Date	February 10, 2021
To	Town of Cumberland Planning Board
From	Carla Nixon, Town Planner
Subject	**Major (Final) Subdivision Review: Cumberland Crossing, Phase 2 - Tuttle and Greely Roads.**

I. REQUEST/OVERVIEW:

The Applicant is Oceanview at Cumberland, LLC. The Applicant is requesting Final Major Subdivision approval for an additional 52 lots and a community center on a 59.acre parcel that is connected to Phase 1 by a triangular piece of land in the southwest corner of Phase 1 into Phase 2.

Little Acres Drive, which serves Phase 1 from Tuttle Road, will be extended 3300 +/- feet from the end of Phase 1 to an existing drive from Greely Road. Little Acres drive will be a private road.

The project will be served by public water and sewer and natural gas. The parcel is shown on Tax Assessor Map R 04, lot 34 A in the Rural Residential 1 (RR 1) zoning district. Frederic Licht, P.E. of Licht Environmental Design, LLC is the Applicant's representative. Dan Diffin, P.E. of Sevee and Maher Engineers reviewed the plans for the Town and has provided comments for the Planning Board's consideration.

This is the third public hearing for subdivision review. The Applicants are requesting final subdivision approval at this meeting.

II. PROJECT HISTORY:

- Preliminary Plan Review: Approved by Planning Board on 7/21/20.
- Preliminary Plan Review: 1/21/20. Tabled after discussion and approval of requested waivers.
- Sketch Plan Review/PH w/ Planning Board on April 16, 2019.
- Sketch Plan Review/PH w/ Planning Board. February 19, 2019.

III. DESCRIPTION:

Parcel size:	59.59 acres
Net Residential Density:	Not required for developments in the Senior Housing Community (SHC) Overlay district.
Proposed # of units:	52, plus a community center.
Zoning:	Rural Residential 1 with a Senior Housing Community Overlay

Development Type:	Clustered Subdivision Design
Min. Lot Size:	RR 1 requires a 4 acre minimum lot size; the SHC Overlay requires a 5 acres minimum lot size. The proposed project site is 59.59 acres.
Road:	Private way from Tuttle Road.
Lot frontage:	50’
Setbacks:	Front: 25’, Rear: 75’, Side: 30’ (combined = 75’
Parking:	2 spaces per unit
Buffering:	50’ undisturbed buffer along entire perimeter of site.
Water & Sewer:	Portland Water District
Electricity:	Central Maine Power
Natural Gas:	Summit Gas
Open Space:	20% required, 68% provided.
Wetlands:	17,516 sf
Vernal Pools:	None
Utilities:	Underground electric, telephone, cable, gas, water and sewer from Tuttle Road and from Greely Road.
Street Lighting:	At street intersections and along roadways at “key locations”.
Traffic Impact Assessment:	Traffic report shows no adverse effects.
Homeowners Association:	None
Floodplain Map Classification:	Zone C and Zone A. No structures will be built in the Zone A area of the site.
Right, Title and Interest:	Trustees’ Deed of Sale.
Fire Protection:	Public water. Fire Hydrants location approved by Fire Chief. Units will have sprinklers.

Additional Approvals Required:

Agency	Type of Permit	Status
MDEP	Site Location of Dev. Permit (SLODA)	On File
MDEP	NRPA Tier 1 permit	On File
US Army Corp of Engineers	(wetlands) permit	Outstanding
MDOT	Entrance Permit	On File
Maine Natural Areas Program	Rare Botanical Data	On File
Maine Historic Preservation Commission	Historic Properties	On File
Maine Dept. Inland Fisheries & Wildlife	Habitat Data	On File
Portland Water District	Ability to Serve	On File
Central Maine Power	Approval of Design	On File
Town of Cumberland	Sewer User Permits	On File

IV. WAIVER REQUESTS:

Waiver Request 1 - Road width for access drive from Greely Road to Community Center. Applicant requests a waiver to maintain the existing road width of 14.5 feet. **GRANTED.**
Waiver Request 2 - Show True North on Subdivision Plan. **GRANTED.**
Waiver Request 3 - Street Signs. Applicant requests waiver from requirement to show street signs until reviewed by Town E911 Administrator. **GRANTED.**
Waiver Request 4 - Trees over 10-inch dbh. **GRANTED.**

- **(NEW) WAIVER REQUEST 5:** From Section 315-28.1 (2) for a paved walkway on the primary access road. Applicant proposes to replace a section of the sidewalk from STA 62+100 to 73 + 63 Little Acres Drive with a stonedust trail across the field from the road to the Community Center.

***Town Engineer's Response to Waiver Request #5* –SME recommends approval of this waiver request.**

V. REVIEW COMMENTS:

DEPARTMENT HEAD REVIEWS:

- **William Longley, CEO:** No comments
- **Police Chief Charles Rumsey:** No comments
- **Fire Chief Small. 2-27-20:** The addition of a fire hydrant and the changes for the fire apparatus access/turnaround are ok.

VI. CUMBERLAND LANDS & CONSERVATION COMMISSION:

Lands and Conservation Commission Recreation Trails Subcommittee
Review of Cumberland Crossing Phase 2
January 11, 2021

In reviewing this and other new subdivision proposals, the goal of the Recreational Trails Subcommittee (RTS) is to ensure that adequate trails are created within new developments (including sidewalks), that new trails connect with existing trails on surrounding properties, and that any existing trails currently crossing the proposed subdivision are retained or rerouted.

Cumberland Crossing – Phase 2
Final Subdivision Application and Plans dated December 18, 2020
(December 18, 2020 Submission)

Sidewalks and Access to Community Center

The developer is proposing to connect Little Acres Drive to the Community Center with a path composed of a stone-dust surface/gravel base. The RTS thinks that a paved sidewalk extension to the Community Center is in the best interest of the residents. In addition, the RTS thinks the developer is underestimating the traffic (listed as "minimal traffic" on the waiver request) on the narrow roadway between the Community Center and Greely Road. For the safety of pedestrians, the RTS recommends that a paved sidewalk extend between the Community Center and Greely Road. Therefore, the RTS opposes granting the waiver requested in Exhibit 1.

Trail Revisions (as seen in the Trail and Walkway Masterplan)

The RTS is very disappointed in the decision of the developer to limit public access to the trails in Cumberland Crossing – Phase 2. Restricting public access to the proposed trail network is a significant reversal from the initial discussions and proposals. Cumberland has had a long history of public access to the town's network of interconnected trails across both public and private properties. This decision of the developer to now make the trails "private internal" trails not only limits access by Town residents to the trails on the Cumberland Crossing property, but also limits access by Cumberland Crossing residents to Cumberland's network of trails.

Furthermore, the developer has been informed multiple times that the "boundary" trail shown on the golf course is not acceptable to the Town due to safety concerns. This trail should be removed from the plans.

VII. TOWN ENGINEER'S REVIEW: 1/11/21.

Ms. Carla Nixon, Town Planner
Town of Cumberland
290 Tuttle Road
Cumberland, Maine 04021

Subject: Peer Review of Cumberland Crossing – Phase 2
Final Subdivision Plan Application
Tuttle Road & Greely Road, Cumberland, Maine

Dear Ms. Nixon:

As requested, Sevee & Maher Engineers, Inc. (SME) has conducted a peer review of the final application for a Major Subdivision and Site Plan for the proposed Cumberland Crossing – Phase 2 senior living community located at 228Greely Road. In addition, the project is required to submit a Shoreland Zoning Application for impacts within a Stream Protection District. The application materials received by SME were prepared by LICHT Environmental Design, LLC (LICHT), and consist of the following:

- Final application package with cover letter prepared by Frederic Licht, P.E., L.S.E., dated December 2020;
- Final project plan set dated December 18, 2020; and
- Final Stormwater Management Report dated November 20, 2020.

PROJECT DESCRIPTION

The Applicant proposes to develop the 59.6-acre Godsoe farmstead as Phase 2 of the Cumberland Crossing, formerly Oceanview at Cumberland senior living facility. Phase 2 will include an additional 52 senior cottages and associated infrastructure, utilities, and stormwater management. This will increase the approved senior cottages to 105 total between Phase 1 and Phase 2.

The parcel is located at 228 Greely Road which will be redeveloped and renovated from the current equestrian farm to a formal community center. The development will be accessed from Phase 1 of the development off Tuttle road by a 3,300-foot extension to Little Acres Drive. Access from Greely Road will be limited to preserve a 500-foot scenic view area. The subdivision will be served with public utilities, including water, sewer, natural gas, electric, telephone, and cable.

This project is being reviewed as a Major Subdivision as outlined in Chapter 250 - Subdivision of Land of the Town of Cumberland Ordinances, most recently amended and adopted on January 12, 2011, and Chapter 229 - Site Plan Review, most recently amended and adopted on March 26, 2012. The comments below relate to the appropriate Ordinance Sections.

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 250-4(N) – Stormwater

1. It appears that significant regrading and proposed culverts identified within the Utility Easement on Plan 10B. It appears that the utilities are designed to have adequate cover from existing grade. If that is the intent, can the culverts and almost 4-feet of fill be removed from the plan set? SME recommends the applicant provide grading details within the utility easement to maintain drainage and avoid the use of culverts in these areas, if possible.

Section 250-35 – Sewage disposal.

1. Please provide engineering design demonstrating that the low-pressure pumps will be adequate hydraulically to pump sewage from the Community Center or furthest extents to the Tuttle Road sewer system and provide a final sewer force main design. Given the amount of flow and various connection that will be using the proposed 4-inch sewer force main in Little Acres Drive, additional detail on the hydraulics of the piping and pump system should be provided to demonstrate that the force main will operate as needed during startup and at full build-out.
2. Please provide additional detail on the designed connection with the Phase 1 sewer force main. Will a new sewer manhole be provided to accomplish this connection?
3. SME recommends that a flushing valve be added in SMH 1.
4. Plan Sheet 6C indicates that a 3 or 4-inch sewer force main be extended to Greely Road. Please clarify if the project intends to carry a 3-inch or 4-inch service.
5. Please add the sewer extension to Greely Road to the plan view on Plan Sheet 10B.
6. SME recommends that an intermediate manhole be provided on the force main pipe from SMH 20 to Greely Road with a flushing valve provide a future location for cleanout of the line.
7. Please provide detail on the proposed connection in SMH 20 with the pipe toward Greely Road. SME recommends that an isolation valve and flushing valve be provided in SMH 20.

Section 250-41– Soil Erosion

8. Provide erosion and sedimentation control measures on Plan Sheet 6C for the Farm Area improvements, including stone check dams, silt fencing, etc.

Section 250-45– Waivers and modifications.

9. Waiver Request 5 – Sidewalk waiver from STA 62+00 to 73+63 Little Acres Drive. SME recommends approval of this waiver request.

Chapter 229: Site Plan Review

SME has reviewed the applicable sections of Chapter 229 and has provided comments for those sections similar to the comments under the review of the Subdivision Ordinance. The remaining sections have been reviewed and found to comply with Chapter 229 requirements.

General Comments

10. Plan Sheet 5B – Please clarify label for SMH 11 and SMH 12. It appears that the note calls out for isolation valve within each manhole. It is anticipated that only SMH 12 will have the valves identified.
11. Plan Sheet 6A – There is an existing catch basin off the northwest corner of the barn. Please confirm where this basin outlets and whether there is adequate outlet protection.
12. Plan Sheet 6C – Please provide spot grades at the accessible parking area.
13. Plan Sheet C7A – Please confirm cover over Culvert 5. It appears to be less than 2-feet and will conflict with the proposed gas main. SME understands this will be included in the Final Plan.
14. Plan Sheet C7A – The K-value near STA 45+13 does not meet the minimum value of 40 for sag curves on Residential Access roadways per the Town's Geometric Standards.
15. Plan Sheet C7A – SME recommends revising the note to "DROP SEWER FORCE MAIN TO AVOID SD1" be revised to require a 12-inch minimum clearance from the top of the sewer force main to the bottom of SD1.
16. Plan Sheet C7A – CULV1 appears to conflict with the proposed force main. Will the force main be constructed below the culvert?
17. Plan Sheet C7B – It is unclear if the force main will conflict with the storm drain pipe crossing the road at CB 36 and CB 40 in this area. Please clarify on the profile and update the sewer line vertical alignment to avoid conflicts.
18. Plan Sheet C8 – It is unclear if the force main will conflict with the storm drain pipe crossing the road. Please clarify on the profile and update the sewer line vertical alignment to avoid conflicts.
19. Plan Sheet C10 – Please label pipes in profile views to confirm which pipes are which to review potential conflicts.
20. Plan Sheet C10B – This appears to be mislabeled as the sheet is called out as C10A on the cover.
21. Plan Sheet C18 and C18A – The force main is labelled as a 3-inch force main in the valve and manhole details on these drawings and either 2-inches or 4-inches on the utility plans and profile sheets depending on which roadway the SMH rests on. Please revise to match per manhole.

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VIII. SUBDIVISION REVIEW:
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. <u>Pollution</u>. 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 parcel is located above sea level. The project will utilize public water and sewer. A groundwater impact assessment was provided by the applicant and reviewed and approved by the Town Engineer. A comprehensive erosion and sedimentation control plan and stormwater management system have been reviewed and approved by the DEP and the Town Engineer. The project will include a third-party inspector to provide oversight during the construction period.

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 subdivision will be served by public water. There is a letter on file, dated July 31, 2018 from the Portland Water District stating the District's ability to serve the proposed project.

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

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 utilize public water. There is a letter on file, dated July 31, 2018, from the Portland Water District stating the District's ability to serve the proposed project.

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

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;*

A comprehensive erosion and sedimentation control plan and stormwater management system have been reviewed and approved by the DEP and the Town Engineer. The project will include a third-party inspector to provide oversight during the construction period.

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

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;

A traffic study was performed by Diane Morabito, PE, PTOE dated 11/19. The study concluded that the project will generate a modest level of vehicle peak hour trips, will not have any significant impact on off-site traffic operation, that there are no capacity constraints at Tuttle Road or Greely Road and that there are no attributable vehicular safety concerns from the development of the project.. An MDOT Entrance permit up is on file.

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

6. <u>Sewage disposal</u>. 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. There is a letter from the Portland Water District indicating capacity to serve the subdivision. There is a letter dated 1/14/20 from Town Manager Bill Shane stating that the Town agrees to accept the sewer design flow from the project. There will be a charge of $500 for each of the required units.

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

7. <u>Municipal solid waste disposal</u>. 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. Based on a conversation with the Director of Public Services, the addition of 52 new homes in Phase 2 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. <u>Aesthetic, cultural and natural values</u>. 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 from the relevant state agencies 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. In addition, the SHC Ordinance created a 500 foot preservation area off Greely Road to preserve the historically agricultural character of the former Godsoe farm from Greely Road. The closest development neighborhood, Leonard Lane, will be located over 1,000 feet from Greely Road and visibility screened by a 100 foot wooded buffer towards Greely Road and abutting properties. There is an extensive landscaping and buffering plan proposed.

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

9. <u>Conformity with local ordinances and plans.</u> 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 and approved by the town planner, the town engineer and town department heads for compliance with the applicable SHC and subdivision ordinance standards. The project is located within a mapped Growth Area. The project helps to address housing for seniors in Cumberland which was an identified need in the Comprehensive plan.

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

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, a traffic engineer, an architect and a licensed soils scientist.

    Financial capacity is evidenced by a letter dated 10/14/19 from Kennebunk Savings stating that bank has approved financing of the infrastructure for the project and that Oceanview at Cumberland has the financial capacity to complete the land development and construction project as proposed.

    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 project does not lie in the watershed of an Outstanding River Segment, pond or within 250 feet of any wetland, great pond or river as defined under Title 38, Chapter 3, Subchapter 1, Article 2-B Shoreland Zoning.

    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 project will be served by public water and sewer. Infiltration of stormwater is limited to the installation of BMP's along the access road which meet all DEP standards for treatment of stormwater prior to discharge to groundwater.

    Based on the information provided, the standards of this section have 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) and a portion within Zone A (a 100 year mapped floodplain). No residences will be located within the mapped floodplain. A stream crossing and box culvert sized for the 100 year storm event which will be within the 100 year mapped flood plain. A 100 year hydrologic study was conducted for the 900 + acre upstream watershed which demonstrates that the culvert and crossing will not cause any back up or restrictions on the current stream flow.

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 and approved by the Town Engineer for conformance with Chapter 250-38 of the Cumberland Subdivision Ordinance.

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

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 have been delineated and mapped by Mark Hampton Associate, Inc. and shown on the project plans. The MDEP has issued a NRPA -Tier 2 permit for the project and a letter of approval for the Army Corp and is expected soon and is listed as a condition of approval.

    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]

    Two streams as defined by the MDEP cross the site. Both streams have been shown on the project plans . All rivers, streams or brooks have been shown on the project plans.

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

IX. STANDARD CONDITION 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 deminimus 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.

X. 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.

XI. RECOMMENDED CONDITIONS OF FINAL PLAN APPROVAL:

1. The Applicant shall provide the Army Corp of Engineers permit prior to the preconstruction conference.
2. All comments made in the Town Engineer’s 1/11/21 review shall be addressed by the Applicant and approved by the Town Engineer prior to the preconstruction conference.
3. A statement of values for required improvements for Phase 2 to be submitted prior to the preconstruction conference.
4. A performance guarantee in a form and amount acceptable to the Town Manager shall be provided prior to the pre-construction conference.
5. A blasting permit, if required, shall be obtained from the Code Enforcement Officer.
6. Clearing limits shall be flagged and approved by the peer review engineer prior to the preconstruction conference.
7. A pre-construction conference is required prior to the start of work.
8. The approved plan shall be recorded at the Cumberland County Registry of Deeds within 90 days of Planning Board approval.

Lands and Conservation Commission Recreation Trails Subcommittee
Review of Cumberland Crossing Phase 2
January 11, 2021

In reviewing this and other new subdivision proposals, the goal of the Recreational Trails Subcommittee (RTS) is to ensure that adequate trails are created within new developments (including sidewalks), that new trails connect with existing trails on surrounding properties, and that any existing trails currently crossing the proposed subdivision are retained or rerouted.

Cumberland Crossing – Phase 2
Final Subdivision Application and Plans dated December 18, 2020
(December 18, 2020 Submission)

Sidewalks and Access to Community Center

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Trail Revisions (as seen in the Trail and Walkway Masterplan)

The RTS is very disappointed in the decision of the developer to limit public access to the trails in Cumberland Crossing – Phase 2. Restricting public access to the proposed trail network is a significant reversal from the initial discussions and proposals. Cumberland has had a long history of public access to the town's network of interconnected trails across both public and private properties. This decision of the developer to now make the trails "private internal" trails not only limits access by Town residents to the trails on the Cumberland Crossing property, but also limits access by Cumberland Crossing residents to Cumberland's network of trails.

Furthermore, the developer has been informed multiple times that the "boundary" trail shown on the golf course is not acceptable to the Town due to safety concerns. This trail should be removed from the plans.

December 22, 2020 (Via Delivery & Email) J16.084

Carla Nixon, Town Planner
Town of Cumberland
290 Tuttle Road
Cumberland, Maine 04021

Cumberland Crossing Phase 2, Greely Road, Cumberland
FINAL SUBDIVISION PLAN SUBMISSION
(Map R04 Parcel 34A)

Dear Carla:

On behalf of OceanView at Cumberland LLC, we are pleased to present for staff and Planning Board review, a ***Final Subdivision Application and Plans dated December 18, 2020*** for the development of the "*Cumberland Crossing – Phase 2* " active senior community located at 228 Greely Road and connected to the Phase 1 Cumberland Crossing project located off Tuttle Road.

This submission includes the following materials; (2 hard copies and PDF Copies)

- Cover Letter Report
- Major Subdivision –Appendix A Application Form
- Major Subdivision - Appendix I Final Plan Review Checklist
- Exhibit -1 Waiver Request
- Exhibit -2 Utility Serviceability Letter -CMP
- Exhibit -3 Draft Stormwater Maintenance Agreement
- Exhibit -4 DEP SLODA & NRPA Permit
- Exhibit -5 Subdivision Chapt. 250-1 Review Standards
- Final Subdivision Plans, Cumberland Crossing Phase 2, Tuttle and Greely Roads, Cumberland, Maine, Town Final Submission, prepared by Belanger Engineering and Licht Environmental Design, LLC Revised 12-18-2020 and including Survey Plans Sheets 1-4 of 4 prepared by Titcomb Associates.

1. BACKGROUND:

The project received Preliminary Major Subdivision approval on July 21, 2020 for the Phase 2 senior retirement community located at 228 Greely Road. The project is a second phase expansion to the Phase 1 project accessed from Tuttle Road through Little Acres Drive, a private way. As you are aware Phase 1 has been under construction since the fall of 2018 and is progressing from Phase 1A into Phase 1B.

In the interim months since Preliminary Approval the project has undergone minor refinements primarily to respond to utility agency updated designs, Planning Board comments and Department of Environmental Protection (DEP) and U.S. Army Corps of Engineers (Corps) comments.

(Note- within this document use of the terms "OceanView at Cumberland, LLC " and "OceanView" shall have the same meaning as OceanView at Cumberland, LLC.)

2. OVERVIEW OF PROJECT & PLAN UPDATES:

The Final Subdivision plans dated December 18, 2020 include an additional level of detail commensurate with final plan submission to comply with the Town of Cumberland Appendix I Final Plan Checklist and Chapter 250-7.D Final Plan and Article IV Design Improvement requirements. A summary of overall plan changes including responses to agency review comments follows:

1. Waiver Request: A request to waive the requirement for a sidewalk along Little Acres Drive from Station 62+50 (past the box culvert) to the community center, to be replaced with the construction of a stone dust pathway is requested in *Exhibit 1*.

2. Subdivision Plat (Sheets 1-4 of 4): DEP meadow and forested buffers have been labeled with annotations for monumenting in the field with pins and caps. Additional plan labeling and minor adjustments in several unit locations have been made and the notes updated on Sheet 3 of 4. Additional detail has been added at the proposed community center pool facility.

3. Road Names: All road names have been approved by the Town Assessor. Refer to Plan C2 - Overall Plan and all subdivision plans for road names.

4. Community Center: The Engineering Plans, Sheet C6.C has added detail to the community center outdoor pool facility (former Godsoe farmhouse). Plan C23 also includes a larger scale layout of the pool facility. The pool which will be available to all Cumberland Crossing residents includes a 25 by 75 foot pool, pool patio and deck, outside restrooms and pool mechanical building, hot tub and associated fencing and walks. As presented in the Preliminary Plan application, the pool is anticipated to be constructed in the spring of 2021, pending approvals, in advance of any renovations to the farmhouse for use as a formal community center. The building code upgrades will be phased in subsequent to the opening of the pool facility as the project development moves forward following completion of Phase 1.

   A detailed community center phasing plan was presented with the Preliminary Plan application which outlined the use of the current subsurface wastewater disposal system and onsite well water for the first several years of pool area operation until the project low pressure sewer system and public waterman are extended to the community center. The current septic tank and building sewer piping will be relocated and re-connected to the existing leach field to accommodate the pool area improvements as shown on plan C6.C. (Refer to the February 25, 2020 Preliminary Plan Addenda 1 –Exhibit 1 for the community center phasing analysis.)

   A note has been added to the Subdivision Plan Sheet 3 of 4 indicating the location of entry signage and signage application to be applied for through the Code Enforcement/Planning office after approvals. The sign may be attached to the existing stone walls or be separately located. The final details and style will be modest and consistent with proposed signage for Phase 1 to be located off Tuttle Road.

35 Fran Circle, Gray, Maine 04039 • rlicht@securespeed.net • V 207.749.4924 F 207.428.4167

5. Units and Roadway Infrastructure:
    a. Several units and associated grading have been "tweaked" to provide more efficient orientations or grading around the units.
    b. The Leonard Lane profile has been adjusted from approximate station 4+00 – 6+00 to provide more efficient grading for units 90 and 91.
    c. Sheet C6.C - cross country utility easement. The culvert and grading located at approximate station 3+00 has been removed and the finish grades shown to approximate the exiting field grades to make this utility corridor more aesthetically appealing and consistent with the natural flow of the fields.
    d. Utilities – Minor revisions to the Plan and Profile Sheets and Utility Sheets have been made to respond to Portland Water District and other utility review comments.
    e. Culverts at stations 41+00 and 48+00 Little Acres Drive have been shown embedded and upsized per Corps recommendations.
    f. Box Culvert at main stream, Little Acres Drive Station 59+25+/-. The concrete box culvert has been increased to a 16 foot wide by 9 foot tall –single opening culvert and rip rap has been reduced at the inlet and outlet to maintain natural stream bed characteristics per Corps recommendations.
    g. Plan and Profile Sheets – Minor adjustments in utilities and storm drainage infrastructure have been made to avoid conflicts and culverts adjusted as noted above. The Leonard Lane profile from Station 4+00 -6+00 has been raised as noted above.
    h. Landscaping at the farm fields –The applicants team has met with the abutter, Dr. Thomas Netland on several occasions to review buffering along the open fields along Little Acres Drive. In response to these meetings, the Landscaping Plans, Sheets C11A and C11B have detailed out the planting buffer to be added along the east side of Little Acres Drive in the field area adjacent to the Netland property.

6. Trails:

Plan Sheet C2A, Aerial Overlay and Trails Plan has been added as requested to compliment the Sheet C12, Trails and Walkway Master Plan to help the reader better understand graphically the trail locations as proposed.

As was presented at the July Preliminary Planning Board meeting, the applicant's position on public verses private trails has evolved over the past two years since the Phase 1 approvals. While OceanView does not specifically prohibit the public from using internal trail systems or walkways which may be near residences, the covid pandemic combined with increased resident concerns at the applicant's other facilities has caused a pause in the use of shared trails. Residents' safety concerns and feeling of being in a safe environment are paramount in both marketing units and in maintaining the proud reputation which OceanView has built over three decades of operating senior facilities. In response to these concerns the internal woods trails are shown without formal connections to the Town "boundary" trail located along the OceanView/Val Halla Golf Course boundary. The plans indicate the boundary trail following the common boundary but primarily on the golf course side of the boundary. Further north towards Greely Road, that trail is shown on the west side of the white farm fence on OceanView property adjacent to the Ingraham property, with additional buffer planting proposed - rather than in the field. This adjustment is still under consideration with town representatives and with

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the abutter, Ms. Ingraham on Greely Road, with the expectation that the final location will be resolved prior to meeting with the Planning Board in January.

Trails would be constructed commensurate with the phasing of the associated units and infrastructure relating to and in the vicinity of the individual trails.

7. Electric, Lighting and Photometric Plan:

    a. Central Maine Power Company has issued the electrical distribution plan for the project (the "905" plan) added to the plan set. Underground power will be provided from the overhead service on Greely Road.
    b. Mancini Electric has updated the Lighting Plans (SE-1 and 2) and added a photometric plan (SEP1 and 2) for the streetlight fixtures located along the roadways and at the gravel parking lot at the community center. Lights at the community center lot will be on timers to dim and turn off at night time. All units will contain individual low wattage LED post lights at the ends of the driveways as with Phase 1. These provide minimal light exposure and are not modeled on the photometric plan.

3. UTILITY SERVICEABILITY LETTERS:

Utility serviceability letters have previously been provided for sewer capacity (Town of Cumberland), and water service (Portland Water District). An additional capacity to serve letter has been provided by CMP, attached as *Exhibit 2*.

4. STORMWATER MANAGEMENT AND FEMA FLOOD PLAIN:

The stormwater management report prepared by Belanger Engineering has been updated to reflect the 16 foot by 9 foot box culvert size and providing offsite stormwater discharge points of analysis at both the property line just southeast of the box culvert and at the railroad culvert further to the east located adjacent to the Netland property. A PDF copy of the updated report was provided to the Town and to Sevee & Maher Engineers on November 9th and an additional PDF copy is included with this submission. The stormwater plans are included in the plan set.

A draft Town of Cumberland MS-4 Stormwater Agreement is attached as *Exhibit 3.* The applicant intends to contract with a third party inspector for annual inspections and reporting.

In the Preliminary Subdivision application, it was noted that the FEMA Flood Map (Flood Insurance Rate Map Number 230162 0015B Panel 15 of 25) indicates a Zone A (100-year flood plain) along the easterly portion of the main stream corridor to the offsite railroad embankment. No elevation is provided and the scaled location is shown on the Stormwater Plans and the Subdivision Plat. The delineation clearly conflicts with the actual ground topography and is inaccurate. The applicant's team had pursued a FEMA Letter of Map Amendment (LOMA) based on the calculated 100-year storm event elevation (determined to be 62.0 based on the analysis of the entire upstream watershed) contained with the stormwater management report and shown on the Stormwater Plans.

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After conferring with the E-LOMA review agents, we have decided to withdraw the request for a FEMA Map Amendment as no building structures are located within or near the FEMA Zone A as currently mapped. Consequently the project subdivision plat will refer to the current FEMA map Zone – A delineation as shown on the Subdivision Plans. The stormwater plans will indicate both the FEMA delineation and the hydrologically calculated 100 year elevation for purposes of culvert sizing.

We would request that the Shoreland Zone application (Filed with the Preliminary Plans) refer to the mapped FEMA Zone A line as noted.

5. PHASING & CONSTRUCTION SEQUENCING:

Phase 2 of Cumberland Crossing will be constructed in sub-phases based on market demand and appropriate utility phasing. The project will commence with the community center pool area construction in spring, 2020 following approvals.

The major infrastructure, roads and units will extend northerly from Phase 1B along Little Acres Drive, Northwind Farm Road, Monarch Drive and Leonard Lane and to the barns and community center based on unit sales and market demand. The exception will be the installation of underground power (and possibly communications) which will commence from Greely Road and be installed in a southerly direction over the 50 foot cross country utility easement to energize the first sub phase of the Phase 2 development. The electric conduits will be installed via directional drilling under the stream prior to the permanent box culvert being placed.

It is expected that the contractor will access the site from Greely Road over the current driveway and provide a temporary construction road in the location of Little Acres Drive to access the construction sub phases. A temporary bridge crossing will be utilized at the main stream until the box culvert is placed.

6. DEP AND CORPS PERMITS:

The Department of Environmental Protection Site Location of Development and NRPA Tier 2 permit was issued on October 9, 2020. A copy is attached as *Exhibit 4*. The Corps permit is being reviewed and is expected to be issued very shortly. A copy will be provided to the Town Planning Office when received.

7. SUBDIVISION CHAPTER 250-1 REVIEW STANDARDS:

Exhibit 5 provides a summary of how the project complies with the Subdivision Chapter 250-1 review criteria and standards

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SUMMARY:

We believe that the submitted materials address the Town of Cumberland requirements for Final Plan review and approval. Should you have any further comments please do not hesitate to contact me. On behalf of our entire project team we look forward to meeting with the Planning Board at the January, 2021 meeting to present the project in further detail.

Sincerely,

Frederic (Rick) Licht, PE, LSE
Principal

Encl: As Noted

Cc: Chris Wasileski; OceanView at Cumberland LLC
Christian Haynes; OceanView at Cumberland LLC
David Haynes; SeaCoast Management Company
Chris Belanger; Belanger Engineering
Rex Croteau; Titcomb Associates
Scott Anderson; Verrill-Dana
Diane Morabito; Sewall

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FINAL PLAN
APPENDIX FORMS

Appendix A
Planning Board Application

Map: R04
Lot: 34A AND PORTION OF 41

1. APPLICANT:

Name: OCEANVIEW AT CUMBERLAND, LLC
Address: 20 BLUEBERRY LANE,
FALMOUTH, ME 04105
Telephone: 207.233.4194
Cell: 207.433.4194
Fax:
E-mail: CHRISW@OCEANVIEWRC.COM

Interest in property: OWN
Interest in abutting properties, if any: EASEMENT AT TOWN OWNED VAL HALLA GOLF COURSE

2. OWNER:

Name: SAME AS APPLICANT
Address:
Telephone:
Cell:
Fax:
E-mail:

3. APPLICANT'S ARCHITECT, LANDSCAPE ARCHITECT, ENGINEER, PLANNER OR SURVEYOR:

Name: FREDERIC (RICK) LICHT, PE
Address: LICHT ENVIRONMENTAL DESIGN, LLC
35 FRAN CIRCLE, GRAY, ME 04039
(If more than one, please attach name and contact information for each.) (SEE APPLICATION REPORT SECTION 1)
Telephone: 207.749.4924
Cell: 207.749.4924
Fax:
E-mail: RLICHT@SECURESPEED.NET

4. PROJECT:

Name of project: CUMBERLAND CROSSING - PHASE 2 -FINAL PLAN
Address of site: 228 GREELY ROAD AND OFF PHASE 1 CUMBERLAND CROSSING , TUTTLE ROAD
Project data:

Book:	35426	Map:	R04
Page:	97	Lot:	34A
Zoning district:	RR1	Number of dwellings:	52
Overlay district:	SHC AND SP	Number of buildings:	52 + EXISTING GODSOE RESIDENCE/BARNS
Size of site:	60+/- AC.	Number of lots:	1
Minor subdivision		Minor site plan	
Major subdivision	X	Major site plan	X
Other:	SHORELAND ZONE PERMIT - SP DISTRICT STREAM CROSSING		

5. OTHER INFORMATION:

a) Is Board of Adjustment and Appeals approval required? NO
b) Are any ordinance waivers requested? X Yes ___ No
(If 'Yes' attach a list of waivers and reasons for their request.) SEE EXHIBIT 1
c) Application fee per Town ordinance: $7,800 + $6,800 REVIEW FEE PAID AT PRELIMINARY REVIEW
d) This application form and all accompanying materials must be submitted to the Town Planner at least 21 days prior to the meeting at which it is to be considered by the Planning Board.

The undersigned, being the applicant, owner or legally authorized representative, states that all information contained in this application is true and correct to the best of his/her knowledge and hereby does submit the information for review by the Town and in accordance with applicable ordinances, statutes and regulations of the Town, state and federal governments.

[signature], AGENT
Signature of applicant/owner/representative

DECEMBER 21, 2020
Date

Appendix I
Application Checklist
Major Subdivision – Final Plan Review

Proposed subdivision name CUMBERLAND CROSSING -PHASE 2

Applicant name OCEANVIEW AT CUMBERLAND, LLC

Owner name OCEANVIEW AT CUMBERLAND, LLC

	Check When Satisfactory		Indicate Date When Satisfactory
(TWO COPIES AND PDF)	**Applicant**	**CEO**	**Planning Bd.**
1. 10 copies of final plan and accompanying materials	X		
2. Title	X		
3. Scale	X		
4. North arrow	X		
5. Date of plan 12-18-2020	X		
6. Name, address and signature of owner	X		
7. Name, address and signature of subdivider	X		
8. Name, address and signature of licensed engineer, land surveyor, architect or planner	X		
9. Names of adjoining property owners or subdivisions	X		
10. Check for conformity with preliminary plan	X		
11. Dimensions and bearings of property being subdivided	X		
12. Location, names and widths of existing and proposed streets	X		
13. Location and names of existing and proposed parks, playgrounds and other public areas	N/A		

14. Lot lines and accurate dimensions and bearings or angles	X		
15. Lot areas (PROJECT IS ONE LOT)	X		
16. Building setback lines	X		
17. Curve data	X		
18. Location, description and size of all monuments	X		
19. Certification by agencies as required	X	(DEP ISSUED. CORPS OF ENGINEERS PENDING)	
20. Restrictive covenants (DEP BUFFERS)	X		
21. Street plans and profiles	X		
22. Typical cross sections of street pavements, including curbs and gutters, sidewalks, manholes and catch basins	X		
23. Landscaping	X		
24. Plan and profiles showing location, size and invert elevations of existing and proposed sanitary sewers and storm sewers	X		
25. Plan and profiles showing location and size of all waterlines, gas lines, and other underground utilities and structures	X		

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, please place an asterisk (*) in the space and explain your reasons in the space below or on attached sheets.

Exhibit 1

WAIVER REQUEST

EXHIBIT 1
WAIVER REQUEST

WAIVER REQUEST #5: Sidewalk Waiver Station 62+00 to 73+63 Little Acres Drive;

OceanView at Cumberland, LLC respectfully requests the granting of a waiver from the SHC Ordinance, § 315-28. I. (2) – Paved sidewalk on primary access road - connecting from Tuttle Road - for Stations 62+00 to 73+63 along a portion of Little Acres Drive connecting to the existing Godsoe driveway. This request is based on the following.

a. This section of road is expected to see minimal traffic and is designed to be a simple park style 20-foot paved road with one section of 18 feet, allowing for pedestrians to safely walk or bicycle on the road. Multi-use of a low volume road such as the Little Acres Drive Extension is in keeping with *Complete Streets* philosophies to "share the road".
b. The road is in an open field providing a pastoral feel and adding a sidewalk would only increase impervious area.
c. A stone dust path across the beautiful fields will be provided as an alternative to access the barns and Community Center areas.

For the reasons stated, we respectfully request approval of the sidewalk waiver.

Exhibit 2

UTILITY SERVICEABILITY LETTER - CMP

rick licht

From:	Cough, Jamie [Jamie.Cough@cmpco.com]
Sent:	Thursday, December 17, 2020 9:00 AM
To:	rick licht; Gino Mancini (gmancini@mancinielectric.com)
Subject:	Cumberland Crossing Development | CMP Capacity Letter CMP Ability to Serve Request and Three Phase Service Process
Attachments:	Easement_Information_Worksheet.doc; Standard Easement Sample.pdf; Jan 3.1 2020 EDET.XLSX

Request for Ability to Serve Letter

Project Description:

Phase II Cumberland Crossing

CMP has the ability to serve the proposed project in accordance with our CMP Handbook (web link below). We can provide you the desired pad or pole mounted transformers per your request and city approval, in accordance with our CMP Handbook of Standard Requirements. If you have any questions on the process, or need help in completion of the documents, **please contact me at 207-629-1489.**

Here is our typical process for getting your three phase or CT rated single phase service installed. If you have any questions, please let me know. The underlined links will redirect you to the appropriate site for additional information. If this is a single phase service with all self-contained metering, the process is simplified, but still begins with a call to CMP.

Service Milestones for Three Phase Services and CT Rated Single Phase Services. Please refer to CMP Installation Checklists for other installations.

- Call 800-750-4000 option 4 to establish a new account (if needed) and an SAP work order. Please provide both of these to me.
- Submit Load information. Please complete the attached EDET (excel file) using load information. Please complete this and email back to me. If the loads are over 500 kw, more in depth load studies may be required with our Distribution Planning and Transmission Planning Departments. Be advised that these will involve more detailed load information, a load study agreement (signed contract), as well as other items. This additional study process may add up to two additional months to completion of the job.
- Submit the easement information worksheet. Please complete this form and either email or fax back to me.
- Submit any electronic drawings (PDF (preferred) or DWG files) of the site layout and proposed electrical connections if you have them.
- Preliminary meetings with CMP Advisor and Engineer to determine details of job (I will need to schedule with your electrician/contractor-please let me know who this is)
- Field planner design appointment to cost out job and develop CMP Invoice. The invoice is typically generated 5-6 weeks after the design appointment. This expires after 90 days from the invoice date.
- CMP submits invoice to the customer for payment (typically via email). Payment received from customer.
- Easements (based on easement information worksheet) sent out, signed and originals returned to CMP.
- Job scheduled for completion after the electrical inspection has been received.

This process can take several months, depending upon several factors including transformer or materials delivery, return of completed paperwork, and other jobs in the system that may be ahead of yours. In addition, contact with the other utilities, including telephone and cable, should be commenced as soon as practical. They may have additional work or charges in addition to the CMP work required to bring your project on line.

Please complete the attached forms (the specific instructions are on each form) and email them back to me at your earliest convenience.

For your convenience, here is a link to the CMP Website which contains our Handbook with details on most service requirements: CMP Handbook of Standard Requirements

You will be responsible for installing the customer connections, conduits, and metering in accordance with the CMP Handbook of Standard Requirements. The transformer will be sized based on your submitted load sheets.

Your deposit amount will be typically based on an estimated two month bill, calculated from your completed load sheet unless otherwise determined by CMP.

Metering:

All metering (including locations) must be preapproved by CMP.

Chapter 324 Interconnections:

Please be advised that if you plan to install solar/wind/hydro generation, you must complete an application under the MPUC mandated Chapter 324 Interconnection Standards. If you go to Chapter 324 Interconnection Standards and follow the instructions for the Small Generator Interconnection Procedures, CMP can do this work in parallel to your service request that will be handled by me. If you project is under 660 KW You will be able to have a Customer Net Energy Billing contract. Information concerning Customer Net Energy Billing can be accessed thru the Chapter 324 website or by clicking here: Net Energy Billing

Reallocation/Line Extensions:

Recently, changes were made to the three-phase construction policy, which require CMP to reallocate construction costs paid by customers. If applicable, those projects identified as "developments" do not qualify for reallocation of funds. Please see this document at our website for details about the reallocation conditions. Any reallocation charges will be specifically denoted on your invoice. The website address for this is: PolyphaseLineExtension .

This line extension will be part of Central Maine Power's distribution system. In the event the property served under this Agreement is sold or otherwise conveyed, all rights and obligations of the Agreement shall stay with the property. Please note that if you rent or lease this property to another and you want to receive the reimbursement payments, you must make special arrangements with the Central Maine Power Company. Otherwise, any reimbursement payments will be sent to the "Customer" taking service at the service location.

Electricity Supplier Information:

Central Maine Power Company (CMP) will provide your facility with electric delivery service. If you don't already have a provider, you will need to make arrangements with a competitive electricity provider in order to receive electricity supply for your facility. In the event you fail to choose a competitive electricity provider, you will receive Standard Offer service arranged by the Maine Public Utilities Commission. If you wish to be served by a competitive electricity provider immediately upon establishment of delivery service, you must arrange for this service directly through your chosen competitive electricity provider, who must enroll your account no later than 5 PM on the business day prior initiation of delivery service by CMP. An up-to-date list of competitive suppliers can be found at the:

1. Maine Public Utilities Commission (MPUC) web site- **Maine PUC**
2. By calling the MPUC at (207) 287-3831

Attachments:

Excel Load Sheet (EDET)
Easement Worksheet and Sample Standard Easement

Regards,

Jamie

Jamie Cough
Energy Services Advisor
Central Maine Power Company
162 Canco Road
Portland, ME 04103
207-629-1489 office

CENTRAL MAINE POWER

Internal Use

==

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Exhibit 3

DRAFT STORMWATER AGREEMENT MS-4

Maintenance Agreement for
Stormwater Management Facilities

This Maintenance Agreement is made this ______day of __________________ 20___ by and between _________________________ and the Town of Cumberland, Maine.

The project name is _**Cumberland Crossing Phase 2________________________________.**

The location is: 228 Greely Road and Little Acres Drive ___________, Cumberland, Maine.

The project's Tax Map and Lot Numbers are Tax Map R04 Lot 34A.

The project is shown on a plan entitled "__Cumberland Crossing Phase -2 prepared by Belanger Engineering________________________" dated ____________and most recently revised on ______________, approved by the ______________________ on _________________ and recorded in the ___________ County Registry of Deeds in Plan Book _____________ Page ____________ (the "Project").

WHEREAS, the approval of the Project includes Stormwater Management Facilities which requires periodic maintenance; and

WHEREAS, in consideration of the approval of the Project the Town of Cumberland requires that periodic maintenance be performed on the Stormwater Management Facilities;

NOW, THEREFORE, in consideration of the mutual benefits accruing from the approval of the Project by the Town and the agreement of ____________________________ to maintain the Stormwater Management Facilities, the parties hereby agree as follows:

I, Chris Wasileski, for itself, and its successors and assigns, agrees to the following:

(a) To inspect, clean, maintain, and repair the Stormwater Management Facilities, which includes, to the extent they exist, parking areas, catch basins, detention basins or ponds, drainage swales, pipes and related structures, at least annually, to prevent the buildup and storage of sediment and debris in the system;

(b) To repair any deficiencies in the Stormwater Management Facilities noted during the annual inspection;

(c) To provide a summary report by **June 1** each year on the inspection, maintenance, and repair activities performed annually on the Stormwater Management Facilities to the Town Public Services Department;

(d) To allow access by Town personnel or the Town's designee for inspecting the Stormwater Management Facilities for conformance with these requirements.

2. This Agreement shall constitute a covenant running with the land, and ______________________ shall reference this Agreement in all deeds to lots and/or units within the Project.

(Project Name)_________________________

By: ____________________________
Title: ___________________________

____
Witness

TOWN OF CUMBERLAND, MAINE

By: ____________________________
Title: ____________________________

____
Witness

STATE OF MAINE
_________________, ss.
______________________, 20__

Personally appeared the above-named ___________________________ _________, the ______________ of ___________________________________, and acknowledged the foregoing Agreement to be said person's free act and deed in said capacity.

Before me,

__________________________ ______________________
Notary Public / Attorney at Law Print Name

STATE OF MAINE
_________________, ss.
______________________, 20__

Personally appeared the above-named ___________________________ _________, the _________________________ of the Town of ____________________________, and acknowledged the foregoing Agreement to be said his/her free act and deed in said capacity.

Before me,

__________________________ ____________________
Notary Public / Attorney at Law Print Name

Exhibit 4

DEP SLODA/NRPA PERMIT

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION AUGUSTA, MAINE 04333-0017

DEPARTMENT ORDER

IN THE MATTER OF

OCEANVIEW AT CUMBERLAND LLC	) SITE LOCATION OF DEVELOPMENT ACT
Cumberland, Cumberland County	) NATURAL RESOURCES PROTECTION ACT
CUMBERLAND CROSSING PHASE II	) TIER 2 WETLAND ALTERATION
L-27834-26-D-N (approval)	) WATER QUALITY CERTIFICATION
L-27834-TE-E-N (approval)	) FINDINGS OF FACT AND ORDER

Pursuant to the provisions of 38 M.R.S. §§ 481–489-E and §§ 480-A–480-JJ, Section 401 of the Federal Water Pollution Control Act (33 U. S. C. § 1341), and Chapters 310, 315, 375, and 500 of Department rules, the Department of Environmental Protection has considered the application of OCEANVIEW AT CUMBERLAND LLC with the supportive data, agency review comments, and other related materials on file and FINDS THE FOLLOWING FACTS:

1. PROJECT DESCRIPTION:

A. History of Project: In Department Order # L-27834-26-A-N / L-27834-TC-B-N dated September 10, 2018, the Department approved a project called Cumberland Crossing (previously called OceanView at Cumberland) that included 52 senior retirement cottages, two community buildings and access roads on a 37.1-acre parcel. The project included 19.76 acres of developed area, of which 8.04 acres was impervious area. The project also included 7,637 square feet of freshwater wetland fill. The project is located on the southwest side of Greely Road in the Town of Cumberland.

B. Summary: The applicant proposes to expand the Cumberland Crossing project onto a 59.6 acre parcel known as the Godsoe Farm property to construct 52 single-family senior cottage units with associated roadways and utilities, and to convert the existing Godsoe farmhouse into a community center. The proposed roads include extending Little Acres Drive, from the first phase, by approximately 3,300 feet through the Godsoe Farm parcel to Greely Road, plus eight shorter interior roads. The farmhouse will be converted into a community center for the residents of both phases of this project by repurposing the interior as meeting rooms and a sales office, and by adding parking, an inground pool with a large surrounding patio area, other outside amenities, and repaving the existing driveway to the farmhouse in same width and same location. The application states that the existing Godsoe barn and indoor arena will continue to be used for horses. The applicant proposes to convert the community center constructed in Phase 1 into a single-family cottage after the Godsoe farmhouse is converted to a community center. The project includes small footpaths, shown on Plan C12, consisting of three-foot wide trails constructed by only cutting the vegetation. The project is shown on a set of plans, the first of which is titled “Cumberland Crossing-Phase 2, Tuttle and Greely Roads, Cumberland, Maine for Seacoast Management Company, 20 Blueberry Lane, Falmouth, ME," prepared by Belanger Engineering, and dated December 18, 2019, with a last revision date on any of the plans of October 15, 2020.

The applicant is also seeking approval under the Natural Resources Protection Act to alter 14,409 square feet of freshwater wetland; see Finding 18. The Department accepted a Natural Resources Protection Act (NRPA) Permit by Rule Notification Form (PBR #69303) on January 24, 2020, for activities adjacent to protected natural resources and stream crossing associated with the proposed project that will be constructed in accordance with Chapter 305, Sections 2 and 10 of the Permit by Rule Standards. The proposed culvert for the stream crossing is a 16-foot by eight-foot precast box culvert as shown in the revised letter dated September 29, 2020.

C. Current Use of Site: The site of the proposed project currently has approximately 19 acres with frontage on Greely Road that is developed with a large house, a horse barn with attached indoor equestrian arena, lawn areas, paddock areas, and fields. The remaining portion of the property, further away from Greely Road, is forested. There are two streams that enter the property, then join together before exiting the property; there is an existing wooden bridge over the stream just below the confluence. There is an existing timber harvesting road on the property.

2. FINANCIAL CAPACITY:

The total cost of the project is estimated to be $5,700,000. The applicant submitted a letter from Kennebunk Savings Bank, dated December 14, 2019, indicating that it intends to provide financing for this project. Prior to the start of construction, the applicant must submit evidence that it has been granted a line of credit or a loan by a financial institution authorized to do business in this State or evidence of any other form of financial assurance consistent with Department Rules, Chapter 373, § 1, to the Bureau of Land Resources (BLR) for review and approval.

The Department finds that the applicant has demonstrated adequate financial capacity to comply with Department standards provided that prior to the start of construction the applicant submits evidence of financial capacity to the Department with a condition compliance application for review and approval.

3. TECHNICAL ABILITY:

The applicant provided a list of projects successfully constructed by the applicant. The applicant also retained the services of Licht Environmental Design for site planning and permitting, Belanger Engineering for civil engineering and stormwater management, Gawron-Turgeon Architects for architectural design services, Titcomb Associates for boundary and topographic surveying services, Verrill-Dana for legal services, and Hampton Associates for wetland delineations and soils mapping services.

The Department finds that the applicant has demonstrated adequate technical ability to comply with Department standards.

4. NOISE:

Noise produced by residential developments is not regulated pursuant to Department rules, Chapter 375 § 10. Noise from the construction of developments between the hours of 7:00 a.m. to 7:00 p.m. or during daylight hours, whichever is longer, is also not regulated pursuant to 38 M.R.S. § 484(3)(A). The applicant proposes to limit any construction to the hours of 8:00 a.m. and 5:00 p.m. with some exceptions to extend construction hours to between the hours of 7:00 a.m. to 7:00 p.m. with permission of the applicant.

The Department finds that no regulated sources of noise have been identified.

5. SCENIC CHARACTER:

The land northwest of the proposed site is occupied by the Val Halla golf course and by single-family homes along the Greely Road frontage. The northwest side of the site is along Greely Road and across Greely Road there is a single-family home in a large field and a road through the field to a single-family home subdivision. On the southeast side of the project is a veterinarian's office near Greely Road with a field further away from Greely Road, a forested area, and a railroad track with forested area across the railroad track. On the southwest side of the project is a residential subdivision with approximately 300 feet of forested buffer. The applicant proposes to maintain a 50-foot wide forested buffer along all the property lines. The additional parking around the farmhouse and the road into the project will be the only elements of the project visible from Greely Road.

Based on the project's location and design, the Department finds that the proposed project will not have an unreasonable adverse effect on the scenic character of the surrounding area.

6. WILDLIFE AND FISHERIES:

The Maine Department of Inland Fisheries and Wildlife (MDIFW) reviewed the proposed project. In its comments dated September 12, 2017, MDIFW stated that it found no records of any Essential or Significant Wildlife Habitats, or other wildlife habitats of special concern associated with this site. MDIFW recommended a 100-foot undisturbed vegetated buffer along streams measured from the edge of stream or from the associated fringe and floodplain wetlands if there are any. The applicant has provided 100-foot wide buffers along the stream associated wetland with the exception of where Little Acres Drive crosses the stream and Leonard Lane parallels the stream for a short distance. Buffers are to remain in their natural state.

The Department finds that the applicant has made adequate provision for the protection of wildlife and fisheries.

7. HISTORIC SITES AND UNUSUAL NATURAL AREAS:

The Maine Historic Preservation Commission reviewed the proposed project and stated that it will have no effect upon any structure or site of historic, architectural, or archaeological significance as defined by the National Historic Preservation Act of 1966.

The Maine Natural Areas Program database does not contain any records documenting the existence of rare or unique botanical features on the project site.

The Department finds that the proposed development will not have an adverse effect on the preservation of any historic sites or unusual natural areas either on or near the development site.

8. BUFFER STRIPS:

The applicant proposes stormwater management buffers; see Finding 10 for information regarding the stormwater management buffers.

The applicant also proposes forested buffers that will be fifty feet wide around the external perimeter of the property to provide a visual buffer to adjacent properties. Stream buffers that are 100 feet wide will be provided along both sides of both streams with the exception of stream crossings by the proposed roads; see Finding 6. The stream buffers, labeled as MDIFW buffer on some on the plans, are forested and are to remain forested and in their natural state. Prior to the start of construction, the stream buffers must be permanently marked on the ground.

The Department finds that the applicant has made adequate provision for buffer strips.

9. SOILS:

The applicant submitted a medium-high intensity Class B soil survey map and report based on the soils found at the project site. The soils found at the site are Lamoine, Scantic, Elmwood, Made Land, and Buxton. This report was prepared by a certified soils scientist and reviewed by staff from the Division of Environmental Assessment (DEA) of the Bureau of Water Quality (BWQ). DEA stated that the information submitted was satisfactory.

The Department finds that, based on this report, and DEA's review, the soils on the project site present no limitations to the proposed project that cannot be overcome through standard engineering practices.

10. STORMWATER MANAGEMENT:

The proposed project includes approximately 18.93 acres of developed area, of which 7.66 acres is impervious area. It lies within the watershed of Mill Brook which is a tributary to the Piscataqua River. The applicant submitted a stormwater management plan based on the Basic, General, and Flooding Standards contained in Chapter 500 Stormwater Management rules (06-096 C.M.R. Chap. 500, effective August 12, 2015). The proposed stormwater management system consists of a grassed underdrained soil filter pond, roof dripline filters on the proposed buildings, a FocalPoint subsurface treatment and storage system, and three forested and two meadow stormwater buffers with and without stone bermed level lip spreaders.

A. Basic Standards:

(1) Erosion and Sedimentation Control: The applicant submitted an Erosion and Sedimentation Control Plan that is based on the performance standards contained in Appendix A of Chapter 500 and the Best Management Practices outlined in the Maine Erosion and Sediment Control BMPs, which were developed by the Department. This plan and plan sheets containing erosion control details were reviewed by, and revised in response to the comments of, the BLR.

Erosion control details will be included on the final construction plans and the erosion control narrative will be included in the project specifications to be provided to the construction contractor. Given the size and nature of the project site, the applicant must retain the services of a third party inspector in accordance with the Special Condition for Third Party Inspection Program, which is attached to this Order. Prior the start of construction, the applicant must conduct a pre-construction meeting to discuss the construction schedule and the erosion and sediment control plan with the appropriate parties. This meeting must be attended by the applicant's representative, Department staff, the design engineer, the contractor, and the third-party inspector. If the applicant retains the same contractor and the same third party inspector that was used during construction of Phase 1, then this pre-construction meeting is waived.

(2) Inspection and Maintenance: The applicant submitted a maintenance plan that addresses both short and long-term maintenance requirements. The maintenance plan is based on the standards contained in Appendix B of Chapter 500. This plan was reviewed by, and revised in response to the comments of, the BLR. The applicant will be responsible for the maintenance of all common facilities including the stormwater management system.

Prior to start of construction of Phase 2, the applicant must submit a copy of an executed long-term maintenance contract (minimum of 5 years and renewable) for the on-going maintenance of the FocalPoint system to the BLR. Grit and sediment materials removed from stormwater structures during maintenance activities must be disposed of in compliance with the Maine Solid Waste Management Rules.

(3) Housekeeping: The proposed project will comply with the performance standards outlined in Appendix C of Chapter 500.

Based on BLR's review of the erosion and sedimentation control plan and the maintenance plan, the Department finds that the proposed project meets the Basic

Standards contained in Chapter 500, § 4(B) provided: that grit and sediment materials removed from stormwater structures during maintenance activities must be disposed of in compliance with the Maine Solid Waste Management Rules; that prior to start of construction of Phase 2, the applicant must submit a copy of an executed long-term maintenance contract for the maintenance of the FocalPoint system to the BLR; and that prior the start of construction, the applicant must retain the services of a third party inspector and conduct a pre-construction meeting.

B. General Standards:

The applicant's stormwater management plan includes general treatment measures that will mitigate for the increased frequency and duration of channel erosive flows due to runoff from smaller storms, provide for effective treatment of pollutants in stormwater, and mitigate potential thermal impacts. This mitigation is being achieved by using Best Management Practices (BMPs) that will treat runoff from 98% of the impervious area and 80% of the developed area.

The forested (limited disturbance) and meadow stormwater buffers will be protected from alteration through the execution of a deed restriction. The applicant proposes to use the deed restriction language contained in Appendix G of Chapter 500.

Prior to the start of construction, the location of stormwater buffers must be permanently marked on the ground. The deed for the property must contain deed restrictions relative to the buffer and have a plot plan for the property, drawn to scale, that specifies the location of the stormwater buffers on the property. The applicant shall execute and record all required deed restrictions, including the appropriate buffer deed restrictions, within 60 days of the date of this Order. The applicant shall submit a copy of the recorded deed restriction, including the plot plan, to the BLR within 60 days of its recording.

The stormwater management system proposed by the applicant was reviewed by BLR. The proposed stormwater management system is designed in accordance with the General Standards contained in Chapter 500, § 4(C).

Based on the stormwater system's design and BLR's review, the Department finds that the applicant has made adequate provision to ensure that the proposed project will meet the General Standards contained in Chapter 500, § 4(C) provided that the location of the stormwater buffers are marked on the ground and the applicant submits a copy of the deed restriction, including the plot plan, to BLR within 60 days of its recording.

C. Flooding Standard:

The applicant is proposing to utilize a stormwater management system based on estimates of pre- and post-development stormwater runoff flows obtained by using Hydrocad, a stormwater modeling software that utilizes the methodologies outlined in Technical Releases #55 and #20, U.S.D.A., Soil Conservation Service and detains stormwater from

24-hour storms of 2-, 10-, and 25-year frequency. The post-development peak flow from the site will not exceed the pre-development peak flow from the site.

The proposed system is designed in accordance with the Flooding Standard contained in Chapter 500, § 4(F).

Based on the system's design, the Department finds that the applicant has made adequate provision to ensure that the proposed project will meet the Flooding Standard contained in Chapter 500, § 4(F) for peak flow from the project site, and channel limits and runoff areas.

11. GROUNDWATER:

The project site is not located over a mapped sand and gravel aquifer with the exception that the northern most corner of the parcel is over an aquifer with expected well yields of ten to fifty gallons per minute. This corner of the parcel is existing lawn or meadow and no development is proposed in this area of the parcel. There is an existing well at the Godsoe house. The application states that this well may continue to be used for irrigation and to provide water to the horses. The Godsoe house will be disconnected from the well and connected to the public water supply main that will be installed under the driveway.

The Department finds that the proposed project will not have an unreasonable adverse effect on ground water quality.

12. WATER SUPPLY:

When completed, the proposed project is anticipated to use 10,360 gallons of water per day. Water will be supplied by the Portland Water District. The applicant submitted a letter from the Portland Water District, dated December 2, 2019, that confirms that it will be capable of servicing this project. The project proposes to install a 12-inch water main for domestic and fire services that extends from the end of Phase 1 to the last lot to be served in Phase 2.

The Department finds that the applicant has made adequate provision for securing and maintaining a sufficient and healthful water supply.

13. WASTEWATER DISPOSAL:

When completed, the proposed Phase 2 is anticipated to discharge 10,360 gallons of wastewater per day through Phase 1 to the Town of Cumberland's sanitary sewer system which will convey the wastewater to the Falmouth wastewater treatment facility. The applicant submitted a letter from the Town of Cumberland that states that it will accept the sewer design flows from the project. This project was reviewed by the Division of Water Quality Management (DWQM) of the BWQ, which commented that the Falmouth treatment plant has the capacity to treat these flows and is operating in compliance with the water quality laws of the State of Maine.

