stating that the subdivision will not have an undue adverse effect on the scenic or natural beauty of the area, aesthetics, historic sites, significant wildlife habitat or rare and irreplaceable natural areas.

Based on the information provided, the standards of this section have been met for preliminary approval.

9. Conformity with local ordinances and plans. The proposed subdivision conforms to a duly adopted subdivision regulation or ordinance, comprehensive plan, development plan or land use plan, if any. In making this determination, the municipal reviewing authority may interpret these ordinances and plans;

The plans have been reviewed by the town planner, the town engineer and town department heads. The plans are sufficiently in conformance for preliminary approval.

Based on the information provided, the standards of this section have been met for preliminary approval.

10. Financial and technical capacity. The subdivider has adequate financial and technical capacity to meet the standards of this section;

Technical capacity is evidenced by the use of the following experts: a professional engineer, a licensed land surveyor, and a wetland scientist.

Financial capacity is evidence by a letter dated 12/27/18 from Katahdin Trust Company stating that the developer has the financial capability to finance the estimated costs of the project which is estimated to be \$2,535,000.

Based on the information provided, the standards of this section have been met.

11. Surface waters; outstanding river segments. Whenever situated entirely or partially within the watershed of any pond or lake or within 250 feet of any wetland, great pond or river as defined in Title 38 chapter 3, subchapter I, article 2-B, the proposed subdivision will not adversely affect the quality of that body of water or unreasonably affect the shoreline of the body of water;

The proposed subdivision will not adversely affect the quality of the mapped wetland or unreasonably affect the shoreline of the stream on the parcel. The proposed stream crossing and wetland impacts will be submitted to and conform to, the requirements of the MDEP and ACOE.

Based on the information provided, the standards of this section have been met.

12. Ground water. The proposed subdivision will not alone, or in conjunction with, existing activities, adversely affect the quality or quantity of ground water;

The 20 lot residential subdivision which will be served by public water and sewer will not adversely affect the quality or quantity of ground water.

Based on the information provided, the standards of this section have not been met.

13. Flood areas. Based on the Federal Emergency Management Agency's Flood Boundary and Floodway Maps and Flood Insurance Rate Maps, and information presented by the applicant whether the subdivision is in a flood-prone area. If the subdivision, or any part of it, is in such an area, the subdivider shall determine the 100-year flood elevation and flood hazard boundaries within the subdivision. The proposed subdivision plan must include a condition of plan approval requiring that principal structures in the subdivision will be constructed with their lowest floor, including the basement, at least one foot above the 100-year flood elevation;

The parcel is shown on FEMA floodplain maps as being in Zone C (area of minimal flooding).

Based on the information provided, the standards of this section have been met.

14. Storm water. The proposed subdivision will provide for adequate storm water management;
A stormwater management plan was submitted as part of the application packet and has been reviewed by the Town Engineer. A Stormwater Permit application has been submitted to MEDEP. A copy of the stormwater management report supporting the application was provided in the packet.
Receipt of the MEDEP Stormwater Permit will be required for final approval.

Based on the information provided, the standards of this section have been met for preliminary approval.

15. Freshwater wetlands. All potential freshwater wetlands, as defined in 30-A M.R.S.A. §4401 (2-A), within the proposed subdivision have been identified on any maps submitted as part of the application, regardless of the size of these wetlands. Any mapping of freshwater wetlands may be done with the help of the local soil and water conservation district.

All wetlands within the proposed subdivision are outlined in the project plan set.

Based on the information provided, the standards of this section have been met.

16. River, stream or brook... Any river, stream, or brook within or abutting the proposed subdivision has been identified on any map submitted as a part of the application. For purposes of this section, "river, stream or brook" has the same meaning as in Title 38, Section 480-B, Subsection 9. [Amended; Effective. 11/27/89]

A perennial stream has been identified on the site. MDEP permitting is underway.

Based on the information provided, the standards of this section have been met for preliminary approval..

V. STANDARD CONDITIONS OF APPROVAL

This approval is dependent upon and limited to the proposals and plans contained in the application and supporting documents submitted by the applicant. Any variation from the plans, proposals and supporting documents, except de minimus changes as so determined by the Town Planner which do not affect approval standards, is subject to review and approval of the Planning Board prior to implementation.

VI. LIMITATION OF APPROVAL

Construction of the improvements covered by any site plan approval must be substantially commenced within twelve (12) months of the date upon which the approval was granted. If construction has not been substantially commenced and substantially completed within the specified period, the approval shall be null and void. The applicant may request an extension of the approval deadline prior to expiration of the period. Such request must be in writing and must be made to the Planning Board. The Planning Board may grant up to two (2) 1 year extensions to the periods if the approved plan conforms to the ordinances in effect at the time the extension is granted and any and all federal and state approvals and permits are current.

VII. RECOMMENDED CONDITIONS OF PRELIMINARY PLAN APPROVAL:

1. That the Board has acted on the requested waivers.

2. That any necessary MDEP and ACE approvals be submitted for final review.
3. That all comments made by the Town Planner and Town Engineer be addressed prior to final submission.

Major
Subdivision
Preliminary Plan
Submission



Presented To:

Carla Nixon, AICP

Director of Planning

January 29th, 2019

January 29, 2019

Town of Cumberland Planning Board
Attn: Carla Nixon, AICP, Director of Planning
290 Tuttle Road
Cumberland, ME 04021

SUBJECT: Major Subdivision Preliminary Plan Submission
PROJECT: Christmas Creek Subdivision – Vining Way
239 Tuttle Road

Dear Ms. Nixon:

On behalf of Beta Zeta properties, LLC, we are pleased to submit this Major Subdivision Pre-Application package for Christmas Creek for your review. We would respectfully like to be added to the February 19th, 2019 Planning Board agenda to present this package and further get the Board's input and consideration on our project.

As a matter of summary and update, the various items are compiled below for initial discussion purposes.

Updated Layout Plan

After several iterations and discussions with our clients, we have refined the roadway and lot layout plan as shown on the attached drawings. This provides for one continuous road terminated by a large cul-d-sac at the end, rather than the spur road on our previous sketch plan. The design preserves the large open-space area in the middle and now opens it into most of the lots' backyards instead of crossing a street to gain access, which is more desirable from all perspectives. The lots all exceed the minimum sizes and frontages while preserving the clustered/conservation subdivision layout concept. The revised plans are included with this submission.

Also, when backchecking the Net Residential Density calculations in the ordinance, we discovered that we were inaccurately deducting the open space area from the net area available for lots. As detailed in Chapter 250 NRD item (e) of the NRD calculation, this area is NOT to be deducted.

Coupled with the reduction in overall road length and that our open space is well over the 25% requirement, this adjusts our available lots from 18 to 20. These are reflected on the plans, and calculation is shown in the table below:

CLUSTERED				
Net Residential Density/Acreage	Square Feet	Acres	% of Parcel	Comments
Gross Area	2,203,371	50.58	100.0%	Measurement provided by licensed surveyor
- Roads/Parking	-	0.00	0.0%	Included in ROW/Easements
- Slope > 20%	-	0.00	0.0%	Steep slopes coincide with wetland delineation
- Wetlands	287,613	6.60	13.1%	Measurement provided by licensed surveyor
- 100-Yr Flood Areas	3,369	0.08	0.2%	Per FEMA Flood Plain Map
- ROW/Easements	160,717	3.69	7.3%	Total ROW including road and utility easements
- Resource Protection Districts	-	0.00	0.0%	Within wetland delineation
Net Area Available for Lots	1,751,672	40.21	79.5%	
Open Space Allotment	651,814	14.96	29.6%	Per attached subdivision plan, >25% MIN
Net Residential Density Limit	87,120	2.00		With public sewer and water
Maximum Number of Lots	20.11			

Maine DEP/Stormwater Design

In accordance with our meetings with MDEP, we have prepared a Site Location permit application for the project. We have included the post- and pre-development stormwater design information including drawings, calculations and other information in this submission.

Additionally, the work performed on Tuttle Road was cause for re-examination of the wetland and vernal pool delineation done prior to the work. As a result, the “potential” vernal pool previously identified near the west corner of the property no longer exists, and an updated Wetlands report is provided.

Lastly, the wetland impact has been reworked at the crossings to fall under the Tier 1 minimum of 4,300 SF. As shown on the plans, we will treat the embankments with rip rap topped with a guardrail for vehicle and pedestrian protection. The culvert has been sized to accommodate the post-development stormwater runoff.

Utility Coordination

Our plans reflect a complete underground utility service to Christmas Creek as shown on the attached Utility Plan and details. We have been actively in contact with the various utilities that will serve the subdivision, with updates as follows:

- **Water/Sewer:** The project has been registered with the Portland Water District and we have submitted the Ability to Serve application with their AMaP MEANS group. Our analysis indicates that the sewer system can be completely gravity drained and no pump station or force main will be required.
- **Electricity:** We have contacted Central Maine Power for an initial consultation and to develop the service requirements for Christmas Creek. Easements for pad-mount transformers are indicated on the plans. We have been advised that their approval will follow the Town's approval of the subdivision.
- **Natural Gas:** Lines for natural gas service have been extended into the subdivision from Tuttle Road. Summit Natural Gas has been contacted and has agreed to extend their service into the subdivision pending Town approval.
- **Telephone/Cable/Internet:** Conduits will be provided for these services as shown on the plans.

Waiver Requests

Below are the two waiver requests we will present to the Board for their consideration:

1. **Dead-end street limit exceeded.** Our street length is 3,080 linear feet. Unfortunately, the slender geometry of the parcel and prevalence of wetlands, vernal pools, and other areas to be avoided and preserved do not lend themselves for inclusion of a loop or second entrance. Fire hydrants have been provided and an easement for fire protection, and the oversizing of the lots well beyond the 30,000 SF minimum will limit the number of occupants of the subdivision by which a single means of access might otherwise impede.
2. **High-Intensity Soil Survey.** Because we are providing sewer and water via public utilities, there will be no onsite septic or wells for the residences. Soil maps and characterizations have been provided as part of this package and will be further developed as part of the stormwater design. Additionally, the soil test pit analysis for the MDEP SLODA permit has been included for the Board's review.
3. **Survey for Trees over 10" in diameter.** Most of the site is wooded and a large portion is earmarked to remain as indigenous Open Space. Additionally, wooded buffers between the lots are required to remain to provided visual screening and privacy while preserving the natural setting. Given this, we are not sure what value the survey would provide and are requesting it be waived.
4. **Street Signs.** We request that this be waived until Final Application so that name and numbering confirmation can be performed with the Town's E911 administrator.

5. **Capacity to Serve Letters.** We are not able to obtain these letters from the utilities until the Town's preliminary approval is given. We will submit these letters once received and ask that this requirement be waived, and perhaps covered as a Condition of Approval.

Consultants included as part of our team include Sebago Technics for Wetland Delineation, Soil Survey and Boundary Survey and BH2M for the stormwater design.

Thank you again for your consideration of this application, and we look forward to your response.

Sincerely,

DIRIGO ARCHITECTURAL ENGINEERING, LLC



Thomas W. Perkins, PE (ME, NH, CT)
LEED AP, CSI, M.ASCE (Maine Section Board Member)
President

Christmas Creek Subdivision

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- USFWS Priority Trust Species Habitats

- High Value Plant and Animal Habitats

- Undeveloped Habitat Blocks and Habitat Connections

- FEMA Flood Plain Maps

Section 4: Wetlands

- Sebago Technics Wetland Delineation Report and Plan (revised)

- USF&W National Wetlands Inventory

- Cumberland Wetlands Characterization

Section 5: Drawing Package – see cover page for drawing list

Section 6: MDEP Site Location Permit Items

- Pre-Development Calculations and Drawings

- Post-Development Calculations and Drawings

- Maine Historic Preservation findings letter

- Maine Natural Areas Program findings letter

- Maine Department of Inland Fisheries and Wildlife findings letter

- Test Pit Soil Survey (refer to C1.0 for locations)



Design Team Organization and Resumes

Financial Capacity letter from Bank

Copy of Deed for Right, Title and Interest

Secretary of State Certificate of Good Standing





Section 1: Pre-Application Checklist

CUMBERLAND CODE

Appendix H
Application Checklist
Major Subdivision – Preliminary Plan Review

Subdivision name Christmas Creek

Applicant name Thomas W. Perkins, PE/Dirigo Architectural Engineering

Owner name Beta Zeta Properties

	Check When Satisfactory		Indicate Date When Satisfactory
	Applicant	CEO	Planning Bd.
1. 10 copies of final plan and accompanying materials	<u>X</u>	<u></u>	<u></u>
2. Location map	<u>X</u>	<u></u>	<u></u>
3. Name of subdivision	<u>X</u>	<u></u>	<u></u>
4. Date	<u>X</u>	<u></u>	<u></u>
5. Scale	<u>X</u>	<u></u>	<u></u>
6. North arrow	<u>X</u>	<u></u>	<u></u>
7. Topography (contour intervals)	<u>X</u>	<u></u>	<u></u>
8. Name of owner	<u>X</u>	<u></u>	<u></u>
9. Name of engineer, land surveyor, architect or planner	<u>X</u>	<u></u>	<u></u>
10. Name of adjoining property owners or subdivision	<u>X</u>	<u></u>	<u></u>
11. Dimensions and bearings or angles of all property boundary lines	<u>X</u>	<u></u>	<u></u>
12. Name, location and width of adjacent streets	<u>X</u>	<u></u>	<u></u>
13. Location and sizes of existing utilities and width of easements	<u>X</u>	<u></u>	<u></u>
14. Location and size of rock outcrops, streams, swamps, other pertinent features, buildings, trees, etc.	<u>X</u>	<u></u>	<u></u>

SUBDIVISION OF LAND

15. Existing deed restrictions	<u>None</u>	<u></u>	<u></u>
16. Zoning district	<u>X</u>	<u></u>	<u></u>
17. Proposed street layout (conformity with Official Map and Comprehensive Plan)	<u>X</u>	<u></u>	<u></u>
18. Right-of-way location width	<u>X</u>	<u></u>	<u></u>
19. Pavement width	<u>X</u>	<u></u>	<u></u>
20. Street names	<u>X</u>	<u></u>	<u></u>
21. Street elevations	<u>X</u>	<u></u>	<u></u>
22. Street grades	<u>X</u>	<u></u>	<u></u>
23. Sidewalks	<u>X</u>	<u></u>	<u></u>
24. Off-street parking (if applicable)	<u>N/A</u>	<u></u>	<u></u>
25. Storm sewers, catch basins and culverts	<u>X</u>	<u></u>	<u></u>
26. Landscaping	<u>X</u>	<u></u>	<u></u>
27. Erosion control	<u>X</u>	<u></u>	<u></u>
28. Streetlighting standards	<u>X</u>	<u></u>	<u></u>
29. Street signs	<u>X</u>	<u></u>	<u></u>
30. Water supply system	<u>X</u>	<u></u>	<u></u>
31. Fire hydrants	<u>X</u>	<u></u>	<u></u>
32. Sanitary sewage system	<u>X</u>	<u></u>	<u></u>
33. Dimensions and area of lots	<u>X</u>	<u></u>	<u></u>
34. Soil characteristics	<u>X</u>	<u></u>	<u></u>
35. Location of temporary monuments	<u>N/A</u>	<u></u>	<u></u>
36. Location of permanent monuments	<u>N/A</u>	<u></u>	<u></u>
37. Location and size of proposed utilities and easements	<u>X</u>	<u></u>	<u></u>

CUMBERLAND CODE

38. Location of nonutility easements	<u>X</u>	<u> </u>	<u> </u>
39. Proposed restrictive covenants	<u>X</u>	<u> </u>	<u> </u>
40. Proposed parks, playgrounds and other public areas	<u>X</u>	<u> </u>	<u> </u>

To the Applicant:

If you are requesting a waiver from a particular requirement or you do not feel that the requirement is applicable to your proposed project, place an asterisk (*) in the space and explain your reasons in the space below or on attached sheets.



Section 2: Draft Declaration of Covenants and Architectural Design Review Standards and Guidelines

**DECLARATION OF EASEMENTS, COVENANTS AND RESTRICTIONS
AND RESERVATION OF RIGHTS AFFECTING THE SUBDIVISION
CALLED CHRISTMAS CREEK IN THE TOWN OF CUMBERLAND, COUNTY OF
CUMBERLAND, AND STATE OF MAINE**

THIS DECLARATION, dated this _____ day of _____, 2018, by **Beta Zeta Properties, LLC**, a Maine limited liability company with an address of 9 Kimberly Circle, Brunswick, Maine 04011 (hereinafter referred to as “Declarant”)

W I T N E S S E T H

WHEREAS Declarant owns a certain parcel of land situated in the Town of Cumberland, County of Cumberland, and State of Maine which is more particularly described in a certain Warranty Deed from Claire I. Vining and Gregory E. Vining dated July 24, 2018 and recorded in the Cumberland County Registry of Deeds in Book 35013, Page 190; and

WHEREAS said parcel of land is depicted on a certain Final Plan of “Christmas Creek” approved by the Town of Cumberland Planning Board on _____ and recorded in the Cumberland County Registry of Deeds on _____ in Plan Book _____, Pages _____ (hereinafter the “Plan”); and

WHEREAS Declarant proposes to sell lots in the subdivision depicted on said Plan; and

WHEREAS said Plan depicts residential Lots 1 - 20 (hereinafter the “Lots”), Vining Way running through the subdivision and certain Open Space, which Lots, Vining Way and Open Space as depicted on said Plan are in the aggregate sometimes referred to hereinafter as the “Subdivision”; and

WHEREAS Vining Way is intended to be a public road upon acceptance by the Town of Cumberland; and

WHEREAS the Open Space, including the trail system established therein, may also be conveyed to the Town of Cumberland; and

WHEREAS the Declarant intends to establish an Association which shall own the Open Space in the Subdivision unless and until the same is conveyed to the Town of Cumberland and shall have such other rights and responsibilities as are set forth herein, which shall be called the Christmas Creek Owners Association, or similar name (the “Owners’ Association”); and

WHEREAS Declarant, believes it is necessary and appropriate to ensure to the extent possible that all purchasers of Lots in the Subdivision will be able to use and enjoy their property in accordance with a plan that harmoniously integrates the rights and obligations of Declarant, each Lot owner, and the Association; and

WHEREAS in order to implement said plan of harmonious integration, Declarant does hereby subject the Subdivision, to certain provisions restrictions, reservations, servitudes, covenants, agreements and easements as hereinafter set forth; and

WHEREAS Declarant desires that all owners of Lots in the Subdivision, their heirs, successors and assigns, (hereinafter referred to as “Owners”) shall have the benefit of certain common rights and certain protective covenants and restrictions to be incorporated by reference hereto in each deed conveying any interest in the Subdivision.

NOW THEREFORE, Declarant hereby declares that all property in the Subdivision now owned by Declarant shall be held and conveyed subject to the terms of this Declaration, and further that all of the restrictions, reservations, covenants, and easements described or referenced herein shall inure to the benefit of and be binding upon Declarant, the Owners of all Lots, the Association, and their heirs, successors and assigns, provided, however, that Declarant shall be under no obligation to enforce the terms hereof.

ARTICLE I

PROTECTIVE COVENANTS AND RESTRICTITONS

Each Lot conveyed in the Subdivision, all Open Space, and so long as Declarant owns it, Vining Way, shall be conveyed, owned, held, occupied and subject to the terms hereof including, without limitation, covenants and restrictions contained in this Article I, which covenants and restrictions shall run with the land and be binding upon Declarant, all Owners, the Association, any future associations relating in any way to the Subdivision and their respective heirs, successors and assigns with the same force and effect as if each such covenant and restriction were recited in full in each and every deed or other conveyance of each such Lot or any Open Space. The purchase of any Lot, or the entering into occupancy of any Lot in the Subdivision shall be deemed to signify that each Owner and occupant has accepted and ratified the terms hereof and that each Owner has accepted and ratified the terms of the Association’s By-Laws, as they may be amended from time to time. The covenants and restrictions are as follows:

1.1 Leasing

No dwelling unit shall be leased for terms shorter than Thirty (30) days in length.

1.2 Residential Use

All buildings on all Lots, except accessory structures, shall be for residential use only, except for the limited use of up to one (1) home occupation per dwelling, which home occupation shall be operated in a manner consistent with all municipal codes and ordinances. There shall be no more than one (1) dwelling erected or maintained per Lot. One accessory dwelling unit may be constructed per Lot, provided the conditions of §315-45 of the Town of Cumberland Zoning Ordinance are satisfied, including, without limitation the owner of the Lot obtaining the approval of the Town’s Code Enforcement Officer pursuant to an accessory dwelling unit permit.

1.3 Architectural Review

The Owners' Association shall have an Architectural Design Review Committee (the "ADRC") which shall perform the functions delegated to it under and pursuant to certain "Architectural Design Review Standards and Guidelines" attached as Exhibit A, as they may be amended from time to time. Prior to the initial sale of all of the Lots in the Subdivision, the Committee shall be comprised of members appointed by the Declarant. Following the initial sale of all of the Lots and continuing until the completion of initial construction on all Lots, the three members shall consist of one representative of the Declarant, an appointee of the Declarant, and an Owner who shall be appointed by the Owners' Association. Commencing as of the time of the first annual meeting of the Owners' Association next following the completion of initial construction on all Lots in the Subdivision, all members of the ADRC shall be appointed by the Owners' Association. All construction on or modifications to Lots or the structures thereon shall conform to the Architectural Design Review Standards and Guidelines as interpreted by the ADRC. Any amendments to the Architectural Design Review Standards and Guidelines shall be subject to the provisions of Article 1.16 hereof with respect to amendment of this Declaration.

1.4 Residences and Structures

All residences constructed on a Lot shall be "stick built" and no modular or pre-made or framed houses shall be permitted, with the limited exception of BrightBuilt or similar homes, as determined by the ADRC. No manufactured or mobile homes shall be permitted, whether or not attached to a foundation and/or utilities. All residences constructed on a Lot shall contain a minimum of 1800 square feet of living area for one story residences and 2200 square feet for multi-story residences (without consideration, in either instance, of square footage of any constructed accessory dwelling unit). All residential structures shall be set back a minimum of _____ feet from Vining Way. All residences shall have attached vehicle storage suitable for a minimum of two (2) cars. Additional (detached) vehicle storage shall be permissible, provided that the minimum attached vehicles storage requirement is also met. All residences constructed on a Lot shall be constructed upon a frost-protected foundation of at least four (4) feet. No residence shall be constructed on a "slab" or other similar foundation or footing. All Lots and buildings, landscaping and grass lawns thereon shall be regularly maintained and kept in good repair. All driveways shall be paved or finished with pavers – no dirt or gravel driveways shall be allowed.

Prior to the commencement of the construction of any structure whatsoever, or the clearing or excavation of land, the Lot Owner shall submit the plans and specifications of said structure to the ADRC for approval, including detailed grading and landscaping plans. All approvals or denials by the ADRC shall be by majority vote, shall be in writing and made within fourteen (14) days of the ADRC's receipt of all materials required to be submitted by the Lot Owner. The ADRC shall approve submitted plans only if it determines, in its sole discretion, that construction in accordance with said plans complies with the Architectural Design Review Standards and Guidelines and will not be detrimental to the Subdivision and that the proposed construction is consistent with all approvals of the Plan by the Town of Cumberland, including any conditions thereof.

Other than single family residences and/or permitted accessory dwelling units, no buildings or structures of any nature or description shall be erected or maintained on any Lot,

provided however, that nothing in this Paragraph shall be construed to prevent the construction of a tasteful storage shed, pergola or in-ground swimming pool if the same had been approved by the Town of Cumberland. No above-ground swimming pools shall be erected or constructed on any Lot. Any permitted in-ground swimming pool shall be constructed in the rear of the residence. No enclosure fencing of any kind shall be permitted in the front of any residential structure on any Lot except for invisible pet containment systems, provided that decorative wood or composite (but not chain link or metal) fencing erected for purposes other than containment or exclusion shall be permissible. Any fencing erected in the rear of the residence including, if applicable, required fencing surrounding any permitted in-ground pool, shall be of a material that contributes to the overall aesthetic of the construction, as determined by the ADRC.

1.5 **Wood**

Cut wood shall be stacked in fireplace lengths neatly behind or on the side of the residence.

1.6 **Surface Water**

No Owner of a Lot, his agents, contractors or employees shall alter the natural flow of surface water on any Lot in a way which would materially alter the natural flow of such water across any other Lot, Vining Way or the property of any abutter unless such alterations are approved by the Owners of the Lots or property affected. This Paragraph shall not be construed to prevent the Declarant's construction, improvement, alteration, or maintenance of drainage or other easements shown on the Plan or necessary for the use and enjoyment of the Lots by all Owners. Nor shall this paragraph be construed to prevent construction of residences within legal building envelopes and setbacks.

1.7 **Compliance with Governmental Orders**

All construction activities, including the siting of buildings, shall in accordance with all local and state laws, codes, ordinances and regulations.

1.8 **Vehicles, Boats and Trailers**

No house trailer, business or commercial vehicle or vehicles of a similar nature shall be maintained or permitted to remain on any Lot unless screened from view from Vining Way and all other Lots in the Subdivision except a business vehicle normally used by a Lot Owner in his or her occupation. No tractor trailers shall be parked or kept on any Lots. A maximum of one (1) boat may be seasonally stored on a Lot, provided the same is screened from view from Vining Way and all other Lots in the Subdivision.

1.9 **Siding**

No dwelling or other building erected on any Lot shall be covered with tar paper, asphalt siding or corrugated metal siding but shall be covered with a natural wood, stone, brick, or vinyl shakes or composite siding.

1.10 **Trash/Outside Storage**

Trash, garbage and other waste shall be kept in sanitary, covered containers. Such containers shall not be visible from Vining Way or from any other Lot, except for limited periods coincident with trash collection. No Lot Owner shall keep, maintain, or store rubbish, unregistered automobiles, white goods, used construction materials or similar items in their yards, but rather shall keep such items stored in a garage or storage shed out of view from Vining Way and all other Lots.

1.11 **Antennae/Satellite Dishes**

No radio antennae or communications towers or masts of any kind shall be installed, constructed, or used on any Lot or structure, except that radio antennae are permitted if they are screened from view from Vining Way and all other Lots and are set back in compliance with applicable Town ordinances at the time of construction of the dish or antennae. Roof mounted satellite dishes used in connection with consumer satellite television services and/or solar panel arrays shall be permitted, but no ground mounted or commercial satellite dishes or solar panels or arrays shall be erected on any Lot.

1.12 **Chimneys**

Any fireplace or chimney located on the exterior of the house shall be of brick or stone construction. No cinder block or metal chimneys shall be allowed on the exterior of any dwelling or structure.

1.13 **Signs**

No sign of any nature or description shall or may be displayed or placed on any part of any Lot except for a "For Sale" sign referring only to the Lot or residence on which it is placed. Nothing herein shall be construed to prevent Declarant from erecting signs to identify the Subdivision or promoting sales of Lots. Any Owner may erect a sign on his/her Lot not exceeding two (2) square feet erected to identify his/her name.

1.14 **Time for Construction**

Once any construction of any structure or building on a Lot has begun, all construction work thereon must be performed diligently with reputable contractors and must be completed within two (2) years from the closing on the acquisition of the Lot. No structure other than a dwelling may be constructed before the main dwelling itself. All disturbed areas not built upon shall be loamed, seeded and appropriately landscaped, or, in the case of driveways, paved or finished with pavers, at the close of construction and in all events within nine (9) months of substantial completion of the dwelling [as evidenced by the issuance of a certificate of occupancy](#). Proper erosion control shall be observed at all times by all Owners and their contractors. All erosion damage shall be promptly repaired at the Lot Owner's sole expense. No prohibitions

contained herein shall be construed to prevent the use of trailers, vehicles or other temporary construction related structures during the period of actual construction.

1.15 Separate Provisions

Each and every provision contained herein shall be considered to be independent and separate, and in the event that any one (1) or more such provisions shall for any reason be held to be invalid or unenforceable, the remainder hereof shall, nevertheless, remain in full force and effect.

1.16 Amendment

The provisions of Article I hereof may from time-to-time be amended by a vote or by written approval of two-thirds (2/3) of the Lot Owners of record, provided however, that (a) the written consent of the Declarant shall be required for any such amendment to become valid and binding unless and until Declarant has sold all Lots in the Subdivision and retains no interest in any Lot, and (b) all such changes must be consistent with the Plan and the terms and conditions of approval of the Subdivision by the Town of Cumberland. Any such amendments shall become effective upon recording of the Amendment together with an affidavit executed under oath certifying the vote of the Lot Owners of record and the persons who cast affirmative votes to amend.

1.17 Enforcement

As set forth in the preamble above, the provisions of this Declaration have been adopted for the benefit of the Owners of Lots shown on the Plan and the Declarant, to ensure a harmonious environment enjoyed by all Lot Owners. Therefore, each and every violation of any covenant, restriction or reservation in this Declaration is hereby declared a nuisance which may be remedied or enjoined by an appropriate legal proceeding brought by a Lot Owner, the Declarant or the Owners' Association. If any Owner shall attempt to violate or permit any violation of any of the covenants, restrictions or reservations described above or hereinafter referred to, Declarant, (its successors and assigns), the Owners' Association or any Owner may, but is not obligated to, commence proceedings at law or equity either to recover compensation and damages, or to seek discontinuance of such attempts or violations, or both.

If a final judgment is rendered against an Owner on account of said Owner's violation hereof, the Owner shall pay all reasonable costs of enforcement, including reasonable attorney's fees, incurred in prosecution of said claim, which shall be included in the judgment. Conversely, if any action is found by a court to have been frivolously brought or maintained, the plaintiff(s) shall pay all reasonable costs of defense, including reasonable attorney's fees of defendant(s). Proceedings may be maintained against any one (1) violator of any provision of this Declaration irrespective of the waiver of any prior violation or attempted violation by the same or other Owners. The failure to enforce any of the provisions of this Declaration on any one (1) occasion shall in no way be deemed to be a waiver of rights to do so thereafter as the original or any other breach by any person or Owner. By acceptance of a deed to a parcel subject to the provisions of this Declaration, an Owner covenants and agrees to abide by such provisions.

The Owners' Association shall have the power to assess common maintenance charges against each Lot from time to time to fund the expenses of the Owners' Association including, without limitation, the maintenance of any drainage installations and/or the Open Space and the fees, costs, recording fees and charges associated with any amendments to the Bylaws of the Owners' Association, this Declaration or other matters, plus a reasonable reserve for future expenses. Such assessments shall be in such amounts as may be determined by the Owners' Association from time to time at its annual meeting or a special meeting called for that purpose. The manner and procedure for such assessments shall be governed by the Bylaws of the Owners' Association. The Owners' Association shall have the power to levy fines to the extent that such powers are granted or provided in the Bylaws.

The Owners' Association has a lien on a Lot for any assessment levied against that Lot or fines imposed against the Lot owner from the time the assessment or fine becomes due. The Owners' Association's lien may be foreclosed in like manner as a mortgage on real estate. If an assessment is payable in installments, the full amount of the assessment is a lien from the time the first installment thereof becomes due.

A lien under this section is prior to all other liens and encumbrances on a unit except: (1) liens and encumbrances recorded before the recordation of this Declaration; (2) a first mortgage recorded before or after the date on which the assessment sought to be enforced becomes delinquent; and (3) liens for real estate taxes and other governmental assessments or charges against the Lot. This subsection does not affect the priority of mechanics' or materialmen's liens, or the priority of liens for other assessments made by the Owners' Association. The lien under this section is not subject to the provisions of Title 14, section 4651 and Title 18-A, Part 2, as they or their equivalents may be amended or modified from time to time.

A lien for unpaid assessments is extinguished unless proceedings to enforce the lien are instituted within 5 years after the full amount of the assessments becomes due.

This section does not prohibit actions to recover sums for which this section creates a lien, or to prohibit an association from taking a deed in lieu of foreclosure.

A judgment or decree in any action or suit brought under this section shall include costs and reasonable attorney's fees for the prevailing party. [1981, c. 699, (NEW).]

The association shall furnish to a Lot owner upon written request a statement setting forth the amount of unpaid assessments currently levied against the Lot. The statement shall be furnished within 10 business days after receipt of the request and is binding on the Owner's Association and every other Lot owner.

1.18 Vining Way

Until such time as Vining Way is dedicated and accepted as a public way or street, title to Vining Way shall remain with the Declarant, which Declarant hereby reserves for itself, its heirs, successors and assigns. Declarant's title shall be subject to the nonexclusive easements of access conveyed to each Lot Owner in the Subdivision, to the rights of ingress and egress of Declarant

and the Owners of all Lots in the Subdivision, and to such utility easements as Defendant may grant.

Until such time as the Town of Cumberland accepts Vining Way as a public way or street, the Declarant shall be responsible for all costs of maintenance and improvements of Vining Way. No individual Lot Owner may make individual improvements to Vining Way without the written consent of Declarant. In the event any Owner of a Lot in the Subdivision does incur any cost or expense, improvements, upkeep or repair of Vining Way without the written consent of the Declarant, said lot Owner shall defend, indemnify and hold Declarant harmless from all claims, losses, causes of action, and damages, including liens and attachments.

In the event that all Lots in the Subdivision have been sold and the Town of Cumberland has declined to accept Vining Way as a public way or street, Declarant shall transfer title to Vining Way to the Owners' Association, which shall thereafter be responsible for all maintenance and upkeep of Vining Way required by the Town of Cumberland approvals of the subdivision and applicable law.

1.19 Animals

No animals, except traditional domestic animals, i.e., dogs and cats, shall be kept on any Lot, provided, however, that any Lot owner may maintain a maximum of six (6) laying hens on such Owner's Lot at any one time provided such Lot owner complies at all times with Section 315-39 of the Town of Cumberland Zoning Ordinance. No boarding or breeding kennels may be kept or maintained on any of the Lots on said Plan, and no permitted animals shall cause an ongoing nuisance to other Lot owners in the subdivision.

1.20 Variance

No variance shall be sought for modification of Town of Cumberland code standards for front, rear or side yard setbacks for of with respect to any Lot boundary abutting land owned by neighboring property owners without the prior written consent of the Owners' Association or the said neighboring property owners.

1.21 No Further Division of Lots

There shall be no further subdivision of any Lot, nor shall any Lot lines be changes except by prior written approval of the Owners' Association, subject also to all required governmental approvals.

ARTICLE II **OPEN SPACE**

2.1 Creation of Open Space

Christmas Creek is a subdivision approved under Section 250-1 et seq. of the Cumberland Zoning Ordinance. The Open Space in the Subdivision as shown on the Plan shall

initially be retained by the Declarant subject to the terms and conditions set forth herein and on the Plan. Upon the initial sale of all Lots in the Subdivision or sooner, at the Declarant's option, such Open Space shall be conveyed to the Owners' Association or the Town of Cumberland. Each Lot Owner shall have the right to the use such Open Space in common with the other Lot Owners for recreational purposes only and for hiking, _____, as provided in the Plan, subject to the peaceful enjoyment by other lot Owners of their Lots, the rights of all lot Owners to have access to and enjoyment of the Open Space areas, and the terms hereof. Subject to the Plan, no Lot Owner or any other person or entity shall erect any structures in or on any Open Space, store or leave any property or belongings in or on the Open Space, create any nuisance on any Open Space, or disturb in any way the condition, terrain or ecology of any Open Space. The Owners' Association may adopt rules and regulations regarding the Open Space during any period that the Open Space is owned by the Owners' Association that are not inconsistent with the terms hereof; all rules and regulations so adopted shall also be consistent with and not in violation of applicable Federal, State and local ordinances and/or provisions that apply to the Subdivision. If the Open Space is conveyed to the Town of Cumberland, such conveyance shall be conditioned upon the Town's agreement to reasonably maintain the Open Space and to institute policies regarding the public's use of the same that shall ensure that restrictions on use described in this section remain permanently in place.

ARTICLE III **EASEMENTS**

3.1 Types of Easements.

All Lots in the Subdivision, Vining Way shall be conveyed subject to the herein referenced easements, including:

A. **Utility Easements.** Utilities shall include, without limitation, electrical power, telephone, cable television, and public water and sewer and shall be granted to the appropriate utility companies. Declarant may, by easement deeds, grant utility companies easements over, across, and under Vining Way, and the Open Spaces as may be necessary to the furnishing of utilities. Declarant reserves the right to make such Easement grants without the consent of any Lot Owner, the Owners' Association, or any other entity.

B. **Access Easements.** Until such time as Vining Way is conveyed to the Town of Cumberland, all Owners in the Subdivision shall enjoy an easement of access to their Lots over and across Vining Way.

3.2 Scope of Easements.

In addition to any rights granted to Declarant, all conveyances of Lots in the Subdivision shall be and hereby are subject to the following rights of the Declarant which shall supplement any other rights of record:

A. To install, relocate, modify, repair and maintain improvements incidental to any subject easement, including without limitation removal of vegetation and excavation. Such

improvements shall be installed and maintained in the most attractive fashion reasonably practicable, and every reasonable effort shall be made to restore any such area to original condition following a disturbance of an easement area incident to a permitted activity. Such restoration shall be conducted in a timely and workmanlike manner entirely at the expense of the burdened party.

B. To grant such easements to others as Declarant deems appropriate for the well being of the Subdivision without the consent of any Lot Owners or other person.

ARTICLE IV **NON-PROFIT CORPORATION**

Christmas Creek Owners' Association

Each Owner of a Lot in the Subdivision shall by virtue of, and during, ownership of a Lot automatically become a member of the Maine non-profit corporation which has been established expressly for the purposes of (a) owning the Open Space in the Subdivision, (b) maintaining Vining Way if the Town declines to accept Vining Way as a public street or way and title is transferred to the Owners' Association by the Declarant, (c) enforcing the covenants contained herein, (d) appointing members to the ADRC as provided for herein, and (e) to maintain the stormwater systems and retention basins serving the Subdivision and shown on the Plan in accordance with the terms of the approval from the Town of Cumberland and the regulations and conditions approved by the Maine Department of Environmental Protection. The corporation shall be named Christmas Creek Owners' Association or similar name. Each member and his invitees shall at all times comply with the rules, regulations and bylaws of said Owners' Association and be subject to enforcement procedures promulgated by the said Owners' Association from time to time (whether before or after any alleged violations).

In the event that more than one party shall own a Lot, each such party shall appear in the corporation clerk's records as a member but only one such party may exercise voting rights at meetings of the Owners' Association as an Owner. If any person shall own more than one Lot, said person shall be counted an equal number of times to the number of Lots owned in determining a quorum or a vote. The meeting of the Owners' Association will be held annually on the second [REDACTED] of [REDACTED] or at such other time as the Owners' Association shall determine for the purposes of electing officers and members of the ADRC and determining any budget necessary or appropriate for the ownership of the Open Space and funding of the Owners' Association's maintenance obligations. Notice of said meeting will be sent to each Lot Owner in accordance with the bylaws of the Owners' Association by the clerk of the Association.

The Owners' Association shall be organized at the sole expense of Declarant, which shall, until the Owners' Association is formed, be solely responsible for performing all obligations of the Owners of the Lots. Other provisions pertaining to the operation of the Owners' Association shall be set forth in its Bylaws.

ARTICLE V
DURATION

All of the covenants, reservations and other restrictions set forth herein, shall run with the land, be binding upon and inure to the benefit of the Owners and occupants of Lots, the Owners' Association and the Declarant, together with their heirs, successors and assigns.

ARTICLE VI
DECLARANT'S RIGHTS

All property, easements and other rights to be conveyed by Declarant to the Association and the individual Lot Owners as described herein are conveyed subject to the following reservation of rights running in favor of Declarant, its successors and assigns:

4.1 Until the initial sale by Declarant of each and every Lot in the Subdivision, Declarant, its successors and assigns, may without the consent of the Owners' Association or any Lot Owner:

A. Modify any Lot not previously conveyed by Declarant and the parcels depicted on the Plan as "Open Space" according to the requirements of applicable laws pertaining to zoning and modification of approved or pending subdivisions, which modification shall be recorded in the Cumberland County Registry of Deeds.

B. Have full benefit of any property or rights incident to membership in the Owners' Association, including without limitation, connections with and use of utilities and use of Vining Way and all easements.

C. Operate Lot sales promotional efforts, erect signs and operate a sales office, if deemed appropriate in the sole judgment of Declarant.

D. Grant such easements and other rights to such persons as the Declarant deems appropriate, including for access, utilities, and other purposes consistent with the use and enjoyment of the Subdivision by Declarant or Lot Owners.

The terms of this Article VI shall control any other terms hereof or of the Bylaws of the Owners' Association in the event of ambiguity or conflicting provisions.

Notwithstanding anything else in this Declaration to the contrary under no circumstances may this Declaration be amended without Declarant's prior signed written consent prior to initial sale by Declarant of each and every Lot in the Subdivision.

Beta Zeta Properties, LLC

By: _____

Witness

Its _____

STATE OF MAINE
Cumberland, ss.

_____, 2018

Personally appeared the above-named _____, in his capacity as _____ of Beta Zeta Properties, LLC and acknowledged the foregoing instrument to be his free acts and deed in his said capacity and the free act and deed of the said Beta Zeta Properties, LLC.

Before me,

Notary Public/Attorney at Law

Typed or Printed Name

ARCHITECTURAL DESIGN REVIEW STANDARDS AND GUIDELINES
FOR CHRISTMAS CREEK SUBDIVISION

1. Architectural Design Review Committee. There shall be a subcommittee of the Board of Directors of the Christmas Creek Owners' Association (the "Association") called the Architectural Design Review Committee ("ADRC"). Initially, all members shall be appointed by Beta Zeta Properties, LLC (the "Declarant"). Following the completion of initial construction on all lots in the Christmas Creek Subdivision (the "Subdivision"), the ADRC shall consist of three members: a representative of the Declarant, an appointee of the Declarant, and an owner of a lot in the Subdivision ("Owner") who shall be appointed by the Association. These members shall continue to serve until the next annual meeting of the Association. At the first annual meeting of the Association next following the initial completion of construction on all lots in the Subdivision, all members of the ADRC shall be appointed by the Association.

2. Construction Subject to Architectural Design Standards and Guidelines. All construction or modification of structures on lots within the Subdivision ("Lots") shall conform to the Architectural Design Review Standards and Guidelines (the "Standards") herein set forth as interpreted by the Declarant or the ADRC. Any amendments to the Standards shall be made only in accordance with the amendment procedures described in the "Declaration of Easements, Covenants and Restrictions and Reservations of Rights Affecting the Subdivision Called Christmas Creek in the Town of Cumberland, County of Cumberland, and State of Maine" dated _____ and recorded in the Cumberland County Registry of Deeds, as the same has been amended from time to time (the "Declaration").

3. Construction. The ADRC shall have exclusive jurisdiction over all construction within the Subdivision. Approvals of any proposed construction shall be in accordance with the terms hereof, the Declaration and any permits and approvals of the Subdivision. Notwithstanding the foregoing, Owners may make any improvements, renovations and alterations within their homes that do not materially impair the structural integrity or appearance of any structure or require a building permit.

4. Architectural Design Review Standards and Guidelines. The Standards for the Subdivision are as set forth in the Declaration and this section 4.

(a) Acceptable House Styles include, but are not limited to, the following:

- Cape Cod/New England House Plans
- Colonial House Plans
- Contemporary House Plans
- Cottage House Plans
- Country House Plans
- Craftsman House Plans
- Farmhouse House Plans
- Historic House Plans
- Luxury Home Plans

Ranch House Plans
Southern Home Plans
Traditional House Plans
Victorian House Plans

(b) Unacceptable styles include, but are not limited to, the following:

A-Frame House Plans
Beach/Coastal House Plans
Bungalow House Plans
Cabin House Plans

European/French House Plans
Florida House Plans

Spanish/Med. House Plans
Tudor/English House Plans
Vacation Home Plans

(c) In addition, the ADRC must conclude in each case that the style of a proposed house and/or addition harmoniously integrates within the Subdivision to create a diverse blend of homes that compliment one another yet preserve the beauty, integrity and value of all homes in the Subdivision. Under no circumstances may any construction be approved that would constitute a violation of the provisions of the Declaration.

(d) The ADRC shall approve any contractors hired by Owners to construct a new residential structure on a previous unimproved Lot. The ADRC may base its decision to approve or disapprove contractors based upon appropriate factors, including financial strength or weakness, contracting ability, prior work, contracting experience, prior history of litigation, etc.

5. Procedure for Approval. Prior to applying for a building permit, or in any way commencing any construction of a house, addition or structure on a Lot, an Owner shall obtain the ADRC's approval of the Owner's detailed plans and specifications for the proposed construction (the "Plans"). Interior modifications or other construction not requiring a building permit or that do not alter the appearance or structural integrity of any structure do not require ADRC approval. Nor do ordinary and necessary repairs require ADRC approval. Owners' Plans shall show all dimensions, elevations and other specifications and shall be sufficiently detailed to enable the contractor to build the proposed structure based thereon.

Upon receipt of the Plans, the ADRC shall render a decision approving or disapproving them within 14 days of receipt of all required submissions. The ADRC may require additional submittals following which the 14-day period shall be extended until the new submittals are received. In the event the ADRC denies approval, the Owner shall be entitled to seek reconsideration by the ADRC within 14 days of the Owner's receipt of the ADRC's decision. If the Owner does not seek reconsideration within 14 days, the decision shall be final, and there

shall be no right of appeal. At the time of any reconsideration, the ADRC shall enable the Owner and his contractor to be heard on the merits of the Owner's application. Following rehearing, there shall be no right of appeal; provided, however, that the Owner may make changes to the Plans and resubmit the Plans for approval. Unless the ADRC concludes that the newly filed Plans do not materially differ from the prior Plans with respect to the matters that were the basis of the denial, the ADRC shall commence the process of approval or disapproval de novo.

6. Violations. A violation of the Standards shall be treated in the same manner as a violation of the Declaration. Under no circumstances shall the Association or the Declarant be deemed to have waived the Standards or be estopped from enforcing them, regardless of the actions or inactions of the ADRC on any prior or other occasions.

7. Expiration. In all events, notwithstanding any other provision stating or inferring to the contrary, these Standards shall automatically expire at the time of the first annual meeting of the Association next following completion of construction on all Lots in the Subdivision unless renewed by vote of the Association at said meeting.

Date: _____

Beta Zeta Properties, LLC

By: _____

Its _____

Receipt of Acknowledgement (Purchaser(s))

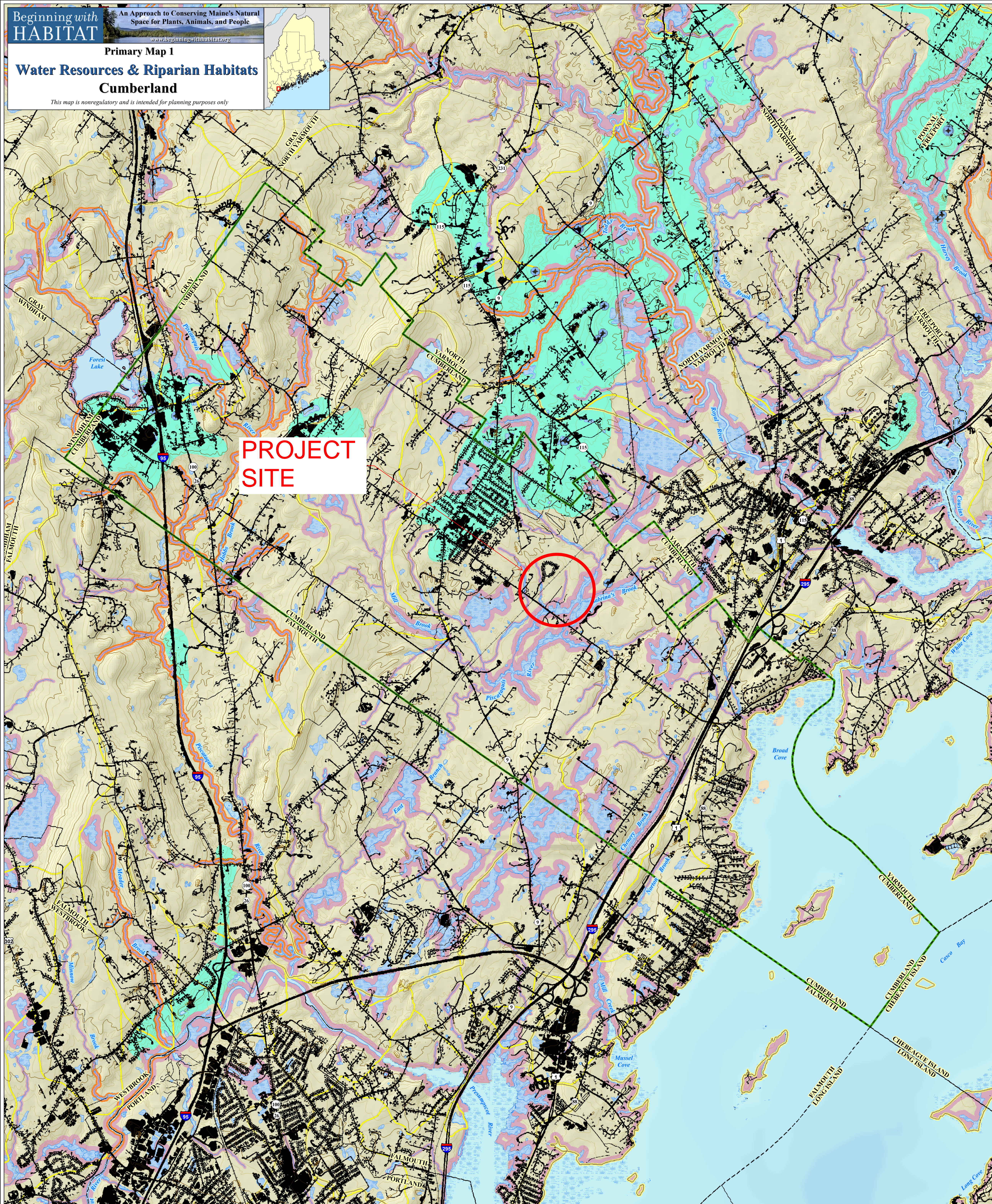
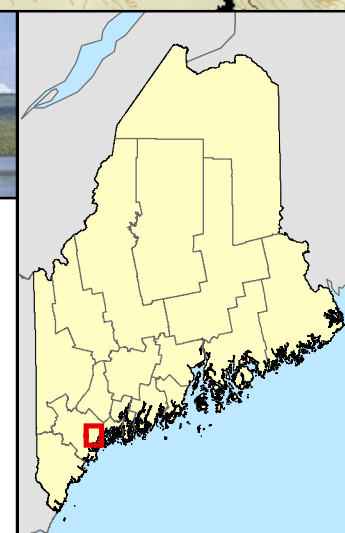


Section 3: Maps
















Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BgB	Belgrade very fine sandy loam, 0 to 8 percent slopes	6.5	4.7%
BuB	Lamoine silt loam, 3 to 8 percent slopes	3.5	2.6%
EmB	Elmwood fine sandy loam, 0 to 8 percent slopes	3.7	2.7%
HfC2	Hartland very fine sandy loam, 8 to 15 percent slopes, eroded	0.8	0.6%
Ls	Limerick-Saco silt loams	14.3	10.4%
Sn	Scantic silt loam, 0 to 3 percent slopes	49.8	36.2%
SuC2	Suffield silt loam, 8 to 15 percent slopes, eroded	28.0	20.3%
SuD2	Suffield silt loam, 15 to 25 percent slopes, eroded	15.6	11.3%
SuE2	Suffield silt loam, 25 to 45 percent slopes, eroded	1.6	1.1%
Sz	Swanton fine sandy loam	10.4	7.6%
WmB	Windsor loamy sand, 0 to 8 percent slopes	3.4	2.5%
Totals for Area of Interest		137.6	100.0%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BgB	Belgrade very fine sandy loam, 0 to 8 percent slopes	6.5	4.7%
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HfC2	Hartland very fine sandy loam, 8 to 15 percent slopes, eroded	0.8	0.6%
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SuC2	Suffield silt loam, 8 to 15 percent slopes, eroded	28.0	20.3%
SuD2	Suffield silt loam, 15 to 25 percent slopes, eroded	15.6	11.3%
SuE2	Suffield silt loam, 25 to 45 percent slopes, eroded	1.6	1.1%
Sz	Swanton fine sandy loam	10.4	7.6%
WmB	Windsor loamy sand, 0 to 8 percent slopes	3.4	2.5%
Totals for Area of Interest		137.6	100.0%



This map depicts riparian areas associated with major surface water features and important public water resources. This map does not depict all streams or wetlands known to occur on the landscape and should not be used as a substitute for on the ground surveys. This map should be used as a planning reference only and is intended to illustrate the natural hydrologic connections between surface water features. Protecting riparian habitats protects water quality, maintains habitat connections, and safeguards important economic resources including recreational and commercial fisheries.