Based on DWQM's comments, the Department finds that the applicant has made adequate provision for wastewater disposal at a facility that has the capacity to ensure satisfactory treatment.

14. SOLID WASTE:

When completed, the proposed project is anticipated to generate approximately 0.6 tons of municipal solid waste per year. All municipal solid wastes from the proposed project will be disposed of at ecomaine in Portland, which is currently in substantial compliance with the Maine Solid Waste Management Rules.

The proposed project will generate approximately 411 cubic yards of stumps and approximately 1,179 cubic yards of other wood waste from clearing such as slash and limbs. The clearing wood waste will be chipped into trucks and hauled off site for use as fuel in biomass boilers. The stumps are proposed to be ground on site and used for erosion control. All stumps and grubbings generated will be disposed of on site, either chipped or burned, with the remainder to be worked into the soil, in compliance with the Maine Solid Waste Management Rules.

The proposed project will generate approximately 5,421 cubic yards of construction debris. All construction debris generated will be hauled by Casella/Pine Tree Waste. The recyclable materials will be segregated for recycling, likely at the Casella Zero Sort facility in Lewiston, and the remaining non-recyclable material will be sent for disposal at disposed the Juniper Ridge Landfill in Old Town, which is currently in substantial compliance with the Maine Solid Waste Management Rules.

Based on the above information, the Department finds that the applicant has made adequate provision for solid waste disposal.

15. FLOODING:

The applicant proposes to construct a road (Little Acres Drive) across an unnamed stream and floodplain wetland associated with the stream. This unnamed stream has a 100-year floodplain associated with it that is connected to the floodplain associated with Maxfield Brook. The proposed road has a lowest finished grade of approximately elevation 71 National Geodetic Vertical Datum (NGVD) at the stream crossing. The applicant completed a hydrologic analysis of the watershed above this crossing and came to the conclusion the elevation of the floodplain is likely elevation 62 NGVD. The applicant stated the box culvert proposed for this crossing is sized to accommodate the 100-year storm event. There are no proposed residential units in or near the elevation of the floodplain.

The Department finds that the proposed project is unlikely to cause or increase flooding or cause an unreasonable flood hazard to any structure.

16. EXISTING SCENIC, AESTHETIC, RECREATIONAL OR NAVIGATIONAL USES:

The Natural Resources Protection Act (NRPA), in 38 M.R.S. § 480-D(1), requires the applicant to demonstrate that the proposed project will not unreasonably interfere with existing scenic, aesthetic, recreational and navigational uses.

In accordance with Chapter 315, *Assessing and Mitigating Impacts to Scenic and Aesthetic Uses* (06-096 C.M.R. Chapter 315, effective June 29, 2003), the applicant submitted a copy of the Department's Visual Evaluation Field Survey Checklist as Appendix A to the application along with a description of the property and the proposed project. The applicant also submitted several photographs of the proposed project site and surroundings including an aerial photograph of the project site. Department staff visited the project site on December 11, 2018 and August 10, 2020.

The proposed project includes a road crossing and the construction of a portion of access road within 100 feet of a stream as well as within forested and scrub shrub wetlands. Neither the stream nor the wetlands are considered to be scenic resources visited by the general public, in part, for the use, observation, enjoyment and appreciation of its natural and cultural visual qualities.

The Department determined that based on the nature of the proposed project and its location, there are no existing recreational or navigational uses of the resource that would be unreasonably impacted.

The Department finds that the proposed activity will not unreasonably interfere with existing scenic, aesthetic, recreational or navigational uses of the freshwater wetland.

17. WATER QUALITY CONSIDERATIONS:

As discussed in Finding 10, the applicant proposes to use erosion and sediment control measures during construction to minimize impacts to water quality from siltation.

The Department does not anticipate that the proposed project will violate any state water quality law, including those governing the classification of the State's waters.

18. WETLAND AND WATERBODIES PROTECTION RULES:

The applicant proposes to directly alter 14,409 square feet of freshwater forested and scrub shrub wetlands in nine different location to construct the proposed roads. Of the wetlands proposed to be filled, 8,057 square feet of these wetland are freshwater wetlands of special significance because they are wetlands subject to flooding as defined by Chapter 310, § 4(A)(6). The Department previously approved 7,637 square feet of forested wetlands to construct Phase 1 of this project. The cumulative wetland impacts for the two phases are 22,046 square feet.

The applicant designed the proposed stream crossing to meet Permit by Rule standards.

The Wetland and Waterbodies Protection Rules, 06-096 C.M.R. Chapter 310 (effective November 11, 2018), interpret and elaborate on the Natural Resources Protection Act (NRPA) criteria for obtaining a permit. The rules guide the Department in its determination of whether a project's impacts would be unreasonable. A proposed project would generally be found to be unreasonable if it would cause a loss in wetland area, functions and values and there is a practicable alternative to the project that would be less damaging to the environment. Each application for a NRPA permit that involves a freshwater wetland alteration must provide an analysis of alternatives in order to demonstrate that a practicable alternative does not exist.

A. Avoidance. An applicant must submit an analysis of whether there is a practicable alternative to the project that would be less damaging to the environment and this analysis is considered by the Department in its assessment of the reasonableness of any impacts. The proposed access road will cross a wetland of special significance. A crossing such as this is among the activities specifically provided for in Chapter 310, § 5(A)(1)(b). The applicant submitted an alternative analysis for the proposed project completed by Licht Environmental Design and dated February 2020. The purpose of the project is to construct an access road to all of the proposed 52 cottages. The applicant avoided wetland impacts by refining the location the access road and the unit placements through several design iterations. In order to extend the access road from Phase 1 through to Greely Road, the stream and its associated floodplain wetland must be crossed. The applicant considered crossing the stream and floodplain wetlands in several different locations, including using the location of the existing wooden bridge, but this location would have had more wetland impacts than the current proposal. The applicant considered crossing the stream north of the Godsoe house but dismissed this alternative as this would have required crossing two streams with wide associated wetland areas and would have required more wetland fill than is currently proposed. The applicant stated that given the location of streams and wetlands on the property, it is not possible to avoid impacts while still meeting the project purpose.

B. Minimal Alteration. The amount of freshwater wetland to be altered must be kept to the minimum amount necessary for meeting the overall purpose of the project. The applicant minimized wetland impacts by utilizing retaining walls made of boulders or precast block systems, or by constructing two to one side slopes instead of three to one side slopes along the access road within the wetland areas. The applicant further minimized wetland impacts when siting the units by adjusting driveway lengths and limiting the amount of developed area surrounding each unit. Prior to the start of construction, the location of the wetlands must be permanently marked on the ground.

C. Compensation. Compensation is required to achieve the goal of no net loss of wetland functions and values because the project cumulatively impacts greater than 15,000 square feet of freshwater wetland, and greater than 500 square feet of freshwater wetland of special significance, which is the threshold over which compensation is generally required.

The applicant submitted a functions and values assessment which concluded that the primary functions and values of the palustrine forested wetlands to be altered in Phase 2 are sediment/toxicant/pathogen retention and nutrient removal/retention/transformation. The palustrine scrub shrub wetland impacts are related to the stream crossing and occur in the floodplain of the stream. The principal wetland functions and values of this type of wetland are flood flow alteration, sediment and toxicant retention, and shoreline stabilization.

The applicant proposes to make a contribution into the In-Lieu Fee program of the Maine Natural Resource Conservation Program in the amount of $94,798. Prior to the start of construction, the applicant must submit a payment in the amount of $94,798, payable to "Treasurer, State of Maine," and directed to the attention of the In-Lieu Fee Program Administrator at 17 State House Station, Augusta, Maine 04333.

The Department finds that the applicant has avoided and minimized wetland impacts to the greatest extent practicable, and that the proposed project represents the least environmentally damaging alternative that meets the overall purpose of the project provided that prior to project construction, the applicant submits the In-Lieu Fee payment as described above

19. <u>ALL OTHER:</u>

All other Findings of Fact, Conclusions and Conditions remain as approved in Department Order #L-27834-26-A-N / L-27834-TC-B-N, and subsequent Orders.

BASED on the above findings of fact, and subject to the conditions listed below, the Department makes the following conclusions pursuant to 38 M.R.S. §§ 480-A–480-JJ and Section 401 of the Federal Water Pollution Control Act:

A. The proposed activity will not unreasonably interfere with existing scenic, aesthetic, recreational, or navigational uses.

B. The proposed activity will not cause unreasonable erosion of soil or sediment.

C. The proposed activity will not unreasonably inhibit the natural transfer of soil from the terrestrial to the marine or freshwater environment.

D. The proposed activity will not unreasonably harm any significant wildlife habitat, freshwater wetland plant habitat, threatened or endangered plant habitat, aquatic habitat, travel corridor, freshwater, estuarine, or marine fisheries or other aquatic life provided that prior to start of construction, the applicant makes a contribution to the In-Lieu Fee program as described in Finding 18.

E. The proposed activity will not unreasonably interfere with the natural flow of any surface or subsurface waters.

F. The proposed activity will not violate any state water quality law including those governing the classifications of the State's waters.

G. The proposed activity will not unreasonably cause or increase the flooding of the alteration area or adjacent properties.

H. The proposed activity is not on or adjacent to a sand dune.

I. The proposed activity is not on an outstanding river segment as noted in 38 M.R.S. § 480-P.

BASED on the above findings of fact, and subject to the conditions listed below, the Department makes the following conclusions pursuant to 38 M.R.S. §§ 481–489-E:

A. The applicant has provided adequate evidence of financial capacity and technical ability to develop the project in a manner consistent with state environmental standards provided that prior to the start of construction, the applicant submits evidence of financial capacity to the Bureau of Land Resources with a condition compliance application for review and approval.

B. The applicant has made adequate provision for fitting the development harmoniously into the existing natural environment and the development will not adversely affect existing uses, scenic character, air quality, water quality or other natural resources in the municipality or in neighboring municipalities.

C. The proposed development will be built on soil types which are suitable to the nature of the undertaking and will not cause unreasonable erosion of soil or sediment nor inhibit the natural transfer of soil.

D. The proposed development meets the standards for storm water management in 38 M.R.S. § 420-D and the standard for erosion and sedimentation control in 38 M.R.S. § 420-C provided that grit and sediment materials removed from stormwater structures during maintenance activities must be disposed of in compliance with the Maine Solid Waste Management Rules, that prior to start of construction on Phase 2, the applicant must submit a copy of an executed long-term maintenance contract for the maintenance of the FocalPoint system to the BLR, the location of buffers are marked on the ground, a copy of the recorded deed restriction is submitted within 60 days, and that prior the start of construction, the applicant must retain the services of a third party inspector and conduct a pre-construction meeting, all as described in Finding 10.

E. The proposed development will not pose an unreasonable risk that a discharge to a significant groundwater aquifer will occur.

F. The applicant has made adequate provision of utilities, including water supplies, sewerage facilities and solid waste disposal required for the development and the development will not have an unreasonable adverse effect on the existing or proposed utilities in the municipality or area served by those services.

G. The activity will not unreasonably cause or increase the flooding of the alteration area or adjacent properties nor create an unreasonable flood hazard to any structure.

THEREFORE, the Department APPROVES the application of OCEANVIEW AT CUMBERLAND LLC to construct the Cumberland Crossing Phase 2 project and to alter freshwater wetlands as described herein, SUBJECT TO THE FOLLOWING CONDITIONS and all applicable standards and regulations:

1. The Standard Conditions of Approval, a copy attached.

2. In addition to any specific erosion control measures described in this or previous orders, the applicant shall take all necessary actions to ensure that its activities or those of its agents do not result in noticeable erosion of soils or fugitive dust emissions on the site during the construction and operation of the project covered by this approval.

3. Severability. The invalidity or unenforceability of any provision, or part thereof, of this License shall not affect the remainder of the provision or any other provisions. This License shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

4. The applicant shall include in all conveyances deed restrictions making the conveyance subject to all terms and conditions of this Department permit and any applicable municipal approval. These terms and conditions may be incorporated by specific and prominent reference to the permit in the deed. All conveyances required by this approval to contain restrictions shall include in the restrictions the requirement that any subsequent conveyance shall specifically include the same restrictions.

5. The applicant shall retain the services of a third-party inspector in accordance with the Special Condition for Third-Party Inspection Program, which is attached to this Order.

6. Prior the start of construction, the applicant shall conduct a pre-construction meeting. This meeting shall be attended by the applicant's representative, Department staff, the design engineer, the contractor, and the third-party inspector unless the contractor and the third-party inspector are the same as the ones employed during the construction of Phase 1, then the pre-construction meeting is waived.

7. The applicant shall execute and record all required deed restrictions, including the appropriate buffer deed restrictions prior to the start of construction. The applicant shall submit a copy of the recorded deed restriction, including the plot plan, to the BLR within 60 days of its recording.

8. Prior to the start of construction, the location of stormwater buffers shall be permanently marked on the ground.

9. Prior to the start of construction, the applicant shall submit evidence of financial capacity to the BLR with a condition compliance application for review and approval.

10. The applicant shall dispose of all grit and sediment materials removed from stormwater structures during maintenance activities in compliance with the Maine Solid Waste Management Rules.

11. Prior to the start of construction, the applicant shall submit a copy of an executed long-term maintenance contract for the FocalPoint system to the BLR.

12. Prior to the start of construction, the applicant shall submit a payment in the amount of $94,798, payable to "Treasurer, State of Maine," to the attention of the In-Lieu Fee Program Administrator at 17 State House Station, Augusta, Maine 04333.

13. All other Findings of Fact, Conclusions and Conditions remain as approved in Department Order #L-27834-26-A-N / L-27834-TC-B-N, and subsequent Orders, and are incorporated herein.

THIS APPROVAL DOES NOT CONSTITUTE OR SUBSTITUTE FOR ANY OTHER REQUIRED STATE, FEDERAL OR LOCAL APPROVALS NOR DOES IT VERIFY COMPLIANCE WITH ANY APPLICABLE SHORELAND ZONING ORDINANCES.

DONE AND DATED IN AUGUSTA, MAINE, THIS 9TH DAY OF OCTOBER, 2020.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: ______________________________

For: Melanie Loyzim, Acting Commissioner

PLEASE NOTE THE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES.

CGW/L27834DNEN/ATS#85594, 85595

FILED
October 9, 2020
State of Maine
Board of Environmental Protection

Exhibit 5

SUBDIVISION CHAPTER 250-1 STANDARDS

EXHIBIT 2

SUBDIVISION CRITERIA REVIEW

CHAPTER 250-1 LAND USE ORDINANCE

A. Pollution: The proposed subdivision will not result in undue water or air pollution.

The project development includes a comprehensive erosion and sedimentation control (EC) plan and stormwater management system approved by the DEP and reviewed by the Town peer review consultant. The EC plan satisfies rigorous requirements to protect the site streams and wetlands from sedimentation or pollution from the construction of the project. Furthermore the project will include a third party inspector to provide oversight during the construction period.

The stormwater management system provides water quality protection for adjacent properties, streams and wetlands through the implementation of approved BMP's to satisfy both water quality and peak flow rate stormwater standards.

As a residential development, the project proposes no significant sources of air pollution. The potential for construction air-borne dust will be mitigated though regular street sweeping and watering.

The project will not result in the undue water or air pollution.

B. **Sufficient Water: The proposed Subdivision has sufficient water available for the reasonable foreseeable needs of the subdivision.**

The Portland Water District has available public water and shall issue a letter of serviceability indicating that a sufficient water supply is available for domestic water usage and fire protection.

C. Municipal Water Supply: The proposed subdivision will not cause an unreasonable burden on an existing water supply, if one is used.

The Portland Water District has available public water and shall issue a letter of serviceability indicating that a sufficient water supply is available for domestic water usage and fire protection.

D. **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 exists.**

The project development includes a comprehensive erosion and sedimentation control (EC) plan and stormwater management system approved by the DEP and reviewed by the Town peer review consultant. The EC plan satisfies rigorous requirements to protect the site streams and wetlands from sedimentation or pollution from the construction of the project. Furthermore the project will include a third party inspector to provide oversight during the construction period.

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

The applicant has submitted a Traffic Impact Study prepared by Diane Morabito, PE, PTOE, dated November, 2019 which summarizes that the project will generate a modest level of vehicle peak hour trips, will not have any significant impact on off-site traffic operations, there are no capacity constraints at Tuttle Road or Greely Road and there are no attributable vehicular safety concerns from the development of the project.

Based on the traffic analysis the proposed subdivision will not cause unreasonable highway or public road congestion or unsafe conditions.

F. Sewage Disposal: The proposed subdivision will provide for adequate sewage waste disposal and will not cause an unreasonable burden on municipal services.

The applicant has estimated an average water/wastewater load of approximately 9.500 gallons per day (gpd) from the Phase 2 development and 9,000 gpd from Phase 1, for a total estimated flow of 18, 500 gpd. Portland Water District operates the down gradient pump stations and has reported the ability to handle the increased flows. The wastewater is ultimately treated at the Falmouth Wastewater Facility (FWWF) under an inter-municipal agreement. A letter from the Cumberland Town Manager dated January 14, 2020 has been provided indicating sufficient capacity to accept the project wastewater flows.

G. 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.

The project proposes to utilize the municipal waste and recycling curbside pick-up services to manage the disposal of residential waste and recycling materials. Cumberland is a member of Eco-Maine which has capacity to handle the additional recycling volume produced by this project.

Construction debris will be collected, recycled and properly disposed by Casella/Pine Tree Waste likely to the Casella Zero Sort facility in Lewiston (recycled materials) and the Juniper Ridge Landfill in Old Town (solid waste disposal.)

The project will not cause an unreasonable burden on the municipal waste disposal services.

H. Aesthetic, Cultural and Natural Values:

The SHC Ordinance created a 500-foot preservation area off Greely to preserve the historically agricultural character of the former Godson farm from Greely Road. Additionally the closest development neighborhood, Leonard Lane, will be located over 1,000 feet from Greely Road and visibility screened by a 100-foot wooded buffer towards Greely Road and abutting properties. In general development neighborhoods are internal to the project boundaries with minimum 50 foot wooded buffers with filtered views of cottages only visible from the golf course. Furthermore the project proposes a robust landscaping and buffering plan to provide the same superior quality community as exists with the Phase 1 development and the applicant's other senior campus projects.

Letters have been provided from the Maine Natural Areas program, Maine Historic Preservation Commission and MDIF&W indicating that no mapped significant wildlife or plant communities have been mapped on the site.

The project should not have an undue adverse impact on scenic, natural or historic values of the property.

I. Conformity with Local Ordinances:

The project has been designed in compliance with the applicable SHC, Site Plan and Subdivision Ordinance Standards. Furthermore the project is located within a mapped Growth Area and Senior Housing Overlay District which are zoned to promote smart growth and more intense development near the community center where there are public utilities. The project also helps to address housing for seniors In Cumberland – a need identified in the Comprehensive Plan.

The project is in conformance with local ordinances and the Comprehensive Plan.

J. Financial and Technical Ability:

The project has submitted evidence of the ability to finance the project through bank financing. The applicant has brought an experienced team to the project and has a 35+ year record of providing and expanding senior communities in Maine demonstrating the technical capacity to undertake the project.

K. Surface Waters; outstanding river segments:

The project does not lie in the watershed of an Outstanding River Segment, pond or within 250 feet or any wetland, great pond or river as defined under Title 38, Chapter 3, Subchapter 1, Article 2-B – Shoreland Zoning.

Therefore the project will have no adverse impacts on any pond, lake or shoreland zoned area or resource as defined.

L. Groundwater: The proposed subdivision will not, alone or in conjunction with existing activities, adversely affect the quality or quantity of groundwater.

The project does not propose to utilize any groundwater from wells. Infiltration of stormwater is limited to the installation of a under drained soil filter and a Focal Point ® stormwater system which meet all DEP standards for treatment of stormwater prior to discharge to groundwater.

The project will not adversely affect the quality or quantity or groundwater.

M. Flood Areas:

The applicant has submitted a FEMA-FIRM Map indicating that the project is located partially within Zone A -100 year flood plain. No residences will be located within the mapped floodplain. However Little Acres Drive and the lower portion of Leonard Lane will include a stream crossing and box culvert sized for the 100 year storm event which will be within the 100 year mapped flood plain. The crossing has been identified in the Subdivision and Shoreland Zoning applications for the project. Additionally a 100 year event hydrologic study was conducted for the 900+ acre upstream watershed which demonstrates that the culvert and crossing will not cause any back up or restrictions on the current stream flows.

The project will not have an adverse impact on a FEMA Zone A – 100 year flood plain.

N. Stormwater: The proposed subdivision will provide for adequate stormwater management.

The project has been designed to meet the standards of the Town of Cumberland Stormwater Management Chapter 250-38 and the DEP Chapter 500 Stormwater Rules using a combination of storm drain system, bio-filters and underground storage systems. The applicant has submitted a stormwater management report indicating that the post-development flow rates do not exceed the pre-development flow rates for the required storm events. The project proposes the main stream crossing culvert which will pass the 100 year storm event.

Based on the submitted information the project will provide adequate stormwater management.

O. Freshwater Wetlands: All freshwater wetlands as defined in 30-A M.R.S.A. § 4401 Subsection 2-A have been defined onsite.

All wetlands on site have been delineated and mapped by Mark Hampton Associates, Inc. and shown on the project plans. Impacts to wetlands due to the development have been minimized through careful analysis of alternative design options. The DEP has issued a NRPA-Tier 2 permit for the project.

P. River, Stream or Brook: Any river, stream or brook within or abutting the proposed subdivision has been identified and mapped.

Two streams as defined by the Maine Department of Environmental Protection cross the site. Both streams have been shown on the project plans.

The project has mapped all rivers, streams or brooks on the property.

PartnersBank
The Bank That Listens®

Letter of Credit No. 11112020

November 11, 2020

Town of Cumberland
290 Tuttle Road
Cumberland, Maine 04021

Re: Ocean View at Cumberland, Tuttle Road

Partners Bank of New England (the "Issuer") hereby opens our Irrevocable Standby Letter of Credit in Favor of the Town of Cumberland in the original amount of Nine Hundred Ninety One Thousand Nine Hundred and 00/100ths Dollars ($991,900.00), for the account of Ocean View at Cumberland, LLC (such amount as automatically reduced in accordance with the provisions of this Letter of Credit is herein called the "Stated Amount").

We hereby irrevocably authorize you to draw on us in accordance with the terms and conditions hereinafter set forth, by a sight draft in the aggregate amount not exceeding the Stated Amount. Partial drawings under this Letter of Credit are permitted.

Unless sooner terminated or reduced to zero as set forth below, this Letter of Credit shall expire at 4:00 pm Eastern Daylight Time, on September 11, 2021, or, if that date is not a Business Day, on the first Business Day after that date, unless extended by the Issuer in its sole discretion (such date, including any extension thereof being referred to herein as the "Expiration Date").

Subject to the foregoing and the further provisions of this Letter of Credit, a demand for payment may be made by you by presentation of your sight draft, accompanied by your certification in the form of Annex A hereto, to the effect that the developer has failed to complete the required roadwork and other site improvements required by the Town pursuant to its approval of the Ocean View at Cumberland Subdivision; or in the event that this Letter of Credit has not been renewed, at any time after August 11, 2021, accompanied by your certification in the form of Annex B hereto, to the effect that portions of the required roadwork and other site improvements required by the Town pursuant to its approval of the Ocean View at Cumberland Subdivision remain incomplete and that the Letter of Credit is being drawn upon to prevent its expiration given that portions of the required roadwork and other site improvements remain incomplete. Notwithstanding the foregoing, for any drawing made by you to prevent the expiry of this Letter of Credit between August 11, 2021 and September 11, 2021 (or if that date is not a Business Day, on the first Business Day after September 11, 2021), the Issuer shall have the option of providing you with an extension of this Letter of Credit in lieu of payment hereunder. If less than 5 business days remain prior to the September 11, 2021 expiration date at the time such demand for payment to prevent the expiry hereof, Issuer shall have an additional five (5) business days after the original expiration date to either issue payment hereunder or to provide you with an extension of this Letter of Credit for an additional period of one (1) year.

A sight draft under this Letter of Credit must bear on its face the clause:

"Drawn under Letter of Credit Number 11112020"

The demand for payment hereunder shall not exceed the Stated Amount. The Stated Amount shall be reduced by the amount of each partial drawing hereunder and upon completion of work to the satisfaction of the Town Manager of the Town of Cumberland, as evidenced by written notice from the said Town Manager of the Town of Cumberland to Partners Bank of New England, such reduction being in accordance with the completion of items as detailed on the Schedule of Values attached hereto as Exhibit A.

Demand for payment under this Letter of Credit may be made prior to expiration at any time during the Issuer's business hours at its office at 900 Main Street, Sanford, Maine 04073, on a day on which you and the Issuer's office is open for the purpose of conducting business (a "Business Day").

Any demand for payment and all other communications to the Issuer relating to this Letter of Credit shall be in writing and addressed and presented to Catherine L. Buffum, Vice President at her office at 900 Main Street, Sanford, Maine 04073, and shall make specific reference to this Letter of Credit by number. If demand for payment is made by you hereunder before 4:00 p.m., prevailing time, on a Business Day, and provided that such demand for payment conforms to the terms and conditions hereof, payment shall be made to you of the amount demanded, in immediately available funds, not later than 10:00 a.m., prevailing time, on the next succeeding Business Day.

This Letter of Credit, including the attached Exhibit A, Annex A and Annex B, sets forth in full the terms of our undertaking and this undertaking shall not in any way be amended or amplified by reference to any document, instrument, or agreement referred to herein (except the Uniform Customs defined below), or to which this Letter of Credit relates and, in any such reference, shall not be deemed to incorporate herein by reference any document, instrument or agreement.

This Letter of Credit is not transferable.

Except as otherwise expressly stated herein, this Letter of Credit is subject to the Uniform Customs and Practice for Documentary Credits (1983 Revision), International Chamber of Commerce Publication Number 400, and any subsequent revisions thereof approved by the International Chamber of Commerce (the "Union Customs"). This Letter of Credit shall, as to matters not governed by the Uniform Customs, be governed by and construed in accordance with the laws of the State of Maine.

This Letter of Credit shall expire on the Issuer's close of business at its office at 900 Main Street, Sanford, Maine 04073, on the earlier to occur of:

(a) 4:00 p.m., prevailing time, on the Expiration Date or, if that date is not a Business Day, on the first Business Day after that date;
(b) The date on which the Stated Amount is reduced to zero;
(c) The date on which we received written notice from the Town Manager of the Town of Cumberland that the Borrower has completed construction of each of the items set forth on the Schedule of Values attached hereto as Exhibit A in accordance with the details and engineering specifications of the Ocean View at Cumberland Subdivision.

Sincerely,

Partners Bank of New England

By: Crystal Lambert
Crystal Lambert
AVP/Senior Commercial Portfolio Manager

ANNEX A
(to Letter of Credit Number 11112020)
Certificate of Town of Cumberland

Partners Bank of New England
Attn: Catherine L. Buffum, Vice President
900 Main Street
Sanford, ME 04073

Re: Ocean View at Cumberland Subdivision – Irrevocable Standby Letter of Credit #11112020 in the amount of $991,900.00 (the "Letter of Credit")

Ladies and Gentlemen:

The undersigned, being the duly authorized Town Manager of the Town of Cumberland, hereby certifies to Partners Bank of New England as follows:

1. That Ocean View at Cumberland, LLC has failed to adequately perform the following item(s) as required by the approvals of the Town of Cumberland in accordance with the Schedule of Values attached as Exhibit A to the Letter of Credit (complete as appropriate):

   a. Completion of ____;

   b. Completion of ____;

   c. Completion of ____;

   d. Completion of ____;

2. The undersigned is making demand for payment under the Letter of Credit in the amount of $____________________.

TOWN OF CUMBERLAND

By: ________________________
Name:
Its: Duly Authorized Manager

ANNEX B
(to Letter of Credit Number 11112020)
(Given to Prevent the Expiration of the Letter of Credit within 30 days prior to its original expiration)

Certificate of Town of Cumberland

Partners Bank of New England
Attn: Catherine L. Buffum, Vice President
900 Main Street
Sanford, ME 04073

Re: Ocean View at Cumberland Subdivision – Irrevocable Standby Letter of Credit #11112020 in the amount of $991,900.00 (the "Letter of Credit")

Ladies and Gentlemen:

The undersigned, being the duly authorized Town Manager of the Town of Cumberland, hereby certifies to Partners Bank of New England ("Issuer") as follows:

1. That portions of the work described on the Schedule of Values attached as Exhibit A to the Letter of Credit remain incomplete.

2. That thirty (30) days or less remain before the expiration date of the Letter of Credit, and that this Demand for payment is being given to prevent the expiration of the Letter of Credit

3. The undersigned is making demand for payment in full under the Letter of Credit, or if indicated as follows: in the amount of $____________________.

4. The undersigned acknowledges that the Issuer shall have the option of providing an extension of the Letter of Credit in lieu of payment thereunder. If less than 5 business days remain prior to the September 11, 2021 expiration date at the time such demand for payment to prevent the expiration of the Letter of Credit, Issuer shall have an additional five (5) business days after the original expiration date to either issue payment hereunder or to provide the undersigned with an extension of this Letter of Credit for an additional period of one (1) year.

TOWN OF CUMBERLAND

By: ________________________
Name:
Its: Duly Authorized Manager

STOREY BROTHERS, INC.

OCEANVIEW, CUMBERLAND
Requisition #4 - June 10 -2020

DESCRIPTION	TOTAL COST	% COMPLETE	DUE THIS PERIOD
Clearing	$ 50,000.00	95%	$ 47,500.00
Erosion Control	$ 20,000.00	70%	$ 14,000.00
Demolition	$ 15,000.00	100%	$ 15,000.00
Earthwork	$ 475,000.00	75%	$ 356,250.00
Aggregate Base & Subbase	$ 250,000.00	75%	$ 187,500.00
Paving/ Curbing	$ 460,000.00	55%	$ 253,000.00
Drainage System	$ 575,000.00	70%	$ 402,500.00
Box Culvert #1	$ 85,000.00	100%	$ 85,000.00
Box Culvert #2	$ 95,000.00	100%	$ 95,000.00
Pond Construction	$ 80,000.00	50%	$ 40,000.00
Water System	$ 425,000.00	90%	$ 382,500.00
Sewer System	$ 340,000.00	90%	$ 306,000.00
Gas Excavation	$ 45,000.00	49%	$ 22,050.00
UGETC & Site Lighting	$ 170,000.00	40%	$ 68,000.00
Retaining Walls	$ 165,000.00	90%	$ 148,500.00
Guardrail	$ 30,000.00	50%	$ 15,000.00
Loam and Seed/ Rip Rap	$ 95,000.00	30%	$ 28,500.00
Common Area Landscaping	$ 104,000.00	20%	$ 20,800.00
			$ -
Total	$ 3,479,000.00		$ 2,487,100.00
	$ 1,391,600.00	Released	$ 2,487,100.00
		Balance to Complete	$ 991,900.00

DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

REPLY TO
ATTENTION OF

MAINE GENERAL PERMITS (GPs)
AUTHORIZATION LETTER AND SCREENING SUMMARY

OCEANVIEW AT CUMBERLAND, LLC
ATTN: CHRIS WASILESKI
20 BLUEBERRY LANE
FALMOUTH, MAINE 04105

CORPS PERMIT # NAE-2018-00545
CORPS GPs# 22 & 8
STATE ID# NRPA

DESCRIPTION OF WORK:
Place temporary and permanent fill below the ordinary high water mark of unnamed streams and in adjacent freshwater wetlands at Cumberland, Maine in order to develop "Cumberland Crossing Phase 2", Phase 2 of a senior living community development, southwest of Greely Road. This phase will result in approximately 240 s.f. of temporary and 1,960 s.f. of permanent stream bed impact, and 15,489 s.f. of permanent wetland impact. With this phase, total cumulative impact to waters of the U.S. is 31,594 s.f. This work is shown on the attached plans entitled "OCEANVIEW AT CUMBERLAND,
Project Description Continued on Page 2
See GENERAL and SPECIAL CONDITIONS attached.

LAT/LONG COORDINATES: 43.600436° N -70.358350° W **USGS QUAD:** PROUTS NECK, ME

I. CORPS DETERMINATION:
Based on our review of the information you provided, we have determined that your project will have only minimal individual and cumulative impacts on waters and wetlands of the United States. **Your work is therefore authorized by the U.S. Army Corps of Engineers under the Federal Permit, the Maine General Permits (GPs) which can be found at:** https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Maine-General-Permit/ Accordingly, we do not plan to take any further action on this project.

You must perform the activity authorized herein in compliance with all the terms and conditions of the GP [including any attached Additional Conditions and any conditions placed on the State 401 Water Quality Certification including any required mitigation]. Please review the enclosed GPs, including the GPs conditions beginning on page 5, to familiarize yourself with its contents. You are responsible for complying with all of the GPs requirements; therefore you should be certain that whoever does the work fully understands all of the conditions. You may wish to discuss the conditions of this authorization with your contractor to ensure the contractor can accomplish the work in a manner that conforms to all requirements.

If you change the plans or construction methods for work within our jurisdiction, please contact us immediately to discuss modification of this authorization. This office must approve any changes before you undertake them.

Condition 45 of the GPs (page 19) provides one year for completion of work that has commenced or is under contract to commence prior to the expiration of the GPs on October 14, 2025. You will need to apply for reauthorization for any work within Corps jurisdiction that is not completed by October 14, 2026.

This authorization presumes the work shown on your plans noted above is in waters of the U.S. Should you desire to appeal our jurisdiction, please submit a request for an approved jurisdictional determination in writing to the undersigned.

No work may be started unless and until all other required local, State and Federal licenses and permits have been obtained. **This includes but is not limited to a Flood Hazard Development Permit issued by the town if necessary.**

II. STATE ACTIONS: PENDING [ ], ISSUED [X], DENIED [ ] DATE________

APPLICATION TYPE: PBR:___, TIER 1:____, TIER 2 :____, TIER 3: X , LURC: ____ DMR LEASE: ____ NA: ___

III. FEDERAL ACTIONS:

JOINT PROCESSING MEETING: 6/25/20 LEVEL OF REVIEW: SELF-VERIFICATION:___ PRE-CONSTRUCTION NOTIFICATION: X

AUTHORITY (Based on a review of plans and/or State/Federal applications): SEC 10_____, 404 X 10/404_____, 103_____

EXCLUSIONS: The exclusionary criteria identified in the general permit do not apply to this project.

FEDERAL RESOURCE AGENCY OBJECTIONS: EPA NO , USF&WS NO , NMFS NO

If you have any questions on this matter, please contact my staff at 978-318-8676 at our Augusta, Maine Project Office. In order for us to better serve you, we would appreciate your completing our Customer Service Survey located at: http://corpsmapu.usace.army.mil/cm_apex/f?p=136:4:0

Jay L. Clement
JAY L. CLEMENT
SENIOR PROJECT MANAGER
MAINE PROJECT OFFICE

Jay L. Clement 1/7/21
For FRANK J. DEL GIUDICE
CHIEF, PERMITS & ENFORCEMENT BRANCH
REGULATORY DIVISION

Project Description Continued from Page 1

TUTTLE ROAD, CUMBERLAND" in one sheet dated "DEC 2019"; "OCEANVIEW AT CUMBERLAND, CUMBERLAND CROSSING" in one sheet dated "1-28-2019"; "Cumberland Crossing – Phases 1 and 2, Overall Context Plan" in one sheet dated "12-18-2019"; "Cumberland Crossing – Phase 2, Overall Plan" in one sheet dated "12-18-2019"; and "Cumberland Crossing Phase 2, Greely Road and Tuttle Road, Cumberland, Maine" in 6 sheets dated "June 15, 2020" and 11 sheets dated "September 22, 2020".

PLEASE NOTE THE FOLLOWING GENERAL AND SPECIAL CONDITIONS FOR DEPARTMENT OF THE ARMY MAINE GENERAL PERMITS 22 & 8 PERMIT NO. NAE-2018-00545

GENERAL CONDITIONS

3. Other Permits. Permittees shall obtain other Federal, State, or local authorizations as required by law. Permittees are responsible for applying for and obtaining all required State of Maine or local approvals including a Flood Hazard Development Permit issued by the town/city. Work that is not regulated by the State of Maine, but is subject to Corps jurisdiction, may still be eligible for authorization under these GPs.

26. Temporary Fill.

a. Temporary fills, including but not limited to construction mats and corduroy roads shall be entirely removed as soon as they are no longer needed to construct the authorized work. Temporary fill shall be placed in its original location or disposed of at an upland site and suitably contained to prevent its subsequent erosion into waters of the U.S.

b. All temporary fill and disturbed soils shall be stabilized to prevent its eroding into waters of the U.S. where it is not authorized. Work shall include phased or staged development to ensure only areas under active development are exposed and to allow for stabilization practices as soon as practicable. Temporary fill shall be placed in a manner that will prevent it from being eroded by expected high flows.

c. Unconfined temporary fill authorized for discharge into waters of the U.S. shall consist of material that minimizes impacts to water quality (e.g. washed stone, stone, etc.).

d. Appropriate measures shall be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable when temporary structures, work, and discharges of dredged or fill material, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Materials shall be placed in a location and manner that does not adversely impact surface or subsurface water flow into or out of the wetland. Temporary fill authorized for discharge into wetlands shall be placed on geotextile fabric or other appropriate material laid on the pre-construction wetland grade where practicable to minimize impacts and to facilitate restoration to the original grade. Construction mats are excluded from this requirement.

e. Construction debris and/or deteriorated materials shall not be placed or otherwise located in waters of the U.S.

33. Permit(s)/Authorization Letter On-Site. The permittee shall ensure that a copy of the terms and conditions of these GPs and any accompanying authorization letter with attached plans are at the site of the work authorized by these GPs whenever work is being performed and that all construction personnel performing work which may affect waters of the U.S. are fully aware of the accompanying terms and conditions. The entire permit authorization shall be made a part of any and all contracts and subcontracts for work that affects areas of Corps jurisdiction at the site of the work authorized by these GPs. This shall be achieved by including the entire permit authorization in the specifications for work. The term "entire permit authorization" means all terms and conditions of the GPs, the GPs, and the authorization letter (including its drawings, plans, appendices and other attachments) and subsequent permit modifications as applicable. If the authorization letter is issued after the construction specifications, but before receipt of bids or quotes, the entire permit authorization shall be included as an addendum to the specifications. If the authorization letter is issued after receipt of bids or quotes, the entire permit authorization shall be included in the contract or subcontract. Although the permittee may assign various aspects of the work to different contractors or subcontractors, all contractors and subcontractors shall be obligated by contract to comply with all environmental protection provisions contained within the entire GP authorization,

34. Inspections. The permittee shall allow the Corps to make periodic inspections at any time deemed necessary in order to ensure that the work is eligible for authorization under these GPs, is being, or has been performed in accordance with the terms and conditions of these GPs. To facilitate these inspections, the permittee shall complete and return to the Corps the Work-Start Notification Form and the Compliance Certification Form when either is provided with an authorization letter. **These forms are attached after the plans.**

SPECIAL CONDITIONS

1. In water work shall be conducted between July 15 and September 30 of any year in order to minimize potential impacts to fisheries and local water quality.

2. No additional filling of waters of the United States (wetlands or waterways) for additional lot development is authorized without prior written approval from the Corps.

3. All tree cutting shall occur between October 16 and April 19 of any year to the maximum extent practicable and no tree cutting shall occur between June 1 and July 31 of any year.

4. The permittee must comply with all terms and conditions of his state permit and water quality certification from the Maine Dept. of Environmental Protection.

5. Mitigation shall consist of payment of $120,133.40 to the Natural Resource Mitigation Fund. The completed ILF Project Data Worksheet which must be mailed with a cashier's check or bank draft, made out to "Treasurer, State of Maine", with the permit number noted on the check. The check and worksheet should be mailed to: ME DEP, Attn: ILF Program Administrator, State House Station 17, Augusta, ME 04333. **No project construction may begin until the permittee provides the Corps with a copy of the check, with the permit number noted on the check.** The ILF amount is only valid for a period of one year from the date on the authorization letter. After that time, the project would need to be reevaluated and a new amount determined.

MAINE IN-LIEU-FEE (ILF)
PROJECT IMPACT WORKSHEET

DEP Invoice # *Filled in by ILF Administrator in Augusta*

Project name: Oceanview at Cumberland, LLC; Cumberland Crossing – Phase 2

Permittee(s): Oceanview at Cumberland, LLC

DEP/Corps permit #: L-27834-26-A-N / L-27834-TC-B-N /NAE-2018-00545 *Attach a copy of the permit*

DEP/Corps Project Manager: C. Woodruff/J. Clement

ILF Fee Amount: $120,133.40

Check Date: *Filled in by ILF Administrator in Augusta*

Project address: Tuttle Road; Cumberland, Maine *Attach a locus map*

Biophysical region - Section: Southern Maine

Biophysical region - Subsection: Gulf of Maine Coastal Lowland

Total impact area subject to compensation: 27,938 SF

Resource(s) impacted:

Resource Types (list all that apply)	**Functions & Values** (for wetland impacts) (list all that apply, by resource type)	**Types of Impacts** (list all that apply, by resource type)	**SF Impacted** (by resource type)	**Linear FT of Streams Impacted (for Corps use)**
PFO	NR, WH, STR, GWR, FF	Filling	4,392	
PSS	NR, WH, STR, GWR, FF	Filling	6,837	
PEM	NR, WH, STR, GWR, FF	Filling	4,260	
PFO	NR, WH, STR, GWR, FF	Filling	12,449*	
		Total impacts:	27,938	NA

*Phase 1 impacts.

Resource Types: Wetlands by NWI Type (PEM, PFO, PSS, PUB, M1, M2, E1, E2, etc), significant vernal pool depression (SVP), significant vernal pool critical terrestrial habitat (VPCTH), shorebird feeding & staging habitat (shorebird), inland waterfowl & wading bird habitat (IWWH), Tidal waterfowl & wading bird habitat (TWWH), lake or pond (L1, L2), river/stream/brook (RSB)

Wetland Functions & Values: Groundwater recharge/discharge (GWR); floodflow alteration (FF); fish & shellfish habitat (FSH); sediment toxicant retention (STR); nutrient removal (NR); production export (PE); sediment/shoreline stabilization (SS); recreation (R); education/scientific value (ESV); uniqueness/heritage (UH); and visual quality/aesthetics (VQ); wildlife habitat (WH)

Types of Impacts: May include: filling, dredging, vegetation conversion (e.g. forested to shrub/scrub), excavation with associated discharge, etc.

US Army Corps of Engineers®
New England District

(Minimum Notice: Permittee must sign and return notification within one month of the completion of work.)

COMPLIANCE CERTIFICATION FORM

Corps of Engineers Permit No: NAE-2018-00545

Name of Permittee: Oceanview at Cumberland, LLC

Permit Issuance Date: ______________________

Please sign this certification and return it to the following address upon completion of the activity and any mitigation required by the permit. You must submit this after the mitigation is complete, but not the mitigation monitoring, which requires separate submittals.

****
* MAIL TO: U.S. Army Corps of Engineers, New England District *
* Policy & Technical Support Branch *
* Regulatory Division *
* 696 Virginia Road *
* Concord, Massachusetts 01742-2751 *
****

Please note that your permitted activity is subject to a compliance inspection by an U.S. Army Corps of Engineers representative. If you fail to comply with this permit you are subject to permit suspension, modification, or revocation.

I hereby certify that the work authorized by the above referenced permit was completed in accordance with the terms and conditions of the above referenced permit, and any required mitigation was completed in accordance with the permit conditions.

______________________________ ______________________________
Signature of Permittee Date

______________________________ ______________________________
Printed Name Date of Work Completion

(____) ______________________ (____) ______________________
Telephone Number Telephone Number

US Army Corps of Engineers®
New England District

GENERAL PERMIT
WORK-START NOTIFICATION FORM
(Minimum Notice: Two weeks before work begins)

EMAIL TO: jay.l.clement@usace.army.mil

-or-

MAIL TO: Jay Clement
U.S. Army Corps of Engineers, New England District
Maine Project Office
442 Civic Center Drive, Suite 350
Augusta, Maine 04330

A Corps of Engineers Permit (No. NAE-2018-00545) was issued to Oceanview at Cumberland, LLC. The permit authorized the permittee to place temporary and permanent fill below the ordinary high water mark of unnamed streams and in adjacent freshwater wetlands at Cumberland, Maine in order to develop "Cumberland Crossing Phase 2", Phase 2 of a senior living community development, southwest of Greely Road. This phase will result in approximately 240 s.f. of temporary and 1,960 s.f. of permanent stream bed impact, and 15,489 s.f. of permanent wetland impact. With this phase, total cumulative impact to waters of the U.S. is 31,594 s.f.

The people (e.g., contractor) listed below will do the work, and they understand the permit's conditions and limitations.

PLEASE PRINT OR TYPE

Name of Person/Firm: ______________________________
____
____

Business Address: ______________________________
____
____

Telephone: (   ) ______________ (   ) ______________

Proposed Work Dates: Start: ______________

Finish: ______________

PERMITTEE'S SIGNATURE: ______________ DATE: ______________

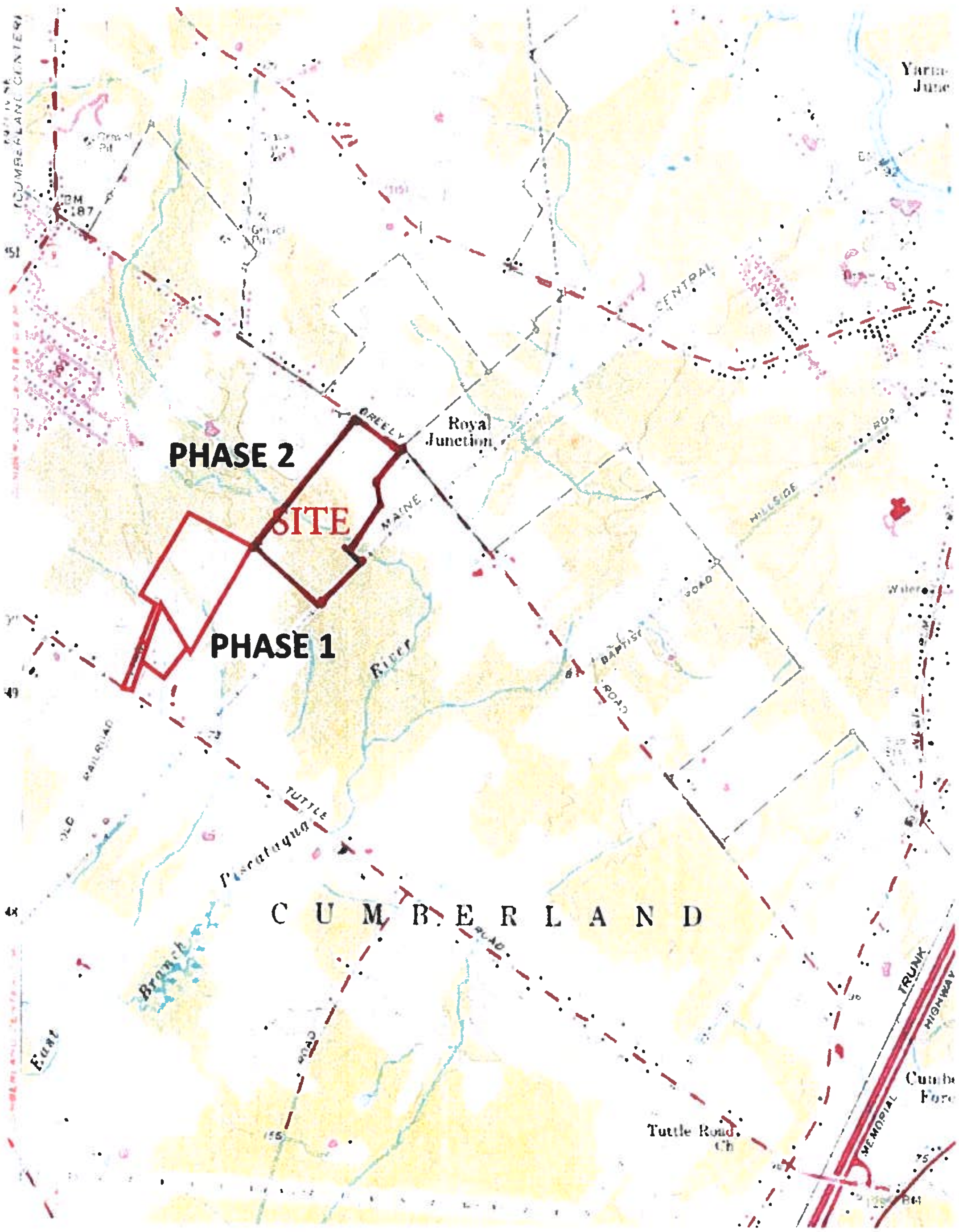
PRINTED NAME: ______________ TITLE: ______________

FOR USE BY THE CORPS OF ENGINEERS

Project Manager: Clement Submittals Required: Yes

Inspection Recommendation: Inspect as convenient

REFERENCE : USGS, Yarmouth, 7.5 Minute Series, 1957, 1977 Rev



PREPARED FOR:

OCEANVIEW AT CUMBERLAND
TUTTLE ROAD
CUMBERLAND

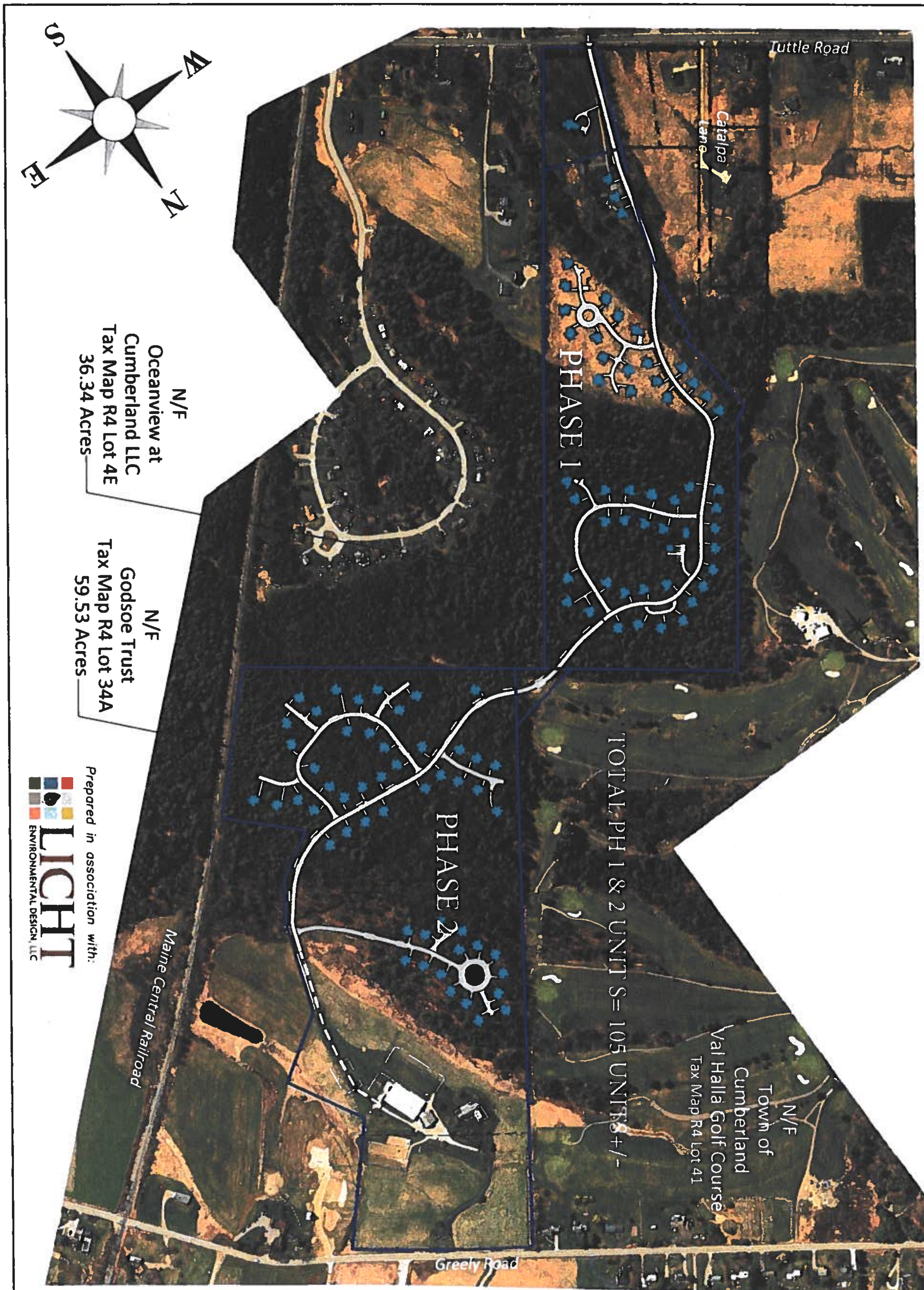
TITLE:

USGS Locus Map

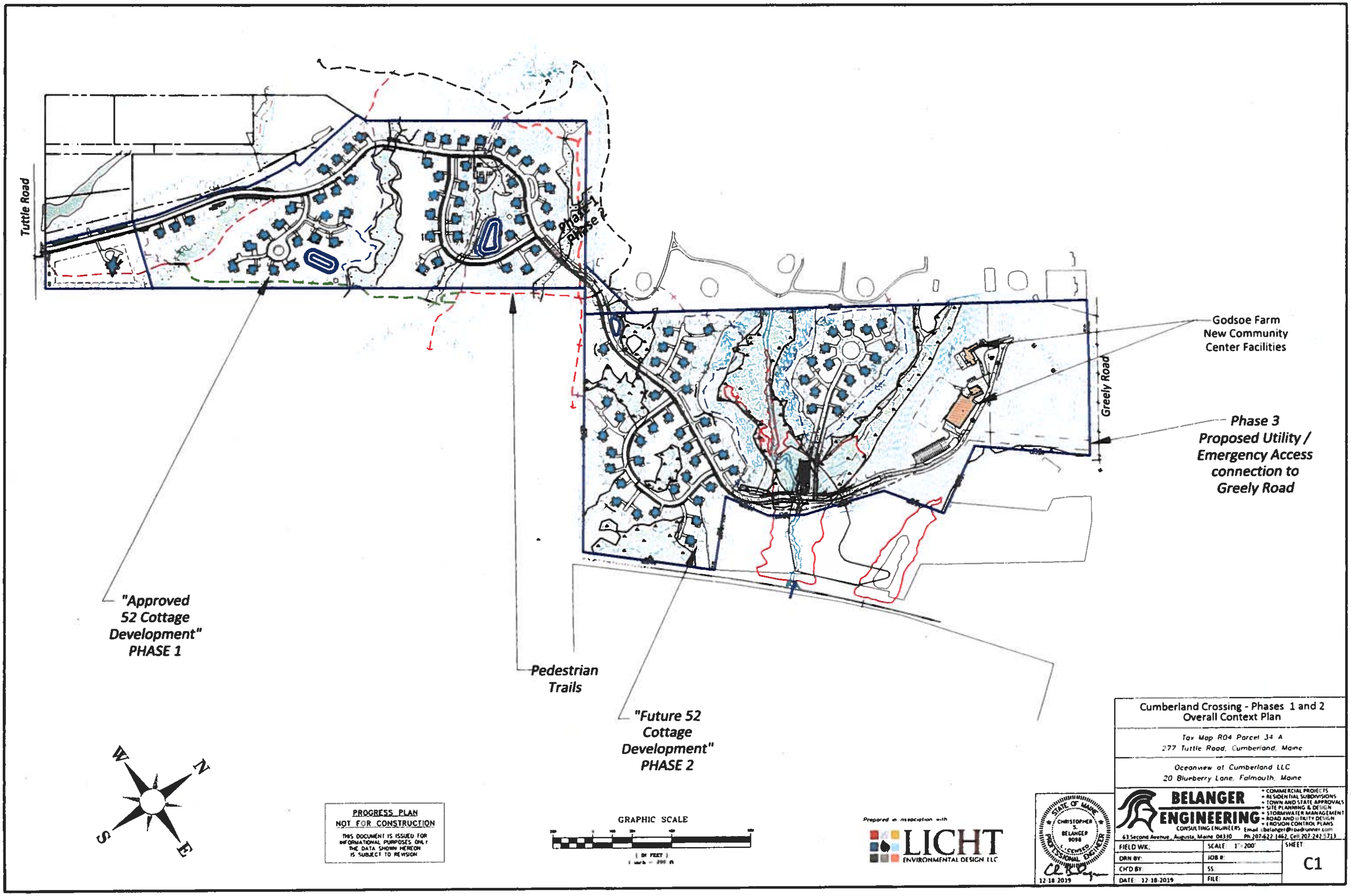
LICHT
ENVIRONMENTAL DESIGN, LLC

DATE: DEC. 2019 SCALE: 1"=1000' JOB NO: 16.084

Exhibit
1.1



Oceanview at Cumberland Cumberland Crossing	BELANGER ENGINEERING CONSULTING ENGINEERS	109	Aerial Plan
Tuttle and Greely Roads		1"=400'	
Cumberland Cumberland Maine		1-28-2019	



Tuttle Road
Phase 1
Phase 2
Greely Road
Godsoe Farm
New Community
Center Facilities
Phase 3
Proposed Utility /
Emergency Access
connection to
Greely Road
"Approved
52 Cottage
Development"
PHASE 1
Pedestrian
Trails
"Future 52
Cottage
Development"
PHASE 2
W
N
S
E
PROGRESS PLAN
NOT FOR CONSTRUCTION
THIS DOCUMENT IS ISSUED FOR
INFORMATIONAL PURPOSES ONLY
THE DATA SHOWN HEREON
IS SUBJECT TO REVISION
GRAPHIC SCALE
(IN FEET)
Prepared in association with
LICHT
ENVIRONMENTAL DESIGN LLC
STATE OF MAINE
CHRISTOPHER
S.
BELANGER
9098
LICENSED
PROFESSIONAL ENGINEER
12-18-2019
Cumberland Crossing - Phases 1 and 2
Overall Context Plan
Tax Map R04 Parcel 34 A
277 Tuttle Road, Cumberland, Maine
Oceanview at Cumberland LLC
20 Blueberry Lane, Falmouth, Maine
BELANGER
ENGINEERING
CONSULTING ENGINEERS
63 Second Avenue, Augusta, Maine 04330
• COMMERCIAL PROJECTS
• RESIDENTIAL SUBDIVISIONS
• TOWN AND STATE APPROVALS
• SITE PLANNING & DESIGN
• STORMWATER MANAGEMENT
• ROAD AND UTILITY DESIGN
• EROSION CONTROL PLANS
FIELD WK.
DRN BY:
CH'D BY:
DATE: 12-18-2019
SCALE: 1"=200'
JOB #:
SS:
FILE
SHEET
C1

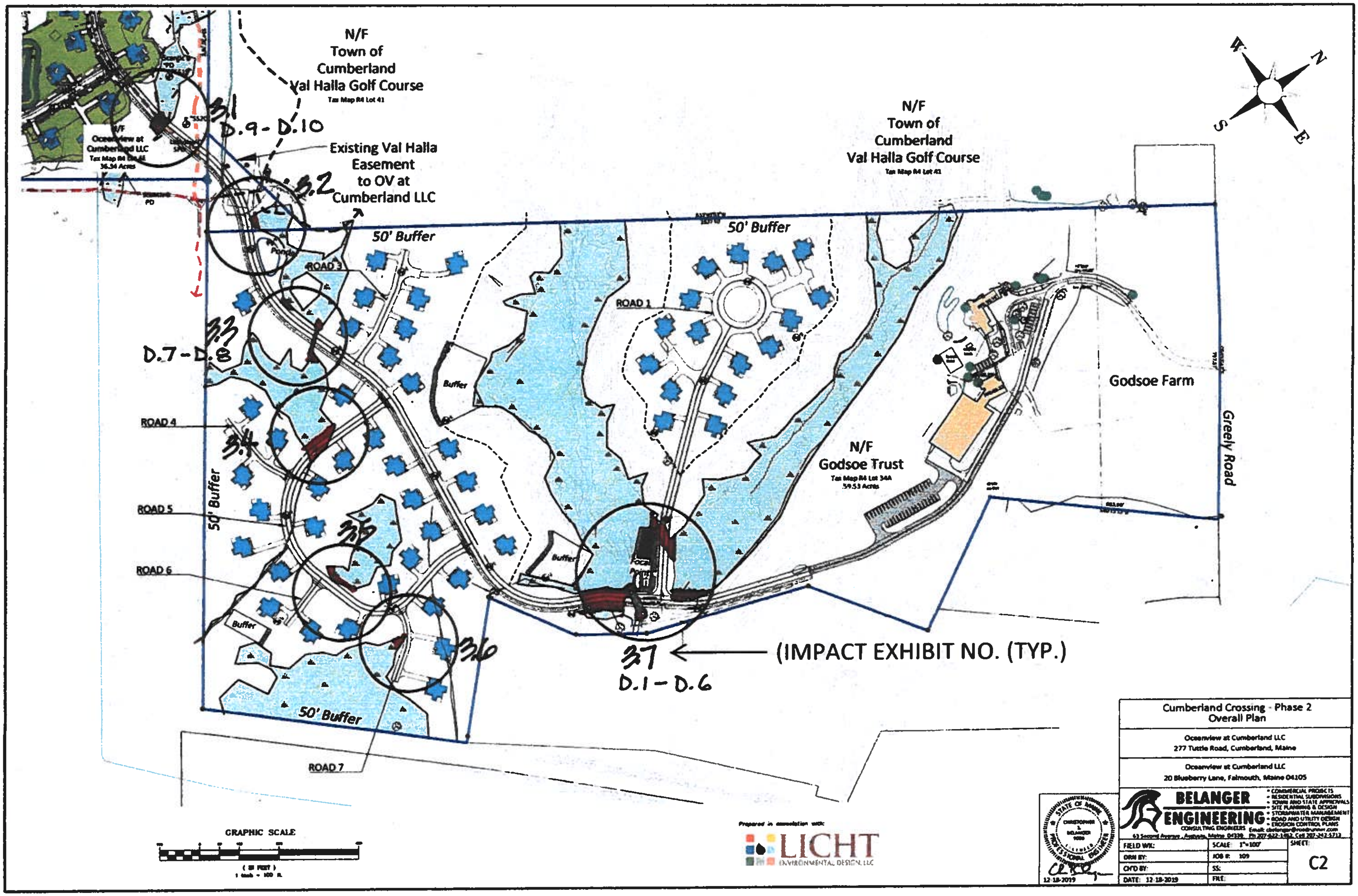
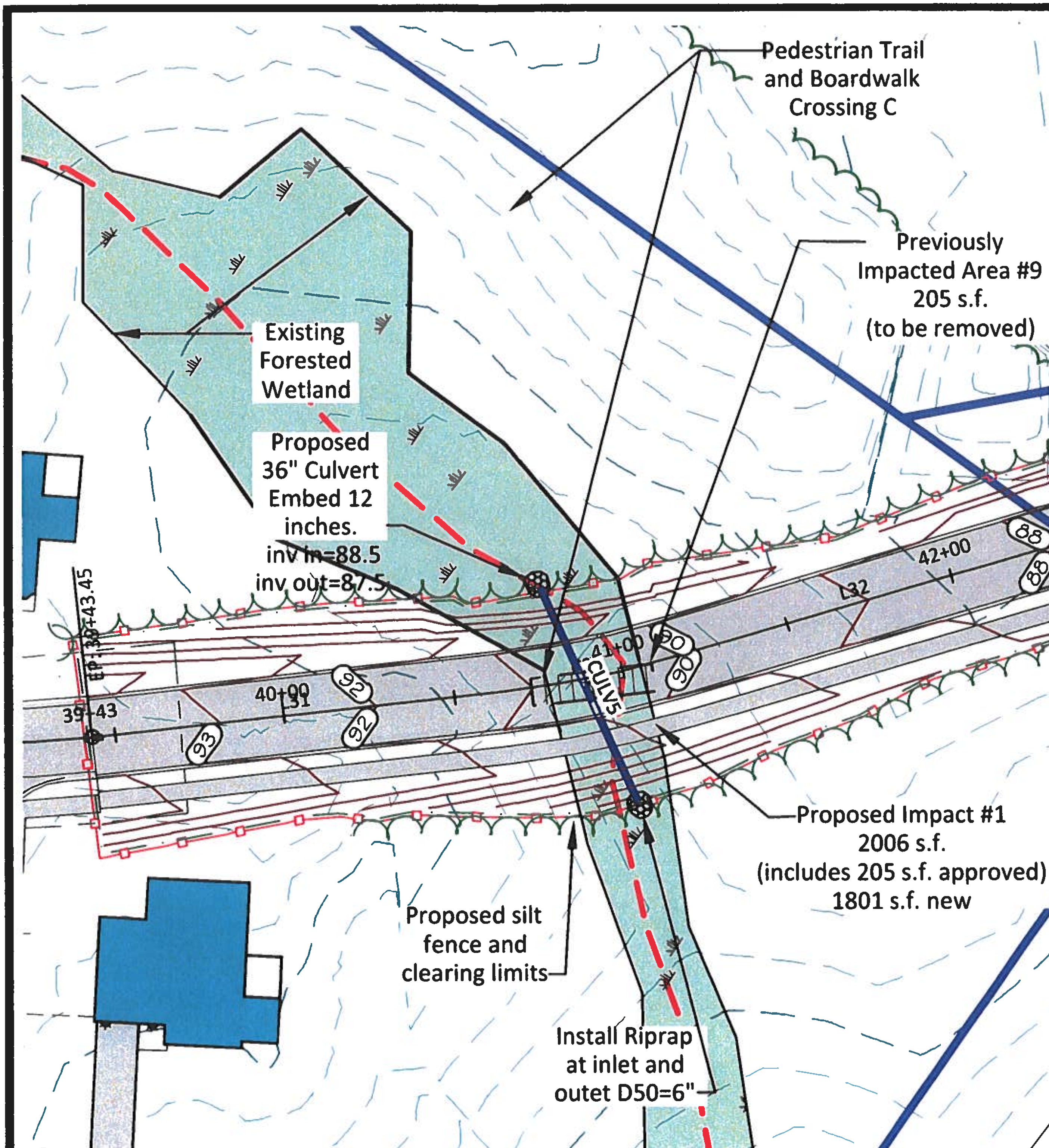


EXHIBIT 3.0

WETLAND IMPACTS KEY MAP



BELANGER ENGINEERING
CONSULTING ENGINEERS

LICHT
ENVIRONMENTAL DESIGN, LLC

Prepared For:
Cumberland Crossing Phase 2
Greely Road and Tuttle Road,
Cumberland, Maine

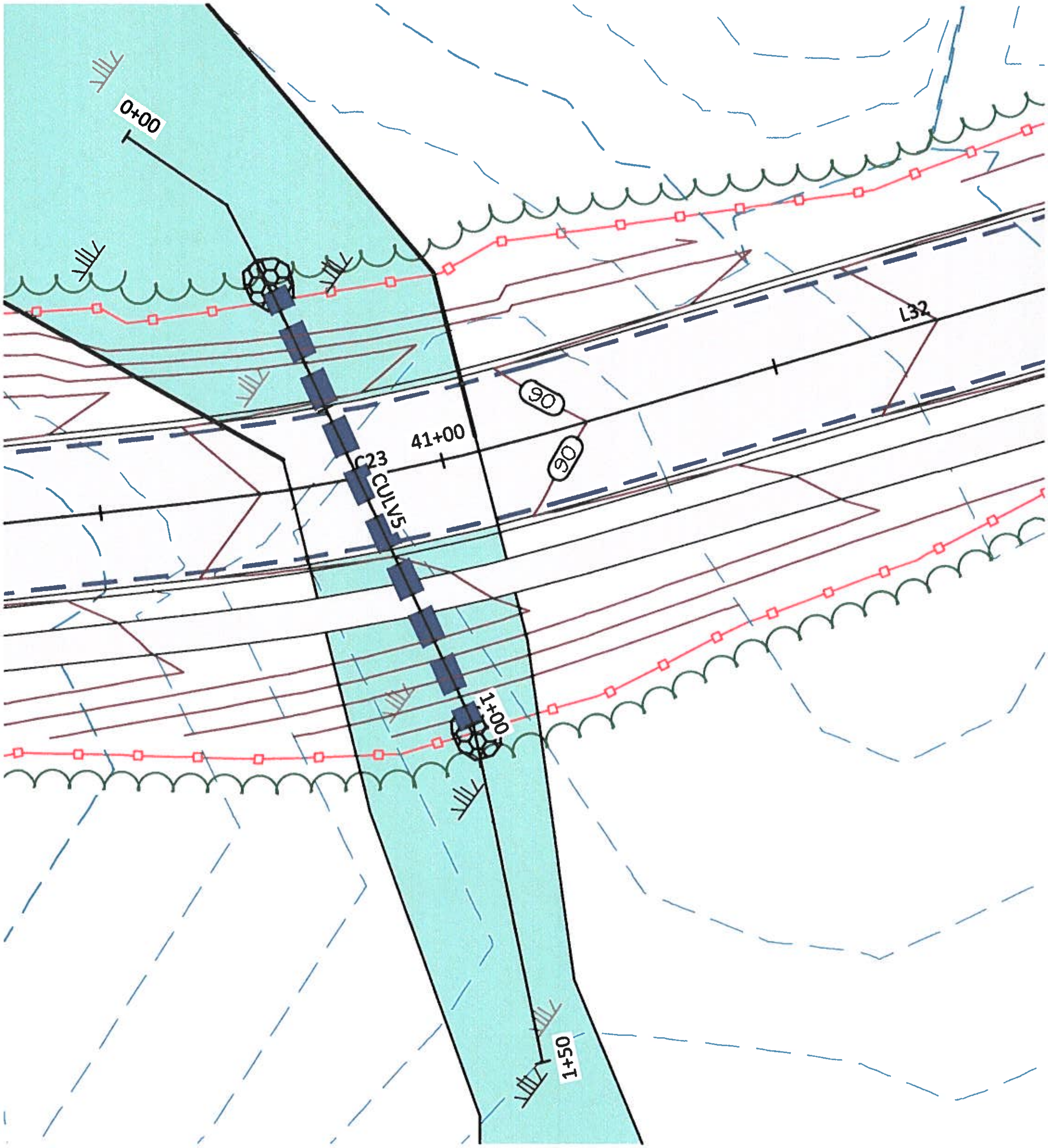
Title:
Wetland Impact #1

Scale: 1"=40'

Date: June 15, 2020

Project #: 134

Sheet #:
Exhibit
3.1



BELANGER ENGINEERING
CONSULTING ENGINEERS

LICHT ENVIRONMENTAL DESIGN, LLC

Prepared For:
Cumberland Crossing Phase 2
Greely Road and Tuttle Road,
Cumberland, Maine

Scale: 1"=20'

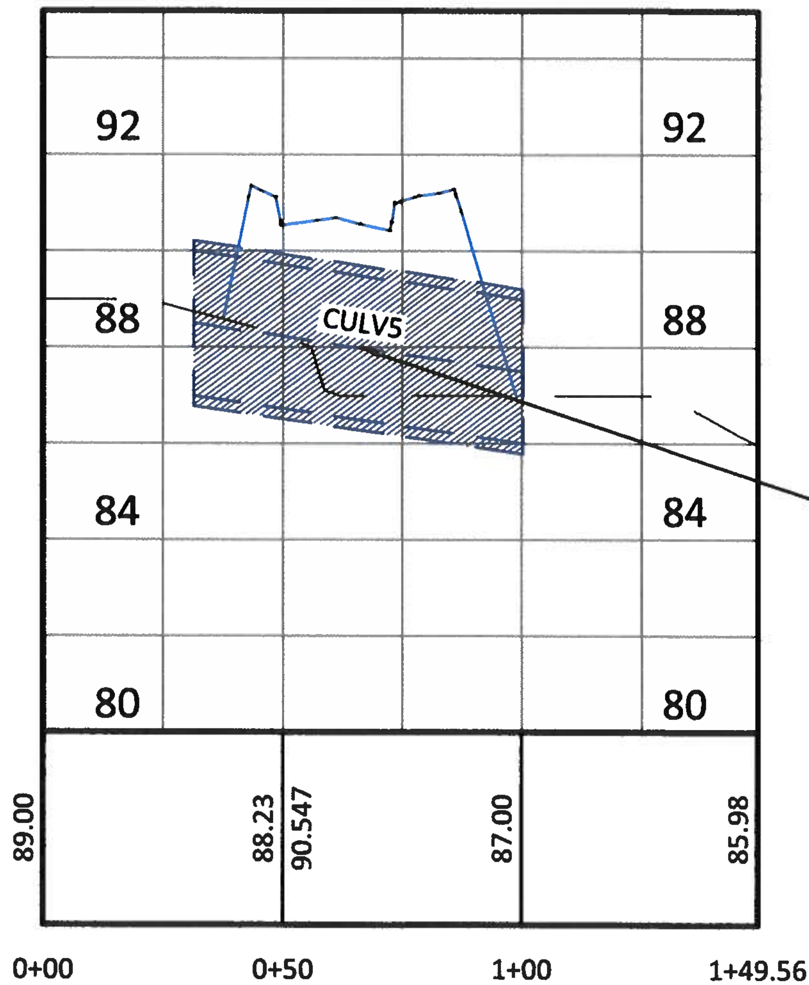
Date: September 22, 2020 Project #: 134

Title:
Culv 5 Plan View

0 10 20
1 inch = 20 ft.

Sheet #:
Exhibit
D.9

CULV 5 PROFILE PROFILE



36 inch Corrugated HDPE Pipe
L=68.65, S=1.46%
Invert In=87.00
Invert Out=86.00

BELANGER ENGINEERING
CONSULTING ENGINEERS

LICHT
ENVIRONMENTAL DESIGN, LLC

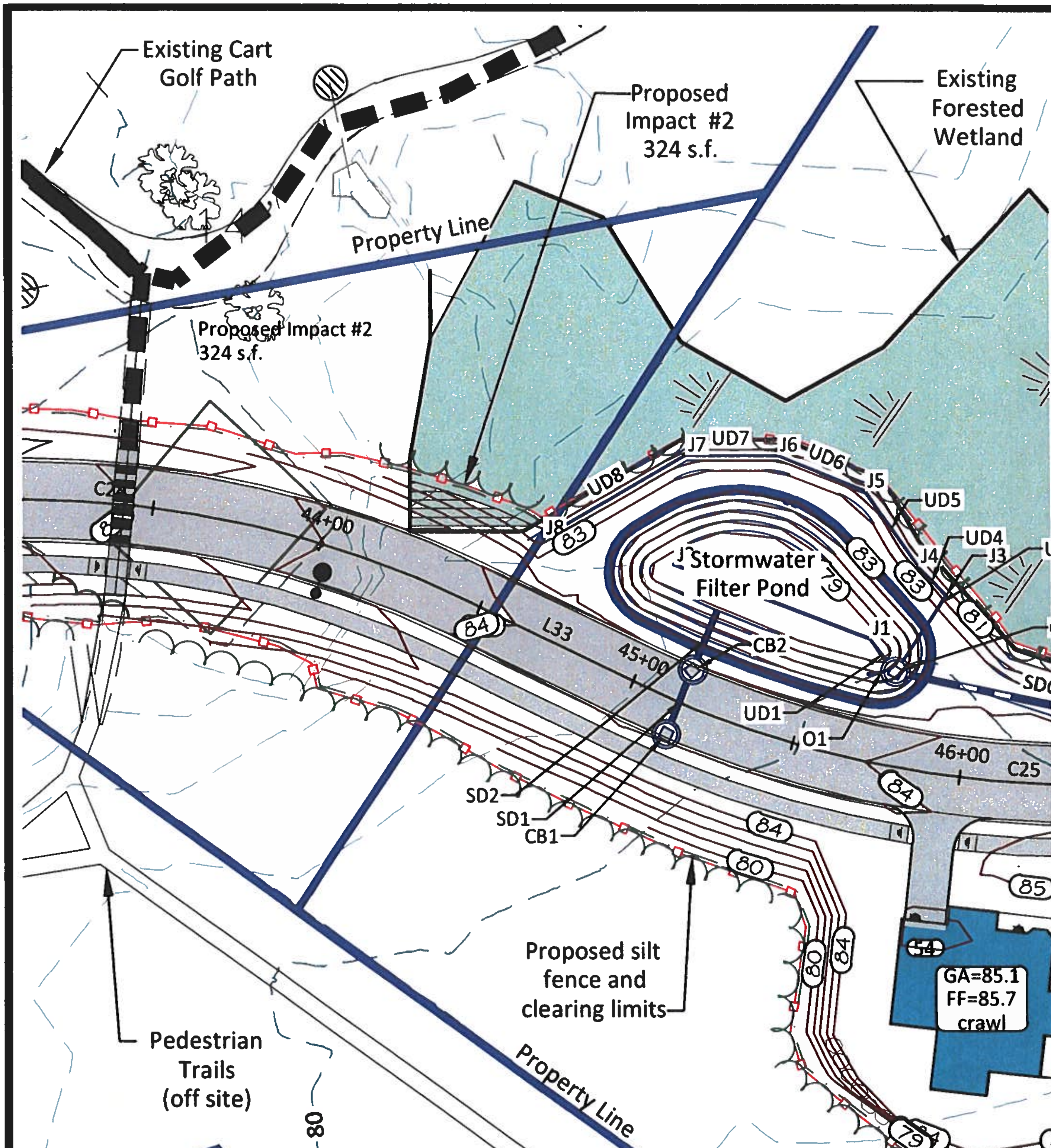
Prepared For:
Cumberland Crossing Phase 2
Greely Road and Tuttle Road,
Cumberland, Maine

Title:
Culv 5 Profile View

Scale: 1"=40'

Date: September 22, 2020 Project #: 134

Sheet #:
Exhibit
D.10



BELANGER ENGINEERING
CONSULTING ENGINEERS

LICHT
ENVIRONMENTAL DESIGN, LLC

Prepared For:
Cumberland Crossing Phase 2
Greely Road and Tuttle Road,
Cumberland, Maine

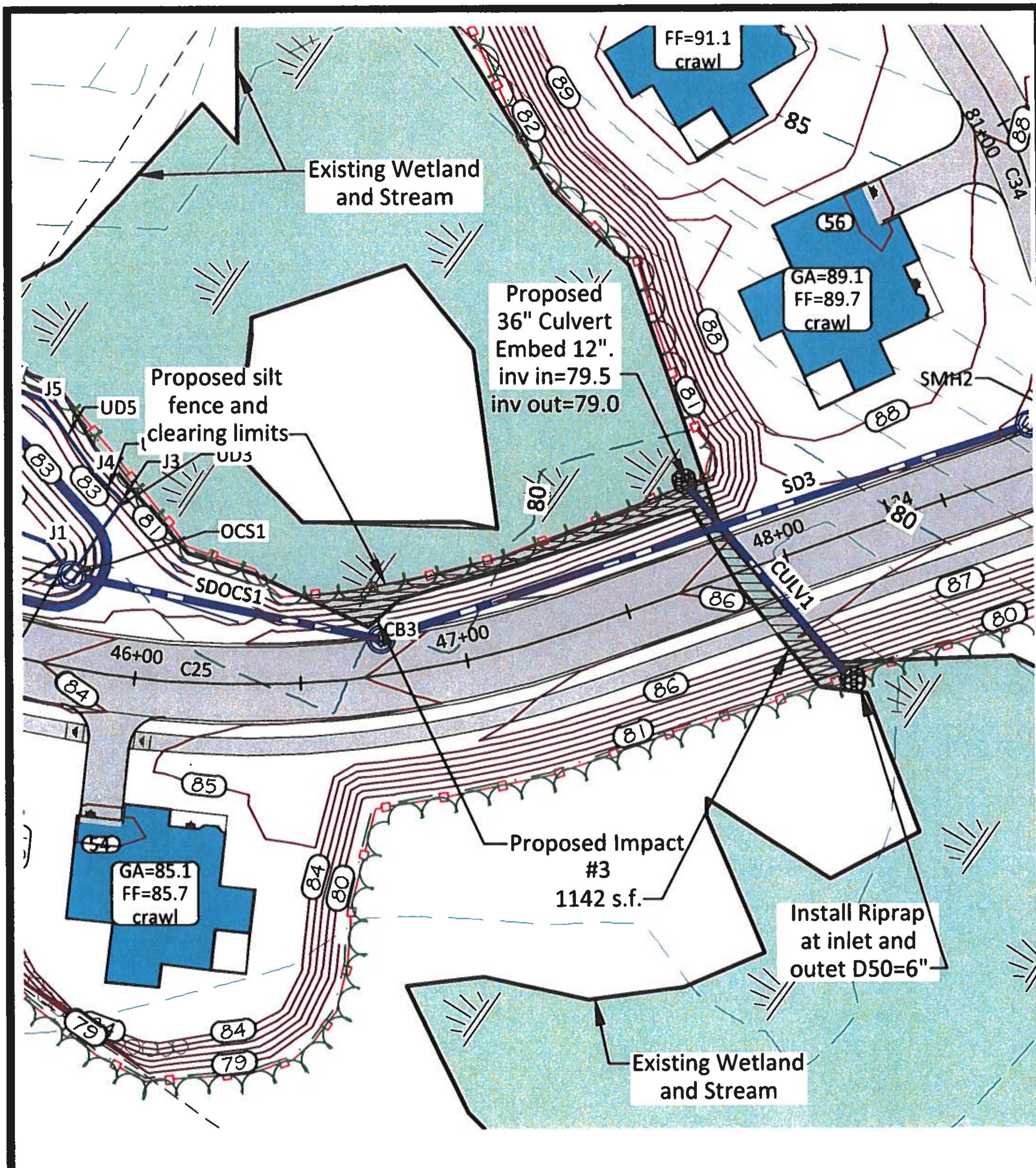
Title:
Wetland Impact #2

Scale: 1"=40'

Date: June 15, 2020

Project #: 134

Sheet #:
Exhibit
3.2



BELANGER ENGINEERING
CONSULTING ENGINEERS

LICHT
ENVIRONMENTAL DESIGN, LLC

Prepared For:
Cumberland Crossing Phase 2
Greely Road and Tuttle Road,
Cumberland, Maine

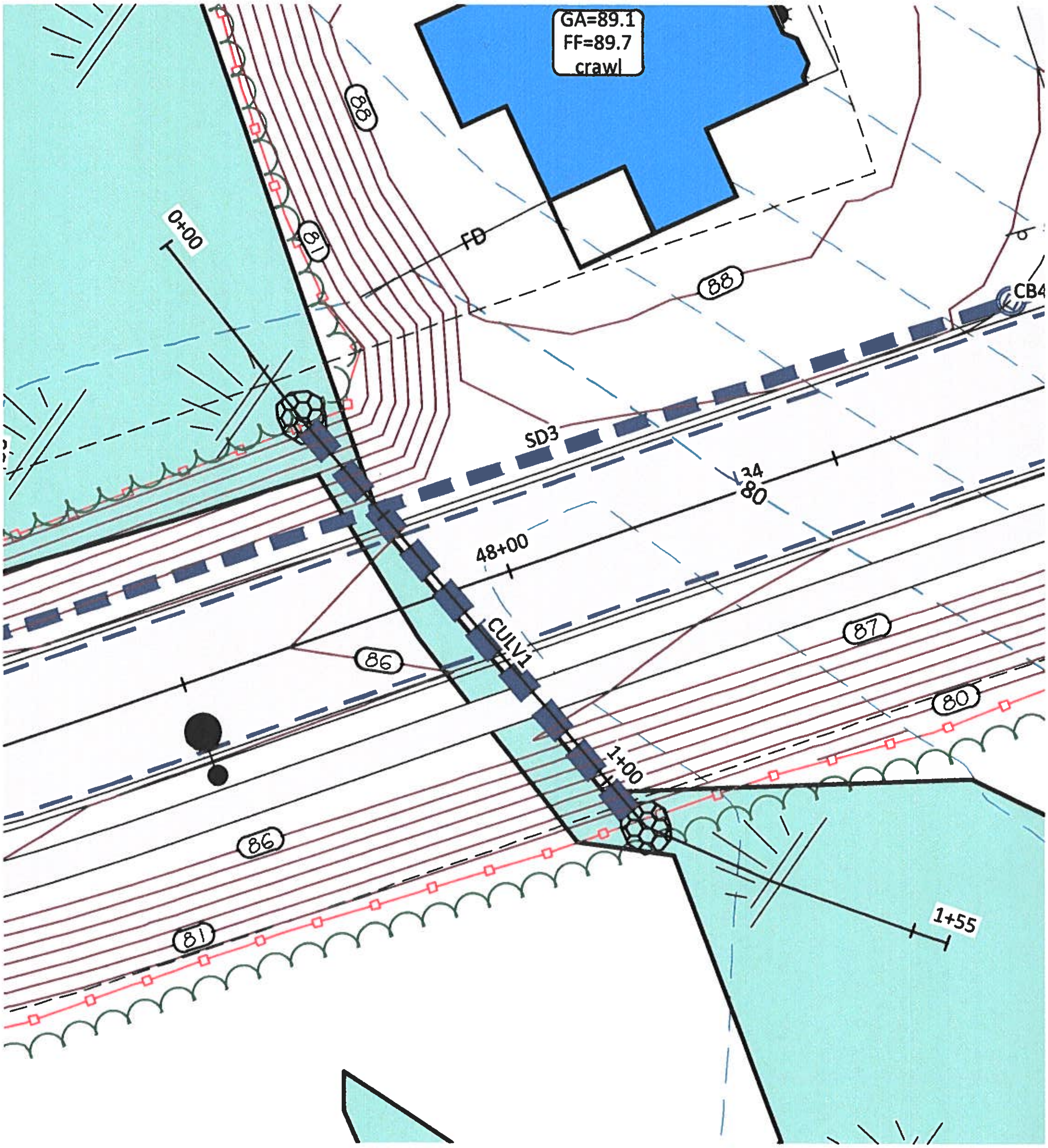
Title:
Wetland Impact #3

Scale: 1"=40'

Date: June 15, 2020

Project #: 134

Sheet #:
Exhibit
3.3



BELANGER ENGINEERING
CONSULTING ENGINEERS

LICHT
ENVIRONMENTAL DESIGN, LLC

Prepared For:
Cumberland Crossing Phase 2
Greely Road and Tuttle Road,
Cumberland, Maine

Scale: 1"=20'

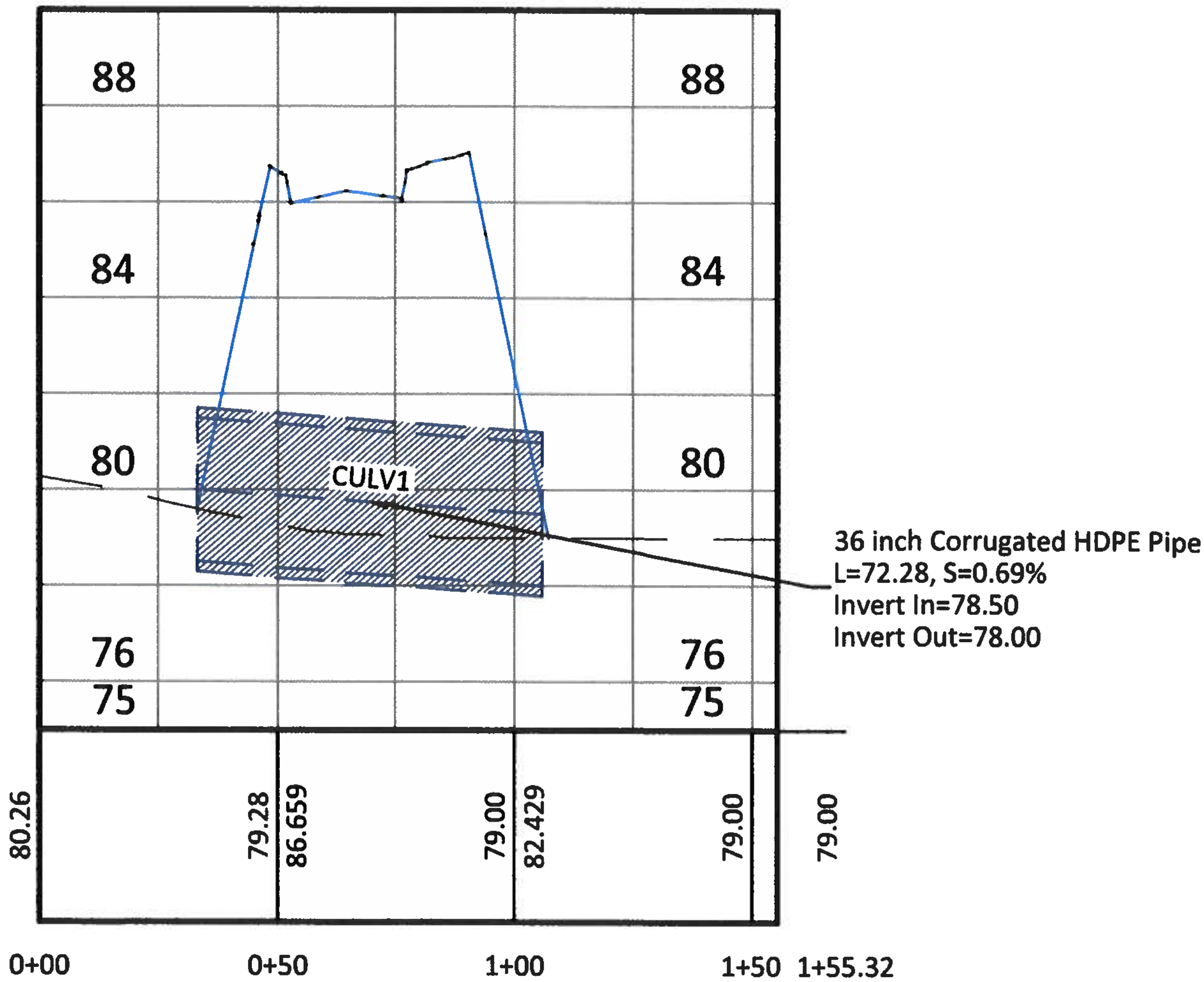
Date: September 22, 2020 Project #: 134

Title:
Culv 1 Plan View

0 10 20
1 inch = 20 ft.

Sheet #:
Exhibit
D.7

CULV 1 PROFILE PROFILE



BELANGER ENGINEERING CONSULTING ENGINEERS

LICHT ENVIRONMENTAL DESIGN, LLC

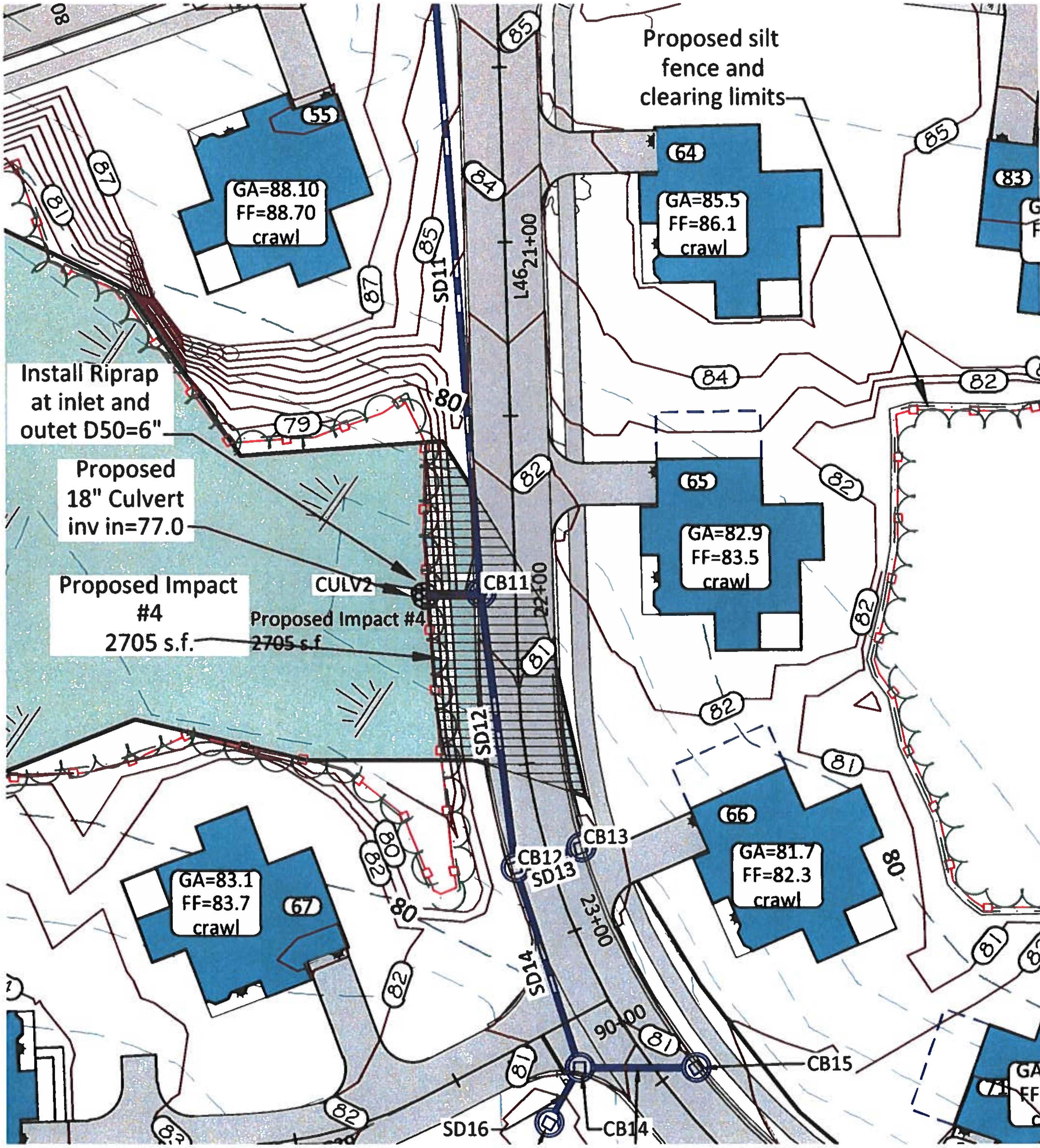
Prepared For:
Cumberland Crossing Phase 2
Greely Road and Tuttle Road,
Cumberland, Maine

Title:
Culv 1 Profile View

Scale: 1"=40'

Date: September 22, 2020 Project #: 134

Sheet #:
Exhibit
D.8



Prepared For:
Cumberland Crossing Phase 2
Greely Road and Tuttle Road,
Cumberland, Maine

Title:
Wetland Impact #4

BELANGER ENGINEERING CONSULTING ENGINEERS

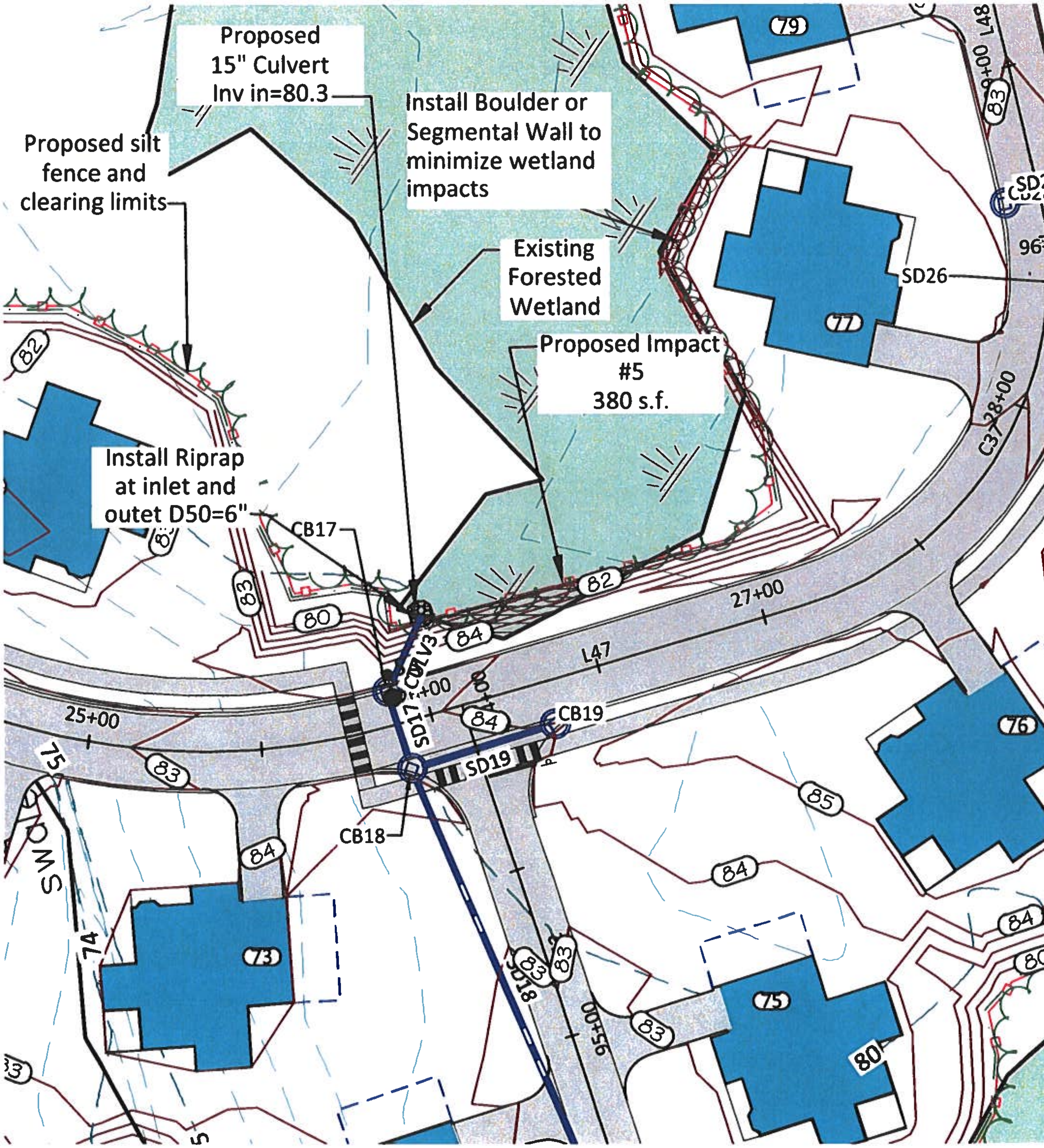
LICHT ENVIRONMENTAL DESIGN, LLC

Scale: 1"=40'

Date: June 15, 2020

Project #: 134

Sheet #: Exhibit 3.4



BELANGER ENGINEERING
CONSULTING ENGINEERS

LICHT ENVIRONMENTAL DESIGN, LLC

Prepared For:
Cumberland Crossing Phase 2
Greely Road and Tuttle Road,
Cumberland, Maine

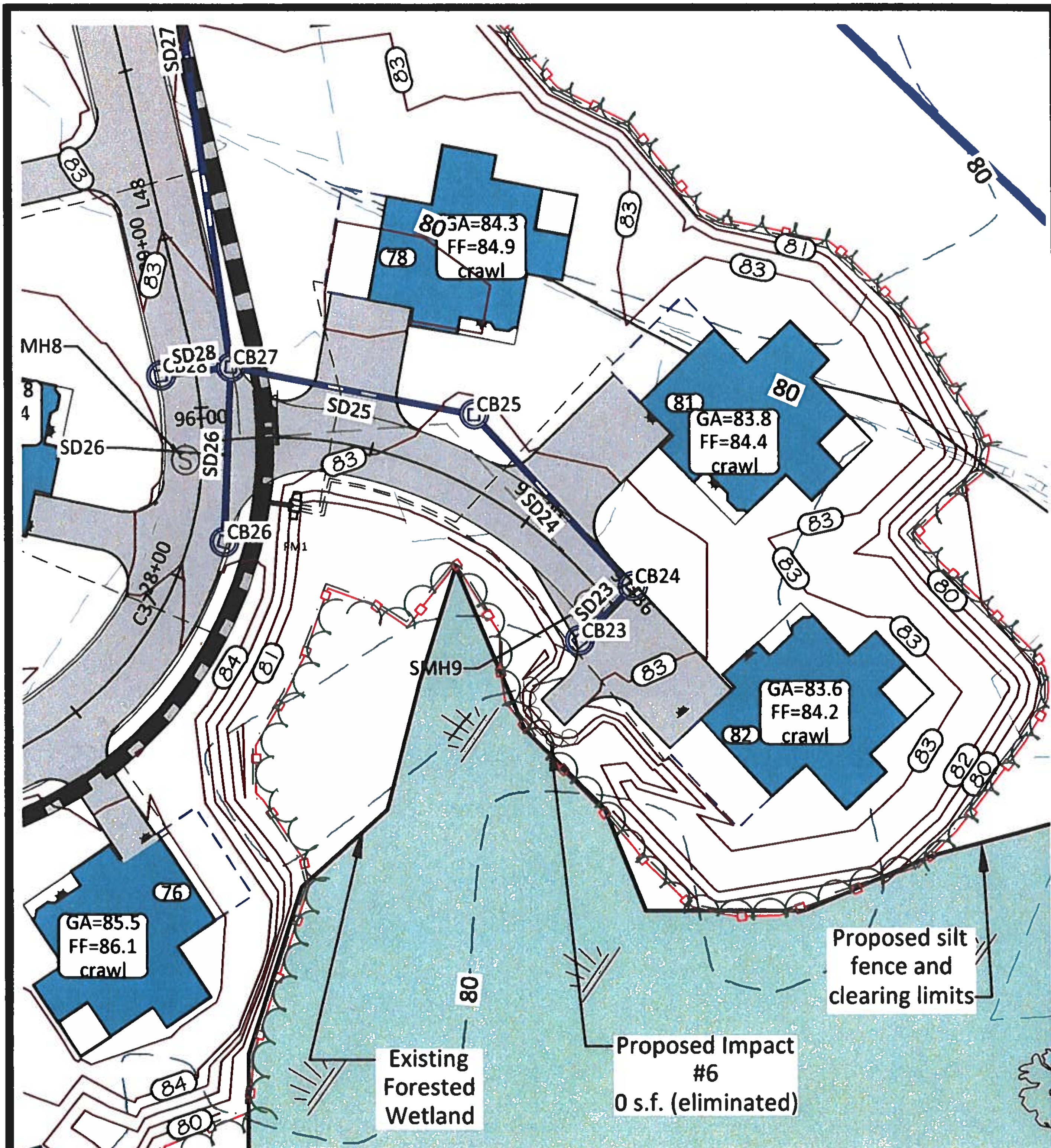
Title:
Wetland Impact #5

Scale: 1"=40'

Date: June 15, 2020

Project #: 134

Sheet #:
Exhibit
3.5



BELANGER ENGINEERING
CONSULTING ENGINEERS

LICHT
ENVIRONMENTAL DESIGN, LLC

Prepared For:
Cumberland Crossing Phase 2
Greely Road and Tuttle Road,
Cumberland, Maine

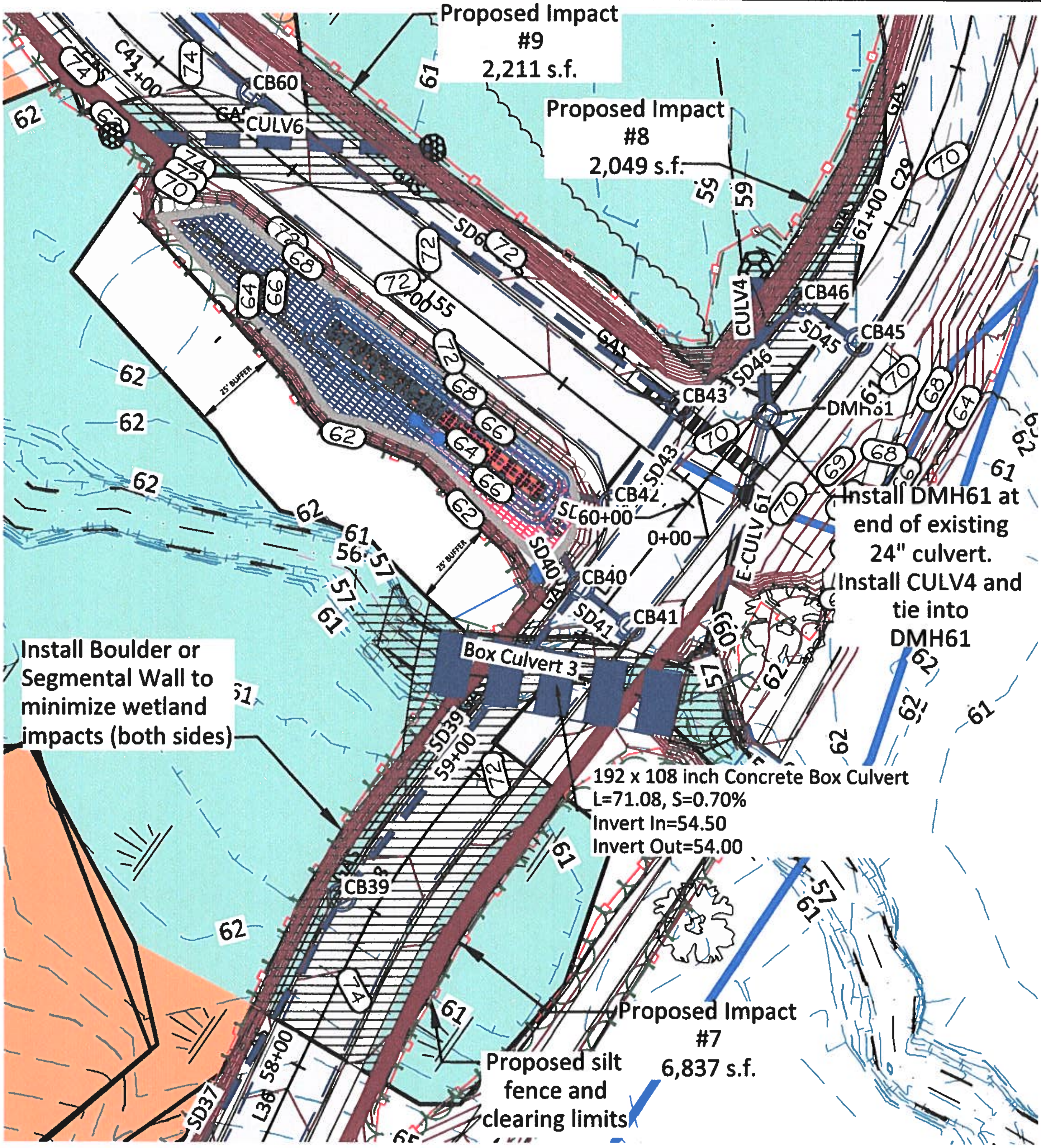
Title:
Wetland Impact #6

Scale: 1"=40'

Date: June 15, 2020

Project #: 134

Sheet #:
Exhibit
3.6



BELANGER ENGINEERING
CONSULTING ENGINEERS

LICHT
ENVIRONMENTAL DESIGN, LLC

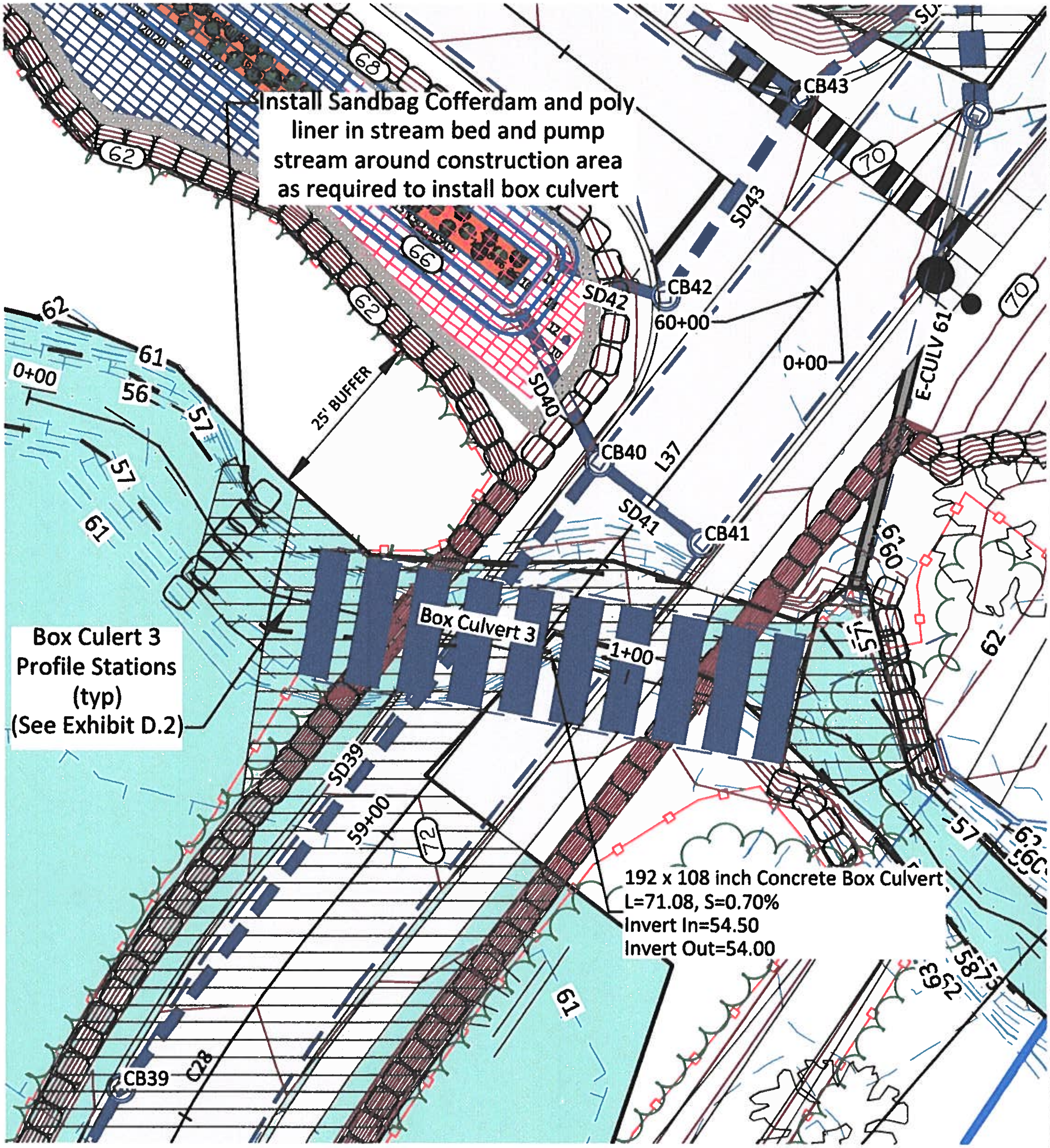
Prepared For:
Cumberland Crossing Phase 2
Greely Road and Tuttle Road,
Cumberland, Maine

Title:
Wetland Impact #7, #8, #9

Scale: 1"=40'

Date: September 22, 2020 Project #: 134

Sheet #:
Exhibit
3.7



BELANGER ENGINEERING
CONSULTING ENGINEERS

LICHT ENVIRONMENTAL DESIGN, LLC

Prepared For:
Cumberland Crossing Phase 2
Greely Road and Tuttle Road,
Cumberland, Maine

Scale: 1"=20'

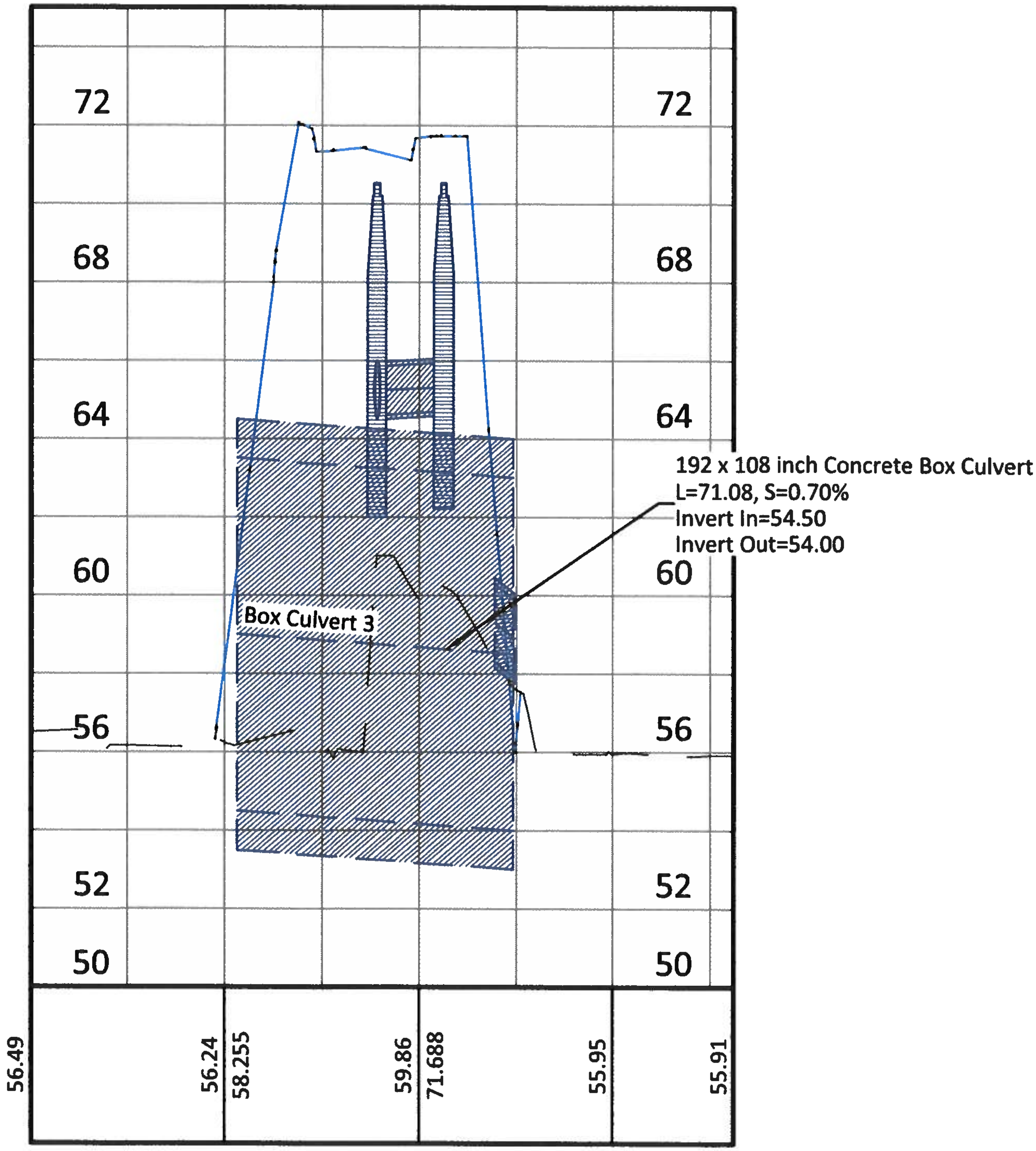
Date: September 22, 2020 Project #: 134

Title:
Box Culvert 3 Plan View

0 10 20
1 inch = 20 ft.

Sheet #:
Exhibit
D.1

Box Culvert 3 Profile PROFILE



BELANGER ENGINEERING
CONSULTING ENGINEERS

LICHT ENVIRONMENTAL DESIGN, LLC

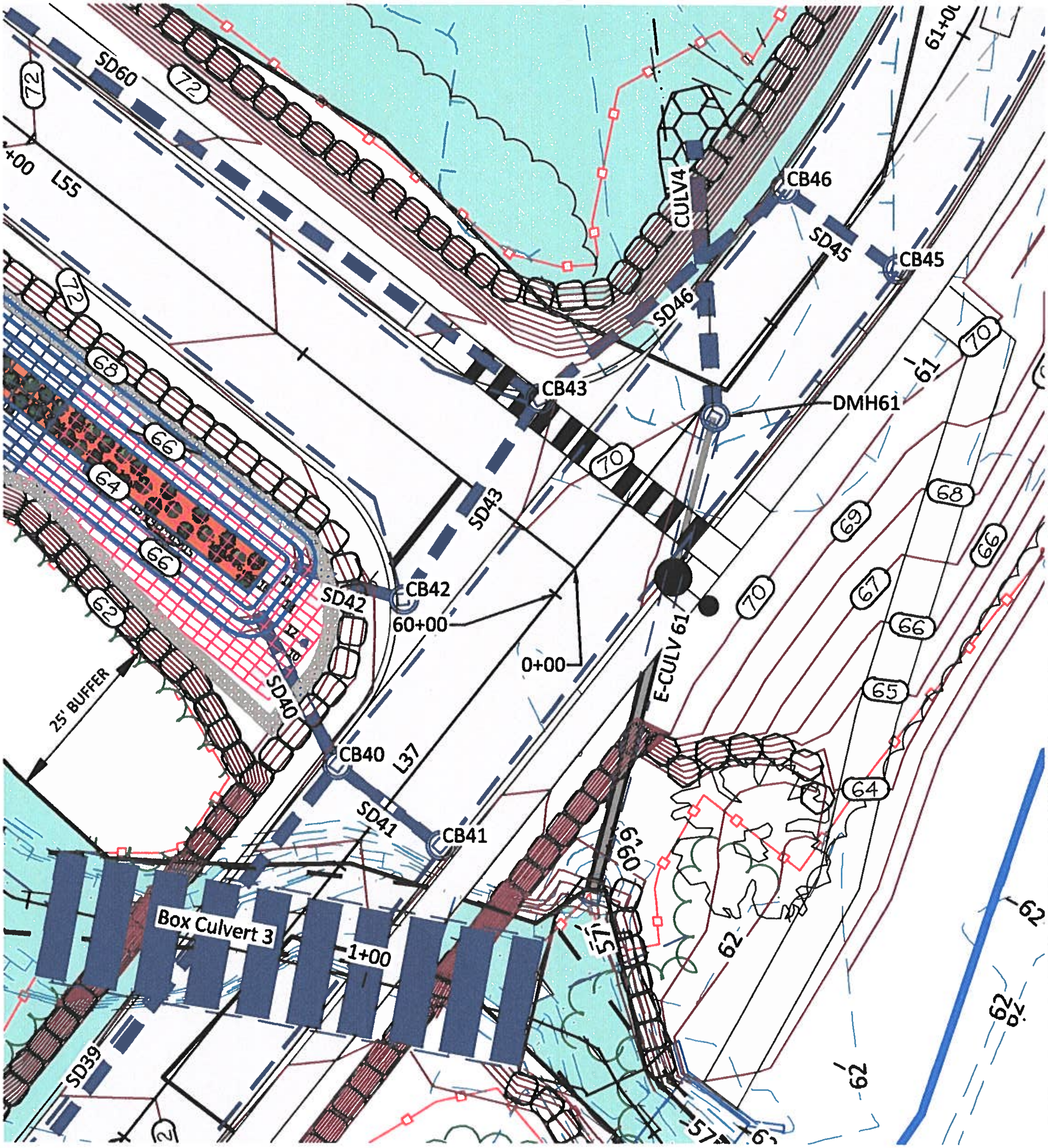
Prepared For:
Cumberland Crossing Phase 2
Greely Road and Tuttle Road,
Cumberland, Maine

Title:
Box Culvert 3 Profile View

Scale: 1"=40'

Date: September 22, 2020 Project #: 134

Sheet #:
Exhibit
D.2



BELANGER ENGINEERING
CONSULTING ENGINEERS

LICHT
ENVIRONMENTAL DESIGN, LLC

Prepared For:
Cumberland Crossing Phase 2
Greely Road and Tuttle Road,
Cumberland, Maine

Title:
Culv 4 Plan View

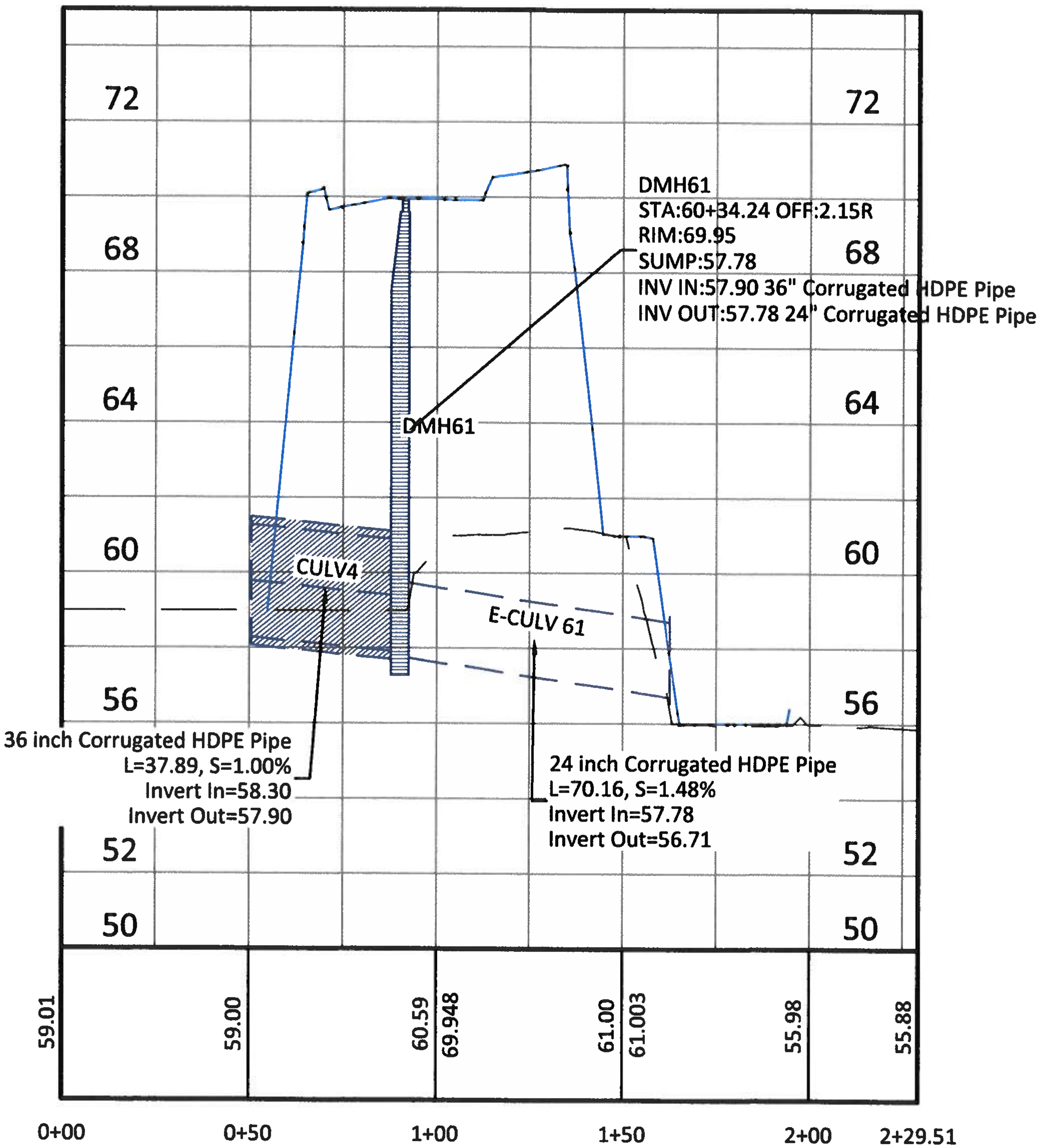
Scale: 1"=20'

Date: September 22, 2020 Project #: 134

0 10 20
1 inch = 20 ft.