-  **Selected Town or Area**
 -  **Organized Township Boundary**
 -  **Unorganized Township**
 -  **Developed**- Impervious surfaces including buildings and roads
 -  **Subwatersheds**- Drainage divides are grouped together to form subwatersheds. See inset below for more information.
 -  **Drainage divides** - These are the smallest hydrologic units mapped in Maine. They contain watershed boundaries for most ponds and rivers in Maine.
 -  **NWI Wetlands** - National Wetlands Inventory (NWI) uses aerial photographs to approximate wetland locations. NWI data is not a comprehensive mapping of wetland resources and typically under represents the presence of wetlands on the landscape. The presence of wetlands needs to be determined in the field prior to conducting activities that could result in wetland disturbance.
 -  **Riparian Habitat** - depicted using common regulatory zones including a 250-foot-wide strip around Great Ponds (ponds ≥ 10 acres), rivers, coastline, and wetlands ≥ 10 acres and a 75-foot-wide strip around streams. Riparian areas depicted on this map may already be affected by existing land uses.
 -  **Shellfish Growing Areas** - The Maine Department of Marine Resources maps growing areas for economically important shellfish resources. This map depicts softshell and hard clam resources in order to illustrate the relation of these resources to streams and shoreline areas vital to their conservation.
 -  **Brook Trout Habitat** - Streams and ponds, buffered to 100 feet, where wild Brook Trout populations have been documented, or managed to enhance local fisheries.
 -  **Public Water Supply Wells**
 -  **Source protection area** - Buffers that represent source water protection areas for wells and surface water intakes that serve the public water supply. Their size is proportional to population served and/or by the type of water supply system. These buffers range from 300 to 2,500 feet in radius.
 -  **Aquifers** - flow of at least 10 gallons per minute

A watershed includes all of the land that drains to a common waterbody. The areas within the watershed are linked ecologically by the water, sediment, nutrients, and pollutants that flow through them. For the purpose of mapping "hydrological units", watersheds are often grouped into larger drainages or divided into smaller ones. Drainage divides (shown on main map as yellow line), are the smallest hydrological units and generally drain into small ponds, wetlands, or streams. These units are grouped into sub-watersheds (shown on both the main map and the above inset map by the yellow-brown-yellow outlines).

-  Main Map Extension
 Selected Township or Area
 Subwatershed
 1 inch = 4 miles

A 3D cross-sectional diagram of the water cycle. It shows a landscape with a green hill and a blue lake. Arrows indicate the following processes: Precipitation (downward arrows from the sky), Transpiration (upward arrows from the hill), Evaporation (upward arrows from the lake), Overland Runoff (down the slope of the hill), Infiltration (downward arrows into the ground from the hill), and Ground Water (labeled in the subsurface with arrows showing flow). The ground is depicted in brown layers.

Precipitation is the source of all water. Surface water and ground water are related. Drinking water can come from either source. Ground contaminants can affect both. The relationship between ground water and surface water is part of the **hydrologic cycle**. **Precipitation** that falls from the atmosphere as rain or snow, soaks the land surface and recharges rivers, lakes, wetlands, and other surface bodies of water directly through **overland runoff**. Surface water also seeps into the ground through **infiltration** and eventually reaches the ground water; or through **evaporation**, returns to the atmosphere. Water evaporates from leaves and stems of plants through **transpiration**.

Maine's Mandatory Shoreland Zoning Act is intended to protect water quality, conserve wildlife habitat, and preserve the natural beauty of Maine's shoreline areas. Successful implementation requires local awareness of and appreciation for surface water resources and effective enforcement of setback and buffer requirements.

At a minimum, Maine's shoreland zones include all land within:

- 250 feet of the high-water line of any pond over 10 acres, any river that drains at least 25 square miles, and all tidal waters and saltwater marshes; and
- 250 feet of a freshwater wetland over 10 acres (except "forested" wetlands); and
- 75 feet of a stream that is either an outlet stream of a great pond, or located below the confluence of two perennial streams as depicted on a USGS topographic map.

Shoreland zoning encourages towns to provide greater protection to their local water resources by applying shoreland zone protections to additional resource types such as smaller streams and wetlands, and rare terrestrial features. For specific guidance regarding Maine's Mandatory Shoreland Zoning Act contact the Dept. of Environmental Protection Shoreland Zoning Unit: 207-287-3901 (Augusta), 207-822-6300 (Portland), 207-941-4116 (Bangor). www.maine.gov/dep/blwq/dcoastand/szpage.htm





DATA SOURCE INFORMATION	
(note: italicized file names can be downloaded from Maine Office of GIS)	
TOWNSHIP BOUNDARIES	SHELLFISH
Maine Office of GIS (2006), <i>metwp24</i>	Maine Department of Marine Resources; software claims hard data
ROADS	RIPARIAN BUFFERS
Maine Office of GIS, Maine Department of Transportation (2005), <i>medutpb</i>	Maine Natural Areas Program (2005), <i>maine_natural_areas</i>
HYDROLOGY	WELLS, WELL BUFFERS
Maine Office of GIS, U.S. Geological Survey (2004), <i>hydro</i>	Maine Office of GIS, Maine Department of Human Services-Drinking Water Program (2004), <i>wells</i> , <i>wells_buffers</i>
DEVELOPED	AQUIFERS
Maine Office of GIS, Maine Department of Environmental Protection (contact agency for use in multiple agency collaboration) (2005), <i>imprv</i>	Maine Office of GIS, Maine Geological Survey (2006), <i>maine_geological_survey</i>
NATIONAL WETLANDS INVENTORY	WATERBODIES, WETLANDS
U.S. Fish and Wildlife Service (1998), <i>nwi</i>	Maine Office of GIS (1994), <i>medwdr</i>
	BROWN TRENT HATFISH
	Maine Department of Inland Fisheries & Wildlife (2011)

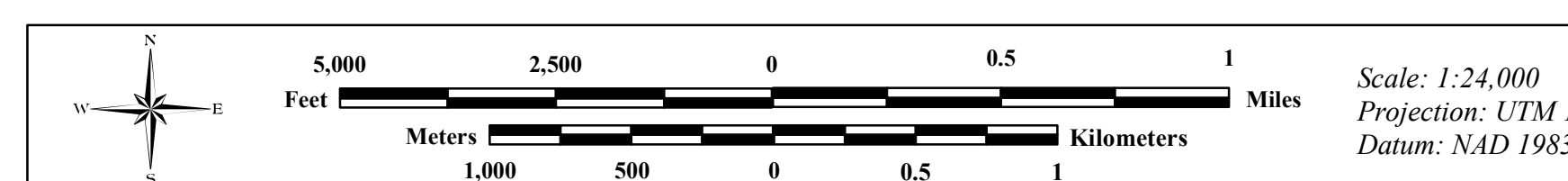
DATA SOURCE CONTACT INFORMATION

Maine Office of GIS: <http://www.maine.gov/megis/>
Maine Natural Areas Program: <http://www.maine.gov/doc/nrm/mnap/>
Maine Department of Marine Resources: <http://www.maine.gov/dmr/>
Maine Department of Transportation: <http://www.maine.gov/dot/>
Maine Geological Survey: <http://www.maine.gov/doc/nrm/mgs/mgs.htm>
Maine Department of Inland Fisheries & Wildlife: <http://www.maine.gov/wild/>

DIGITAL DATA REQUEST

To request digital data for a town or organization, please visit our website.
http://www.beginningwithahabitat.org/the_maps/gis_data_request.html


 Supported in part by Maine Outdoor Heritage Fund lottery ticket sales
 
 Map Prepared by Maine Department of Inland Fisheries & Wildlife
 
 Supported in part by Loon Conservation Plate funds
 
 MAINE DEPARTMENT OF NATURAL RESOURCES





JANET T. MILLS
GOVERNOR

MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

KIRK F. MOHNEY
DIRECTOR

January 14, 2019

Mr. Thomas W. Perkins
Dirigo Architectural
7 Cobblestone Dr, Suite 2
Turner, ME 04266

Project: MHPC #1757-18 Christmas Creek Subdivision; Tuttle Road
New Residential Subdivision
Town: Cumberland, ME

Dear Mr. Perkins:

In response to your recent request, I have reviewed the information received December 31, 2018 to initiate consultation on the above referenced project.

There are no known prehistoric archaeological sites on the property, but prehistoric archaeological sites are possible/probable within 50 yards of the unnamed Piscataqua River tributary creek (Christmas creek?) on the property. A phase I prehistoric archaeological survey is recommended prior to ground disturbance

A list of qualified prehistoric archaeologists has been enclosed and can be found on our website:
http://www.maine.gov/mhpc/project_review/consultants/prehistoric_archaeology.shtml.

No architectural or historic archaeological resources will be affected by this undertaking.

If you have any questions regarding archaeology, please contact Dr. Arthur Spiess of this office at Arthur.Spiess@maine.gov.

Sincerely,

Kirk F. Mohney
State Historic Preservation Officer



MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

JANET T. MILLS
GOVERNOR

KIRK F. MOHNEY
DIRECTOR

Archaeological Survey Guidelines

Updated: June 10, 2002

This document is provided as background information to agencies, corporations, professional consultants or individuals needing contract archaeological services (also known as Cultural Resources Management archaeology) in Maine. These guidelines are based on state rules (94-089 Chapter 812).

Project Types

The vast majority of contract archaeology survey work falls into one of three categories.

Phase I surveys are designed to determine whether or not archaeological sites exist on a particular piece of land. Such work involves checking records of previous archaeology in the area, walking over the landscape to inspect land forms and look for surface exposures of soil and possible archaeological material, and the excavation of shovel test pits in areas of high probability.

Phase II surveys are designed to focus on one or more sites that are already known to exist, find site limits by digging test pits, and determine site content and preservation. Information from Phase II survey work is used by the Maine Historic Preservation Commission (MHPC) to determine site significance (eligibility for listing in the National Register of Historic Places). Phase III archaeological work, often called data recovery, is careful excavation of a significant archaeological site to recover the artifacts and information it contains in advance of construction or other disturbance.

Archaeological sites are further divided into two broad categories of culture, prehistoric (or Native American), and historic (or European-American). Different archaeological specialists are usually needed for prehistoric or historic sites because the nature of content and preservation and site locations are quite different.

Scope of Work

In responding to a project submission, the MHPC may issue a letter specifying which type of archaeological survey is needed (prehistoric, historic or both) and at what level (Phase I, II, or III). Often the response letter contains further information, such as the suspected presence of an historic site of a certain age, or a statement that only a portion of the project parcel in question is sensitive for prehistoric sites and only that portion needs archaeological survey.

Once the project applicant has one or more scopes of work (proposals) from appropriate archaeologists (see below), the applicant should submit their preferred proposal (without attached financial information or bid total) to the MHPC for approval. MHPC will not comment upon cost, but will comment on the appropriateness of the scale and scope of the work. An approval from MHPC of the scope of work is the applicant's guarantee that, if the field and laboratory work are done according to the scope, and appropriately described in writing, the results will be accepted by MHPC.

The final written report on the project must also be submitted to MHPC for review and comment.

Finding an Archaeologist

At the time that MHPC issues a letter requiring archaeological survey work, MHPC will also supply one (or more) lists of archaeologists (Levels 1 and/or 2, historic or prehistoric) appropriate to the type of work (Phase I, II, III, historic or prehistoric). Archaeologists on the Level 2 Approved Lists can do projects of any level, including Phase I archaeological survey projects. Level 1 archaeologists are restricted to doing Phase I surveys, and certain planning projects for municipal governments.

MHPC maintains lists of archaeologists interested in working in different geographic areas of Maine, and those who are qualified in different types of work. The archaeologists themselves indicate their availability (except for short-term absence) to MHPC on a periodic basis, so archaeologists on the list can be expected to respond to inquiries. The applicant should solicit proposals or bids for work from archaeologists whose names appear on the list supplied by MHPC.

These archaeologists' names are taken from lists of archaeologists approved for work in Maine by MHPC under a set of rules establishing minimal qualifications, such as previous supervisory experience in northern New England, and an appropriate graduate degree. However, the inclusion of an archaeologist on one of these lists should not be interpreted as an endorsement by the MHPC beyond these limited qualification criteria. Moreover, the MHPC cannot recommend the services of an individual archaeologist.

Project Final Report

Whatever the archaeological survey result, a final report on the project should be submitted by the applicant to the MHPC. The MHPC will review the report, and issue further guidance or issue a "clearance" letter for the project.

Beginning with
HABITAT

An Approach to Conserving Maine's Natural
Space for Plants, Animals, and People

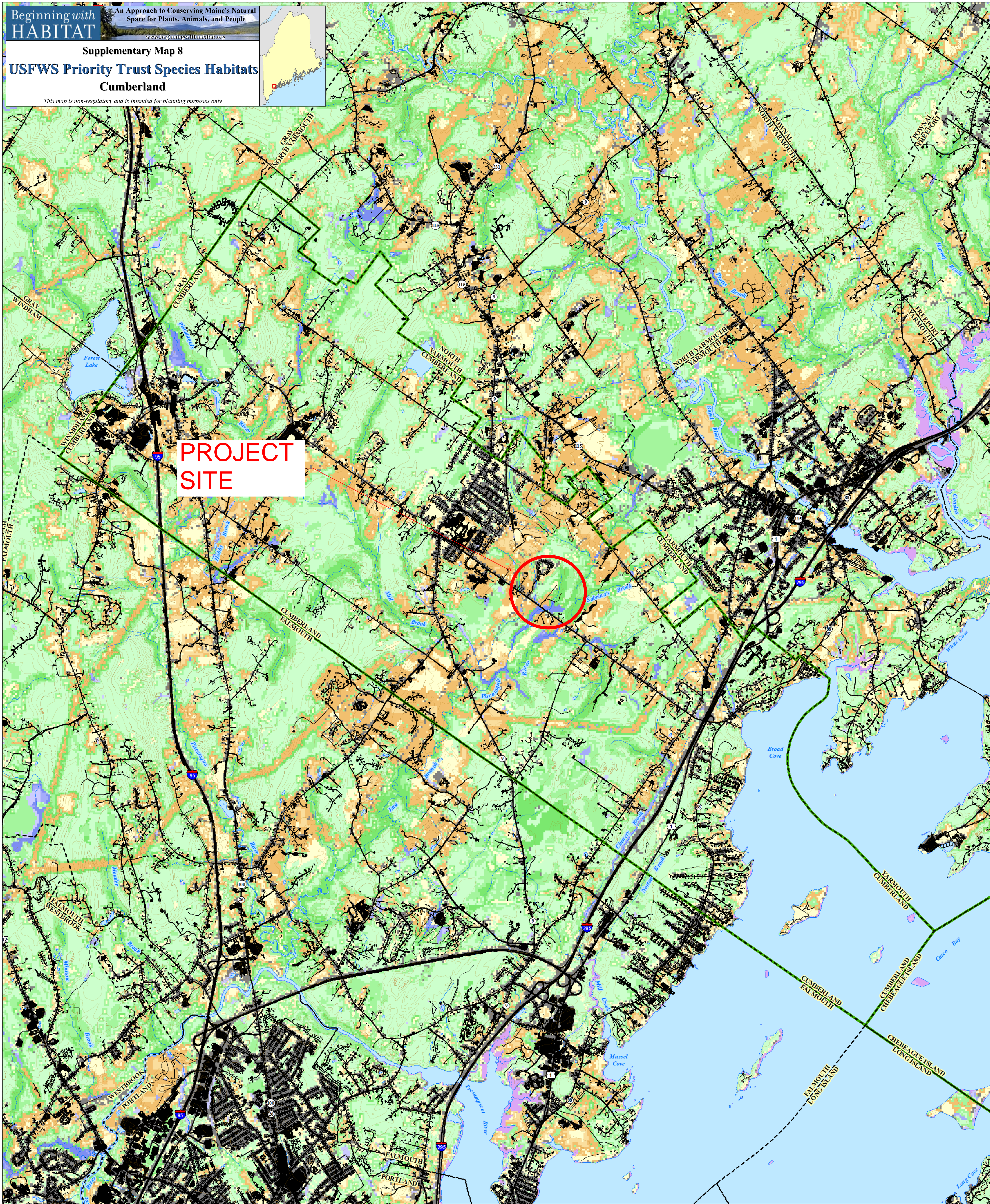
www.beginningwithhabitat.org

Supplementary Map 8

USFWS Priority Trust Species Habitats

Cumberland

This map is non-regulatory and is intended for planning purposes only



LEGEND

For more information about U.S. Fish & Wildlife Service Priority Trust Species, contact Bob Houston at the U.S. Fish & Wildlife Service Gulf of Maine Coastal Program (207-781-8364, robert_houston@fws.gov).

Introduction
This map identifies potentially valuable habitat for U.S. Fish and Wildlife Service (USFWS) Priority Trust Species based on the Gulf of Maine Watershed Habitat Analysis developed by the USFWS Gulf of Maine Coastal Program. This analysis was completed for the United States portion of the Gulf of Maine watershed that includes all of Maine, most of New Hampshire, and the eastern third of Massachusetts.

Habitat Types and Importance

- Township Boundary
- Unorganized Township Boundary
- Selected Town or Area of Interest
- Developed- Residential, Industrial, Commercial, and Roads

Habitats

Saltmarsh/saltwater	Freshwater wetlands (non-forested wetlands)
1 - 49%	1 - 49%
50 - 74%	50 - 74%
Top 25% (most important)	Top 25% (most important)
Grassland/shrub/bare ground	Forested (includes forested wetland)
1 - 49%	1 - 49%
50 - 74%	50 - 74%
Top 25% (most important)	Top 25% (most important)

Priority Trust Species

The 91 USFWS Gulf of Maine Priority Trust Species include animals and plants that regularly occur in the Gulf of Maine watershed and meet any of the following criteria:
+ Federally endangered, threatened, or candidate species;
+ Migratory birds, sea-run fish and marine fish that show significant and persistent declining population trends, or have been identified as endangered or threatened by 2 or 3 states in the Gulf of Maine watershed;
+ Species of concern as identified in the U.S. Shorebird Conservation Plan, Colonial Waterbird Plan or Partners in Flight.

An asterisk (*) following the name in the list of priority species below indicates that high value habitat depicted on the map at left has the potential to support that species.

BIRDS American bittern* American black duck * American oystercatcher American woodcock* Arctic tern Bald eagle* Baltimore oriole* Bay-breasted warbler Bicknell's thrush Black scoter Black tern Black-bellied plover* Blackburnian warbler* Blackpoll warbler Black-throated blue warbler* Blue-winged warbler Buff-breasted sandpiper Canada warbler* Cape May warbler Chestnut-sided warbler* Common loon* Common tern Eastern meadowlark* Field sparrow* Golden-winged warbler Grasshopper sparrow Hudsonian godwit Killdeer Least sandpiper* Least tern Little blue heron Little gull Louisiana waterthrush*	BIRDS (cont'd) Marsh wren* Nelson's sparrow Northern flicker * Northern goshawk* Northern harrier Olive-sided flycatcher Osprey* Peregrine falcon Pied-billed grebe* Piping plover Prairie warbler* Purple sandpiper Razorbill Red crossbill Red-headed woodpecker Red knot Red-shouldered hawk* Roseate tern Ruddy turnstone* Saltmarsh sparrow Sanderling Scaup (greater* and lesser) Seaside sparrow Sedge wren Semipalmated sandpiper Short-billed dowitcher Short-eared owl Snowy egret Solitary sandpiper* Spruce grouse Surf scoter* Tricolored heron	BIRDS (cont'd) Upland sandpiper Veery* Whimbrel Whip-poor-will* White-winged scoter Wilson's Snipe* Wood duck* Wood thrush* Yellow rail FISHERIES Alewife* American eel* American shad Atlantic salmon* Atlantic sturgeon Blueback herring Bluefish Horseshoe crab Shortnose sturgeon Winter flounder PLANTS E. prairie fringed orchid Furbish's lousewort Robbins' cinquefoil Small whorled pogonia MAMMAL Canada lynx REPTILE Plymouth redbelly turtle
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Mapping Valuable Habitat
Using a Geographic Information System (GIS), valuable habitat was mapped by combining field sightings (collected by various agencies and non-governmental organizations) and habitat modeling. Frequently, sightings are too limited to adequately represent all habitat used. Therefore, habitat models based on selected environmental conditions can be helpful in more fully predicting potential habitat utilization.

To create the final map shown on this page, we first identified habitat for each of the 91 species in the analysis and ranked its importance on a scale of one to ten, with ten being considered the most important. Next, we combined the scores for each of the species to create a sum of scores. Then, we subdivided the sum of scores into the four basic habitat types shown on this map. Finally, we portrayed the data in a three level gradient (the top 25%, the next 25%, and then, the bottom 50% of the habitat value for each habitat type). The top 25% may be considered the most important habitat in that gradient.

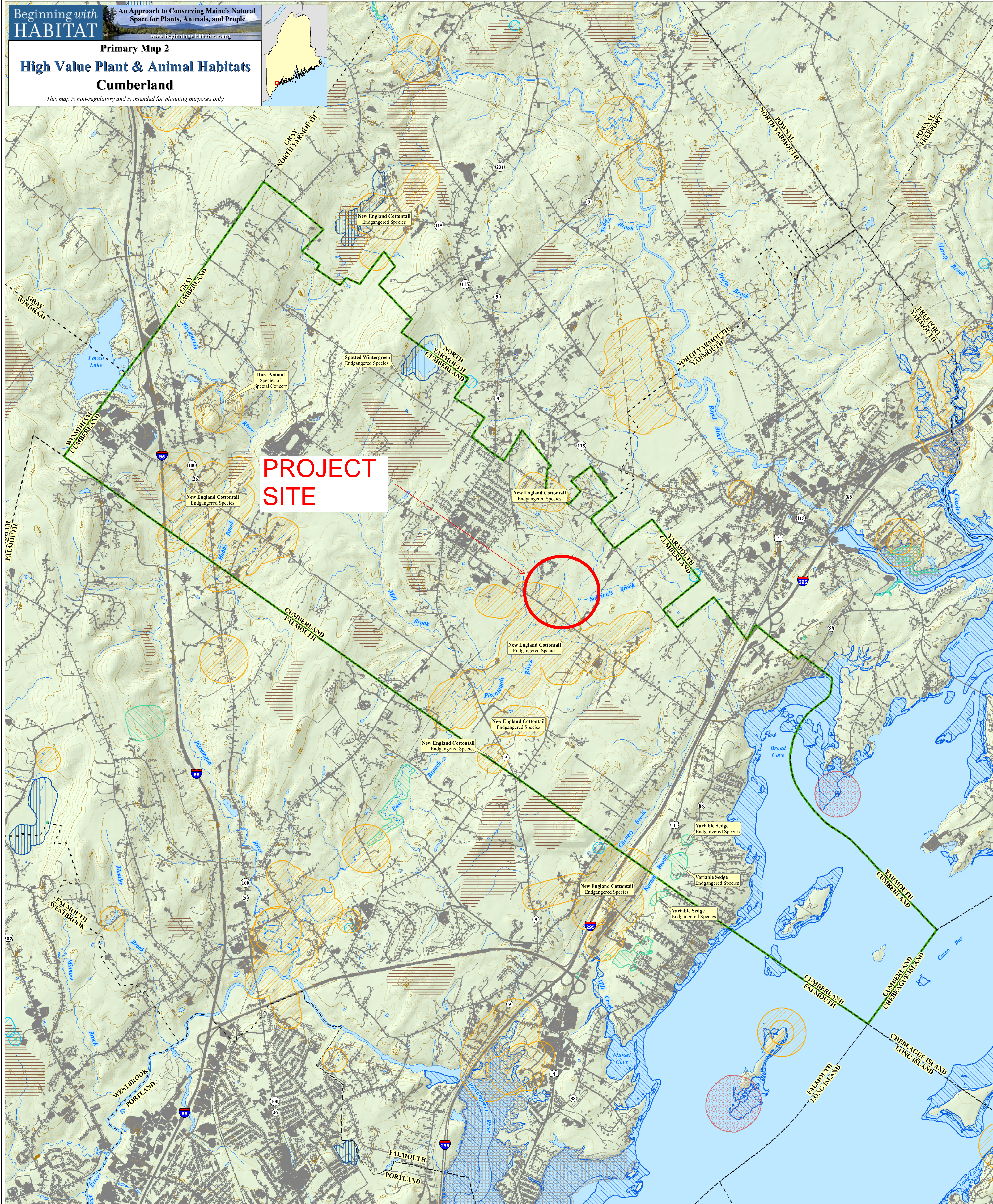
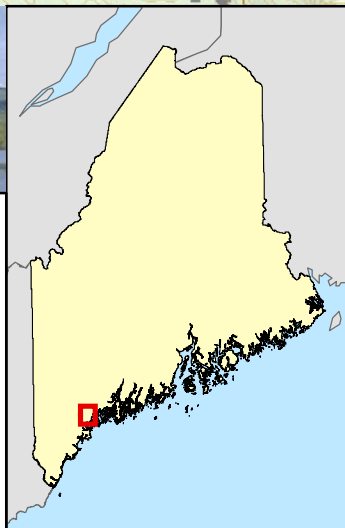
Uses of the Data
This map may be used in combination with other data sources to help identify potentially valuable wildlife habitat at the local or town level. This information can be incorporated into town comprehensive planning or open space planning. It may also be used to help prioritize habitat protection by local land protection organizations or to support grants for habitat protection. This map represents only one possible way of portraying the model results; there are many other maps that may be derived from the data. Please contact the Gulf of Maine Coastal Program for more information and assistance.

Limitations of the Data
Maps of habitats for individual species are limited by the accuracy and timeliness of the data sets used in developing them and by the validity of models used to interpret those data. We used the most recent data available and relied on species experts to review the models. We also tested predicted habitats using occurrence data. Habitat maps rely quite extensively on land cover and the land cover used for this project is based on the interpretation of 1993 satellite imagery with a resolution of 30 meters (each pixel on the map is about 1/4 acre). It is important to realize that if land cover has changed significantly since 1993 in a given area, the predicted habitat value for individual species may no longer be reliable. We must also emphasize that this map only depicts predicted high value habitat for the species included in the analysis; important habitat may exist for other species not included in this analysis. Other important USFWS habitat of significance includes Nationally Significant Maine Coastal Nesting Islands, areas around National Wildlife Refuges, and specific endangered species habitat. There also may be important habitat information available from state conservation agencies or other environmental organizations. In addition, this map does not show buffer zones that should be included to protect valuable wildlife habitat.

For More Information
The Gulf of Maine Coastal Program can provide more information that will help support your habitat protection initiatives. This includes detailed parcel-specific maps, detailed tables delineating habitat importance for each of the 91 species and assistance in grant-writing for some habitat protection grants. For more information please contact us or see our website <http://www.fws.gov/northeast/gulfofmaine>.

Data Sources

DATA SOURCE INFORMATION
(note: italicized file names can be downloaded from Maine Office of GIS)
TOWNSHIP BOUNDARIES
Maine Office of GIS (2006); *metwp24*
ROADS
Maine Office of GIS, Maine Department of Transportation (2005); *medotpub*
HYDROLOGY
Maine Office of GIS, U.S. Geological Survey (2004); *hyd24*
HIGH VALUE HABITAT FOR PRIORITY TRUST SPECIES
U.S. Fish & Wildlife Service-Gulf of Maine Coastal Program; *forest91, fresh91, grass91, saline91, gomlc7*
DATA SOURCE CONTACT INFORMATION
Maine Office of GIS: <http://www.maine.gov/megis/>
U.S. Fish & Wildlife Service: Gulf of Maine Coastal Program: <http://www.fws.gov/GOMCP>
Maine Department of Transportation: <http://www.maine.gov/mdot/>
Maine Geological Survey: <http://www.maine.gov/doc/nrmc/mgs/mgs.htm>
DIGITAL DATA REQUEST
To request digital data for a town or organization, or to request a CD containing GIS data of the Gulf of Maine Watershed Habitat Analysis, visit our website. http://www.beginningwithhabitat.org/the_maps/gis_data_request.html



LEGEND

Beginning with Habitat (BwH) is a voluntary tool intended to assist landowners, resource managers, planners, and municipalities in identifying and making informed decisions about areas of potential natural resource concern. This data includes the best available information provided through BwH's coalition partners as of the map date, and is intended for information purposes only. It should not be interpreted as a comprehensive analysis of plant and animal occurrences or other local resources, but rather as an initial screen to flag areas where agency consultation may be appropriate. Habitat data sets are updated continuously as more accurate and current data becomes available. However, as many areas have not been completely surveyed, features may be present that are not yet mapped, and the boundaries of some depicted features may need to be revised. Local knowledge is critical in providing accurate data. If errors are noted in the current depiction of resources, please contact our office. Some habitat features depicted on this map are regulated by the State of Maine through the Maine Endangered Species Act (Essential Habitats and threatened and endangered species occurrences) and Natural Resources Protection Act (Significant Wildlife Habitat). We recommend consultation with MDIFW Regional Biologists or MNAEP Ecologists if activities are proposed within resource areas depicted on this map. Consultation early in the planning process usually helps to resolve regulatory concerns and minimize agency review time. For MDIFW and MNAEP contact information, visit <http://www.beginningwithhabitat.org/contacts/index.html>.

- Organized Township Boundary
- Unorganized Township
- Selected Town or Area of Interest
- Developed: Impervious surfaces such as buildings and roads

Rare, Threatened, or Endangered Wildlife

- Known rare, threatened, or endangered species occurrence and/or the associated habitats based on species sightings.

Consult with an MDIFW regional biologist to determine the relative importance and conservation needs of the specific location and supporting habitat. For more information regarding individual species visit our website, http://www.maine.gov/wildlife/species/endangered_species/state_list.htm, for species specific fact sheets.

The Federal Endangered Species Act requires actions authorized, funded, or carried out by federal agencies be reviewed by the U. S. Fish and Wildlife Service. If your project occurs near an occurrence of the Atlantic Salmon, Roseate Tern, Piping Plover, Canada Lynx, New England Cottontail, Fish's Housewort, or Small-whorled Pagonia contact the Maine Field Office, USFWS, 1168 Main St., Old Town, ME 04468.

Rare or Exemplary Plants and Natural Communities

- Rare Plant Locations
- Known rare, threatened, or endangered plant occurrences are based on field observations. Consult with a Maine Natural Areas Program (MNAEP) Ecologist to determine conservation needs of particular species. For more information regarding rare plants, the complete list of tracked species and fact sheets for those species can be found at: <http://www.maine.gov/doc/nimc/mnap/features/planlist.htm>
- Rare or Exemplary Natural Community Locations

The MNAEP has classified and distinguished 98 different natural community types that collectively cover the state's landscape. These include such habitats as floodplain forests, coastal bogs, alpine summits, and many others. Each type is assigned a rarity rank of 1 (rare) through 5 (common). Mapped rare natural communities or ecosystems, or exemplary examples of common natural communities or ecosystems, are based on field surveys and aerial photo interpretation. Consult with an MNAEP Ecologist to determine conservation needs of particular communities or ecosystems.

Essential Wildlife Habitats

- Roseate Tern Nesting Area or Piping Plover-Least Tern Nesting, Feeding, & Brood-Rearing Area

Maine's Department of Inland Fisheries & Wildlife (MDIFW, www.state.me.us/ifw) maps areas currently or historically providing habitat essential to the conservation of endangered or threatened species as directed by the Maine Endangered Species Act (12 MRSA, Chapter 925, Subchapter 3, Sections 12804 and 12806) and regulations (MDIFW Rules, Chapter 8.05). Identification of Essential Habitat areas is based on species observations and confirmed habitat use. If a project occurs partly or wholly within an Essential Habitat, it must be evaluated by MDIFW before state and/or municipal permits can be approved or project activities can take place.

Significant Wildlife Habitats

- Candidate Deer Wintering Area
- Forested area possibly used by deer for shelter during periods of deep snow and cold temperatures. Assessing the current value of a deer wintering area requires on-site investigation and verification by IF&W staff. Locations depicted should be considered approximate only.
- Inland Waterfowl / Wading Bird
- Freshwater breeding, migration/staging, and wintering habitats for inland waterfowl or breeding, feeding, loafing, migration, or roosting habitats for inland wading birds.
- Seabird Nesting Island
- An island, ledge, or portion thereof in tidal waters with documented, nesting seabirds or suitable nesting habitat for endangered seabirds.
- Shorebird Areas
- Coastal staging areas that provide feeding habitat like tidal mud flats or roosting habitat like gravel bars or sand spits for migrating shorebirds
- Tidal Waterfowl / Wading Bird
- Breeding, migrating/staging, or wintering areas for coastal waterfowl or breeding, feeding, loafing, migrating, or roosting areas for coastal wading birds. Tidal Waterfowl/Wading Bird habitats include aquatic beds, eelgrass, emergent wetlands, mudflats, seaweed communities, and reefs.
- Significant Vernal Pools

A pool depression used for breeding by amphibians and other indicator species and that portion of the critical terrestrial habitat within 250 ft of the spring or fall high water mark. A vernal pool must have the following characteristics: natural origin, nonpermanent hydroperiod, lack permanently flowing inlet or outlet, and lack predatory fish.

Maine's Natural Resources Protection Act

Maine's Natural Resources Protection Act (NRPA, 1988) is administered by the Maine Department of Environmental Protection (MDEP; <http://www.maine.gov/dep/btwg/docstnd/nrpapage.htm>) and is intended to prevent further degradation and loss of natural resources in the state, including the above Significant Wildlife Habitats that have been mapped by MDIFW. MDEP has regulatory authority over most Significant Wildlife Habitat types. The regional MDEP office should be consulted when considering a project in these areas.

Atlantic Salmon Spawning/Rearing Habitat

- Atlantic Salmon Rearing Habitat
- Atlantic Salmon Spawning Habitat
- Atlantic Salmon Limited Spawning Habitat

Mapped by Atlantic Salmon Commission (ASC) and US Fish & Wildlife Service (USFWS) from field surveys on selected Penobscot and Kennebec River tributaries and the Denny's, Ducktrap, East Machias, Machias, Pleasant, Narragagus, and Sheepscot Rivers.

Data Sources

DATA SOURCE INFORMATION
(note: italicized file names can be downloaded from Maine Office of GIS)
TOWNSHIP BOUNDARIES
Maine Office of GIS (2006); *metwp24*
ROADS
Maine Office of GIS, Maine Department of Transportation (2005); *medotub*
HYDROLOGY
Maine Office of GIS, U.S. Geological Survey (2004); *hyd24*
DEVELOPED
Maine Office of GIS, Maine Department of Environmental Protection (contact agency for this multiple agency collaboration) (2005); *imperv*
ESSENTIAL & SIGNIFICANT WILDLIFE HABITATS
Maine Office of GIS, Maine Department of Inland Fisheries & Wildlife; *ehplvm, ehrtm, sni*
RARE NATURAL COMMUNITIES & PLANTS
Maine Natural Areas Program
ATLANTIC SALMON HABITAT
Maine Office of GIS, Maine Atlantic Salmon Commission, U.S. Fish & Wildlife Service (2006); *ashab3*

DATA SOURCE CONTACT INFORMATION
Maine Office of GIS: <http://www.maine.gov/negs/catalog/>
Maine Natural Areas Program: <http://www.maine.gov/nimc/mnap/>
Maine Department of Inland Fisheries & Wildlife: <http://www.maine.gov/ifw/>
U.S. Fish & Wildlife Service, Gulf of Maine Program: <http://gulfofmaine.fws.gov>
Maine Atlantic Salmon Commission: <http://www.maine.gov/ascl/>
Maine Department of Transportation: <http://www.maine.gov/mdot/>

DIGITAL DATA REQUEST
To request digital data for a town or organization, please visit our website: http://www.beginningwithhabitat.org/the_maps/gis_data_request.html

Beginning with
HABITAT

An Approach to Conserving Maine's Natural
Space for Plants, Animals, and People

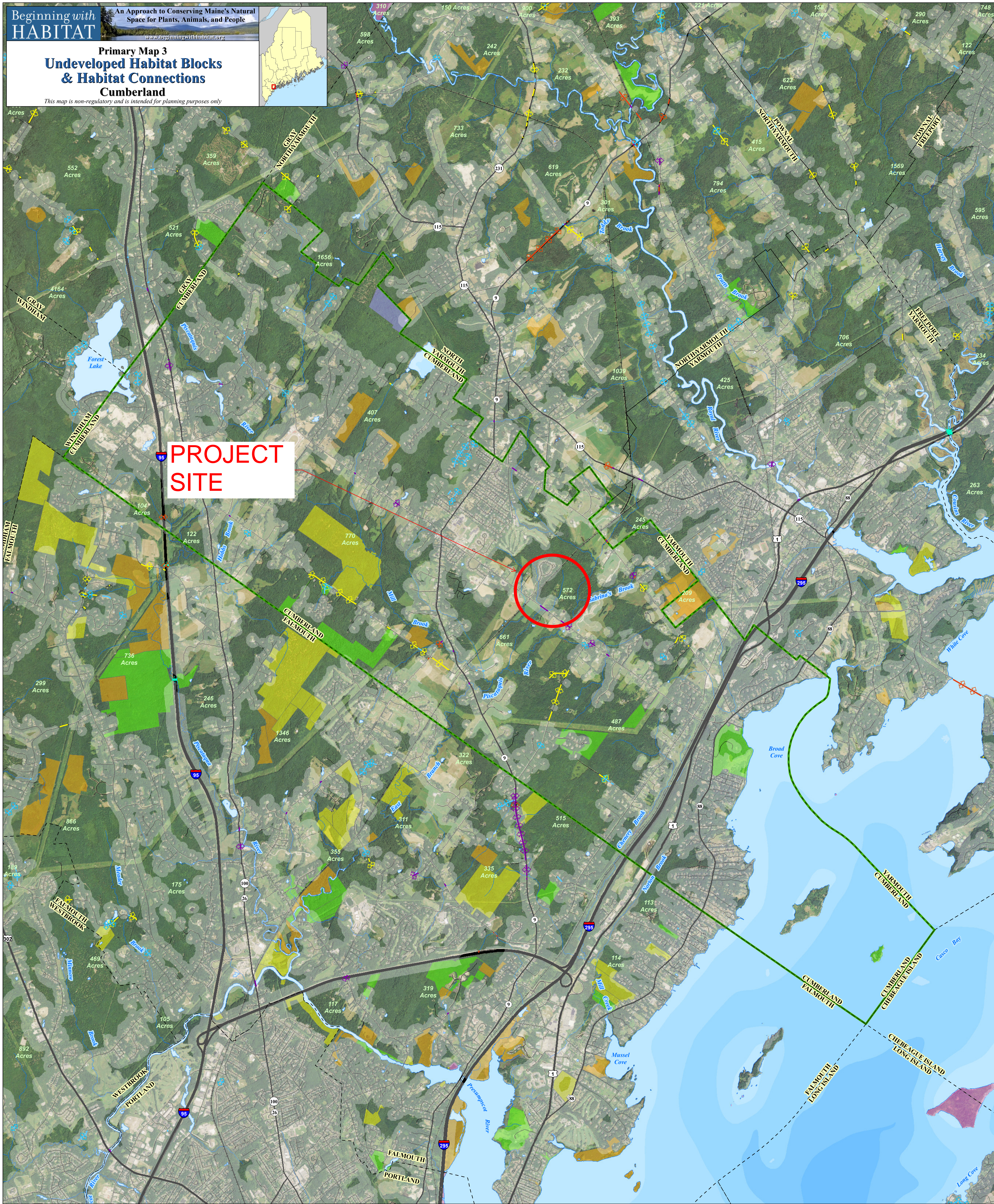
www.beginningwithhabitat.org

Primary Map 3

**Undeveloped Habitat Blocks
& Habitat Connections**

Cumberland

This map is non-regulatory and is intended for planning purposes only



LEGEND

This map highlights undeveloped natural areas likely to provide core habitat blocks and habitat connections that facilitate species movements between blocks. Undeveloped habitat blocks provide relatively undisturbed habitat conditions required by many of Maine's species. Habitat connections provide necessary opportunities for wildlife to travel between preferred habitat types in search for food, water, and mates. Roads and development fragment habitat blocks and can be barriers to moving wildlife. By maintaining a network of interconnected blocks towns and land trusts can protect a wide variety of Maine's species—both rare and common—to help ensure rich species diversity long into the future. Maintaining a network of these large rural open spaces also protects future opportunities for forestry, agriculture, and outdoor recreation.

- Organized Township Boundary
- Unorganized Township
- Selected Town or Area of Interest

Habitat Blocks

Development Buffer (pale transparency)
250-500 foot buffer around improved roads and developed areas based on development intensity.
Undeveloped Habitat Block
Remaining land outside of Development Buffers. Blocks greater than 100 acres are labeled with their estimated acreage.

Approximate Road Crossing Habitat Connections

Represented habitat connections identified through computer modeling highlight locations where quality habitat is likely to occur on both sides of a given road between undeveloped habitat blocks greater than 100 acres and between higher value wetlands. These representations are approximate and have not been field verified.

Undeveloped Block Connectors

Likely road crossing areas linking undeveloped habitat blocks greater than 100 acres. The threat of habitat fragmentation and animal mortality corresponds to traffic volume.
Yellow lines represent habitat road crossings with daily traffic volumes less than 2000 vehicles per day.
Red lines represent habitat road crossings with daily traffic volumes greater than 2000 vehicles per day.

Riparian Connectors

Likely crossing locations for wetland dependent species moving between waterways and wetlands divided by roads.
Blue lines represent riparian road crossings with daily traffic volumes less than 2000 vehicles per day.
Purple lines represent riparian road crossings with daily traffic volumes greater than 2000 vehicles per day.

Highway Bridge Connectors

Highway bridges along I-95 and I-295 that span riparian habitat connecting adjacent but separated habitat blocks. These are locations where species are likely to take advantage of infrastructure to move between habitat blocks.

Conserved Lands

The State of Maine's conserved lands database includes lands in federal, state, and non-profit ownership. It does not include many privately owned conservation lands, especially those protected by local land trusts, or town owned conservation lands. For the most accurate and current information about land ownership, consult with the local assessor and/or other local land management agencies. If public access potential to any of the properties displayed here is uncertain, landowners should be contacted to determine if permission is necessary.

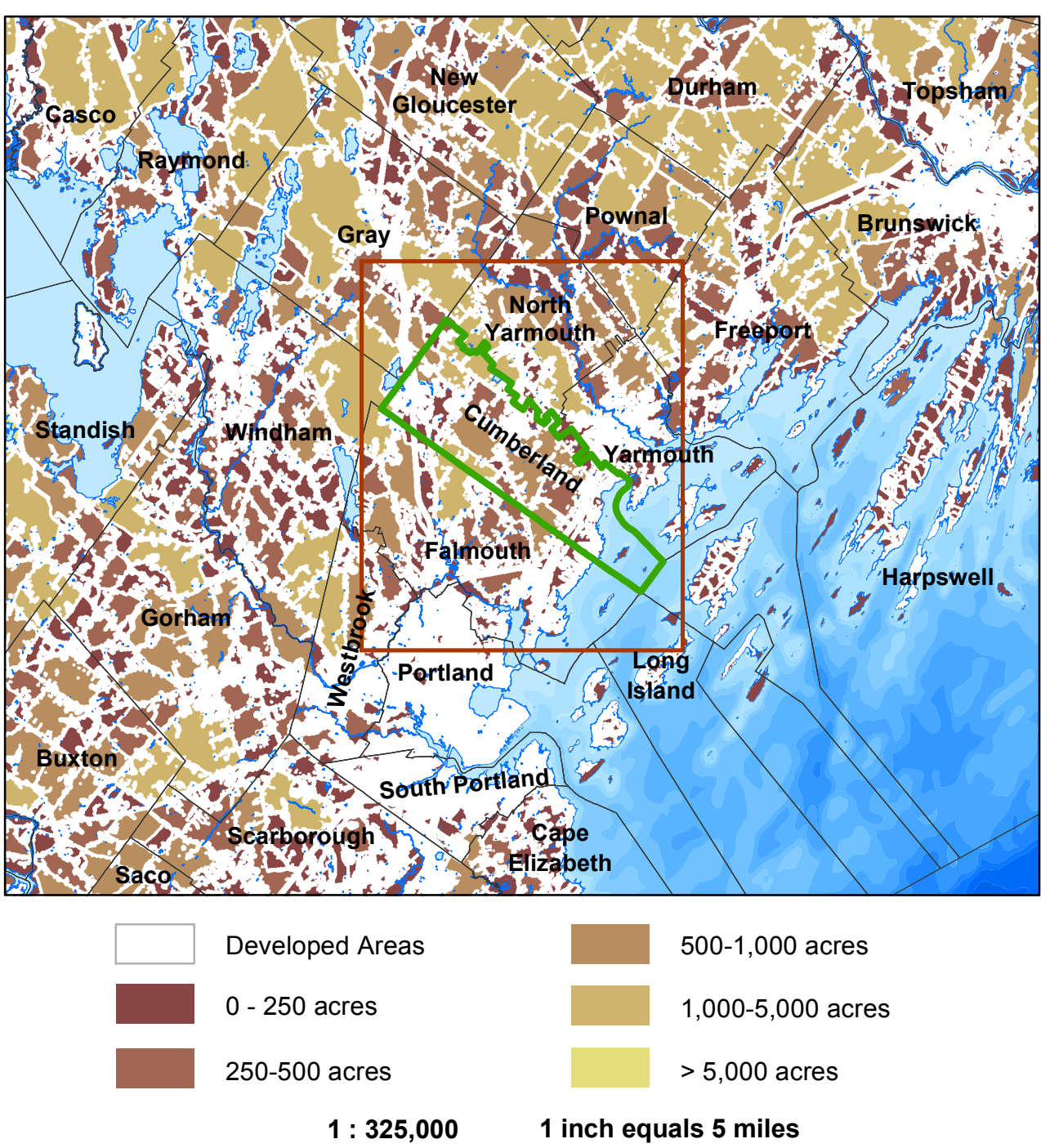
Ownership Type (transparent layers)

- Federal**
National parks, forests, and wildlife refuges. (Includes Canadian conserved lands.)
- State**
Wildlife Management Areas and other properties managed by the Department of Inland Fisheries and Wildlife, state parks, and parcels managed by the Bureau of Parks & Lands.
- Municipal**
Town parks, athletic fields, community forests, etc.
- Private Conservation**
Properties owned and managed by private (usually non-profit) organizations such as The Nature Conservancy, Maine Coast Heritage Trust, Trust for Public Land, and local land trusts.
- Easement**
Voluntary legal agreements that allow landowners to realize economic benefit by permanently restricting the amount and type of future development and other uses on all or part of their property as they continue to own and use it.

Aerial Imagery

Aerial imagery is often the best tool available to visualize existing patterns of development and resulting changes in the natural landscape. By depicting undeveloped habitat blocks, habitat connectors and conserved lands with aerial photos, the map user can more easily identify opportunities to expand the size and ecological effectiveness of local conservation efforts.

Regional Undeveloped Blocks



Data Sources

DATA SOURCE INFORMATION
(note: italicized file names can be downloaded from Maine Office of GIS)
TOWNSHIP BOUNDARIES
Maine Office of GIS (2006); *metwp24*
ROADS
Maine Office of GIS, Maine Department of Transportation (2005); *medotpb*
HYDROLOGY
Maine Office of GIS, U.S. Geological Survey (2004); *hyd24*
UNDEVELOPED HABITAT BLOCKS, DEVELOPMENT BUFFER, CONNECTORS
Beginning with Habitat
CONSERVATION LANDS
Bureau of Parks and Land, Land Use Regularity Commission, Department of Inland Fisheries and Wildlife, State Planning Office (2012); *conserved_land*
AERIAL IMAGERY
U.S. Department of Agriculture: NAIP 2011 - state-wide 1-meter color orthoimagery
DATA SOURCE CONTACT INFORMATION
Maine Office of GIS - <http://www.maine.gov/megis/catalog/>
Maine Natural Areas Program - <http://www.maine.gov/dnrimc/mmap/>
Maine Dept. of Inland Fisheries & Wildlife - <http://www.maine.gov/ifw/>
Maine Department of Transportation - <http://www.maine.gov/mdot/>
Maine Department of Environmental Protection - <http://www.maine.gov/dep/>
DIGITAL DATA REQUEST
To request digital data for a town or organization, visit our website.
http://www.beginningwithhabitat.org/the_maps/gis_data_request.html

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) Report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS Report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0 North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study Report for this jurisdiction.

The AE Zone category has been divided by a **Limit of Moderate Wave Action (LIMWA)**. The LIMWA represents the approximate landward limit of the 1.5-foot breaking wave. The effects of wave hazards between the VE Zone and the LIMWA (or between the shoreline and the LIMWA for areas where VE Zones are not identified) will be similar to, but less severe than those in the VE Zone.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study Report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 19. The **horizontal datum** was NAD 83, GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov> or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, NNGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at <http://www.ngs.noaa.gov>.

Base map information shown on this FIRM was derived from digital orthophotography. Basemap files were provided in digital form by State of Maine, Maine Office of GIS (MeGIS). Ortho imagery was produced at a scale of 1:500 and is dated August 2012. The projection used in the preparation of this map is Maine State Plane West (FIPSZONE 1802). The horizontal datum is NAD 83, GRS1980 spheroid.

The **profile baselines** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the **profile baseline**, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

Based on updated topographic information, this map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. As a result, the Flood Profiles and Floodway Data tables for multiple streams in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on the map. Also, the road to floodplain relationships for unrevised streams may differ from what is shown on previous maps.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

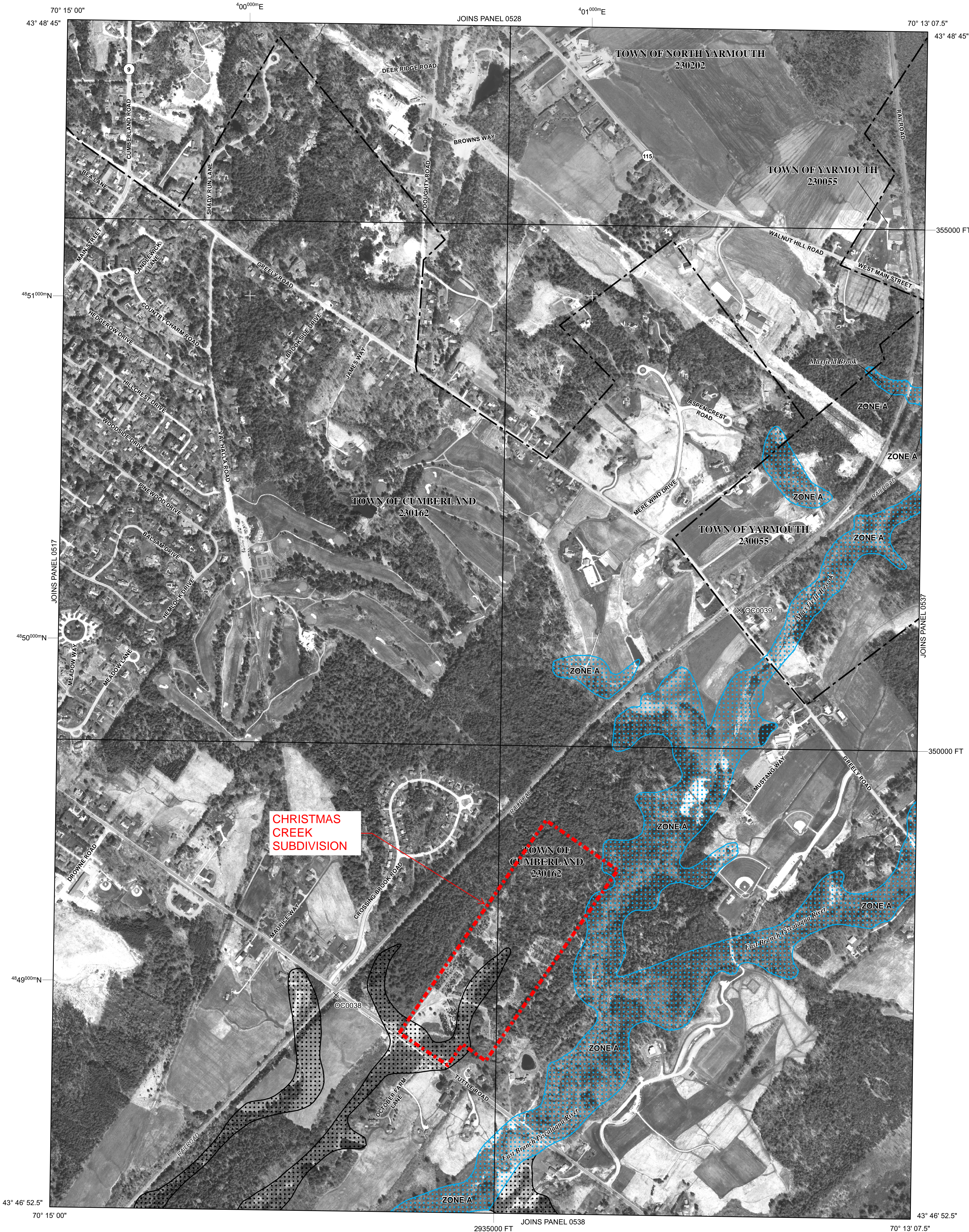
Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information on available products associated with this FIRM visit the **Map Service Center (MSC)** website at <http://msc.fema.gov>. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

If you have **questions about this map**, how to order products, or the National Flood Insurance Program in general, please call the **FEMA Map Information eXchange (FMIX)** at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov/business/nfip>.

State of Maine Floodway Note: Under the Maine Revised Statutes Annotated (M.R.S.A.) Title 38 § 439-A, 7C where the floodway is not designated on the Flood Insurance Rate Map, the floodway is considered to be the channel of a river or other water course and the adjacent land areas to a distance of one-half the width of the floodplain, as measured from the normal high water mark to the upland limit of the floodplain, unless a technical evaluation certified by a registered professional engineer is provided demonstrating the actual floodway based upon approved FEMA modeling methods.

Only coastal structures that are certified to provide protection from the 1-percent-annual chance flood are shown on this panel. However, all structures taken into consideration for the purpose of coastal flood hazard analysis and mapping are present in the DFIRM database in S_Gen_Struct.



LEGEND

- SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD**
The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.
- ZONE A** No Base Flood Elevations determined.
ZONE AE Base Flood Elevations determined.
ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently identified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.
- FLOODWAY AREAS IN ZONE AE**

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% Annual Chance Floodplain Boundary
0.2% Annual Chance Floodplain Boundary
Floodway boundary
Zone D boundary
CBRS and OPA boundary

Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities.

Limit of Moderate Wave Action

Limit of Moderate Wave Action coincident with Zone Break

Base Flood Elevation line and value: elevation in feet*
Base Flood Elevation value where uniform within zone: elevation in feet*

*Referenced to the North American Vertical Datum of 1988

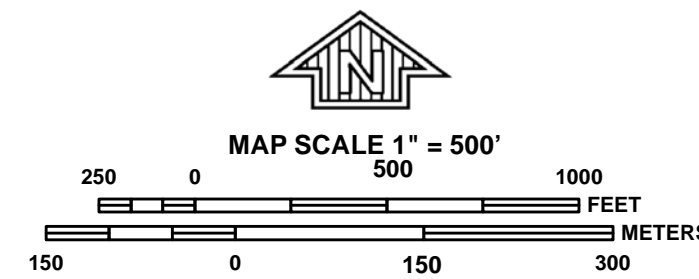
- A** Cross section line
23 Transsect line
Culvert
Bridge
Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere
5000-foot ticks: Maine State Plane West Zone (FIPS Zone 1802), Transverse Mercator projection
1000-meter Universal Transverse Mercator grid values, zone 19
Bench mark (see explanation in Notes to Users section of this FIRM panel)

MAP REPOSITORIES
Refer to Map Repositories list on Map Index
EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0536F

FIRM
FLOOD INSURANCE RATE MAP
CUMBERLAND COUNTY, MAINE
(ALL JURISDICTIONS)

PANEL 536 OF 862
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CUMBERLAND, TOWN OF	230162	0536	F
NORTH YARMOUTH, TOWN OF	230202	0536	F
YARMOUTH, TOWN OF	230055	0536	F

PRELIMINARY
NOVEMBER 5, 2013

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
23005C0536F
EFFECTIVE DATE

Federal Emergency Management Agency



Section 4: Wetlands



December 3, 2018
18080

WETLAND DELINEATION TUTTLE ROAD, CUMBERLAND

INTRODUCTION:

The purpose of this investigation is to determine the presence or absence of wetlands at an approximately 50-acre parcel identified as Map R4, Lot 10 by the Cumberland Assessor's Office.

The project area is located along the northeast side of Tuttle Road, Maine approximately 750 feet southeast of the intersection of Crossing Brook Road and Tuttle Road. The lot is centered at approximately N43 degrees, 19.1 minutes, W70 degrees, 14 minutes.

The Sebago Technics wetland delineation was conducted from July 5 to 20, 2018. The investigation involved plant identification, topographic analysis, and soil auger borings. The survey area (the "site") consists of the lot and is depicted on the attached Wetland and Stream Map.

STI identified wetland boundaries with a Trimble Juno handheld GPS connected to a Trimble R2 backpack antenna capable of submeter accuracy. Stream courses were identified from lidar-derived surface data generated in Global Mapper using a 2006 point cloud data set obtained from NOAA coastal data viewer along with data collected with the Trimble GPS.

LITERATURE REVIEW & SITE DESCRIPTION:

The site is located on the *U.S.G.S. Cumberland Center, Maine Quadrangle 7.5 Minute Series (1989 Edition)*. A review of the web soil survey for this site shows that the soil consists of Belgrade very fine sandy loam, Suffield silt loam, or Scantic silt loam. Belgrade soil forms in glacial lakebeds and toeslopes. Suffield soil forms on backslope portions of coastal plains, and Scantic soil forms in glacial marine terrace environments.

A review of *National Wetlands Inventory maps* reveals federally mapped wetlands at the south end and northeast corner of the site as well as a stream which traverses the property from north to south.

METHODOLOGY AND CLASSIFICATION:

The delineation of wetlands was conducted according to Town of Cumberland wetlands regulations and the *Corps of Engineers Wetlands Delineation Manual* dated January 1987, and according to performance standards and the supplemental definitions issued 1 August 1995 by the New England Division, U.S. Army Corps of Engineers. The term “wetlands” is defined by federal regulation to mean “...those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions...” (33 C.F.R. Part 323.2). In order to properly define these areas, three mandatory criteria must be met. These criteria define hydrophytic vegetation, hydric soils, and wetland hydrology. Hydrophytic vegetation fits into the wetland category when more than 50 percent of the dominant vegetation is within the range of obligate through facultative on the *National List of Plant Species That Occur in Wetlands: Northeast (Region 1)*. Hydric soil is any soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part. Wetland hydrology is the permanent or periodic inundation, or saturation of soil by groundwater for a significant period (usually two weeks or more) during the growing season. All three of the mandatory criteria, i.e., hydrophytic vegetation, hydric soil conditions, and wetland hydrology, were present within the mapped wetland areas.

The State of Maine Department of Environmental Protection Natural Resource Protection Act (Chapter 310 - Wetland and Waterbodies Protection) classifies some wetland areas as Wetlands of Special Significance. All coastal wetlands and great ponds are considered Wetlands of Special Significance. Additionally, certain freshwater wetlands are considered Wetlands of Special Significance. Freshwater Wetlands of Special Significance have one or more of the following characteristics:

1. Critically imperiled or imperiled community. The freshwater wetland contains a natural community that is critically imperiled (S1) or imperiled (S2) as defined by the Natural Areas Program.
2. Significant wildlife habitat. The freshwater wetland contains significant wildlife habitat as defined by 38 M.R.S.A. § 480-B (10).
3. Location near coastal wetland. The freshwater wetland area is located within 250 feet of a coastal wetland.
4. Location near GPA great pond. The freshwater wetland area is located within 250 feet of the normal high-water line, and within the same watershed, of any lake or pond classified as GPA under 38 M.R.S.A. § 465-A.
5. Aquatic vegetation, emergent marsh vegetation or open water. The freshwater wetland contains under normal circumstances at least 20,000 square feet of aquatic vegetation, emergent marsh vegetation or open water, unless the 20,000 or more-square foot area is the result of an artificial ponds or impoundment.
6. Wetlands subject to flooding. The freshwater wetland area is inundated with floodwater during a 100-year flood event based on flood insurance maps produced by the Federal Emergency Management Agency or other site-specific information.

7. Peatlands. The freshwater wetland is or contains peatlands, except that the department may determine that a previously mined peatland, or portion thereof, is not a wetland of special significance.
8. The freshwater wetland area is located within 25 feet of a river, stream or brook.

The identification of a Significant Vernal Pool must be conducted according to the State of Maine Department of Environmental Protection, Natural Resource Protection Act (Chapter 335 - Significant Wildlife Habitat). The policy reads:

“A vernal pool, also referred to as a seasonal forest pool, is a natural, temporary to semi-permanent body of water occurring in a shallow depression that typically fills during the spring or fall and may dry during the summer. Vernal pools have no permanent inlet and no viable populations of predatory fish. A vernal pool may provide the primary breeding habitat for wood frogs (*Rana sylvatica*), spotted salamanders (*Ambystoma maculatum*), blue-spotted salamanders (*Ambystoma laterale*), and fairy shrimp (*Eubrachipus sp.*), as well as valuable habitat for other plants and wildlife, including several rare, threatened, and endangered species. A vernal pool intentionally created for the purposes of compensatory mitigation is included in this definition.

“Whether a vernal pool is a Significant Vernal Pool is determined by the number and type of pool-breeding amphibian egg masses in a pool, or the presence of fairy shrimp, or use by threatened or endangered species as specified in Section 9(B). The Significant Vernal Pool habitat consists of the vernal pool depression and a portion of the critical terrestrial habitat within a 250-foot radius of the spring or fall high water mark of the depression. An activity that takes place in, on, over, or adjacent to a Significant Vernal Pool habitat must meet the standards of this chapter.”

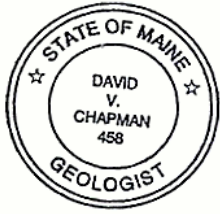
Many natural wetland areas can be ruled out as being or containing a Significant Vernal Pool based on the following criteria: land surface morphology, permanent standing water, a permanently flowing inlet or outlet and/or the presence of fish. However, under many circumstances it is impossible to determine whether or not a particular wetland contains a Significant Vernal Pool. Under these circumstances, two or more vernal pool surveys during the Spring are required to determine whether or not a Significant Vernal Pool exists on-site.

CONCLUSIONS:

The conclusions of this wetland delineation are as follows:

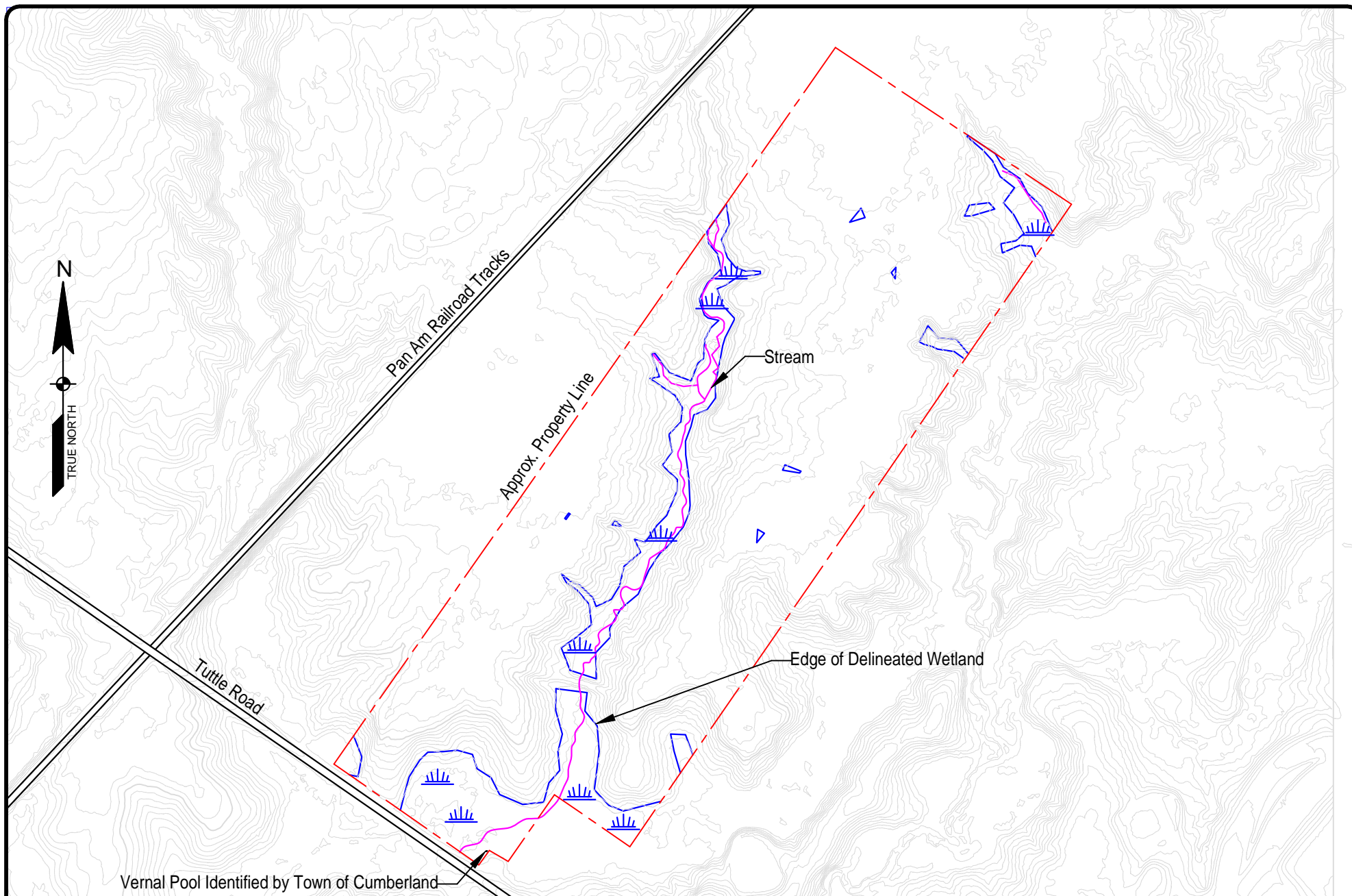
- Wetland areas and streams were observed at the site. These areas are depicted on the attached Wetland and Stream Map.
- One potential vernal pool was identified on a Town of Cumberland map (#193 on vernal_pool_map_east_of_main_st.pdf from www.lcumberlandmaine.com) and is depicted on the Wetland and Stream Map.
- Wetlands within 25 feet of the streams are considered to be wetlands of special significance.

Sincerely,
SEBAGO TECHNICS, INC.



A handwritten signature in black ink that reads "David V. Chapman".

Dave Chapman, LSE
Certified Geologist #458



SEBAGO
TECHNICS

WWW.SEBAGOTECHNICS.COM

75 John Roberts Rd. Suite 1A
South Portland, ME 04106
Tel. 207-200-2100

250 Goddard Rd. Suite B
Lewiston, ME 04240
Tel. 207-783-5656

WETLAND AND STREAM MAP

LOCATION: TUTTLE ROAD
CUMBERLAND, MAINE

FOR: DIRIGO ARCHITECTURAL ENGINEERING
7 COBBLESTONE DRIVE, SUITE 2
TURNER, MAINE 04282

SCALE: 1" = 400'

DATE: 12-3-18

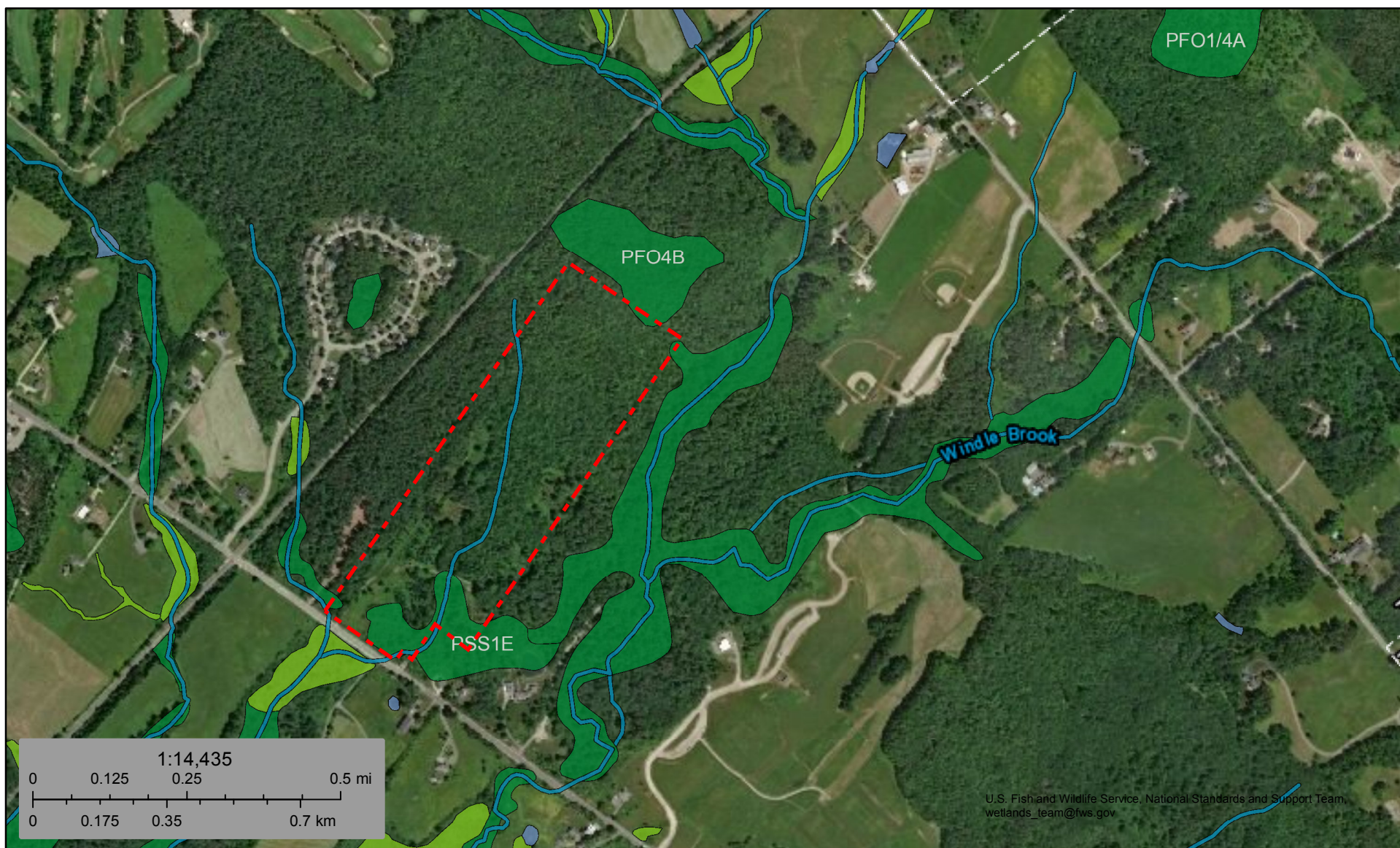
SHEET:
1 OF 1



U.S. Fish and Wildlife Service


National Wetlands Inventory

Christmas Creek and Extension

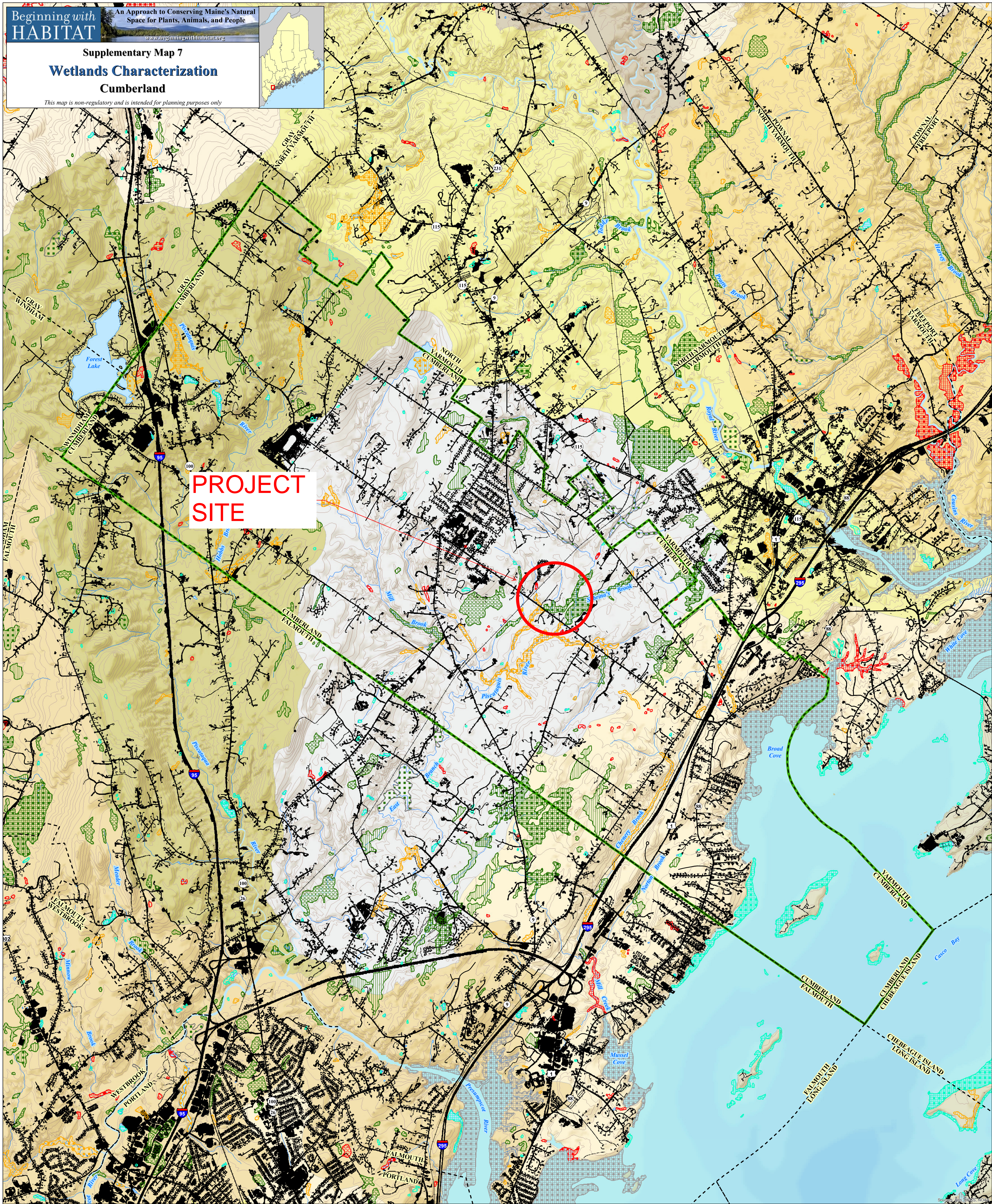


October 26, 2018

Wetlands

 Estuarine and Marine Deepwater	 Freshwater Emergent Wetland	 Lake
 Estuarine and Marine Wetland	 Freshwater Forested/Shrub Wetland	 Other
	 Freshwater Pond	 Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.



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An Approach to Conserving Maine's Natural
Space for Plants, Animals, and People

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Supplementary Map 7

Wetlands Characterization

Cumberland

This map is non-regulatory and is intended for planning purposes only

LEGEND

This map depicts all wetlands shown on National Wetland Inventory (NWI) maps, but categorized them based on a subset of wetland functions. This map and its depiction of wetland features neither substitute for nor eliminate the need to perform on-the-ground wetland delineation and functional assessment. In no way shall use of this map diminish or alter the regulatory protection that all wetlands are accorded under applicable State and Federal laws. For more information about wetlands characterization, contact Elizabeth Hertz at the Maine Department of Conservation (207-287-8061, elizabeth.hertz@maine.gov).

The Wetlands Characterization model is a planning tool intended to help identify likely wetland functions associated with significant wetland resources and adjacent uplands. Using GIS analysis, this map provides basic information regarding what ecological services various wetlands are likely to provide. These ecological services, each of which has associated economic benefits, include: floodflow control, sediment retention, finfish habitat, and/or shellfish habitat. There are other important wetland functions and values not depicted in this map. Refer to www.maine.gov/dep/water/wetlands/ipwetfv2.html for additional information regarding wetland functions and values. Forested wetlands and small wetlands such as vernal pools are known to be underrepresented in the National Wetlands Inventory (NWI) data used to create this map. The model developed to estimate the functions provided by each wetland could not capture every wetland function or value. Therefore, it is important to use local knowledge and other data sources when evaluating wetlands, and each wetland should be considered relative to the whole landscape/watershed when assessing wetland resources at a local level.

Organized Township Boundary

Unorganized Township

Selected Town or Area of Interest

Developed: Impervious surfaces including buildings and roads

Subwatersheds: The shaded, background polygons are subwatersheds (areas that drain to a particular lake, wetland, pond, river, stream, or the ocean). The subwatersheds are shaded to show topographic relief. The "hillshading" assumes the sun is shining from the northwest, so ridgetops and northwest-facing slopes appear light, whereas valleys and southeast-facing slopes appear dark. Because many areas of Maine are relatively flat, the topographic relief shown here has been exaggerated to make the details easier to see.

Wetland Functions: Fill Pattern

Some wetlands may have more than one function (fill pattern)

- RUNOFF / FLOODFLOW ALTERATION**
Wetlands provide natural stormwater control capabilities. As natural basins in the landscape, wetlands are able to receive, detain, and slowly release stormwater runoff. Wetland shelves along stream banks naturally regulate flood waters by providing an area for swollen stream flows to expand and slow, thereby protecting downstream properties. This map assigns Runoff/Floodflow Alteration Functions to wetlands that are (a) contained in a known flood zone, (b) associated with a surface water course or waterbody, and (c) with slope < 3%.
- AND/OR**
EROSION CONTROL / SEDIMENT RETENTION
Wetlands act as natural sponges that can hold water, allowing suspended particles such as sediment to settle out. The dense vegetation in most wetlands helps to stabilize soil and water flows, thereby reducing scouring and bank erosion. This map assigns Erosion Control / Sediment Retention functions to wetlands with (a) slope < 3%; (b) emergent vegetation; and (c) close proximity to a river, stream, or lake.
- FINFISH HABITAT**
Wetlands with documented finfish populations, including wetlands adjacent to a river, stream, or lake.
- AND/OR**
SHELLFISH HABITAT
Inland wetlands and streams can directly affect the status of coastal shellfish harvest areas. Fecal coliform bacteria and waterborne nutrients resulting from land use changes away from the coast can travel via streams to coastal shellfish harvestable flats. One failed septic system near a stream could close a mudflat several miles away. Excessive nutrients can reduce water clarity and stimulate epiphytic growth that degrades eelgrass meadows. Conservation of freshwater wetlands and stream buffers in coastal watersheds is a key component in marine resource conservation. This map assigns a Shellfish Habitat function to wetlands within 0.5 miles of (a) identified shellfish habitat, (b) identified shellfish closure areas, or (c) mapped eelgrass beds OR palustrine wetlands directly connected by a stream of < 0.5 mile in length to (a) identified shellfish habitat, (b) identified shellfish closure areas, or (c) mapped eelgrass beds.
- PLANT/ANIMAL HABITAT**
Nearly all wildlife species, and many of Maine's plant species, depend on wetlands during some part of their life cycle. For the purposes of this map, wetlands containing open water or emergent vegetation, 3 or more wetland vegetation classes (see below), and within ¼ mile of a known rare, threatened, or endangered plant or animal occurrence, within ¼ mile of a mapped significant or essential habitat, or within ¼ mile of a rare or exemplary natural community have been assigned this function. Rare element occurrences and mapped habitats can be found on Map 2 High Value Plant & Animal Habitats.
- OTHER FUNCTIONS**
CULTURAL/EDUCATIONAL. Wetlands within ¼ mile of a boat ramp or school have been assigned this value as these wetlands are likely candidates for use as outdoor classrooms, or similar social benefit. Wetlands rated for other functions listed above may also demonstrate cultural/educational values although not expressly shown.
- OR**
NO DOCUMENTED FUNCTION. The basis of this characterization is high altitude aerial photos. Photo quality often limits the information that can be interpreted from small wetland features, or those with dense canopy cover. Although not assigned a function under this study, ground surveys may reveal that these wetlands have multiple functions and values.

Wetland Class: Fill Color

- Aquatic Bed (floating or submerged aquatic vegetation), Open Water
- Emergent (herbaceous vegetation), Emergent/Forested Mix (woody vegetation >20 ft tall), Emergent/Shrub-Scrub Mix (woody vegetation <20 ft tall)
- Forested, Forested/Shrub-scrub
- Shrub-scrub
- Other (rocky shore, streambed, unconsolidated shore, reef, rocky bottom)

National Wetlands Inventory (NWI) maps (the basis of wetlands shown on this map) are interpreted from high altitude photographs. NWI Wetlands are identified by vegetation, hydrology, and geography in accordance with "Classification of Wetlands and Deepwater Habitats" (FWS/OBS-79/31, Dec 1979). The aerial photographs document conditions for the year they were taken. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, State, or local government. NWI maps depict general wetland locations, boundaries, and characteristics. They are not a substitute for on-ground, site-specific wetland delineation.

Data Sources

- DATA SOURCE INFORMATION**
(note: italicized file names can be downloaded from Maine Office of GIS)

TOWNSHIP BOUNDARIES
Maine Office of GIS (2006); *metwp24*

ROADS
Maine Office of GIS, Maine Department of Transportation (2005); *medotpub*

HYDROLOGY
Maine Office of GIS, U.S. Geological Survey (2004); *hyd24*

DEVELOPED
Maine Office of GIS, Maine Department of Environmental Protection (contact agency for this multiple agency collaboration) (2005); *imperv*

NATIONAL WETLANDS INVENTORY (NWI)
Maine Office of GIS (1998); *nwi*

DRAINAGE DIVIDES
Maine Office of GIS (1994); *medrdiv*

DATA SOURCE CONTACT INFORMATION
Maine Office of GIS: <http://www.maine.gov/megis/>
Maine Department of Transportation- <http://www.maine.gov/mdot/>
Maine Department of Conservation- <http://www.maine.gov/doc/commissioner/landuse/index.shtml>
Maine Geological Survey- <http://www.maine.gov/doc/nrmc/mgs/mgs.htm>

DIGITAL DATA REQUEST
To request digital data for a town or organization, visit our website.
http://www.beginningwithhabitat.org/the_maps/gis_data_request.html

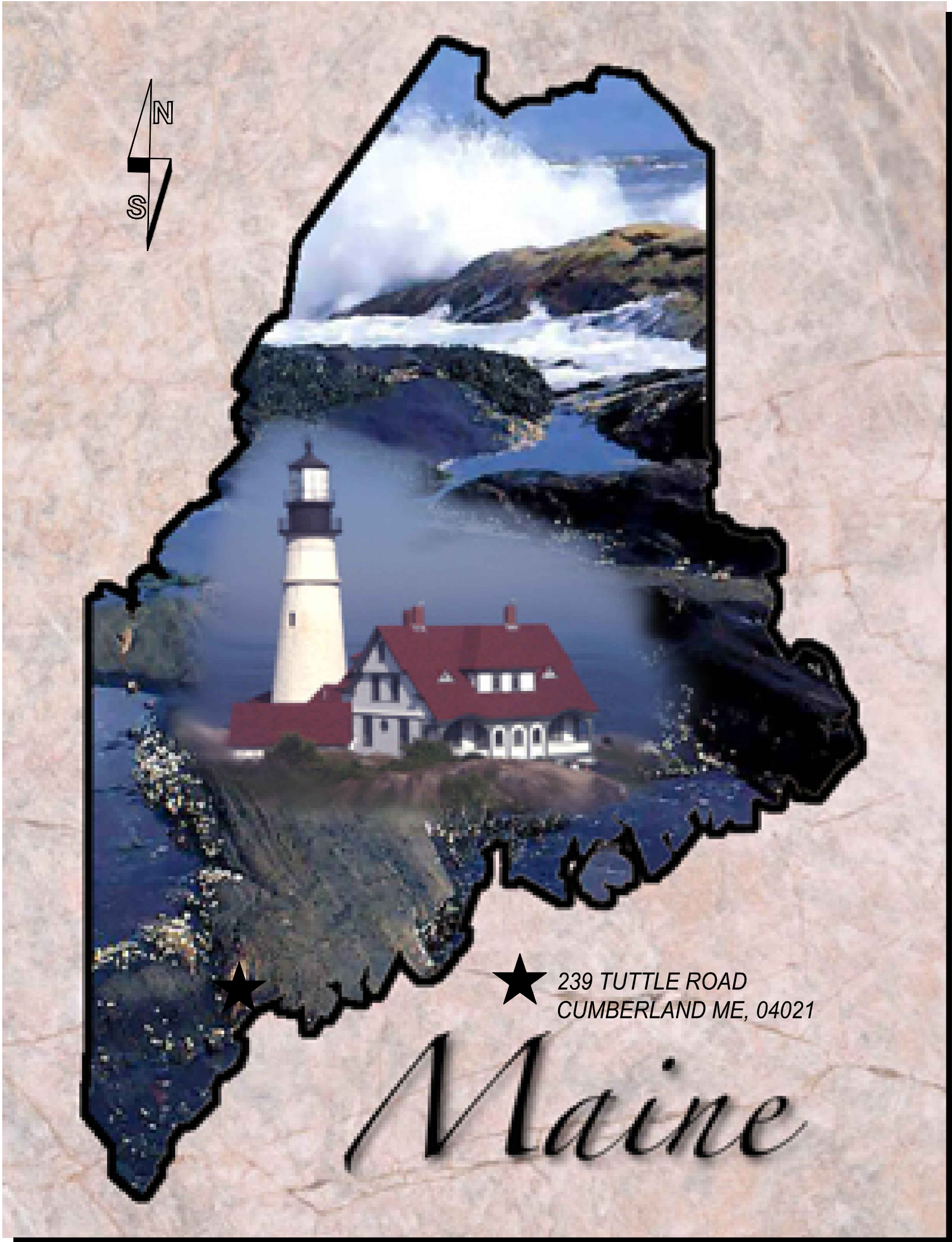


Section 5: Drawing Package

CHRISTMAS CREEK SUBDIVISION

CUMBERLAND, MAINE

PROJECT #: 18-015



LOCATION MAP

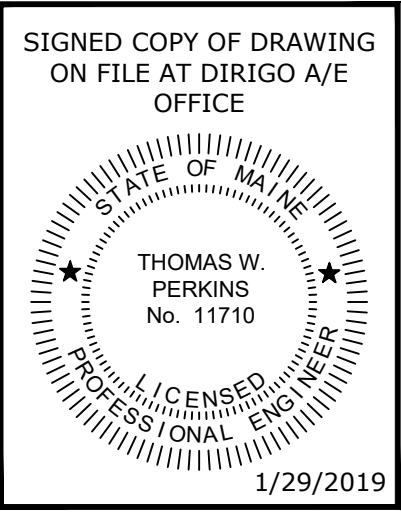


VICINITY MAP

DRAWING INDEX	
CIVIL	
C1.0	EXISTING CONDITIONS
10F2	BOUNDARY SURVEY
20F2	BOUNDARY SURVEY
C2.0	SUBDIVISION PLAN
C2.1	ENTRANCE PLAN
C2.4	EROSION CONTROL PLAN
C2.5	EROSION CONTROL NOTES
C2.6	SITE/UTILITY DETAILS
C3.0	OVERALL GRADING + DRAINAGE PLAN AND PROFILE
C3.1	GRADING PLAN & PROFILE
C3.2	GRADING PLAN & PROFILE
C3.3	GRADING PLAN & PROFILE
C3.4	GRADING PLAN & PROFILE
C3.5	ROAD SECTIONS
A	STORM WATER PREDEVELOPMENT
10F1	POND DETAILS
C4.0	OVERALL UTILITY PLAN
C4.1	UTILITY PLAN & PROFILE
C4.2	UTILITY PLAN & PROFILE
C4.3	UTILITY PLAN & PROFILE
C4.4	UTILITY PLAN & PROFILE
C5.0	TRAIL PLAN

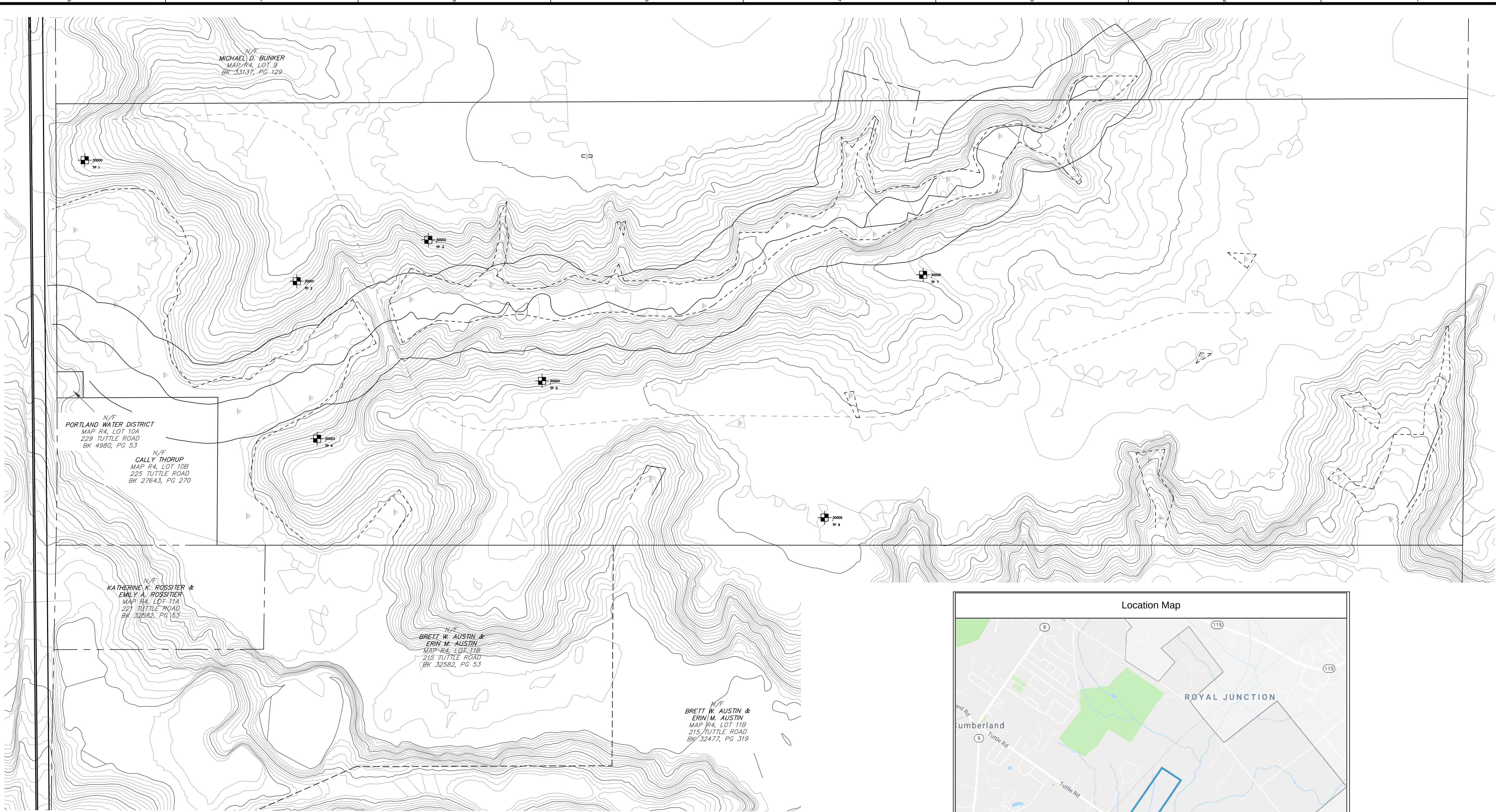


PLANNING BOARD -
PRELIMINARY APPLICATION
REVIEW



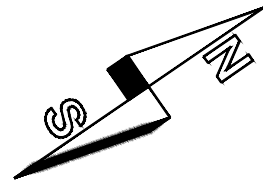
"STATEMENT AND NOTICE OF COOPERATION"
RELEASE OF THESE PLANS CONTEMPLATES FURTHER COOPERATION AMONG THE OWNER, HIS CONTRACTOR AND THE ENGINEER. DESIGN AND CONSTRUCTION ARE COMPLEX. ALTHOUGH THE ENGINEER AND HIS CONSULTANTS HAVE PERFORMED THEIR SERVICES WITH DUE CARE AND DILIGENCE, THEY CANNOT GUARANTEE PERFECTION. COMMUNICATION IS IMPERFECT, AND EVERY CONTINGENCY CANNOT BE ANTICIPATED. ANY AMBIGUITY OR DISCREPANCY DISCOVERED BY THE USE OF THESE PLANS NEED TO BE REPORTED IMMEDIATELY TO THE ENGINEER. FAILURE TO NOTIFY THE ENGINEER COMPOUNDS MISUNDERSTANDING AND INCREASES CONSTRUCTION COSTS. A FAILURE TO COOPERATE BY A SIMPLE NOTICE TO THE ENGINEER RELIEVES THE ENGINEER FROM RESPONSIBILITY FOR ALL CONSEQUENCES. CHANGES MADE FROM THE PLANS WITHOUT CONSENT OF THE ENGINEER ARE UNAUTHORIZED, AND RELIEVE THE ENGINEER OF RESPONSIBILITY FOR ALL CONSEQUENCES ARISING OUT OF SUCH CHANGES. IN MANY CASES SUCH RELIEF OF RESPONSIBILITY INCLUDES RELIEF OF OWNER RESPONSIBILITY. THE CONTRACTOR AND HIS SUBCONTRACTORS NEED BE DILIGENT IN THESE MATTERS AT ALL TIMES PRIOR TO AND DURING CONSTRUCTION. REFER TO CONTRACT GENERAL AND SUPPLEMENTAL CONDITION AND SPECIFICATIONS (PROJECT MANUAL) FOR ADDITIONAL DETAILS AND CONDITIONS.