Sheet #:
Exhibit
D.3

CULV 4 PROFILE PROFILE



BELANGER ENGINEERING
CONSULTING ENGINEERS

LICHT
ENVIRONMENTAL DESIGN, LLC

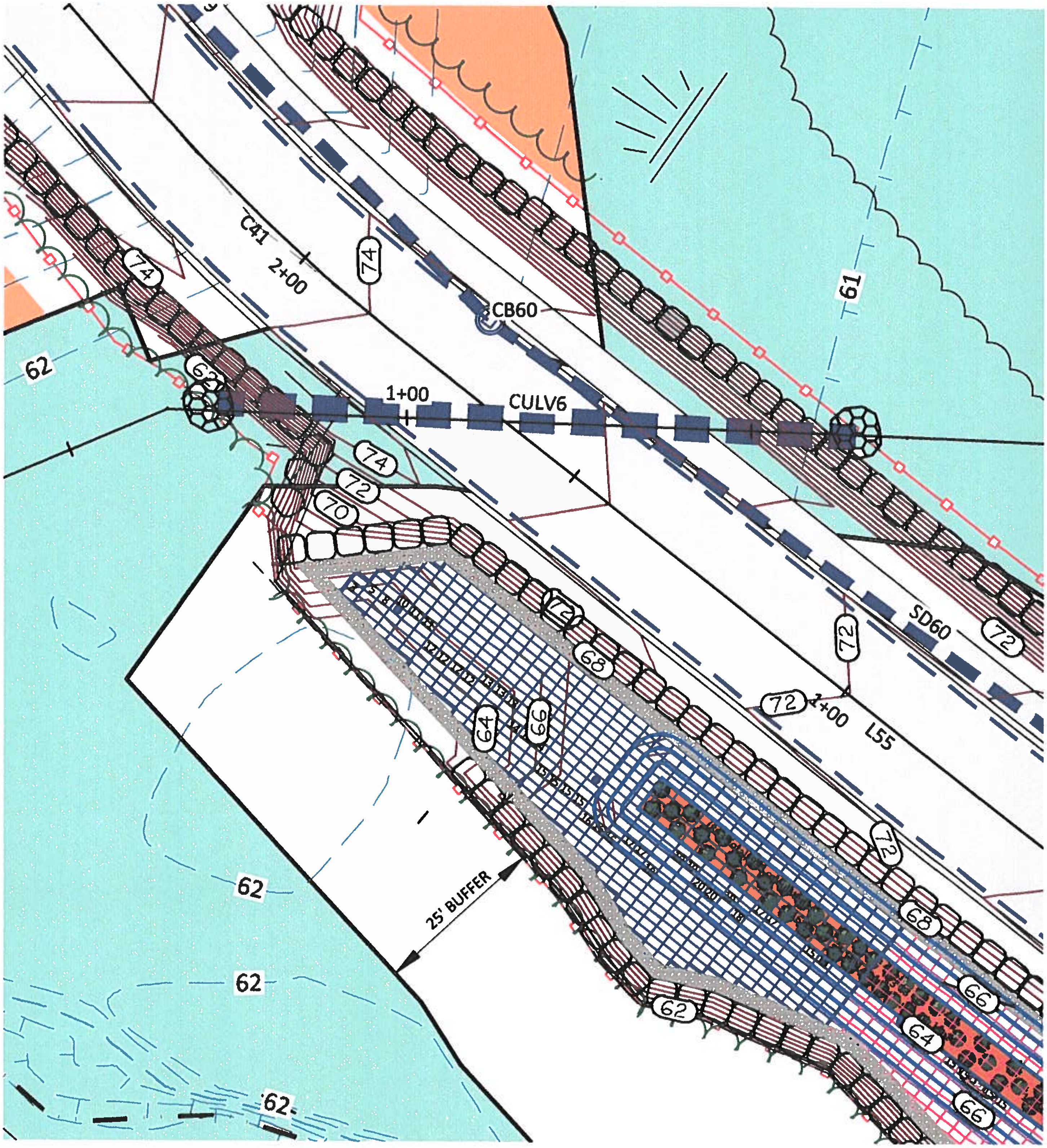
Prepared For:
Cumberland Crossing Phase 2
Greely Road and Tuttle Road,
Cumberland, Maine

Title:
Culv 4 Profile View

Scale: 1"=40'

Date: September 22, 2020 Project #: 134

Sheet #:
Exhibit
D.4



BELANGER ENGINEERING
CONSULTING ENGINEERS

LICHT ENVIRONMENTAL DESIGN, LLC

Prepared For:
Cumberland Crossing Phase 2
Greely Road and Tuttle Road,
Cumberland, Maine

Title:
Culv 6 Plan View

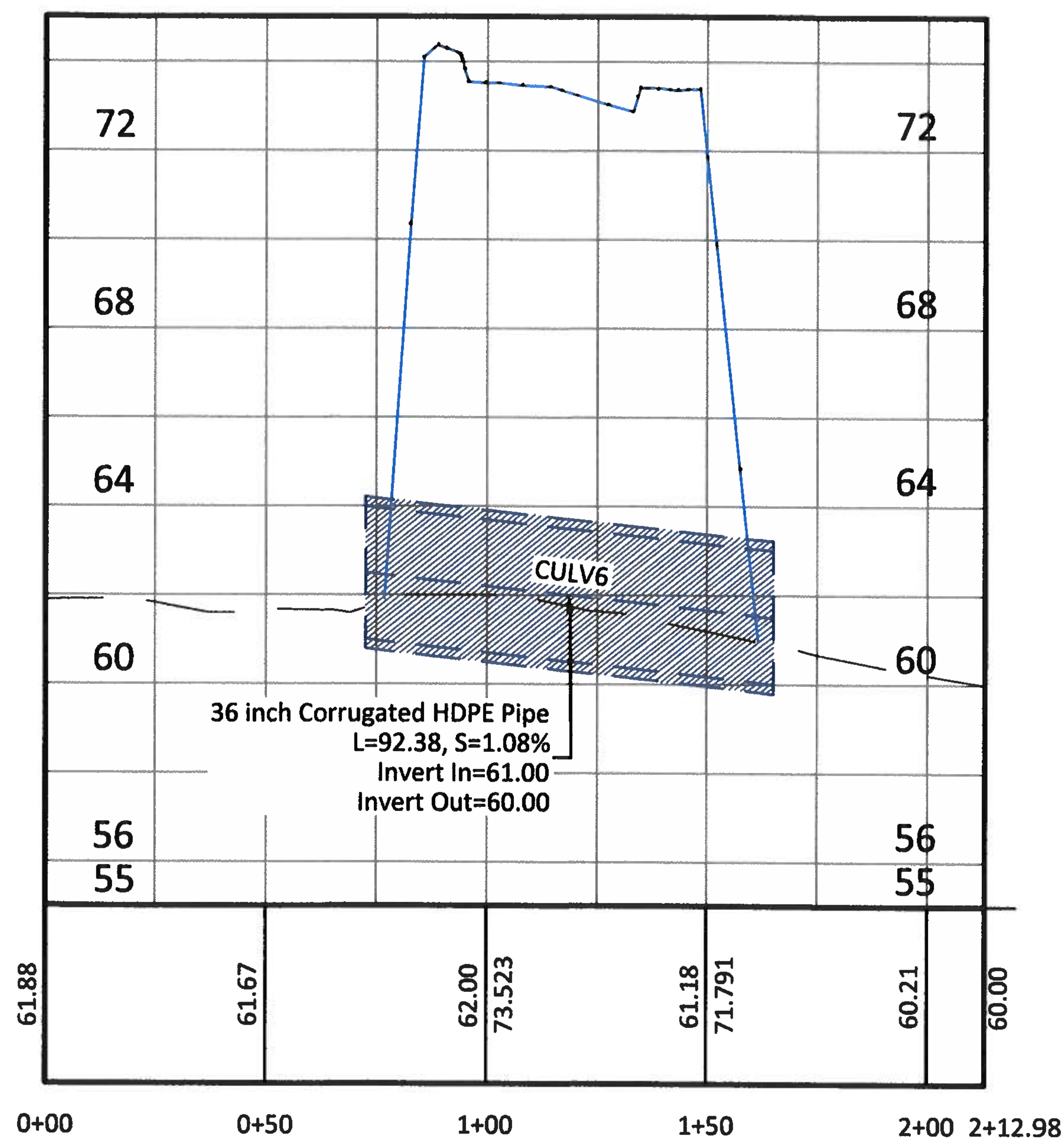
Scale: 1"=20'

Date: September 22, 2020 Project #: 134

0 10 20
1 inch = 20 ft.

Sheet #:
Exhibit
D.5

CULV 6 PROFILE PROFILE



BELANGER ENGINEERING
CONSULTING ENGINEERS

LICHT
ENVIRONMENTAL DESIGN, LLC

Prepared For:
Cumberland Crossing Phase 2
Greely Road and Tuttle Road,
Cumberland, Maine

Title:
Culv 6 Profile View

Scale: 1"=40'

Date: September 22, 2020 Project #: 134

Sheet #:
Exhibit
D.6

LEGEND:

EXISTING — PROPOSED

- IRON PIPE OR MONUMENT (OR / OR)
- BENCH MARK (SEE NOTES)
- TRAVERSE STATION
- TEST PIT (TP2)
- CATCH BASIN
- SEWER MANHOLE
- FIRE HYDRANT
- WATER GATE VALVE (WV)
- WATER SHUT–OFF
- BLOW–OFF/CLEAN–OUT
- WELL
- UTILITY POLE
- POLE W/SINGLE LIGHT
- POLE W/DOUBLE LIGHT
- SPOT LIGHT & WALL LIGHT
- BOLLARD LIGHT
- SIGN
- RESIDENTIAL SEWER PUMP STATION
- GAS VALVE
- HANDICAP SYMBOL
- PAVEMENT PAINT MARKINGS
- PARKING SPACE COUNT (15)
- PROPERTY LINE
- EASEMENTS
- SETBACK/BUFFER
- SOILS BOUNDARY (WmB / Au)
- WETLAND BOUNDARY
- STREAM
- CULVERT
- CONCRETE SLIPFORM
- GRANITE CURB
- VERTICAL CONCRETE CURB
- EDGE OF PAVEMENT
- ROAD CENTERLINE
- BUILDING
- STORM DRAIN(SEE PLAN FOR SIZE) (12"SD)
- SEWER LINE(SEE PLAN FOR SIZE) (S)
- SEWER FORCE MAIN(SEE PLAN FOR SIZE) (FM)
- WATER LINE(SEE PLAN FOR SIZE) (W)
- NATURAL GAS LINE(SEE PLAN FOR SIZE) (GAS)
- UNDERGROUND POWER,PHONE,CABLE CONDUIT (UE)
- UNDERGROUND SECONDARY POWER LINES (SE)
- CHILLER LINES (WC)
- SPOT ELEVATION (x(100.00) / x100.00)
- SPOT: CURB TOP & BOTTOM (T=106.9 B=106.4)
- CONTOURS (100)
- CATCH BASIN HAY BALE BARRIER
- CLEARING LIMIT
- TREE LINE
- SILT FENCE
- CHAIN LINK FENCE
- WOOD GUARD RAIL
- RIPRAP
- CONSTRUCTION ENTRANCE
- CONCRETE
- PAVEMENT
- PAVEMENT OVERLAY
- BUILDING
- EXISTING BUILDING
- NOT IN CONTRACT ("NIC")

PROJECT SCALES

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

GENERAL NOTES:

1. TOPOGRAPHIC DATA IS BASED ON COMPILATIONS OF INFORMATION INCLUDING AERIAL INFORMATION, ON THE GROUND SURVEY, APPROVED DESIGN PLANS, AND FIELD OBSERVATIONS. ON THE GROUND SURVEYS HAVE BEEN COMPLETED BY TITCOMB ASSOCIATES IN 2017
2. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR THE ELEVATION OF THE EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND WHERE POSSIBLE MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION HAS NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVES AND IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL CALL THE APPROPRIATE UTILITY COMPANY AND DIG SAFE (1-800-DIG-SAFE) AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
3. UNIT FOOTPRINTS AS SHOWN ARE FOR PLANNING PURPOSES ONLY. FINAL FOOTPRINTS MAY VARY. SEE ARCHITECTURAL DRAWINGS FOR EXACT BUILDING DIMENSIONS AND ALL DETAILS CONTIGUOUS TO THE BUILDING, INCLUDING SIDEWALKS, RAMPS, BUILDING ENTRANCES, STAIRWAYS, UTILITY PENETRATIONS, CONCRETE DOOR PADS, COMPACTOR PAD, LOADING DOCKS, BOLLARDS ETC.
4. LAYOUT DIMENSIONS ARE FROM FACE OF BUILDING, RETAINING WALLS, CURBS OR BERMS.
5. RIM ELEVATIONS OF PROPOSED DRAINAGE AND SANITARY SEWER MANHOLES AND ASSOCIATED STRUCTURES ARE APPROXIMATE. FINAL ELEVATIONS ARE TO BE SET FLUSH AND CONSISTENT WITH THE GRADING PLANS. ADJUST ALL OTHER RIM ELEVATIONS OF MANHOLES, WATER GATES, GAS GATES AND OTHER UTILITIES TO FINISH GRADE WITHIN LIMITS OF WORK.
6. THE LOCATION, SIZE, DEPTH, AND SPECIFICATIONS FOR CONSTRUCTION OF PROPOSED PRIVATE UTILITY SERVICES SHALL BE INSTALLED ACCORDING TO THE REQUIREMENTS PROVIDED BY, AND APPROVED BY THE RESPECTIVE UTILITY COMPANY (GAS, TELEPHONE, ELECTRIC AND FIRE ALARM). FINAL DESIGN LOADS AND LOCATIONS TO BE COORDINATED WITH OWNER AND ARCHITECT.
7. THE CONTRACTOR SHALL FIELD VERIFY THE LOCATION, SIZE, INVERTS AND TYPES OF EXISTING PIPES AT ALL PROPOSED POINTS OF CONNECTION PRIOR TO ORDERING MATERIALS. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATIONS, ELEVATION, AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED IN WRITING TO THE OWNER'S REPRESENTATIVE FOR THE RESOLUTION OF THE CONFLICT.
8. ALL AREAS OUTSIDE THE LIMIT OF WORK THAT ARE DISTURBED SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE. ALL AREAS DISTURBED DURING CONSTRUCTION NOT COVERED WITH BUILDINGS, STRUCTURES, OR PAVEMENT SHALL RECEIVE 6 INCHES OF LOAM AND SEED.
9. CONTRACTOR SHALL MAKE ALL ARRANGEMENTS AND SHALL BE RESPONSIBLE FOR PAYING ANY FEES FOR ANY POLE RELOCATION AND FOR THE ALTERATION OR ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE, FIRE ALARM AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES.
10. UPON AWARD OF CONTRACT, CONTRACTOR SHALL MAKE ALL NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN ALL NECESSARY PERMITS, PAY ALL FEES AND POST ALL BONDS ASSOCIATED WITH THE WORK INDICATED ON THE DRAWINGS.
11. ALL PROPERTY MONUMENTATION DISTURBED DURING CONSTRUCTION SHALL BE RESET TO THEIR ORIGINAL LOCATION BY A MAINE REGISTERED PROFESSIONAL LAND SURVEYOR (PLS) AT THE CONTRACTOR'S EXPENSE.
12. THE CONTRACTOR SHALL PREPARE/PROVIDE AN AS-BUILT SURVEY SHOWING LOCATIONS OF ALL CONSTRUCTED SURFACE FEATURES AND SUBSURFACE UTILITY SYSTEMS INCLUDING THE GPS POINT LOCATION, TYPE, SIZE AND INVERTS. THE CONTRACTOR SHALL PROVIDE SURVEY POINTS AND DATA TO THE ENGINEER.
13. CONTRACTOR SHALL INSTALL ALL EROSION CONTROL MEASURES PRIOR TO EARTHWORK OPERATION AND MAINTAIN ALL EROSION CONTROL MEASURES AND SEEDED EMBANKMENTS DURING CONSTRUCTION. EROSION CONTROL SHALL BE REMOVED ONLY UPON THE ESTABLISHMENT OF ALL LANDSCAPED AREAS. AL WORK SHALL BE IN COMPLIANCE WITH THE ENVIRONMENTAL QUALITY HANDBOOK FOR EROSION AND SEDIMENT CONTROL, LATEST EDITION, AS ADOPTED BY THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
14. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY. ALL CONSTRUCTION ACTIVITY SHALL BE IN ACCORDANCE WITH OSHA STANDARDS AND LOCAL REQUIREMENTS.
15. ALL MATERIALS AND CONSTRUCTION METHODS USED WITHIN THE PUBLIC RIGHT-OF-WAY SHALL CONFORM TO ALL LOCAL MUNICIPAL STANDARDS AND MAINE DEPARTMENT OF TRANSPORTATION SPECIFICATIONS.
16. ALL HANDICAP ACCESSIBLE PARKING SPACES, RAMPS AND SIDEWALKS SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE AMERICANS WITH DISABILITIES ACT (ADA).
17. ALL SITE SIGNAGE AND PAVEMENT MARKINGS SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

LAYOUT NOTES:

1. ALL DIMENSIONING, UNLESS NOTED OTHERWISE, IS TO THE FACE OF CURB OR BUILDING.
2. OFFSETS TO CATCH BASINS AND MANHOLES ARE TO THE CENTER OF THE FRAME.
3. PIPE LENGTH EQUALS THE CENTER TO CENTER DISTANCES BETWEEN CATCH BASINS AND/OR MANHOLES MINUS ONE HALF THE DIAMETER OF EACH CATCH BASIN OR MANHOLE.
4. BOUNDARY INFORMATION ON LAYOUT PLAN IS FOR REFERENCE ONLY, REFER TO SUBDIVISION PLAT AND ACTUAL SURVEY AND BOUNDARY SURVEY REFERENCES BY TITCOMB ASSOCIATES.

GRADING AND DRAINAGE NOTES:

1. UNLESS OTHERWISE NOTED, ALL STORM DRAIN PIPE SHALL BE IN ACCORDANCE WITH MDOT SPECIFICATIONS SECTION 603. PIPE CULVERTS AND STORM DRAINS, LATEST REVISION WITH THE EXCEPTION THAT THE ONLY ACCEPTABLE TYPES OF PIPE ARE AS FOLLOWS:
   REINFORCED CONCRETE PIPE
   POLYVINYL CHLORIDE PIPE (PVC)
   SMOOTH BORE HDPE POLYETHYLENE PIPE
2. TOPSOIL STRIPPED IN AREAS OF CONSTRUCTION THAT IS SUITABLE FOR REUSE AS LOAM SHALL BE STOCKPILED ON SITE AT A LOCATION TO BE DESIGNATED BY OWNER. UNSUITABLE SOIL SHALL BE SEPARATED, REMOVED AND DISPOSED OF AT AN APPROVED DISPOSAL LOCATION OFF SITE.
3. THE CONTRACTOR SHALL ANTICIPATE THAT GROUNDWATER WILL BE ENCOUNTERED DURING CONSTRUCTION AND SHALL INCLUDE SUFFICIENT COSTS WITHIN THEIR BID TO PROVIDE DEWATERING AS NECESSARY. NO SEPARATE PAYMENT SHALL BE MADE TO THE CONTRACTOR FOR DEWATERING.

EROSION CONTROL NOTES:

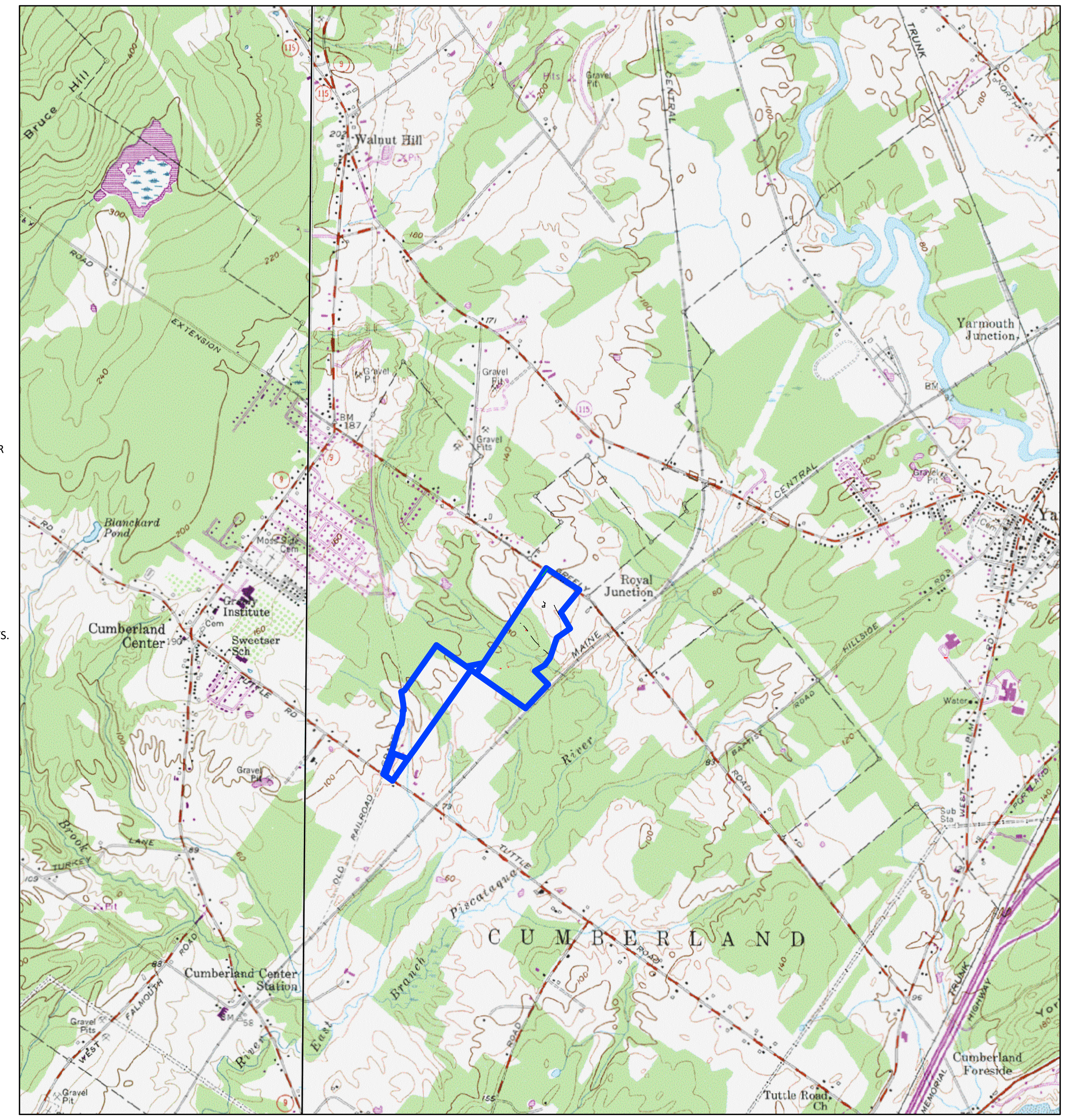
1. LAND DISTURBING ACTIVITIES SHALL BE ACCOMPLISHED IN A MANNER AND SEQUENCE THAT CAUSES THE LEAST PRACTICAL DISTURBANCE OF THE SITE. SEE EROSION CONTROL PLAN FOR EROSION CONTROL SEQUENCING.
2. ALL EROSION CONTROL METHODS IMPLEMENTED SHALL CONFORM TO THE "MAINE EROSION AND SEDIMENT CONTROL EST MANAGEMENT PRACTICES (BMP's) MANUAL" DATED OCTOBER 2016 BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION. http://www.maine.gov/dep/land/erosion/escbmps/esc_bmp_engineers.pdf
3. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR SHALL PLACE THE EROSION CONTROL BMPS INCLUDING SILT FENCE, BERMS, EROSION CONTROL MIX, ETC.. THE CONTRACTOR SHALL INSPECT THE BARRIER AND OTHER PREVENTATIVE MEASURES BI-WEEKLY, BEFORE ANY PREDICTED RAIN EVENT, AND AFTER ANY RAIN EVENT. THE CONTRACTOR SHALL REMOVE ANY ACCUMULATED SILT AND/OR MAKE REPAIRS AS NECESSARY.
4. THE CONTRACTOR IS CAUTIONED THAT FAILURE TO COMPLY WITH THE SEQUENCE OF CONSTRUCTION, EROSION/SEDIMENT CONTROL PLAN, AND OTHER PERMIT REQUIREMENTS MAY RESULT IN MONETARY PENALTIES. THE CONTRACTOR SHALL BE ASSESSED ALL SUCH PENALTIES AT NO COST TO THE OWNER OR PERMITTEE.

CUMBERLAND CROSSING - PHASE 2

Tuttle & Greely Roads, Cumberland, Maine

December 18, 2020

Town Final Submission



LOCATION MAP
1"=2000'

UTILITY INFO & CONTACTS:

SUMMIT NATURAL GAS: 12 INCH MAIN, W. SIDE TUTTLE RD.
CONTACT: MICHAEL STINCHFIELD, PROJECT MANAGER 207.620.8000

WATER: PORTLAND WATER DISTRICT: 12 C.I.INCH MAIN, E. SIDE TUTTLE RD.& N. SIDE GREELY ROAD.
CONTACT: ROBERT BARTELS, MEANS DEPT. 207.774.5961 X3199

SANITARY SEWER: PORTLAND WATER DISTRICT - 8 INCH GRAVITY SS, W. SIDE TUTTLE RD.
CONTACT: ROBERT BARTELS, MEANS DEPT. 207.774.5961 X3199

ELECTRIC CENTRAL MAINE POWER: 3 PHASE OVERHEAD, W. SIDE TUTTLE RD. & N. SIDE GREELY ROAD.
CONTACT: HERB STEVENS, 800.750.4000

COMMUNICATIONS/CTV: SPECTRUM COMMUNICATIONS, OVERHEAD, W. SIDE TUTTLE ROAD
CONTACT: PETER DETESO, 207.318.6542

TELE; FAIRPOINT & CONSOLIDATED, OVERHEAD, W. SIDE TUTTLE ROAD
CONTACT MATT FREE (CONSOLIDATED), 207.626.2007

STREET OPENING: TOWN OF CUMBERLAND URBAN COMPACT& (MDOT)
CONTACT: MDOT SCARBOROGH, REGION 1, 207.885.7000
CONTACT: CUMBERLAND DPW: CHRIS BOLDUC, 207.829.2220

APPROVALS OBTAINED AND REQUIRED:

1. TOWN OF CUMBERLAND PLANNING BOARD. THE PLANNING BOARD CONDITIONALLY APPROVED PHASE 1 OF THE PROJECT ON AUGUST 21, 2018. TAX MAP R4 LOTS 4B, 4D, 4E, & 5. SEE NOTICE OF DECISION DATED AUGUST 22, 2018. PHASE 2 IS BEING SUBMITTED FOR APPROVAL.
2. MAINE DEP SITE LOCATION OF DEVELOPMENT PERMIT. MAINE DEP APPROVED PHASE 1 OF THE PROJECT ON SEPTEMBER 8, 2018. SEE DEP # L-27834-26-A-N & L-27834-TC-B-N. PHASE 2 WAS APPROVED ON OCTOBER 9, 2020. SEE DEP# L-27834-26-D-N & L-27834-TE-E-N.
3. MAINE DEP NRPA TIER 1 PERMIT. MAINE DEP APPROVED PHASE 1 OF THE PROJECT ON SEPTEMBER 8, 2018. SEE DEP # L-27834-26-A-N & L-27834-TC-B-N. A DEP TIER 2 PERMIT HAS BEEN SUBMITTED FOR REVIEW AND APPROVAL. A TIER 2 PERMIT WAS APPROVED ON OCTOBER 9, 2020. SEE DEP# L-27834-26-D-N & L-27834-TE-E-N.
4. MAINE DOT ENTRANCE PERMIT. SEE PERMIT NUMBER 25667 - ENTRANCE ID: 1 DATED MARCH 16, 2018.
5. U.S. ARMY CORPS OF ENGINEERS PERMIT. ACOE APPROVED PHASE 1 OF THE PROJECT ON AUGUST 14, 2018. SEE CORPS PERMIT # NAE-2018-00545. PHASE 2 HAS BEEN SUBMITTED FOR REVIEW AND APPROVAL.

DESIGN CONSULTANTS:

BELANGER ENGINEERING
63 SECOND AVENUE
AUGUSTA, ME 04330
(207) 622-0543

ANTHONY MANCINI, INC.
179 SHERIDAN STREET
PORTLAND, MAINE 04101
(207) 774-5829

LICHT ENVIRONMENTAL DESIGN
35 FRAN CIRCLE
GRAY, ME 04330
(207) 749-4924

GAWRON / TURGEON ARCHITECTS
29 BLACK PT. ROAD
SCARBOROUGH, MAINE 04074
207-883-6307

J. D. HAYNES
MAINE REGISTERED LANDSCAPE ARCHITECT
OCEAN VIEW RETIREMENT COMMUNITY
207-653-9427

TITCOMB ASSOCIATES
39 COURT STREET
BATH, ME 04530
(207) 443-9199

SHEET INDEX:

5.	12–18–2020	Re–submit to Town	CSB
4.	6–15–2020	Re–submit to Town and DEP	CSB
3.	2–24–2020	Re–submit to Town	CSB
2.	1–15–2019	Submit to Maine DEP	CSB
1.	12–18–2019	Submit to Town	CSB

Cover Page

Cumberland Crossing – Phase 2
Tuttle and Greely Roads, Cumberland, Maine

Seacoast Management Company
20 Blueberry Lane, Falmouth, ME

STATE OF MAINE
CHRISTOPHER S. BELANGER 9098
LICENSED PROFESSIONAL ENGINEER
12-18-2020

BELANGER ENGINEERING
CONSULTING ENGINEERS
63 Second Avenue , Augusta, Maine 04330
• COMMERCIAL PROJECTS
• RESIDENTIAL SUBDIVISIONS
• TOWN AND STATE APPROVALS
• SITE PLANNING & DESIGN
• STORMWATER MANAGEMENT
• ROAD AND UTILITY DESIGN
• EROSION CONTROL PLANS
Email: cbelanger@roadrunner.com
Ph 207-622-1462, Cell 207-242-5713

FIELD WK:	SCALE:	SHEET:
DRN BY:	JOB #:	C0
CH'D BY:	SS:	
DATE: 12-18-2020	FILE:	

State of Maine, Cumberland ss
Registry of Deeds

Received ____________ 20____

at ___h___m___M and recorded in

Plan Book ________ Page ____

Attest: ____________________
Register

CERTIFICATION

This is not a boundary survey. The boundary lines shown for this property rely solely upon the information depicted on plan reference 2, no representations are made or implied regarding the accuracy of the information provided.

Rex J. Croteau, P.L.S. #2273

Approved by the Town of Cumberland Planning Board dated: __________

SEE SHEET 3 FOR NOTES, CHARTS AND LEGEND

PLAN OF
Subdivision Plat Cumberland Crossing Phase II
228 Greely Road — Cumberland, Maine

MADE FOR
Ocean View at Cumberland, LLC
20 Blueberry Lane — Falmouth, Maine

JOB #89076.1	DATE: December 18, 2020	SCALE: 1" = 50'
BOOK #898,904		
89076_Subdivision Plat.dwg		
Sheet 1 of 4		

Titcomb Associates
133 Gray Road, Falmouth, Maine 04105
(207)797-9199 www.titcombsurvey.com

Rev. 1 8/18/20 Stormwater Buffer labels/metes & bounds RJC

State of Maine, Cumberland ss
Registry of Deeds

Received ____________ 20____

at___h___m___M and recorded in

Plan Book ________ Page ____

Attest: ____________________
Register

Approved by the Town of Cumberland Planning Board

STATE OF MAINE REX J. CROTEAU 2273 PROFESSIONAL LAND SURVEYOR

CERTIFICATION

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Rex J. Croteau, P.L.S. #2273

Rev. 1 8/18/20 Stormwater Buffer labels/metes & bounds RjC

SEE SHEET 3 FOR NOTES, CHARTS AND LEGEND

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Subdivision Plat Cumberland Crossing Phase II
228 Greely Road — Cumberland, Maine

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20 Blueberry Lane — Falmouth, Maine

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BOOK #898,904	Titcomb Associates 133 Gray Road, Falmouth, Maine 04105 (207)797-9199 www.titcombsurvey.com	
89076_Subdivision Plat.dwg		
Sheet 2 of 4		

ZONING

RR1 and Senior Housing Community Overlay District
Shoreland–Stream Protection Overlay

State of Maine, Cumberland ss
Registry of Deeds

Received _____________ 20____

at ___h___m___M and recorded in

Plan Book ________ Page ____

Attest: ____________________
Register

Approved by the Town of Cumberland Planning Board dated ________

LEGEND

- Monument – found
- Iron marker – found
- Property line (locus)
- Property line (abutter)
- Fence
- Edge of pavement
- Edge of gravel
- Curb
- Sign
- Utility pole
- Guy wire
- Water shutoff
- Fire hydrant
- Sewer manhole
- Catch basin (round)
- OH — Overhead utility line
- SS — Sewer line
- SD — Storm drain
- W — Underground water line
- G — Underground gas line
- E — Underground electrical line
- Contours (1ft Topographic)
- Contours (5ft Topographic)
- Contours (2ft LIDAR; see note 6))
- N/F — Now or formerly of
- 1234/567 — Deed reference (Book/Page)
- Tree line
- Wetlands
- Deciduous tree
- Coniferous tree
- Existing building

NOTES

1) Book and Page references are to the Cumberland County Registry of Deeds.

2) Bearings are referenced to grid north, Maine State Plane Coordinate System, NAD83, West Zone.

3) Elevations are based on the NAVD88 datum as derived by GPS observations.

4) Utility information on this plan is approximate, based on location of visible features. DigSafe and/or the appropriate utilities should be contacted prior to any construction.

5) Property lies within Zone C based on FIRM Community #230162 Panel #0015 B, dated May 19, 1981. A portion of the property lies within Zone A (approximate location shown).

6) Offsite abutter information obtained from a combination of field survey, aerial photography, and Maine GIS data.

7) Wetland delineation by Hampton Assoc. dated October, 2017 as mapped by GPS equipment.

8) Stream assessment in marsh west of the farm per DEP site-walk on December 11, 2018.

SITE DATA TABLE

ZONING	RR1 AND SENIOR HOUSING COMMUNITY (SHC) OVERLAY DISTRICT AND S.Z. STREAM PROTECTION DISTRICT	
STANDARD	REQUIRED SHC	PROVIDED
MIN. LOT AREA (AC)	5 AC	59.59 (1)
MIN. FRONTAGE (FT)	0	797.5
SETBACKS:		
A. EDGE PAVED ROAD	25	25+
B. BETWEEN STRUCTURES	20	20+
C. DEVELOPMENT PROPERTY LINE	30	50 MIN.(2)
MAXIMUM DENSITY (LAND AREA/UNIT)	10,000	49,893
MAX. ALLOWABLE UNITS	259	52
OPEN SPACE	20% (11.9 AC.)	68% (41 AC.)
MAX. STRUCTURE HEIGHT (FT.)	40	40 (3.)
PERIMETER BUFFER (FT.)	50	50 (2.)

NOTES:
1. TOWN/GOLF COURSE ACCESS/UTIL. EASEMENT = 0.72 ACRES.
TOTAL PHASE 2 AREA = 60.31 ACRES.
PHASE 1 (37.09 AC.) + PHASE 2 = 97.40 ACRES.
2. BUFFER < 50 FEET AT STREAM CROSSING AREA BELOW FARM PER SHC ORDINANCE WITH PLANNING BOARD APPROVAL.
3. TYPICAL COTTAGE HEIGHTS ARE 23 FEET+/-. NO BUILDING SHALL EXCEED 40 FT.

SUBDIVISION NOTES

1) This project is being proposed as Phase 2 of the 2018 approved Cumberland Crossing (f.k.a. Oceanview at Cumberland) Phase 1 Senior Housing Community permitted under the Town of Cumberland Land Uuse Ordinance Section 315–28.4.– Senior Housing Community (SHC) Overlay District. This Phase 2 project includes 52 cottage units, a community center at the former Godsoe Farmstead and associated infrastructure. This plan is being reviewed and approved as a separate subdivision from the Phase 1 development.

2) Project lies within the RR1 Zoning District, Senior Housing Community (SHC) Overlay District and Shoreland Zoning Stream Protection District.

3) Wetlands mapping by Hampton Associates, Spring, 2017 and located by GPS survey (Hampton Assoc. and Titcomb Assoc, surveyors.)

4) Site topography and existing conditions from a field survey by Titcomb Associates, surveyors with information supplemented from the State of Maine GIS digital ortho and lidar mapping as noted.

5) Project to be serviced by public water, private on–site low pressure sewer system discharging to the Portland Water District public sewerage system in Tuttle Road, natural gas and underground cable utilities.

6) All internal roadways shall remain private.

7) Cottage units and footprint styles and driveway locations are shown in the general locations intended to be constructed. However approval final locations and building types may vary slightly to fit field conditions.

8) There shall be no less than one parking space per unit per Ordinance Section 315–28.4.f.

9) Refer to site data table for setbacks and dimensional requirements.

10) This plat shall be recorded within 90 days of final subdivision approval and signing of the plat by the Town of Cumberland Planning Board, subject to the establishment of any performance guarantee.

11) Access & utility widths proposed over main roads:
a. little Acres Drive (LAD) Extension – 50 feet.
b. Cross Country Extension from LAD to Greely Road –50 feet.
c. Monarch Lane (Loop Road) – 50 feet
d. Leonard Lane (Culdesac) – 50 feet
e. Northwind Farm Road – 40 feet
f. On remaining five (5) side roads – 40 feet
Note PWD easements not required on the 5 additional side roads. All water services to be from the main road to individual units.

13) DEP Meadow and Forested Buffers as shown shall be monumented or marked in the field using iron rods and plastic "buffer caps"or similar markings. Locations of Forested Buffer monuments shall be field determined at reasonable locations due to the irregular and large size of these buffers. Meadow Buffer pins shal be set flush to prevent disturbance by farm equipment and marked with a wood stake.

13) 100–foot Maine Department of Inland Fisheries & Wildlife (MDIFW) Buffers are shown along stream associated wetlands excepting permitted areas of encroachment for roads and infrastructure as shown on this plan and the accompanying engineering plans. Some buffer areas are existing farmland and meadows and shall continue to be managed as meadows subject to any overlapping DEP Stormwater Meadow Easements as shown on the plans.

14) Street have been approved by the town assessor prior to final plan approval. Street signs to be provided by the developer in accordance with Town of Cumberland Street Standards for private streets.

15) Clearing limits shall be as shown on the plans as proposed treelines or as otherwise noted. All clearing limits shall be flagged in the field for review prior to cutting operations.

16) Project DEP SLODA/NRPA Tier 2Permit #l–27834–26–D–N/TE–E–N issued 10/09/2020.

17) Project U.S. Army Corps of Engineering authorization letter issued______.

PLAN REFERENCES

1) Property Plan made for Robert E. Brown by Howard F. Babbidge, RLS dated November 22, 1983.

2) Boundary Survey made for Legacy Properties by Owen Haskell, Inc. dated July 24, 2017.

3) Right–of–Way and Track Map, Maine Central R.R., Station 307+80 to Station 360+60, June 30, 1916. MCCR File Mo. V2/S1 and V2/S2.

4) Subdivision Plan Oceanview at Cumberland made for Ocean View at Cumberland LLC dated December 26, 2017 and revised through July 31, 2018 as recorded in Plan Book 218, Page 411.

STATE OF MAINE REX J. CROTEAU 2273 PROFESSIONAL LAND SURVEYOR

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Rex J. Croteau, P.L.S. #2273

Rev. 1 8/18/20 Stormwater Buffer labels/metes & bounds RjC

AREA

2,595,768 square feet / 59.59 acres

OWNERS OF RECORD

Ocean View at Cumberland, LLC
Book 35246, Page 97

SCALE IN FEET
50 0 50 100
1" = 50'

PLAN OF
Subdivision Plat Cumberland Crossing Phase II
228 Greely Road Cumberland, Maine

MADE FOR
Ocean View at Cumberland, LLC
20 Blueberry Lane Falmouth, Maine

JOB #89076.1	DATE: December 18, 2020	SCALE: 1" = 50'
BOOK #898,904	Titcomb Associates 133 Gray Road, Falmouth, Maine 04105 (207)797-9199 www.titcombsurvey.com	
89076_Subdivision Plat.dwg		
Sheet 3 of 4		

State of Maine, Cumberland ss
Registry of Deeds

Received ______________ 20____

at __h__m__M and recorded in

Plan Book ________ Page ____

Attest: ____________________
Register

PLAN OF

Subdivision Plat Cumberland Crossing Phase II

228 Greely Road — Cumberland, Maine

MADE FOR

Ocean View at Cumberland, LLC

20 Blueberry Lane — Falmouth, Maine

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89076_Subdivision Plat.dwg	133 Gray Road, Falmouth, Maine 04105	
Sheet 4 of 4	(207)797-9199 www.titcombsurvey.com	

Rev. 1 8/18/20 Stormwater Buffer labels/metes & bounds RJC

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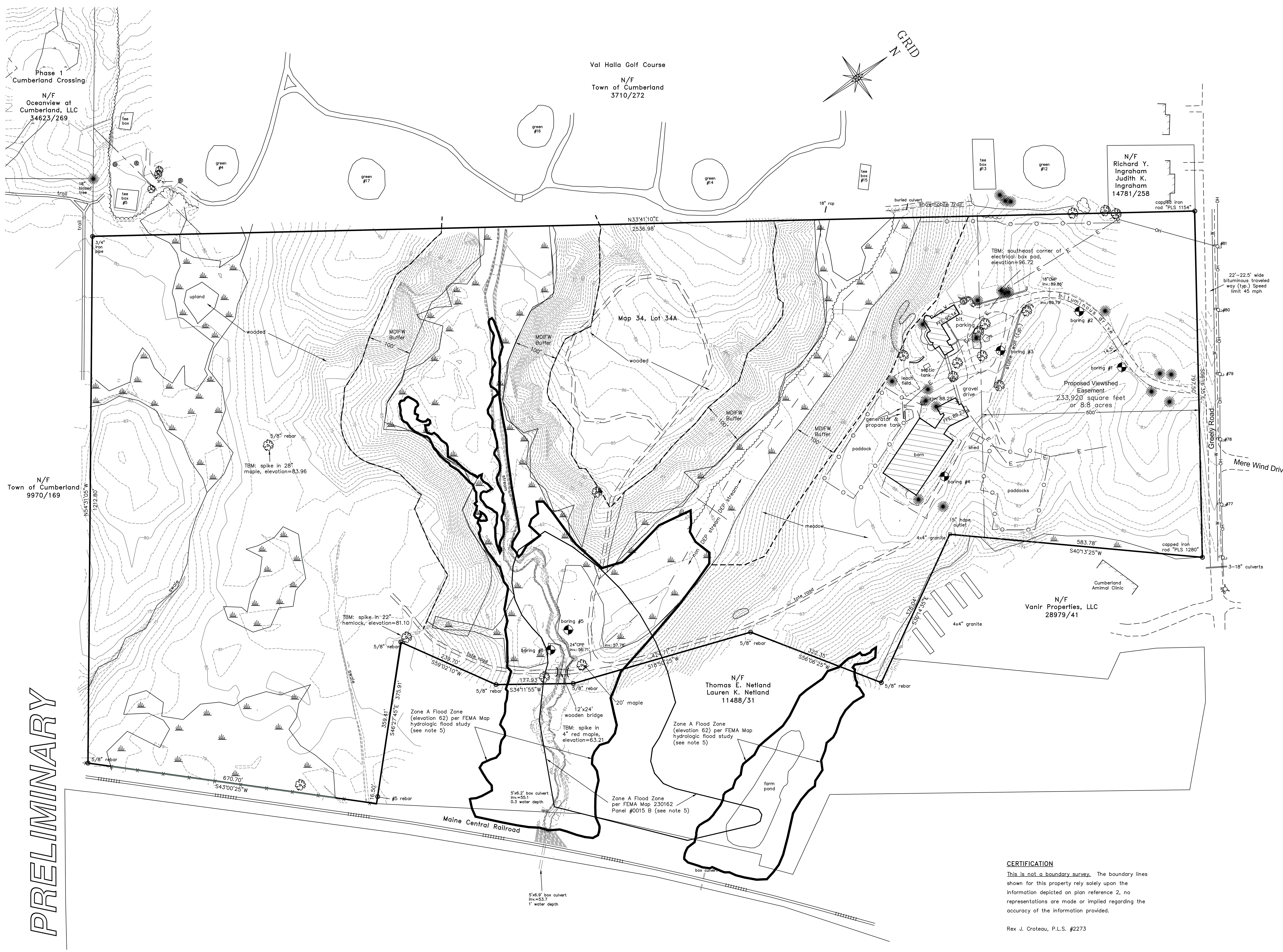

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- Iron marker – found
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- Property line (abutter)
- Fence
- Edge of pavement
- Edge of gravel
- Curb
- Sign
- Utility pole
- Guy wire
- Water shutoff
- Fire hydrant
- Sewer manhole
- Catch basin (round)
- Overhead utility line
- Sewer line
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- 1234/567 Deed reference (Book/Page)
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4) Utility information on this plan is approximate, based on location of visible features. DigSafe and/or the appropriate utilities should be contacted prior to any construction.

5) Property lies within Zone C based on FIRM Community #230162 Panel #0015 B, dated May 19, 1981. A portion of the property lies within Zone A (approximate location shown). The The Elevation 62.0 FEMA line is proposed from a hydrologic flood study of watershed by Belanger Engineering dated December, 2019, a LOMA will be pursued with FEMA to adjust Zone A line.

6) Offsite abutter information obtained from a combination of field survey, aerial photography, and Maine GIS data.

7) Wetland delineation by Hampton Assoc. dated October, 2017 as mapped by GPS equipment.

8) Stream assessment in marsh west of the farm per DEP site-walk on December 11, 2018.

9) Borings B-1 through B-6 performed by Summit Geoengineering Services, June 6, 2019.

ZONING

RR1 and Senior Housing Community Overlay District
Shoreland-Stream Protection Overlay

PLAN REFERENCES

1) Property Plan made for Robert E. Brown by Howard F. Babbidge, RLS dated November 22, 1983.

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AREA

2,595,768 square feet / 59.59 acres

OWNERS OF RECORD

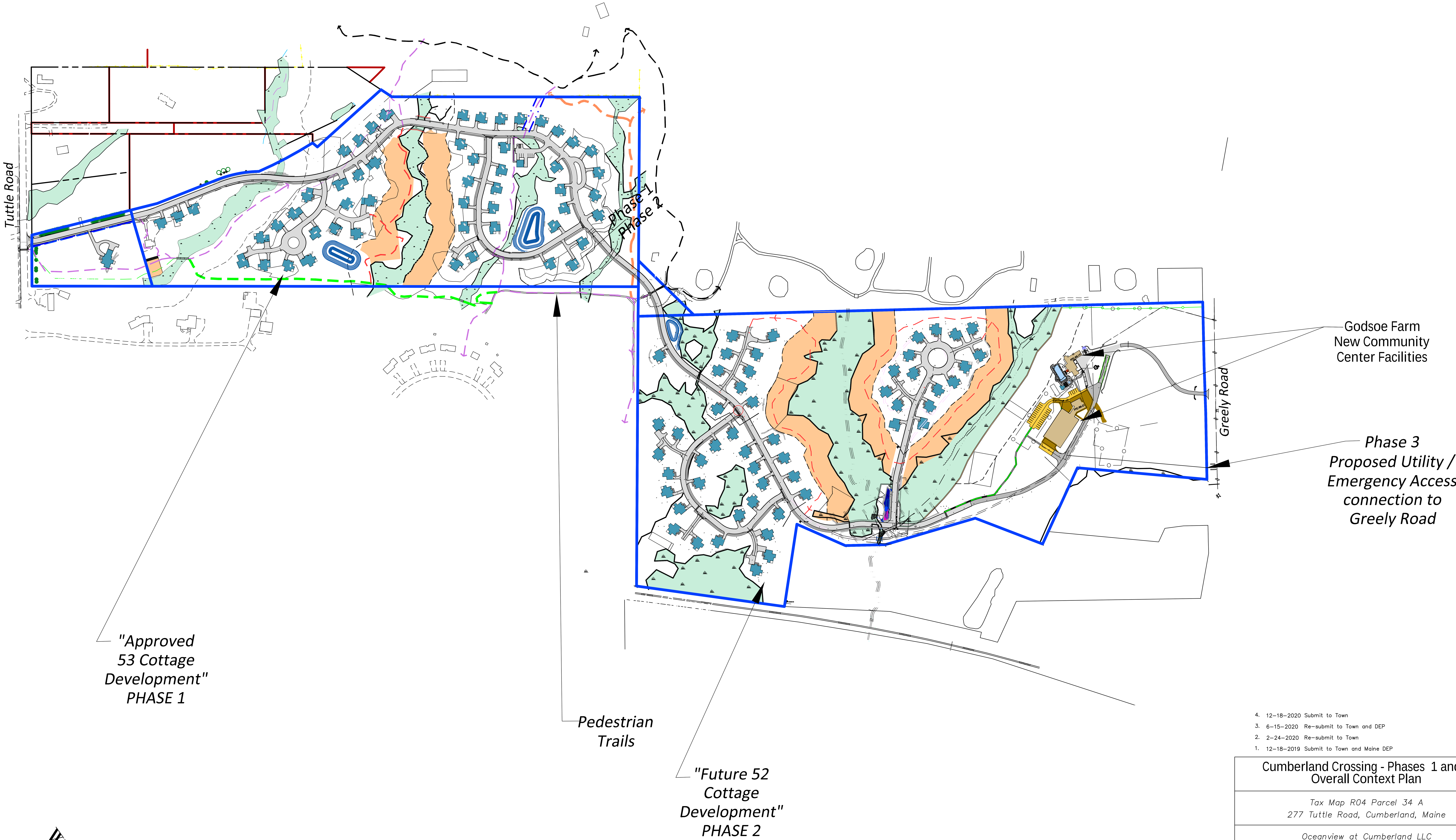
Ocean view at Cumberland, LLC
Book 35246, Page 97

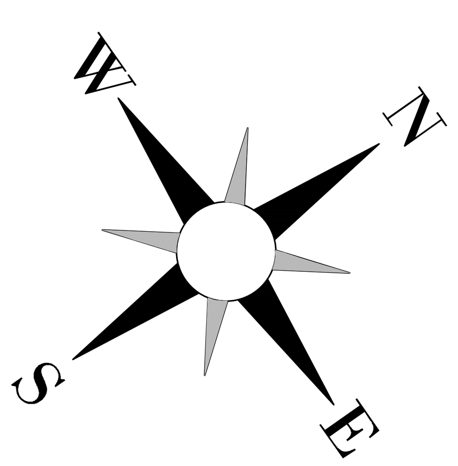
SCALE IN FEET
100 0 100 200
1" = 100'

PLAN OF
Existing Conditions and Removals
228 Greely Road — Cumberland, Maine

MADE FOR
Ocean View at Cumberland, LLC
20 Blueberry Lane — Falmouth, Maine

JOB #89076.1	DATE: December 13, 2019	SCALE: 1" = 100'
BOOK #898,904	Titcomb Associates 133 Gray Road, Falmouth, Maine 04105 (207)797-9199 www.titcombsurvey.com	
89076_2019.dwg		





PROGRESS PLAN
NOT FOR CONSTRUCTION

THIS DOCUMENT IS ISSUED FOR INFORMATIONAL PURPOSES ONLY. THE DATA SHOWN HEREON IS SUBJECT TO REVISION.

GRAPHIC SCALE
200 0 100 200 400 800
(IN FEET)
1 inch = 200 ft.