Jan 29, 2019 - 11:27am
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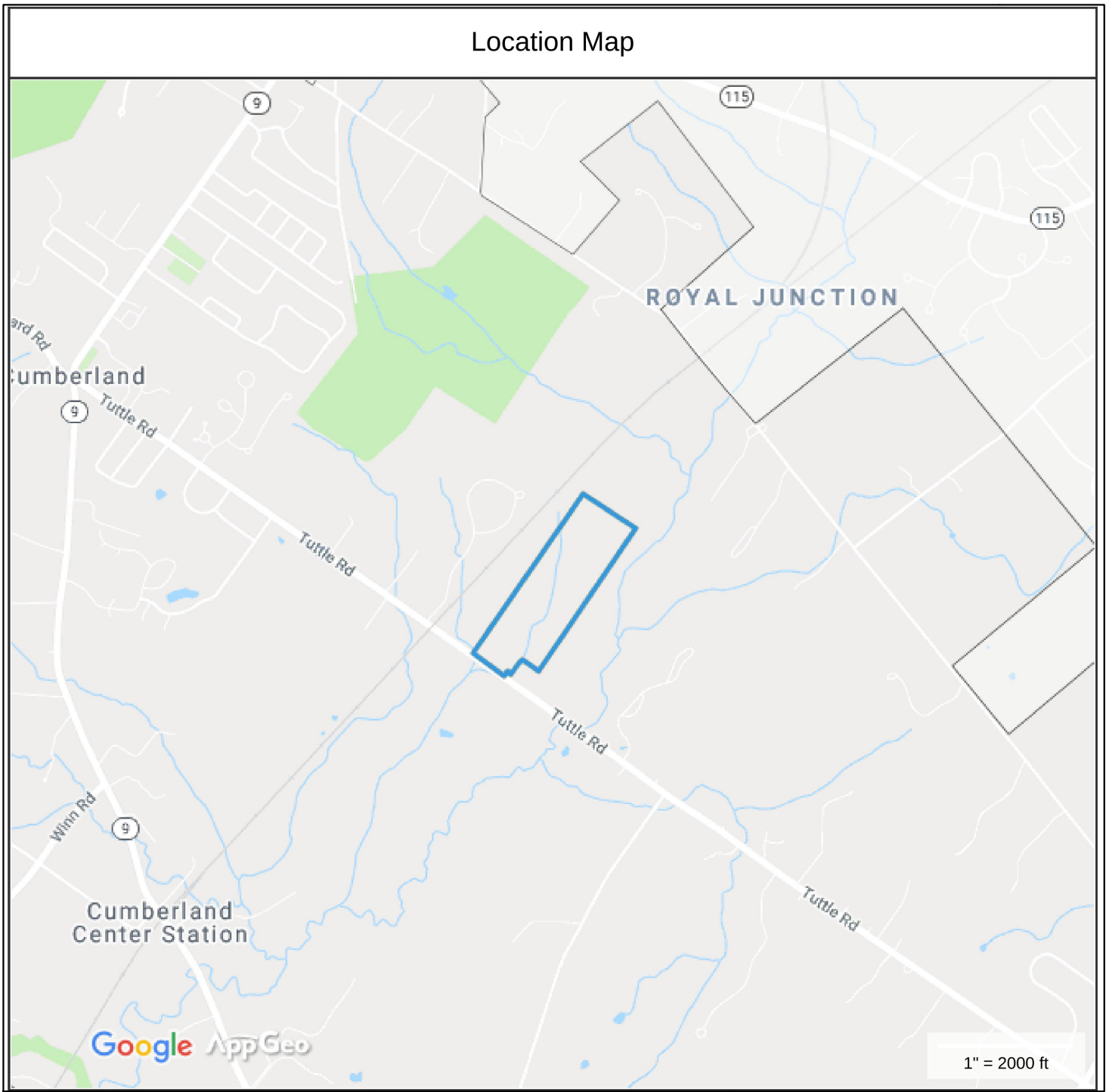
LEGEND

- BOUNDARY LINE
- SET BACK
- TREE CLEARING LIMITS
- IRON ROD FOUND
- EXISTING TRAIL SYSTEM
- PROPOSED TRAIL SYSTEM
- TRAIL BRIDGE CROSSING
- EDGE OF WETLANDS
- STREAM BED



EXISTING CONDITIONS PLAN
22X34 SCALE: 1"=100'
11X17 SCALE: 1"=200'

1
C1.0



LOCATION MAP
22X34 SCALE: 1"=2000'
11X17 SCALE: 1"=4000'

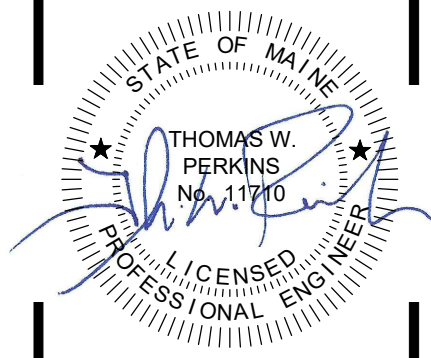
2
C1.0

CHRISTMAS CREEK
SUBDIVISION

CUMBERLAND

MAINE

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EXISTING CONDITIONS PLAN

REV.	DATE	DESCRIPTION
0	10/30/18	PLANNING BOARD - PRELIMINARY PLAN REVIEW
1	10/30/18	PLANNING BOARD - PRELIMINARY APPLICATION REVIEW

DRAWN BY: ZIQ
CHECKED BY: TWP

PH: (207) 225 - 3040
7 Cobblestone Way,
Suite 2
Turner, ME 04282



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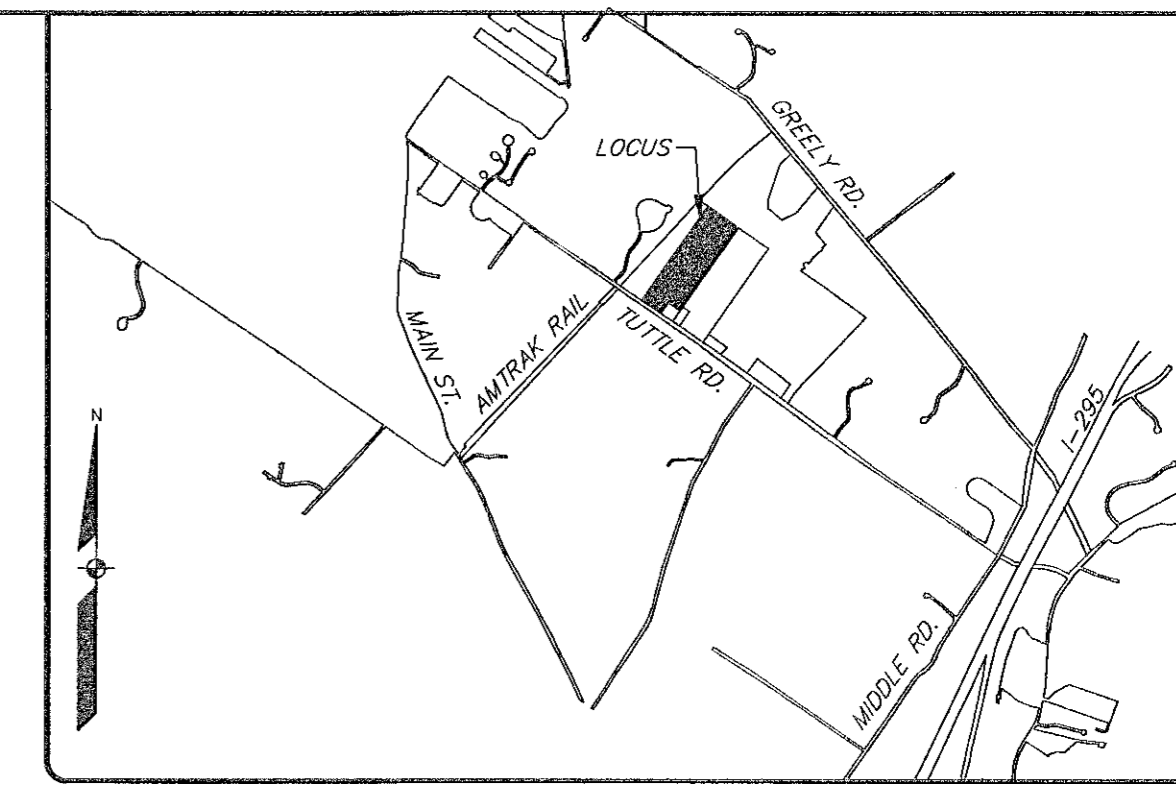
ENGINEERING • CONSTRUCTION MANAGEMENT
EM:tperkins@dirigoae.com W:www.dirigoae.com

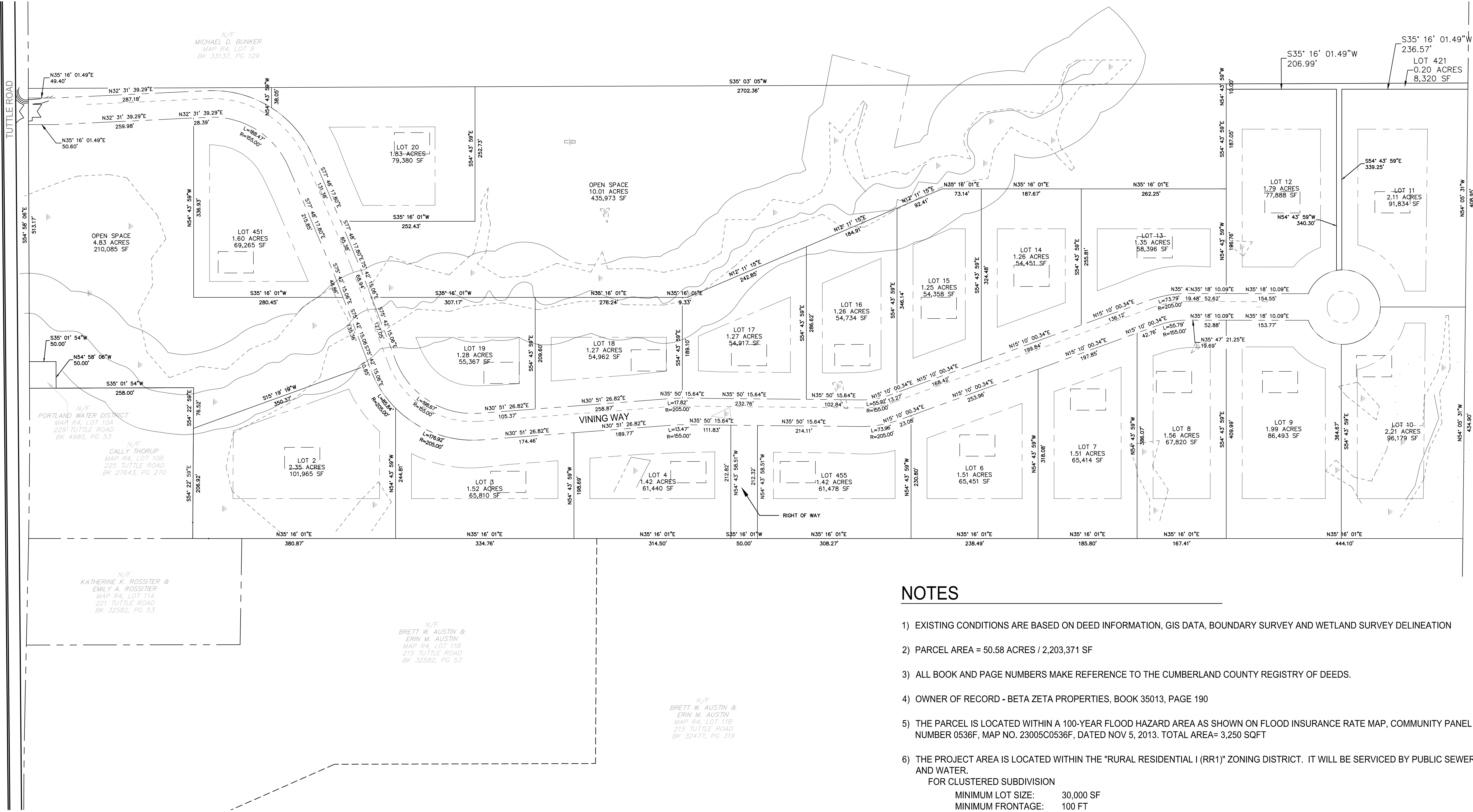
DATE: 1/29/2019

PROJECT NO. 18-015

SHEET NO.

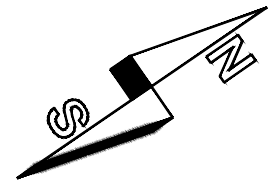
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LEGEND

- BOUNDARY LINE
- SET BACK
- TREE CLEARING LIMITS
- IRON ROD FOUND
- EXISTING TRAIL SYSTEM
- PROPOSED TRAIL SYSTEM
- TRAIL BRIDGE CROSSING
- EDGE OF WETLANDS
- STREAM BED



SUBDIVISION PLAN

22X34 SCALE: 1"=100'
11X17 SCALE: 1"=200'

1
C2.0

NOTES

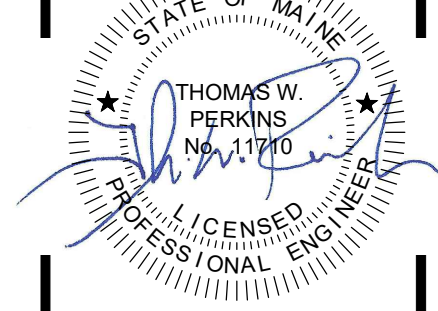
- EXISTING CONDITIONS ARE BASED ON DEED INFORMATION, GIS DATA, BOUNDARY SURVEY AND WETLAND SURVEY DELINEATION
- PARCEL AREA = 50.58 ACRES / 2,203,371 SF
- ALL BOOK AND PAGE NUMBERS MAKE REFERENCE TO THE CUMBERLAND COUNTY REGISTRY OF DEEDS.
- OWNER OF RECORD - BETA ZETA PROPERTIES, BOOK 35013, PAGE 190
- THE PARCEL IS LOCATED WITHIN A 100-YEAR FLOOD HAZARD AREA AS SHOWN ON FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NUMBER 0536F, MAP NO. 23005C0536F, DATED NOV 5, 2013. TOTAL AREA= 3,250 SQFT
- THE PROJECT AREA IS LOCATED WITHIN THE "RURAL RESIDENTIAL 1 (RR1)" ZONING DISTRICT. IT WILL BE SERVICED BY PUBLIC SEWER AND WATER.
FOR CLUSTERED SUBDIVISION
MINIMUM LOT SIZE: 30,000 SF
MINIMUM FRONTAGE: 100 FT
SETBACKS:
FRONT: 50 FT
SIDE: 30 FT
REAR: 75 FT
- ROADWAY TYPE: RESIDENTIAL ACCESS > 50 VPD
ROW WIDTH: 50 FT
PAVEMENT WIDTH: 26 FT
SHOULDERS: 2 FT (GRAVEL) & 4 FT PAVED SHOULDER (PEDESTRIAN LANE)
SIDEWALK: N/A
DESIGN SPEED: 25 MPH

CHRISTMAS CREEK
SUBDIVISION

CUMBERLAND

MAINE

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OFFICE



SUBDIVISION PLAN

REV.	DATE	DESCRIPTION
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1	10/30/18	PLANNING BOARD - PRELIMINARY APPLICATION REVIEW

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CHECKED BY: TWP

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7 Cobblestone Way,
Suite 2
Turner, ME 04282



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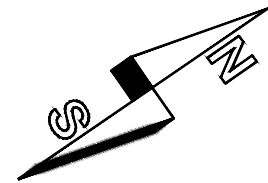
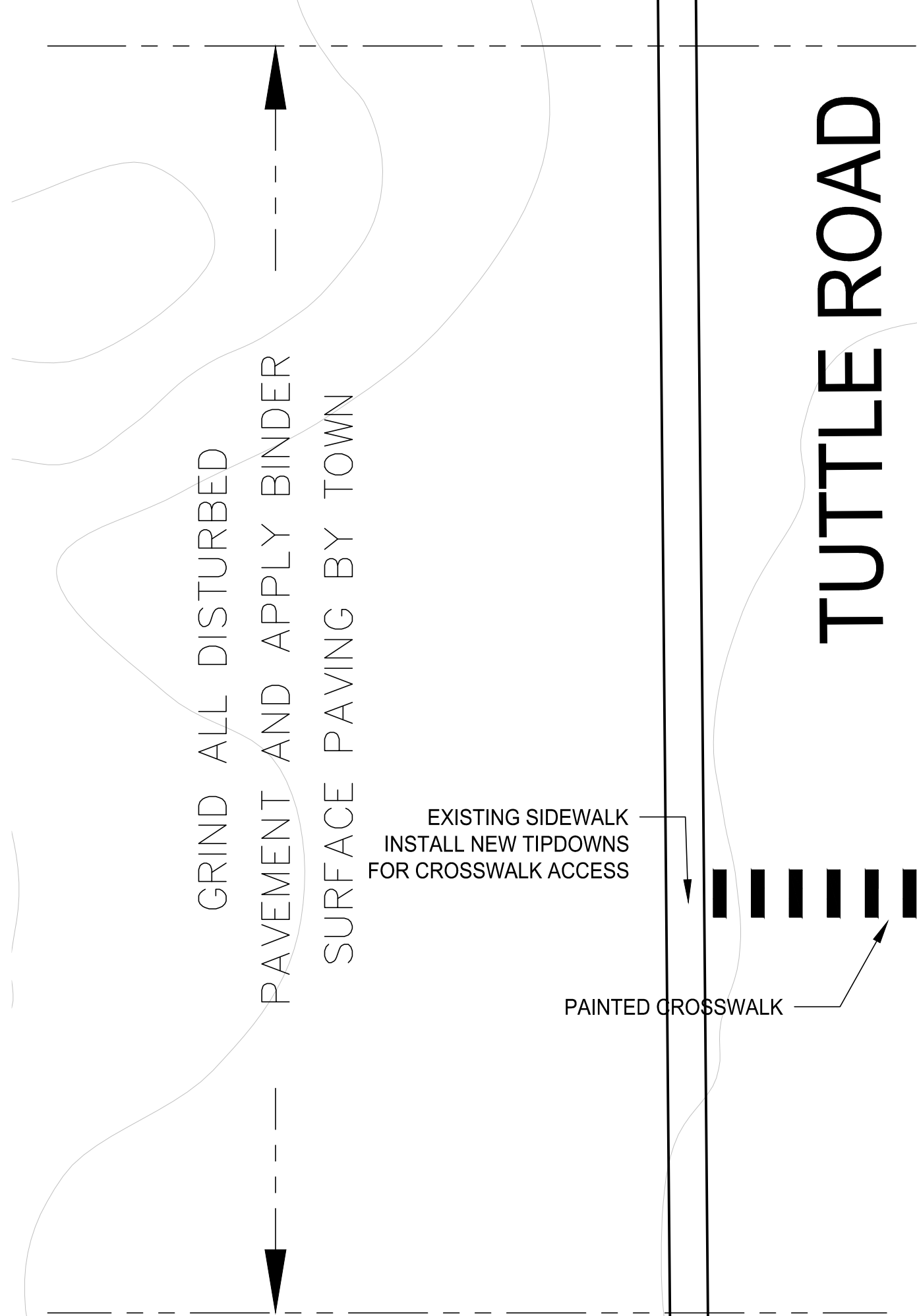
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PROJECT NO. 18-015

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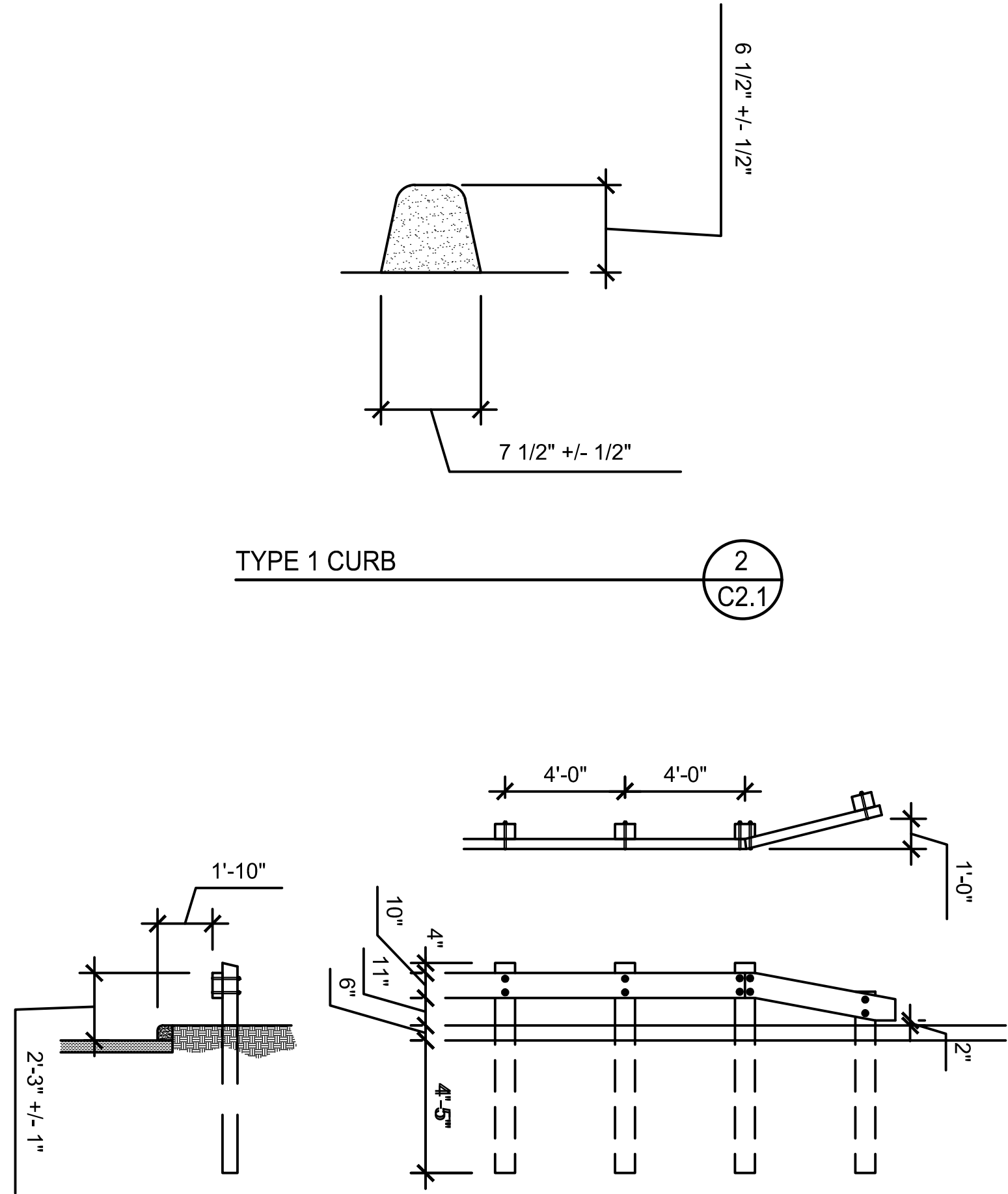
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ENLARGED ENTRANCE PLAN
22X34 SCALE: 1"=10'
11X17 SCALE: 1"=20'

1
C2.1



TIMBER GUARDRAIL NOTES:
POSTS: 6X10 PT
RAILS: 4X10 PT
BOLTS: 3/4" X 12" GALVANIZED
TIMBER GUARDRAIL

3
C2.1

CHRISTMAS CREEK
SUBDIVISION

CUMBERLAND
MAINE

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STATE OF MAINE
THOMAS W. PERKINS
NO. 11770
PROFESSIONAL ENGINEER

ENLARGED ENTRANCE PLAN

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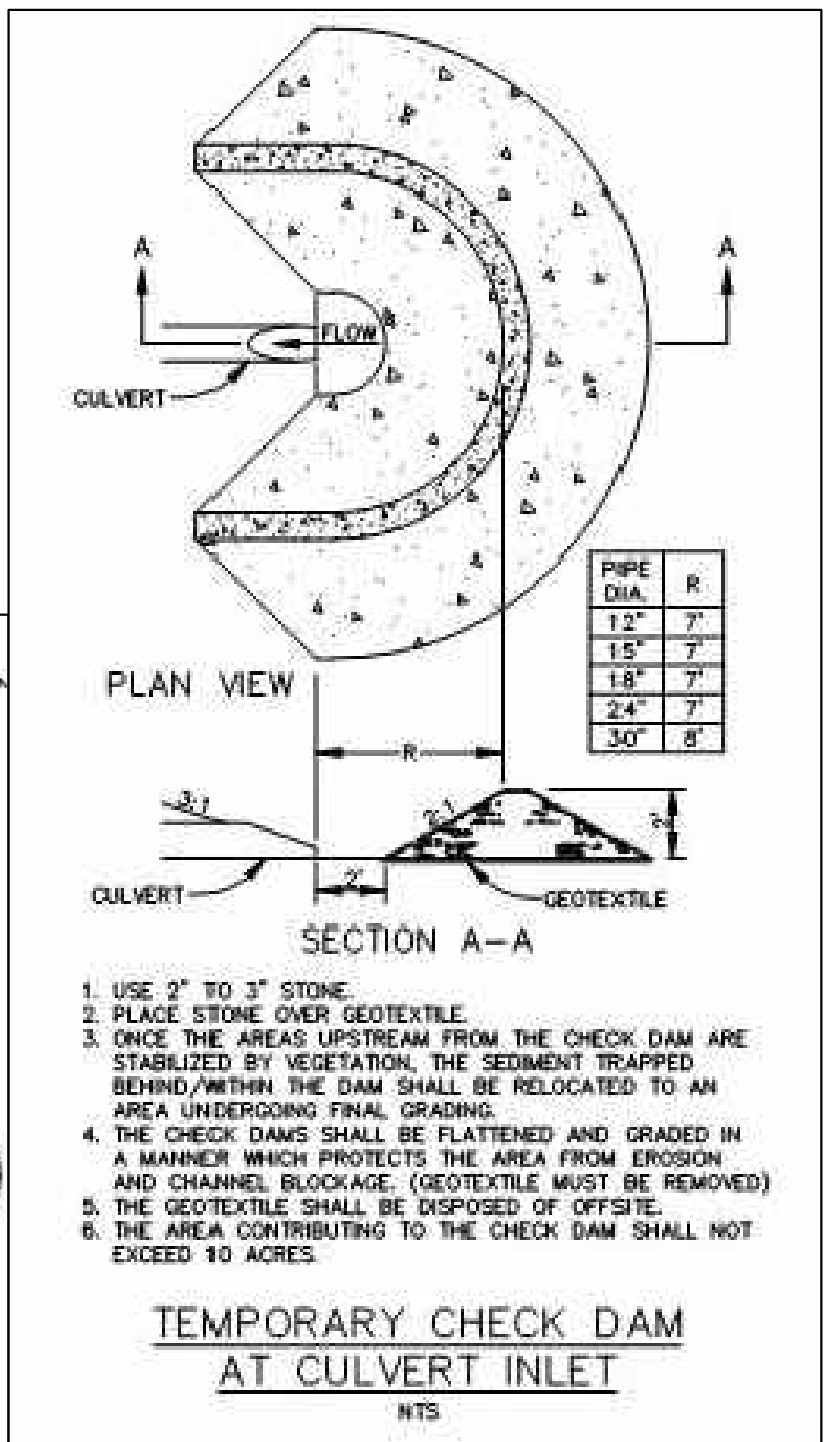
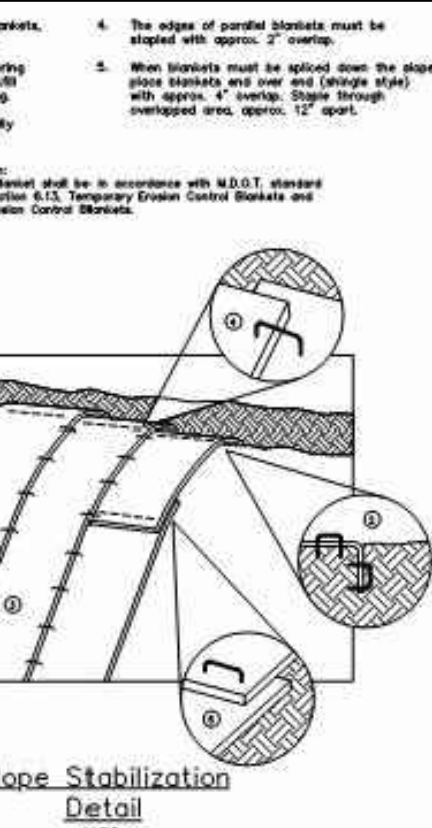
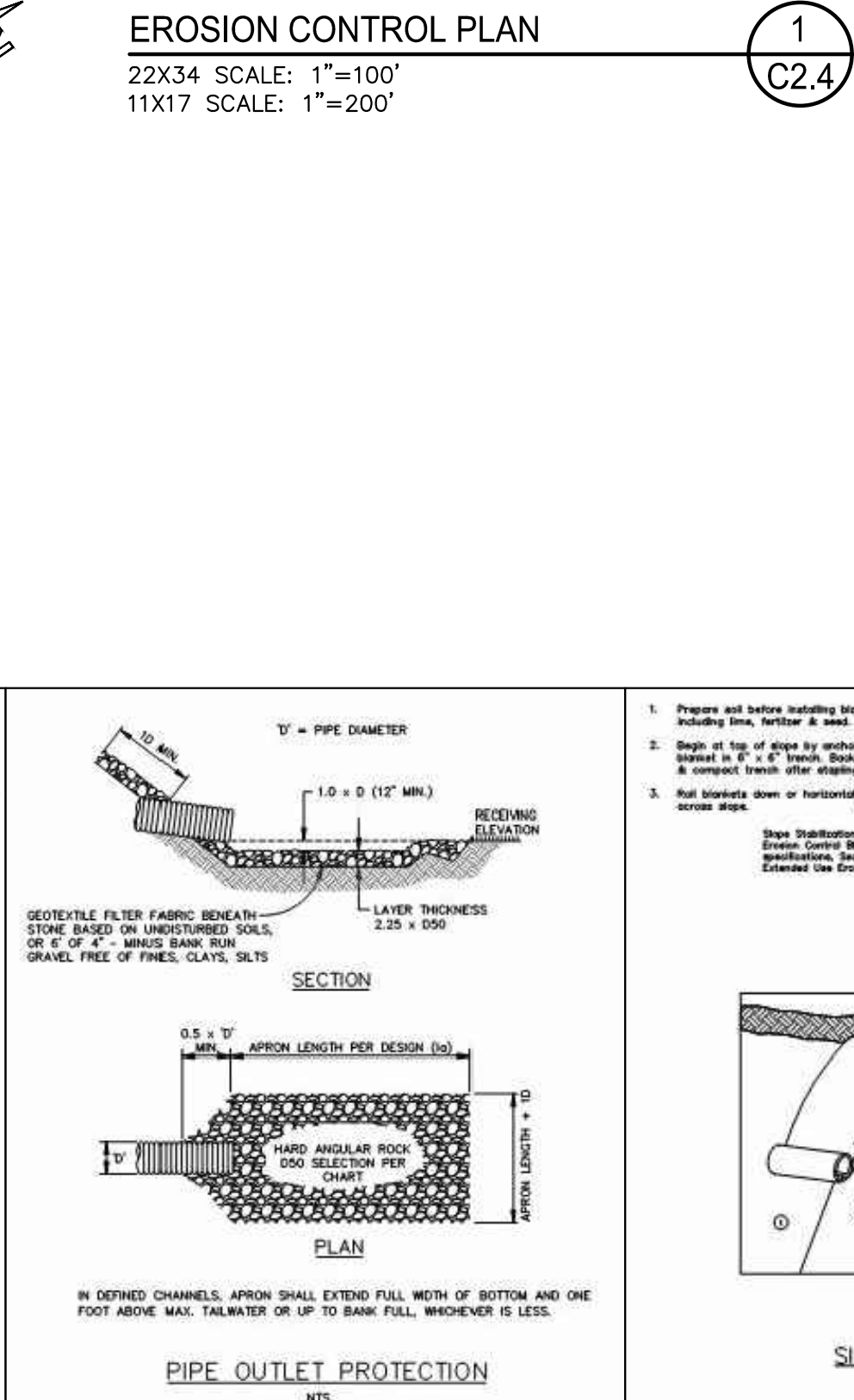
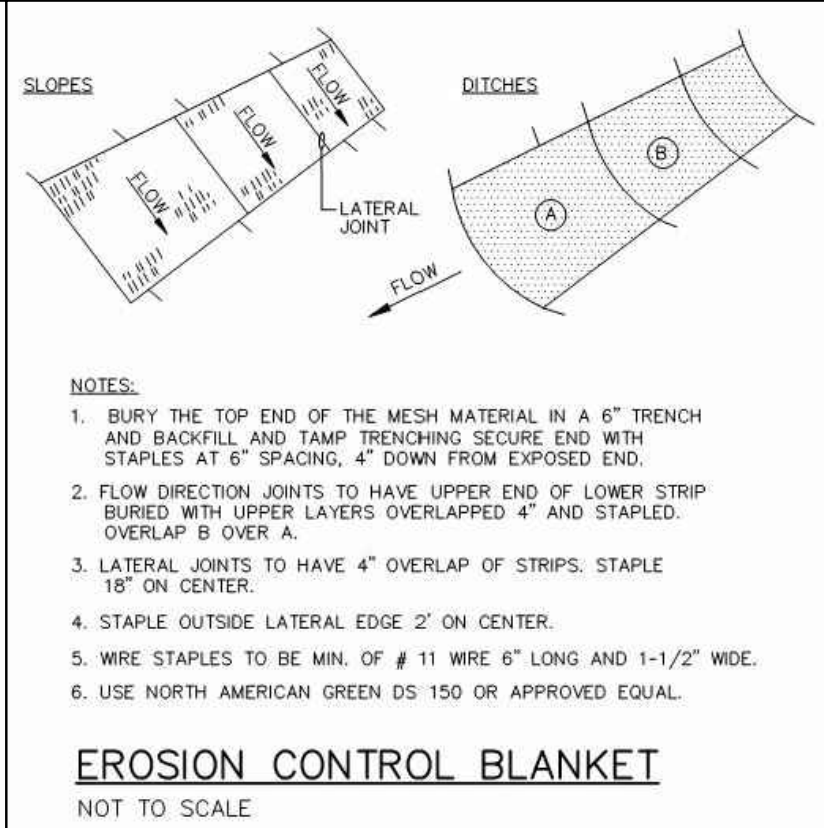
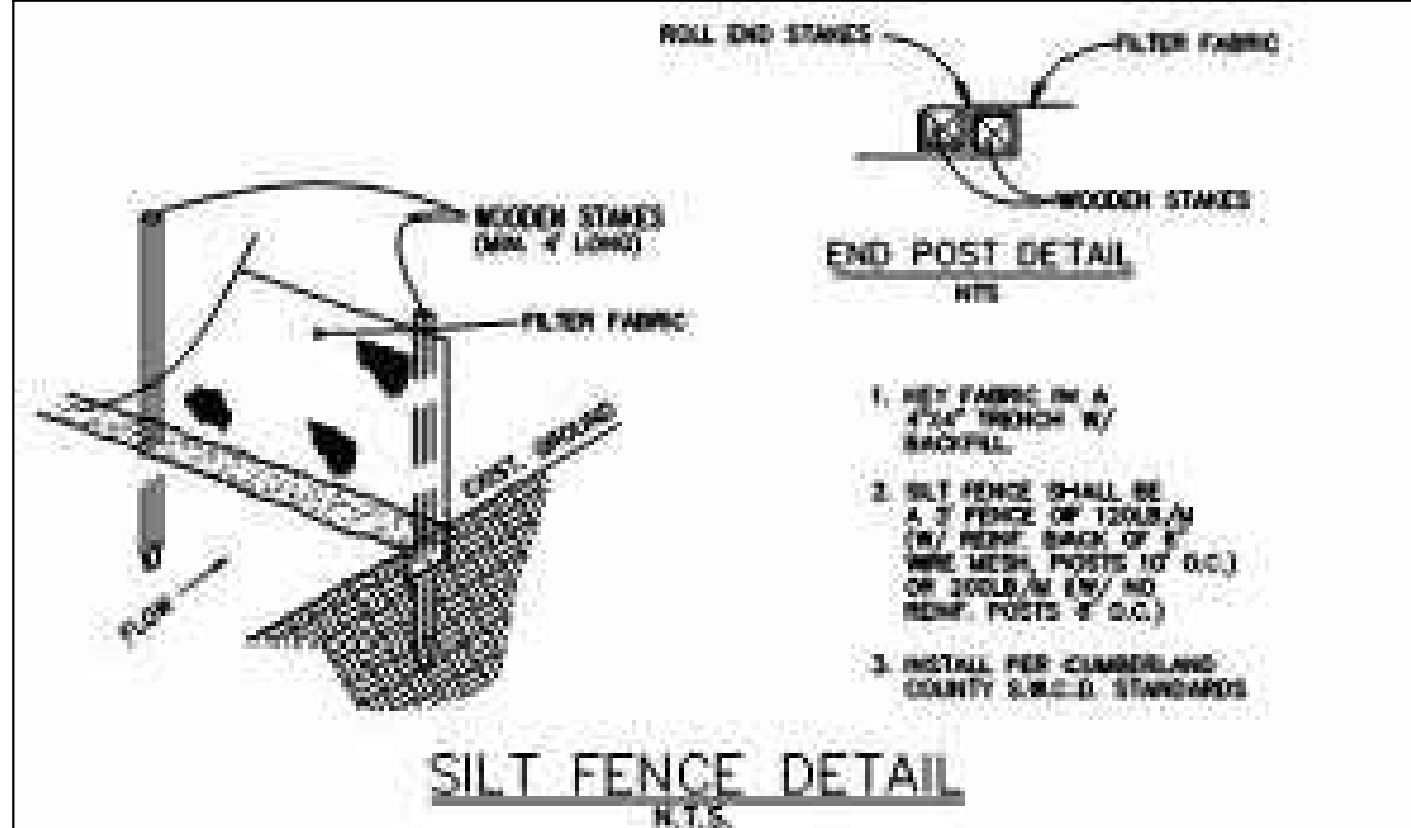
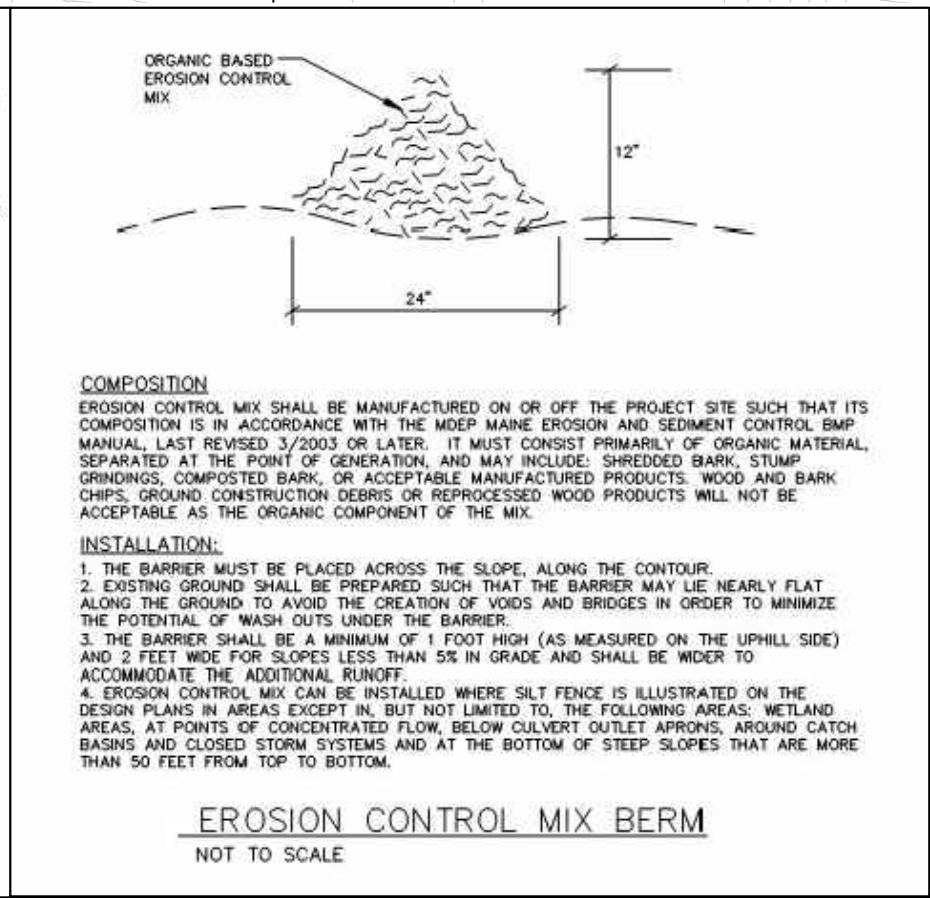
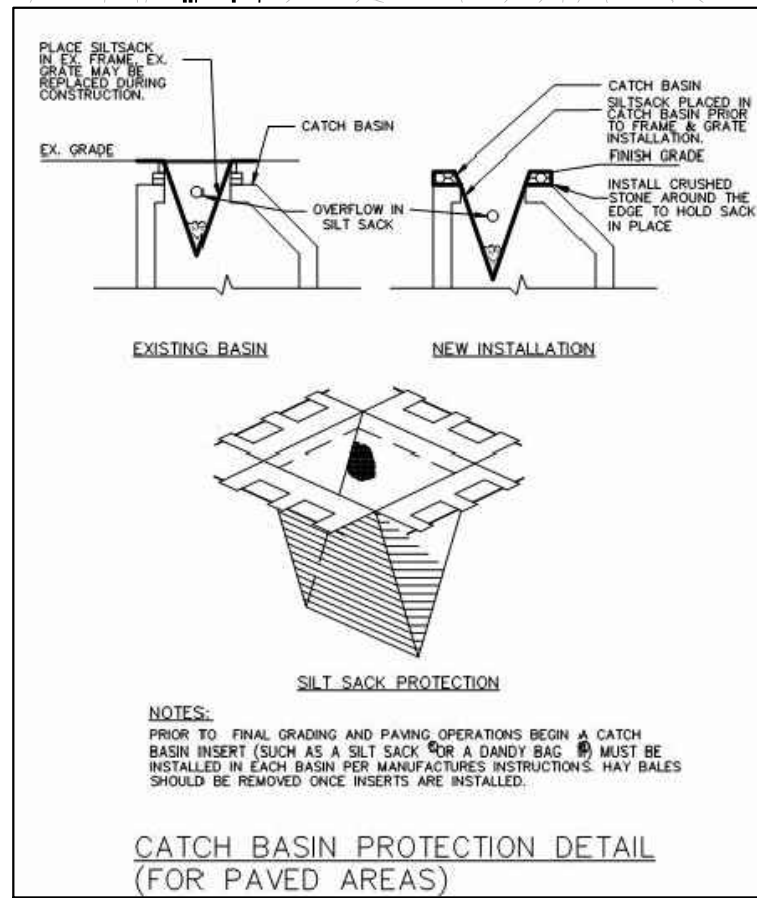
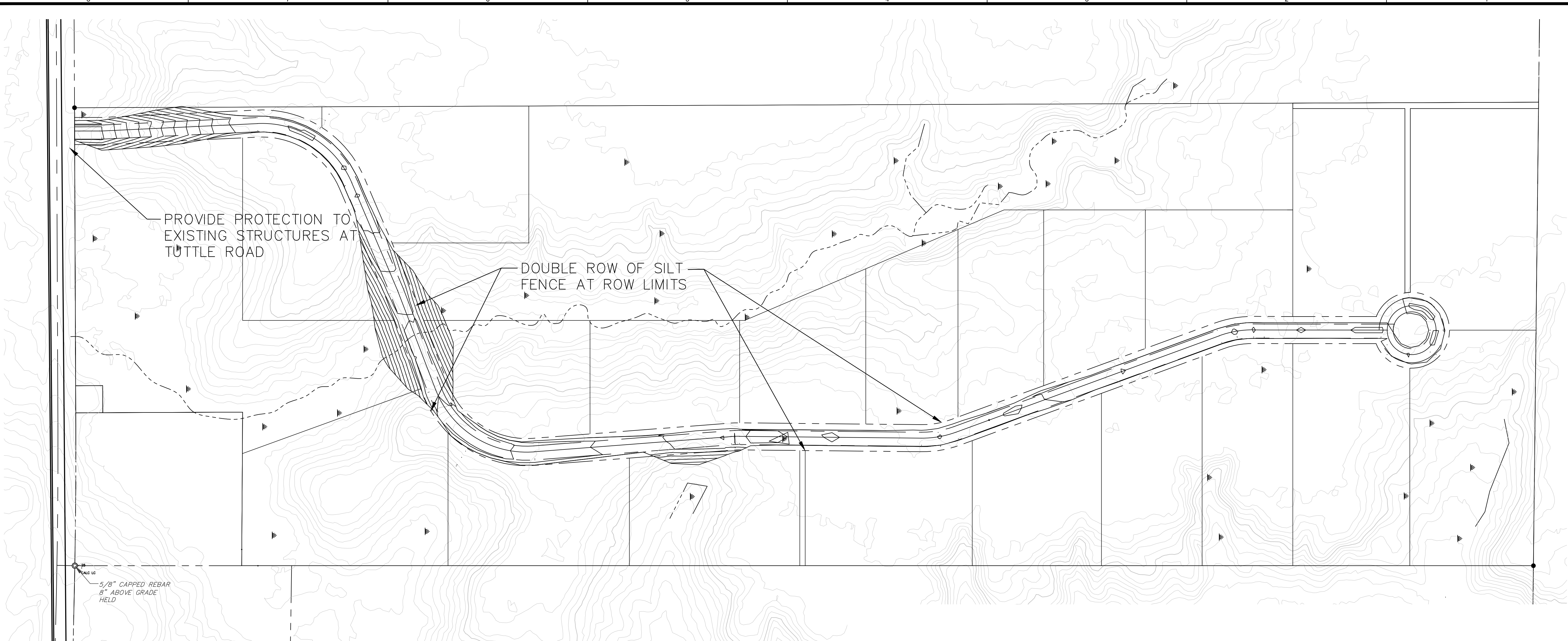
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DATE: 1/29/2019
PROJECT NO. 18-015
SHEET NO.

C2.1



EROSION CONTROL PLAN			
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DRAWN BY: ZTQ			CHECKED BY: TWP

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7 Cobblestone Way,
Suite 2
Turner, ME 04282

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EROSION CONTROL MEASURES
PRE-CONSTRUCTION PHASE

PRIOR TO CONSTRUCTION, PROPERLY INSTALL SEDIMENT BARRIERS AT THE DOWNGRADIENT EDGE OF ANY AREA TO BE DISTURBED AND ADJACENT TO ANY DRAINAGE CHANNELS WITHIN THE DISTURBED AREA. SEDIMENT BARRIERS SHOULD BE INSTALLED DOWNGRADIENT OF SOIL OR SEDIMENT STOCKPILES AND STORMWATER PREVENTED FROM RUNNING ONTO THE STOCKPILE. MAINTAIN THE SEDIMENT BARRIERS BY REMOVING ACCUMULATED SEDIMENT, OR REMOVING AND REPLACING THE BARRIER, UNTIL THE DISTURBED AREA IS PERMANENTLY STABILIZED. WHERE A DISCHARGE TO A STORM DRAIN INLET OCCURS, IF THE STORM DRAIN CARRIES WATER DIRECTLY TO A SURFACE WATER AND YOU HAVE AUTHORITY TO ACCESS THE STORM DRAIN INLET, YOU MUST INSTALL AND MAINTAIN PROTECTION MEASURES THAT REMOVE SEDIMENT FROM THE DISCHARGE.

PRIOR TO CONSTRUCTION, PROPERLY INSTALL A STABILIZED CONSTRUCTION ENTRANCE (SCE) AT ALL POINTS OF EGRESS FROM THE SITE. THE SCE IS A STABILIZED PAD OF AGGREGATE, UNDERLAIN BY A GEOTEXTILE FILTER FABRIC, USED TO PREVENT TRAFFIC FROM TRACKING MATERIAL AWAY FROM THE SITE ONTO PUBLIC ROWS. MAINTAIN THE SCE UNTIL ALL DISTURBED AREAS ARE STABILIZED.

PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PREPARE A DETAILED SCHEDULE AND MARKED UP PLAN INDICATING AREAS AND COMPONENTS OF THE WORK AND KEY DATES SHOWING DATE OF DISTURBANCE AND COMPLETION OF THE WORK. THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE MUNICIPAL STAFF. THREE COPIES OF THE SCHEDULE AND MARKED UP PLAN SHALL BE PROVIDED TO THE MUNICIPALITY THREE DAYS PRIOR TO THE SCHEDULED PRE-CONSTRUCTION MEETING. SPECIAL ATTENTION SHALL BE GIVEN TO THE 14 DAY LIMIT OF DISTURBANCE IN THE SCHEDULE ADDRESSING TEMPORARY AND PERMANENT VEGETATION MEASURES.

CONSTRUCTION AND POST-CONSTRUCTION PHASE

DURING CONSTRUCTION

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

THE LOG MUST BE MADE ACCESSIBLE TO DEPARTMENT STAFF AND A COPY MUST BE PROVIDED UPON REQUEST. THE PERMITTEE SHALL RETAIN A COPY OF THE LOG FOR A PERIOD OF AT LEAST THREE YEARS FROM THE COMPLETION OF PERMANENT STABILIZATION.

POST-CONSTRUCTION

- PLAN:
CARRY OUT AN APPROVED INSPECTION AND MAINTENANCE PLAN THAT IS CONSISTENT WITH THE MINIMUM REQUIREMENTS OF THIS SECTION. THE PLAN MUST ADDRESS INSPECTION AND MAINTENANCE OF THE PROJECT'S PERMANENT EROSION CONTROL MEASURES AND STORMWATER MANAGEMENT SYSTEM. THIS PLAN MAY BE COMBINED WITH THE PLAN LISTED IN SECTION 2(A) OF THIS APPENDIX. SEE SECTION 7(C)(2) FOR SUBMISSION REQUIREMENTS.
- INSPECTION AND MAINTENANCE:
ALL MEASURES MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT, SHALL CONDUCT THE INSPECTIONS. 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. INSPECTION OR MAINTENANCE TASKS OTHER THAN THOSE DISCUSSED BELOW MUST BE INCLUDED IN THE MAINTENANCE PLAN DEVELOPED FOR A SPECIFIC SITE.
- REGULAR MAINTENANCE:
CLEAR ACCUMULATIONS OF WINTER SAND IN PARKING LOTS AND ALONG ROADWAYS AT LEAST ONCE A YEAR, PREFERABLY IN THE SPRING. ACCUMULATIONS ON PAVEMENT MAY BE REMOVED BY PAVEMENT SWEEPING. ACCUMULATIONS OF SAND ALONG ROAD SHOULDERS MAY BE REMOVED BY GRADING EXCESS SAND TO THE PAVEMENT EDGE AND REMOVING IT MANUALLY OR BY A FRONT-END LOADER. GRADING OF GRAVEL ROADS, OR GRADING OF THE GRAVEL SHOULDERS OF GRAVEL OR PAVED ROADS, MUST BE ROUTINELY PERFORMED TO ENSURE THAT STORMWATER DRAINAGE RUNOFF OFF THE ROAD SURFACE TO ADJACENT BUILT-UP AREAS WAS NOT DISRUPTED, AND IS NOT IMPEDED BY ACCUMULATIONS OF GRADED MATERIAL ON THE ROAD SHOULDER OR BY EXCAVATION OF FALSE DITCHES IN THE SHOULDER. IF WATER BARS OR OPEN-TOP CULVERTS ARE USED TO DIVERT RUNOFF FROM ROAD SURFACES, CLEAN-OUT ANY SEDIMENTS WITHIN OR AT THE OUTLET OF THESE STRUCTURES TO RESTORE THEIR FUNCTION.
- 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 SEDIMENT AND/OR DEBRIS, INDICATE WHERE THE SEDIMENT AND/OR DEBRIS WAS DISPOSED AFTER REMOVAL. THE LOG MUST BE MADE ACCESSIBLE TO DEPARTMENT STAFF AND A COPY PROVIDED TO THE DEPARTMENT 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.

EROSION CONTROL APPLICATIONS & MEASURES

THE PLACEMENT OF EROSION CONTROL MEASURES SHALL BE COMPLETED IN ACCORDANCE WITH GUIDELINES ESTABLISHED WITHIN THE CURRENT MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION CHAPTER 500 RULES. THE DEPARTMENTS BEST MANAGEMENT PRACTICES AND IN ACCORDANCE WITH THE EROSION CONTROL PLAN AND DETAILS IN THE PLAN SET. EROSION CONTROL MEASURES MUST BE IN PLACE BEFORE THE ACTIVITY BEGINS. MEASURES MUST REMAIN IN PLACE AND FUNCTIONAL UNTIL THE SITE IS PERMANENTLY STABILIZED. ADEQUATE AND TIMELY TEMPORARY AND PERMANENT STABILIZATION MEASURES MUST BE TAKEN.

- POLLUTION PREVENTION:
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 48 HOURS.
- TEMPORARY MULCHING:
ALL DISTURBED AREAS SHALL BE MULCHED WITH MATERIALS SPECIFIED BELOW PRIOR TO ANY STORM EVENT. ALL DISTURBED AREAS NOT FINAL GRADED WITHIN 7 DAYS SHALL BE MULCHED. ALSO, AREAS, WHICH HAVE BEEN TEMPORARILY OR PERMANENTLY SEEDED, SHALL BE MULCHED IMMEDIATELY FOLLOWING SEEDING. EROSION CONTROL BLANKETS ARE RECOMMENDED TO BE USED AT THE BASE OF GRASSED WATERWAYS AND ON SLOPES GREATER THAN 15%. MULCH ANCHORING SHOULD BE USED ON SLOPES GREATER THAN 5% AFTER SEPTEMBER 15TH OF THE CONSTRUCTION YEAR (SEE WINTER EROSION CONTROL NOTES).
TYPES OF MULCH:
HAY OR STRAW: SHALL BE APPLIED AT A RATE OF 75 LBS/1,000 S.F. (1.5 TONS PER ACRE).
EROSION CONTROL MIX: SHALL BE PLACED EVENLY AND MUST PROVIDE 100% SOIL COVERAGE. EROSION CONTROL MIX SHALL BE APPLIED SUCH THAT THE THICKNESS ON SLOPES 3:1 OR LESS IS 2 INCHES PLUS 1/2 INCH PER 20 FEET OF SLOPE UP TO 100 FEET. THE THICKNESS ON SLOPES BETWEEN 3:1 AND 2:1 SHALL BE 4 INCHES PLUS 1/2 INCH PER 20 FEET OF SLOPE UP TO 100 FEET. THIS SHALL NOT BE USED ON SLOPES GREATER THAN 2:1.
EROSION CONTROL BLANKET: SHALL BE INSTALLED SUCH THAT CONTINUOUS CONTACT BETWEEN THE MAT AND THE SOIL IS OBTAINED. INSTALL BLANKETS AND STAPLE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- SOIL STOCKPILES:
STOCKPILES OF SOIL OR SUBSOIL SHALL BE MULCHED WITH HAY OR STRAW AT A RATE OF 75 LBS/1,000 S.F. (1.5 TONS PER ACRE) OR WITH A FOUR-INCH LAYER OF WOOD WASTE EROSION CONTROL MIX. THIS WILL BE DONE WITHIN 24 HOURS OF STOCKING AND RE-ESTABLISHED PRIOR TO ANY RAINFALL. ANY SOIL STOCKPILE WILL NOT BE PLACED (EVEN COVERED WITH HAY OR STRAW) WITHIN 100 FEET FROM ANY NATURAL RESOURCES.
- NATURAL RESOURCES PROTECTION:
ANY AREAS WITHIN 100 FEET FROM ANY NATURAL RESOURCES, IF NOT STABILIZED WITH A MINIMUM OF 75% MATURE VEGETATION CATCH, SHALL BE STABILIZED USING TEMPORARY MULCHING (AS DESCRIBED IN PART 1. OF THIS SECTION) OR OTHER NON-ERODIBLE COVER WITHIN 48 HOURS OF EXPOSURE OR PRIOR TO ANY STORM EVENT. SEDIMENT BARRIERS (AS DESCRIBED IN PART 4. OF THIS SECTION) SHALL BE PLACED BETWEEN ANY NATURAL RESOURCE AND THE DISTURBED AREA. PROJECTS CROSSING THE NATURAL RESOURCES SHALL BE PROTECTED A MINIMUM DISTANCE OF 100 FEET ON EITHER SIDE FROM THE RESOURCE. IF DISTURBANCE TAKES PLACE LESS THAN 30 FEET FROM A PROTECTED RESOURCE AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TO THE RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED.
- SEDIMENT BARRIERS:
PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, SEDIMENT BARRIERS SHALL BE STAKED ACROSS THE SLOPE(S), ON THE CONTOUR AT OR JUST BELOW THE LIMITS OF CLEARING OR GRUBBING, AND/OR JUST ABOVE ANY ADJACENT PROPERTY LINE OR WATERCOURSE TO PROTECT AGAINST CONSTRUCTION RELATED EROSION. SEDIMENT BARRIERS SHALL BE MAINTAINED BY THE CONTRACTOR UNTIL ALL EXPOSED SLOPES HAVE AT LEAST 85%-90% VIGOROUS PERENNIAL VEGETATIVE COVER TO PREVENT EROSION.

SILT FENCE: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE EFFECTIVE HEIGHT OF THE FENCE SHALL NOT EXCEED 36 INCHES. IT IS RECOMMENDED THAT SILT FENCE BE REMOVED BY CUTTING THE FENCE MATERIALS AT GROUND LEVEL SO AS TO AVOID ADDITIONAL SOIL DISTURBANCE.

HAY BALES: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. BALES SHALL BE WIRE-BOUND OR STRING-TIED AND THESE BINDINGS MUST REMAIN PARALLEL WITH THE GROUND SURFACE DURING INSTALLATION TO PREVENT DETERIORATION OF THE BINDINGS. BALES SHALL BE INSTALLED WITHIN A MINIMUM 4 INCH DEEP TRENCH LINE WITH ENDS OF ADJACENT BALES TIGHTLY ABUTTING ONE ANOTHER.

EROSION CONTROL MIX: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE MIX SHALL CONSIST PRIMARILY OF ORGANIC MATERIAL AND CONTAIN A WELL-GRADED MIXTURE OF PARTICLE SIZES AND MAY CONTAIN ROCKS LESS THAN 4 INCHES IN DIAMETER. THE MIX COMPOSITION SHALL MEET THE STANDARDS DESCRIBED WITHIN THE MDEP BEST MANAGEMENT PRACTICES. NO TRENCHING IS REQUIRED FOR INSTALLATION OF THIS BARRIER.

CONTINUOUS CONTAINED BERM: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THIS SEDIMENT BARRIER IS EROSION CONTROL MIX PLACED WITHIN A SYNTHETIC TUBULAR NETTING AND PERFORMS AS A STURDY SEDIMENT BARRIER THAT WORKS WELL ON HARD GROUND SUCH AS FROZEN CONDITIONS, TRAVELED AREAS OR PAVEMENT. NO TRENCHING IS REQUIRED FOR INSTALLATION OF THIS BARRIER.

TEMPORARY CHECK DAMS:

SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. CHECK DAMS ARE TO BE PLACED WITHIN DITCHES/ SWALES AS SPECIFIED ON THE DESIGN PLANS IMMEDIATELY AFTER FINAL GRADING. CHECK DAMS SHALL BE 2 FEET HIGH. TEMPORARY CHECK DAMS MAY BE REMOVED ONLY AFTER THE ROADWAYS ARE PAVED AND THE VEGETATED SWALE ARE ESTABLISHED WITH AT LEAST 85%-90% OF VIGOROUS PERENNIAL GROWTH. THE AREA BENEATH THE CHECK DAM MUST BE SEEDED AND MULCHED IMMEDIATELY AFTER REMOVAL OF THE CHECK DAM.

STONE CHECK DAMS: SHOULD BE CONSTRUCTED OF 2 TO 3 INCH STONE AND PLACED SUCH THAT COMPLETE COVERAGE OF THE SWALE IS OBTAINED AND THAT THE CENTER OF THE DAM IS 6 INCHES LOWER THAN THE OUTER EDGES.

HAY BALE CHECK DAMS: WE DO NOT RECOMMEND THE USE OF HAY BALES AS CHECK DAMS.

MANUFACTURED CHECK DAMS: MANUFACTURED CHECK DAMS, AS SPECIFIED IN THE DETAIL ON THE PLANS, MAY BE USED IF AUTHORIZED BY THE PROPER LOCAL, STATE OR FEDERAL REGULATING AGENCIES. THESE UNITS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

- STORMDRAIN INLET PROTECTION:
INLET PROTECTION SHALL BE PLACED AROUND A STORMDRAIN DROP INLET OR CURB INLET PRIOR TO PERMANENT STABILIZATION OF THE IMMEDIATE AND UPSTREAM DISTURBED AREAS. THEY SHALL BE CONSTRUCTED IN A MANNER THAT WILL FACILITATE CLEAN-OUT AND DISPOSAL OF TRAPPED SEDIMENTS AND MINIMIZE INTERFERENCE WITH CONSTRUCTION ACTIVITIES. ANY RESULTANT PONDING OF WATER FROM THE PROTECTION METHOD MUST NOT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT AREAS OR STRUCTURES.

HAY BALE DROP INLET PROTECTION: WE DO NOT RECOMMEND THE USE OF HAY BALES AS INLET PROTECTION.

CONCRETE BLOCK AND STONE INLET SEDIMENT FILTER (DROP OR CURB INLET): SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE HEIGHT OF THE CONCRETE BLOCK BARRIER CAN VARY BUT MUST BE BETWEEN 12 AND 24 INCHES TALL. A MINIMUM OF 1 INCH CRUSHED STONE SHALL BE USED.

MANUFACTURED SEDIMENT BARRIERS AND FILTER (DROP OR CURB INLET): MANUFACTURED FILTERS, AS SPECIFIED IN THE DETAIL ON THE PLANS, MAY BE USED IF INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

- STABILIZED CONSTRUCTION EXIT:
PRIOR TO LEAVING THE SITE OR GRUBBING THE SITE A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE CONSTRUCTED WHEREVER TRAFFIC WILL EXIT THE CONSTRUCTION SITE ONTO A PAVED ROADWAY IN ORDER TO MINIMIZE THE TRACKING OF SEDIMENT AND DEBRIS FROM THE CONSTRUCTION SITE ONTO PUBLIC ROADWAYS. THE ENTRANCES AND ADJACENT ROADWAY AREAS SHALL BE PERIODICALLY SWEEP OR WASHED TO FURTHER MINIMIZE THE TRACKING OF MUD, DUST OR DEBRIS FROM THE CONSTRUCTION AREA. STABILIZED CONSTRUCTION EXITS SHALL BE CONSTRUCTED IN AREAS SPECIFIED ON THE PLANS AND AS DETAILED ON THE PLANS.

- DUST CONTROL:
DUST CONTROL DURING CONSTRUCTION SHALL BE ACHIEVED BY THE USE OF A WATERING TRUCK TO PERIODICALLY SPRINKLE THE EXPOSED ROADWAY AREAS AS NECESSARY TO REDUCE DUST DURING THE DRY MONTHS. APPLYING OTHER DUST CONTROL PRODUCTS SUCH AS CALCIUM CHLORIDE OR OTHER MANUFACTURED PRODUCTS ARE ALLOWED IF AUTHORIZED BY THE PROPER LOCAL, STATE AND/OR FEDERAL REGULATING AGENCIES. HOWEVER, IT IS THE CONTRACTOR'S ULTIMATE RESPONSIBILITY TO MITIGATE DUST AND SOIL LOSS FROM THE SITE.

- TEMPORARY VEGETATION:
TEMPORARY VEGETATION SHALL BE APPLIED TO DISTURBED AREAS THAT WILL NOT RECEIVE FINAL GRADING FOR PERIODS UP TO 12 MONTHS. THIS PROCEDURE SHOULD BE USED EXTENSIVELY IN AREAS ADJACENT TO NATURAL RESOURCES. SEEDED PREPARATION AND APPLICATION OF SEED SHALL BE CONDUCTED AS INDICATED IN THE PERMANENT VEGETATION SECTION OF THIS NARRATIVE. SPECIFIC SEEDS (FAST GROWING AND SHORT LIVING) SHALL BE SELECTED FROM THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL DATED 3/2003 OR LATER. ALTERNATIVE EROSION CONTROL MEASURES SHOULD BE USED IF SEEDING CAN NOT BE DONE BEFORE SEPTEMBER 15TH OF THE CONSTRUCTION YEAR.

- PERMANENT VEGETATION:
REVEGETATION MEASURES SHALL COMMENCE IMMEDIATELY UPON COMPLETION OF FINAL GRADING OF AREAS TO BE LOAMED AND SEEDED. THE APPLICATION OF SEED SHALL BE CONDUCTED BETWEEN APRIL 1ST AND OCTOBER 1ST OF THE CONSTRUCTION YEAR. PLEASE REFER TO THE WINTER EROSION CONTROL NOTES FOR MORE DETAIL. REVEGETATION MEASURES SHALL CONSIST OF THE FOLLOWING:

SEEDED PREPARATION:

- FOUR (4) INCHES OF LOAM SHALL BE SPREAD OVER DISTURBED AREAS AND SMOOTHED TO A UNIFORM SURFACE. LOAM SHALL BE FREE OF SUBSOIL, CLAY LUMPS, STONES AND OTHER OBJECTS OVER 2 INCHES OR LARGER IN ANY DIMENSION, AND WITHOUT WEEDS, ROOTS OR OTHER OBJECTIONABLE MATERIAL.
- SOILS TESTS SHALL BE TAKEN AT THE TIME OF SOIL STRIPPING TO DETERMINE FERTILIZATION REQUIREMENTS. SOILS TESTS SHALL BE TAKEN PROMPTLY AS TO NOT INTERFERE WITH THE 14-DAY LIMIT ON SOIL EXPOSURE. BASED UPON TEST RESULTS, SOIL AMENDMENTS SHALL BE INCORPORATED INTO THE SOIL PRIOR TO FINAL SEEDING. IN LIEU OF SOIL TESTS, SOIL AMENDMENTS MAY BE APPLIED AS FOLLOWS:

ITEM	APPLICATION RATE
10-20-20 FERTILIZER (N-P205-K20 OR EQUAL)	18.4 LBS./1,000 S.F.
GROUND LIMESTONE (50% CALCIUM & MAGNESIUM OXIDE)	138 LBS./1,000 S.F.
- WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH PROPER EQUIPMENT. ROLL THE AREA TO FIRM THE SEEDED EXCEPT ON CLAY OR SILTY SOILS OR COARSE SAND.

APPLICATION OF SEED:

- SEEDED: SHALL BE CONDUCTED BETWEEN APRIL 1ST AND OCTOBER 1ST OF THE CONSTRUCTION YEAR. GENERALLY A SEED MIXTURE MAY BE APPLIED AS FOLLOWS: (MDEP SEED MIX 2 IS DISPLAYED)

SEED TYPE	APPLICATION RATE
CREeping RED FESCUE	0.46 LBS/1,000 S.F. (20 LBS/ACRE)
REDTOP	0.05 LBS/1,000 S.F. (2 LBS/ACRE)
TALL FESCUE	0.46 LBS/1,000 S.F. (20 LBS/ACRE)
TOTAL:	0.97 LBS/1,000 S.F. (42 LBS/ACRE)

NOTE: A SPECIFIC SEED MIXTURE SHOULD BE CHOSEN TO MATCH THE SOILS CONDITION OF THE SITE. VARIOUS AGENCIES CAN RECOMMEND SEED MIXTURES. MDEP RECOMMENDED SEED MIXTURES ARE IN THE EROSION AND SEDIMENT CONTROL BMP MANUAL DATED 3/2003 OR LATER.

- HYDROSEEDING: SHALL BE CONDUCTED ON PREPARED AREAS WITH SLOPES LESS THAN 2:1. LIME AND FERTILIZER MAY BE APPLIED SIMULTANEOUSLY WITH THE SEED. RECOMMENDED SEEDING RATES MUST BE INCREASED BY 10% WHEN HYDROSEEDING.

- MULCHING: SHALL COMMENCE IMMEDIATELY AFTER SEED IS APPLIED. REFER TO THE TEMPORARY MULCHING SECTION OF THIS NARRATIVE FOR DETAILS.

SODDING:

FOLLOWING SEEDED PREPARATION, SOD CAN BE APPLIED IN LIEU OF SEEDING IN AREAS WHERE IMMEDIATE VEGETATION IS MOST BENEFICIAL SUCH AS DITCHES, AROUND STORMWATER DROP INLETS AND AREAS OF AESTHETIC VALUE. SOD SHOULD BE LAID AT RIGHT ANGLES TO THE DIRECTION OF FLOW, STARTING AT THE LOWEST ELEVATION. SOD SHOULD BE ROLLED OR TAMPED DOWN TO EVEN OUT THE JOINTS ONCE LAID DOWN. WHERE FLOW IS PREVALENT THE SOD MUST BE PROPERLY ANCHORED DOWN. IRRIGATE THE SOD IMMEDIATELY AFTER INSTALLATION. IN MOST CASES, SOD CAN BE ESTABLISHED BETWEEN APRIL 1ST AND NOVEMBER 15TH OF THE CONSTRUCTION YEAR, HOWEVER, REFER TO THE WINTER EROSION CONTROL NOTES FOR ANY ACTIVITIES AFTER OCTOBER 1ST.

TRENCH DEWATERING AND TEMPORARY STREAM DIVERSION:

WATER FROM CONSTRUCTION TRENCH DEWATERING OR TEMPORARY STREAM DIVERSION WILL PASS FIRST THROUGH A FILTER BAG OR SECONDARY CONTAINMENT STRUCTURE (E.G. HAY BALE LINED POOL) PRIOR TO DISCHARGE. THE DISCHARGE SITE SHALL BE SELECTED TO AVOID FLOODING AND SEDIMENT DISCHARGES TO A PROTECTED RESOURCE. IN NO CASE SHALL THE FILTER BAG OR CONTAINMENT STRUCTURE BE LOCATED WITHIN 100 FEET OF A PROTECTED NATURAL RESOURCE.

STANDARDS FOR TIMELY STABILIZATION:

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SLOPES -- THE CONTRACTOR WILL CONSTRUCT AND STABILIZE STONE-COVERED SLOPES BY NOVEMBER 15. THE CONTRACTOR WILL SEED AND MULCH ALL SLOPES TO BE VEGETATED BY SEPTEMBER 15. THE MDEP WILL CONSIDER ANY AREA HAVING A GRADE GREATER THAN 8% (12.5H:1V) TO BE A SLOPE. IF THE CONTRACTOR FAILS TO STABILIZE ANY SLOPE TO BE VEGETATED BY SEPTEMBER 15, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER.

- STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS -- BY OCTOBER 1 THE CONTRACTOR WILL SEED THE DISTURBED SLOPE WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1,000 SQUARE FEET AND APPLY EROSION CONTROL MATS OVER THE MULCHED SLOPE. THE CONTRACTOR WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SLOPE BY NOVEMBER 1, THEN THE APPLICANT WILL COVER THE SLOPE WITH A LAYER OF EROSION CONTROL MIX AS DESCRIBED IN ITEM 2(C) OF THIS STANDARD OR WITH STONE RIPRAP AS DESCRIBED IN ITEM 2(D) OF THIS STANDARD.
- STABILIZE THE SLOPE WITH SOD -- THE CONTRACTOR WILL STABILIZE THE DISTURBED SLOPE WITH PROPERLY INSTALLED SOD BY NOVEMBER 15. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SLOPE WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL. THE APPLICANT WILL NOT USE LATE-SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 33% (3H:1V).
- STABILIZE THE SLOPE WITH EROSION CONTROL MIX -- THE CONTRACTOR WILL PLACE A SIX-INCH LAYER OF EROSION CONTROL MIX ON THE SLOPE BY NOVEMBER 15. PRIOR TO PLACING THE EROSION CONTROL MIX, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED SLOPE. DO NOT USE EROSION CONTROL MIX TO STABILIZE SLOPES HAVING GRADES GREATER THAN 1H:1V OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.
- STABILIZE THE SLOPE WITH STONE RIPRAP -- THE CONTRACTOR WILL PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15. THE APPLICANT WILL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SOILS -- BY SEPTEMBER 15 THE CONTRACTOR WILL SEED AND MULCH ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 8%. IF THE CONTRACTOR FAILS TO STABILIZE THESE SOILS BY THIS DATE, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SOIL FOR LATE FALL AND WINTER.

- STABILIZE THE SOIL WITH TEMPORARY VEGETATION -- BY OCTOBER 1 THE CONTRACTOR WILL SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET, LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 POUNDS PER 1000 SQUARE FEET, AND ANCHOR THE MULCH WITH PLASTIC NETTING. THE APPLICANT WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 15, THEN THE APPLICANT WILL MULCH THE AREA FOR OVER-WINTER PROTECTION AS DESCRIBED IN ITEM 3(C) OF THIS STANDARD.
- STABILIZE THE SOIL WITH SOD -- THE APPLICANT WILL STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL.
- STABILIZE THE SOIL WITH MULCH -- BY NOVEMBER 15 THE APPLICANT WILL MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 POUNDS PER 1000 SQUARE FEET ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. PRIOR TO APPLYING THE MULCH, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED AREA. IMMEDIATELY AFTER APPLYING THE MULCH, THE APPLICANT WILL ANCHOR THE MULCH WITH PLASTIC NETTING TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.
- STABILIZE THE SOIL WITH EROSION CONTROL MIX -- THE CONTRACTOR WILL PLACE A MINIMUM TWO-INCH LAYER OF EROSION CONTROL MIX ON THE SOIL BY NOVEMBER 15. PRIOR TO PLACING THE EROSION CONTROL MIX, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED SLOPE.

HOUSEKEEPING:

THE FOLLOWING GENERAL PERFORMANCE STANDARDS APPLY TO THE PROPOSED PROJECT.

- SPILL PREVENTION:
CONTROLS MUST BE USED TO PREVENT POLLUTANTS FROM CONSTRUCTION AND WASTE MATERIALS STORED ON-SITE FROM ENTERING 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.
- 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.
- 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 CLEANED 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.
- 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.
- 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 PONDING AREA MUST BE EITHER PUMPED THROUGH GRAVITY OR 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.
- AUTHORIZED NON-STORMWATER DISCHARGES:
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:
DISCHARGES FROM FIREFIGHTING ACTIVITY: FIRE HYDRANT FLUSHINGS;
VEHICLE WASHWATER IF DETERGENTS ARE NOT USED AND WASHING IS LIMITED TO THE EXTERIOR OF VEHICLES (ENGINE, UNDERCARRIAGE AND TRANSMISSION WASHING IS PROHIBITED);
DUST CONTROL RUNOFF IN ACCORDANCE WITH PERMIT CONDITIONS;
ROUTINE EXTERNAL BUILDING WASHDOWN, NOT INCLUDING SURFACE PAINT REMOVAL, THAT DOES NOT INVOLVE DETERGENTS;
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;
UNCONTAMINATED AIR CONDITIONING OR COMPRESSOR CONDENSATE;
UNCONTAMINATED GROUNDWATER OR SPRING WATER OR SPRING WATER OR RE-USE FOUNDATION OR FOOTER DRAIN-WATER WHERE FLOWS ARE NOT CONTAMINATED;
UNCONTAMINATED EXCAVATION DEWATERING;
POTABLE WATER DISCHARGES INCLUDING WATERLINE FLUSHINGS;
LANDSCAPE IRRIGATION;
- UNAUTHORIZED NON-STORMWATER DISCHARGES:
THE DEP DOES NOT AUTHORIZE A DISCHARGE THAT IS MIXED WITH A SOURCE OF NON-STORMWATER. SPECIFICALLY, THE DEPARTMENT'S APPROVAL DOES NOT AUTHORIZE DISCHARGES OF THE FOLLOWING:
WASTEWATER FROM THE WASHOUT OR CLEANOUT OF CONCRETE, STUCCO, PAINT, FORM RELEASE OILS, CURING COMPOUNDS OR OTHER CONSTRUCTION MATERIALS;
FUELS, OILS OR OTHER POLLUTANTS USED IN VEHICLE AND EQUIPMENT OPERATION AND MAINTENANCE;
SOAPS, SOLVENTS, OR DETERGENTS USED IN VEHICLE AND EQUIPMENT WASHING;
TOXIC OR HAZARDOUS SUBSTANCES FROM A SPILL OR OTHER RELEASE

CHRISTMAS CREEK
SUBDIVISION

EROSION CONTROL NOTES

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7 Cobblestone Way,
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DRAFT

THOMAS W.
NOT FOR
CONSTRUCTION

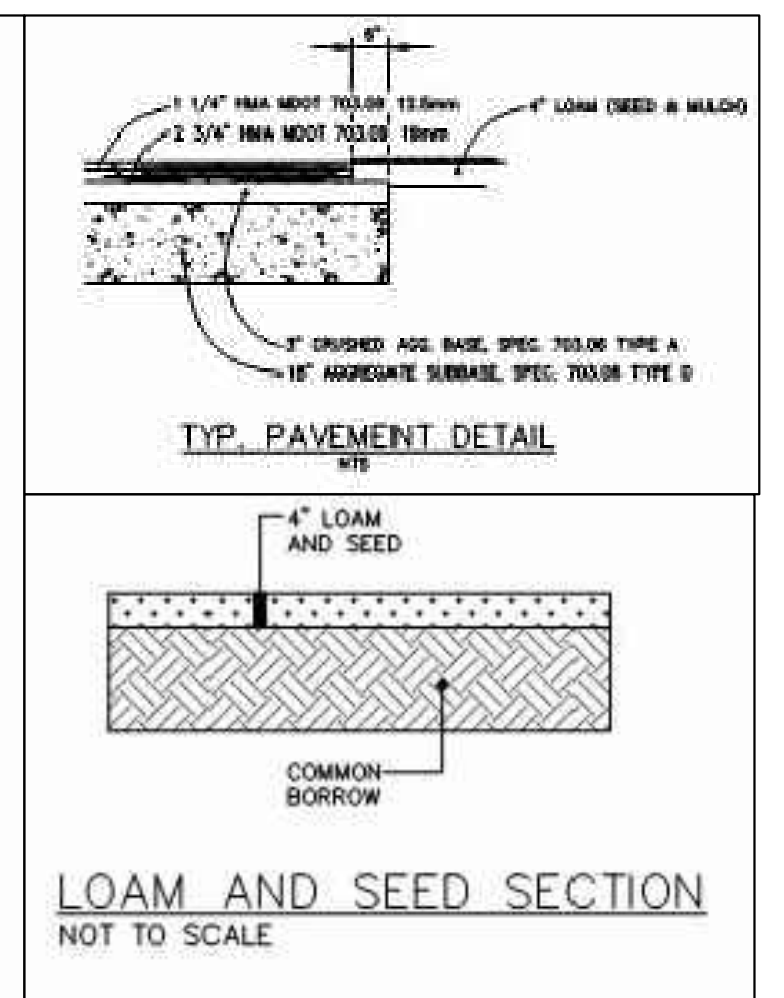
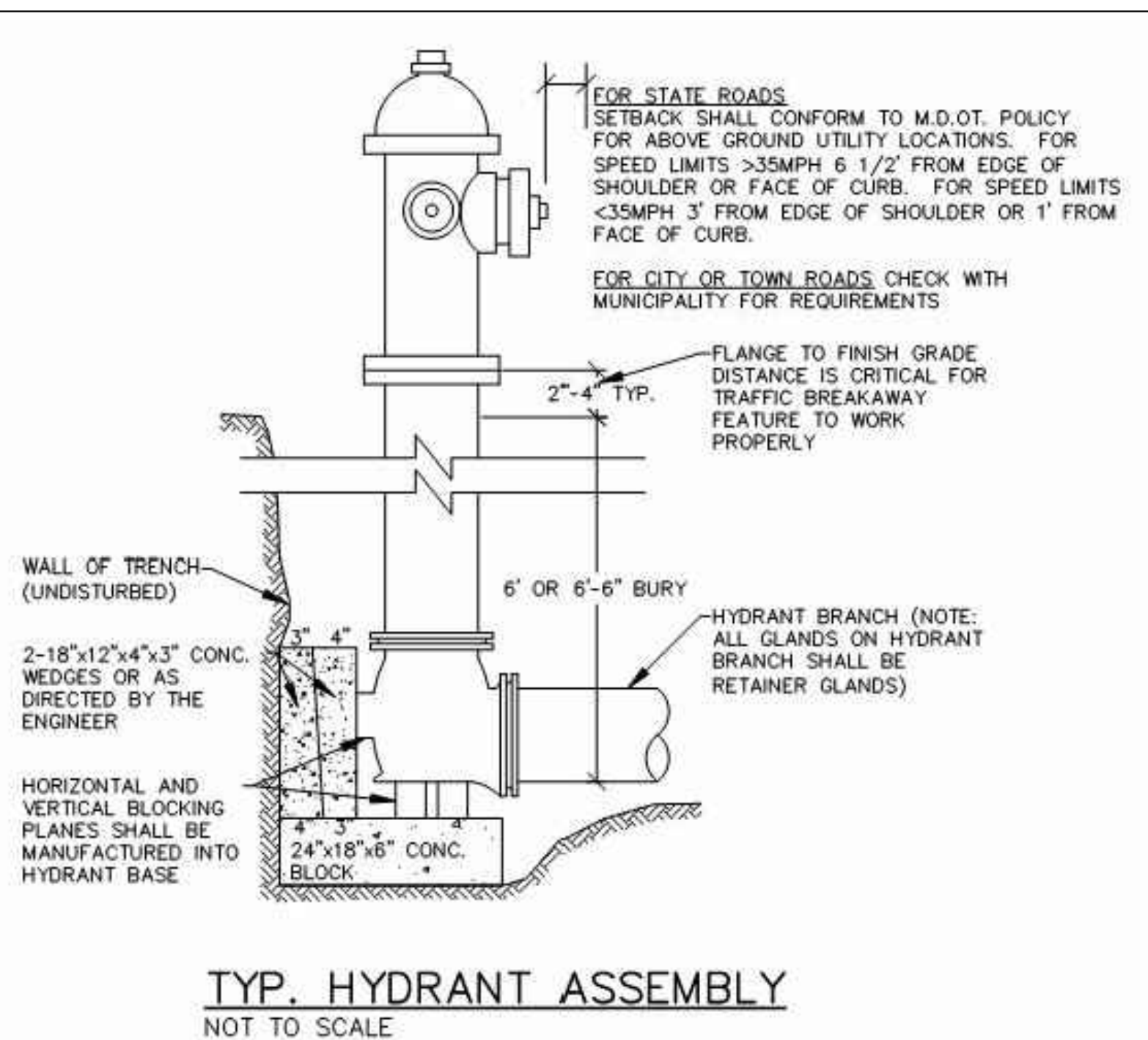
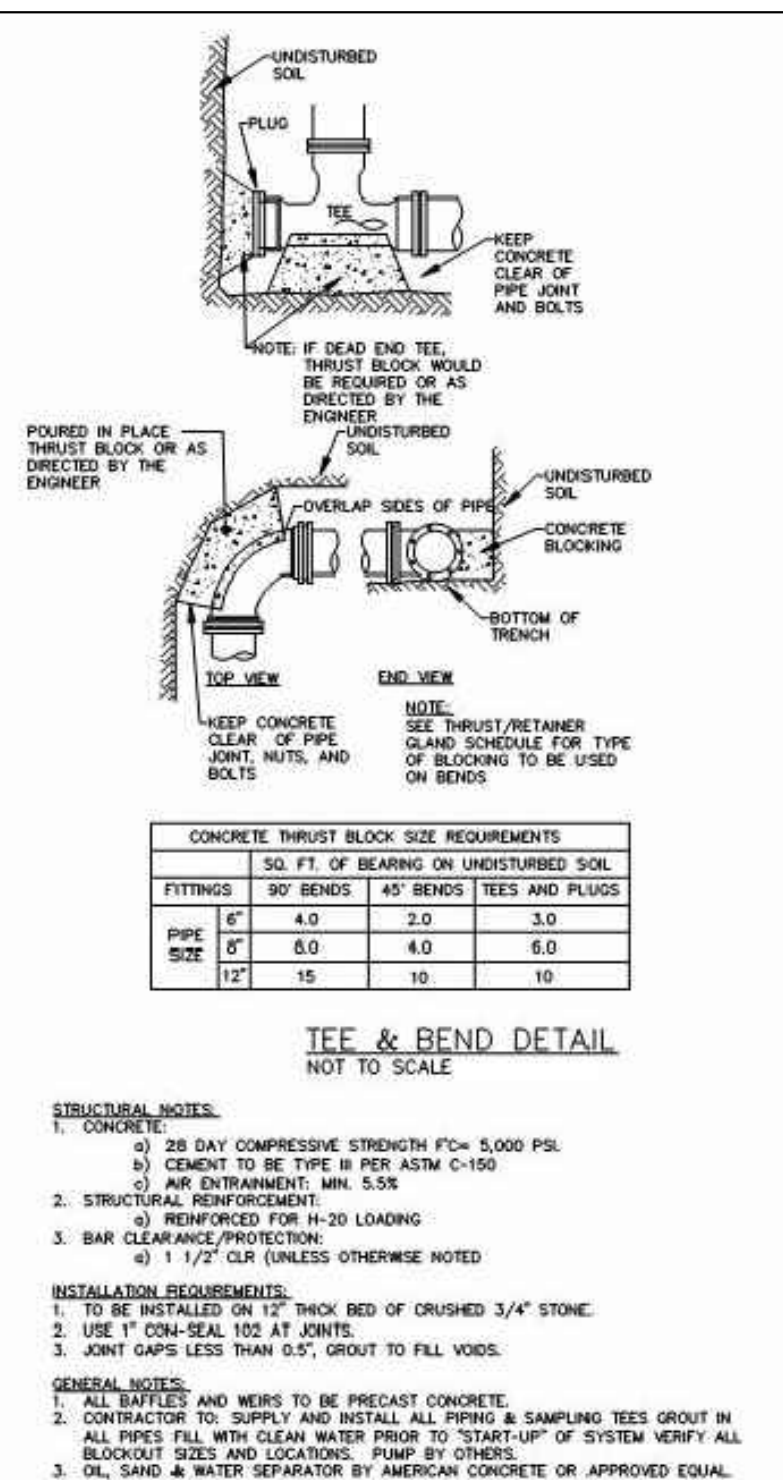
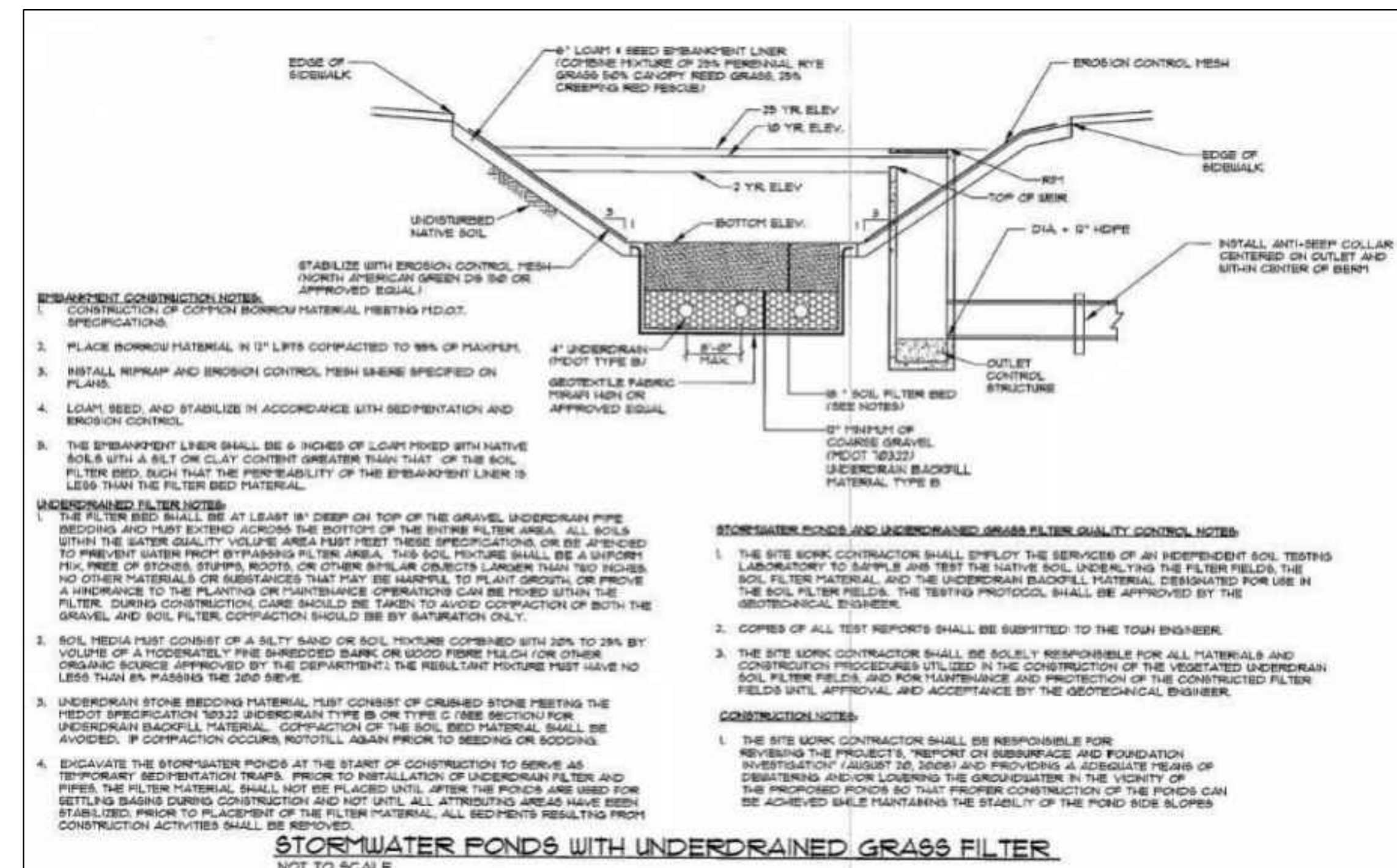
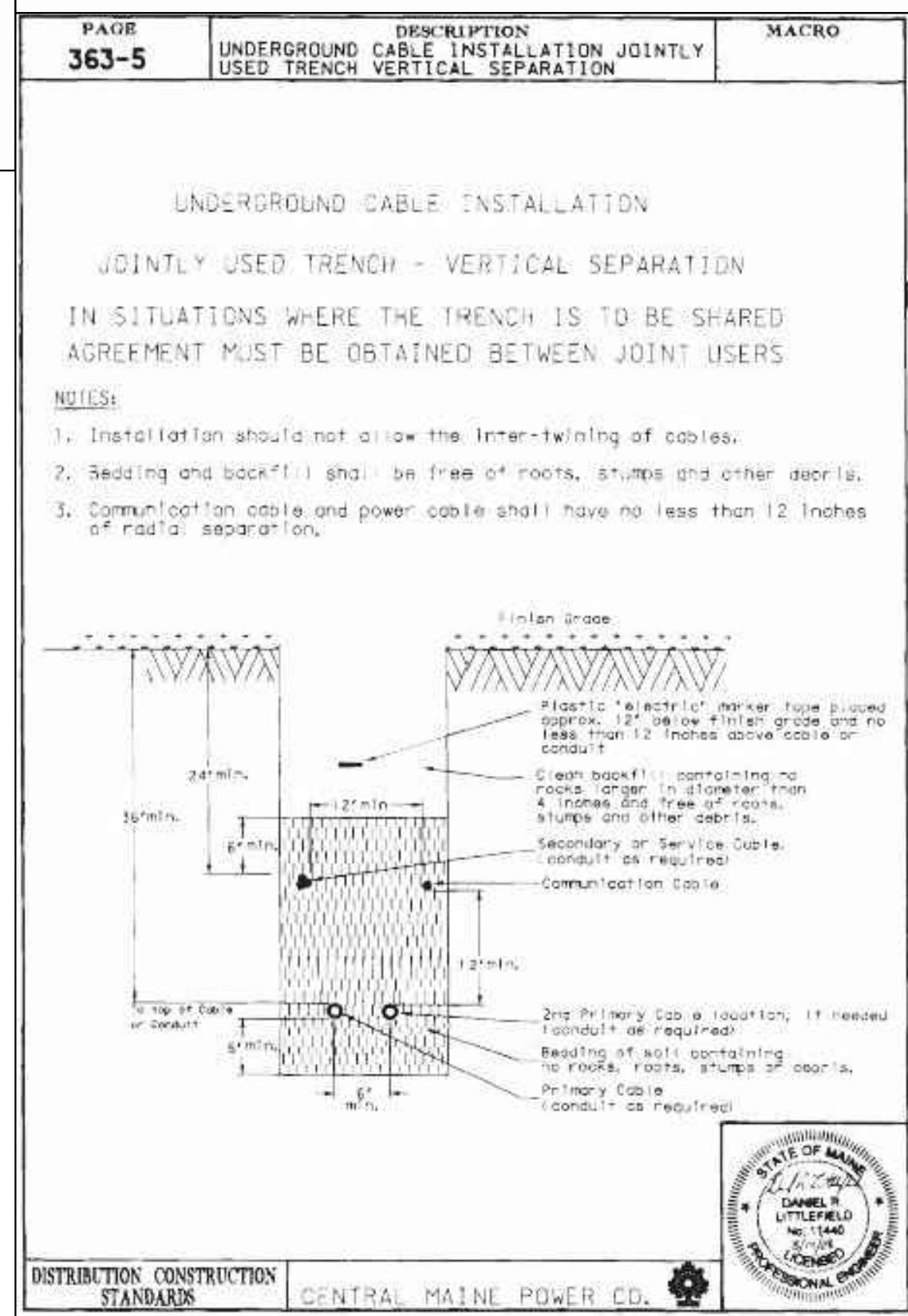
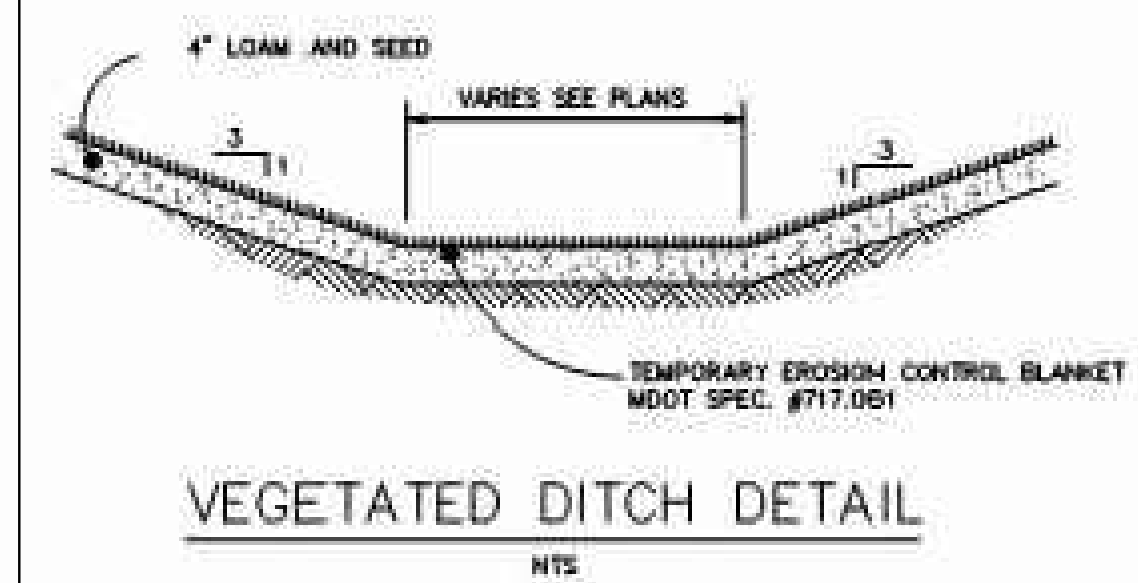
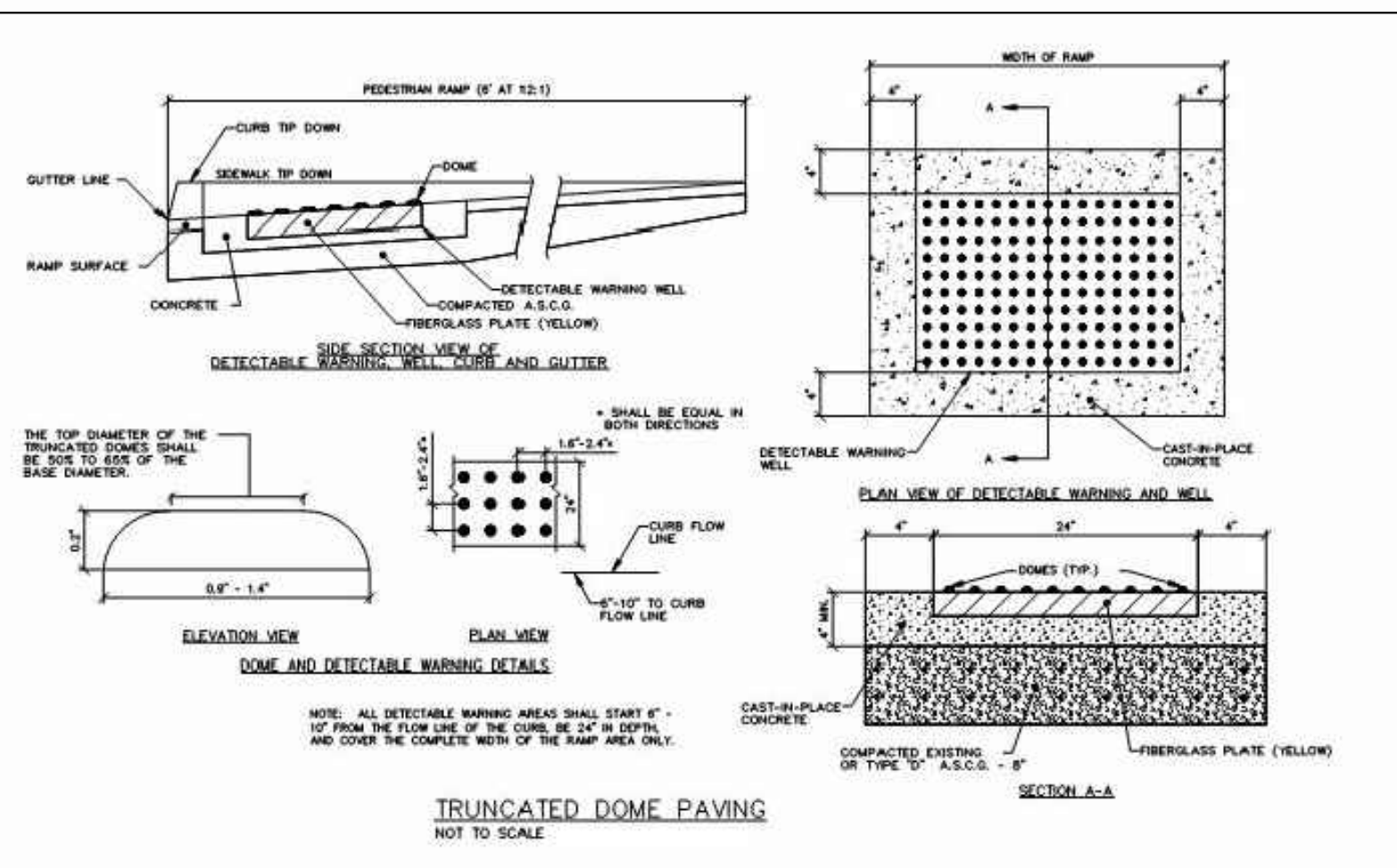
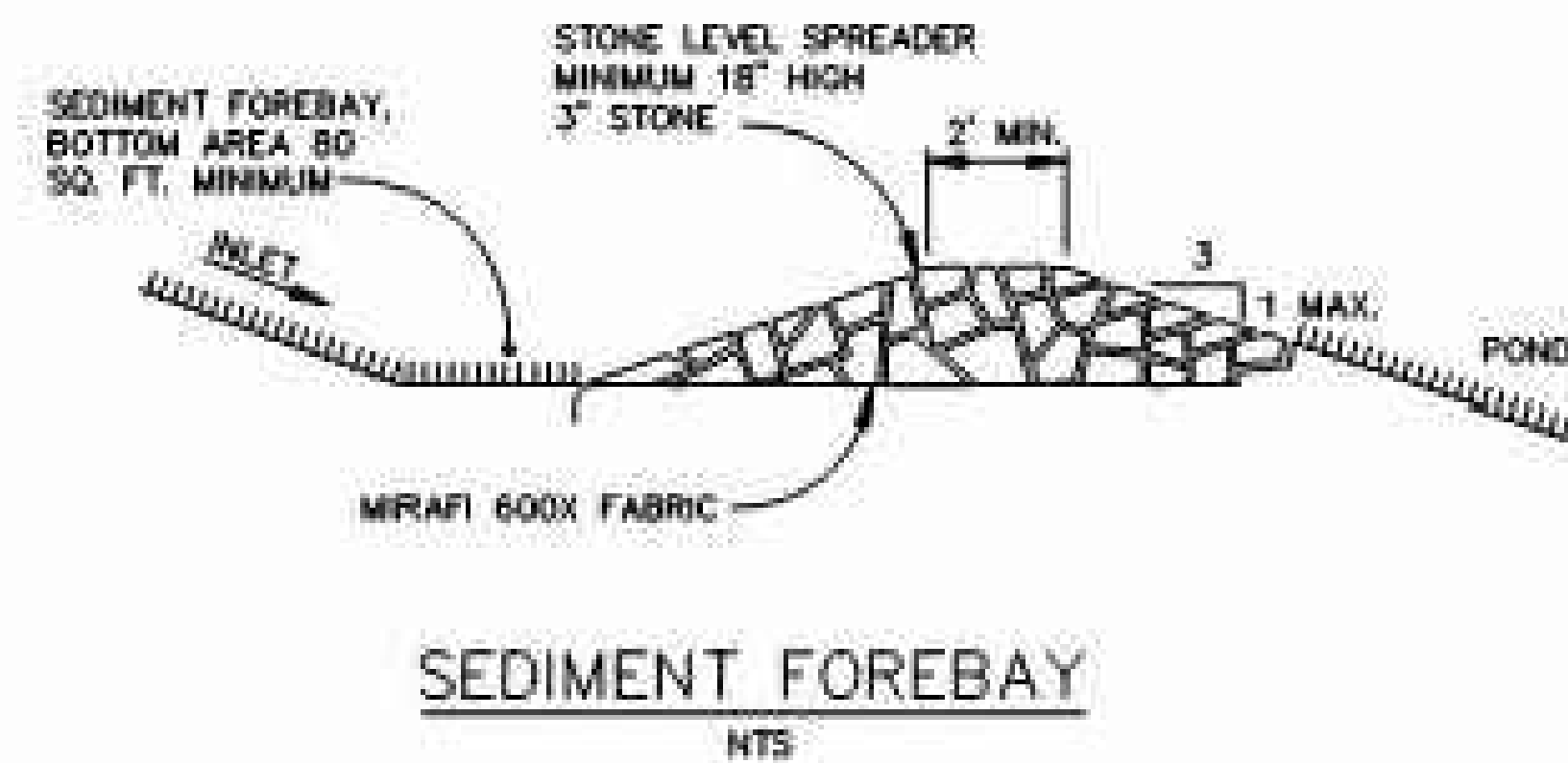
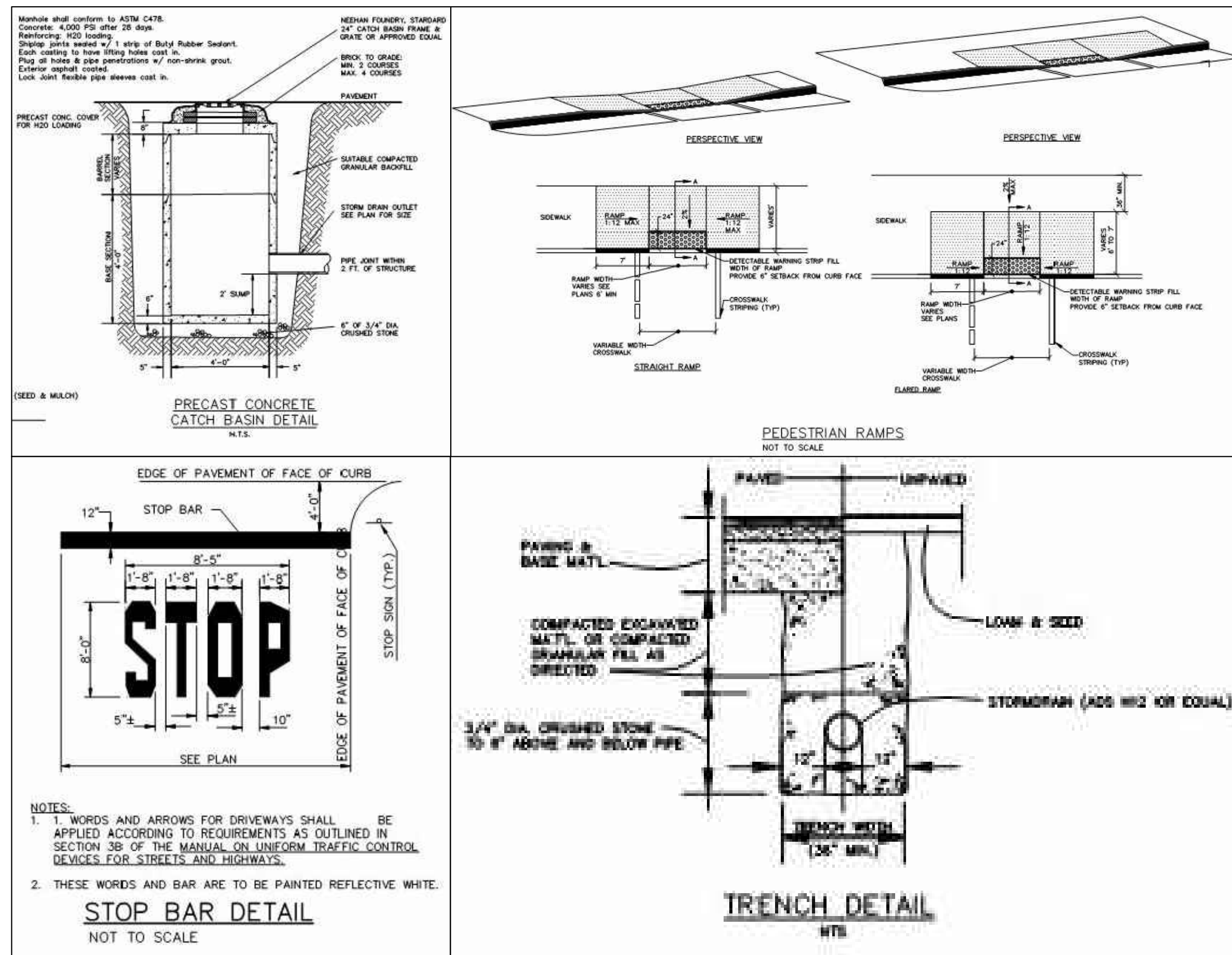
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PROFESSIONAL ENGINEER