Prepared in association with:
LICHT ENVIRONMENTAL DESIGN, LLC

4.	12–18–2020	Submit to Town	CSB
3.	6–15–2020	Re–submit to Town and DEP	CSB
2.	2–24–2020	Re–submit to Town	CSB
1.	12–18–2019	Submit to Town and Maine DEP	CSB

Cumberland Crossing - Phases 1 and 2
Overall Context Plan

Tax Map R04 Parcel 34 A
277 Tuttle Road, Cumberland, Maine

Oceanview at Cumberland LLC
20 Blueberry Lane, Falmouth, Maine

STATE OF MAINE ★ CHRISTOPHER S. BELANGER 9098 ★ LICENSED PROFESSIONAL ENGINEER
12-18-2020

BELANGER ENGINEERING
CONSULTING ENGINEERS
63 Second Avenue , Augusta, Maine 04330
- COMMERCIAL PROJECTS
- RESIDENTIAL SUBDIVISIONS
- TOWN AND STATE APPROVALS
- SITE PLANNING & DESIGN
- STORMWATER MANAGEMENT
- ROAD AND UTILITY DESIGN
- EROSION CONTROL PLANS

Email: cbelanger@roadrunner.com
Ph 207-622-1462, Cell 207-242-5713

FIELD WK:	SCALE: 1"=200'	SHEET: C1
DRN BY:	JOB #:	
CH'D BY:	SS:	
DATE: 12-18-2020	FILE:	

Begin Phase 2 Extension Little Acres Drive
Existing Val Halla Easement to OV at Cumberland LLC
N/F Town of Cumberland Val Halla Golf Course
Tax Map R4 Lot 41
EXISTING HOUSE
ROAD A Skipper Way
ROAD D Northwind Farm Road
N/F Oceanview at Cumberland LLC
Tax Map R4 Lot 4E
36.34 Acres
Maine DEP Stream
Maine DEP Stream
50' Buffer
50' Buffer
Filter Pond
ROAD J Little Acres Drive
100' MDIFW Buffer from Wetland
ROAD B Cricket Lane
100' MDIFW Buffer from Wetland
EXISTING 14.5' DRIVEWAY TO REMAIN
ROAD E Monarch Drive
N/F Godsoe Trust
Tax Map R4 Lot 34A
59.53 Acres
100' MDIFW Buffer from Wetland
100' MDIFW Buffer from Wetland
Godsoe Farm
BARN
ROAD F Firefly Lane
PROPOSED UTILITY EXTENSIONS TO GREELY ROAD
Greely Road
End Maine DEP Stream
50' Buffer
ROAD C Leonard Lane
ROAD G Luna Lane
Short Stream Segment to existing 24" culvert
PROPERTY LINE
PROPERTY LINE
PROPERTY LINE
PROPERTY LINE
EXISTING POND
Focal Point Drainage System
Portion of Focal Point System and grading within 100' of stream (maintain 25' no cut buffer)
ROAD H Grasshopper Lane
50' Buffer
50' Buffer
Stone Berm Level Spreader and grading within 100' stream buffer
EXISTING 5'x6' BOX CULVERT UNDER RAILROAD
ROAD I Little Acres Drive
GRAPHIC SCALE
(IN FEET)
1 inch = 100 ft.
Prepared in association with:
LICHT ENVIRONMENTAL DESIGN, LLC
PROGRESS PLAN
NOT FOR CONSTRUCTION
THIS DOCUMENT IS ISSUED FOR INFORMATIONAL PURPOSES ONLY. THE DATA SHOWN HEREON IS SUBJECT TO REVISION.
STATE OF MAINE
CHRISTOPHER S. BELANGER 9098
LICENSED PROFESSIONAL ENGINEER
12-18-2020
3. 12-18-2020 Re-submit to Town CSB
2. 6-15-2020 Re-submit to Town and DEP CSB
1. 12-18-2019 Submit to Town and DEP CSB
Cumberland Crossing - Phase 2
Overall Plan
Oceanview at Cumberland LLC
277 Tuttle Road, Cumberland, Maine
Oceanview at Cumberland LLC
20 Blueberry Lane, Falmouth, Maine 04105
BELANGER ENGINEERING
CONSULTING ENGINEERS
63 Second Avenue , Augusta, Maine 04330
• COMMERCIAL PROJECTS
• RESIDENTIAL SUBDIVISIONS
• TOWN AND STATE APPROVALS
• SITE PLANNING & DESIGN
• STORMWATER MANAGEMENT
• ROAD AND UTILITY DESIGN
• EROSION CONTROL PLANS
Email: cbelanger@roadrunner.com
Ph 207-622-1462, Cell 207-242-5713
FIELD WK:
SCALE: 1"=100'
SHEET:
C2
DRN BY:
JOB #: 109
CH'D BY:
SS:
DATE: 12-18-2020
FILE:


N/F
Town of
Cumberland
Val Halla Golf Course
Tax Map R4 Lot 41
Existing Power Pole
Existing Fence
50' Buffer
Existing Fence
50' Buffer
Install Crossing to connect
the Town Trail at back of
Smalls Brook Crossing to
the Golf Course
W
N
S
E
Private
Internal
Trails
Godsoe Farm
N/F
Godsoe Trust
Tax Map R4 Lot 34A
59.53 Acres
50' Buffer
50' Buffer
Trail & Pedestrian Ways Key
Existing Snowmobile and Pedestrian Trails
Proposed Sidewalk and Pedestrian Access
6-8' Wide Grass/Gravel Trail (Not in Contract)
Golf Cart Path
3' Hand Cut/Mulch Nature Trail
4' Stonedust Path
GRAPHIC SCALE
(IN FEET)
1 inch = 100 ft.
Prepared in association with:
LICHT
ENVIRONMENTAL DESIGN, LLC
2. 2-4-2021 Remove Boundary Trail
1. 1-7-2021 Show existing fence by Abutter and Greely Road
Revise trial
Aerial Overlay
and Trails Plan
Cumberland Crossing – Phase 2
Greely Road, Cumberland, Maine
BELANGER
ENGINEERING
CONSULTING ENGINEERS
Email: cbelanger@roadrunner.com
Ph 207-622-1462, Cell 207-242-5713
63 Second Avenue
Augusta, Maine 04330
SCALE: 1"=100'
JOB #:
DATE: 2-4-2021
SHEET:
C2A


W
N
S
E
GRAPHIC SCALE
100 0 50 100 200 400
(IN FEET)
1 inch = 100 ft.
AERIAL OVERLAY
BELANGER
ENGINEERING
CONSULTING ENGINEERS
Email: cbelanger@roadrunner.com
Ph 207-622-1462, Cell 207-242-5713
63 Second Avenue
Augusta, Maine 04330
SCALE: 1"=100'
JOB #: 134
DATE: 12-18-2020
SHEET:
C2B


EXTEND NEW 12" D.I. WATER LINE
4" SEWER FORCE MAIN, GAS MAIN,
UTILITY CONDUITS, TO SERVE RESIDENTIAL
COTTAGES. COORDINATE WITH UTILITY
50' Buffer
CULV5 (36" N-12 ADS)
EMBED 1' BELOW WETLAND GRADE
INV=87.0
OUT=86.0
Tee Box
Easement Line
Re-locate CB to drain Area
Tee Box To be re-located
4th Green
17th Green
Wetland Impact Area #1 = 2006 s.f. (1801 s.f. new)
50' Buffer
Install crosswalk, walkway tipdowns, signage, and 5' paved pads on each side of the cart path and pedestrian trail crossing
Connect 6' wide path to ex trail
Existing Town of Cumberland Pedestrian and Snowmobile Trails
Wetland Impact Area #2 = 324 s.f.
2:1 Slope
Install Erosion Control Blankett
Slope shall revert back to buffer (do not mow)
Install Silt Fence at Toe of fill slopes (typ)
PROPOSED TREE LINE AND CLEARING LIMIT (TYP)
Footing Drain (FD) (typ.)
Outlet to a stable slope or tie into catch basin, storm drain, or road underdrain as available
18' WIDE
PROPERTY LINE
50' Buffer
PROPOSED FILTER POND (SEE DETAILS)
EDGE OF WETLAND
PROPOSED TREE LINE AND CLEARING LIMIT (TYP)
3:1 Slope
Install Erosion Control Blankett on all slopes 3:1 or steeper
Install Silt Sack or Sediment Filter in all catch basins during construction (typ)
RIPRAP CULVERT INLET AND OUTLET D50=6"
Install Boulder Wall
Top=84
Bot=77 (2' embed)
PROPERTY LINE
22' WIDE ROAD, CURB, AND SIDEWALK
2:1 Slope
Install Erosion Control Blankett
Slope shall revert back to buffer (do not mow)
Wetland Impact Area #3 = 1142 s.f.
EDGE OF WETLAND
Little Acres Drive
Northwind Farm Road
100' BUFFER ADJACENT TO WETLAND AND STREAM (BOTH SIDES)
DEP Jurisdictional Stream
GA=92.5 FF=93.1 crawl
GA=94.1 FF=94.7 crawl
GA=90.5 FF=91.1 crawl
GA=91.4 FF=92.0 crawl
GA=85.1 FF=85.7 crawl
GA=89.1 FF=89.7 crawl
GA=90.1 FF=90.7 crawl
GA=89.1 FF=89.7 crawl
GA=87.1 FF=87.7 BA=78.7
GA=88.10 FF=88.70 crawl
S35 33' 56"E 12.53'
99.93' S55 04' 02"W
S25 26' 58"E 75.61'
S46 48' 20"E 58.71'
N26 28' 16"W 81.50'
S47 24' 21"E 61.10'
STORMWATER FORESTED BUFFER #1 AND STONE BERMED LEVEL SPREADER TO PROVIDE STORMWATER TREATMENT
CULV1 (36" N-12 ADS)
EMBED 1' BELOW WETLAND GRADE
INV=78.5
OUT=78.0
PROPOSED LIGHT
INSTALL STREET AND STOP SIGN
INSTALL STOP BAR AND CROSSWALK
W N S E
PROGRESS PLAN
NOT FOR CONSTRUCTION
THIS DOCUMENT IS ISSUED FOR INFORMATIONAL PURPOSES ONLY. THE DATA SHOWN HEREON IS SUBJECT TO REVISION.
GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.
Prepared in association with:
LICHT ENVIRONMENTAL DESIGN, LLC
2. 12-18-2020 Re-submit to Town CSB
1. 6-15-2020 Respond to SME memo dated 3-4-2020 Re-submit to Town and DEP CSB
Cumberland Crossing - Phase 2
Grading and Drainage Plan
Oceanview at Cumberland LLC
277 Tuttle Road, Cumberland, Maine
Oceanview at Cumberland LLC
20 Blueberry Lane, Falmouth, Maine 04105
STATE OF MAINE
CHRISTOPHER S. BELANGER 9098
PROFESSIONAL ENGINEER LICENSED
12-18-2020
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• COMMERCIAL PROJECTS
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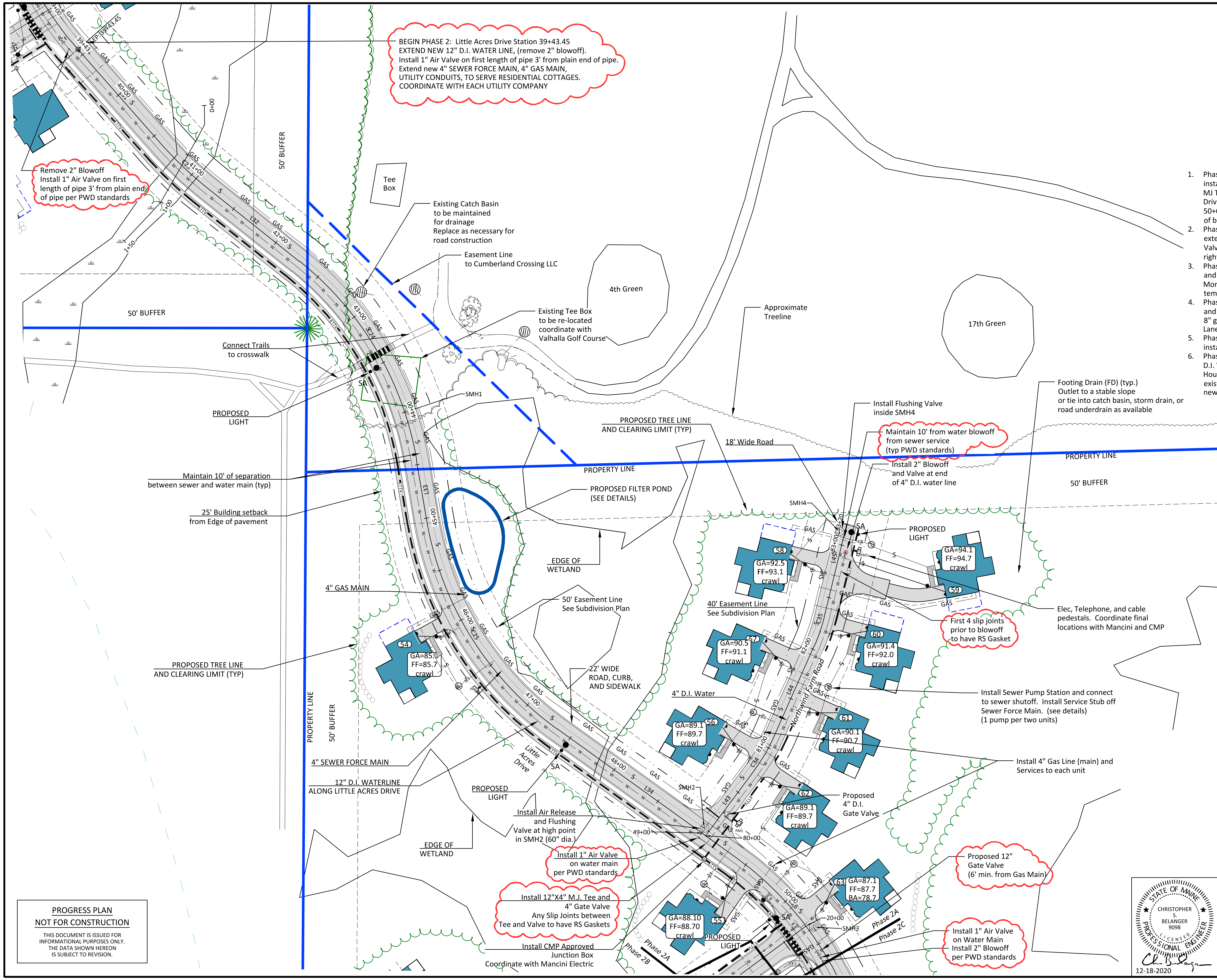
• TOWN AND STATE APPROVALS
• SITE PLANNING & DESIGN
• STORMWATER MANAGEMENT
• ROAD AND UTILITY DESIGN
• EROSION CONTROL PLANS
FIELD WK:
SCALE: 1"=40'
SHEET:
DRN BY:
JOB #: 109
C3A
CH'D BY:
SS:
DATE: 12-18-2020
FILE:



PWD Phasing Notes
Water Main Installation

1. Phase 2A. Little Acres Drive Sta 39+43+/- to Sta 50+60. Phase 2A includes installation of 12" D.I. Main. 12"X4" MJ Tee (Northwind Farm Road), 12"X8" MJ Tee (Monarch), 6" Gate Valve and hydrant, 12" Gate Valve (Little Acres Drive), 8" Gate Valve (Monarch) and 2" Blowoff Assembly at end of phase sta 50+60 (phase 2B) and at Monarch Intersection. Phase 2B shall include removal of blowoff (b.o.) and 12" main extension along Little Acres Drive.
2. Phase 2B. Phase 2B shall include removal of blowoff (b.o.) and 8" main extension along Monarch Drive. Phase 2B shall include 8" main, 8" Gate Valve, (at other end sta 30+25+/-), and Fire Hydrant Assembly (sta 26+75 right),. Phase 2B re-connection to Little Acres 12" Main.
3. Phase 2B. Remove temporary 2" blowoff and extend 12" main to sta 55+25+/- and install 12" gate valve and temporary 2" blowoff at end of phase. At Monarch Drive intersection install 8"X12" Tee, 8" Gate Valve, and remove temporary 2" blowoff and connect Monarch Drive 8" main.
4. Phase 2C. Remove Temporary Blowoff and extend 12" D.I. Main to sta 60+50 and install 12" gate valve and temporary 2" blowoff. Install 8"X12" Swivel Tee, 8" gate valve at Leonard Lane Intersection. Extend 8" main along Leonard Lane.
5. Phase 2D. Remove Temporary Blowoff and extend 12" D.I. Main to Sta 68+00, install 12" gate valve and temporary 2" blowoff at end of phase.
6. Phase CC. Community Center and Farm House service connection. Extend 12" D.I. Water Main to Greely Road (cross country). Install 12"X6" Tee (Farm House and barn service). Install Fire Hydrant and 6"X12" Tee. Connect to existing 12" main in Greely Road. Install 12"X12" tee and 12" gate valve on new main.

Note:
Phase 6 May be constructed independent of phases 1-5 and may be constructed early in the project to support repurposing the existing farm house into the project community center.

Notes:
1. Refer to Sheet C0 for additional utility notes and Subdivision plats S1-S4 for easement information.
2. Refer to Electric Plans SE1, SE2, and CMP 905 plans for ETTV layout and details.

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

Prepared in association with:
LICHT ENVIRONMENTAL DESIGN, LLC

2.	12-18-2020	Resubmit to Town	CSB
1.	6-15-2020	SME response to comments dated 3-4-2020	CSB

PROGRESS PLAN
NOT FOR CONSTRUCTION
THIS DOCUMENT IS ISSUED FOR INFORMATIONAL PURPOSES ONLY. THE DATA SHOWN HEREON IS SUBJECT TO REVISION.

Cumberland Crossing - Phase 2 Utilities Plan

Oceanview at Cumberland LLC
277 Tuttle Road, Cumberland, Maine

Oceanview at Cumberland LLC
20 Blueberry Lane, Falmouth, Maine 04105

STATE OF MAINE
CHRISTOPHER S. BELANGER 9098
LICENSED PROFESSIONAL ENGINEER
12-18-2020

BELANGER ENGINEERING
CONSULTING ENGINEERS
• COMMERCIAL PROJECTS
• RESIDENTIAL SUBDIVISIONS
• TOWN AND STATE APPROVALS
• SITE PLANNING & DESIGN
• STORMWATER MANAGEMENT
• ROAD AND UTILITY DESIGN
• EROSION CONTROL PLANS
Email: cbelanger@roadrunner.com
63 Second Avenue , Augusta, Maine 04330 Ph 207-622-1462, Cell 207-242-5713

FIELD WK:	SCALE: 1"=40'	SHEET: C3B
DRN BY:	JOB #: 109	
CH'D BY:	SS:	
DATE: 12-18-2020	FILE:	

Install Boulder Wall to avoid wet impacts Top=87.5 Bot=77.0
2:1 Slope Install Erosion Control Blankett Slope shall revert back to buffer (do not mow)
3:1 Slope Install Erosion Control Blankett on all slopes 3:1 or steeper
2:1 Slope at Wetland Proposed Impact #4 2705 s.f.
EDGE OF WETLAND
Footing Drain (FD) (typ.) Outlet to a stable slope or tie into catch basin, storm drain, or road underdrain as available
Install Silt Fence at Toe of fill slopes (typ)
PROPERTY LINE
BUFFER
Install Silt Sack or Sediment Filter in all catch basins during construction (typ)
Proposed Wetland Impact #5 = 380 s.f.
3:1 Slope Install Erosion Control Blankett on all slopes 3:1 or steeper
BUFFER #3 WITH STONE BERMED LEVEL LIP SPREADER BMP 5.2 L=34', S=0-8%, HSG C FORESTED BUFFER sd20 outlet=78.0 3' trench=77.5 top of stone=79.0
STORMWATER FORESTED BUFFER #4 AND STONE BERMED LEVEL SPREADER TO PROVIDE STORMWATER TREATMENT
18' WIDE
22' WIDE ROAD, CURB, AND SIDEWALK
Install Boulder Wall to avoid wet impacts Top=84.0 Bot=78.0 (embed 2')
Install Silt Fence at Toe of fill slopes (typ)
STORMWATER FORESTED BUFFER #2 AND STONE BERMED LEVEL SPREADER TO PROVIDE STORMWATER TREATMENT
3:1 Slope Install Erosion Control Blankett on all slopes 3:1 or steeper
BUFFER #1 AND STONE BERMED LEVEL LIP SPREADER BMP 5.2 L=278', S=9-15%, HSG C FORESTED BUFFER SD10 outlet elev=73.0 3' trench elev = 72.5 Top of Stone=74.0±
STORMWATER FORESTED BUFFER #1 AND STONE BERMED LEVEL SPREADER TO PROVIDE STORMWATER TREATMENT
MAINE DEP JURISDICTIONAL STREAM
100' BUFFER ADJACENT TO WETLAND AND STREAM (BOTH SIDES)
BUFFER #2 AND STONE BERMED LEVEL LIP SPREADER BMP 5.2 L=118', S=9-15%, HSG C FORESTED BUFFER SD33 outlet=73.0 3' trench=72.5 Top of stone=74.0
Focal Point Drainage System (See details)
Monarch Drive
Firefly Lane
Little Acres Drive
Luna Lane
Grasshopper Lane
Leonard Lane
GRAPHIC SCALE
(IN FEET)
1 inch = 40 ft.
Prepared in association with:
LICHT ENVIRONMENTAL DESIGN, LLC
PROGRESS PLAN
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STATE OF MAINE CHRISTOPHER S. BELANGER 9098 LICENSED PROFESSIONAL ENGINEER
12-18-2020
4. 12-18-2020 Re-submit to Town CSB
3. 6-15-2020 Respond to SME memo dated 3-4-2020 Re-submit to Town and DEP CSB
2. 2-24-2020 Re-submit to Town CSB
1. 12-18-2019 Submit to Town and DEP CSB
Cumberland Crossing - Phase 2 Grading and Drainage Plan
Oceanview at Cumberland LLC 277 Tuttle Road, Cumberland, Maine
Oceanview at Cumberland LLC 20 Blueberry Lane, Falmouth, Maine 04105
BELANGER ENGINEERING CONSULTING ENGINEERS
• COMMERCIAL PROJECTS • RESIDENTIAL SUBDIVISIONS • TOWN AND STATE APPROVALS • SITE PLANNING & DESIGN • STORMWATER MANAGEMENT • ROAD AND UTILITY DESIGN • EROSION CONTROL PLANS
Email: cbelanger@roadrunner.com
63 Second Avenue , Augusta, Maine 04330 Ph 207-622-1462, Cell 207-242-5713
FIELD WK: SCALE: 1"=40'
DRN BY: JOB #: 109
CH'D BY: SS:
DATE: 12-18-2020 FILE:
SHEET: C4A

GRAPHIC SCALE
(IN FEET)
1 inch = 40 ft.
First three (3) pipe slip joints before tee shall be restrained
Proposed Fire Hydrant install 12"X6" Swivel Tee and 6" G.V. 3' off face of curb (typ)
Install 12"X8" Swivel Tee and 8" Gate Valve
Install 12" G.V. 1-2 pipe lengths from tee
First three (3) pipe slip loints before tee @ L.A.D. shall be restrained
install 2" blowoff (temporary) set @ 5' from end pavement (Ph 2B) @Monarch and Little Acres Drive
SMH 3
4" force main Little Acres Drive (LAD) and 2" FM on Monarch
Install isolation valve and Flushing valve
MAINE DEP JURISDICTIONAL STREAM
Install 12" D.I. Gate Valve min. 6' from Gas Main Crossing
Install 1" Air Valve 3' from gate valve
Phase 2B Remove Blowoff
Extend 12" D.I. Water Main
Maintain 10' of separation between water and sewer (typ)
4" SEWER FORCE MAIN
4" GAS MAIN
12" D.I. WATERLINE ALONG LITTLE ACRES DRIVE (LAD)
Install Restrained Joint Gaskets on 12" D.I. water main from Sta 54+00 to Sta 55+10.
SMH 10
4" force main Little Acres Drive (LAD) and 2" FM on Monarch
Install isolation valve and Flushing valve
Install 12"X8" SWIVEL TEE
12" G.V. 2 pipe lengths from tee
Install 2" temporary blowoff Phase 2B/2C min. 5' to edge of pavement phase 2B.
PROPOSED FIRE HYDRANT
Install 12"X6" Swivel Tee and 6" G.V. 3' off face curb.
Install 12" G.V., 1" air release valve 3' from valve, 2" blowoff at end of phase 2B
Install valve 1 pipe lenth from tee
Install blowoff 2 pipe lengths from tee
Start of Phase 2C
Remove Blowoff and extend 12" main
EDGE OF WETLAND
Elec, Telephone, and cable pedestals. Coordinate final locations with Mancini and CMP
12" X 8" Swivel Tee and 8" Gate Valve
Install 1" Air Valve 3' from valve
Phase 2B Remove Blowoff
Extend 8" D.I. Water Main
8" D.I. Water Line
Water Line shall maintain 5' from storm drain
Install Sewer Pump Station and connect to sewer shutoff. Install Service Stub off Sewer Force Main. (see details) (1 pump per two units)
SMH 6
2" FM on Firefly Lane
Install Flushing valve
SMH6
Install 4" Gas Line (main) and Services to each unit
SMH 5
2" force main Monarch
Install isolation valve and Flushing valve
PROPERTY LINE
50' Buffer
BUFFER
EDGE OF WETLAND
Proposed Fire Hydrant install 8"X6" Swivel Tee and 6" G.V. 3' off face of curb (typ)
SMH 7
2" force main Monarch
Install isolation valve and Flushing valve
Air Release Valve
EXTEND NEW 8" D.I. WATER LINE 2" SEWER FORCE MAIN, GAS MAIN, UTILITY CONDUITS, TO SERVE RESIDENTIAL COTTAGES. COORDINATE WITH UTILITY
Footing Drain (FD) (typ.)
Outlet to a stable slope or tie into catch basin, storm drain, or road underdrain as available
PROPOSED LIGHT
SMH 8
2" force main Monarch
2" FM on Grasshopper Lane
Install isolation valve and Flushing valve
CMP Approved Junction Box (Coordinate with Mancini)
PWD easement does not need to include Grasshopper lane. Service shutoffs are located in the Monarch drive easement
Water Shutoffs in pavement shall have valve boxes (typ)
18' WIDE
22' WIDE ROAD, CURB, AND SIDEWALK
EDGE OF WETLAND
EXTEND NEW 8" D.I. WATER LINE 2" SEWER FORCE MAIN, GAS MAIN, UTILITY CONDUITS, TO SERVE RESIDENTIAL COTTAGES. COORDINATE WITH UTILITY
18' WIDE
SMH 9
2" FM on Grasshopper Lane
Install Flushing valve
40' Easement
BUFFER
50' Buffer
Monarch Drive
Little Acres Drive
Firefly Lane
Luna Lane
Grasshopper Lane
Leonard Lane
Phase 2A
Phase 2B
Phase 2C
SMH11
Prepared in association with:
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PROGRESS PLAN
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STATE OF MAINE
CHRISTOPHER S. BELANGER 9098
LICENSED PROFESSIONAL ENGINEER
12-18-2020
4. 12-18-2020 Re-submit to Town, PWD revisions CSB
3. 6-15-2020 Response to SME letter dated 3-4-2020 Re-submit to Town and DEP CSB
2. 2.-24-2020 Re-submit to Town CSB
1. 12-18-2019 Submit to Town and DEP CSB
Cumberland Crossing - Phase 2
Utilities Plan
Oceanview at Cumberland LLC
277 Tuttle Road, Cumberland, Maine
Oceanview at Cumberland LLC
20 Blueberry Lane, Falmouth, Maine 04105
BELANGER ENGINEERING
CONSULTING ENGINEERS
63 Second Avenue , Augusta, Maine 04330
Email: cbelanger@roadrunner.com
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• TOWN AND STATE APPROVALS
• SITE PLANNING & DESIGN
• STORMWATER MANAGEMENT
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• EROSION CONTROL PLANS
FIELD WK:
SCALE: 1"=40'
DRN BY:
JOB #: 109
CH'D BY:
SS:
DATE: 12-18-2020
FILE:
SHEET:
C4B

2.	12-18-2020	Re-submit to Town	CSB
1	6-15-2020	Response to SME letter dated 3-4-2020 Re-submit to Town and DEP	CSB

Cumberland Crossing - Phase 2
Grading and Drainage Plan

Oceanview at Cumberland LLC
277 Tuttle Road, Cumberland, Maine

Oceanview at Cumberland LLC
20 Blueberry Lane, Falmouth, Maine 04105

Prepared in association with:
LICHT ENVIRONMENTAL DESIGN, LLC

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STATE OF MAINE
CHRISTOPHER S. BELANGER
9098
LICENSED
PROFESSIONAL ENGINEER
12-18-2020

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FIELD WK:	SCALE: 1"=40'	SHEET:
DRN BY:	JOB #: 109	C5A
CH'D BY:	SS:	
DATE: 12-18-2020	FILE:	


PROGRESS PLAN
NOT FOR CONSTRUCTION
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50' Utility / PWD Easement (typ)
Elec, Telephone, and cable pedestals. Coordinate final locations with Mancini and CMP
4" SEWER FORCE MAIN
4" GAS MAIN
12" D.I. WATERLINE ALONG LITTLE ACRES DRIVE (LAD)
Install 4" Gas Line (main) and Services to each unit
See sheet 4B for Monarch Drive Notes and information
Install Sewer Pump Station and connect to sewer shutoff. Install Service Stub off Sewer Force Main. (see details) (1 pump per two units)
See Sheets C3B and C4B for Phase 2A, 2B, 2C water phasing details
Maine DEP Jurisdictional Stream
SMH's 11 and 12
4" force main Little Acres Drive (LAD) and 2" FM on Leonard Lane
Install isolation valve and Flushing valve
Footing Drain (FD) (typ.) Outlet to a stable slope or tie into catch basin, storm drain, or road underdrain as available
CMP Approved Junction Box
INSTALL STONE STRONG RETAINING WALLS COORDINATE FINAL DESIGN WITH SUMMIT GEOENGINEERING (SEE DETAILS)
Existing pedestrian bridge to remain
Install 12"X8" SWIVEL TEE and 8" G.V.
Proposed light
Install walkway tipdown 5'X5' landing and crosswalk (both ends of crosswalk)
CMP Approved Junction Box coordinate with Mancini Electrict
PWD Phase 2C
2" SEWER FORCE MAIN
2" GAS MAIN (verify size)
8" D.I. WATERLINE
50' Utility / PWD Easement (typ)
End Maine DEP Jurisdictional Stream
CMP Approved Junction Box
EXTEND NEW 8" D.I. WATER LINE 2" SEWER FORCE MAIN, GAS MAIN, UTILITY CONDUITS, TO SERVE RESIDENTIAL COTTAGES. COORDINATE WITH UTILITY
Lighting Junction or Pull Box Coordinate with Mancini Electric
FOCAL POINT DRAINAGE SYSTEM (SEE DETAILS)
STONE STRONG RETAINING WALL (SEE DETAILS)
Start of Small Stream Segment at Existing Culvert inlet
Existing Vinyl Fencing
Field
4' Stone Dust Pedestrian Path
Maintain 10' of separation between water and sewer mains (typ.)
Gravel Pedestrian path to Farm House Beginning at crosswalk at sta 62+50
CMP Approved Junction Box
Taper Road from 22' wide to 20' from Sta 63+00 to Sta 63+75 (Both Sides)
Install walkway tipdown 5'X5' landing and crosswalk (both ends of crosswalk)
Install 2" blowoff and 12" G.V. at end of phase 2C Install valve 1 pipe lenth from tee Install blowoff 2 pipe lengths from tee Start of Phase 2D Remove Blowoff and extend 12" main
Proposed Fire Hydrant install 12"X6" Swivel Tee and 6" G.V. 3' off sidewalk (typ)
Monarch Drive
Little Acres Drive
Leonard Lane
Grasshopper Lane
Phase 2A
Phase 2B
Phase 2C
Phase 2D
PROPERTY LINE
50' Buffer
SMH3
SMH8
SMH9
SMH10
SMH11
SMH12
SMH19
Prepared in association with:
LICHT ENVIRONMENTAL DESIGN, LLC
GRAPHIC SCALE
(IN FEET)
1 inch = 40 ft.
2. 12-18-2020 Re-submit to Town C5B
1. 6-15-2020 Response to SME letter dated 3-4-2020 Re-submit to Town and DEP C5B
Cumberland Crossing - Phase 2
Utility Plan
Oceanview at Cumberland LLC
277 Tuttle Road, Cumberland, Maine
Oceanview at Cumberland LLC
20 Blueberry Lane, Falmouth, Maine 04105
STATE OF MAINE
CHRISTOPHER S. BELANGER 9098
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12-18-2020
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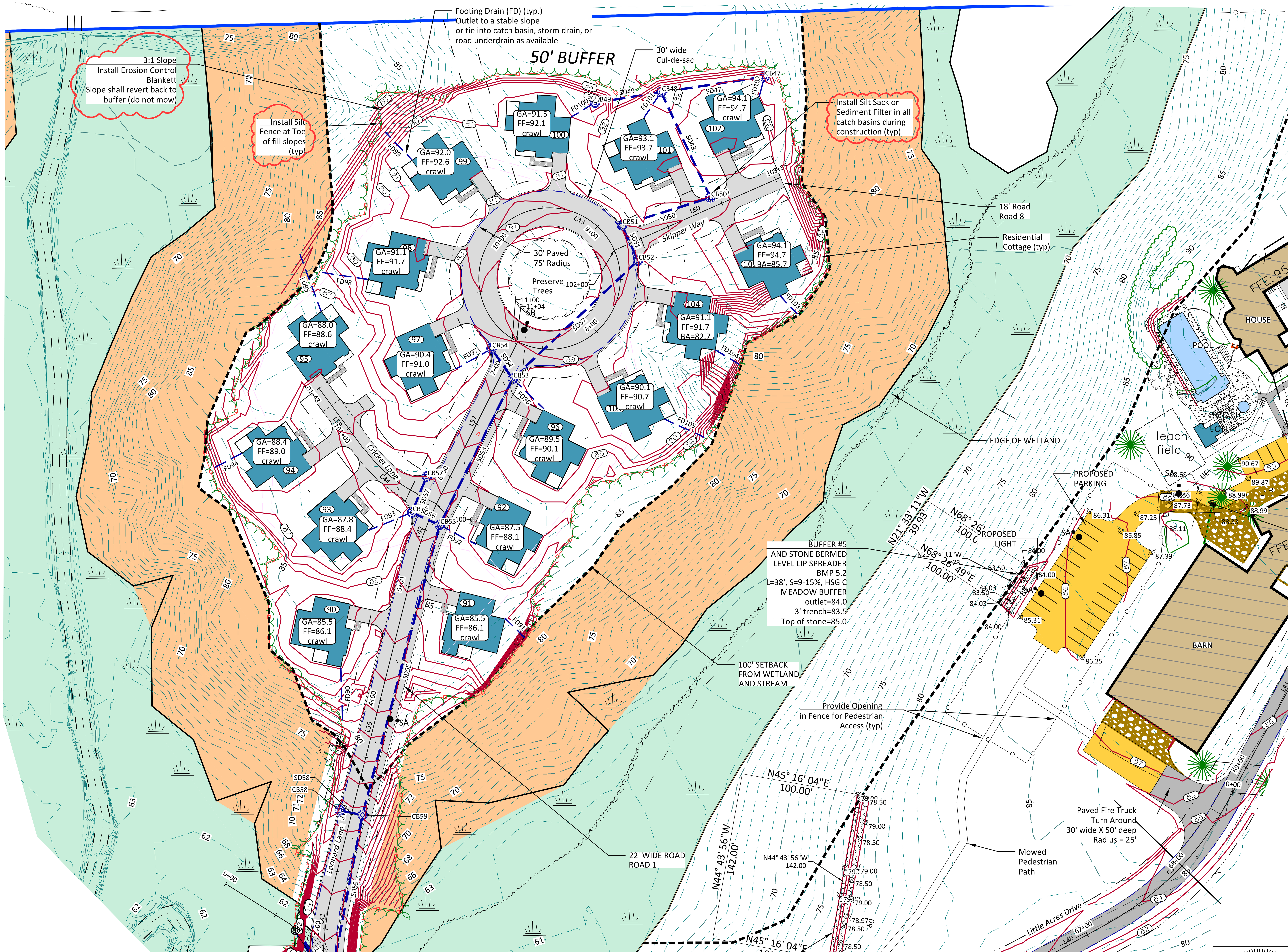
• EROSION CONTROL PLANS
FIELD WK:
SCALE: 1"=40'
DRN BY:
JOB #: 109
CH'D BY:
SS:
DATE: 12-18-2020
FILE:
SHEET:
C5B



BUFFER #4
AND STONE BERMED
LEVEL LIP SPREADER
BMP 5.2
L=142', S=9-15%, HSG C
MEADOW BUFFER
culv7 outlet=79.0
3' trench=78.5
Top of stone=80.0

GRAPHIC SCALE

(IN FEET)
1 inch = 40 ft.

Note: Refer to trail and walkway master plan Sheet C12 for trail locations

2.	12-18-2020	Re-submit to Town	CSB
1.	6-15-2020	Respond to SME memo dated 3-4-2020 Re-submit to Town and DEP	CSB

Cumberland Crossing - Phase 2
Grading and Drainage

Oceanview at Cumberland LLC
277 Tuttle Road, Cumberland, Maine

Oceanview at Cumberland LLC
20 Blueberry Lane, Falmouth, Maine 04105

Prepared in association with:

LICHT ENVIRONMENTAL DESIGN, LLC

STATE OF MAINE
CHRISTOPHER S. BELANGER 9098
LICENSED PROFESSIONAL ENGINEER
12-18-2020

BELANGER ENGINEERING
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63 Second Avenue, Augusta, Maine 04330 Email: cbelanger@roadrunner.com Ph 207-622-1462, Cell 207-242-5713

- COMMERCIAL PROJECTS
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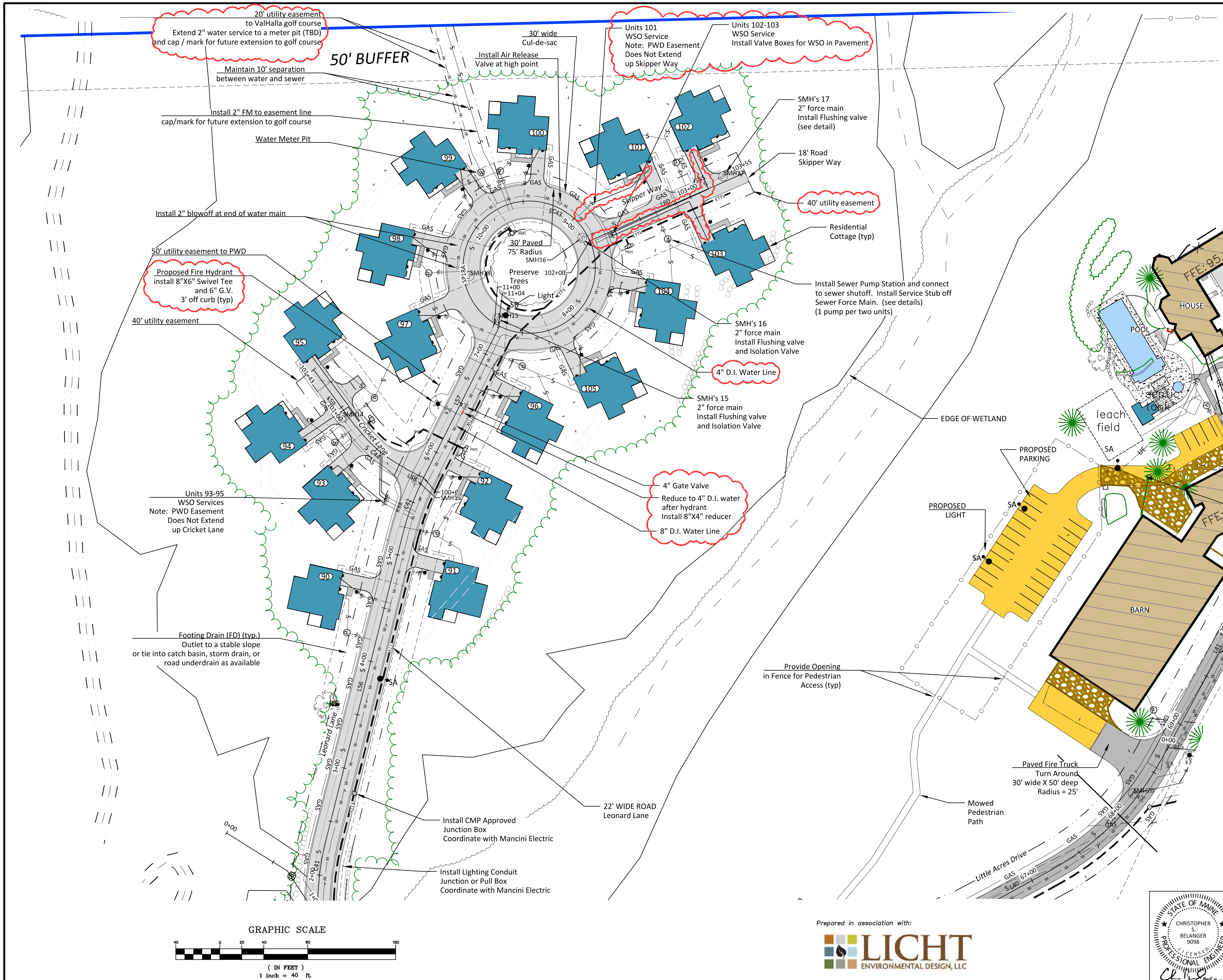
- EROSION CONTROL PLANS

FIELD WK:	SCALE: 1"=40'	SHEET:
DRN BY:	JOB #: 109	C6A
CH'D BY:	SS:	
DATE: 12-18-2020	FILE:	



3.	12-18-2020	Re-submit to Town, PWD revisions	CSB
2.	7-9-2020	Add Hydrant Note	CSB
1.	6-15-2020	Response to SME letter dated 3-4-2020 Re-submit to Town and DEP	CSB

Cumberland Crossing - Phase 2
Utility Plan

Oceanview at Cumberland LLC
277 Tuttle Road, Cumberland, Maine

Oceanview at Cumberland LLC
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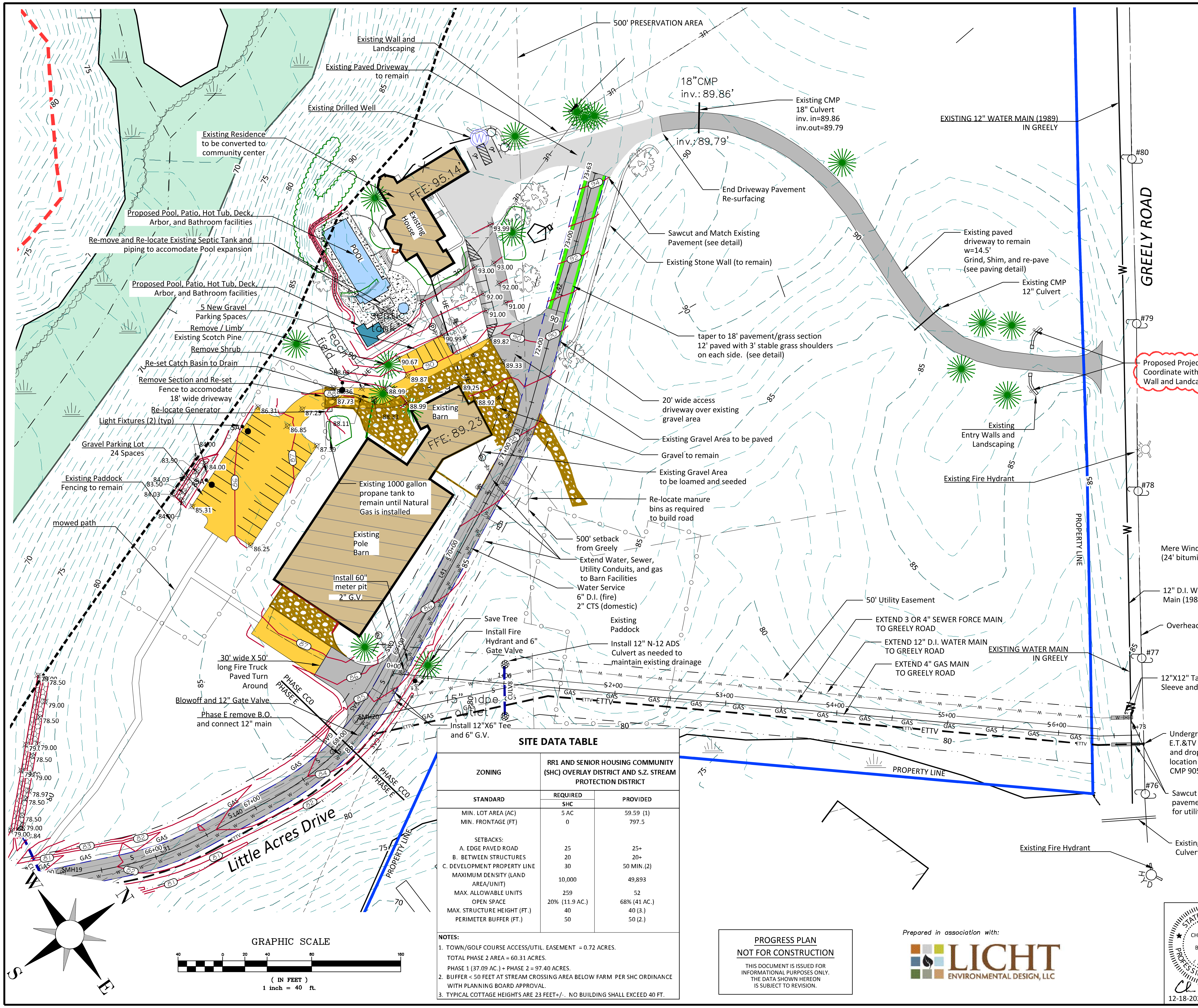

1. FORMER GODSOE RESIDENCE TO BE CONVERTED INTO A COMMUNITY CENTER FOR THE PHASE 1 AND 2 CUMBERLAND CROSSING PROJECT. USES TO INCLUDE BUT NOT BE LIMITED TO MEETING/GAME ROOMS, SALES OFFICES, ACTIVITY AREAS, LOCKER ROOMS, OUTDOOR POOL FACILITY AND ADA IMPROVEMENTS. DETAILS OF INTERNAL BUILDING IMPROVEMENTS & ADA ACCESS TO BE FILED UNDER A BUILDING PERMIT TO THE CODE ENFORCEMENT OFFICER AND ARE NOT A PART OFF THIS SITE PLAN REVIEW.
2. COMMUNITY CENTER USE/IMPROVEMENTS TO BE PHASED. THE FOLLOWING PROVIDES A GENERAL PHASING APPROACH AS A GUIDELINE. ACTUAL TIMING AND IMPLEMENTATION OF IMPROVEMENTS MAY VARY DEPENDING ON FINAL PERMITS, MARKET ABSORPTION OF UNITS IN PHASES 1 AND 2 AND OTHER FACTORS:
   A. 2020-21:
      a. INSTALL POOL, PATIO, ADA & LOCKER ROOM IMPROVEMENTS.
      b. LIFE SAFETY CODE REVIEW.
      c. INSTALL NEW 2 INCH WATER SERVICE. USE WELL FOR IRRIGATION.
      d. MAINTAIN EX. WASTEWATER LEACHFIELD. REPLACE/MOVE SEPTIC TANK AND PIPING.
   B. 2021-22:
      a. CREATE CC AREA PARKING-10 SPACES.
      b. INTERNAL BUILDING IMPROVEMENTS, UTILITY UPGRADES.
      c. MAINTAIN EX. WASTEWATER LEACHFIELD.
   C. 2022-25:
      a. CONSTRUCT REAR GRAVEL PARKING AREA.
      b. RELOCATE GENERATOR.
      c. EXTEND LITTLE ACRES DRIVE FROM PHASE 2 AND CONNECT TO EXISTING 14.5 FOOT DRIVE.
      d. EXTEND UTILITIES FROM LITTLE ACRES DRIVE TO GREELY ROAD. CONNECT SERVICES TO BARNS AND COMMUNITY CENTER.
      e. ABANDON WASTEWATER SYSTEM & CONNECT CC TO NEW SANITARY SEWER FORCEMAIN.
      f. GRIND AND RE-PAVE EXISTING DRIVEWAY.
3. WASTEWATER SYSTEM - THE CURRENT SYSTEM HAS A DESIGN FLOW OF 303 GPD. LICHT ENVIRONMENTAL DESIGN, LLC HAS INCLUDED IN THE SUBDIVISION APPLICATION, A PROJECTED USE AND PHASING OF FLOWS TO THE SYSTEM TO DEMONSTRATE THE CAPACITY OF THE SYSTEM UNTIL SEWER IS EXTENDED TO THE COMMUNITY CENTER/BARNS. THE 1000 GALLON SEPTIC TANK SHALL AND D-BOX SHALL BE REPLACED AND RELOCATED COMMENSURATE WITH THE 2020-21 POOL IMPROVEMENTS.

COMMUNITY CENTER PARKING REQUIRED

BASIS (ZONING C. 315-57 PARKING & LOADING)	STANDARD	UNITS	REQUIRED
SALES OFFICES (PROF. OFFICES/BUSINESS)	1 SP/250 SF. GROSS AREA	948 SF (2^{ND} STORY SALES OFFICE)	4
PRIVATE CLUB/LODGE (CLOSEST COMPARABLE USE)	1 SP/ 4 MEMBERS (UNITS)	105 COTTAGE UNITS	27
TOTAL REQUIRED			31

NOTES:
1. USES BASED ON BEST COMPARISON OF "COMMUNITY CENTER' ACTIVITIES WITH ORDINANCE PRESCRIBED USES.

PARKING PROVIDED

LOCATION	REGULAR	ADA	TOTAL
FRONT OF CC BUILDING (PAVED)	3	2	5
SIDE OF CC BUILDING (GRAVEL)	5	0	5
BEHIND BARN (GRAVEL)	24	0	24
TOTAL PROPOSED	32	2	34

NOTES:
1. PARKING COUNT DOES NOT INCLUDE THE 2 GARAGE SPACES AT THE CC.
2. PARKING COUNTS DO NOT INCLUDE EXISTING GRAVEL FARM/AGRICULURAL AREAS USED FOR DAILY PARKING, TRAILERS AND FARM EQUIPMENT ACCESS. ETC.

SITE DATA TABLE

ZONING	RR1 AND SENIOR HOUSING COMMUNITY (SHC) OVERLAY DISTRICT AND S.Z. STREAM PROTECTION DISTRICT	
STANDARD	REQUIRED SHC	PROVIDED
MIN. LOT AREA (AC)	5 AC	59.59 (1)
MIN. FRONTAGE (FT)	0	797.5
SETBACKS:		
A. EDGE PAVED ROAD	25	25+
B. BETWEEN STRUCTURES	20	20+
C. DEVELOPMENT PROPERTY LINE	30	50 MIN.(2)
MAXIMUM DENSITY (LAND AREA/UNIT)	10,000	49,893
MAX. ALLOWABLE UNITS	259	52
OPEN SPACE	20% (11.9 AC.)	68% (41 AC.)
MAX. STRUCTURE HEIGHT (FT.)	40	40 (3.)
PERIMETER BUFFER (FT.)	50	50 (2.)

NOTES:
1. TOWN/GOLF COURSE ACCESS/UTIL. EASEMENT = 0.72 ACRES.
   TOTAL PHASE 2 AREA = 60.31 ACRES.
   PHASE 1 (37.09 AC.) + PHASE 2 = 97.40 ACRES.
2. BUFFER < 50 FEET AT STREAM CROSSING AREA BELOW FARM PER SHC ORDINANCE WITH PLANNING BOARD APPROVAL.
3. TYPICAL COTTAGE HEIGHTS ARE 23 FEET+/-. NO BUILDING SHALL EXCEED 40 FT.

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Prepared in association with:
LICHT ENVIRONMENTAL DESIGN, LLC

2.	12-18-2020	Re-submit to Town	CSB
1.	6-15-2020	Respond to SME memo dated 3-4-2020 Re-submit to Town and DEP	CSB

Cumberland Crossing - Phase 2 Farm Area Site Plan

Oceanview at Cumberland LLC
277 Tuttle Road, Cumberland, Maine

Oceanview at Cumberland LLC
20 Blueberry Lane, Falmouth, Maine 04105

STATE OF MAINE
CHRISTOPHER S. BELANGER 9098
LICENSED PROFESSIONAL ENGINEER
12-18-2020

BELANGER ENGINEERING
CONSULTING ENGINEERS
63 Second Avenue, Augusta, Maine 04330
Email: cbelanger@roadrunner.com
Ph 207-622-1462, Cell 207-242-5713

- COMMERCIAL PROJECTS
- RESIDENTIAL SUBDIVISIONS
- TOWN AND STATE APPROVALS
- SITE PLANNING & DESIGN
- STORMWATER MANAGEMENT
- ROAD AND UTILITY DESIGN
- EROSION CONTROL PLANS

FIELD WK:	SCALE: 1"=40'	SHEET:
DRN BY:	JOB #: 109	C6C
CH'D BY:	SS:	
DATE: 12-18-2020	FILE:	

Little Acres Drive Extension PROFILE

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

Prepared in association with:

LICHT ENVIRONMENTAL DESIGN, LLC

PROGRESS PLAN
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STATE OF MAINE
CHRISTOPHER S. BELANGER 9098
LICENSED
PROFESSIONAL ENGINEER
12-18-2020

2. 12-18-2020 Re-submit to Town, Respond to PWD comments
1. 6-15-2020 Respond to SME memo dated 3-4-2020 Re-submit to Town and DEP

Profile Sta 39+43.35 - Sta 52+50
Little Acres Drive - ph 2

Cumberland Crossing – Phase 2

BELANGER ENGINEERING
CONSULTING ENGINEERS

Email: cbelanger@roadrunner.com
Ph 207-622-1462, Cell 207-242-5713
63 Second Avenue
Augusta, Maine 04330

SCALE: 1"=40' H, 4' V	SHEET:
JOB #: 134	C7A
DATE:12-18-2020	

Little Acres Drive Extension PROFILE

GRAPHIC SCALE

(IN FEET)
1 inch = 40 ft.

Prepared in association with:

LICHT ENVIRONMENTAL DESIGN, LLC

PROGRESS PLAN
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STATE OF MAINE
CHRISTOPHER S. BELANGER
9098
LICENSED
PROFESSIONAL ENGINEER
12-18-2020

2. 12-18-2020 Re-submit to Town, Revisions per PWD
1. 6-15-2020 Re-submit to Town and DEP

Profile Sta 52+50 - Sta 63+50
Little Acres Drive Extension

Cumberland Crossing – Phase 2

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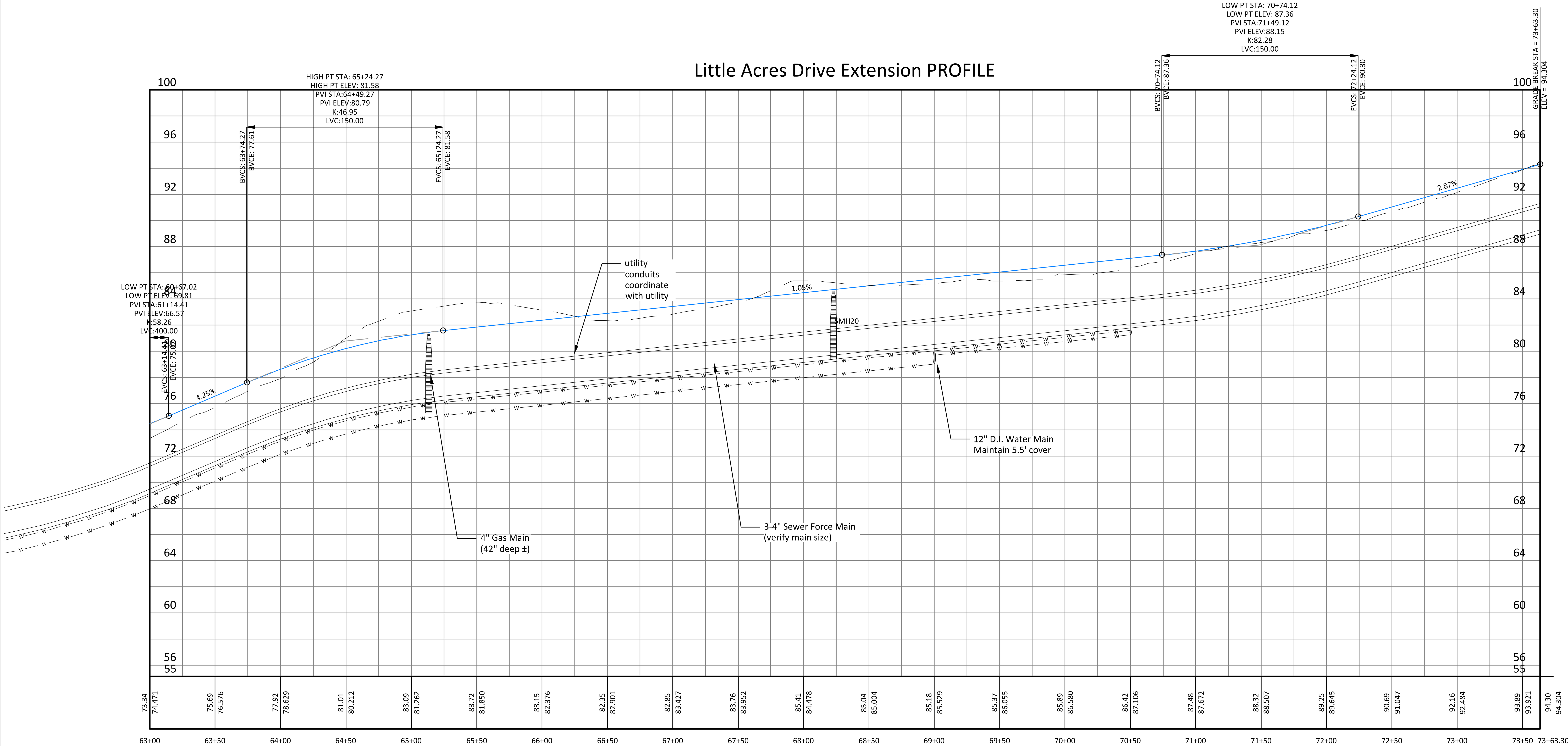
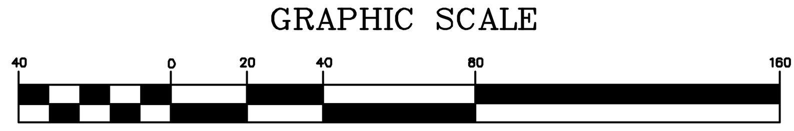
CONSULTING ENGINEERS
Email: cbelanger@roadrunner.com
Ph 207-622-1462, Cell 207-242-5713
63 Second Avenue
Augusta, Maine 04330

SCALE: 1"=40' H, 4' V	SHEET:
JOB #: 134	C7B
DATE: 12-18-2020	

Little Acres Drive Extension PROFILE



GRAPHIC SCALE



(IN FEET)
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CHRISTOPHER S. BELANGER
9098
LICENSED
PROFESSIONAL ENGINEER
12-18-2020

2. 12-18-2020 Re-submit to Town
1. 6-15-2020 Re-submit to Town and DEP

Profile Sta 63+50 - End
Little Acres Drive

Cumberland Crossing – Phase 2

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CONSULTING ENGINEERS
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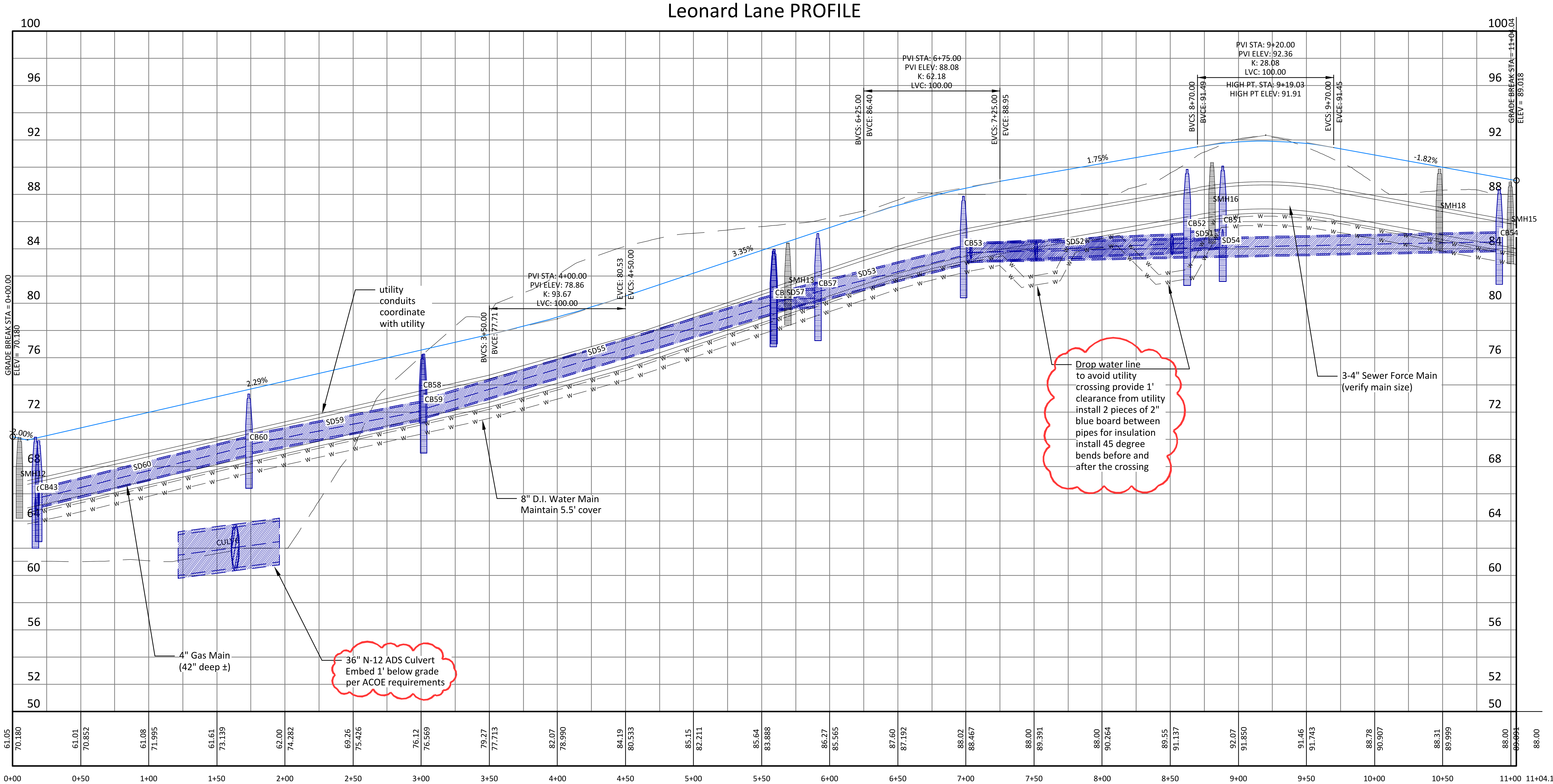
Ph 207-622-1462, Cell 207-242-5713
63 Second Avenue
Augusta, Maine 04330

SCALE: 1"=40' H, 4' V
JOB #: 134
DATE: 12-18-2020
SHEET: C7C

Leonard Lane PROFILE



2. 12-18-2020 Re-submit to Town
1. 6-15-2020 Re-submit to Town and DEP

Profile
Leonard Lane

Cumberland Crossing – Phase 2

BELANGER ENGINEERING
CONSULTING ENGINEERS
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Ph 207-622-1462, Cell 207-242-5713
63 Second Avenue
Augusta, Maine 04330

SCALE: 1"=40' H, 4' V
JOB #: 134
DATE: 12-18-2020
SHEET: C8

STATE OF MAINE
CHRISTOPHER S. BELANGER
9098
LICENSED
PROFESSIONAL ENGINEER
12-18-2020

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

PROGRESS PLAN
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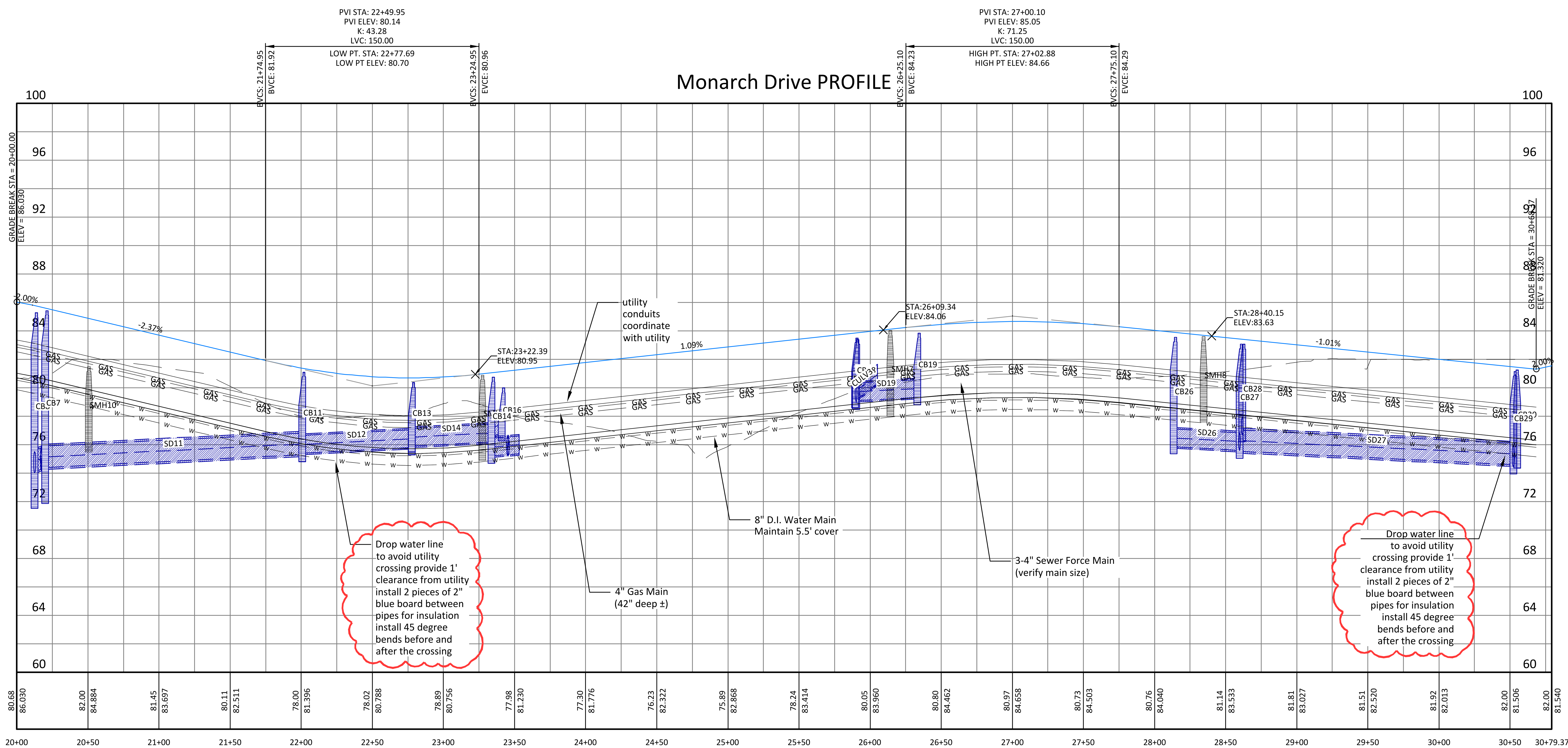
Prepared in association with:
LICHT
ENVIRONMENTAL DESIGN, LLC



GRAPHIC SCALE

(IN FEET)
1 inch = 40 ft.

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2. 12-18-2020 Re-submit to Town
1. 6-15-2020 Respond to SME memo dated 3-4-2020 Re-submit to Town and DEP

Profile
Monarch Drive

Cumberland Crossing – Phase 2

STATE OF MAINE
CHRISTOPHER S. BELANGER
9098
LICENSED
PROFESSIONAL ENGINEER
12-18-2020

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CONSULTING ENGINEERS

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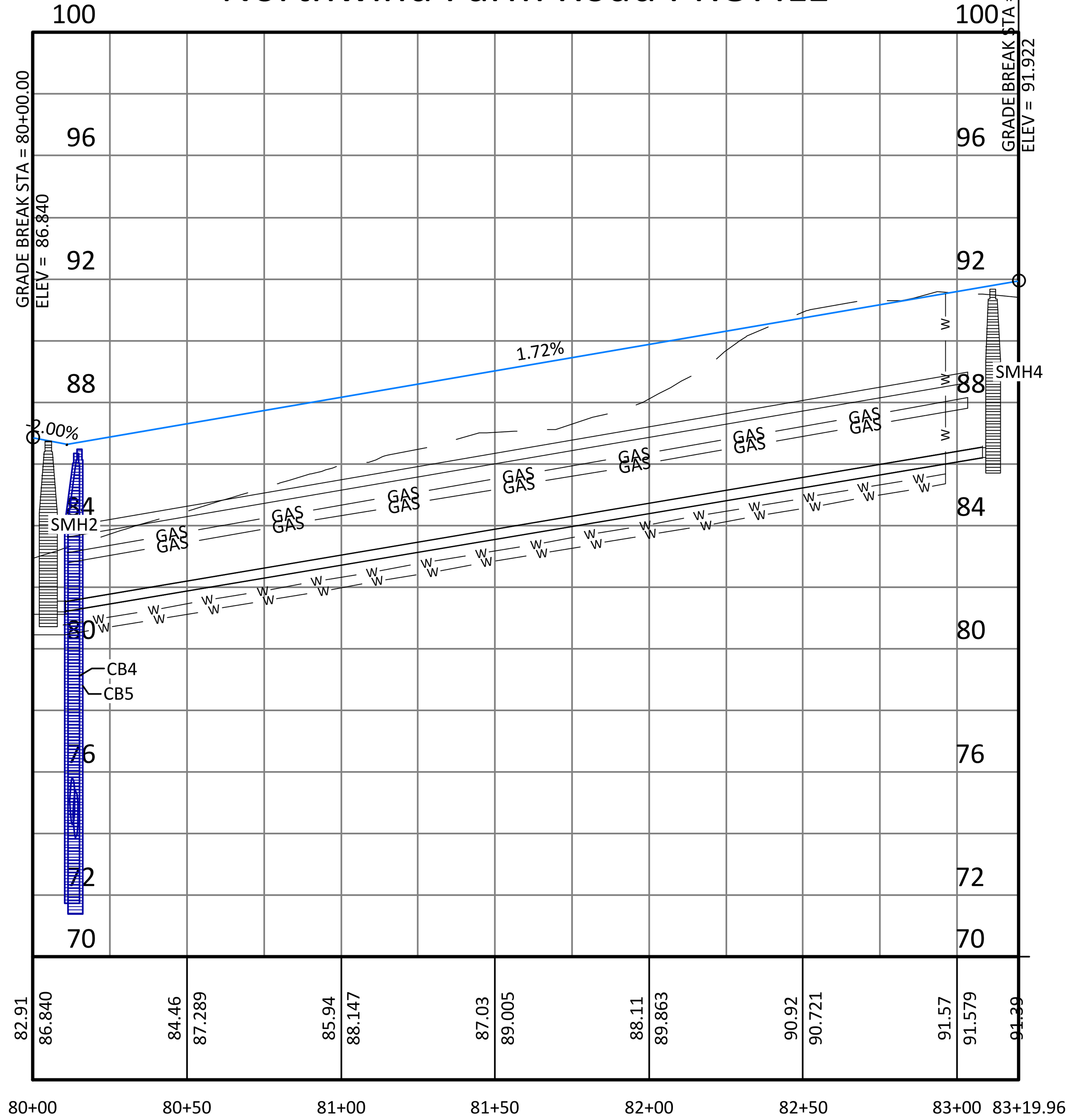
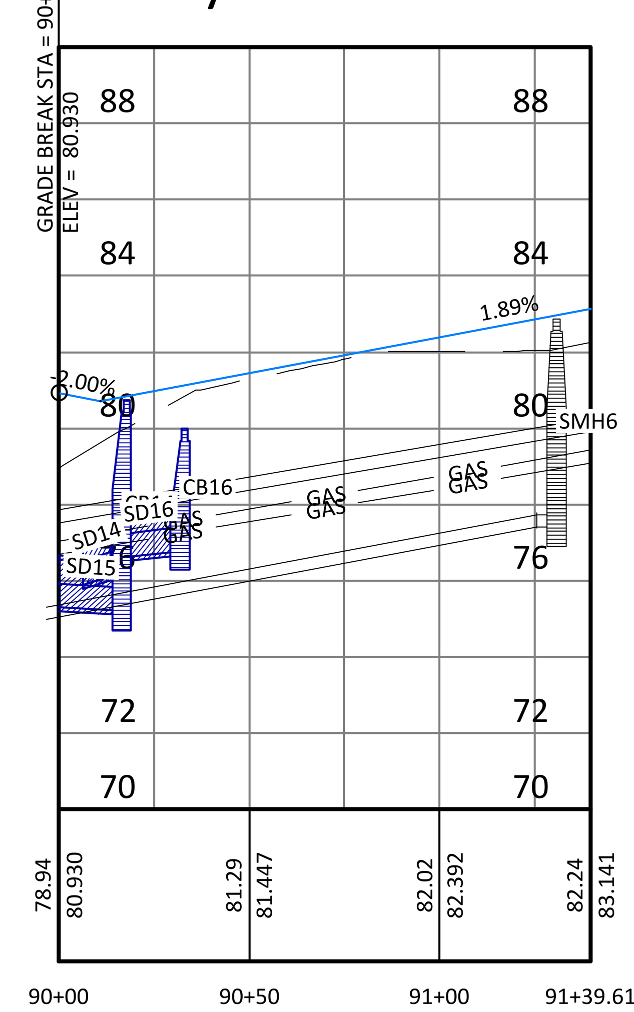
Ph 207-622-1462, Cell 207-242-5713
63 Second Avenue
Augusta, Maine 04330

SCALE: 1"=40' H, 4' V	SHEET:
JOB #: 134	C9
DATE: 12-18-2020	

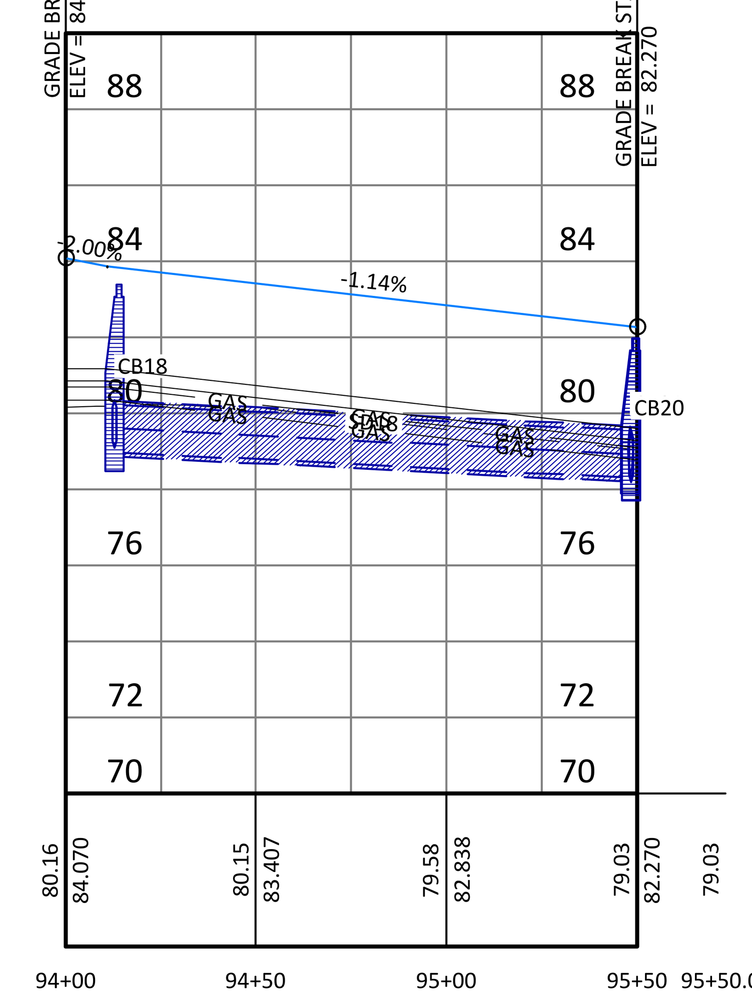
Northwind Farm Road PROFILE



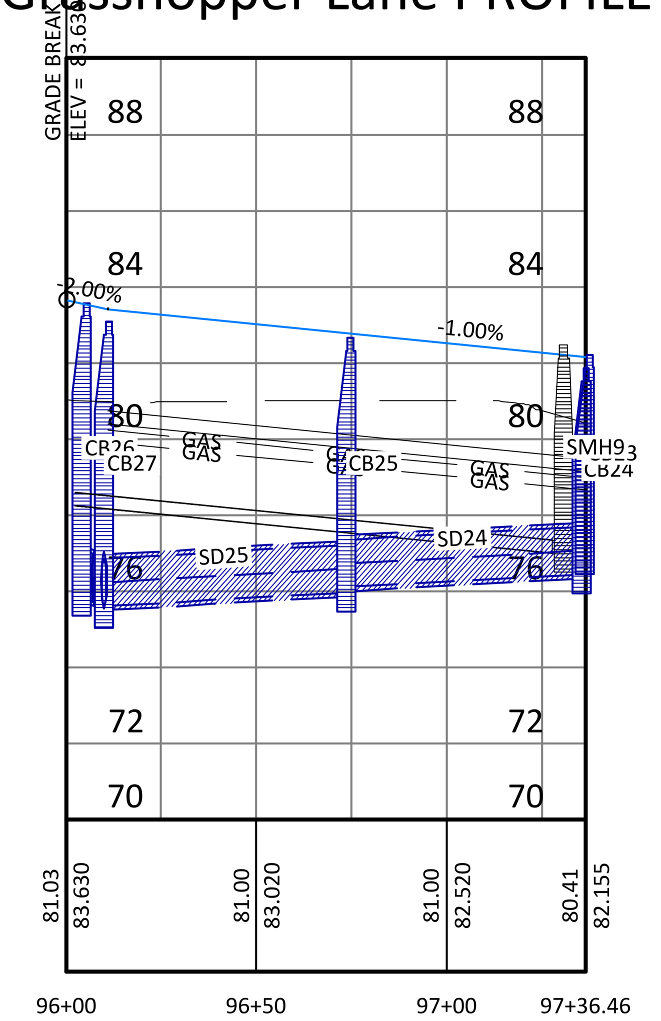
Firefly Lane PROFILE



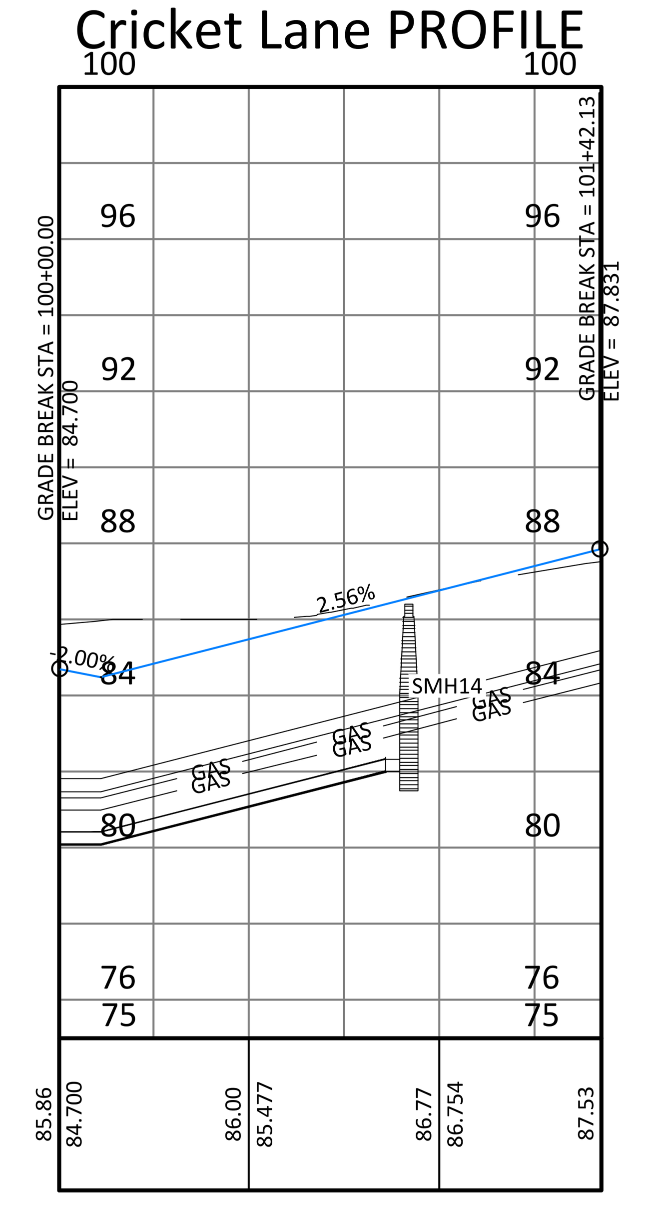
Luna Lane PROFILE



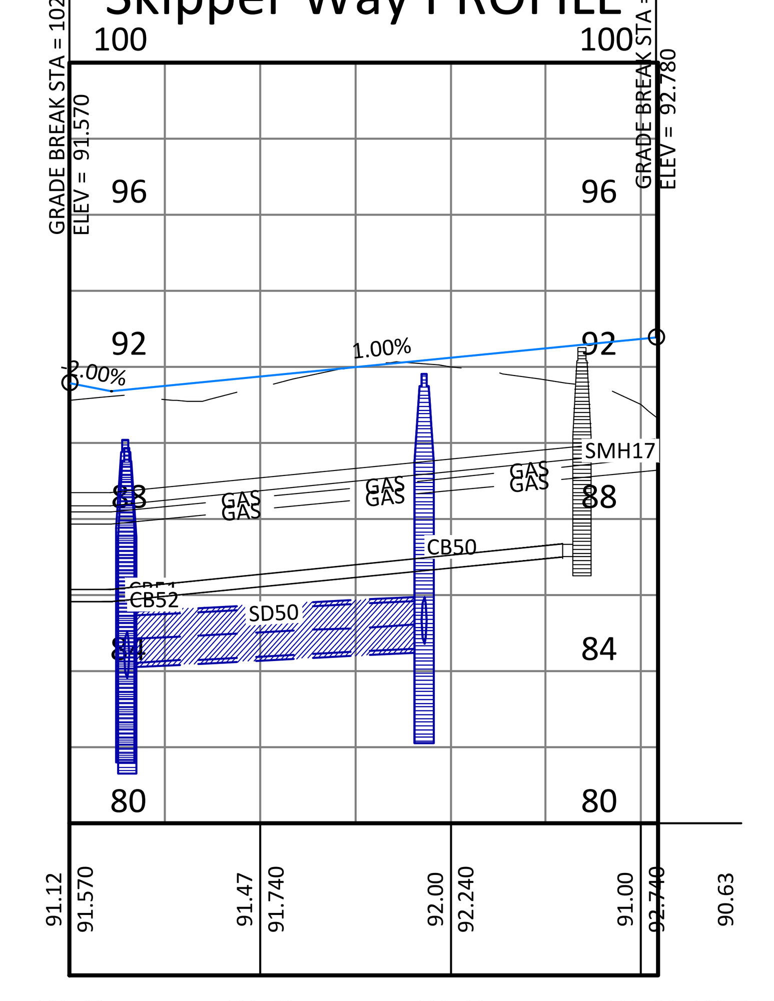
Grasshopper Lane PROFILE



Cricket Lane PROFILE



Skipper Way PROFILE



GRAPHIC SCALE

(IN FEET)
1 inch = 40 ft.

Prepared in association with:

LICHT ENVIRONMENTAL DESIGN, LLC

PROGRESS PLAN
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STATE OF MAINE
CHRISTOPHER S. BELANGER
9098
LICENSED
PROFESSIONAL ENGINEER

12-18-2020

2. 12-18-2020 Re-submit to Town
1. 6-15-2020 Re-submit to Town and DEP

Cottage Road Profiles

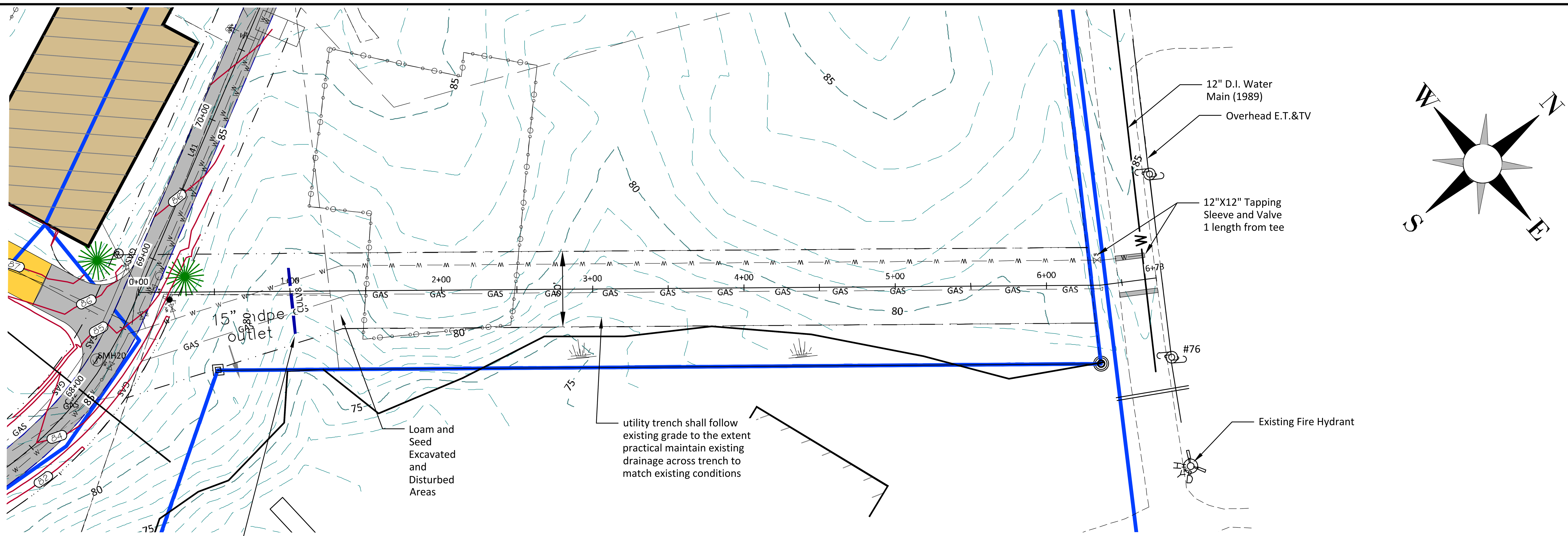
Cumberland Crossing – Phase 2

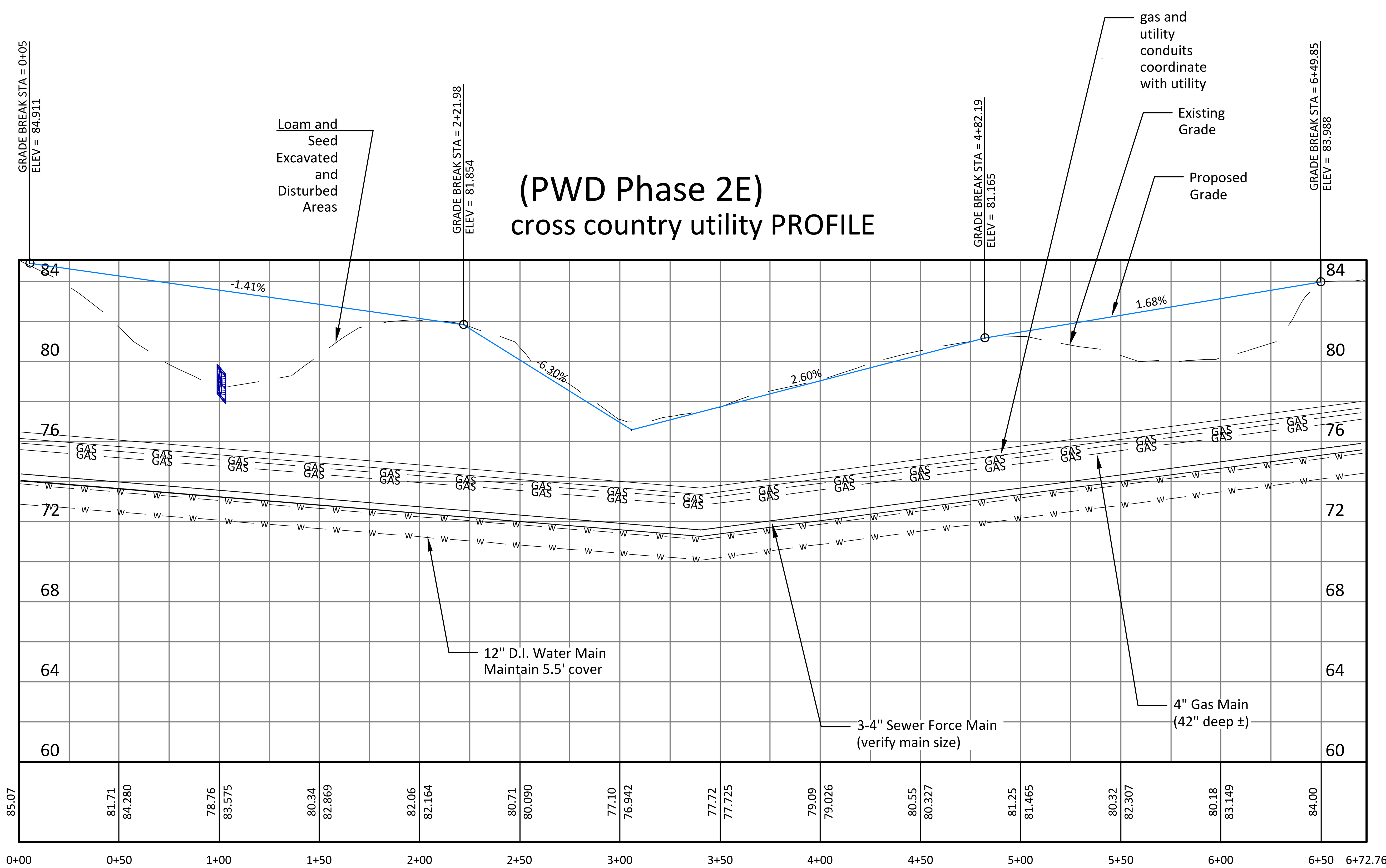
BELANGER ENGINEERING
CONSULTING ENGINEERS

Email: cbelanger@roadrunner.com
Ph 207-622-1462, Cell 207-242-5713
63 Second Avenue
Augusta, Maine 04330

SCALE: 1"=40' H, 4' V
JOB #: 134
DATE: 12-18-2020

SHEET:
C10





GRAPHIC SCALE

(IN FEET)
1 inch = 40 ft.

Prepared in association with:

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PROGRESS PLAN
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9098
LICENSED
PROFESSIONAL ENGINEER
12-18-2020

2. 12-18-2020 Re-submit to Town
1. 6-15-2020 Respond to SME memo dated 3-4-2020 Re-submit to Town and DEP

Plan and Profile
Cross Country Utility

Cumberland Crossing – Phase 2

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CONSULTING ENGINEERS
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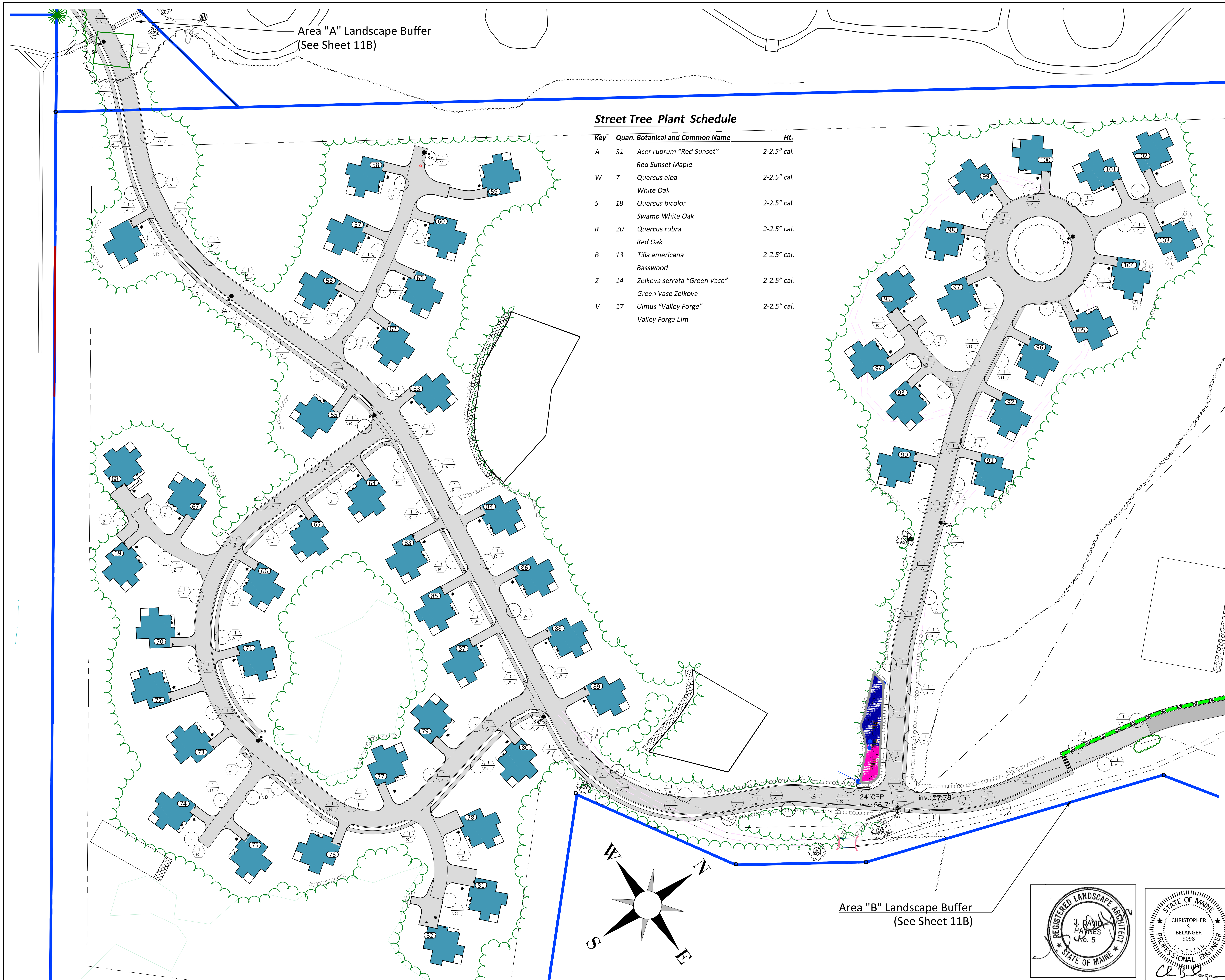
Ph 207-622-1462, Cell 207-242-5713
63 Second Avenue
Augusta, Maine 04330

SCALE: 1"=40' H, 4' V
JOB #: 134
DATE: 12-18-2020
SHEET: C10B



Street Tree Plant Schedule

Key	Quan.	Botanical and Common Name	Ht.
A	31	Acer rubrum "Red Sunset" Red Sunset Maple	2-2.5" cal.
W	7	Quercus alba White Oak	2-2.5" cal.
S	18	Quercus bicolor Swamp White Oak	2-2.5" cal.
R	20	Quercus rubra Red Oak	2-2.5" cal.
B	13	Tilia americana Basswood	2-2.5" cal.
Z	14	Zelkova serrata "Green Vase" Green Vase Zelkova	2-2.5" cal.
V	17	Ulmus "Valley Forge" Valley Forge Elm	2-2.5" cal.

2. 12-18-2020 Re-submit to Town CSB
1. 6-15-2020 Re-submit to Town and DEP CSB

Landscape Overall Plan and Street Tree Layout

Cumberland Crossing – Phase 2
Tuttle and Greely Roads, Cumberland, Maine

Seacoast Management Company
20 Blueberry Lane, Falmouth, ME

REGISTERED LANDSCAPE ARCHITECT J. DAVID HAYNES No. 5 STATE OF MAINE

STATE OF MAINE CHRISTOPHER S. BELANGER 9098 LICENSED PROFESSIONAL ENGINEER

12-18-2020

BELANGER ENGINEERING
CONSULTING ENGINEERS
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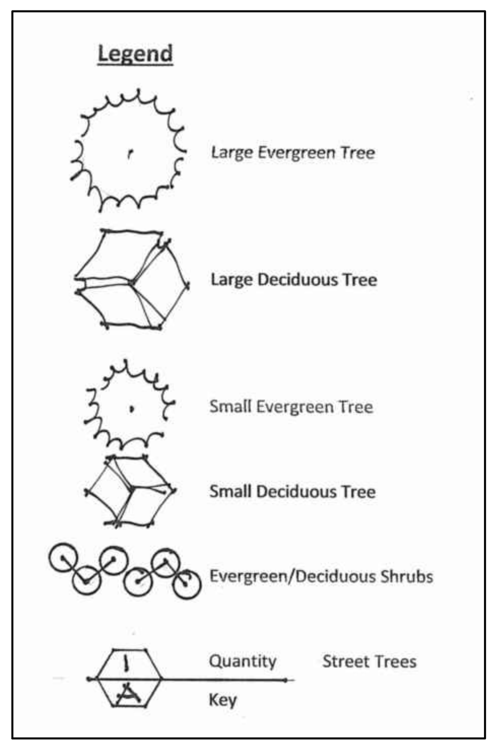
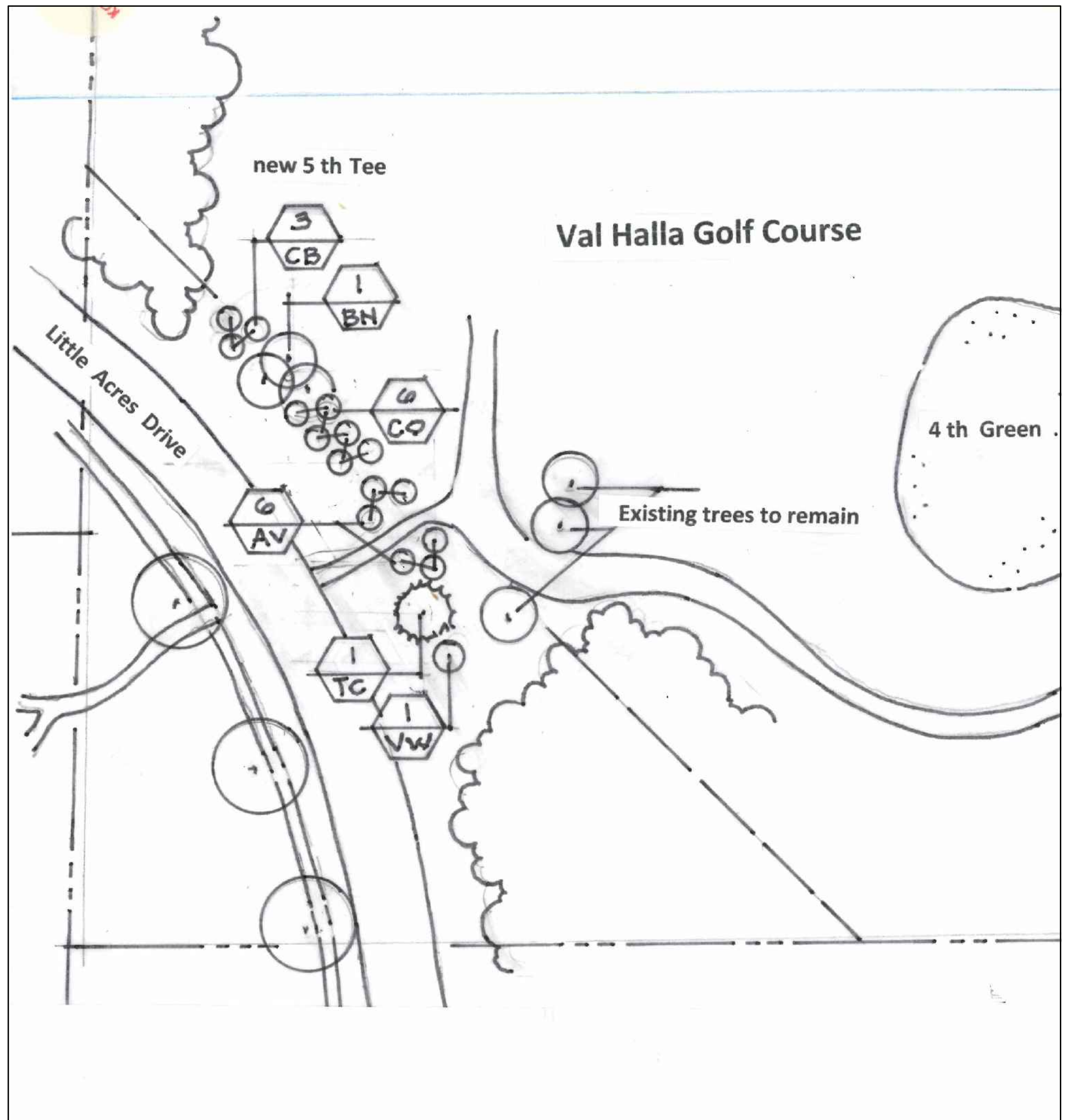
- ROAD AND UTILITY DESIGN
- EROSION CONTROL PLANS

FIELD WK:	SCALE:	SHEET: C11A
DRN BY:	JOB #:	
CH'D BY:	SS:	
DATE: 12-18-2020	FILE:	

Landscape Notes:

1. All disturbed construction areas to be re-vegetated with grass shall receive a minimum of 4 in. topsoil loam with hydro-seed or sod as indicated on plans.
2. Prior to plant installation the contractor shall meet with the landscape architect on site for a pre-construction meeting.
3. Plant beds shall receive 10-12 in. of prepared topsoil loam.
4. The landscape architect shall approve plant spacing and layout prior to planting.
5. Contractor shall verify plant schedule with planting plans. If conflicts exist, the contractor shall provide higher number of plants.
6. Installation of plant materials; materials and plantings shall meet requirements as specified by "American standard for nursery stock, may 2004 and as shown on construction detail drawings.
7. Landscape contractor shall construct curvilinear plant beds around and under all shrub plantings to outside limit of branching. plant beds shall be mulched with 3 in. deep dark decomposed mulch.
8. All tags, labels or other foreign material shall be removed from plant material limbs and stems.
9. All plant material substitutions shall be applied for in writing for approval by the landscape architect. Approval of plant variety substitutions shall be based on similar characteristics of the specified plant – mature size, color, bloom times, branching habit, shape, solar and soil preferences.
10. Final spacing of street trees to be field determined based upon driveway curb cuts, utility service stops, view sheds, preserved woodland edges and landscape buffers.
11. Tree and shrub understory buffers around property perimeter and disturbed common areas such as specified and around storm water management basins to be supplemented in various locations with indigenous plant material as selected from, but not limited to, the following "Buffer Tree and Shrub Specifications" list. Precise location of buffer plant materials to be field selected based upon view sheds, existing plant materials and field conditions.



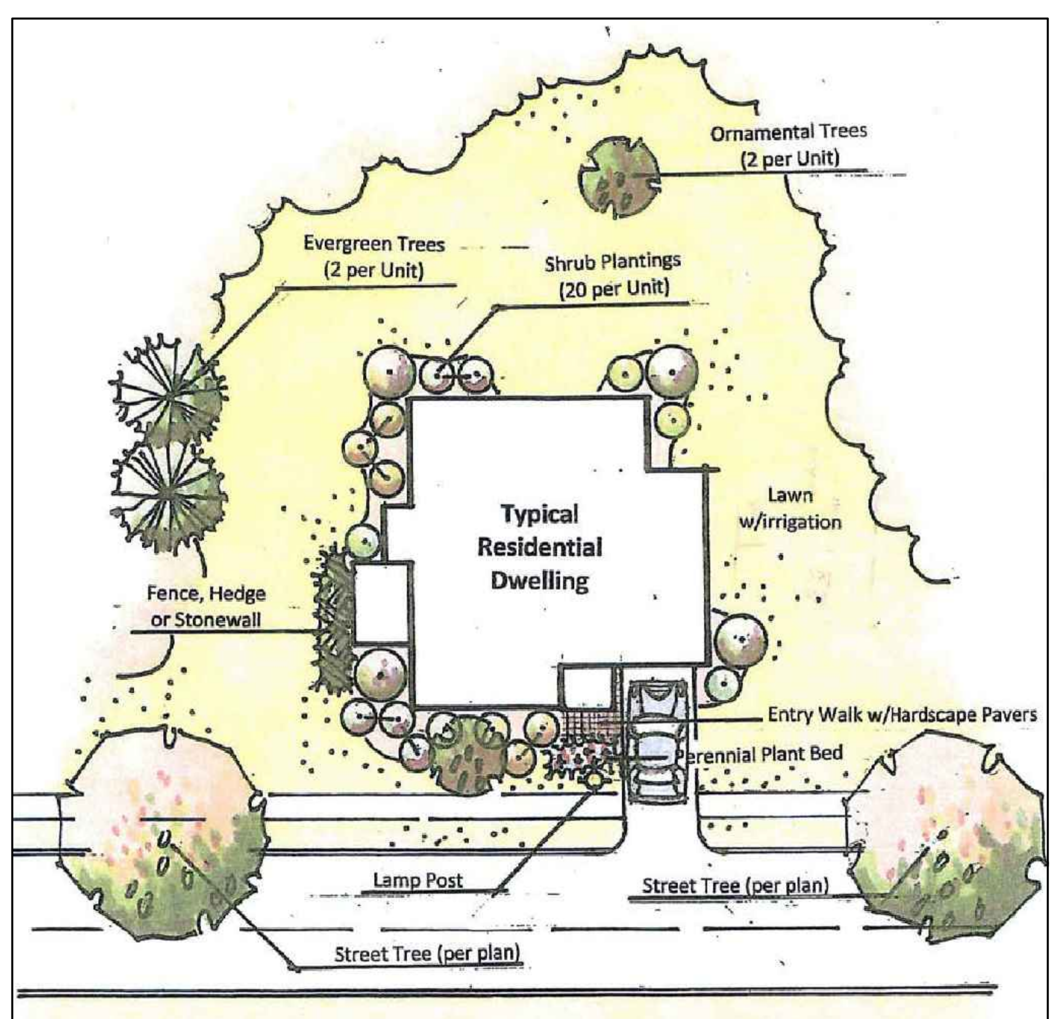


Area "A" Landscape Buffer 1"=40'

Area "A" Landscape Buffer 1"=40'

Area "A" Plant Schedule

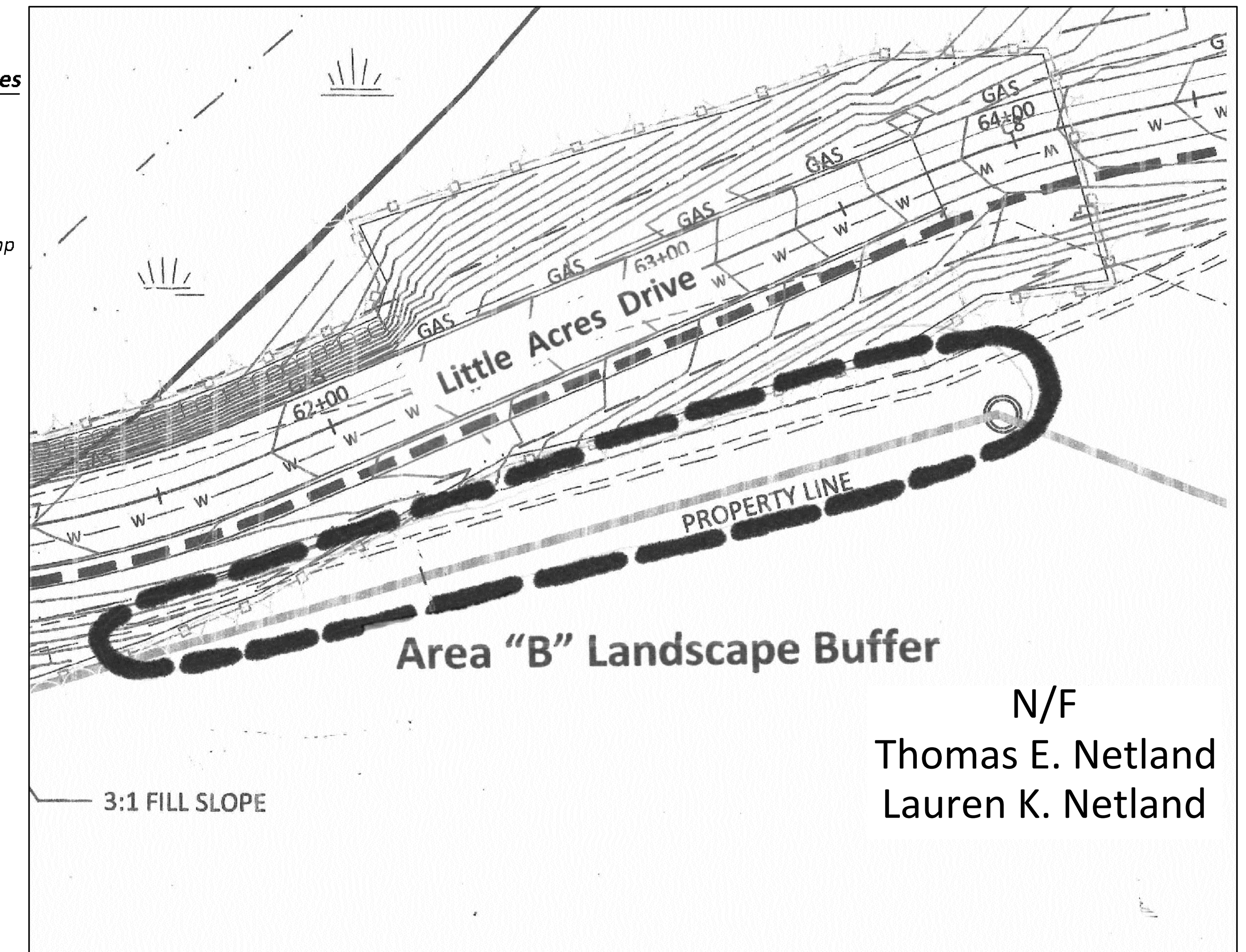
Key	Quan	Plant Name	Ht.	Spr.	Notes
Trees:					
BN	1	Betula nigra "Heritage" Heritage River Birch	10-12 ft.		clump
TC	1	Tsuga Canadensis Canadian Hemlock	6-7 ft.		
Shrubs:					
AV	6	Azalea viscosum (var.) Swamp Azalea		#3 cont.	
CO	6	Cephalanthus occidentalis "Sugar Shack" Sugar Shack Buttonbush		#3 cont.	
CB	3	Cornus sericea "Baileyii" Red Twig Dogwood		#5 cont.	
VW	1	Viburnum nudum "Winterthur" Winterthur Viburnum		#5 cont.	



Typical Residential Landscape Plan

Area "B" Plant Schedule

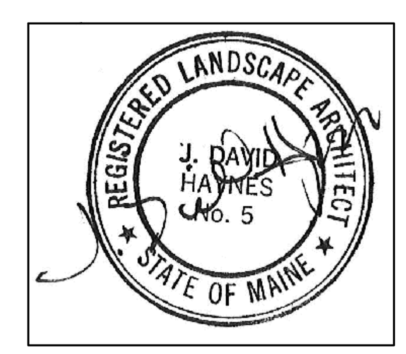
Key	Quan	Plant Name	Ht.	Spr.	Notes
Trees:					
	2	Tsuga canadensis Canadian Hemlock	5-6 ft.		
	2	Amelanchier laevis grandiflora "A. Brillance Autumn Brillance Serviceberry	6-7 ft.		clump
Shrubs:					
	5	Azalea viscosum Swamp azalea		#2 cont.	
	3	Aronia arbutifolia "Brilliantissima" Red Chokeberry		#3 cont.	
	5	Cephalanthus occidentalis "Sugar Shack" Sugar Shack Buttonbush		#3 cont.	
	3	Clethra alnifolia Sweet Pepperbush		#3 cont.	
	5	Cornus sericea "Baileyii" Red Twig Dogwood		#3 cont.	
	2	Corylus americana American Hazelnut		#5 cont.	
	2	Corylus americana "Bailey's Redleaf" Redleaf Hazelnut		#5 cont.	
	3	Hamamelis intermedia "Pallida" Pallida Witchhazel		#3 cont.	
	5	Ilex verticillata Winterberry		#3 cont	M&F
	2	Picea abies "Pumila" Globe Spruce		#3 cont.	
	7	Juniperus chinensis "Sea Green" Sea Green Juniper		#5 cont.	
	2	Lindera benzoin Spicebush		#2 cont.	
	2	Salix discolor Pussy Willow		#3 cont.	
	2	Sambucus canadensis Elderberry		#2-3 cont.	var.
	5	Vaccinium corymbosum Highbush Blueberry		#3 cont.	var.
	2	Viburnum cassinoides Withrod Viburnum		#3 cont.	
	1	Viburnum dentatum "christom" Blue Muffin Arrowwood		#5 cont.	
	2	Viburnum lentago Nannyberry Viburnum		#5 cont.	
	2	Viburnum nudum "Winterthur" Winterthur Viburnum		#3 cont.	

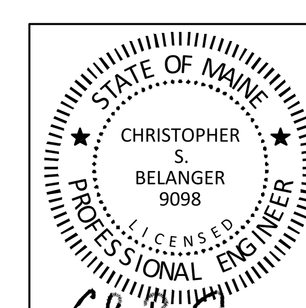


Area "B" Landscape Buffer 1"=40'

Note: Landscape contractor to notify abutter and Landscape Architect prior to installation of plant material so that abutter and Landscape Architect can assist with siting plants before installation.

2.	12-18-2020	Re-submit to Town	CSB
1.	6-15-2020	Re-submit to Town and DEP	CSB





Landscape Plan Details

Cumberland Crossing – Phase 2
Tuttle and Greely Roads, Cumberland, Maine

Seacoast Management Company
20 Blueberry Lane, Falmouth, ME

BELANGER ENGINEERING
CONSULTING ENGINEERS
63 Second Avenue , Augusta, Maine 04330
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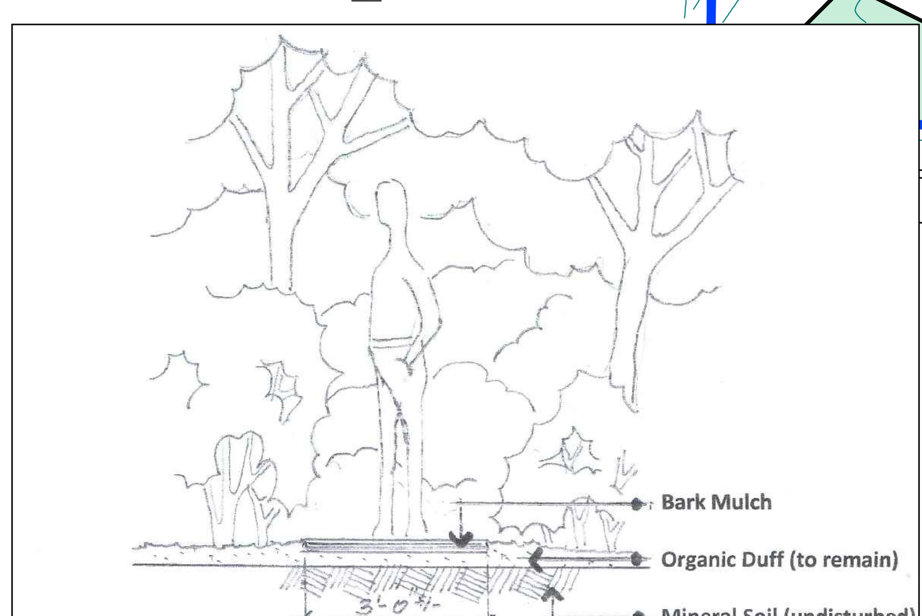
FIELD WK:	SCALE:	SHEET:
DRN BY:	JOB #:	C11B
CH'D BY:	SS:	
DATE: 12-18-2020	FILE:	

Note:

Phasing of trail construction to be commensurate with associated project construction phasing.

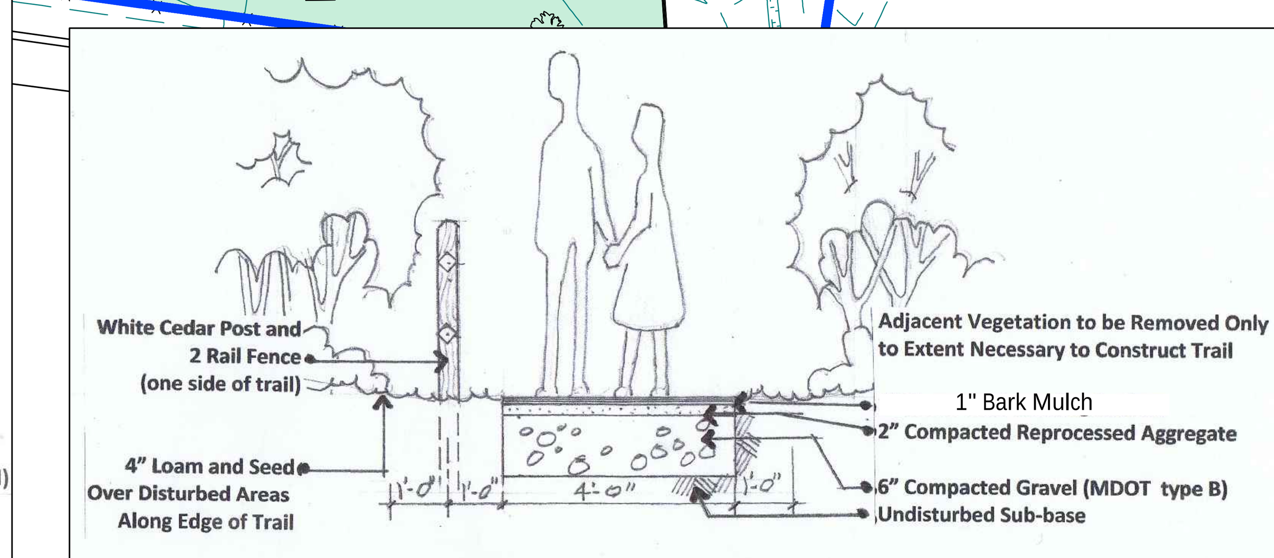


Construction Notes:

1. Alignment of trail to meander through woods along "path of least resistance".
2. Trail to be 3 ft. +/- wide.
3. Path of trail to be cleared of small trees and brush and grubbed to remove small stumps and roots.
4. Meandering trail surfacing to be 2-3 in. depth of wood chips and/or well rotted bark mulch.

Woodland Buffer Trail

Typical Section



Access Trail - Typical Section

Trail & Pedestrian Ways Key

- (A) Existing Snowmobile and Pedestrian Trails
- (B) Proposed Sidewalk and Pedestrian Access
- (C) 6-8' Wide Grass/Gravel Trail (Not in Contract)
- (D) 4' Bark Mulch / Access Trail (Not in Contract)
- (E) 3' Hand Cut/Woodland Buffer Trail
- (F) 4' Stonedust Path
- Proposed Boardwalk or Culvert
- Crosswalk

5.	2-4-2021	Remove Boundary Trail	CSB
4.	1-7-2021	Label Existing Fence and revise trail connection to Greely	CSB
3.	12-18-2020	Re-submit to Town	CSB
2.	7-20-2020	Adjust trail colors	CSB
1.	6-15-2020	Re-submit to Town and DEP	CSB

STATE OF MAINE
CHRISTOPHER S. BELANGER
9098
LICENSED
PROFESSIONAL ENGINEER
2-4-2021

Trail and Walkway Master Plan

Cumberland Crossing – Phase 2
Tuttle and Greely Roads, Cumberland, Maine

Seacoast Management Company
20 Blueberry Lane, Falmouth, ME

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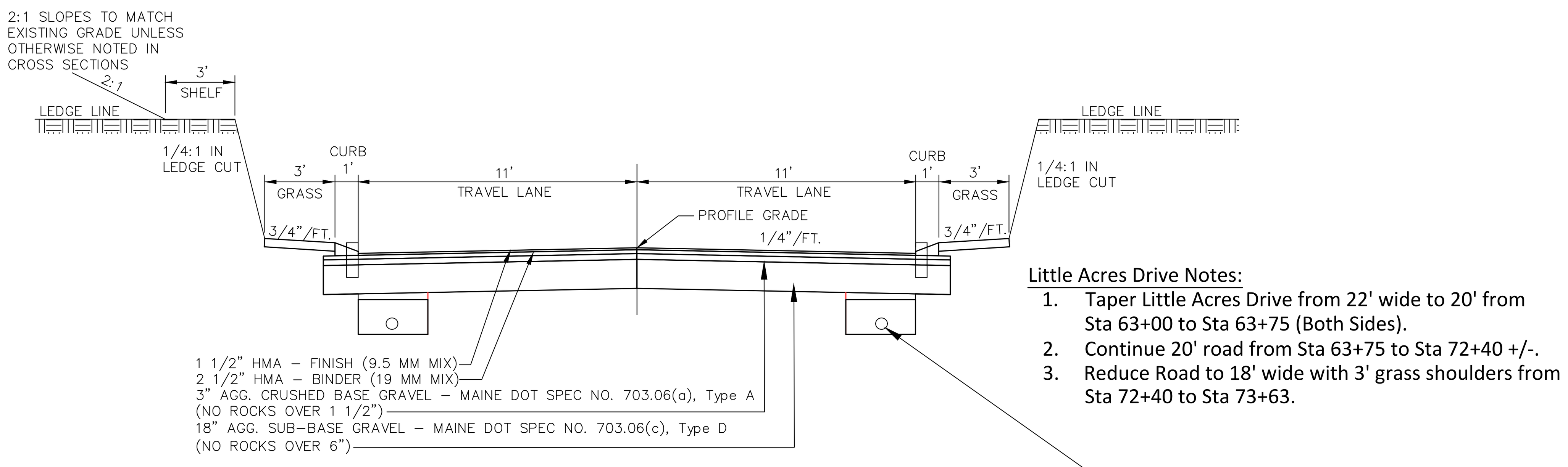
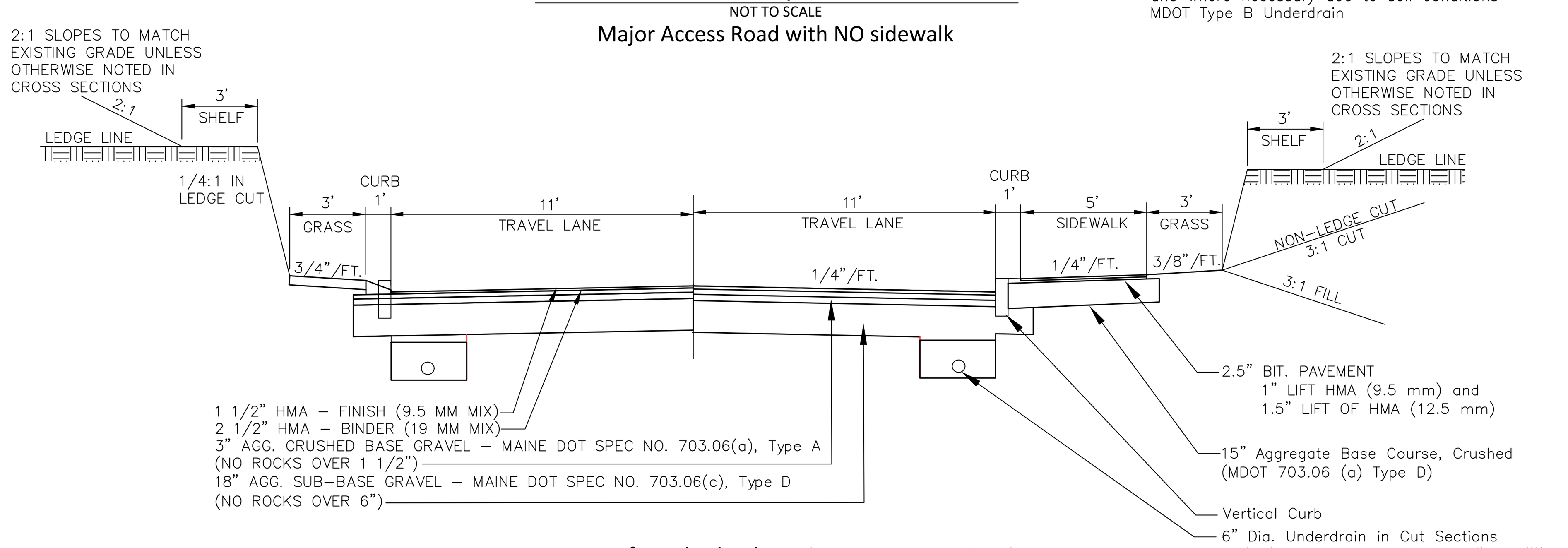
FIELD WK:	SCALE:	SHEET:
DRN BY:	JOB #:	C12
CH'D BY:	SS:	
DATE: 2-4-2021	FILE:	



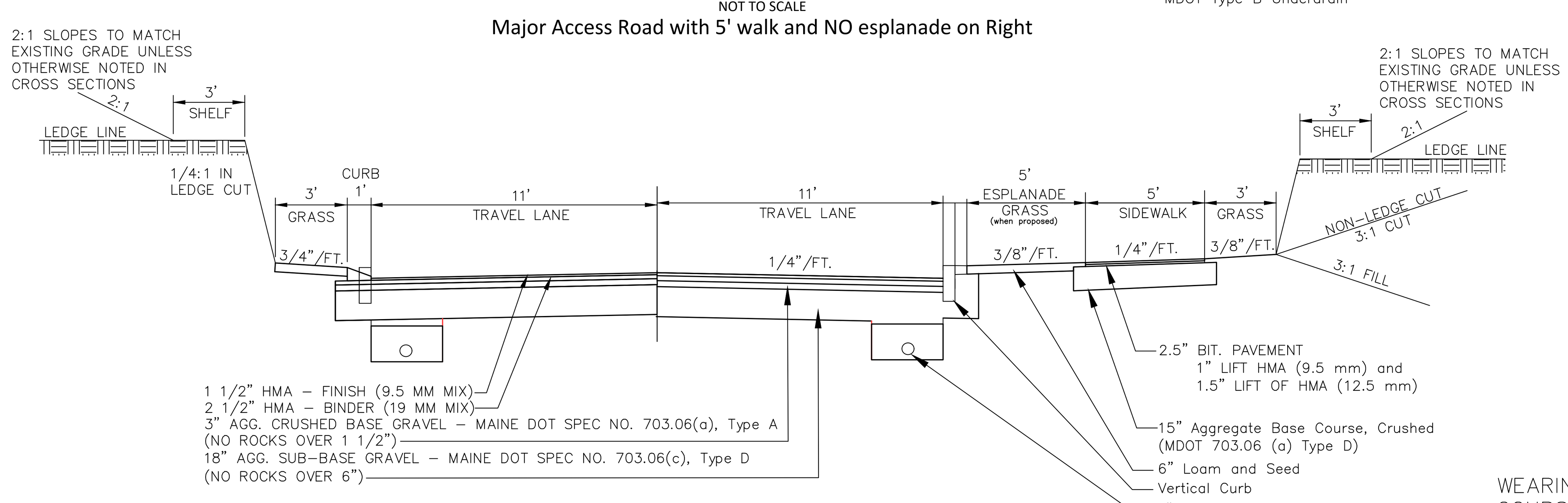
Little Acres Drive Notes:

1. Taper Little Acres Drive from 22' wide to 20' from Sta 63+00 to Sta 63+75 (Both Sides).
2. Continue 20' road from Sta 63+75 to Sta 72+40 +/-.
3. Reduce Road to 18' wide with 3' grass shoulders from Sta 72+40 to Sta 73+63.