10/29/18

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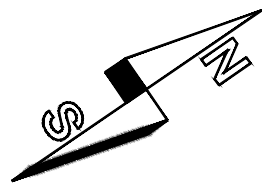
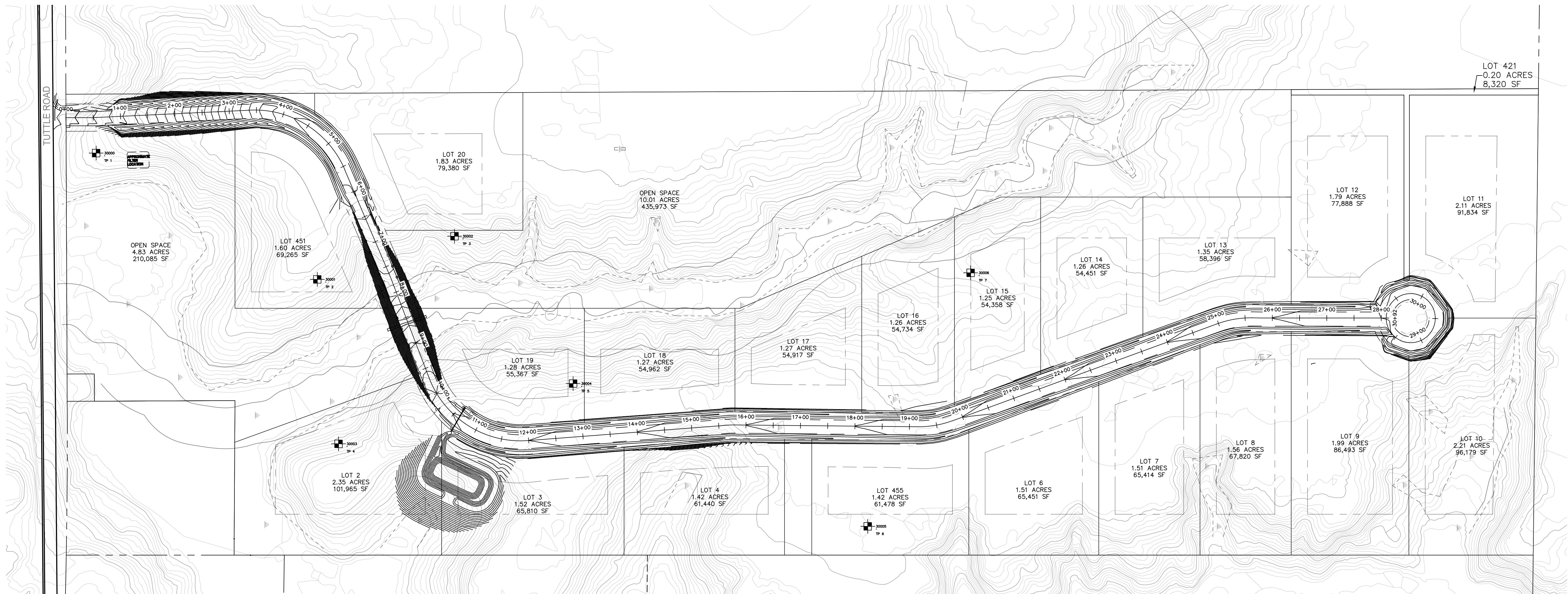
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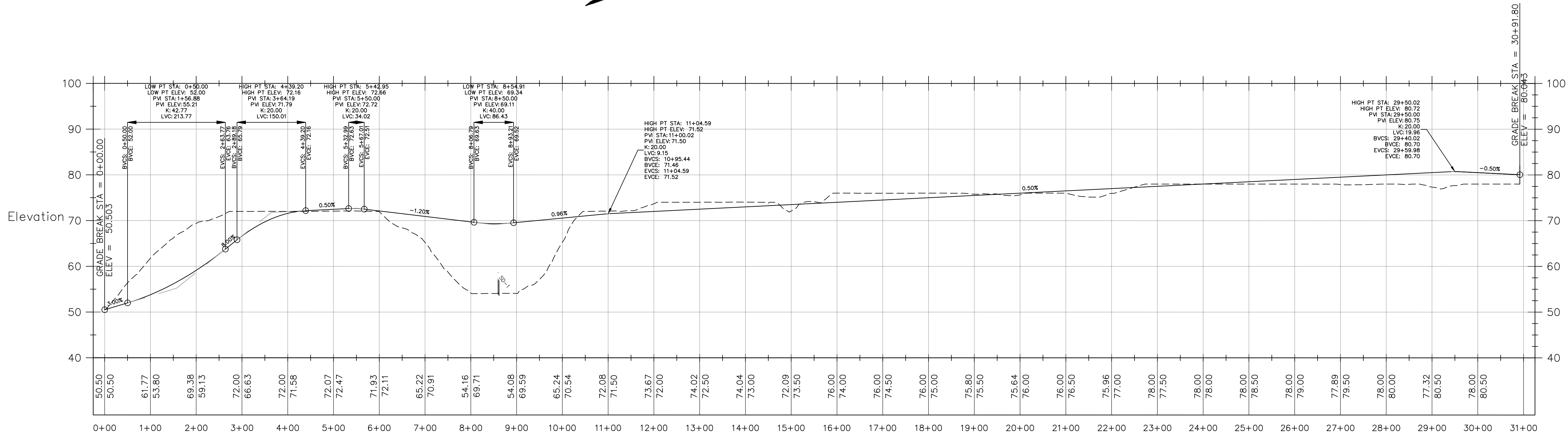


GRADING AND DRAINAGE PLAN

22X34 SCALE: 1"=100'
11X17 SCALE: 1"=200'

1
C2.2

WETLAND IMPACT = 3150 SF



PROFILE

22X34 SCALE: V:1"=4' H:1"=40'
11X17 SCALE: V:1"=8' H:1"=80'

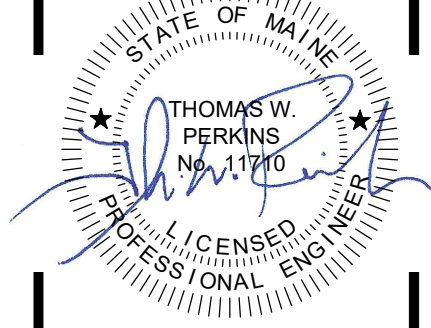
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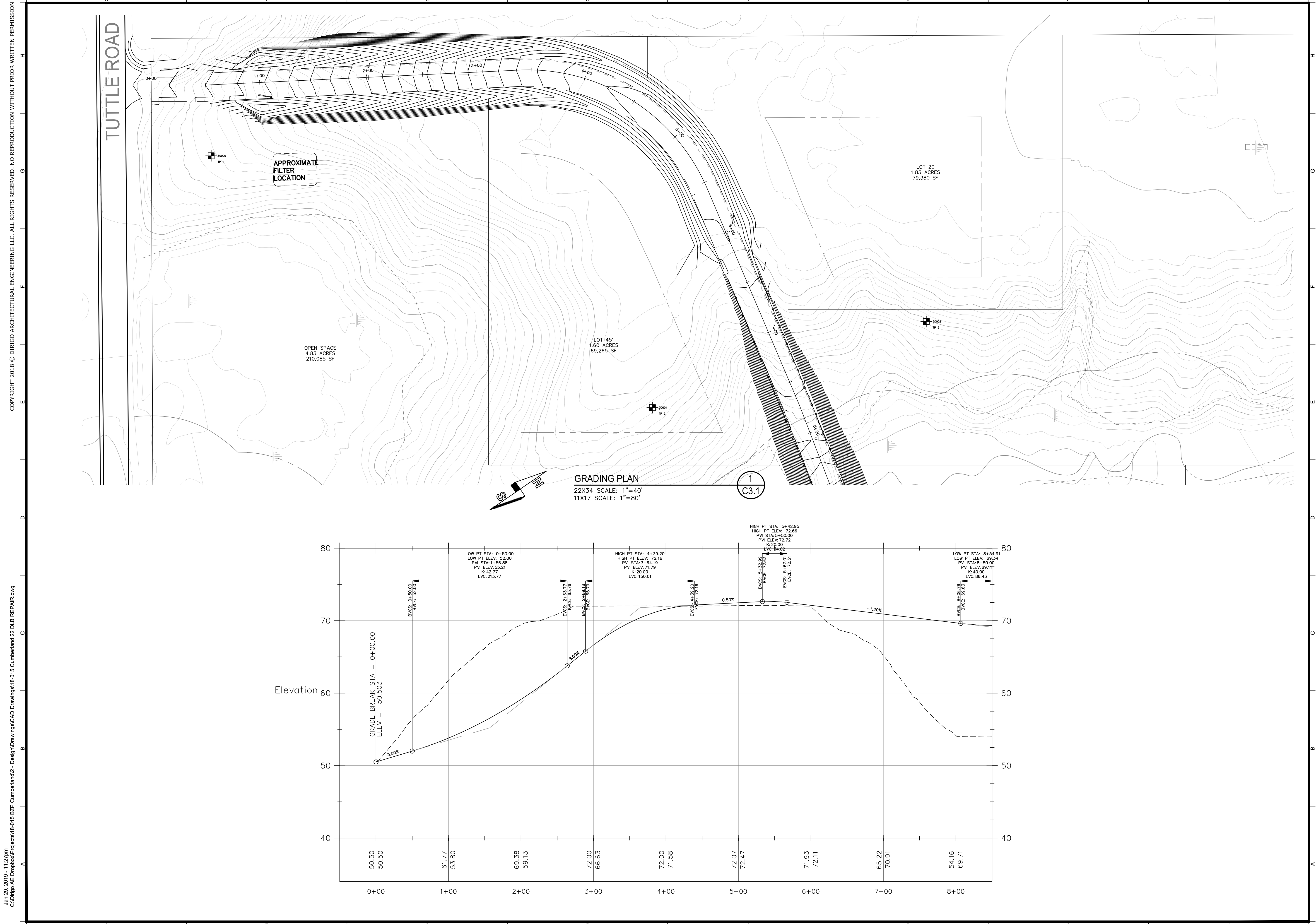


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STATE OF MAINE

THOMAS W. PERKINS
No. 11770

LICENSED PROFESSIONAL ENGINEER

GRADING PLAN & PROFILE

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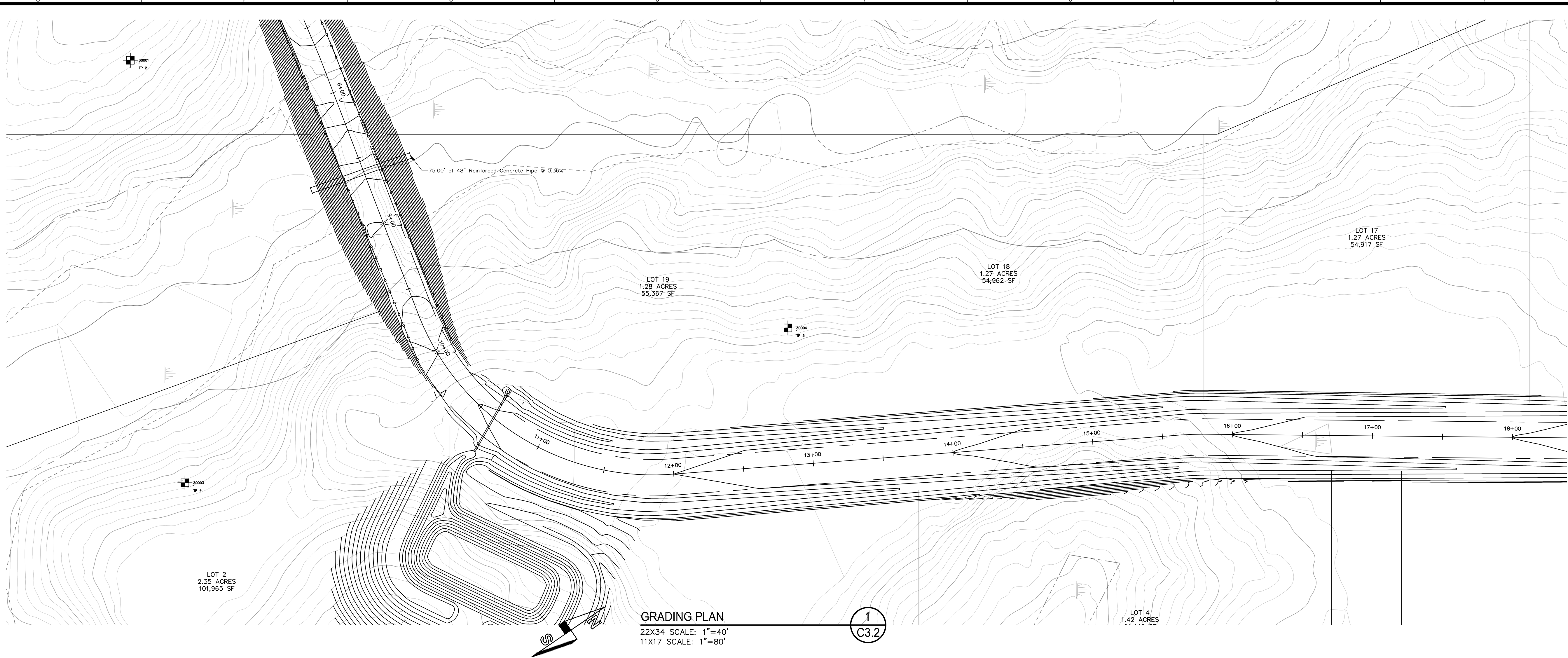
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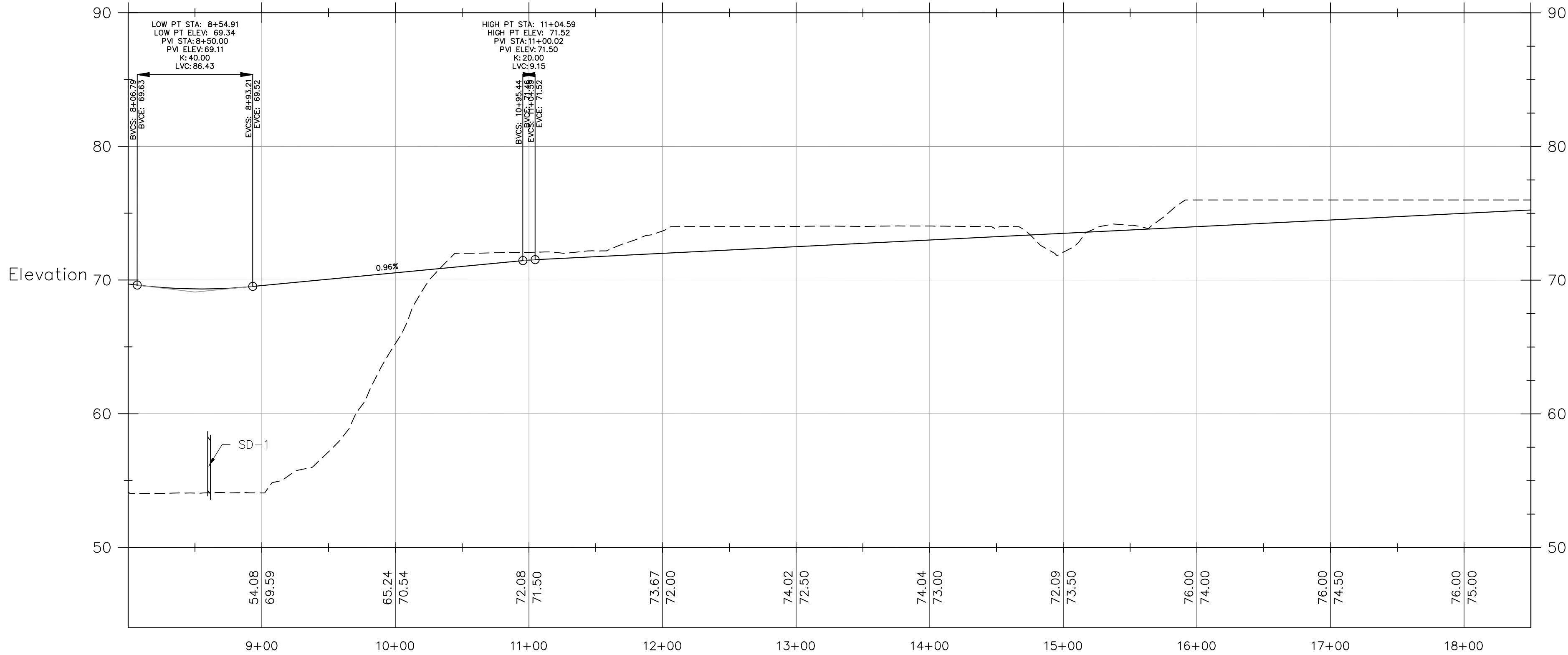
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GRADING PLAN
22X34 SCALE: 1"=40'
11X17 SCALE: 1"=80'

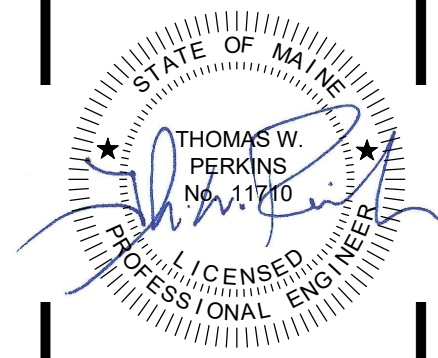


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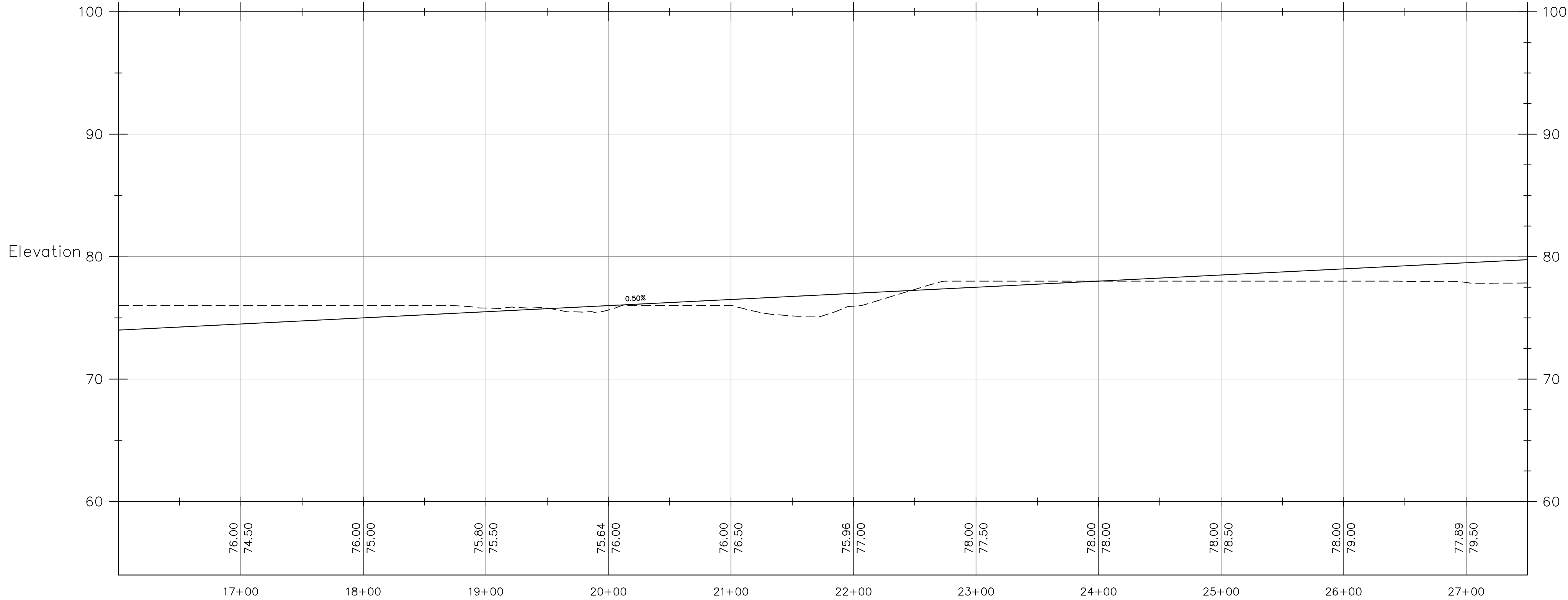
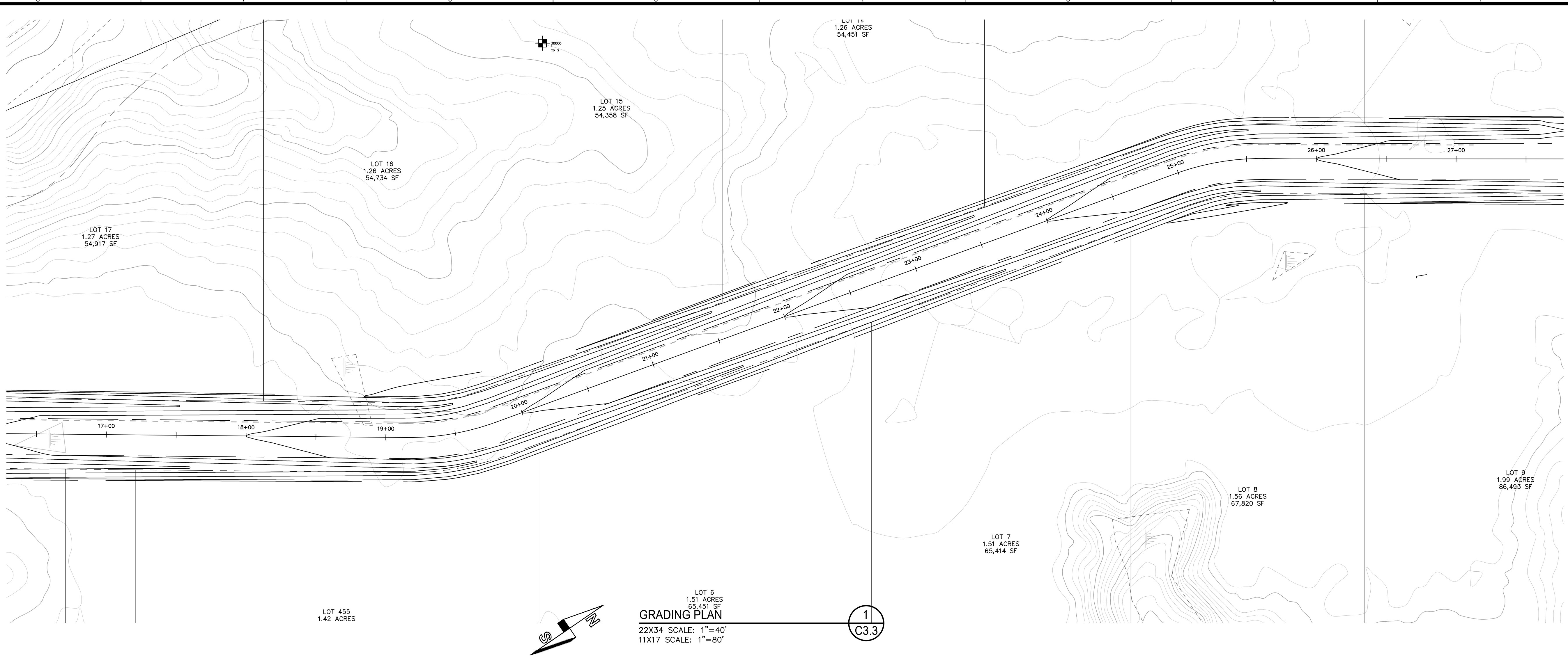
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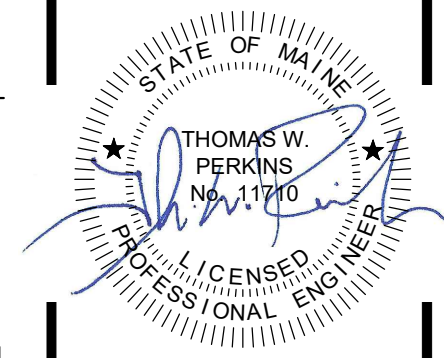


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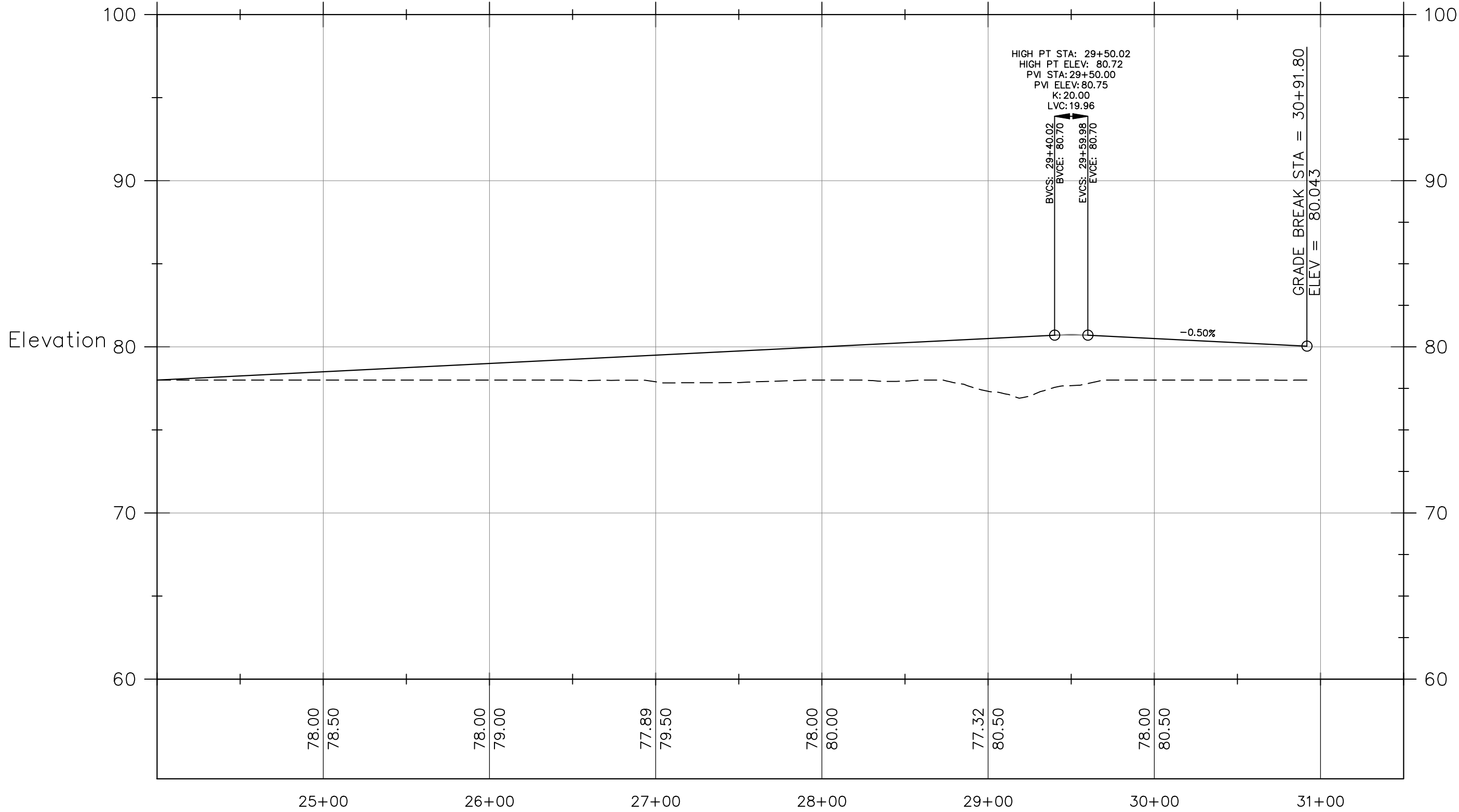
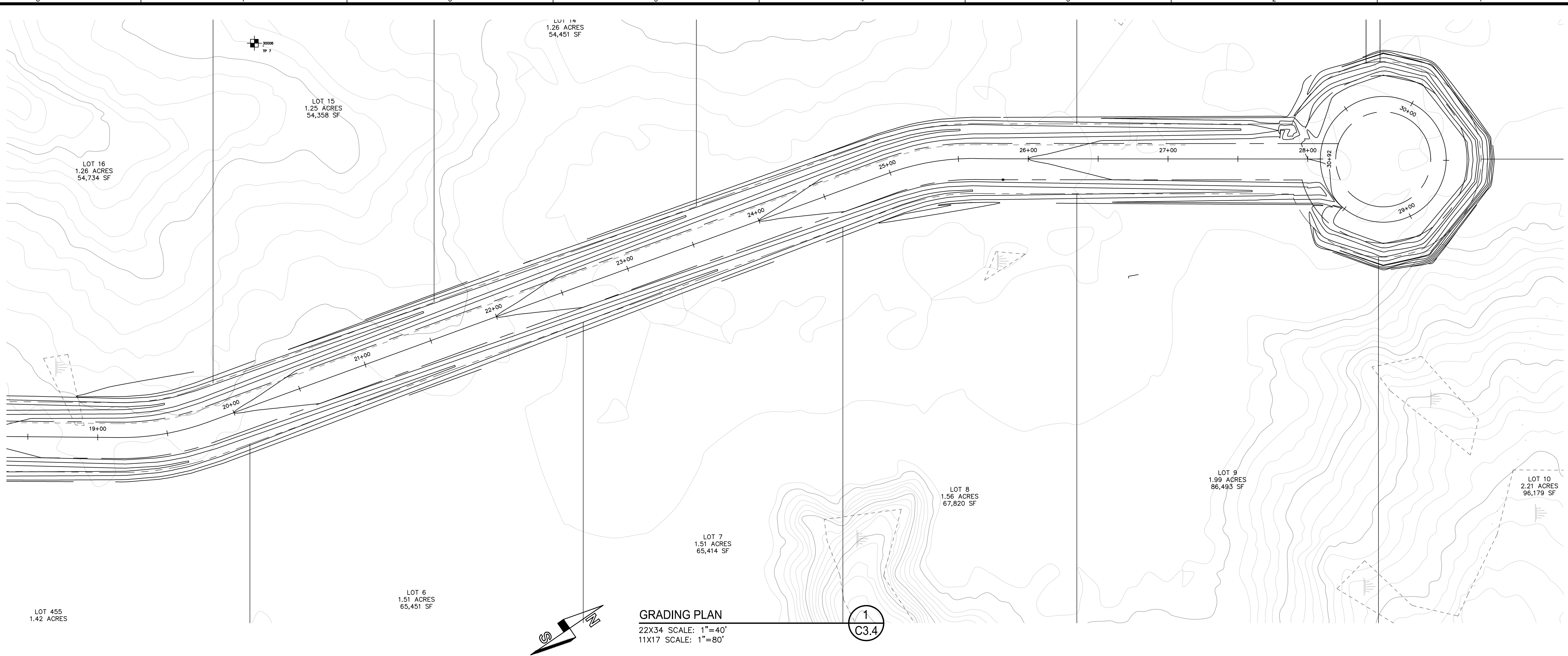
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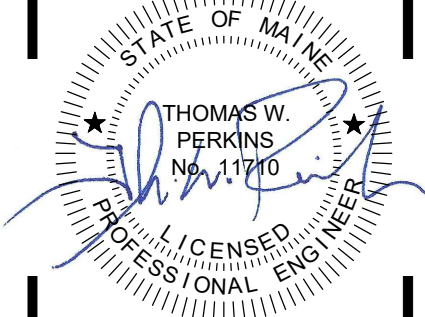


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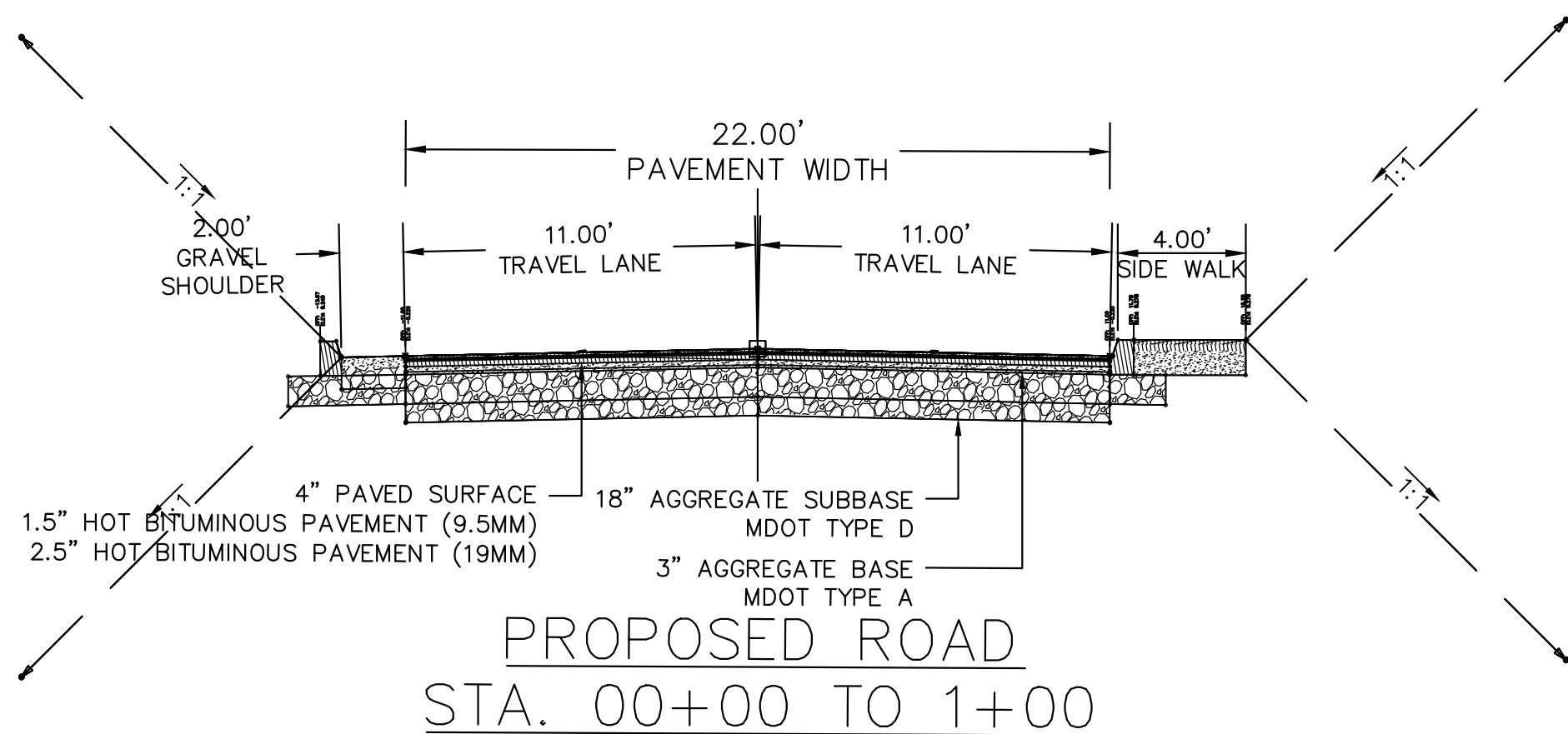
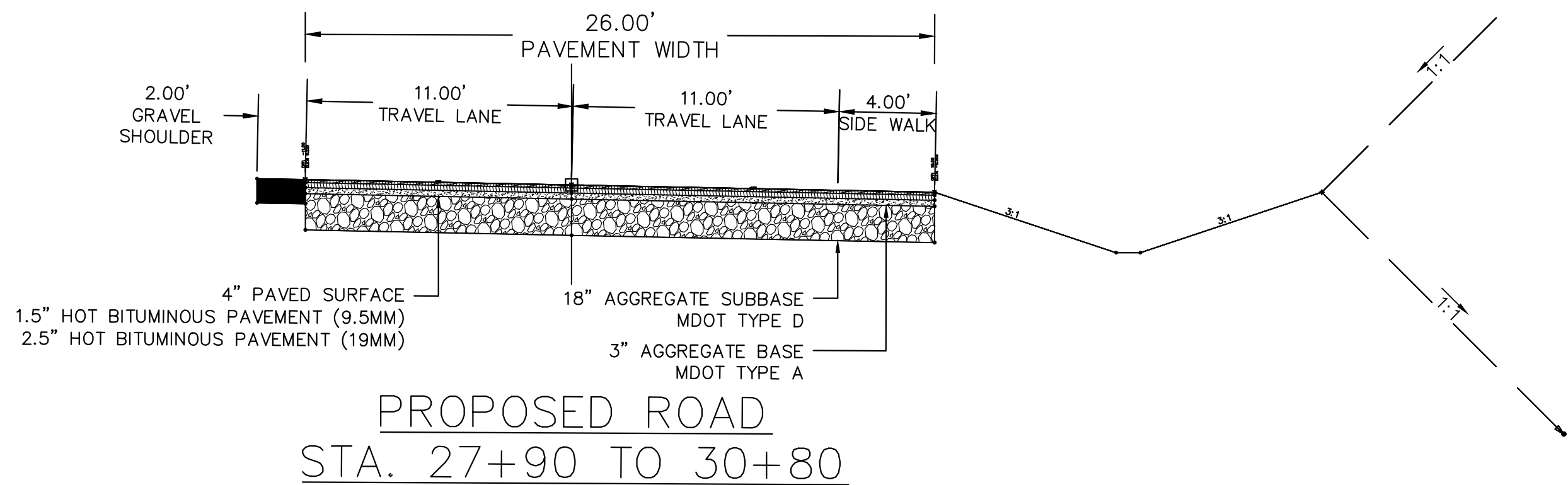
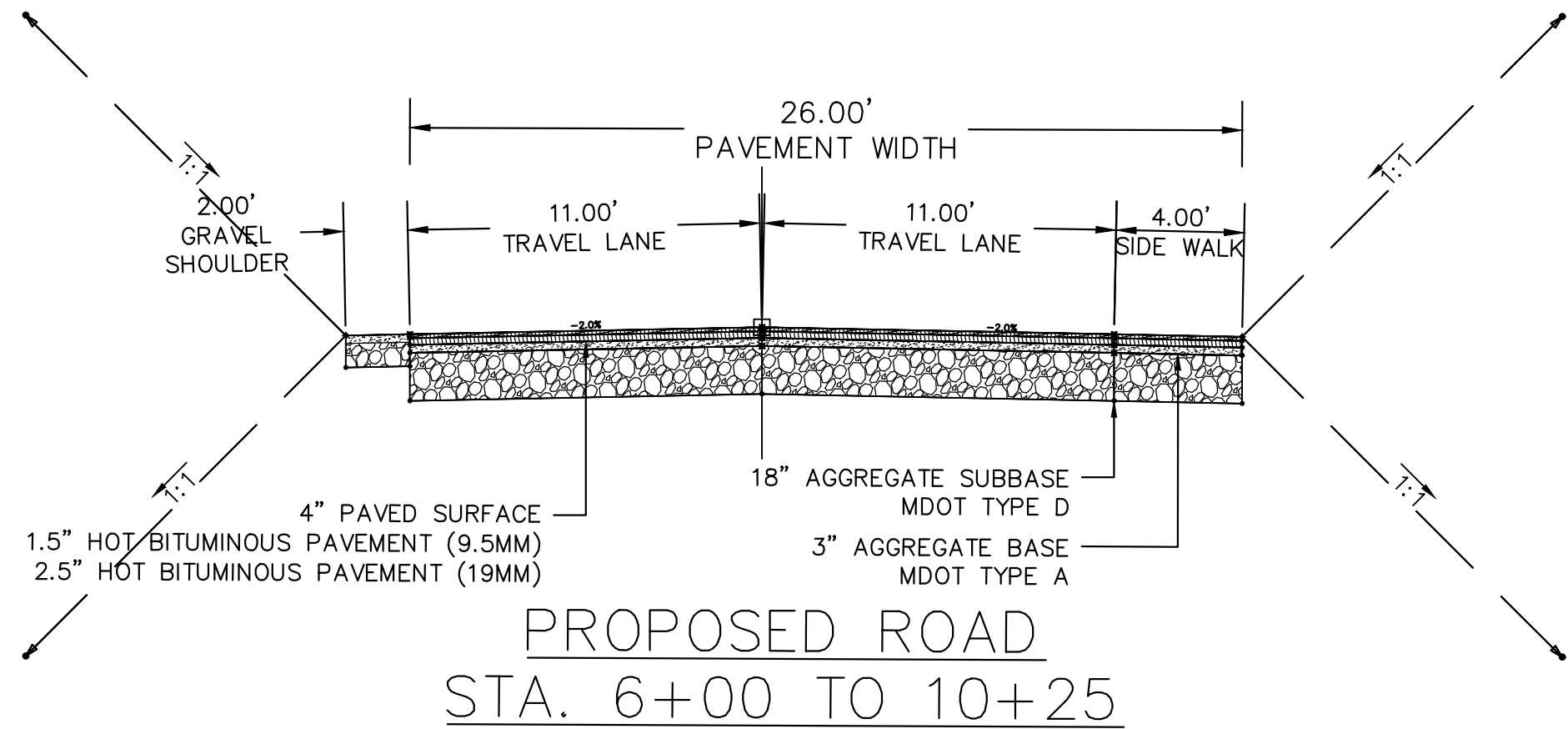
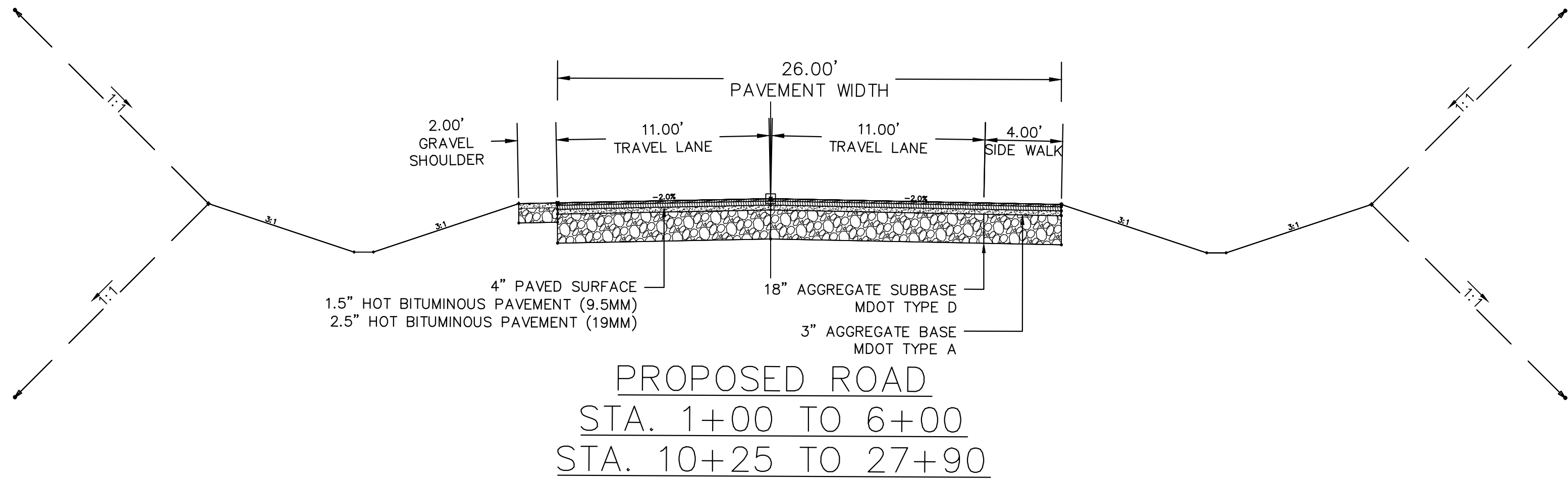
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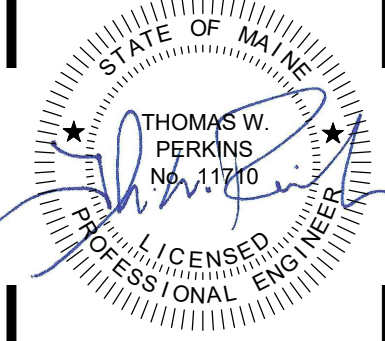