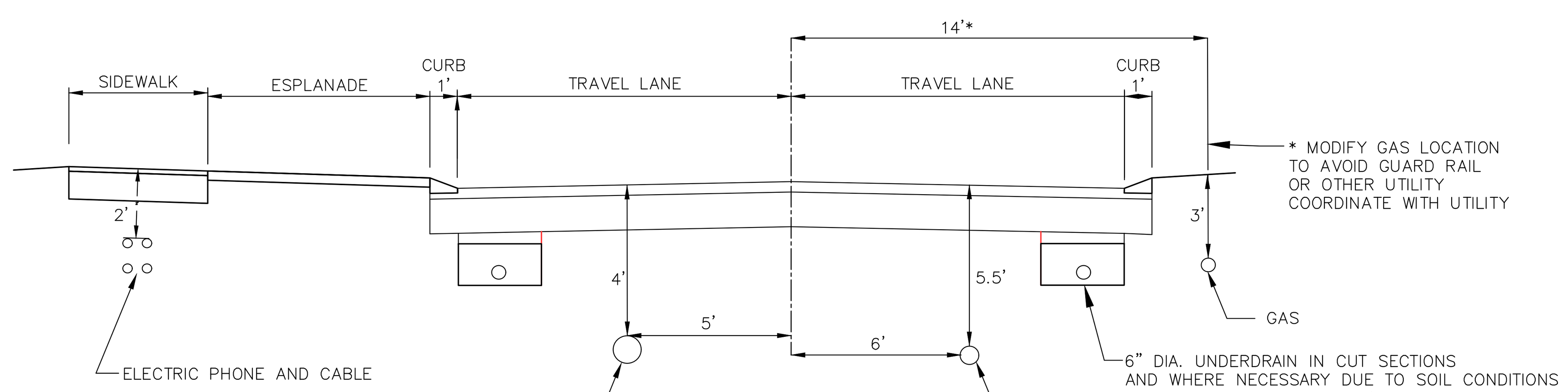
Town of Cumberland - Major Access Cross Section
NOT TO SCALE
Major Access Road with NO sidewalk



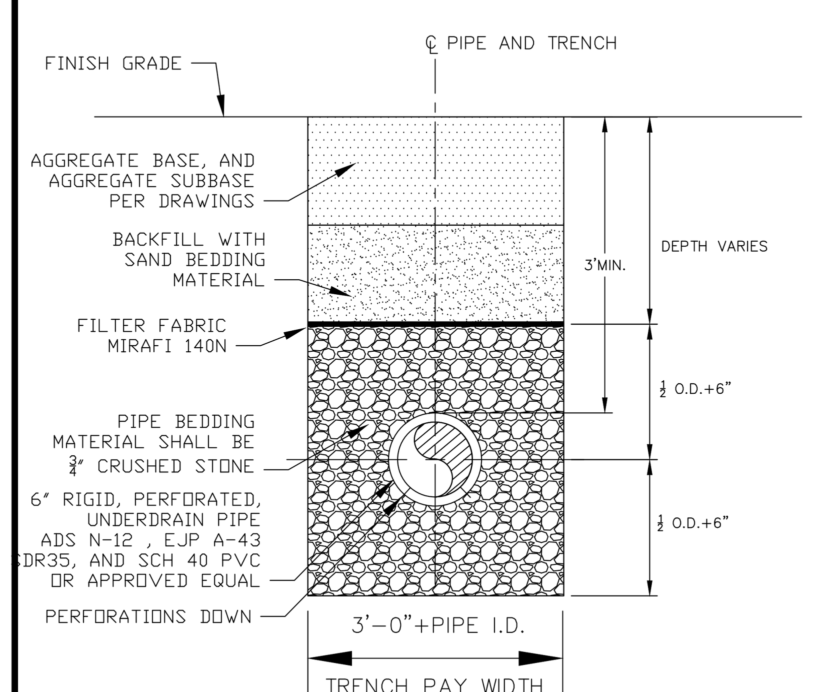
Town of Cumberland - Major Access Cross Section
NOT TO SCALE
Major Access Road with 5' walk and NO esplanade on Right



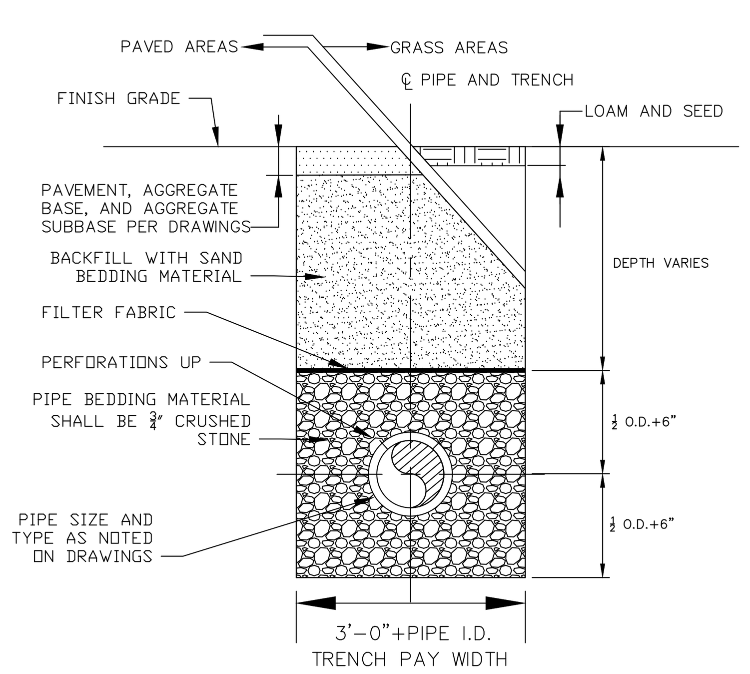
Town of Cumberland - Major Access Cross Section
NOT TO SCALE
Major Access Road with 5' walk and esplanade on Right



TYPICAL UTILITY SECTION
NOT TO SCALE



MDOT TYPE "B" UNDERDRAIN TRENCH DETAIL
NOT TO SCALE



MDOT TYPE "C" UNDERDRAIN TRENCH DETAIL
NOT TO SCALE

ROAD CONSTRUCTION NOTES:

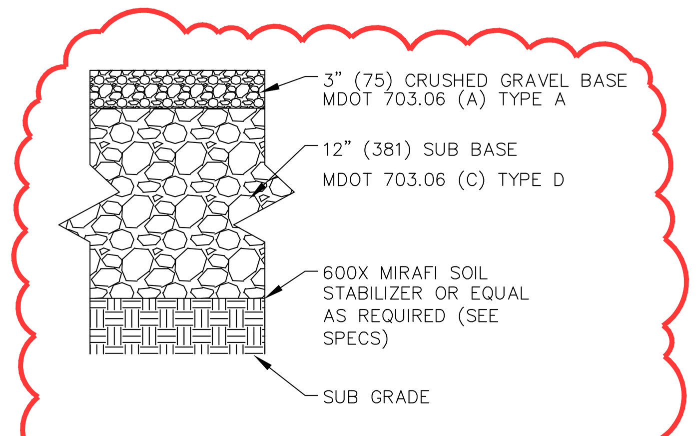
1. IN FILL AREAS 3:1 SLOPES ARE TO BE USED UNLESS ENOUGH USEABLE WASTE MATERIAL HAS BEEN STOCKPILED TO USE 4:1 FILL SLOPES.

2. IN FILL AREAS THE GRANULAR MATERIAL TO BE USED SHALL CONFORM TO SECTION 703.19 OF THE STATE OF MAINE STANDARDS SPECIFICATIONS FOR GRANULAR BORROW.

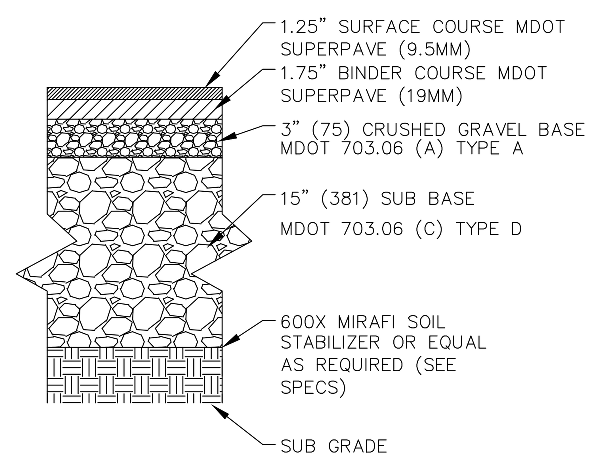
3. UNDERDRAIN SHALL BE INSTALLED IN ALL AREAS WHERE LEDGE IS ENCOUNTERED. CONTRACTOR SHALL ASSUME UNDERDRAIN IS REQUIRED IN CUT AND LEDGE CONDITIONS AND SHALL BE PART OF THE BASE BID.

4. INSTALL FABRIC (Mirafi 500X) UNDER ROAD BASE WHEN SOFT CLAY IS ENCOUNTERED DURING CONSTRUCTION. WHEN FOUND CONTRACTOR SHALL CONTACT ENGINEER FOR SPECIFIC RECOMMENDATION BASED ON FIELD CONDITIONS.

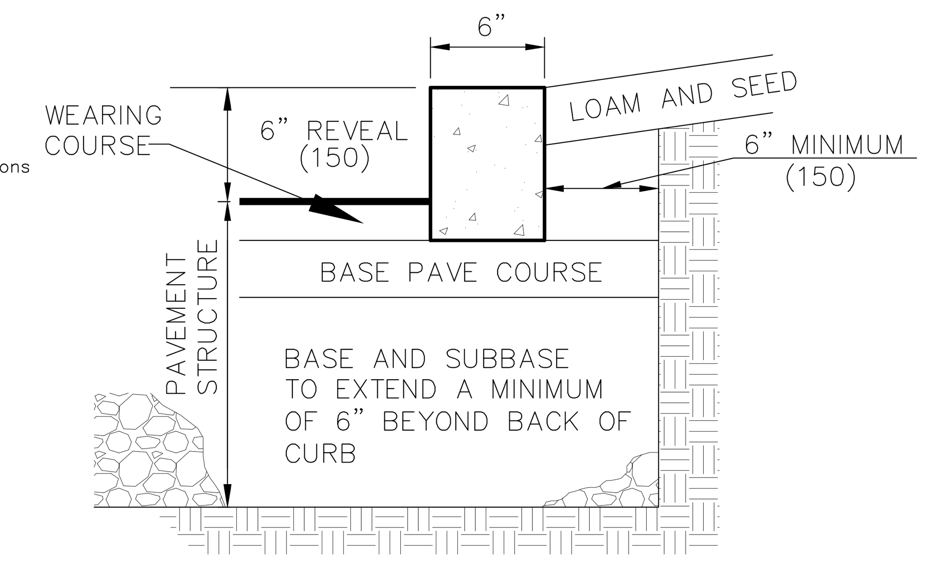
5. CONTRACTOR MAY PERFORATE STORM DRAIN IF AVAILABLE TO SUBSTITUTE UNDERDRAIN ON THAT SIDE OF ROAD. UNDERDRAIN IS STILL REQUIRED ON OTHER SIDE OF ROAD TO MEET TOWN SPECIFICATION. INSTALL TYPE C UNDERDRAIN WITH PERFORATED STORM DRAIN (HOLES UP). INSTALL TYPE B UNDERDRAIN FOR 6" UNDERDRAIN IS USED (HOLES DOWN). TIE UNDERDRAIN INTO CATCH BASINS AS AVAILABLE OR OUTLET TO DITCH OR SWALE.



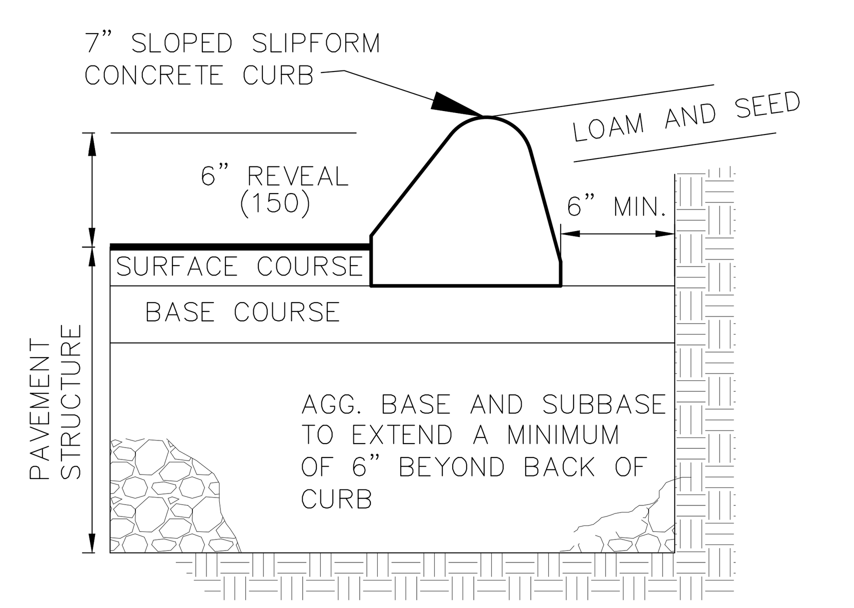
GRAVEL DRIVE @ FARM
NOT TO SCALE



BIUMINOUS CONCRETE DRIVE
NOT TO SCALE



VERTICAL SLIPFORM CONCRETE CURB
NOT TO SCALE – ONLY WHEN SIDEWALK ABUTS ROAD (NO ESPLANADE)



7" SLOPED SLIPFORM CONCRETE CURB
NOT TO SCALE – NON-SIDEWALK AREAS

EROSION CONTROL NOTES:

1. ALL EROSION CONTROL METHODS SHALL CONFORM TO THE MAINE EROSION AND SEDIMENT CONTROL HANDBOOK FOR CONSTRUCTION BEST MANAGEMENT PRACTICES BY THE CUMBERLAND COUNTY SOIL WATER CONSERVATION DISTRICT, AND THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

2. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR SHALL PLACE THE SILT FENCE. THE CONTRACTOR SHALL INSPECT THE BARRIER AND OTHER PREVENTATIVE MEASURES BI-WEEKLY, BEFORE ANY PREDICTED RAIN EVENT, AND AFTER ANY RAIN EVENT. THE CONTRACTOR SHALL REMOVE ANY ACCUMULATED SILT AND/OR MAKE REPAIRS AS NECESSARY.

3. ALL TOPSOIL SHALL BE SAVED TO LOAM LANDSCAPED AREAS TO A DEPTH OF 4". LOAM SHALL BE STOCKPILED ON SITE IN A LOCATION CONVENIENT TO THE CONTRACTOR. THE STOCKPILE WILL BE TEMPORARILY SEEDED WITH RYE GRASS AND MULCHED AT 75 90 LBS/1000SF. ALL SOIL STOCKPILES ARE TO BE ENCLOSED WITH SILT FENCE. STOCKPILES SHALL NOT BE LOCATED IN WETLAND STEEP SLOPES, OR AREAS OF CONCERTRATING FLOW.

4. ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE PERMANENTLY SEEDED. SEEDING SHALL BE PERFORMED IN ACCORDANCE WITH MDOT SPECIFICATION: LIME AT 3 TONS/ACRE: FERTILIZER 10-10-10 AT 13.8LBS/1000 SF: SEED MDOT PARK MIX AT 3 LBS/1000 SF. - SEEDING SHALL BE PERFORMED BETWEEN APRIL 15 - JUNE 15 OR AUGUST 15 - SEPTEMBER 15, WINTER RYE SHALL BE USED AS TEMPORARY SEED BETWEEN SEPTEMBER 15 - OCTOBER 15. ALL FINISHED SLOPES EXCEEDING 15% SHALL ALSO HAVE MULCH NETTING INSTALLED AND PINNED DOWN. AFTER SEPTEMBER 15, THE SAME APPLIES TO ALL SLOPES EXCEEDING 8%.

5. ALL AREAS TO BE SEEDED SHALL BE MULCHED. MULCH SHALL BE LONG FIBERED HAY OR STRAW AND SPREAD UNIFORMLY. 1.5 TO 2.0 TONS PER ACRE. TO BE MAINTAINED MOIST TO MINIMIZE BLOWING AS NECESSARY. IN WINTER CONDITIONS, NO MULCH IS TO BE APPLIED OVER SNOW. THE SNOW MUST FIRST BE REMOVED AND THEN MULCH APPLIED ACCORDING TO SPECIFICATIONS STATED PRIOR. IN ALL CASES MULCH SHALL BE APPLIED SUCH THAT THE SOIL SURFACE IS NOT VISIBLE THROUGH THE MULCH. DURING NOVEMBER 1 THROUGH APRIL 1 MULCHING SHALL BE COMPLETED DAILY BY THE END OF THE WORK DAY.

6. PLACE SILT SACKS IN CATCH BASIN INLET DURING CONSTRUCTION. CONTACT AH HARRIS IN PORTLAND (207) 775-5764 OR AUGUSTA (207) 622-0821 SILT SACKS SHALL BE REMOVED AFTER FINAL PAVEMENT OVERLAY.

7. ALL SEDIMENT CONTROL FENCING AND SILT SACKS BARRIERS WILL REMAIN IN PLACE UNTIL SEEDLINGS HAVE BEEN ESTABLISHED.

8. ALL EARTH CHANGES WILL BE CONSTRUCTED AND COMPLETED IN SUCH A MANNER SO THAT THE EXPOSED AREA OF ANY DISTURBED LAND WILL BE LIMITED TO THE SHORTEST PERIOD OF TIME POSSIBLE. THE CONTRACTOR SHALL COMPLETE FINAL GRADING, SEEDING, AND MULCHING IN CONJUNCTION WITH THE COMPLETION OF THE CORRESPONDING BUILDINGS WHENEVER POSSIBLE. IF FINAL GRADING CANNOT BE COMPLETED THEN THE CONTRACTOR IS TO MULCH ANY DISTURBED LAND AND WORK ON TOP OF THE MULCH. AREAS OF DISTURBED SOIL WILL BE TEMPORARILY MULCHED OR SEEDED WITHIN 30 DAYS OF INITIAL DISTURBANCE.

9. SEDIMENT CAUSED BY ACCELERATED SOIL EROSION WILL BE REMOVED FROM RUNOFF WATER BEFORE IT LEAVES THE DEVELOPMENT SITE.

10. ALL TEMPORARY OR PERMANENT FACILITY CONSTRUCTED FOR THE CONVEYANCE OF WATER AROUND, THROUGH, OR FROM THE DEVELOPMENT SITE WILL BE CONSTRUCTED TO LIMIT THE WATER FLOW TO A NON-EROSIVE VELOCITY.

11. PERMANENT SOIL EROSION CONTROL MEASURES FOR ALL SLOPES, CHANNELS, DITCHES, OR ANY DISTURBED LAND AREA WILL BE COMPLETED WITHIN 15 DAYS AFTER FINAL GRADING HAS BEEN COMPLETED.

12. IN THE EVENT THAT TEMPORARY OR PERMANENT SEEDLINGS HAVE NOT BEEN ESTABLISHED (90% SURFACE COVERAGE) BY SEPTEMBER 15, TEMPORARY MULCHING SHALL BE APPLIED FOR PROTECTION OVER WINTER (PAST THE GROWING SEASON) IN ACCORDANCE WITH THE TEMPORARY MULCHING BMP OF THE MAINE EROSION AND SEDIMENT CONTROL HANDBOOK.
A. MULCHING FOR OVER WINTER PROTECTION WILL BE COMPLETED BY NOVEMBER 15.
B. WINTER MULCH ON SLOPES 8% OR GREATER WILL BE ANCHORED WITH NETTING.
C. ALL SOILS DISTURBED PRIOR TO NOVEMBER 1 AND NOT HAVING THE REQUIRED COVER OF VEGETATION WILL BE STABILIZED WITH ANCHORED MULCH BY NOVEMBER 15.

13. PROVIDE TWO TEMPORARY CMP RISERS AT EXISTING CATCH BASIN AND WRAP WITH EROSION CONTROL FABRIC TO CONTROL POTENTIAL SEDIMENTATION. INSTALL STONE BERM OR HAY BALES AROUND CATCH DURING CONSTRUCTION..

14. NO EARTH MOVING OR CONSTRUCTION OPERATIONS ARE ANTICIPATED ON THE EXISTING STEEP SLOPE EXCEPT FOR RIP-RAP SLOPE PROTECTION. ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED IN ACCORDANCE WITH OTHER EROSION CONTROL NOTES.

15. DURING WINTER CONSTRUCTION THE CONTRACTOR SHALL INSTALL AN EROSION CONTROL FILTER BERM. THE CONTRACTOR SHALL INSTALL THE BERMS AS SEDIMENT BARRIERS DURING FROZEN GROUND CONDITIONS.

PAVING, GRADING & DRAINAGE NOTES:

1. VERTICAL DATUM IS NATIONAL GEODETIC DATUM 1929 DEFINITION. BENCHMARK LOCATIONS ARE SPECIFIED ON TITCOMB SURVEY.

2. CLEARING LIMITS WILL BE FLAGGED BY THE ENGINEER AND THE OWNER. THE CONTRACTOR SHALL NOT CUT BEYOND THE LIMITS OR REMOVE A TREE DESIGNATED TO BE SAVED WITHOUT THE OWNER'S AND ENGINEER'S CONSENT.

3. ALL CURBS AND WALKS SHALL BE STAKED OUT BY THE CONTRACTOR AND APPROVED BY THE OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION. SIDEWALKS TO BE 4' WIDE FROM DRIVEWAY TO THE FRONT DOOR AND SET BACK 4' FROM THE HOUSE.

4. DRIVEWAYS TO BE 24' WIDE AT THE GARAGE DOOR AND MAY TRANSITION TO 20' WIDTH AS APPROPRIATE TO MEET SITE CONDITIONS.

TRAIL SYSTEM NOTES:

1. A TRAIL SYSTEM SHALL BE INSTALLED THROUGH OCEANVIEW AT CUMBERLAND PROPERTY TO PROVIDE PEDESTRIAN ACCESS. THE TRAIL SYSTEM WILL FORM LINKS TO ABUTTING PARCELS AND CONNECTION TO TOWN TRAIL SYSTEMS. THE TRAIL SYSTEM WILL BE AVAILABLE FOR PUBLIC & PRIVATE USE. THE DETAILED DESIGN WILL BE COORDINATED WITH THE TOWN PLANNER, PLANNING BOARD, AND THE OWNER.

FAIRPOINT NOTES:

1. ALL CONSTRUCTION TO BE IN COMPLIANCE WITH FAIRPOINT CONSTRUCTION STANDARDS.

2. ALL TRENCHING, CONDUIT AND BACK FILLING IS THE CONTRACTOR'S RESPONSIBILITY.

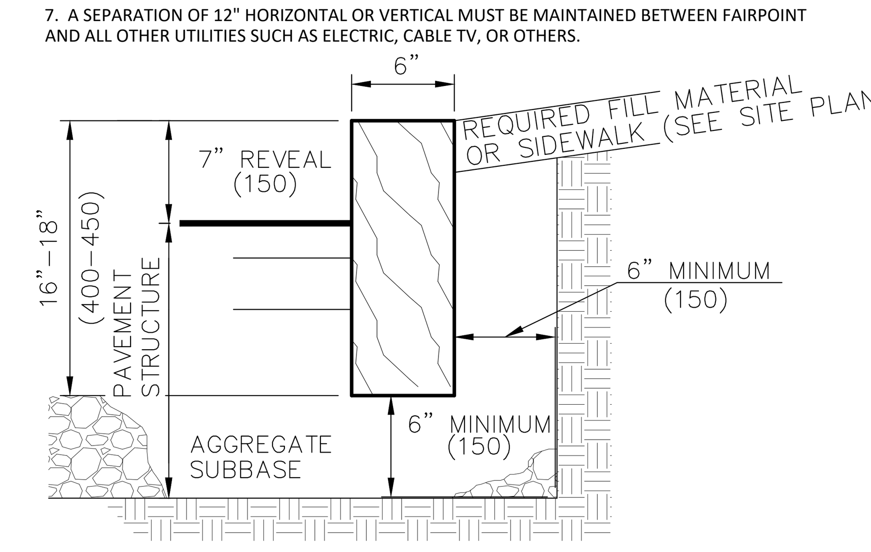
3. ALL CABLES SHALL BE IN CONDUIT UNDER ALL PAVED ROADS, DRIVEWAYS AND WALKWAYS. 4" FOR THE MAIN CABLE AND 2" FOR SERVICE WIRES.

4. CONDUITS FOR SERVICE WIRES SHOULD BE INSTALLED AT ALL LOCATIONS WHERE REQUIRED DURING THE INITIAL INSTALLATION OF THE MAIN CABLE.

5. THE TRENCH MUST BE FILLED WITH "SUITABLE" BACK FILL, I.E. , SAND BACK FILL WITH NO STONE LARGER THAN 1/4" IN DIAMETER.

6. FAIRPOINT WILL SUPPLY THE CABLE AND LABOR TO INSTALL SAME.

7. A SEPARATION OF 12" HORIZONTAL OR VERTICAL MUST BE MAINTAINED BETWEEN FAIRPOINT AND ALL OTHER UTILITIES SUCH AS ELECTRIC, CABLE TV, OR OTHERS.



VERTICAL GRANITE CURB
NOT TO SCALE AT ALL ROAD ENTRANCE RADII AT INTERSECTIONS

UTILITIES GENERAL NOTES:

1. ALL UTILITIES TO BE LOCATED UNDERGROUND.

2. THE LOCATION OF EXISTING UNDERGROUND UTILITIES IS NOT GUARANTEED. THE CONTRACTOR SHALL VERIFY THE LOCATION OF UNDERGROUND UTILITIES AND STRUCTURES WITH THE RESPECTIVE OWNERS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH THE REQUIREMENTS OF UTILITY AN STRUCTURE OWNERS REGARDING NOTIFICATION OF WORK AND PROTECTION OF EXISTING FACILITIES.

3. CONTRACTOR SHALL VERIFY ALL CRITICAL DIMENSIONS AND GRADES TO HIS SATISFACTION BEFORE WORK BEGINS. ANY DISCREPANCIES SHALL BE REPORTED IMMEDIATELY TO THE OWNER'S REPRESENTATIVE.

4. ALL UTILITIES ARE TO BE CONSTRUCTED TO THE STANDARDS SET BY THE RESPECTIVE UTILITY. PRE- CONSTRUCTION CONFERENCE MUST BE HELD WITH ALL UTILITY REPRESENTATIVES.

5. A MINIMUM OF 12" HORIZONTAL SPACING IS NECESSARY BETWEEN CABLES.

6. 4" CABLE & TELEPHONE SERVICE WILL BE CONSTRUCTED IN THE SAME TRENCH AS ELECTRIC.

7. THE ROAD CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING ELECTRIC, TELEPHONE, & CABLE UP TO AND INCLUDING THE INSTALLATION OF JUNCTION BOXES AND TRANSFORMER PADS. THE ROAD CONTRACTOR SHALL INSTALL ANY ADDITIONAL CONDUIT NEEDED WHERE INDIVIDUAL UNIT SERVICES CROSS THE ROADWAY. THE SITE CONTRACTOR SHALL BE RESPONSIBLE TO EXTEND INDIVIDUAL SERVICE FROM THE TRANSFORMER PAD TO THE BUILDING. THE SITE CONTRACTOR IS REQUIRED TO INSTALL CONDUIT AT ALL PAVEMENT CROSSINGS OTHER THAN THE ROADWAY.

8. THE ROADWAY CONTRACTOR SHALL SET UP A SCOPING MEETING WITH THE SITE CONTRACTOR TO CONFIRM LIMITS OF WORK, SCHEDULING, AND CONSTRUCTION SEQUENCE BEFORE CONSTRUCTION.

CMP NOTES:

1. THE PROPOSED DISTRIBUTION SYSTEM PLAN SHALL BE COORDINATED WITH CENTRAL MAINE POWER COMPANY.

2. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CMP'S CONSTRUCTION STANDARDS AND THE LATEST REVISION OF THE NATIONAL ELECTRICAL SAFTEY CODE.

3. ALL TRENCHING, CONDUIT AND BACK FILLING IS THE CONTRACTOR'S RESPONSIBILITY.

4. CONDUITS SHALL BE A MINIMUM OF SCHEDULE 40 PVC OR EQUIVALENT.

5. ALL CABLES SHALL BE IN CONDUIT UNDER ALL PAVED AREAS, ROADWAYS, AND DRIVEWAYS. PRIMARY CABLES ARE TO BE INSTALLED IN CONDUIT IF DRIVEWAYS ARE NOT ROUGH GRADED.

6. CONDUITS FOR SECONDARY CABLES SHOULD BE INSTALLED AT ALL LOCATIONS WHERE REQUIRED DURING THE INITIAL INSTALLATION OF THE PRIMARY CABLE.

7. PRIMARY CABLE TO BE #2 AL 15 KV.

8. SEE CMP'S CONTRACTOR HANDBOOK, SECTION IX, PARAGRAPHS 910, 911, AND 912 FOR SPECIFICATIONS ON BACK-FILL MATERIALS AND DEPTHS, ETC.

9. ALL TRANSFORMER PADS MUST BE SUPPLIED AND INSTALLED BY THE CONTRACTOR. PAD DESIGNS MUST CONFORM TO CMP SPECIFICATIONS. SEE ILLUSTRATIONS NO. 19, NO. 20, NO. 21 IN SECTION XII OF THE CONTRACTOR'S HANDBOOK.

10. ALL JUNCTION BOXES WILL BE PURCHASED AND INSTALLED BY THE CONTRACTOR. CMP WILL PROVIDE THE JUNCTION BOX, HOWEVER, THE EXCESS COST WILL BE BILLED TO THE OWNER.FIBERGLASS OR CONCRETE PADS REQUIRED FOR STELL CABINETS AND JUNCTION BOXES.

11. CMP WILL SUPPLY THE CABLE, TRANSFORMERS AND LABOR TO INSTALL SAME.

12. ALL METERING ENCLOSURES WILL BE PUNCHED AND INSTALLED BY THE CONTRACTOR.

13. A SEPARATION OF 12" MUST BE MAINTAINED BETWEEN CMP AND ALL OTHER UTILITIES AND/OR TELEPHONE, CABLE ETC.

CABLE TV NOTES:

1. ALL TRENCHING, CONDUIT & BACK FILLING IS THE CONTRACTORS RESPONSIBILITY.

2. CONDUITS SHALL BE SCHEDULE 40 PVC AND WILL BE ROPED WITH 1/4" ROPE.

3. ALL CABLES SHALL BE IN CONDUIT UNDER ALL PAVED ROADS, DRIVEWAYS AND WALKWAYS AS NOTED OR SHOWN ON THE PLAN; 4" FOR THE MAIN CABLE AND 2" FOR THE SERVICE WIRES.

4. CONDUITS FOR SERVICE WIRES SHOULD BE INSTALLED AT ALL LOCATIONS WHERE REQUIRED DURING THE INSTALLATION OF THE MAIN CABLE.

5. THE CABLE COMPANY WILL SUPPLY THE MAIN CABLE AND PEDESTALS AND THE LABOR TO INSTALL SAME.

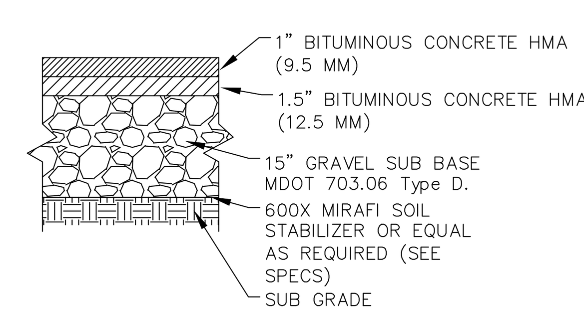
6. THE CABLE COMPANY WILL SUPPLY THE SERVICE WIRES.

7. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE CABLE COMPANY FOR INTERNAL WIRING SPECIFICATIONS AND SERVICE WIRE INSTALLATIONS.

8. ALL SERVICE WIRE INSTALLATIONS AND INTERIOR WIRING SHALL CONFORM TO THE CABLE COMPANY SPECIFICATIONS.

9. A SEPARATION OF 12" HORIZONTAL OR VERTICAL MUST BE MAINTAINED BETWEEN THE CABLE COMPANY AND ALL OTHER UTILITIES SUCH AS ELECTRIC, TELEPHONE OR OTHERS.

10. CONTRACTOR SHALL EXPOSE GROUND ROD AT ALL PAD LOCATIONS TO INSURE PROPER GROUNDING FOR THE CABLE COMPANY.



BIUMINOUS CONCRETE WALK

SEWER CONSTRUCTION NOTES:

1. SEWER LINE CONSTRUCTION SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE TOWN OF CUMBERLAND STANDARD SPECIFICATIONS.

2. MINIMUM DIAMETER FOR MAINLINE SEWER IS EIGHT INCH (8") WITH A MINIMUM SLOPE OF 0.005.

3. SANITARY SEWER SERVICE STUBS TO BE SIX INCH (6") DIAMETER MINIMUM AND TO BE INSTALLED BEYOND THE EDGE OF PAVEMENT, AND UTILITY TRENCH AS SHOWN ON PLAN.

4. SANITARY SEWER SERVICE STUBS TO BE CONNECTED TO THE MAIN LINE BY USE OF 8X8X6 WYES. TEE STUBS WILL NOT BE ALLOWED.

5. SANITARY SEWER MANHOLES TO BE PER ASTM SPECIFICATIONS, WITH TWO (2) COATS OF BITUMINOUS COATING, WITH SMOOTH CHANNELED INVERTS, AND PROPERLY SIZED AND ORIENTED PRECAST PIPE OPENINGS WITH FLEXIBLE PIPE BOOTS. STEPS TO BE INSTALLED PARALLEL TO INVERT CHANNEL. SERVICE CONNECTIONS TO BE INCORPORATED IN INVERT CHANNEL.

6. MANHOLE FRAMES AND COVERS TO BE SUITABLE FOR HIGHWAY LOADING AND TO BE TO DISTRICT STANDARDS.

7. DESIGN AND CONSTRUCTION OF PROJECT SANITARY SEWER UTILITY WILL BE CARRIED OUT TO SPECIFICALLY EXCLUDE THE INTRODUCTION OF NON-SANITARY GROUND AND / OR SURFACE WATER INTO THE SANITARY SEWER SYSTEM.

8. ALL GRAVITY SEWER TO BE LOW PRESSURE AIR AND DEFLECTION TESTED AFTER BACK FILLING AND COMPACTION AND PRIOR TO CONNECTION OF BUILDING SEWER.

9. PRIOR TO THE START OF CONSTRUCTION, DEVELOPER TO PROVIDE TO DISTRICT TWO (2) COPIES OF UTILITY PLAN.

10. MINIMUM HORIZONTAL CLEARANCES TO BE MAINTAINED BETWEEN UTILITIES, TO PERMIT FUTURE MAINTENANCE OPERATIONS WITHOUT DISTURBING ADJACENT UTILITIES,

WATER CONSTRUCTION NOTES:

1. TEST PITS SHALL BE EXCAVATED AT CROSSINGS OF UTILITIES TO DETERMINE LOCATION AND DEPTH SUFFICIENTLY IN ADVANCE OF WATER MAIN CONSTRUCTION TO PERMIT ADJUSTMENT OF WATER MAIN LOCATION BY DEFLECTION OF THE PIPE.

2. MINIMUM DEPTH OF COVER FOR ALL WATER LINES SHALL BE 5.5' FROM FINISHED GRADE UNLESS OTHERWISE DIRECTED.

3. PROPOSED PIPELINE, VALVE, AND HYDRANT LOCATIONS ARE APPROXIMATE. FINAL LOCATION MAY BE ADJUSTED AS REQUIRED TO AVOID CONFLICTS WITH OTHER UTILITIES AND STRUCTURES. NO ADDITIONAL PAYMENT WILL BE MADE FOR EXCAVATION AND BACK FILL BEYOND THE TRENCH LIMITS SHOWN.

4. ANY EXISTING PIPELINE , UTILITY OR STRUCTURE, INCLUDING EXISTING WATER MAINS, DAMAGED BY CONTRACTOR'S OPERATIONS SHALL BE IMMEDIATELY REPAIRED BY CONTRACTOR AT NO ADDITIONAL COST TO OWNER.

5. ALL PROPERTY REMOVED, DAMAGED OR ALTERED IN THE COURSE OF THE WORK SHALL BE REPLACED OR RESTORED TO EQUAL OR BETTER CONDITION TO THAT WHICH EXISTED BEFORE THE WORK COMMENCED.

6. ALL FITTINGS, VALVES, AND HYDRANTS SHALL HAVE MECHANICAL JOINTS RESTRAINED WITH GRIP-RING RETAINER GLANDS.

7. CONSTRUCTION SHALL FOLLOW PORTLAND WATER DISTRICT STANDARDS. ALL MATERIALS FOR THE PROJECT INCLUDING PIPE, COUPLINGS, VALVES, FITTINGS, HYDRANTS, TAPPING SLEEVES AND VALVES, VALVE BOXES, CORPORATION STOPS, CURB STOPS, SERVICE PIPING, CURB BOXES, RETAINER GLANDS, AND ACCESSORIES SUCH AS GASKETS, BOLTS, NUTS, AND GLANDS AS REQUIRED TO MAKE THE PIPING SYSTEMS COMPLETE SHALL MEET PWD SPECIFICATIONS. ALL CONCRETE AND EARTH MATERIALS INCLUDING CRUSHED STONE, GRAVEL, SAND, AND BORROW SHALL BE FURNISHED BY THE CONTRACTOR.

8. A SEPARATION OF 12" VERTICAL CLEARANCE MUST BE MAINTAINED BETWEEN THE WATER MAIN AND ALL OTHER UTILITIES.

9. ALL WATER MAIN SIZES ARE AS INDICATED ON THE PLAN/PROFILES. EACH UNIT SHALL BE SERVICED BY A 1 1/2" LINE OFF THE MAIN, SPLIT AT THE UNIT TO PROVIDE A 1"CTS DOMESTIC SUPPLY AND A 1 1/2" SPRINKLER SUPPLY INSTALLED IN ACCORDANCE WITH THE STANDARDS OF THE PORTLAND WATER DISTRICT. SIZES SHALL BE CONFIRMED BY THE SPRINKLER INSTALLER PRIOR TO CONSTRUCTION.

10. THE COMPLETE PIPING SYSTEM SHALL BE FLUSHED, CHLORINATED, AND PRESSURE TESTED BY THE CONTRACTOR PRIOR TO ACCEPTANCE BY THE OWNER. SERVICES SHALL BE INSTALLED UNDER LINE PRESSURE AFTER THE MAIN HAS BEEN SUCCESSFULLY PRESSURE TESTED.

3.	12-18-2020	No changes, Re-submit to Town	CSB
2.	6-15-2020	Respond to SME Memo 3-4-2020 Re-submit to Maine DEP	CSB
1.	2-24-2020	clarify veritical slipform curb locations Re-submit to Town	CSB

Roadway Sections and Details

Cumberland Crossing - Phase 2
Tuttle and Greely Roads, Cumberland, Maine

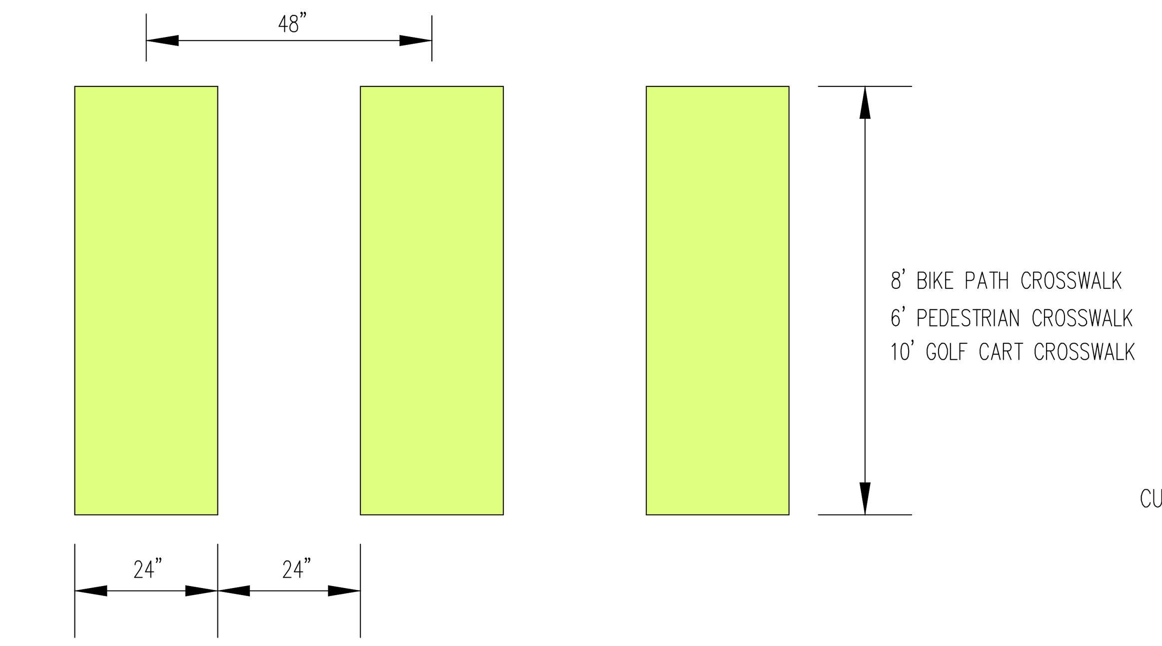
Seacoast Management Company
20 Blueberry Lane, Falmouth, Maine

STATE OF MAINE
CHRISTOPHER S. BELANGER
9098
LICENSED
PROFESSIONAL ENGINEER
12-18-2020

BELANGER ENGINEERING
CONSULTING ENGINEERS
63 Second Avenue , Augusta, Maine 04330
Email: cbelanger@roadrunner.com
Ph 207-622-1462, Cell 207-242-5713

- COMMERCIAL PROJECTS
- RESIDENTIAL SUBDIVISIONS
- TOWN AND STATE APPROVALS
- SITE PLANNING & DESIGN
- STORMWATER MANAGEMENT
- ROAD AND UTILITY DESIGN
- EROSION CONTROL PLANS

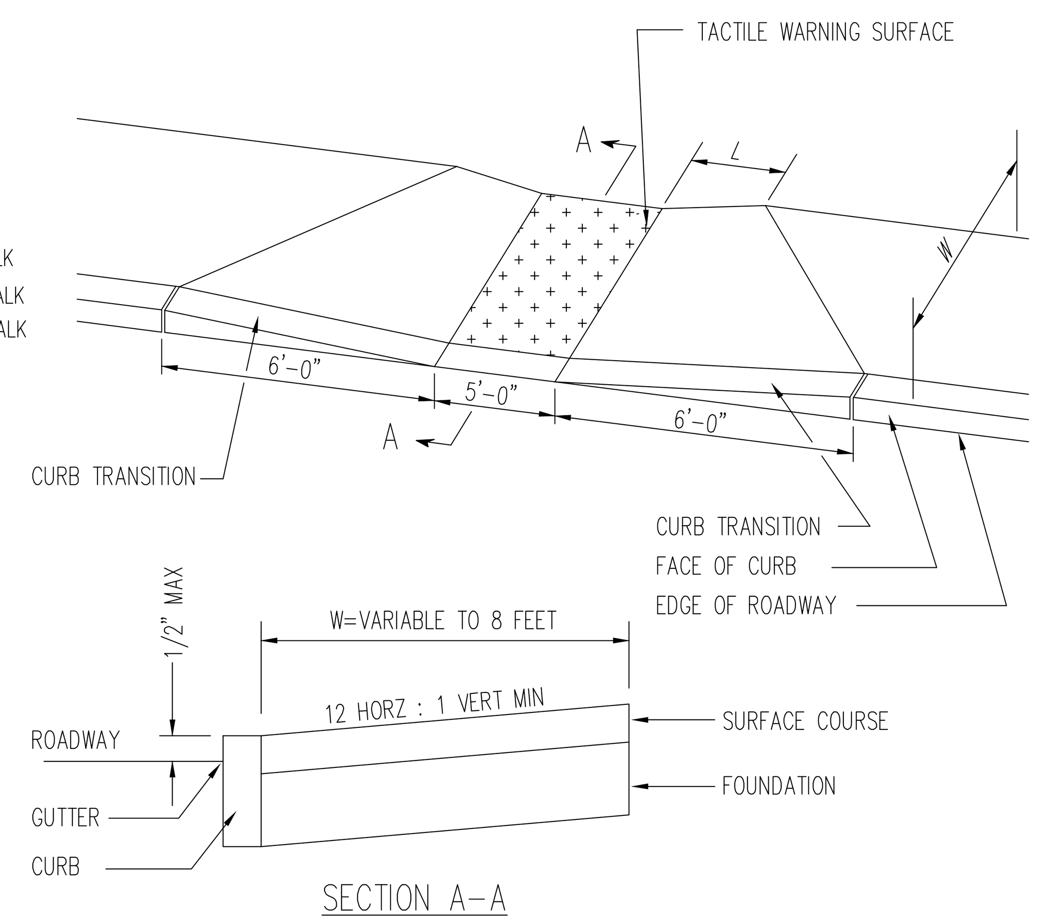
FIELD WK:	SCALE:	SHEET:
DRN BY:	JOB #: 134	C13
CH'D BY:	SS:	
DATE: 12-18-2020	FILE:	



CROSSWALK

NOT TO SCALE

RD-MARKS-CROSSWALK/10-02



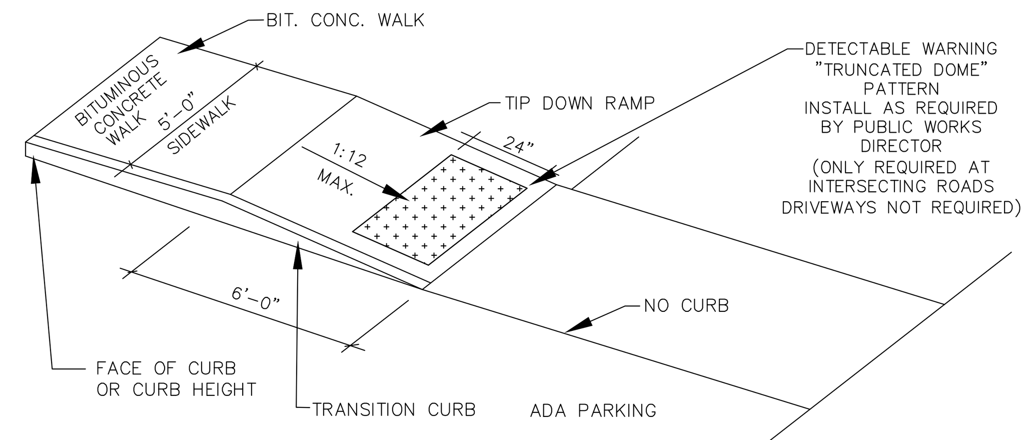
NOTES:
1. THE DIMENSIONS SHOWN AT ROADWAY EDGE ARE FIXED DISTANCES.
2. RAMP CROSS SECTION TO BE SAME AS ADJACENT SIDEWALK; I.E. DEPTH OF SURFACE AND FOUNDATION.
3. IN NO CASE ARE THE RAMPS TO BE PLACED BEHIND THE STOP LINE.

W	L
4'-0"	3'-6"±
5'-0"	2'-9"±
6'-0"	2'-0"±
7'-0"	1'-3"±
8'-0"	0'-0"

WHEEL CHAIR RAMP

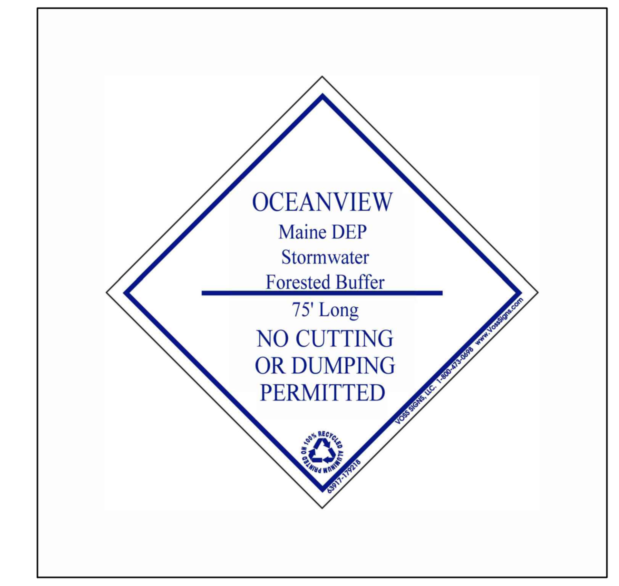
NOT TO SCALE

HC-RAMP-CONC-GCURB/5-95



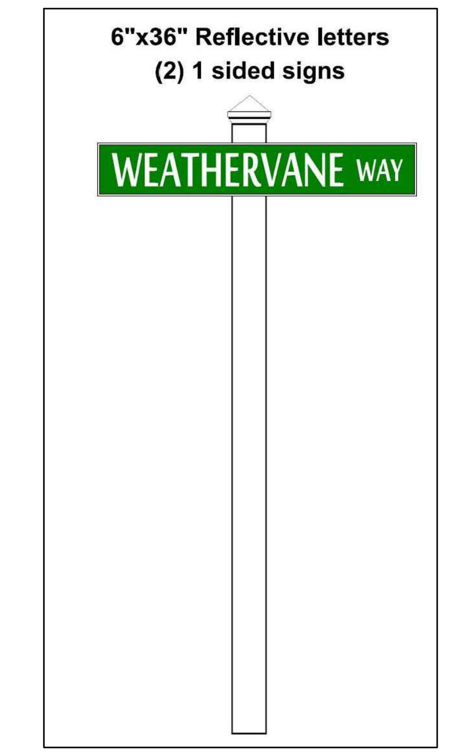
WALKWAY TIP DOWN

N.T.S.