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NOTES:

BOUNDARY:

SOILS MAPPING: CUMBERLAND COUNTY MEDIUM INTENSITY
SOILS MAPS

TOPOGRAPHY: MAINE STATE GIS 2' CONTOURS

Tc SUMMARY

SUBCATCHMENT	Tc ROUTE
SA-1	150' SHEET, 2446' SHALLOW, 2049' CHANNEL
SA-1A	150' SHEET, 188' SHALLOW, 257' SHALLOW
SA-2	150' SHEET, 252' SHALLOW, 475' SHALLOW
SA-3	150' SHEET, 433' SHALLOW

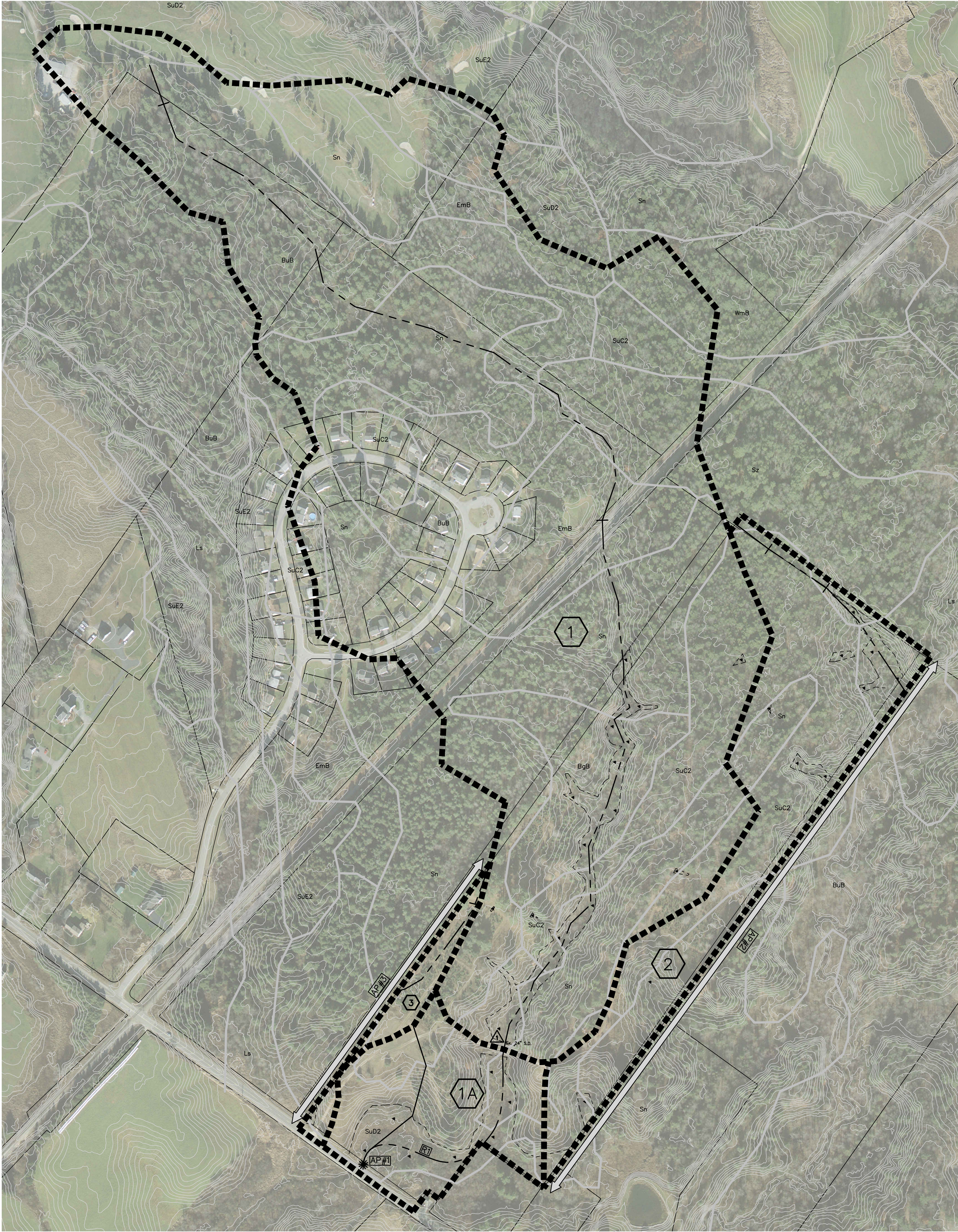
ANALYSIS POINT	PRE DEVELOPMENT FLOWS		
	2 YR. STORM	10 YR. STORM	25 YR. STORM
AP-1	18.85 CFS	40.57 CFS	81.79 CFS
AP-2 (SA-2)	6.02 CFS	13.81 CFS	20.80 CFS
AP-3 (SA-3)	0.82 CFS	1.74 CFS	2.55 CFS

SOILS LEGEND	
SYMBOL	DESCRIPTION
	SOIL BOUNDARY LINES
	LIMIT OF WETLANDS

SLOPE DESIGNATION	
A	= 0 - 3%
B	= 3- 8%
C	= 8 - 20%
D	= 20%+

HYDROLOGIC SOIL GROUP	
SOIL	GROUP
BELGRADE (BgB)	B
ELMWOOD (EmB)	B
LAMOINE (BuB)	C/D*
LIMERICK-SACO (Ls)	B/D*
SCANTIC (Sn)	D
SUFFIELD (SuC2,D2,E2)	C
SWANTON (Sz)	C/D*
WINDSOR (WmB)	A
* ASSUME TYPE D SOIL	

SYMBOL	LEGEND	DESCRIPTION
	TEST PIT	
	POND	
	DRAINAGE SUB AREA	
	REACH	
	DRAINAGE AREA BOUNDARY	
	TIME OF CONCENTRATION ROUTE	
	LIMIT OF WETLANDS	
	EXISTING CONTOUR	
	PROPOSED CONTOUR	



NO.	DATE	REVISION	DESCRIPTION

BH2M

Berry, Huff, McDonald, Milligan Inc.
Engineers, Surveyors

28 State Street
Gordian, Maine 04038

Tel: (207) 839-2771
Fax: (207) 839-8250

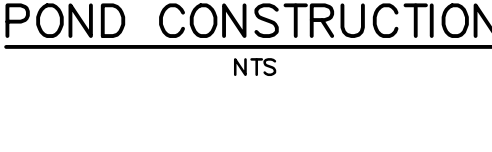
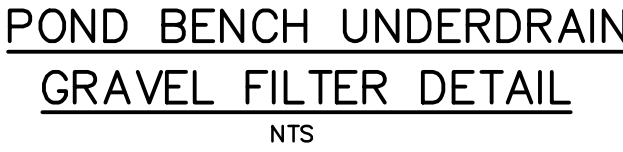
FOR
Name
Street
Town

PRE DEVELOPMENT

CHRISTMAS CREEK

LITTLE ROAD
CUMBERLAND, MAINE

DESIGNED ----	DATE Date
DRAWN Dept.	SCALE As Noted
CHECKED ----	JOB. NO. ----

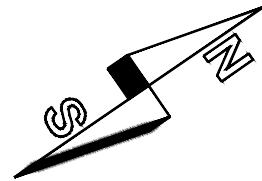
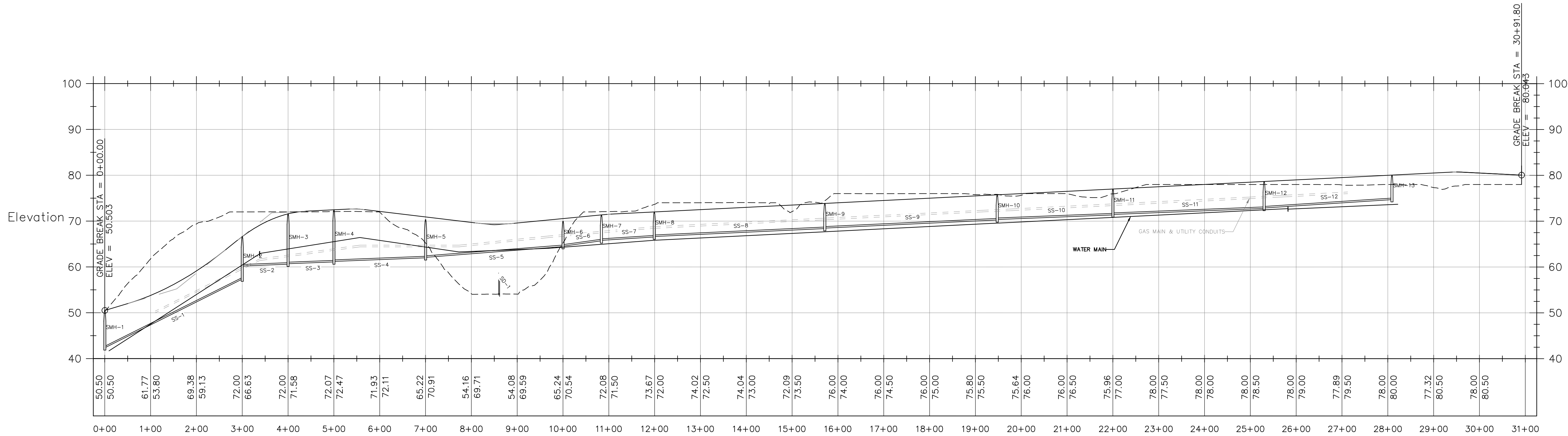


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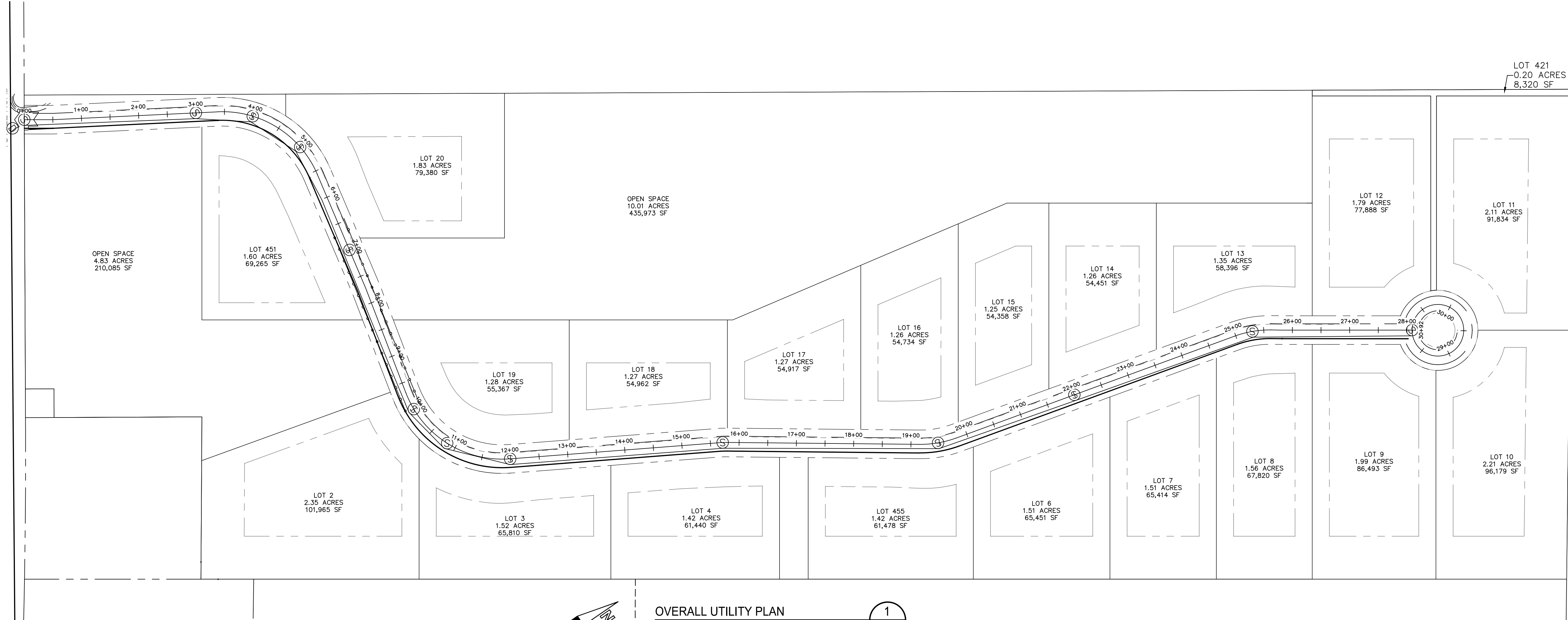
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OVERALL UTILITY PLAN
22X34 SCALE: 1"=100'
11X17 SCALE: 1"=200'

1
C4.0

NOTE: UTILITY EASMENT TO BE
GRANTED TO ALL UTILITIES WITHIN
ROAD RIGHT OF WAY. 50' WIDTH



OVERALL UTILITY PLAN

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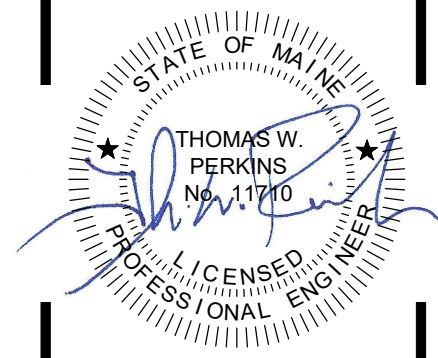
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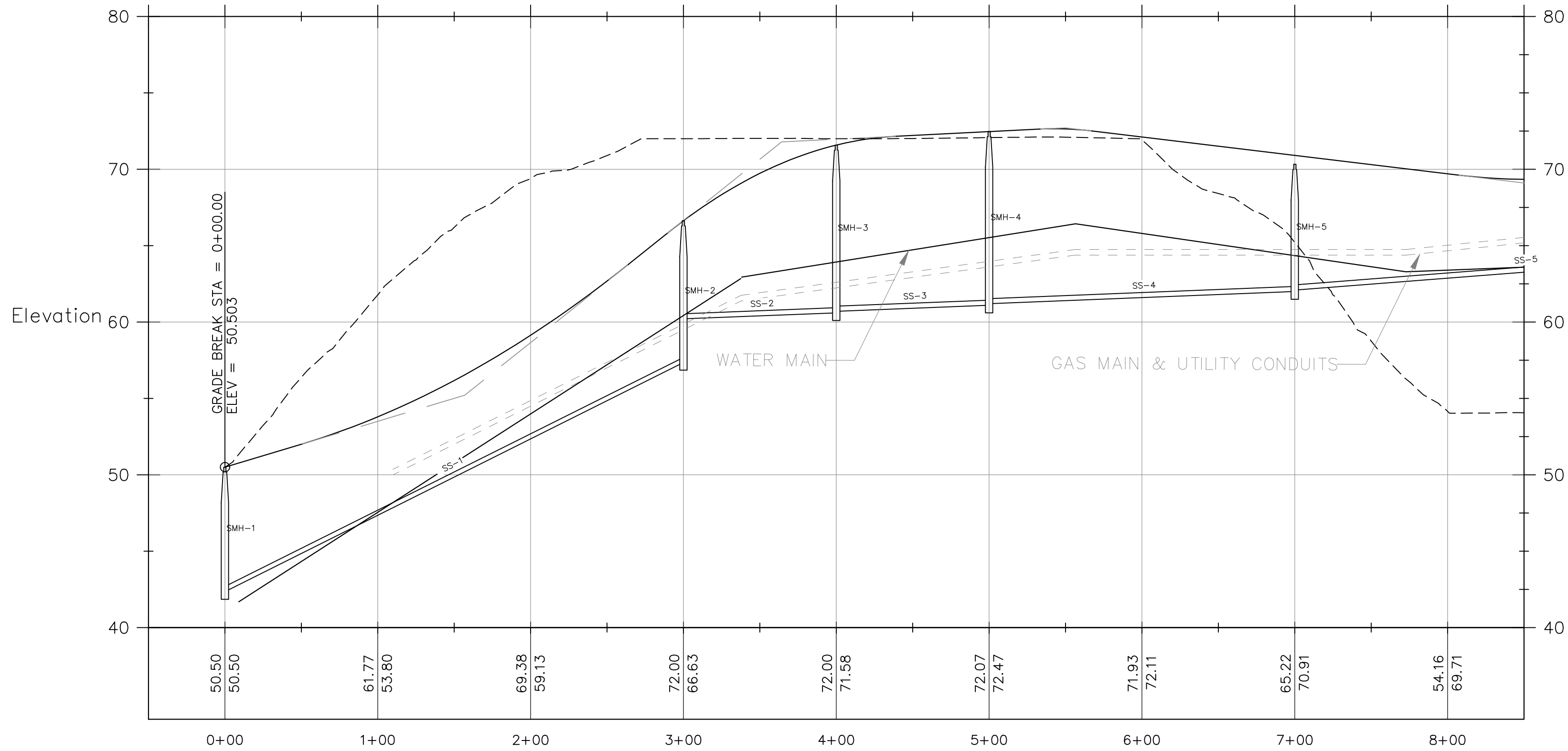
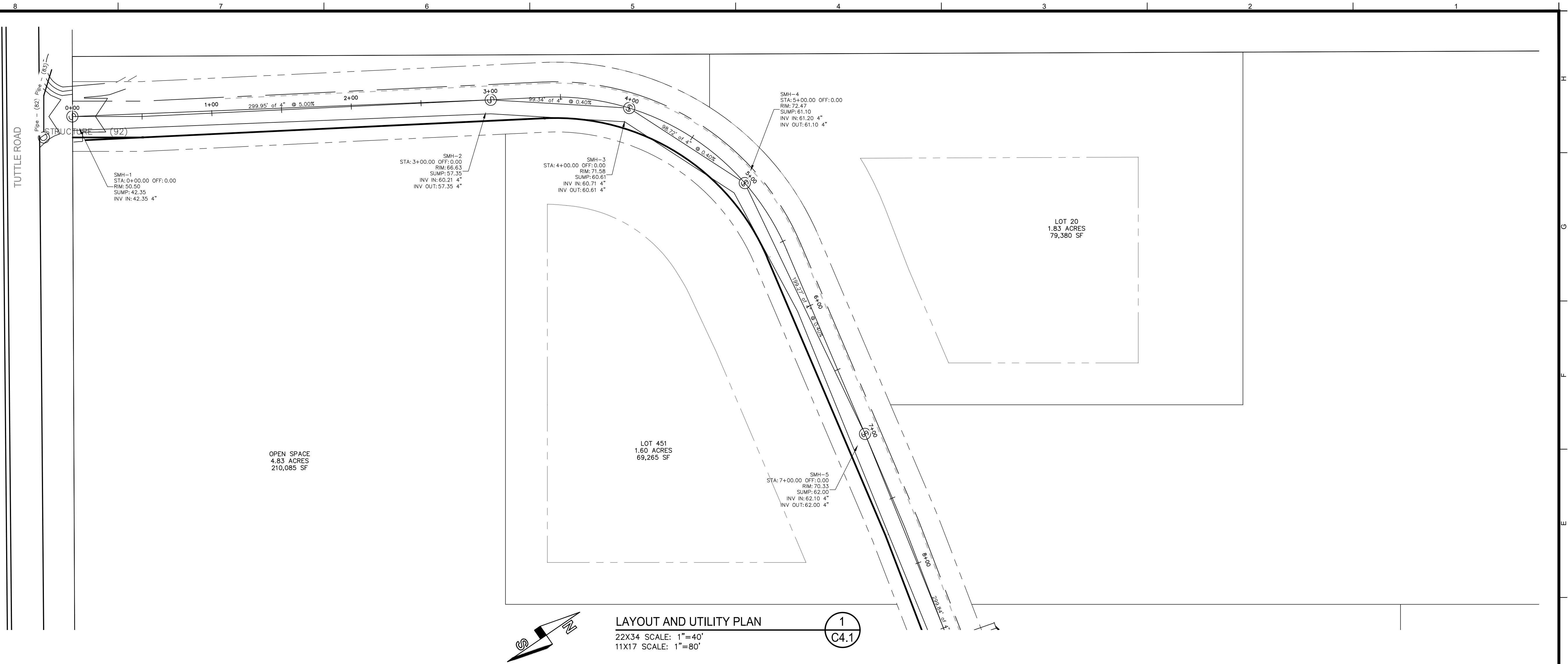
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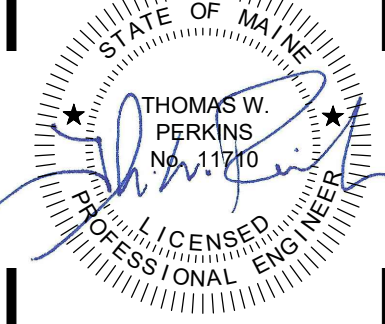


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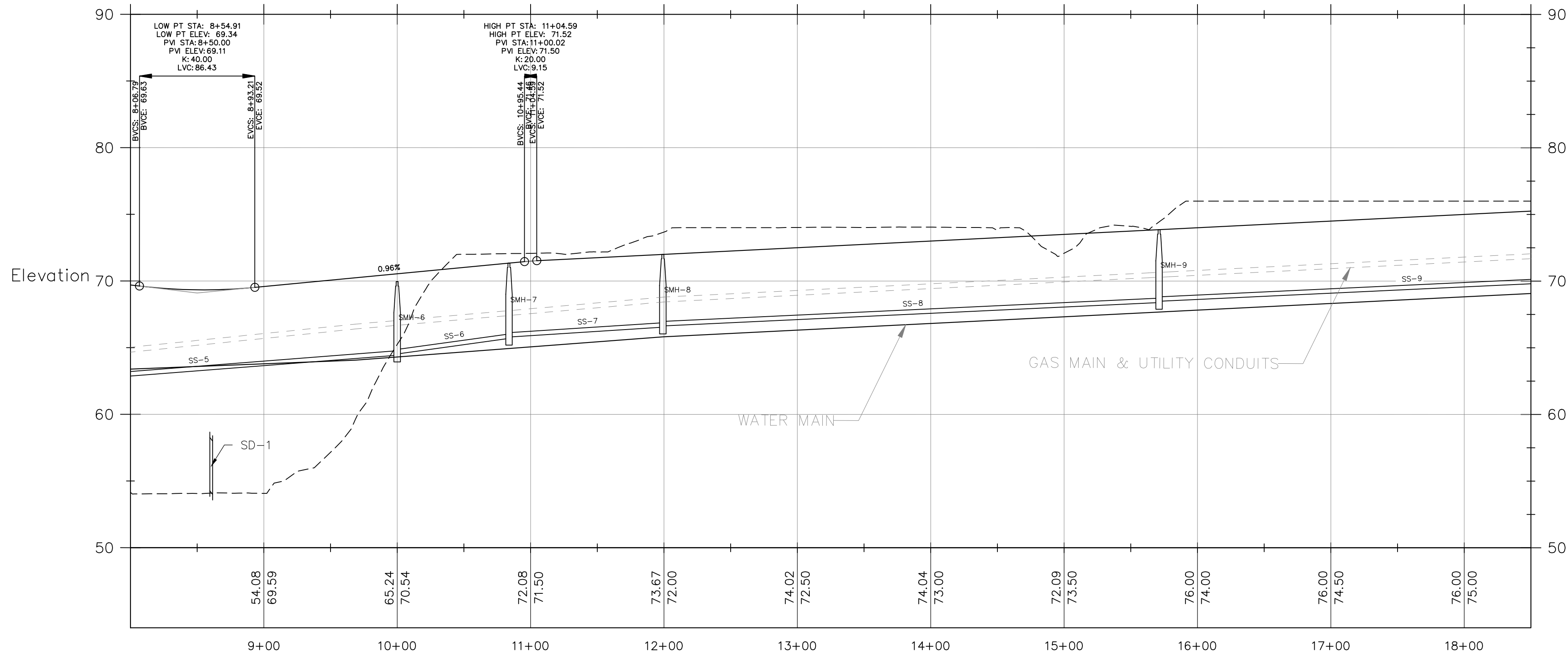
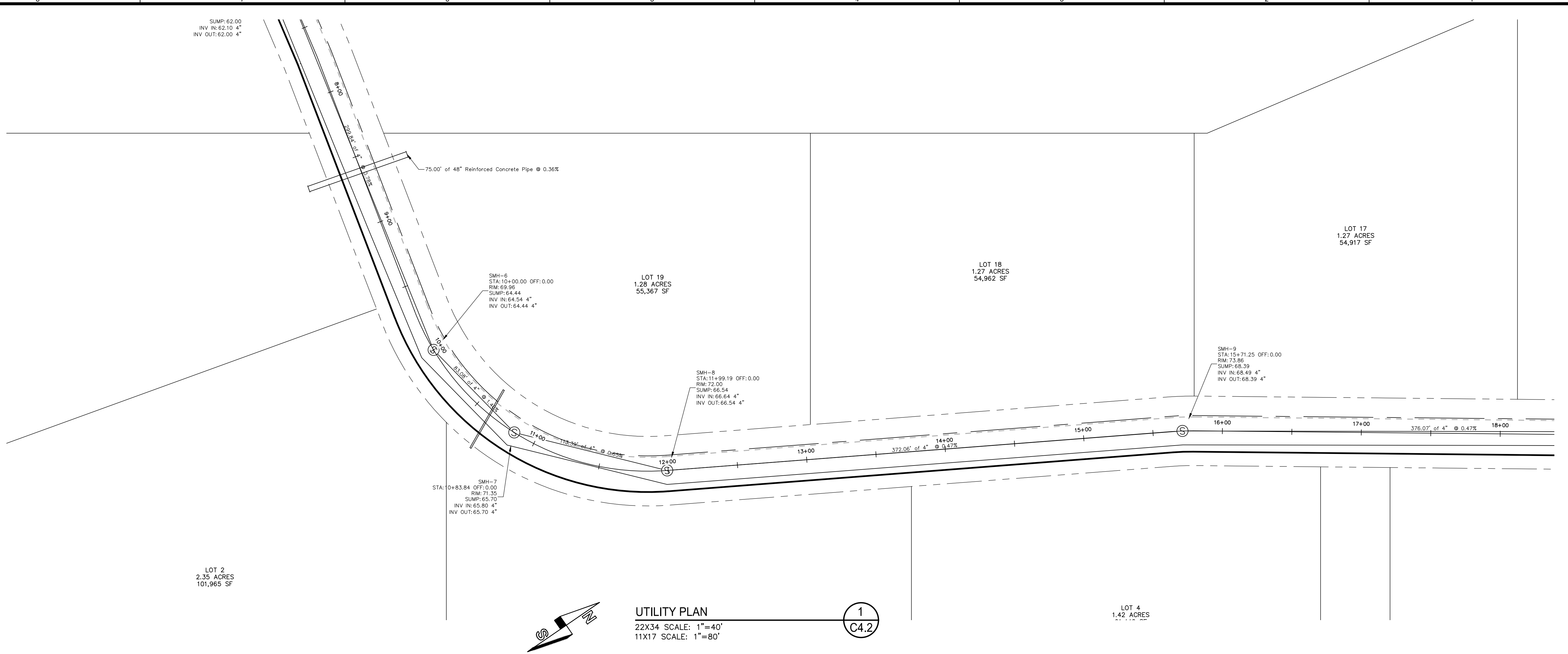
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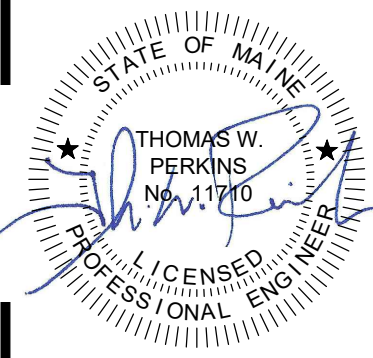


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1	10/30/18	PLANNING BOARD - PRELIMINARY APPLICATION REVIEW

DRAWN BY: ZTQ
CHECKED BY: TWP

PH: (207) 225 - 3040
7 Cobblestone Way,
Suite 2
Turner, ME 04282

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ARCHITECTURAL
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EM: tperkins@dirigoae.com W: www.dirigoae.com

DATE: 1/29/2019

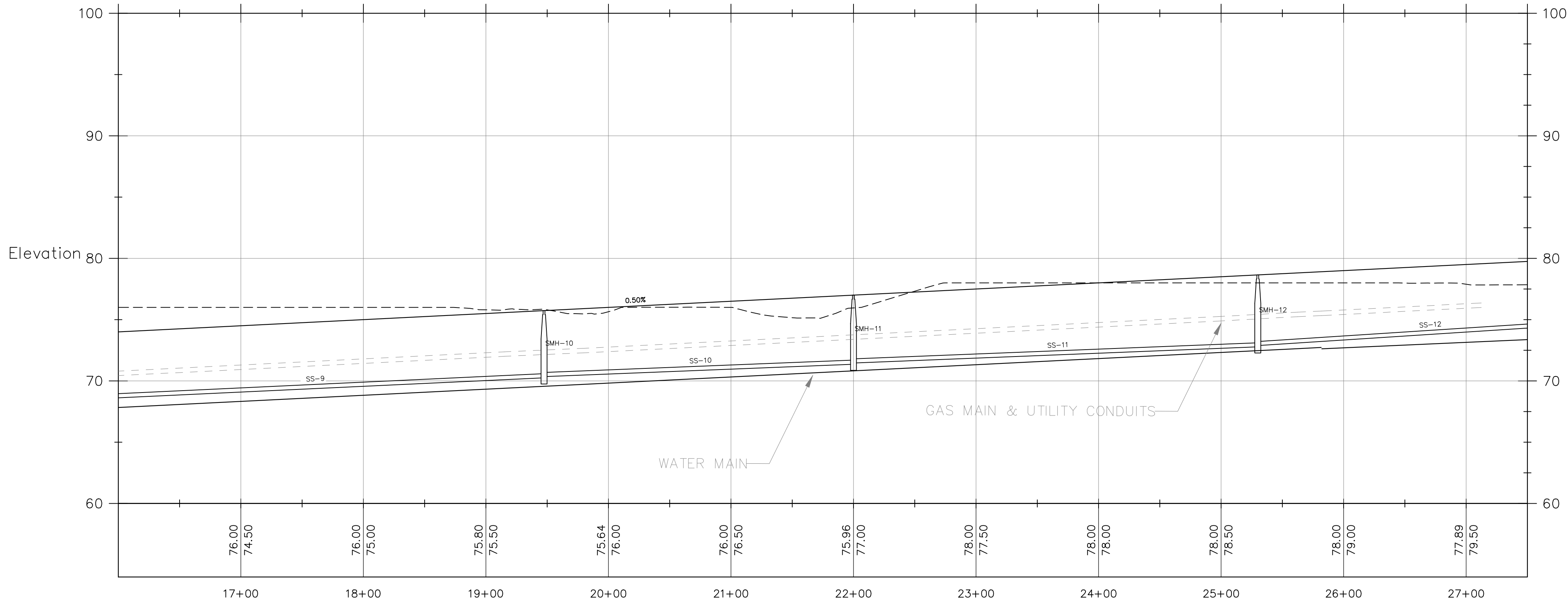
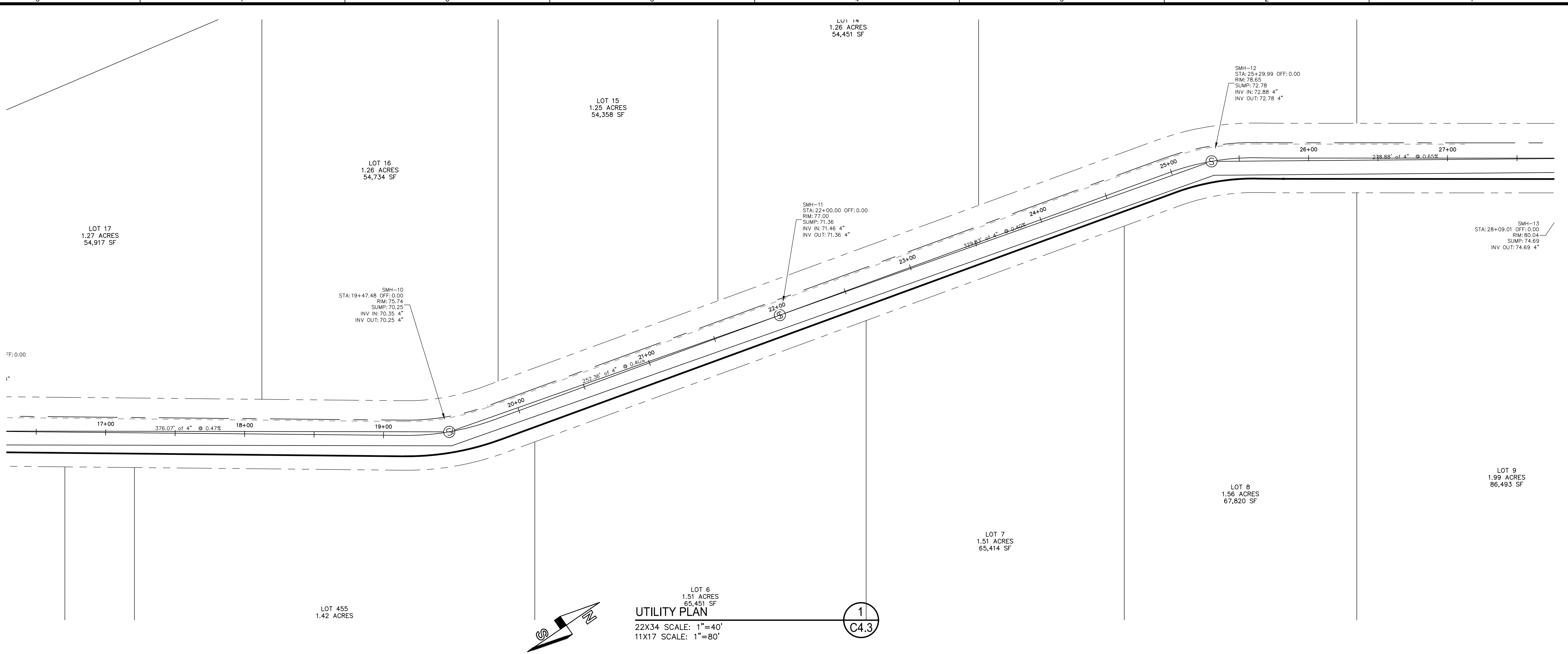
PROJECT NO. 18-015

SHEET NO.

C4.2

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Jan 29, 2019 - 11:29pm
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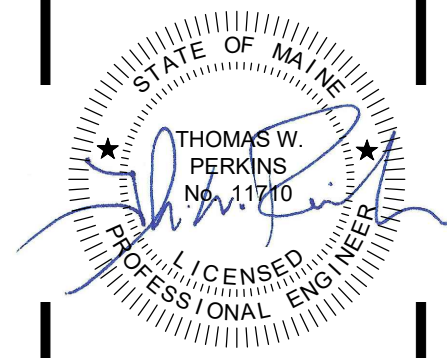


CHRISTMAS CREEK
SUBDIVISION

CUMBERLAND

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UTILITY PLAN

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1	10/30/18	PLANNING BOARD - PRELIMINARY APPLICATION REVIEW
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DATE: 1/29/2019

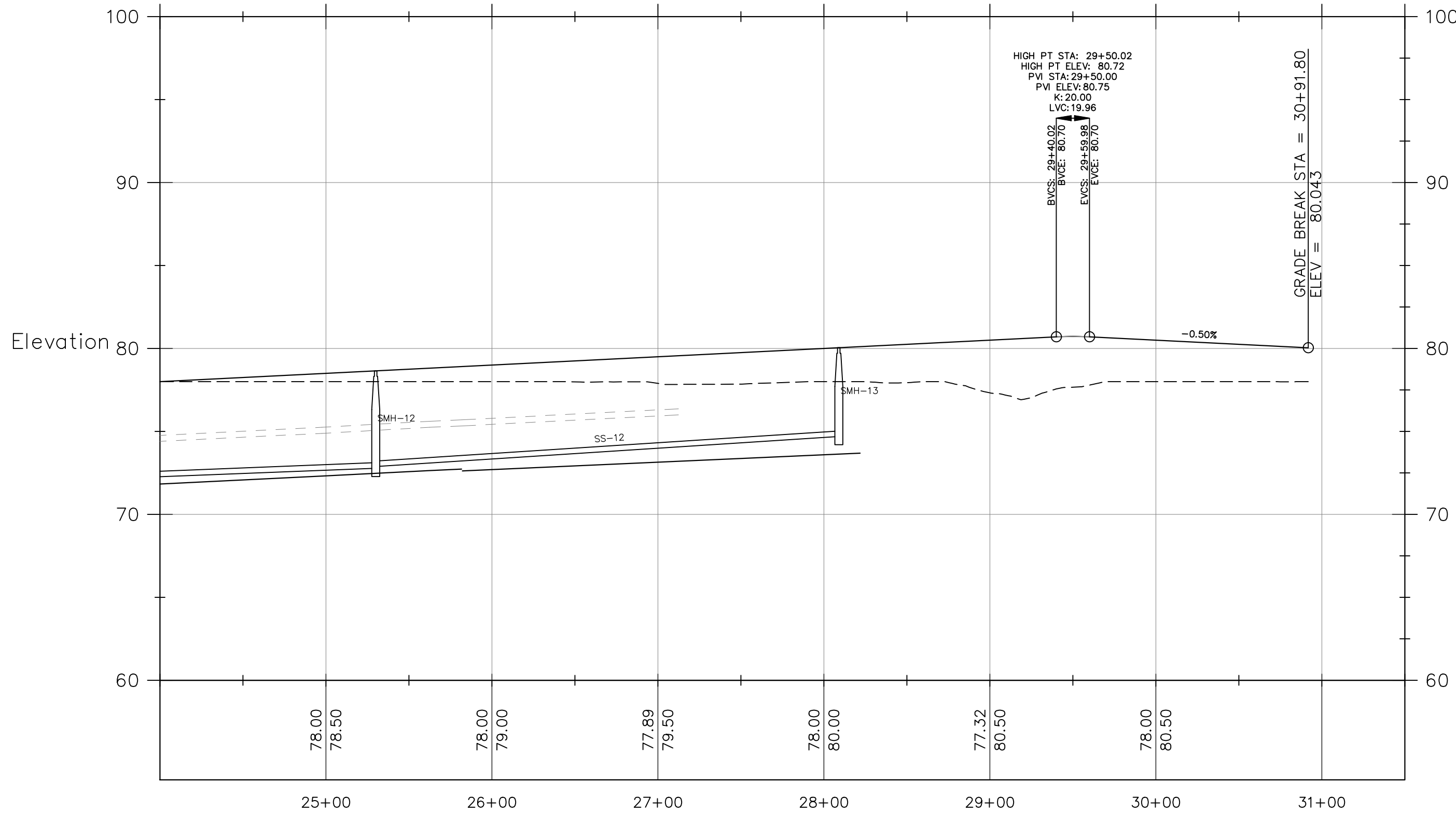
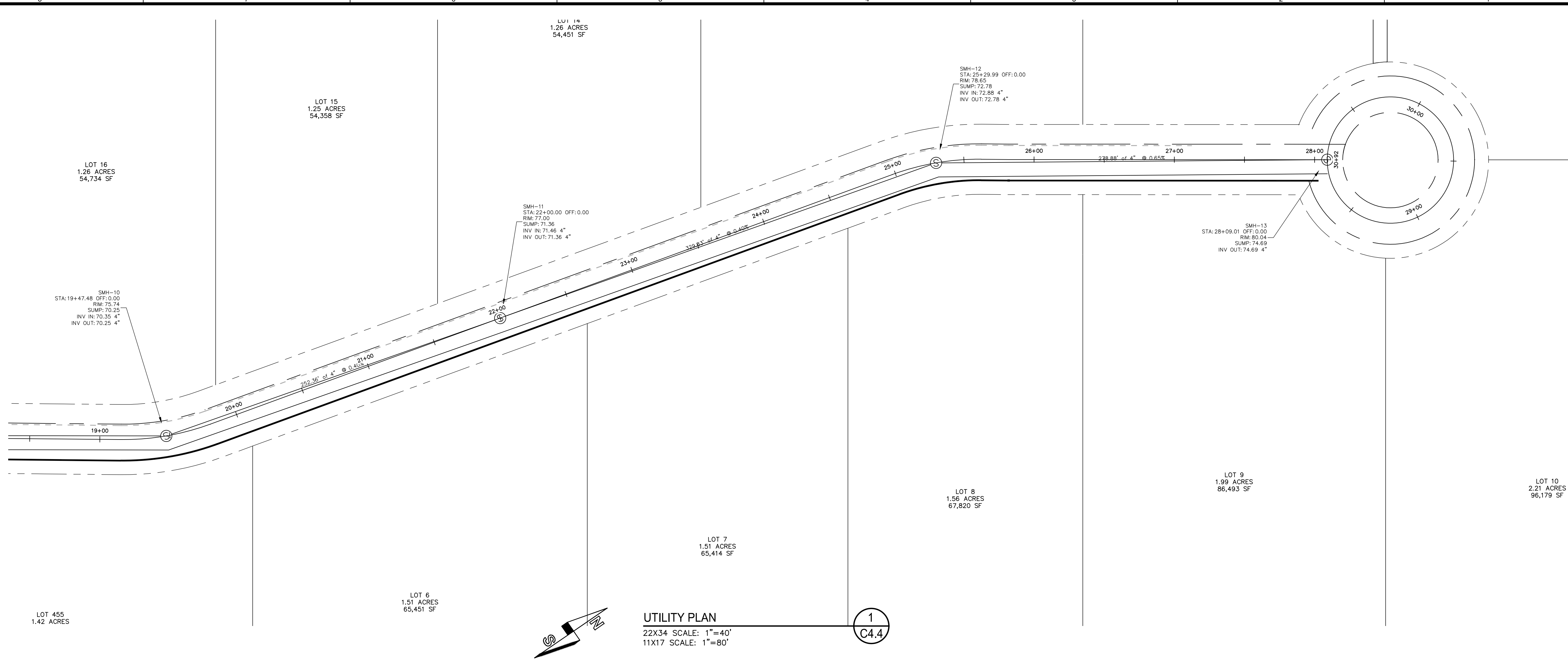
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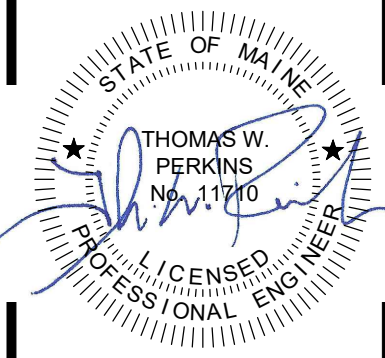


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UTILITY PLAN		DESCRIPTION	
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0	10/30/18		
1	10/30/18		
DRAWN BY: ZTQ		CHECKED BY: TWP	

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Turner, ME 04282

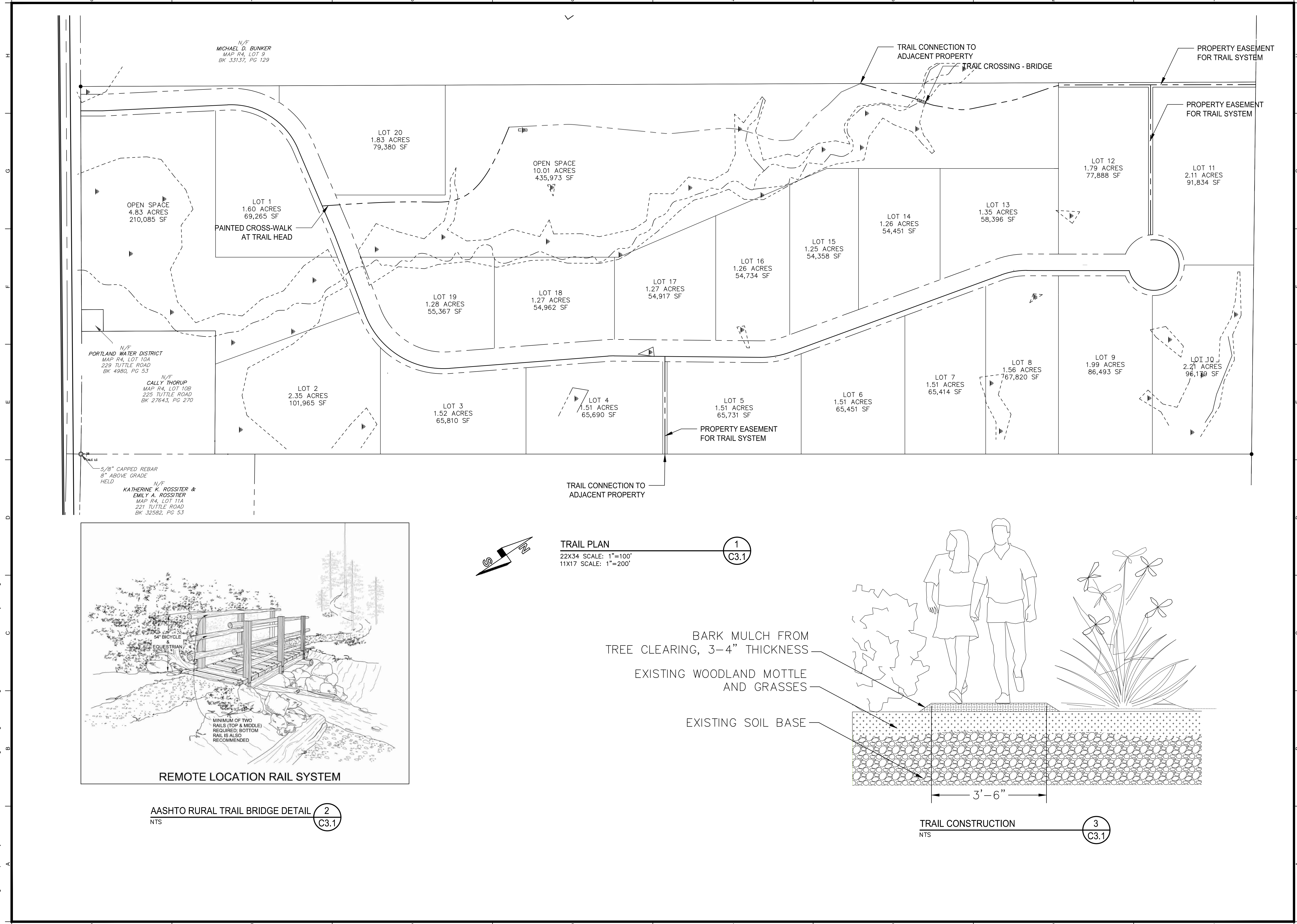
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DATE: 1/29/2019
PROJECT NO. 18-015
SHEET NO.

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10/29/18

TRAIL PLAN

REV.	DATE	DESCRIPTION
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CHECKED BY: TWP

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Suite 2
Turner, ME 04282

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DATE: 10/30/2018

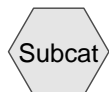
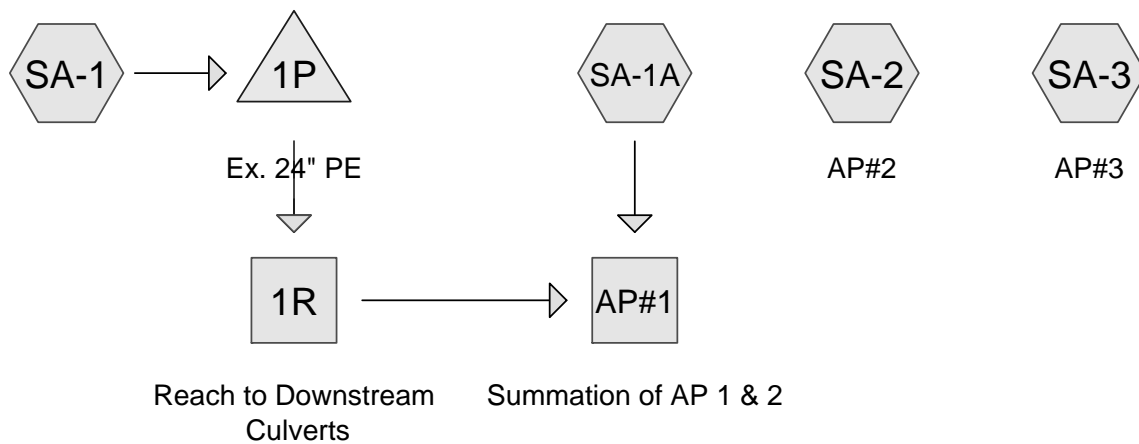
PROJECT NO. 18-015

SHEET NO.

C5.0



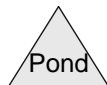
Section 6: MDEP Site Location Permit Items



Subcat



Reach



Pond



Link

Routing Diagram for Pre Development - Christmas Creek

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Pre Development - Christmas Creek

Prepared by BH2M

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.223	75	1/4 acre lots, 38% imp, HSG B (SA-1)
2.222	83	1/4 acre lots, 38% imp, HSG C (SA-1)
10.162	87	1/4 acre lots, 38% imp, HSG D (SA-1)
0.201	98	Existing Road (SA-1A, SA-3)
1.841	30	Woods, Good, HSG A (SA-1)
13.502	55	Woods, Good, HSG B (SA-1)
32.673	70	Woods, Good, HSG C (SA-1, SA-1A, SA-2, SA-3)
66.552	77	Woods, Good, HSG D (SA-1, SA-1A, SA-2, SA-3)
128.376	73	TOTAL AREA

Pre Development - Christmas Creek

Type III 24-hr 2 YEAR STORM Rainfall=3.10"

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Summary for Subcatchment SA-1:

Runoff = 24.16 cfs @ 13.75 hrs, Volume= 6.608 af, Depth> 0.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.10"

Area (sf)	CN	Description
53,285	75	1/4 acre lots, 38% imp, HSG B
96,783	83	1/4 acre lots, 38% imp, HSG C
442,657	87	1/4 acre lots, 38% imp, HSG D
80,198	30	Woods, Good, HSG A
588,128	55	Woods, Good, HSG B
675,215	70	Woods, Good, HSG C
2,473,442	77	Woods, Good, HSG D
4,409,708	73	Weighted Average
4,184,473		94.89% Pervious Area
225,236		5.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
46.7	150	0.0067	0.05		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
74.4	2,446	0.0120	0.55		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
2.5	2,049	0.0080	13.41	24,141.26	Trap/Vee/Rect Channel Flow, Bot.W=30.00' D=12.00' Z= 10.0 '/' Top.W=270.00' n= 0.035
123.6	4,645	Total			

Summary for Subcatchment SA-1A:

Runoff = 4.27 cfs @ 12.54 hrs, Volume= 0.564 af, Depth> 0.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.10"

Area (sf)	CN	Description
* 7,297	98	Existing Road
277,866	70	Woods, Good, HSG C
94,644	77	Woods, Good, HSG D
379,807	72	Weighted Average
372,510		98.08% Pervious Area
7,297		1.92% Impervious Area

Pre Development - Christmas Creek

Type III 24-hr 2 YEAR STORM Rainfall=3.10"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.2	150	0.0200	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
1.8	188	0.1200	1.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
2.9	257	0.0100	1.50		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
34.9	595	Total			

Summary for Subcatchment SA-2: AP#2

Runoff = 6.02 cfs @ 12.98 hrs, Volume= 1.120 af, Depth> 0.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.10"

Area (sf)	CN	Description
453,736	70	Woods, Good, HSG C
268,378	77	Woods, Good, HSG D
722,114	73	Weighted Average
722,114		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0050	0.05		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
7.1	252	0.0140	0.59		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
7.4	475	0.0460	1.07		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
67.0	877	Total			

Summary for Subcatchment SA-3: AP#3

Runoff = 0.82 cfs @ 12.96 hrs, Volume= 0.148 af, Depth> 0.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.10"

Area (sf)	CN	Description
* 1,460	98	Existing Road
16,419	70	Woods, Good, HSG C
62,559	77	Woods, Good, HSG D
80,438	76	Weighted Average
78,978		98.18% Pervious Area
1,460		1.82% Impervious Area

Pre Development - Christmas Creek

Type III 24-hr 2 YEAR STORM Rainfall=3.10"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0050	0.05		Sheet Flow,
					Woods: Light underbrush n= 0.400 P2= 3.10"
14.4	433	0.0100	0.50		Shallow Concentrated Flow,
					Woodland Kv= 5.0 fps
66.9	583	Total			

Summary for Reach 1R: Reach to Downstream Culverts

Inflow Area = 101.233 ac, 5.11% Impervious, Inflow Depth > 0.76" for 2 YEAR STORM event
 Inflow = 18.33 cfs @ 14.56 hrs, Volume= 6.403 af
 Outflow = 18.22 cfs @ 15.08 hrs, Volume= 6.131 af, Atten= 1%, Lag= 31.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 0.82 fps, Min. Travel Time= 18.2 min

Avg. Velocity = 0.56 fps, Avg. Travel Time= 26.4 min

Peak Storage= 19,882 cf @ 14.77 hrs

Average Depth at Peak Storage= 0.21'

Bank-Full Depth= 2.00' Flow Area= 280.0 sf, Capacity= 878.74 cfs

100.00' x 2.00' deep channel, n= 0.035

Side Slope Z-value= 20.0 '/' Top Width= 180.00'

Length= 890.0' Slope= 0.0030 '/'

Inlet Invert= 47.70', Outlet Invert= 45.00'

**Summary for Reach AP#1: Summation of AP 1 & 2**

Inflow Area = 109.952 ac, 4.86% Impervious, Inflow Depth > 0.73" for 2 YEAR STORM event
 Inflow = 18.85 cfs @ 15.05 hrs, Volume= 6.694 af
 Outflow = 18.85 cfs @ 15.05 hrs, Volume= 6.694 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 1P: Ex. 24" PE

Inflow Area = 101.233 ac, 5.11% Impervious, Inflow Depth > 0.78" for 2 YEAR STORM event
 Inflow = 24.16 cfs @ 13.75 hrs, Volume= 6.608 af
 Outflow = 18.33 cfs @ 14.56 hrs, Volume= 6.403 af, Atten= 24%, Lag= 48.5 min
 Primary = 18.33 cfs @ 14.56 hrs, Volume= 6.403 af
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Pre Development - Christmas Creek

Type III 24-hr 2 YEAR STORM Rainfall=3.10"

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Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 51.36' @ 14.56 hrs Surf.Area= 27,321 sf Storage= 48,009 cf
 Flood Elev= 54.00' Surf.Area= 60,890 sf Storage= 163,108 cf

Plug-Flow detention time= 36.4 min calculated for 6.382 af (97% of inflow)
 Center-of-Mass det. time= 27.8 min (936.6 - 908.8)

Volume	Invert	Avail.Storage	Storage Description
#1	48.00'	163,108 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
48.00	8,500	0	0
50.00	12,504	21,004	21,004
52.00	34,355	46,859	67,863
54.00	60,890	95,245	163,108

Device	Routing	Invert	Outlet Devices
#1	Primary	48.00'	24.0" Round Culvert L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 48.00' / 47.70' S= 0.0050 '/ Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Secondary	54.00'	100.0' long x 10.0' 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) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=18.33 cfs @ 14.56 hrs HW=51.36' (Free Discharge)

↑**1=Culvert** (Inlet Controls 18.33 cfs @ 5.83 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=48.00' (Free Discharge)

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

Pre Development - Christmas Creek

Type III 24-hr 10 YEAR STORM Rainfall=4.60"

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Summary for Subcatchment SA-1:

Runoff = 55.57 cfs @ 13.66 hrs, Volume= 14.546 af, Depth> 1.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.60"

Area (sf)	CN	Description
53,285	75	1/4 acre lots, 38% imp, HSG B
96,783	83	1/4 acre lots, 38% imp, HSG C
442,657	87	1/4 acre lots, 38% imp, HSG D
80,198	30	Woods, Good, HSG A
588,128	55	Woods, Good, HSG B
675,215	70	Woods, Good, HSG C
2,473,442	77	Woods, Good, HSG D
4,409,708	73	Weighted Average
4,184,473		94.89% Pervious Area
225,236		5.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
46.7	150	0.0067	0.05		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
74.4	2,446	0.0120	0.55		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
2.5	2,049	0.0080	13.41	24,141.26	Trap/Vee/Rect Channel Flow, Bot.W=30.00' D=12.00' Z= 10.0 '/' Top.W=270.00' n= 0.035
123.6	4,645	Total			

Summary for Subcatchment SA-1A:

Runoff = 9.99 cfs @ 12.51 hrs, Volume= 1.253 af, Depth> 1.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.60"

Area (sf)	CN	Description
* 7,297	98	Existing Road
277,866	70	Woods, Good, HSG C
94,644	77	Woods, Good, HSG D
379,807	72	Weighted Average
372,510		98.08% Pervious Area
7,297		1.92% Impervious Area

Pre Development - Christmas Creek

Type III 24-hr 10 YEAR STORM Rainfall=4.60"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.2	150	0.0200	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
1.8	188	0.1200	1.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
2.9	257	0.0100	1.50		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
34.9	595	Total			

Summary for Subcatchment SA-2: AP#2

Runoff = 13.81 cfs @ 12.92 hrs, Volume= 2.451 af, Depth> 1.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.60"

Area (sf)	CN	Description
453,736	70	Woods, Good, HSG C
268,378	77	Woods, Good, HSG D
722,114	73	Weighted Average
722,114		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0050	0.05		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
7.1	252	0.0140	0.59		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
7.4	475	0.0460	1.07		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
67.0	877	Total			

Summary for Subcatchment SA-3: AP#3

Runoff = 1.74 cfs @ 12.91 hrs, Volume= 0.308 af, Depth> 2.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.60"

Area (sf)	CN	Description
* 1,460	98	Existing Road
16,419	70	Woods, Good, HSG C
62,559	77	Woods, Good, HSG D
80,438	76	Weighted Average
78,978		98.18% Pervious Area
1,460		1.82% Impervious Area

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Type III 24-hr 10 YEAR STORM Rainfall=4.60"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0050	0.05		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
14.4	433	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
66.9	583	Total			

Summary for Reach 1R: Reach to Downstream Culverts

Inflow Area = 101.233 ac, 5.11% Impervious, Inflow Depth > 1.68" for 10 YEAR STORM event
 Inflow = 50.07 cfs @ 14.31 hrs, Volume= 14.187 af
 Outflow = 39.28 cfs @ 14.78 hrs, Volume= 13.672 af, Atten= 22%, Lag= 28.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.09 fps, Min. Travel Time= 13.6 min

Avg. Velocity = 0.70 fps, Avg. Travel Time= 21.3 min

Peak Storage= 32,134 cf @ 14.55 hrs

Average Depth at Peak Storage= 0.34'

Bank-Full Depth= 2.00' Flow Area= 280.0 sf, Capacity= 878.74 cfs

100.00' x 2.00' deep channel, n= 0.035

Side Slope Z-value= 20.0 '/' Top Width= 180.00'

Length= 890.0' Slope= 0.0030 '/'

Inlet Invert= 47.70', Outlet Invert= 45.00'

**Summary for Reach AP#1: Summation of AP 1 & 2**

Inflow Area = 109.952 ac, 4.86% Impervious, Inflow Depth > 1.63" for 10 YEAR STORM event
 Inflow = 40.57 cfs @ 14.78 hrs, Volume= 14.926 af
 Outflow = 40.57 cfs @ 14.78 hrs, Volume= 14.926 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 1P: Ex. 24" PE

Inflow Area = 101.233 ac, 5.11% Impervious, Inflow Depth > 1.72" for 10 YEAR STORM event
 Inflow = 55.57 cfs @ 13.66 hrs, Volume= 14.546 af
 Outflow = 50.07 cfs @ 14.31 hrs, Volume= 14.187 af, Atten= 10%, Lag= 38.9 min
 Primary = 27.26 cfs @ 14.32 hrs, Volume= 13.498 af
 Secondary = 22.81 cfs @ 14.31 hrs, Volume= 0.688 af

Pre Development - Christmas Creek

Type III 24-hr 10 YEAR STORM Rainfall=4.60"

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Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 54.21' @ 14.32 hrs Surf.Area= 60,890 sf Storage= 163,108 cf
 Flood Elev= 54.00' Surf.Area= 60,890 sf Storage= 163,108 cf

Plug-Flow detention time= 71.3 min calculated for 14.140 af (97% of inflow)
 Center-of-Mass det. time= 64.1 min (958.2 - 894.1)

Volume	Invert	Avail.Storage	Storage Description
#1	48.00'	163,108 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
48.00	8,500	0	0
50.00	12,504	21,004	21,004
52.00	34,355	46,859	67,863
54.00	60,890	95,245	163,108

Device	Routing	Invert	Outlet Devices
#1	Primary	48.00'	24.0" Round Culvert L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 48.00' / 47.70' S= 0.0050 '/ Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Secondary	54.00'	100.0' long x 10.0' 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) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=27.18 cfs @ 14.32 hrs HW=54.18' (Free Discharge)

↑ **1=Culvert** (Inlet Controls 27.18 cfs @ 8.65 fps)

Secondary OutFlow Max=19.84 cfs @ 14.31 hrs HW=54.19' (Free Discharge)

↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 19.84 cfs @ 1.07 fps)

Pre Development - Christmas Creek

Type III 24-hr 25 YEAR STORM Rainfall=5.80"

Prepared by BH2M

Printed 1/3/2019

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Summary for Subcatchment SA-1:

Runoff = 84.16 cfs @ 13.62 hrs, Volume= 21.812 af, Depth> 2.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=5.80"

Area (sf)	CN	Description
53,285	75	1/4 acre lots, 38% imp, HSG B
96,783	83	1/4 acre lots, 38% imp, HSG C
442,657	87	1/4 acre lots, 38% imp, HSG D
80,198	30	Woods, Good, HSG A
588,128	55	Woods, Good, HSG B
675,215	70	Woods, Good, HSG C
2,473,442	77	Woods, Good, HSG D
4,409,708	73	Weighted Average
4,184,473		94.89% Pervious Area
225,236		5.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
46.7	150	0.0067	0.05		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
74.4	2,446	0.0120	0.55		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
2.5	2,049	0.0080	13.41	24,141.26	Trap/Vee/Rect Channel Flow, Bot.W=30.00' D=12.00' Z= 10.0 '/' Top.W=270.00' n= 0.035
123.6	4,645	Total			

Summary for Subcatchment SA-1A:

Runoff = 15.14 cfs @ 12.50 hrs, Volume= 1.888 af, Depth> 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=5.80"

Area (sf)	CN	Description
* 7,297	98	Existing Road
277,866	70	Woods, Good, HSG C
94,644	77	Woods, Good, HSG D
379,807	72	Weighted Average
372,510		98.08% Pervious Area
7,297		1.92% Impervious Area

Pre Development - Christmas Creek

Type III 24-hr 25 YEAR STORM Rainfall=5.80"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.2	150	0.0200	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
1.8	188	0.1200	1.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
2.9	257	0.0100	1.50		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
34.9	595	Total			

Summary for Subcatchment SA-2: AP#2

Runoff = 20.80 cfs @ 12.91 hrs, Volume= 3.666 af, Depth> 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=5.80"

Area (sf)	CN	Description
453,736	70	Woods, Good, HSG C
268,378	77	Woods, Good, HSG D
722,114	73	Weighted Average
722,114		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0050	0.05		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
7.1	252	0.0140	0.59		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
7.4	475	0.0460	1.07		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
67.0	877	Total			

Summary for Subcatchment SA-3: AP#3

Runoff = 2.55 cfs @ 12.90 hrs, Volume= 0.450 af, Depth> 2.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=5.80"

Area (sf)	CN	Description
* 1,460	98	Existing Road
16,419	70	Woods, Good, HSG C
62,559	77	Woods, Good, HSG D
80,438	76	Weighted Average
78,978		98.18% Pervious Area
1,460		1.82% Impervious Area

Pre Development - Christmas Creek

Type III 24-hr 25 YEAR STORM Rainfall=5.80"

Prepared by BH2M

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0050	0.05		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
14.4	433	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
66.9	583	Total			

Summary for Reach 1R: Reach to Downstream Culverts

Inflow Area = 101.233 ac, 5.11% Impervious, Inflow Depth > 2.48" for 25 YEAR STORM event
 Inflow = 119.91 cfs @ 13.60 hrs, Volume= 20.959 af
 Outflow = 79.54 cfs @ 14.14 hrs, Volume= 20.252 af, Atten= 34%, Lag= 32.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.41 fps, Min. Travel Time= 10.5 min

Avg. Velocity = 0.76 fps, Avg. Travel Time= 19.5 min

Peak Storage= 50,240 cf @ 13.97 hrs

Average Depth at Peak Storage= 0.51'

Bank-Full Depth= 2.00' Flow Area= 280.0 sf, Capacity= 878.74 cfs

100.00' x 2.00' deep channel, n= 0.035

Side Slope Z-value= 20.0 '/' Top Width= 180.00'

Length= 890.0' Slope= 0.0030 '/'

Inlet Invert= 47.70', Outlet Invert= 45.00'

**Summary for Reach AP#1: Summation of AP 1 & 2**

Inflow Area = 109.952 ac, 4.86% Impervious, Inflow Depth > 2.42" for 25 YEAR STORM event
 Inflow = 81.79 cfs @ 14.14 hrs, Volume= 22.139 af
 Outflow = 81.79 cfs @ 14.14 hrs, Volume= 22.139 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 1P: Ex. 24" PE

Inflow Area = 101.233 ac, 5.11% Impervious, Inflow Depth > 2.59" for 25 YEAR STORM event
 Inflow = 84.16 cfs @ 13.62 hrs, Volume= 21.812 af
 Outflow = 119.91 cfs @ 13.60 hrs, Volume= 20.959 af, Atten= 0%, Lag= 0.0 min
 Primary = 28.00 cfs @ 13.60 hrs, Volume= 15.576 af
 Secondary = 91.91 cfs @ 13.60 hrs, Volume= 5.383 af

Pre Development - Christmas Creek

Type III 24-hr 25 YEAR STORM Rainfall=5.80"

Prepared by BH2M

Printed 1/3/2019

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Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 54.50' @ 13.60 hrs Surf.Area= 60,890 sf Storage= 163,108 cf
 Flood Elev= 54.00' Surf.Area= 60,890 sf Storage= 163,108 cf

Plug-Flow detention time= 60.1 min calculated for 20.889 af (96% of inflow)
 Center-of-Mass det. time= 48.8 min (935.1 - 886.4)

Volume	Invert	Avail.Storage	Storage Description
#1	48.00'	163,108 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
48.00	8,500	0	0
50.00	12,504	21,004	21,004
52.00	34,355	46,859	67,863
54.00	60,890	95,245	163,108

Device	Routing	Invert	Outlet Devices
#1	Primary	48.00'	24.0" Round Culvert L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 48.00' / 47.70' S= 0.0050 '/ Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Secondary	54.00'	100.0' long x 10.0' 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) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=28.00 cfs @ 13.60 hrs HW=54.50' (Free Discharge)
 ↑1=Culvert (Inlet Controls 28.00 cfs @ 8.91 fps)

Secondary OutFlow Max=91.76 cfs @ 13.60 hrs HW=54.50' (Free Discharge)
 ↑2=Broad-Crested Rectangular Weir (Weir Controls 91.76 cfs @ 1.85 fps)



STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
93 STATE HOUSE STATION
AUGUSTA, MAINE 04333

JANET T. MILLS
GOVERNOR

January 8, 2019

Thomas Perkins
Dirigo Architectural Engineering, LLC
7 Cobblestone Way
Suite 2
Turner, ME 04282

Via email: tperkins@dirigoae.com

Re: Rare and exemplary botanical features in proximity to: #18-015, Christmas Creek Subdivision, Cumberland, Maine

Dear Mr. Perkins:

I have searched the Natural Areas Program's Biological and Conservation Data System files in response to your request received January 8, 2019 for information on the presence of rare or unique botanical features documented from the vicinity of the project in Cumberland, Maine. Rare and unique botanical features include the habitat of rare, threatened, or endangered plant species 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



PHONE: (207) 287-8044
FAX: (207) 287-8040
WWW.MAINE.GOV/DACF/MNAP

The Natural Areas Program 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. The Natural Areas Program welcomes coordination with individuals or organizations proposing environmental alteration, or conducting environmental assessments. If, however, data provided by the Natural Areas Program are to be published in any form, the Program should be informed at the outset and credited as the source.

The 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 the Natural Areas Program 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,

A handwritten signature in cursive script, appearing to read "Krist Puryear".

Kristen Puryear | Ecologist | Maine Natural Areas Program
207-287-8043 | kristen.puryear@maine.gov

Rare and Exemplary Botanical Features within 4 miles of Project: #18-015, Christmas Creek Subdivision, Cumberland, Maine

Common Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
American Chestnut						
	SC	S4	G4	2001-02-13	2	Hardwood to mixed forest (forest, upland)
Engelmann's Spikerush						
	PE	SH	G4G5	1916-08-31	2	Open wetland, not coastal nor rivershore (non-forested, wetland)
Fern-leaved False Foxglove						
	SC	S3	G5	1902-09-02	13	Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland)
Foxtail Bog-clubmoss						
	E	S1	G5	2014-09-24	1	<null>
Great Blue Lobelia						
	PE	SX	G5	1905-09	3	Forested wetland,Non-tidal rivershore (non-forested, seasonally wet)
Horned Pondweed						
	SC	S2	G5	1913-09-13	9	Tidal wetland (non-forested, wetland)
Marsh Milkwort						
	PE	SH	G5T4	1903-08-18	1	Dry barrens (partly forested, upland),Open wetland, not coastal nor rivershore (non-forested, wetland)
Mountain-laurel						
	SC	S2	G5	1985-08-01	13	Conifer forest (forest, upland),Hardwood to mixed forest (forest, upland)
Oak - Hickory Forest						
	<null>	S1	G4G5	2014-08-21	5	Hardwood to mixed forest (forest, upland)
Rattlesnake Hawkweed						
	E	S1	G5T4Q	1909-07	1	Dry barrens (partly forested, upland)
Salt-hay Saltmarsh						
	<null>	S3	G5	2009	24	Tidal wetland (non-forested, wetland)
	<null>	S3	G5	2011-09-09	62	Tidal wetland (non-forested, wetland)

Rare and Exemplary Botanical Features within 4 miles of Project: #18-015, Christmas Creek Subdivision, Cumberland, Maine

Common Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
Screwstem						
	T	S1	G5	2014-09-24	17	Coastal non-tidal wetland (non-forested, wetland)
Slender Knotweed						
	PE	SH	G5	1902-09-07	1	Dry barrens (partly forested, upland)
Smooth Winterberry Holly						
	SC	S3	G5	2010-06-13	32	Forested wetland
Spotted Wintergreen						
	E	S2	G5	2009-07-26	30	Conifer forest (forest, upland),Hardwood to mixed forest (forest, upland)
Upper Floodplain Hardwood Forest						
	<null>	S3	GNR	2010-06-23	20	Forested wetland
Variable Sedge						
	E	S1	G3	1985-07-16	5	Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland)
	E	S1	G3	2012-08-09	1	Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland)
	E	S1	G3	2006-07-12	6	Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland)
	E	S1	G3	2014-09-24	4	Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland)
Water-plantain Spearwort						
	PE	SH	G4	1903-07-29	2	Open water (non-forested, wetland)
Wild Leek						
	SC	S3	G5	2013-04-29	28	Hardwood to mixed forest (forest, upland),Forested wetland

STATE RARITY RANKS

- S1** Critically imperiled in Maine because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation from the State of Maine.
- S2** Imperiled in Maine because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
- S3** Rare in Maine (20-100 occurrences).
- S4** Apparently secure in Maine.
- S5** Demonstrably secure in Maine.
- SU** Under consideration for assigning rarity status; more information needed on threats or distribution.
- SNR** Not yet ranked.
- SNA** Rank not applicable.
- S#?** Current occurrence data suggests assigned rank, but lack of survey effort along with amount of potential habitat create uncertainty (e.g. S3?).

Note: **State Rarity Ranks** are determined by the Maine Natural Areas Program for rare plants and rare and exemplary natural communities and ecosystems. The Maine Department of Inland Fisheries and Wildlife determines State Rarity Ranks for animals.

GLOBAL RARITY RANKS

- G1** Critically imperiled globally because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extinction.
- G2** Globally imperiled because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
- G3** Globally rare (20-100 occurrences).
- G4** Apparently secure globally.
- G5** Demonstrably secure globally.
- GNR** Not yet ranked.

Note: **Global Ranks** are determined by NatureServe.

STATE LEGAL STATUS

Note: State legal status is according to 5 M.R.S.A. § 13076-13079, which mandates the Department of Conservation to produce and biennially update the official list of Maine's **Endangered** and **Threatened** plants. The list is derived by a technical advisory committee of botanists who use data in the Natural Areas Program's database to recommend status changes to the Department of Conservation.

- E** ENDANGERED; Rare and in danger of being lost from the state in the foreseeable future; or federally listed as Endangered.
- T** THREATENED; Rare and, with further decline, could become endangered; or federally listed as Threatened.

NON-LEGAL STATUS

- SC** SPECIAL CONCERN; Rare in Maine, based on available information, but not sufficiently rare to be considered Threatened or Endangered.
- PE** Potentially Extirpated; Species has not been documented in Maine in past 20 years or loss of last known occurrence has been documented.

ELEMENT OCCURRENCE RANKS - EO RANKS

Element Occurrence ranks are used to describe the quality of a rare plant population or natural community based on three factors:

- **Size**: Size of community or population relative to other known examples in Maine. Community or population's viability, capability to maintain itself.
- **Condition**: For communities, condition includes presence of representative species, maturity of species, and evidence of human-caused disturbance. For plants, factors include species vigor and evidence of human-caused disturbance.
- **Landscape context**: Land uses and/or condition of natural communities surrounding the observed area. Ability of the observed community or population to be protected from effects of adjacent land uses.

These three factors are combined into an overall ranking of the feature of **A**, **B**, **C**, or **D**, where **A** indicates an **excellent** example of the community or population and **D** indicates a **poor** example of the community or population. A rank of **E** indicates that the community or population is **extant** but there is not enough data to assign a quality rank. The Maine Natural Areas Program tracks all occurrences of rare (S1-S3) plants and natural communities as well as A and B ranked common (S4-S5) natural communities.

Note: **Element Occurrence Ranks** are determined by the Maine Natural Areas Program for rare plants and rare and exemplary natural communities and ecosystems. The Maine Department of Inland Fisheries and Wildlife determines Element Occurrence ranks for animals.

Visit our website for more information on rare, threatened, and endangered species!
<http://www.maine.gov/dacf/mnap>

SOIL PROFILE/CLASSIFICATION INFORMATION

Detailed Description of Subsurface Conditions at Project Sites

Project Name: CHRISTMAS CREEK SUBDIVISION	Applicant Name: BETA ZETA PROPERTIES, LLC	Project Location (municipality): CUMBERLAND
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SOIL DESCRIPTION AND CLASSIFICATION				
Exploration Symbol: <u>TP-1</u> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring				
0" Depth of Organic Horizon Above Mineral Soil				
Texture	Consistency	Color	Mottling	
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SOIL PROFILE/CLASSIFICATION INFORMATION

Detailed Description of Subsurface Conditions at Project Sites

Project Name: CHRISTMAS CREEK SUBDIVISION	Applicant Name: BETA ZETA PROPERTIES, LLC	Project Location (municipality): CUMBERLAND
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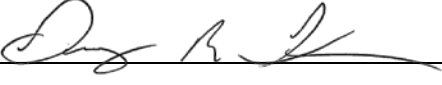
SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <u>TP-5</u> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring			
1-2" Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
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3		2.5Y 4/4	
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5		OLIVE BROWN	
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LIMIT OF EXCAVATION = 10'			
<input type="checkbox"/> hydric <input checked="" type="checkbox"/> non-hydric	Slope % <u>8-15</u>	Limiting factor <u>22"</u>	<input type="checkbox"/> ground water <input checked="" type="checkbox"/> restrictive layer <input type="checkbox"/> bedrock
C.S.S. Soil Series / phase name: <u>SALMON</u> <u>WD</u> <u>B</u>		Drainage Class Hydrologic Group	
L.S.E. Soil Classification: _____		Profile Drainage Class Design Class	

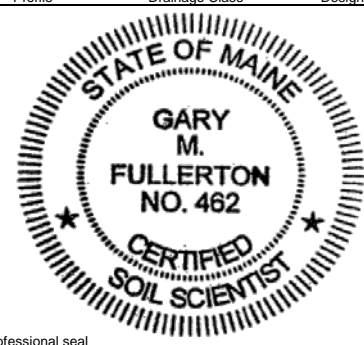
SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <u>TP-7</u> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring			
1-2" Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
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3		2.5Y 3/3	
4			
5		DARK OLIVE BROWN	
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LIMIT OF EXCAVATION = 10'			
<input type="checkbox"/> hydric <input checked="" type="checkbox"/> non-hydric	Slope % <u>3-8</u>	Limiting factor <u>13"</u>	<input type="checkbox"/> ground water <input checked="" type="checkbox"/> restrictive layer <input type="checkbox"/> bedrock
C.S.S. Soil Series / phase name: <u>LAMOINE</u> <u>SWPD</u> <u>C/D</u>		Drainage Class Hydrologic Group	
L.S.E. Soil Classification: _____		Profile Drainage Class Design Class	

Professional Endorsements (as applicable)

C.S.S.	signature: 	Date: <u>1/17/19</u>
	name printed/typed: <u>Gary M. Fullerton</u>	Lic.#: <u>462</u>
L.S.E.	signature: _____	Date: _____
	name printed/typed: _____	Lic.#: _____

affix professional seal



SOIL PROFILE/CLASSIFICATION INFORMATION

Detailed Description of Subsurface Conditions at Project Sites

Project Name: CHRISTMAS CREEK SUBDIVISION	Applicant Name: BETA ZETA PROPERTIES, LLC	Project Location (municipality): CUMBERLAND
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SOIL DESCRIPTION AND CLASSIFICATION				
Exploration Symbol: <u>TP-1</u> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring				
0" Depth of Organic Horizon Above Mineral Soil				
Texture	Consistency	Color	Mottling	
1				
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3				
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SOIL PROFILE/CLASSIFICATION INFORMATION

Detailed Description of Subsurface Conditions at Project Sites

Project Name: CHRISTMAS CREEK SUBDIVISION	Applicant Name: BETA ZETA PROPERTIES, LLC	Project Location (municipality): CUMBERLAND
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SOIL DESCRIPTION AND CLASSIFICATION				
Exploration Symbol: <u>TP-5</u> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring				
1-2" Depth of Organic Horizon Above Mineral Soil				
Texture	Consistency	Color	Mottling	
1				
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3		2.5Y 4/4		
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5		OLIVE BROWN		
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7				
8		FRIABLE		
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12		2.5Y 5/3		
13		LIGHT OLIVE BROWN		
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Project Development Team

This project development team consisted of several licensed professionals with extensive experience in site planning and design. The structure and roles are itemized as follows:

Entity	Member	Role
Beta Zeta Properties, LLC	Johan Noren	Owners of property and development leads
	Chris Webster	
Dirigo A/E, LLC	Thomas W. Perkins, PE	Project Manager
	Zachary Quinn	Document Development/Drafting
BH2M, Inc.	Andrew Morrell, PE	Stormwater design and HydroCAD modelling
	Austin Fagan, EI	Stormwater design
Sebago Technics	Jimmy Courbron, PLS	Boundary Surveys
	David Chapman, CG, LSE, LSIT	Geologist and Wetland Scientist
	Gary Fullerton, CSS, LSE	Soils Engineer

Also attached for your review:

1. Information of Developer, Beta Zeta Properties, LLC
2. Resumes of Project Development Team Personnel



Beta Zeta Properties, LLC

Established:	2015
Property Holdings (past and current):	5
Subdivision Development (past and current):	2

Beta Zeta Properties was established in 2013 as a joint venture between partners Johan Noren and Christopher Webster. Their association is focused on the development of real estate in southern Maine, including both residential and commercial ventures. Their relationship is founded on a lifelong friendship started in college and continues strongly in this business partnership today.

Both partners maintain full-time engagement outside of this corporation. Mr. Webster is a vice-president of a large software technology company and resides in Yarmouth, Maine. Mr. Noren is extensively involved with single-family home restorations, is self-employed and lives in Brunswick, Maine. Both have families with young children and are actively involved within their communities.

Through this venture, the partners have built a successful track record of real estate development that continues to increase in size and scope. They have secure financial backing with a trusted lender who has funded many of their other endeavors, and relationships have been established with the real estate sales community for marketing their products. Day to day operations are co-managed, and decisions are able to be made in a timely manner to progress their work forward.



Thomas W. Perkins, PE.
LEED AP, M.ASCE, CSI

President

Profile

Mr. Perkins endeavors to foresee and correct issues before they become problems, which is why most of Dirigo's new projects are from repeat clients.

Education

B.S. Construction Management
University of Maine, Orono, ME
1996

Registration

Licensed Engineer in Maine, New
Hampshire, Connecticut, New York
(pending)
US Green Building Council LEED
Accredited Professional (LEED AP)
OSHA 30-Hour Site Supervisor
Training
OSHA 40-Hour HAZWOPER
Hazardous Material Training

Email: tperkins@dirigoae.com

Cell: (207) 475 - 4958

PROFESSIONAL SUMMARY

Highly skilled career professional with over 20 years of practical experience in a variety of commercial construction projects. Diverse project management background in public/municipal, healthcare, energy services, heavy/civil/marine, communications technology, and higher education construction projects.

Professional engineering expertise brings added value to any project, large or small, and provides design-build flexibility as well. Thorough knowledge of current building codes and local governing board processes align well during planning and pre-construction efforts to vet potential constructability problems in advance of actual field work, and provide client with accurate decision-making information.

EXPERIENCE

PRESIDENT - Current

Dirigo Architectural Engineering, LLC, Turner, Maine

ADJUNCT FACULTY - Current

University of Maine College of Engineering, Orono, Maine

GENERAL SUPERINTENDENT/PROJECT MANAGER - 2008-2010

Barr & Barr, Inc. Brunswick, Maine

SUPERINTENDENT - 2004-2008

William A. Berry & Son, Inc., Portland, Maine

AREA SUPERINTENDENT - 2000-2004

Clark Construction Group, LLC, Boston, Massachusetts

LEAD FIELD ENGINEER - 1999-2000

Atkinson Construction (Clark Construction), Bath, Maine

LEAD FIELD ENGINEER - 1998-1999

Kiewit Construction Company, Boston, Massachusetts

OPERATIONS MANAGER - 1997-1998

J.J. Phelan & Son, Inc., Tewksbury, Massachusetts

SENIOR PROJECT ACCOUNTANT/ASSISTANT PROJECT MANAGER

OHM Remediation Services Corporation, Trenton, New Jersey

ANDREW S. MORRELL, PE
ENGINEER
BERRY HUFF MCDONALD MILLIGAN, INC.
GORHAM, MAINE 04038

Education:

B.S. Civil Engineering, State University of New York at Buffalo – May 1999

Professional Background:

Project Engineer, DeLuca-Hoffman Associates, Inc., South Portland, Maine
August 2007 to March 2010

Responsibilities included design of commercial site plans and roadway reconstruction projects along with various other types of land development projects. The design and implementation of site specific stormwater management and best management practice stormwater treatment facilities was utilized.

Project Engineer, Berry Huff McDonald Milligan, Inc., Gorham, Maine
August 2001 to August 2007
April 2010 - Present

Responsibilities included the design and drafting of residential subdivisions, condominium developments, commercial site plans and various other types of land development projects. Roadway and utility design as well as stormwater management and erosion control designs were performed in preparation for both local and state approvals.

Project Engineer, Diversified Civil Engineering, Westford, Mass.
May 1999 – August 2001

Responsibilities included design and drafting of residential subdivisions, condominium developments, commercial site plans and various other types of land development projects. A focus on the design of site utilities, stormwater management and erosion control methods was utilized. Represented clients at town board meetings and completed applications pertinent to local and state approvals.

Stormwater Education

Hydraulics Review Class for Professional Engineering License Exam – ASCE, 2009
Hydrocad Seminar – Joint Environment Training Coordinating Committee, 2002
Hydraulics and related college courses.

Stormwater Experience

Eleven years experience of performing stormwater management calculations for civil-site land development projects. Experience with TR-55, TR-20 and Hydrocad.

DAVID V. CHAPMAN, CG, LSE, LSIT

Senior Geologist



Mr. Chapman joined the staff of Sebago Technics, Inc. in 2017 as part of the acquisition of Sweet Associates. David is a certified Geologist with more than 25 years of geologic/hydrogeologic experience in Maine and throughout the U.S. He formerly worked for Jacques Whitford, Stantec and most recently Sweet Associates. He has been a part of teams that worked on the Holtrachem contamination site in Orrington, Maine, the decommissioning of Maine Yankee and the BP Gulf oil spill cleanup in 2010. David conducts mounding and nitrate studies, performs environmental site assessments, conducts groundwater sampling and modeling, designs septic systems, supervises monitoring well installation and delineates wetlands. David has completed over 200 Phase I and Phase II Environmental Site Assessments nationwide, Canada, and in Mexico. Duties included fieldwork, data reduction and technical report preparation.

EXPERIENCE



Morse School (RSU 1) - Bath, ME

Mr. Chapman was responsible for conducting a Phase I ESA, site walk, and report for the new High School and Technical Center heading into Site Engineering, Development and Permitting.

Freeport Wetland - Freeport, ME

Mr. Chapman delineated, characterized and documented wetlands on a 52-acre parcel with jurisdictional streams, vernal pools, forested, scrub-shrub, and emergent wetlands.

Proposed Subdivision - Cumberland, ME

David completed a study to determine the potential impacts of nitrate nitrogen to the groundwater at the site and dug test pits to determine the suitability of the soil for septic systems.

Mounding Study - Brunswick, ME

Project Manager responsible for determining the potential for groundwater mounding under a stormwater detention basin.

Industrial Landfill Site - Pittsfield, Maine

Project geologist involved in the assessment and remediation of a landfill contaminated with volatile organic compounds. The work involved the location and removal of hazardous waste allegedly disposed of in a landfill. Some of the work was performed under Level B conditions.

Defense Fuel Supply Center - Mattawamkeag, Maine

Geologist for the assessment of a pipeline pump station where jet fuel had been released. Determined the extent of free-phase petroleum on the groundwater table by installing a monitoring well network. Collected water levels and conducted soil and groundwater samples.

EDUCATION



Northeastern University
Boston, MA
M.S. Environmental Engineering

University of Maine
Orono, ME
B.A. Geology

REGISTRATIONS

State of Maine Geologist No. 458
State of Maine Site Evaluator No. SE00293
LSIT, State of Maine No. SIT002489

AFFILIATIONS

Maine Association of Site Evaluators
Geological Society of Maine

TRAINING

40-hour HAZWOPER
8-hour HAZWOPER refresher
8-hour Supervisor Training
40-hour Asbestos Building Inspector Course

SEBAGO
T E C H N I C S



207.200.2129



DCHAPMAN@SEBAGOTECHNICS.COM

GARY M. FULLERTON, CSS, LSE

Director, Natural Resources



Mr. Fullerton joined Sebago Technics in 2000 as a Soil Scientist. Gary is a Maine Licensed Site Evaluator and Certified Subsurface Wastewater Disposal Systems Inspector. He has experience with septic system design, field delineation of coastal and freshwater wetlands, and site evaluations and inspections for septic system designs. He is responsible for preparing designs for residential and commercial septic systems and management and support for natural resource issues on both residential and commercial properties. He is responsible for conducting field assessments of natural resource issues which involve performing soil evaluations for septic system designs, performing wetland delineations, and preparing high intensity soil surveys. Mr. Fullerton is also responsible for providing appropriate permitting applications and supporting documentation for wetland impacts of projects.

Prior to joining Sebago Technics, Inc., Mr. Fullerton was a Soil Evaluator for a Rhode Island based environmental consulting and engineering firm for two years, where he worked in conjunction with the University of Rhode Island to research and design alternative and innovative septic systems for environmentally sensitive areas. While in school, he delineated freshwater wetlands in both Rhode Island and Massachusetts. Mr. Fullerton has over 18 years of experience in Maine as a natural resource specialist.

EXPERIENCE



- **Maine Turnpike Authority:** Seven mile stretch of vernal pools and wetlands
- **Sanford High School & Regional Technical Center - Sanford, Maine** Wetlands and vernal pools mapping on a 69-acre site
- **Brewer Business Park - Brewer, Maine:** Natural resource mapping, surveying, preliminary planning and design
- **Bigelow Laboratory - East Boothbay, Maine:** Soils and subsurface conditions investigation
- **Thornton Heights and Pleasantdale Sewer Separation, City of South Portland, ME:** Residential sewer inspections for illicit connections as part of the Thornton Heights Sewer Separation project

MEMBERSHIPS

Public Service Leadership Award, 2004,
Maine Association of Professional Soils
Scientists

Maine Association of Site Evaluators

Maine Association of Wetland Scientists

Maine Historic Preservation Association

National Main Street Foundation

TRAINING

U.S.A.C.O.E. Wetlands Delineations
Training Course

EDUCATION



University of Rhode Island
Kingston, RI
Bachelor of Science
Soil and Water Resources, 1998

REGISTRATIONS

Licensed Site Evaluator:
Maine #355

Certified Soil Scientist:
Maine #462

Certified Subsurface Wastewater
Disposal System Inspector:
Maine #291

Certified Wetland Scientist:
New Hampshire #246

Certified Designer of
Subsurface Disposal Systems:
New Hampshire #1796



JIMMY C. COURBRON, PLS

Professional Land Surveyor



Mr. Courbron joined Sebago Technics, Inc. in 2017 as a Project Surveyor. Mr. Courbron graduated with a Bachelor of Science in Surveying Engineering Technology from the University of Maine, and now holds registrations in multiple states with over seven years of experience. He has worked for New England based engineering and surveying firms on a wide variety of survey assignments.

EXPERIENCE



LL Bean Corporate Campus – Freeport, Maine

LL Bean, Inc. asked Sebago Technics for help with design and permitting of renovations to their corporate campus in Freeport. This required an existing site conditions survey of the entire campus that included a topographic survey of a stream running through the property as well as the location of all overhead and underground utilities within the property. With over sixty acres of buildings, roads, parking lots and utilities to be located, RTK GPS technology was implemented. When site conditions permit, this technology allows a survey crew to locate features with survey-grade accuracy at nearly twice the speed of a crew utilizing more conventional survey equipment.

Topographic Survey Utilizing LiDAR data – Saco, Maine

Sebago Technics was hired to provide permitting, survey and civil engineering services for a forty-acre subdivision in Saco. This required a boundary and topographic survey of the property, including the location of wetlands and streams running through the property. These significant features were located on the ground with conventional survey technology and this data was combined with Airborne Light Detection and Ranging (LiDAR) data to produce an Existing Conditions Plan of the entire site with two-foot contours. The use of LiDAR technology in this instance saved days of fieldwork and helped get the client to their planning process quicker and at less cost.

ALTA/NSPS Land Title Survey – Portland, Maine

Our client intended to purchase two abutting lots, one with a local business and warehouse on it and the other a vacant lot. For insurance purposes, a Land Title Survey was required that meets certain standards set forth by the American Land Title Association (ALTA), the National Society of Professional Surveyors (NSPS), and those negotiated between the client and the surveyor. These standards include the location of any physical evidence of access and/or encroachments onto abutting properties, as well as the production of a survey plan depicting any and all easements, servitudes and rights-of-way burdening and benefitting the property surveyed. Fortunately for this project, and as is the case with many of our projects, Sebago's thirty-five-plus years of survey services to the area meant that we had performed similar surveys to this property and all of the abutting properties in the past. After the site was inspected and all improvements to the properties since the previous survey were located, the production of a plan was made simple by these previous surveys.

EDUCATION



Bachelor of Science
Surveying Engineering Technology
Minor: Business
University of Maine, Orono, ME
2009

REGISTRATIONS

Professional Land Surveyor
Maine #2532
Massachusetts #53065

CERTIFICATIONS

OSHA 10-hour Construction Safety





December 27, 2018

Community Banking at its Best!

Maine Department of Environmental Protection

17 State House Station

Augusta, ME 04333

Re: Beta Zeta Properties, LLC

Christmas Creek planned subdivision, 239 Tuttle Rd., -Vining Way- Cumberland ME

To Whom It May Concern;

Beta Zeta Properties LLC has an established commercial banking relationship with this institution, and we have been involved as a financing partner on this subject development project since the July 2018 acquisition.

The owner/developer has the financial capability to finance the estimated costs of this project and we have reviewed total estimated development costs of up to \$2,535,000, some of which has been paid for to date. Subject to routine and normal conditions financing is available for the project and we look forward to continuing to work with the developer.

Sincerely

Aaron Cannan

Sr. Vice President- Commercial Services

144 US Route One • Scarborough, ME 04074 • Telephone (207) 510-7017 • Fax (207) 883-1205

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Member
FDIC



WARRANTY DEED

CLAIRE I. VINING and GREGORY E. VINING

of 85 Tuttle Road, Cumberland, Maine 04021 and 87 Tuttle Road, Cumberland, Maine 04021

for consideration paid, grants to

BETA ZETA PROPERTIES, LLC, a Maine Limited Liability Company

whose business address is 9 Kimberly Circle, Brunswick, Maine 04011, with WARRANTY COVENANTS, the following described real property in the Town of Cumberland, County of Cumberland and State of Maine:

See Exhibit A attached hereto and made a part hereof

Also hereby conveying all rights, easements, privileges, and appurtenances, belonging to the premises hereinabove described.

WITNESS our hands and seals this 24th day of July, 2018.

WITNESS

Brett P. Davis

Claire I. Vining
CLAIRE I. VINING

to BETA

Gregory E. Vining
GREGORY E. VINING

State of Maine
Cumberland, ss.

Personally appeared before me CLAIRE I. VINING and GREGORY E. VINING, and acknowledged the foregoing instrument to be their free act and deed on July 24, 2018.

Before me,

[Signature]
Notary Public / Attorney-at-Law
Print Name: Joshua R. Davis, Bar No. 8888
My commission expires: _____

MAINE REAL ESTATE TAX PAID

EXHIBIT A
(239 Tuttle Road)

A certain tract of land in said Cumberland, described as follows: Fifty (50) acres, more or less being the northwesterly half of the one hundred acre lot numbered sixty-six (66) in said Town. Said premises are bounded southwesterly by the Tuttle Road, southeasterly by land now or formerly of West, northeasterly by land now or formerly of Stanley Blanchard et al, and northwesterly by land now or formerly of Herman P. Sweetser et al.

For title reference see Deed given by Claire I. Vining and Carroll E. Vining to Claire I. Vining and Gregory E. Vining, dated January 22, 1985 and recorded in the Cumberland County Registry of Deeds in Book 6720, Page 180.

EXCEPTING HOWEVER from said above parcel of land from Claire I. Vining and Carroll E. Vining to the Portland Water District, dated June 22, 1982, said deed was recorded in the said Registry of Deeds in Book 4980, Page 53, and as described as follows:

Beginning at a point on the northeasterly sideline of Tuttle Road, said point being five hundred seventeen (517.00) feet as measured South 35°-43'-00" East along said Tuttle Road from a point on the dividing line between land of the Grantor and land now or formerly of Richard W. Sweetser; thence North 54°-17'-00" East fifty (50.00) feet to a point; thence South 35°-43'-00" East fifty (50.00) feet to a point; thence South 54°-17'-00" West fifty (50.00) feet to the northeasterly sideline of Tuttle Road; thence North 35°-43'-00" West along said Tuttle Road fifty (50.00) feet more or less to the point of beginning.

Also the temporary use of the following described parcel during the period of construction for the purposes of construction, bounded and described as follows:

Beginning at a point on the northeasterly sideline of Tuttle Road, said point being four hundred ninety-seven (497.00) feet as measured South 35°-43'-00" East along Tuttle Road from a point on the dividing line between land of the Grantor and land now or formerly of Richard W. Sweetser; thence North 54°-17'-00" East eighty (80.00) feet to a point; thence South 35°-43'-00" East one hundred (100.00) feet to a point; thence South 54°-17'-00" West eighty (80.00) feet to the northeasterly sideline of Tuttle Road; thence North 35°-43'-00" West along said Tuttle Road thirty (30) feet to the above-described lot, thence North 54°-17'-00" East by said lot fifty (50) feet to a point, thence North 35°-43'-00" West by said lot fifty (50) feet to a point, thence South 54°-17'-00" West by said lot fifty (50) feet more or less to Tuttle Road, thence North 35°-43'-00" West along said Tuttle Road twenty (20) feet more or less to the point of beginning.

ALSO EXCEPTING HOWEVER from said above parcel of land from Gregory E. Vining and Claire I. Vining to Cally Thorup, dated March 11, 2010, said deed was recorded in the said Registry of Deeds in Book 27643, Page 270, and described as follows:

A certain lot or parcel of land, situated on the northeasterly side of Tuttle Road in the Town of Cumberland, County of Cumberland and State of Maine, bounded and described as follows:

Beginning at an iron pin found on the northeasterly sideline of Tuttle Road at the westerly corner of land now or formerly of Richard M. & Joanne Longo as recorded in the Cumberland County Registry of Deeds in Book 22822, Page 163;

Thence by the following courses and distances:

- 1) N 55° 05' 16" W along Tuttle Road a distance of 282.17 feet to an iron pin set at land now or formerly of the Portland Water District as recorded in said Registry of Deeds in Book 4980, Page 53;
- 2) N 34° 54' 44" E along land of Portland Water District and land to be retained by Claire I. Vining and Gregory E. Vining a distance of 307.98 feet to an iron pin set;
- 3) S 55° 05' 16" E along land to be retained a distance of 283.64 feet to an iron pin set at land of said Longo;
- 4) S 35° 11' 29" E along land of said Longo a distance of 307.98 feet to the point of beginning.

The above described parcel contains 2.0 acres. Bearings are referenced to grid north.

Received
Recorded Register of Deeds
Jul 24, 2018 02:16:59P
Cumberland County
Nancy A. Lane


[Corporate Name Search](#)

Information Summary

[Subscriber activity report](#)

This record contains information from the CEC database and is accurate as of: Wed Dec 26 2018 12:42:08. Please print or save for your records.

Legal Name	Charter Number	Filing Type	Status
BETA ZETA PROPERTIES, LLC	20153193DC	LIMITED LIABILITY COMPANY (DOMESTIC)	GOOD STANDING

Filing Date	Expiration Date	Jurisdiction
02/20/2015	N/A	MAINE

Other Names (A=Assumed ; F=Former)

NONE

Clerk/Registered Agent

JOHAN N NOREN
9 KIMBERLY CIRCLE
BRUNSWICK, ME 04011

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Click on a link to obtain additional information.

List of Filings

[View list of filings](#)

Obtain additional information:

Certificate of Existence (more info)	Short Form without amendments (\$30.00)	Long Form with amendments (\$30.00)
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