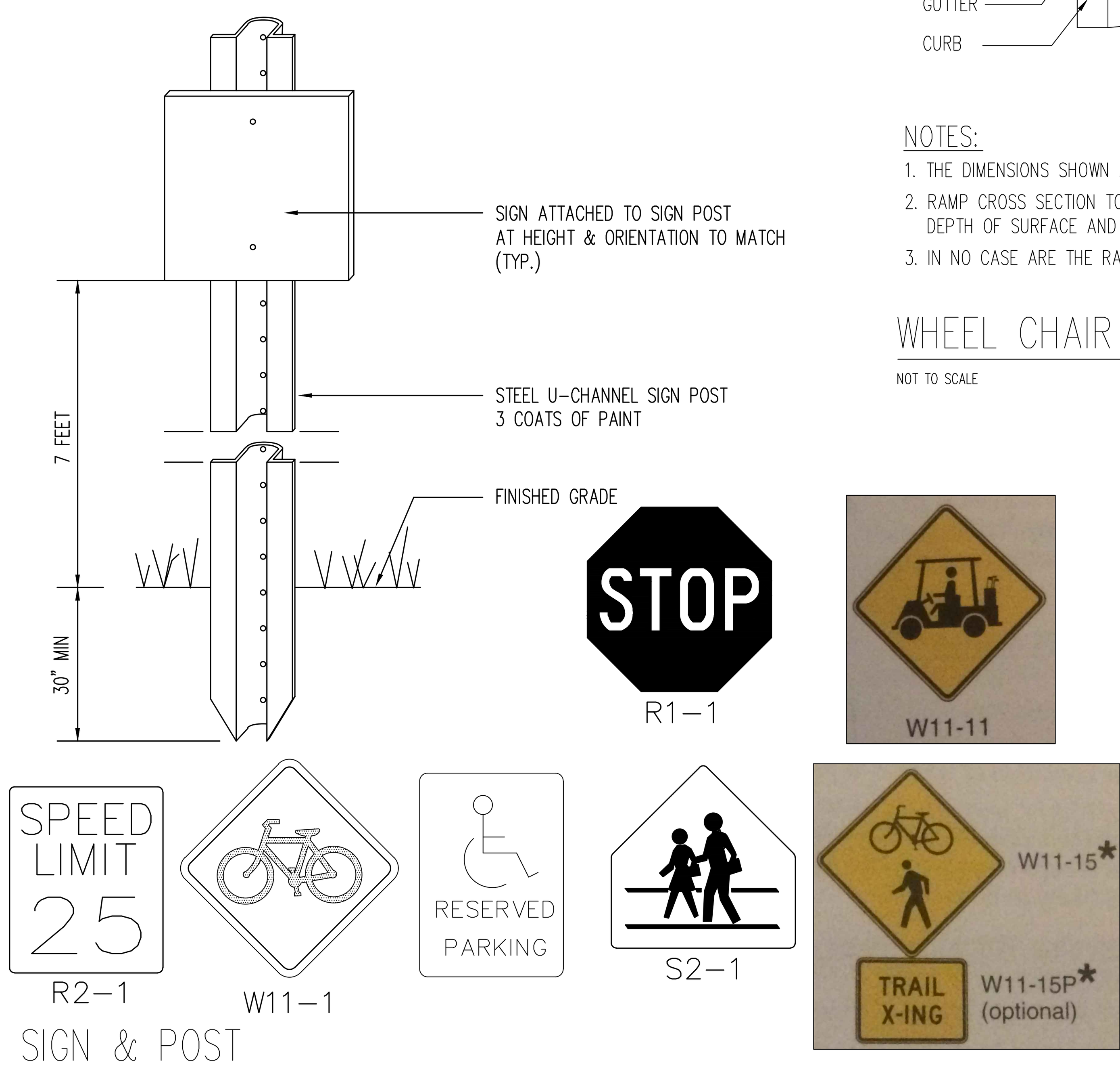
TYPICAL STORMWATER BUFFER SIGN

NOT TO SCALE



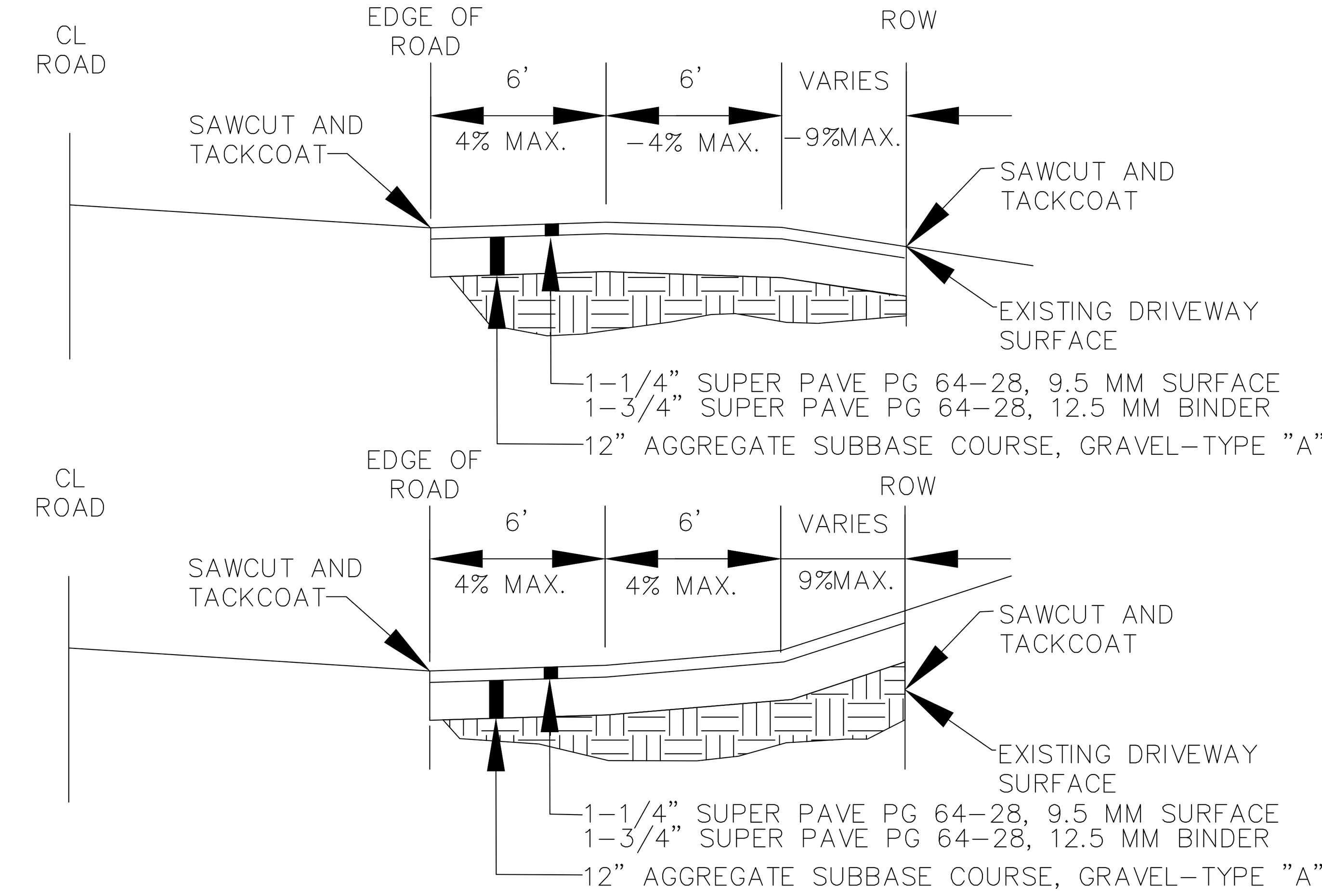
TYPICAL STREET SIGN

NOT TO SCALE



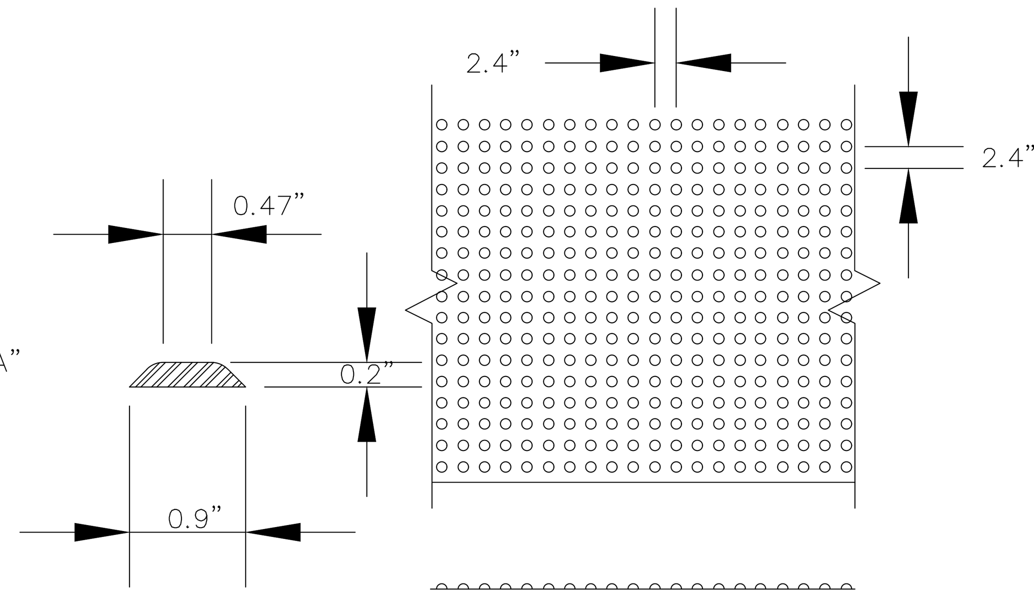
SIGN & POST

NOT TO SCALE



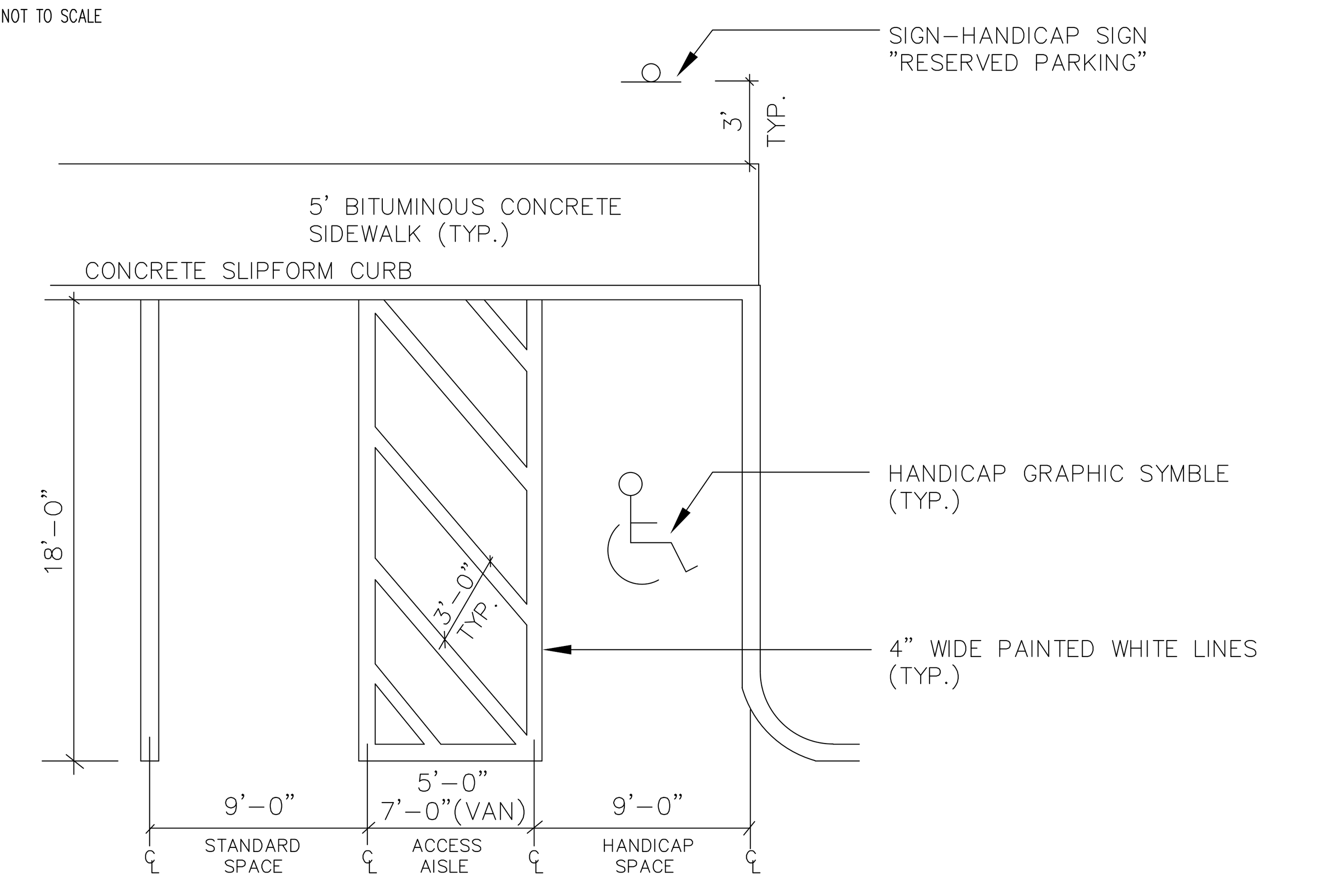
DRIVEWAY APRON DETAIL

NOT TO SCALE



TRUNCATED DOME DETAIL

NOT TO SCALE



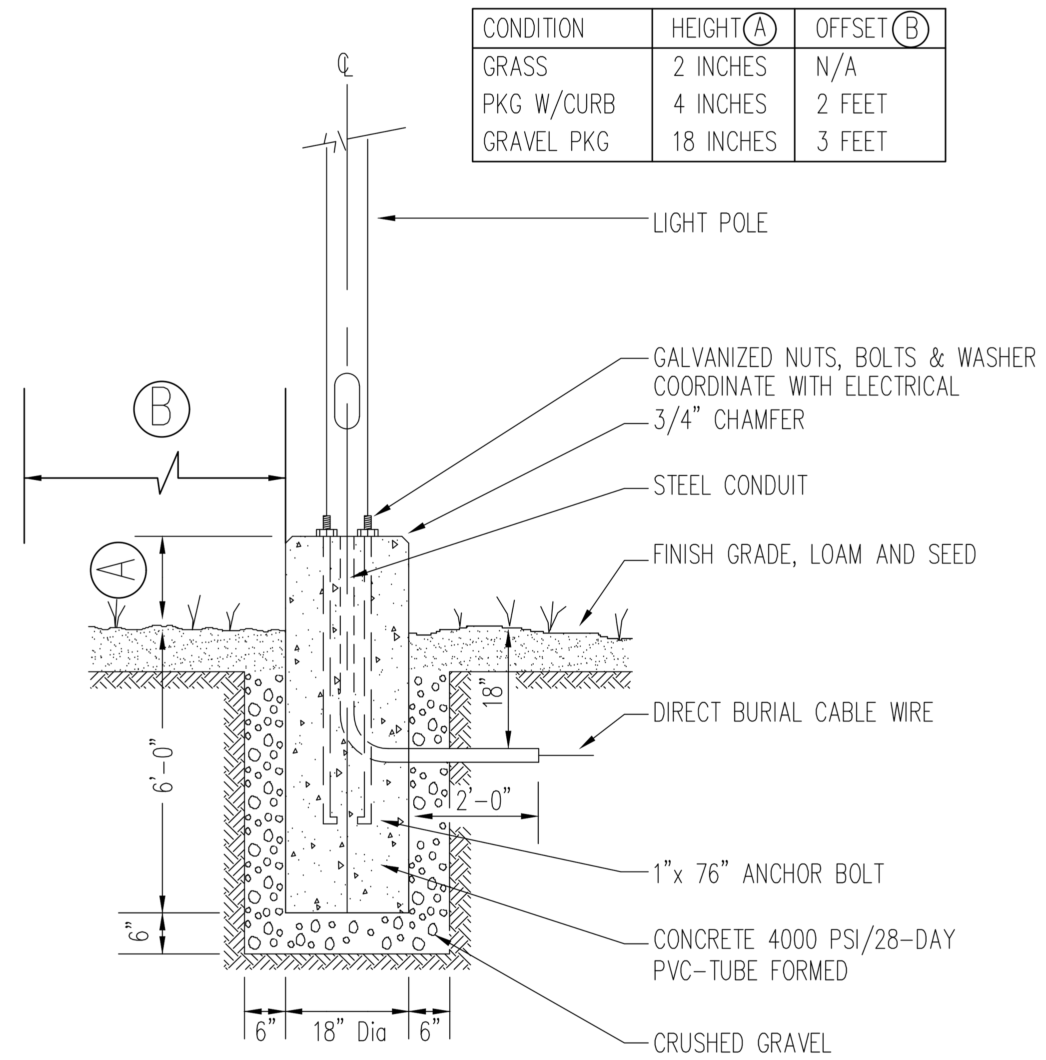
NOTE:
1. SYMBOLS AND PARKING STALLS SHALL CONFORM TO THE REQUIREMENTS OF THE AMERICAN WITH DISABILITIES ACT.
2. ALL PAINT SHALL BE FAST DRYING TRAFFIC PAINT WITH SILICA SAND FOR SKID RESISTANCE, MEETING THE REQUIREMENTS OF OSHTA M248-TYPE N. PAINT SHALL BE APPLIED AS SPECIFIED BY THE MANUFACTURER.

PARKING SPACE LAYOUT

NOT TO SCALE

BASE LOCATION

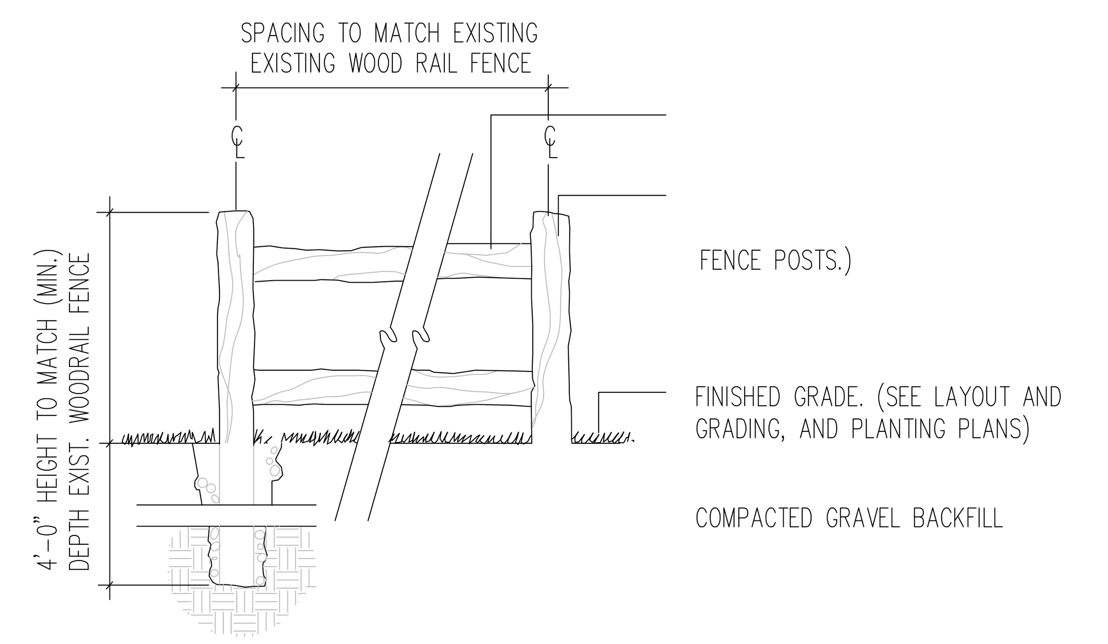
CONDITION	HEIGHT (A)	OFFSET (B)
GRASS	2 INCHES	N/A
PKG W/CURB	4 INCHES	2 FEET
GRAVEL PKG	18 INCHES	3 FEET



NOTES:
1. SUBMIT SHOP DRAWING FOR APPROVAL PRIOR TO INSTALLATION.
2. COORDINATE WITH ELECTRICAL SPECIFICATIONS.
3. COLD-GALVANIZE ALL CUTS.
4. FORM WITH FIBERGLASS OR PVC SMOOTH-FACED FORMS.
5. SEE ELECTRICAL PLANS FOR SIZES

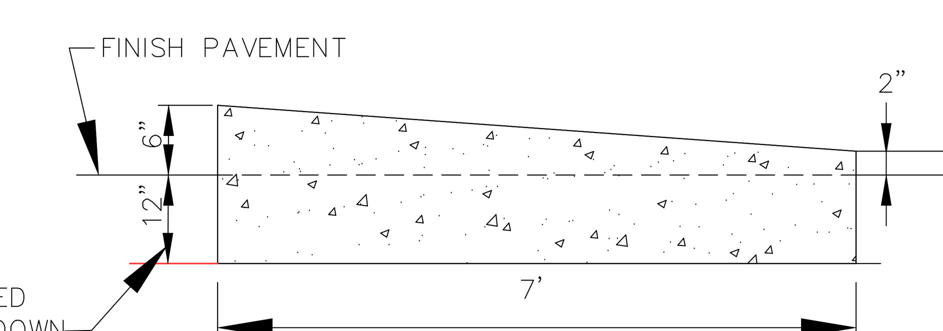
CONCRETE LIGHT POLE BASE

NOT TO SCALE



NEW & REINSTALLED WOOD RAIL FENCE

NOT TO SCALE

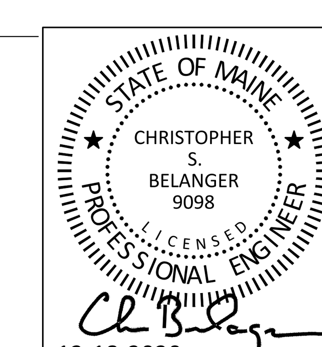


SAWCUT BASE PAVEMENT TO PROVIDE 12" THICKENED CONCRETE BASE AT TIP DOWN

TYPICAL TIPDOWN CURB INSTALLATION

NOT TO SCALE

4.	12-18-2020	No changes, Re-submit to Town	CSB
3.	6-15-2020	No changes, re-submit to Town and DEP	CSB
2.	2-24-2020	No changes this sheet, Re-submit to Town	CSB
1.	12-18-2019	Submit to Town and DEP	CSB



Civil Details

Cumberland Crossing - Phase 2
Tuttle and Greely Roads, Cumberland, Maine

Seacoast Management Company
20 Blueberry Lane, Falmouth, Maine

BELANGER ENGINEERING
CONSULTING ENGINEERS
• COMMERCIAL PROJECTS • RESIDENTIAL SUBDIVISIONS • TOWN AND STATE APPROVALS • SITE PLANNING & DESIGN • STORMWATER MANAGEMENT • ROAD AND UTILITY DESIGN • EROSION CONTROL PLANS
Email: cbelanger@roadrunner.com
63 Second Avenue , Augusta, Maine 04330 Ph 207-622-1462, Cell 207-242-5713

FIELD WK:	SCALE:	SHEET:
DRN BY:	JOB #: 109	C14
CH'D BY:	SS:	
DATE: 12-18-2020	FILE:	

PAVEMENT OR GRAVEL BUILDUP AS REQUIRED
PAVED OR GRAVEL AREAS
UNPAVED AREAS
LOAM AND SEED
BACKFILL WITH CLEAN EXCAVATED MATERIAL OR GRAVEL BORROW
SHEETING AND SHORING AS REQUIRED BY O.S.H.A.
SIDE OF TRENCH MUST BE SLOPED BACK TO MEET SAFETY REQUIREMENTS WHERE EXTRA WIDTH IS POSSIBLE
2" STYROFOAM INSULATION IF COVER OVER PIPE IS LESS THAN 4'
MAINTAIN TRENCH WIDTH TO TOP OF STONE BEDDING
A.SAND OR STONE BEDDING
B.GRAVEL BEDDING WITH NO STONES OVER 2"
C.THOROUGHLY COMPACTED SUITABLE MATERIAL FROM TRENCH WITH NO STONES LARGER THAN 2" OR
ADS N-12 (STORM DRAIN) SDR 35 (SEWER) (SIZE AS NOTED ON PLAN)
UNDISTURBED ORIGINAL SOIL
VARIES 24" MIN.
6"
PIPE DIA.
PIPE DIA.
DIA. or 15" MAX.
MIN. WIDTH 30"
STORM DRAIN / SEWER TRENCH DETAIL
NOT TO SCALE
UNPAVED AREAS
PAVED AREAS
BACKFILL TO MATCH EXISTING MATERIAL
SAW CUT
EXISTING PAVEMENT
EXISTING GROUND
UTILITY LOCATION MARKER (TAPE) 24" BELOW FINAL GRADE. USE FOR FORCE MAINS ONLY.
SIDE OF TRENCH MAY BE SLOPED BACK IN UNPAVED AREAS ONLY. EXCAVATION MUST MEET O.S.H.A. STANDARDS
PAVING, AGGREGATE BASE & SUBBASE (SEE TRENCH PAVING DETAILS)
FINAL BACKFILL TO BE COMPACTED IN 12" LAYERS MAX.
INITIAL BACKFILL
SHEETING AND SHORING AS REQUIRED BY O.S.H.A.
1/2 PIPE O.D. + 6" MIN.
1/2 PIPE O.D. + 6" MIN.
LEDGE
PIPE BEDDING MATERIAL
4/3 O.D. PIPE + 1.5' MAX.
LEDGE
EARTH
NOTES:
1. INSTALL 3 FOOT LONG IMPERVIOUS DAMS IN BEDDING/INITIAL BACKFILL MATERIAL EVERY 100 FEET TO PREVENT TRENCH GROUNDWATER FROM BEING CHANNELED ALONG BEDDING/INITIAL BACKFILL.
2. REFER TO LATEST MDOT SPECIFICATIONS FOR BEDDING AND BACKFILL REQUIREMENTS.
3. INITIAL BACKFILL TO BE 12 INCHES OVER TOP OF PVC PIPE ONLY.
TYPICAL TRENCH DETAIL
NOT TO SCALE
PROGRESS PLAN
NOT FOR CONSTRUCTION
THIS DOCUMENT IS ISSUED FOR INFORMATIONAL PURPOSES ONLY. THE DATA SHOWN HEREON IS SUBJECT TO REVISION.
NOTES:
1. #5 REBAR VERTICAL 5" O.C. CANTILEVERED OVER TOP TO OPENING.
2. #4 REBAR HORIZONTAL 8" O.C. EACH WALL.
3. 4 EXTRA #4 REBAR AROUND KNOCKOUTS. KNOCKOUTS TO LINE UP WITH TRENCHES.
4. #4 REBAR 5" O.C. BOTH WAYS ON TOP.
5. REFER TO SPECS OF CMP CO.
6. IF INSTALLED IN PAVED AREAS, ORDER PRECAST SLAB AND INSTALL UNDER HAND-HOLE FOR ADDITIONAL TRAFFIC LOAD.
7. FINAL DESIGN SUBJECT TO CMP CO. APPROVAL.
6'-10"
11"
4'-0"
33.5" SQUARE
5"
TAPER TO 7" AT TOP
3 PIECE TYPE "B" CASTING BY ETHERIDGE FOUNDRY
MORTAR ONE LAYER BRICK UNDER CASTING
FINISH GRADE
2.5"
4.5"
5"
2'-0"
4'-0"
3/4" DIA EYELET (TYP.)
8"x14" KNOCKOUTS
5" THICK WALL WITH 2" TAPER TO 7" AT TOP
BASE SLAB WHERE REQUIRED (SEE NOTE #6)
5"
6'-0"
5"
ELECTRIC PULLBOX DETAIL
NOT TO SCALE
PROVIDE CONCRETE COVER IF REQUIRED FOR PHASING OF TRANSFORMERS BY CMP
38"-40"
7"
7"
2"
2-8" x 5/8" BOLTS
FINAL GRADE
6"
6"
1/2"
2"TYP.
GROUND ROD (SEE NOTE 6)
3'-0"
SECTION VIEW A-A
6"
6"
3"
4x4-W2.7xW2.9 TYP ALL FOUR SIDES
6" GRAVEL FILL
5"
5"
TRANSFORMER FOUNDATION
CABLE HOLE (TYP)
1/2" HOLE FOR GROUND WIRE
8" LAP AT CORNERS (TYP)
A
A
NOTE 7
26"-30"
40"-42"
50"-52"
PLAN VIEW
1'-0"
6"
GROUND ROD
1/2" HOLE FOR GROUND WIRE
24"
28"
38"-40"
48"-50"
FRONT
4x4-W2.7xW2.9 TYP ALL FOUR SIDES
NOTES:
1. CONCRETE FOUNDATION IS SUITABLE FOR BOTH 7200/12470 VOLT & 20/34.5 KV SINGLE-PHASE TRANSFORMER & PRIMARY JUNCTION BOX INSTALLATIONS.
2. SET FOUNDATION ON SUITABLE GRAVEL FILL AND PROVIDE ADEQUATE DRAINAGE. LOCATION TO BE ACCESSIBLE BY TRUCK & SUITABLY PROTECTED FROM PLOW AND TRAFFIC DAMAGE.
3. FRONT DENOTES THE SIDE ON WHICH THE ACCESS DOORS ARE LOCATED. THE FOUNDATION MUST BE INSTALLED SO THE "FRONT" IS READILY ACCESSIBLE.
4. OTHER CMP-APPROVED PADMOUNT TRANSFORMER FOUNDATIONS MAY BE USED.
5. PROVIDE 6" SQUARE CABLE HOLES (BOND OUT) 3" UP THE WALL FROM THE BASE. ONE PER WALL, LINE UP W/TRENCHES.
6. CMPCO. TO FURNISH A 3/4"x8' GALVANIZED ROD TO BE INSTALLED 6" IN FRONT OF THE LEFT FRONT CORNER OF TRANSFORMER FOUNDATION. THE TOP OF THE GROUND ROD IS TO BE 6" BELOW FINAL GRADE.
7. PULLING EYE INSERT, FOR USE WITH 3/4" NATIONAL COURSE THREAD EYE-BOLT (RICHMOND LCB-1 OR EQ.) LOCATED OPPOSITE EACH CABLE HOLE & APPROX. 16" FROM THE BOTTOM.
8. CAN BE USED AS A FOUNDATION FOR 3 PHASE JUNCTION CABINET CU UDCUT3 (S/C 62-1490) WITH CU UDCUT3S (S/C 67-3921) SKIRT.
TRANSFORMER PAD DETAIL 25 TO 167 KVA 1 Φ
NOT TO SCALE
FINISH GRADE
PLASTIC MARKER TAPE PLACED APPROX. 12" BELOW FINISH GRADE
4" CONDUIT - SERVICE CABLE
CLEAN BACKFILL CONTAINING NO ROCKS LARGER THAN 5" IN DIAMETER.
4" TELEPHONE CABLE CONDUIT
PRIMARY CABLE POWER - 2 4" CONDUITS
BEDDING OF SOIL CONTAINING NO ROCKS
42" MIN
36" MIN
24" MIN
6"
12" MIN
12" MIN
NOTES:
1. SECONDARY OR SERVICE CABLES AND COMMUNICATION CABLES MAY BE PLACED IN THE SAME TRENCH AT THE SAME DEPTH WITHOUT A REQUIRED CLEARANCE OR SEPARATION BETWEEN THE CABLES.
2. INSTALLATION SHOULD NOT ALLOW THE INTER-TWINING OF CABLES.
3. BEDDING AND BACKFILL SHALL BE FREE OF ROCKS, STUMPS AND OTHER DEBRIS.
TYPICAL ELECTRICAL TRENCH
NOT TO SCALE
2"
8"
TOPSOIL WITH GRASS
GRAVEL SUBBASE, MDOT 703.06 TYPE D (NO STONES > 6")
GEOTEXTILE SEPARATOR MAY BE REQUIRED FOR SOME CONDITIONS
SUBGRADE
7'
TYPICAL SECTION THRU STABILIZED TRAIL / CART PATH
NOT TO SCALE
COVER
END CAP WITH UPPER 1/3 CUT OUT
GROUT TEE INTO MANHOLE WALL
ATTACH TO MANHOLE WITH ALL STAINLESS STEEL 1/4" x 2" STRAP HANGERS AND 1/2" DIA. STAINLESS STEEL EXPANSION ANCHORS AT 2" O.C. (MIN. 1 HANGER)
COMPLETELY GROUT FITTINGS INTO CHANNEL
MATCH CROWNS UNLESS OTHERWISE NOTED
DIAMETER *
*FOR MANHOLE WITH 12" DIA. DROP PIPE, USE 5' DIAMETER, OR AS INDICATED. FOR MANHOLES WITH TWO OR MORE DROP STRUCTURES, USE 6'DIA, OR AS INDICATED
INSIDE DROP MANHOLE WITH PVC PIPE
N.T.S.
3/8" PRE-MOLDED FIBER EXPANSION JOINT (CUT TOP 3/8" AND FASTEN WITH FINISH NAILS FOR EASY REMOVAL AFTER POURING)
STIFF BROOM FINISH 4000 PSI / 28 DAY CONCRETE
6x6 W1.4 x W1.4 WWF
24" LONG #4 GALVANIZED DOWEL - WRAP ONE END WITH FELT.
6"
GRAVEL SUBBASE MDOT 703.06 TYPE E (MAX. STONE 3")
14"
SUBGRADE
NOTES:
-DO NOT PLACE CONCRETE DURING COLD OR RAINY WEATHER CONDITIONS (SEE SPECS.) -SEE PLAN DRAWINGS FOR EXPANSION JOINT LOCATIONS.
CONCRETE PAD - SECTION
NOT TO SCALE
8"
2'-0"
8"
26" DIA. STANDARD CAST IRON FRAME TOPSHAM SEWER DISTRICT STANDARD
BRING TO GRADE WITH BRICK COURSES MIN 1 AND MAX 3 COURSES
PRECAST REINFORCED CONCRETE CONE SECTION
PRECAST REINFORCED CONCRETE BARREL SECTION(S) AS REQUIRED
5"
BUTYL RUBBER TO BE USED ON ALL JOINTS
4'-0" I.D.
PRECAST REINFORCED CONCRETE BASE SECTION
PIPE OPENING TO BE CAST AS REQ'D
RUBBER BOOT TO BE USED ON ALL PIPE CONNECTIONS (CAST IN PLACE)
INVERTS VARY, SEE PLAN
PREFAB FIBERGLASS CHANNEL
3/4" DIA. CRUSHED STONE
OVERALL DEPTH VARIES, SEE PLAN
2'-2" - 4'-0" CONE
VARIES BARREL
4'-0" BASE
6"
6"
6"
NOTES:
1. CONCRETE 4000 PSI AFTER 28 DAYS.
2. REINFORCING H-20 LOADING 4x4 / 4x4 WWM.
3. EACH CASTING TO HAVE LIFTING HOLES TO BE FILLED WITH NON-SHRINK MORTAR.
4. MANHOLE STEPS TO BE ALUMINUM OR HIGH IMPACT PLASTIC.
5. APPLY TWO COATS OF BITUMASTIC PAINT ON ALL EXTERIOR SECTIONS.
SANITARY SEWER MANHOLE
NOT TO SCALE
8"
2'-0"
8"
24" DIA. STANDARD CAST IRON FRAME AND COVER
BRING TO GRADE WITH BRICK COURSES MIN 1 COURSE AND MAX 3 COURSES NOTE: GRADE RINGS ARE PREFERRED
PRECAST REINFORCED CONCRETE CONE SECTION
PRECAST REINFORCED CONCRETE BARREL SECTION(S) AS REQUIRED
5"
JOINTS TO BE SEALED WITH "CON-SEAL" (SEE NOTE 6)
4'-0" I.D.
PRECAST REINFORCED CONCRETE BASE SECTION
PIPE OPENING TO BE CAST AS REQ'D
INVERTS VARY, SEE PLAN
FLEXIBLE CONNECTION REQUIRED (FERNCO OR EQUAL) & SS EXP BAND (KOREBAND W/ PRESS SEAL)
CONCRETE OR MASONRY FILL WITH CHANNEL AT PIPE
3/4" DIA. CRUSHED STONE
OVERALL DEPTH VARIES, SEE PLAN
2' CONE
1' THRU 4' RISER SECTION
2' THRU 6' BASE
6"
6"
NOTES:
1. CONCRETE 5000 PSI AFTER 28 DAYS.
2. REINFORCING H-20 LOADING 4x4 / 4x4 WWM. SLAB TOP - NO. 5 BARS.
3. EACH CASTING TO HAVE LIFTING HOLES TO BE FILLED WITH NON-SHRINK MORTAR.
4. ONE POUR MONOLITHIC BASE SECTION
5. CEMENT: TYPE III PER ASTM C150-81.
6. JOINTS TO BE SEALED WITH "CON-SEAL". (CONFORMS TO ASTM C443 SPEC. AND FEDERAL SPEC. SS-S-210A)
7. ALTERNATE TOP SLAB IS STEEL REINFORCED TO MEET OR EXCEED H-20 LOADING.
PRECAST CONCRETE DRAIN MANHOLE
NOT TO SCALE
ST-DMH/9-02
8"
2'-0"
8"
24" DIA. STANDARD CAST IRON FRAME AND COVER
BRING TO GRADE WITH BRICK COURSES MIN 1 COURSE AND MAX 3 COURSES NOTE: GRADE RINGS ARE PREFERRED
PRECAST REINFORCED CONCRETE CONE SECTION OR PRE-CAST CONCRETE FLAT TOP SECTION (CONE SHOWN) CONE IS PREFERRED, ONLY USE FLAT TOP SECTION WHEN ELEVATIONS REQUIRE
PRECAST CONCRETE BARREL SECTION(S) AS REQUIRED
5"
JOINTS TO BE SEALED WITH "CON-SEAL" (SEE NOTE 6)
4'-0" I.D.
PRECAST CONCRETE BASE SECTION
PIPE OPENING TO BE CAST AS REQ'D
PIPE SIZE VARIES, SEE PLAN
INVERTS & SIZE VARY, SEE PLAN
FLEXIBLE CONNECTION REQUIRED (FERNCO OR EQUAL) & SS EXP BAND (KOREBAND W/ PRESS SEAL)
3/4" CRUSHED STONE
OVERALL DEPTH VARIES, SEE PLAN
2' CONE
1' THRU 4' RISER SECTION
2' THRU 6' BASE
INVERT VARIES
24" MIN. SUMP
6"
6"
NOTES:
1. CONCRETE 5000 PSI AFTER 28 DAYS.
2. REINFORCING H-20 LOADING 4x4 / 4x4 WWM. SLAB TOP - NO. 5 BARS.
3. EACH CASTING TO HAVE LIFTING HOLES TO BE FILLED WITH NON-SHRINK MORTAR.
4. ONE POUR MONOLITHIC BASE SECTION
5. CEMENT: TYPE III PER ASTM C150-81.
6. JOINTS TO BE SEALED WITH "CON-SEAL". (CONFORMS TO ASTM C443 SPEC. AND FEDERAL SPEC. SS-S-210A)
7. ALTERNATE TOP SLAB IS STEEL REINFORCED TO MEET OR EXCEED H-20 LOADING.
TYPICAL PRECAST CONCRETE CATCH BASIN
NOT TO SCALE
PLAN VIEW
PLAN VIEW
ETHRIDGE FOUNDRY FRAME & GRATE S24G OR EQUAL
NON-SHRINK GROUT (TYP) AS NEEDED
OUTLET
INVERT OUT ELEV.
BASE HEIGHT AS REQUIRED
24" MIN. SUMP
5.5"
2'-0" SQUARE
5.5"
2'-11"
SECTION VIEW
NOTES:
1. CONCRETE 5000 PSI AFTER 28 DAYS.
2. REINFORCING: 1 LAYER 4x4 / 4x4 WWM.
3. FIELD INLET IS USED FOR SHALLOW, OFF-DRIVE, DEAD END DRAINAGE AREAS.
FIELD INLET
NOT TO SCALE
4. No changes, Re-submit to Town CSB
3. 6-15-2020 No changes, re-submit to town and dep CSB
2. 2-24-2020 No changes this sheet, Re-submit to Town CSB
1. 12-18-2019 Submit to Town and Maine DEP CSB
Civil Details
Cumberland Crossing - Phase 2
Tuttle and Greely Roads, Cumberland, Maine
Seacoast Management Company
20 Blueberry Lane, Falmouth, Maine
STATE OF MAINE
CHRISTOPHER S. BELANGER 9098
LICENSED
PROFESSIONAL ENGINEER
12-18-2020
BELANGER ENGINEERING
CONSULTING ENGINEERS
63 Second Avenue , Augusta, Maine 04330
• COMMERCIAL PROJECTS
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SS:
C15
DATE: 12-18-2020
FILE:

EROSION AND SEDIMENTATION NOTES:

1. The Site Contractor shall follow the "Maine Erosion and Sediment Control BMPs" published by the Maine DEP in 2003 and the "Maine Erosion and Sediment Control Practices Field Guide for Contractors published in 2016 or most current update". The manuals can be found on the Maine DEP web site. A Link to the field guide is shown below:

http://www.maine.gov/dep/land/erosion/escbmps/index.html

THE CONTRACTOR SHALL ALSO FOLLOW THE GUIDELINES LISTED IN APPENDICES A, B, C IN MAINE DEP CHAPTER 500 RULES (2015 NOTES PROVIDED ON THIS SHEET).

GENERAL EROSION AND SEDIMENTATION CONTROL PRACTICES:

EROSION/SEDIMENT CONTROL DEVICES:

THE FOLLOWING EROSION SEDIMENTATION CONTROL DEVICES ARE PROPOSED FOR CONSTRUCTION ON THIS PROJECT. INSTALL THESE DEVICES AS INDICATED ON THE PLANS.

1 SILT FENCE: SILT FENCE WILL BE INSTALLED ALONG THE DOWN GRADING EDGES OF DISTURBED AREAS TO TRAP RUNOFF BORNE SEDIMENTS UNTIL THE SITE IS STABILIZED. IN AREAS WHERE STORMWATER DISCHARGES THE SILT FENCE WILL BE REINFORCED WITH HAY BALES TO HELP MAINTAIN THE INTEGRITY OF THE SILT FENCE AND TO PROVIDE ADDITIONAL TREATMENT.

2. HAY BALES: HAY BALES TO BE PLACED IN LOW FLOW DRAINAGE SWALES AND PATHS TO TRAP SEDIMENTS AND REDUCE RUNOFF VELOCITIES. DO NOT PLACE HAY BALES IN FLOWING WATER OR STREAMS.

3. RIPRAP: PROVIDE RIPRAP IN AREAS WHERE CULVERTS DISCHARGE OR AS SHOWN ON THE PLANS.

4. LOAM, SEED, & MULCH: ALL DISTURBED AREAS, WHICH ARE NOT OTHERWISE TREATED, SHALL RECEIVE PERMANENT SEEDING AND MULCH TO STABILIZE THE DISTURBED AREAS. THE DISTURBED AREAS WILL BE REVEGETATED WITHIN 5 DAYS OF FINAL GRADING. SEEDING REQUIREMENTS ARE PROVIDED AT THE END OF THIS SPECIFICATION.

5. STRAW AND HAY MULCH: USED TO COVER DENUDED AREAS UNTIL PERMANENT SEED OR EROSION CONTROL MEASURES ARE IN PLACE. MULCH BY ITSELF CAN BE USED ON SLOPES LESS THAN 15% IN SUMMER AND 8% IN WINTER. JUTE MESH IS TO BE USED OVER MULCH ONLY. CURLEX II AND EXCELSIOR MAY BE USED IN PLACE OF JUTE MESH OVER MULCH.

6. MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL DRAINAGE WAYS WITH A SLOPE GREATER THAN 3% FOR SLOPES EXPOSED TO DIRECT WINDS AND FOR ALL OTHER SLOPES GREATER THAN 8%.

TEMPORARY EROSION/SEDIMENTATION CONTROL MEASURES:

PROVIDE THE FOLLOWING TEMPORARY EROSION/SEDIMENTATION CONTROL MEASURES DURING CONSTRUCTION OF THE DEVELOPMENT:

1. SILTATION FENCE ALONG THE DOWNGRADIENT SIDE OF THE PARKING AREAS AND OF ALL FILL SECTIONS. THE SILTATION FENCE WILL REMAIN IN PLACE UNTIL THE SITE IS 90% REVEGETATED. REMOVE SILTATION FENCE, WITHIN 30 DAYS AFTER PERMANENT STABILIZATION IS ATTAINED. REMOVE ANY ACCUMULATED SEDIMENT AND STABILIZE.

2. HAY BALES PLACED AT KEY LOCATIONS TO SUPPLEMENT THE SILT FENCE.

3. PROTECT TEMPORARY STOCKPILES OF STUMPS, GRUBBINGS, OR COMMON EXCAVATION AS FOLLOWS:
A. SOIL STOCKPILE SIDE SLOPES SHALL NOT EXCEED 2:1.
B. AVOID PLACING TEMPORARY STOCKPILES IN AREAS WITH SLOPES OVER 10 PERCENT, OR NEAR DRAINAGE SWALES. SEE ITEM 3 IN CONSTRUCTION PHASE NOTES BELOW.
C. STABILIZE STOCKPILES WITHIN 15 DAYS BY TEMPORARILY SEEDING WITH A HYDROSEED METHOD CONTAINING AN EMULSIFIED MULCH TACKIFIER OR BY COVERING THE STOCKPILE WITH MULCH.
D. SURROUND STOCKPILE SOIL WITH SILTATION FENCE AT BASE OF PILE.

4. ALL DENUDED AREAS WHICH HAVE BEEN ROUGH GRADED AND ARE NOT LOCATED WITHIN THE BUILDING PAD, OR PARKING AND DRIVEWAY SUBBASE AREA THAT WILL NOT BE WORKED FOR MORE THAN 7 DAYS SHALL RECEIVE MULCH OR NON-ERODABLE COVER. STABILIZE AREAS WITHIN 75 FEET OF A WETLAND OR WATERBODY WITHIN 48 HOURS OF THE INITIAL DISTURBANCE OR THE SOIL OR PRIOR TO ANY STORM EVENT, WHICHEVER COMES FIRST. IN THE EVENT THE CONTRACTOR COMPLETES FINAL GRADING AND INSTALLATION OF LOAM AND SOD WITHIN THE TIME PERIODS PRESENTED ABOVE, INSTALLATION OF MULCH AND NETTING, WHERE APPLICABLE, IS NOT REQUIRED.

5. IF WORK IS CONDUCTED BETWEEN OCTOBER 15 AND APRIL 15, ALL DENUDED AREAS ARE TO BE COVERED WITH HAY MULCH, APPLIED AT TWICE THE NORMAL APPLICATION RATE, AND ANCHORED WITH FABRIC NETTING. THE PERIOD BETWEEN FINAL GRADING AND MULCHING SHALL BE REDUCED TO A 15 DAY MAXIMUM.

6. TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED ONCE THE SITE HAS BEEN STABILIZED OR IN AREAS WHERE PERMANENT EROSION CONTROL MEASURES HAVE BEEN INSTALLED.

PERMANENT EROSION CONTROL MEASURES:

THE FOLLOWING PERMANENT CONTROL MEASURES ARE REQUIRED BY THIS EROSION/SEDIMENTATION CONTROL PLAN:

1. ALL AREAS DISTURBED DURING CONSTRUCTION, BUT NOT SUBJECT TO OTHER RESTORATION (PAVING, RIPRAP, ETC.), WILL BE LOAMED, LIMED, FERTILIZED AND SEEDED. NATIVE TOPSOIL SHALL BE STOCKPILED AND REUSED FOR FINAL RESTORATION WHEN IT IS OF SUFFICIENT QUALITY.

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

(a) Seeded areas. For seeded areas, permanent stabilization means a 90% cover of healthy plants with no evidence of washing or rilling of the topsoil.

(b) Sodded areas. For sodded areas, permanent stabilization means the complete binding of the sod roots into the underlying soil with no slumping of the sod or die-off.

(c) Permanent Mulch. For mulched areas, permanent mulching means total coverage of the exposed area with an approved mulch material. Erosion control mix may be used as mulch for permanent stabilization according to the approved application rates and limitations.

(d) Riprap. For areas stabilized with riprap, permanent stabilization means that slopes stabilized with riprap have an appropriate backing of a well-graded gravel or approved geotextile to prevent soil movement from behind the riprap. Stone must be sized appropriately. It is recommended that angular stone be used.

(e) Agricultural use. For construction projects on land used for agricultural purposes (e.g., pipelines across crop land), permanent stabilization may be accomplished by returning the disturbed land to agricultural use.

(f) Paved areas. For paved areas, permanent stabilization means the placement of the compacted gravel subbase is completed.

(g) Ditches, channels, and swales. For open channels, permanent stabilization means the channel is stabilized with a 90% cover of healthy vegetation, with a well-graded riprap lining, or with another non-erosive lining such as concrete or asphalt pavement. There must be no evidence of slumping of the channel lining, undercutting of the channel banks, or down-cutting of the channel.

3. SLOPES GREATER THAN 2:1 WILL RECEIVE RIPRAP.

POST-CONSTRUCTION REVEGETATION:

THE FOLLOWING GENERAL PRACTICES WILL BE USED TO PREVENT EROSION AS SOON AS AN AREA IS READY TO UNDERGO FINAL GRADING.

1. A MINIMUM OF 4" OF LOAM WILL BE SPREAD OVER DISTURBED AREAS AND GRADED TO A UNIFORM DEPTH AND NATURAL APPEARANCE, OR STONE WILL BE PLACED ON SLOPES TO STABILIZE SURFACES.

2. IF FINAL GRADING IS REACHED DURING THE NORMAL GROWING SEASON (4/15 TO 9/15), PERMANENT SEEDING WILL BE DONE AS SPECIFIED BELOW. PRIOR TO SEEDING, LIMESTONE SHALL BE APPLIED AT A RATE OF 138 LBS/1000 SQ. FT. AND 10:20:20 FERTILIZER AT A RATE OF 18.4 LBS/1000 SQ.FT WILL BE APPLIED. BROADCAST SEEDING AT THE FOLLOWING RATES:

LAWNS	SWALES
KENTUCKY BLUEGRASS 0.46 LBS/1000 SF.	RED TOP 0.05 LBS/1000 SF.
CREEPING RED FESCUE 0.46 LBS/1000 SF.	TALL FESCUE 0.46 LBS/1000 SF.
PERENNIAL RYE GRASS 0.11 LB/1000 SF.	

3. AN AREA SHALL BE MULCHED IMMEDIATELY AFTER IS HAS BEEN SEEDED. MULCHING SHALL CONSIST OF HAY MULCH, HYDRO-MULCH, JUTE NET OVER MULCH, PRE-MANUFACTURED EROSION MATS OR ANY SUITABLE SUBSTITUTE DEEMED ACCEPTABLE BY THE DESIGNER.
A. HAY MULCH SHALL BE APPLIED AT THE RATE OF 2 TONS PER ACRE. HAY MULCH SHALL BE SECURED BY EITHER: (NOTE: SOIL SHALL NOT BE VISIBLE)
I. BEING DRIVEN OVER BY TRACKED CONSTRUCTION EQUIPMENT ON GRADES OF 5% AND LESS.
II. BLANKETED BY TACKED PHOTODEGRADABLE/BIODEGRADABLE NETTING, OR WITH SPRAY, ON GRADES GREATER THAN 5%.
III. SEE NOTE 6, GENERAL NOTES, AND NOTE 8, WINTER CONSTRUCTION.
B. HYDRO-MULCH SHALL CONSIST OF A MIXTURE OF EITHER ASPHALT, WOOD FIBER OR PAPER FIBER AND WATER SPRAYED OVER A SEEDED AREA. HYDRO-MULCH SHALL NOT BE USED BETWEEN 9/15 AND 4/15.

4. CONSTRUCTION SHALL BE PLANNED TO ELIMINATE THE NEED FOR SEEDING BETWEEN SEPTEMBER 15 AND APRIL 15. SHOULD SEEDING BE NECESSARY BETWEEN SEPTEMBER 15 AND APRIL 15 THE FOLLOWING PROCEDURE SHALL BE FOLLOWED. ALSO REFER TO NOTE 9 OF WINTER CONSTRUCTION.
A. ONLY UNFROZEN LOAM SHALL BE USED.
B. LOAMING, SEEDING AND MULCHING WILL NOT BE DONE OVER SNOW OR ICE COVER. IF SNOW EXISTS, IT MUST BE REMOVED PRIOR TO PLACEMENT OF SEED.
C. WHERE PERMANENT SEEDING IS NECESSARY, ANNUAL WINTER RYE (1.2 LBS/1000 SQ.FT) SHALL BE ADDED TO THE PREVIOUSLY NOTED AREAS.
D. WHERE TEMPORARY SEEDING IS REQUIRED, ANNUAL WINTER RYE (2.6 LBS/1000 SQ. FT.) SHALL BE SOWN INSTEAD OF THE PREVIOUSLY NOTED SEEDING RATE.
E. FERTILIZING, SEEDING AND MULCHING SHALL BE APPLIED TO LOAM THE DAY THE LOAM IS SPREAD BY MACHINERY.
F. ALTERNATIVE HAY MULCH SHALL BE SECURED WITH PHOTODEGRADABLE/BIODEGRADABLE NETTING. TRACKING BY MACHINERY ALONE WILL NOT SUFFICE.

5. FOLLOWING FINAL SEEDING, THE SITE WILL BE INSPECTED EVERY 30 DAYS UNTIL 90% COVER HAS BEEN ESTABLISHED. RESEEDING WILL BE CARRIED OUT BY THE CONTRACTOR WITHIN 10 DAYS OF NOTIFICATION BY THE ENGINEER THAT THE EXISTING CATCH IS INADEQUATE.

MONITORING SCHEDULE:

THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING, MONITORING, MAINTAINING, REPAIRING, REPLACING AND REMOVING ALL OF THE EROSION AND SEDIMENTATION CONTROLS OR APPOINTING A QUALIFIED SUBCONTRACTOR TO DO SO. MAINTENANCE MEASURES WILL BE APPLIED AS NEEDED DURING THE ENTIRE CONSTRUCTION CYCLE. AFTER EACH RAINFALL, A VISUAL INSPECTION WILL BE MADE OF ALL EROSION AND SEDIMENTATION CONTROLS AS FOLLOWS:

1. HAY BALE BARRIERS, SILT FENCE, AND STONE CHECK DAMS SHALL BE INSPECTED AND REPAIRED ONCE A WEEK OR IMMEDIATELY FOLLOWING ANY SIGNIFICANT RAINFALL. SEDIMENT TRAPPED BEHIND THESE BARRIERS SHALL BE EXCAVATED WHEN IT REACHES A DEPTH OF 6" AND REDISTRIBUTED TO AREAS UNDERGOING FINAL GRADING. SHOULD THE HAY BALE BARRIERS PROVE TO BE INEFFECTIVE, THE CONTRACTOR SHALL INSTALL SILT FENCE BEHIND THE HAY BALES.

2. VISUALLY INSPECT RIPRAP ONCE A WEEK OR AFTER EACH SIGNIFICANT RAINFALL AND REPAIR AS NEEDED. REMOVE SEDIMENT TRAPPED BEHIND THESE DEVICES ONCE IT ATTAINS A DEPTH EQUAL TO 1/2 THE HEIGHT OF THE DAM OR RISER. DISTRIBUTE REMOVED SEDIMENT OFF-SITE OR TO AN AREA UNDERGOING FINAL GRADING.

3. REVEGETATION OF DISTURBED AREAS WITHIN 25' OF DRAINAGE-COURSE/STREAM WILL BE SEEDED WITH THE "MEADOW AREA MIX" AND INSPECTED ON A WEEKLY BASIS OR AFTER EACH SIGNIFICANT RAINFALL AND RESEEDED AS NEEDED. EXPOSED AREAS WILL BE RESEEDED AS NEEDED UNTIL THE AREA HAS OBTAINED 100% GROWTH RATE. PROVIDE PERMANENT RIPRAP FOR SLOPES IN EXCESS OF 3:1 AND WITHIN 25' OF DRAINAGE COURSE.

EROSION CONTROL DURING WINTER CONSTRUCTION:

1. WINTER CONSTRUCTION PERIOD: NOVEMBER 1 THROUGH APRIL 15.

2. WINTER EXCAVATION AND EARTHWORK SHALL BE COMPLETED SUCH THAT NO MORE THAN 1 ACRE OF THE SITE IS WITHOUT STABILIZATION AT ANY ONE TIME.

3. EXPOSED AREA SHALL BE LIMITED TO THOSE AREAS TO BE MULCHED IN ONE DAY PRIOR TO ANY SNOW EVENT. AT THE END OF EACH WORK WEEK NO AREAS MAY BE LEFT UNSTABILIZED OVER THE WEEKEND.

4. CONTINUATION OF EARTHWORK OPERATIONS ON ADDITIONAL AREAS SHALL NOT BEGIN UNTIL THE EXPOSED SOIL SURFACE ON THE AREA BEING WORKED HAS BEEN STABILIZED, SUCH THAT NO LARGER AREA OF THE SITE IS WITHOUT EROSION CONTROL PROTECTION AS LISTED IN ITEM 2 ABOVE.

5. AN AREA SHALL BE CONSIDERED TO HAVE BEEN STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED WITH STRAW OR HAY AT A RATE OF 150 LB. PER 1000 S.F. (WITH OR WITHOUT SEEDING) OR DORMANT SEEDED, MULCHED AND ANCHORED SUCH THAT SOIL SURFACE IS NOT VISIBLE THROUGH THE MULCH. NOTE: AN AREA IS ALSO CONSIDERED STABLE IF SODDED, COVERED WITH GRAVEL (PARKING LOTS) OR STRUCTURAL SAND.

6. BETWEEN THE DATES OF OCTOBER 15 AND APRIL 1, LOAM OR SEED WILL NOT BE REQUIRED. DURING PERIODS OF ABOVE FREEZING TEMPERATURES THE SLOPES SHALL BE FINE GRADED AND EITHER PROTECTED WITH MULCH OR TEMPORARILY SEEDED AND MULCHED UNTIL SUCH TIME AS THE FINAL TREATMENT CAN BE APPLIED. IF THE DATE IS AFTER NOVEMBER 1 AND IF THE EXPOSED AREA HAS BEEN LOAMED, FINAL GRADED WITH A UNIFORM SURFACE, THEN THE AREA MAY BE DORMANT SEEDED AT A RATE OF 3 TIMES HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED. IF CONSTRUCTION CONTINUES DURING FREEZING WEATHER, ALL EXPOSED AREAS SHALL BE CONTINUOUSLY GRADED BEFORE FREEZING AND THE SURFACE TEMPORARILY PROTECTED FROM EROSION BY THE APPLICATION OF MULCH. SLOPES SHALL NOT BE LEFT UNEXPOSED OVER THE WINTER OR ANY OTHER EXTENDED TIME OF WORK SUSPENSION UNLESS TREATED IN THE ABOVE MANNER. UNTIL SUCH TIME AS WEATHER CONDITIONS ALLOW, DITCHES TO BE FINISHED WITH THE PERMANENT SURFACE TREATMENT, EROSION SHALL BE CONTROLLED BY THE INSTALLATION OF BALES OF HAY, SILT FENCE OR STONE CHECK DAMS IN ACCORDANCE WITH THE STANDARD DETAILS SHOWN ON THE DESIGN DRAWINGS. NOTE: DORMANT SEEDING SHOULD NOT BE ATTEMPTED UNLESS SOIL TEMPERATURE REMAINS BELOW 50 DEGREES AND DAY TIME TEMPERATURES REMAIN IN THE 30'S.

7. MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL DRAINAGE WAYS WITH A SLOPE GREATER THAN 3% FOR SLOPES EXPOSED TO DIRECT WINDS AND FOR ALL OTHER SLOPES GREATER THAN 8%. VEGETATED DRAINAGE SWALES SHALL BE LINED WITH EXCELSIOR OR CURLEX.

8. MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL DRAINAGE WAYS WITH SLOPES GREATER THAN 15%. AFTER OCTOBER 1 THE SAME APPLIES FOR ALL SLOPES GREATER THAN 8%.

9. BETWEEN THE DATES OF OCTOBER 15 TO NOVEMBER 1, WINTER RYE IS RECOMMENDED FOR STABILIZATION. AFTER NOVEMBER 1, WINTER RYE IS NOT EFFECTIVE. AROUND NOVEMBER 15 OR LATER, ONCE TEMPERATURES OF THE AIR AND SOIL PERMIT, DORMANT SEEDING IS EFFECTIVE.

10. IN THE EVENT OF SNOWFALL (FRESH OR CUMULATIVE) GREATER THAN 1 INCH DURING WINTER CONSTRUCTION PERIOD ALL SNOW SHALL BE REMOVED FROM THE AREAS OF SEEDING AND MULCHING PRIOR TO PLACEMENT.

Construction Plan

CONSTRUCTION OF THE PROJECT IS EXPECTED TO COMMENCE IN LATE SUMMER 2018 FOLLOWING ISSUE OF TOWN AND DEP PERMITS AND ONCE UNITS ARE PRE-SOLD. THE CONSTRUCTION OF THE ROAD AND UTILITY INFRASTRUCTURE IS EXPECTED TO CONTINUE INTO THE SPRING OF 2019. CONSTRUCTION OF UNITS WILL DEPEND ON MARKET CONDITIONS BUT BASED ON THE RECENT SUCCESS WE WOULD EXPECT THE UNITS TO BE CONSTRUCTED WITHIN 2-3 YEARS. CONSTRUCTION SEQUENCING WILL INCLUDE THE FOLLOWING:

- TREE CLEARING AND STUMP REMOVAL.
- REMOVAL OF THE THREE HOUSES AND ASSOCIATED DRIVES AND INFRASTRUCTURE.
- ROUGH GRADING, SITE BLASTING FOR ROADWAYS AND UNITS AND INSTALLATION OF UTILITIES AND STORMWATER SYSTEMS.
- FINISH GRAVELS AND SURFACES & PAVING
- LOAM, SEED AND STABILIZATION.

CONSTRUCTION PHASE:

THE FOLLOWING GENERAL PRACTICES WILL BE USED TO PREVENT EROSION DURING CONSTRUCTION OF THIS PROJECT.

1. ONLY THOSE AREAS UNDER ACTIVE CONSTRUCTION WILL BE CLEARED AND LEFT IN AN UNTREATED OR UNVEGETATED CONDITION. IF FINAL GRADING, LOAMING AND SEEDING WILL NOT OCCUR WITHIN 7 DAYS, SEE ITEM NO. 4.

2. PRIOR TO THE START OF CONSTRUCTION IN A SPECIFIC AREA, SILT FENCING AND/OR HAY BALES WILL BE INSTALLED AT THE TOE OF SLOPE AND IN AREAS AS LOCATED ON THE PLANS TO PROTECT AGAINST ANY CONSTRUCTION RELATED EROSION. IMMEDIATELY FOLLOWING CONSTRUCTION OF CULVERTS AND SWALES, RIP RAP APRONS SHALL BE INSTALLED, AS SHOWN ON THE PLANS.

3. TOPSOIL WILL BE STOCKPILED WHEN NECESSARY IN AREAS WHICH HAVE MINIMUM POTENTIAL FOR EROSION AND WILL BE KEPT AS FAR AS POSSIBLE FROM THE EXISTING DRAINAGE COURSE. NO STOCKPILE SHALL BE CLOSER THEN 100' OF A RESOURCE INCLUDING, BUT NOT LIMITED TO, WETLANDS, STREAMS, AND OPEN WATER BODIES. ALL STOCKPILES SHALL HAVE A SILTATION FENCE BELOW THEM REGARDLESS OF TIME OF PRESENCE. ALL STOCKPILES EXPECTED TO REMAIN LONGER THAN 15 DAYS SHALL BE:
A. TREATED WITH ANCHORED MULCH (WITHIN 5 DAYS OF THE LAST DEPOSIT OF STOCKPILED SOIL).
B. SEEDED WITH CONSERVATION MIX AND MULCHED IMMEDIATELY.
C. INSTALL SILT FENCE AROUND STOCKPILE AT BASE OF PILE. STOCKPILES TO HAVE SILT FENCE INSTALLED AT TIME OF ESTABLISHMENT AT BASE OF PILE.

4. ALL DISTURBED AREAS THAT WILL NOT BE WORKED FOR MORE THAN 7 DAYS SHALL BE EITHER:
A. TREATED WITH ANCHORED MULCH IMMEDIATELY, OR
B. SEEDED WITH CONSERVATION MIX OF ANNUAL RYE GRASS (0.9 LBS/1000 SQ. FT) AND MULCHED IMMEDIATELY.

5. ALL GRADING WILL BE HELD TO A MAXIMUM 2:1 SLOPE WHERE PRACTICAL. ALL SLOPES WILL BE STABILIZED WITH PERMANENT SEEDING, OR WITH STONE, WITHIN 7 DAYS AFTER FINAL GRADING IS COMPLETE. (SEE POST-CONSTRUCTION REVEGETATION FOR SEEDING SPECIFICATION.)

6. ALL CULVERTS WILL BE PROTECTED WITH STONE RIPRAP (D50 = 6" UNLESS OTHERWISE SPECIFIED) AT INLETS AND OUTLETS.

Maine DEP Chapter 500, APPENDIX C. Housekeeping

These performance standards apply to all projects except for stormwater PBR projects.

1. Spill prevention. Controls must be used to prevent pollutants from construction and waste materials stored on site to enter stormwater, which includes storage practices to minimize exposure of the materials to stormwater. The site contractor or operator must develop, and implement as necessary, appropriate spill prevention, containment, and response planning measures.

NOTE: Any spill or release of toxic or hazardous substances must be reported to the Department. For oil spills, call 1-800-482-0777 which is available 24 hours a day. For spills of toxic or hazardous material, call 1-800-452-4664 which is available 24 hours a day. For more information, visit the Department's website at : http://www.maine.gov/dep/spills/emergspillresp/

2. Groundwater protection. During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. An "infiltration area" is any area of the site that by design or as a result of soils, topography and other relevant factors accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials. Any project proposing infiltration of stormwater must provide adequate pre-treatment of stormwater prior to discharge of stormwater to the infiltration area, or provide for treatment within the infiltration area, in order to prevent the accumulation of fines, reduction in infiltration rate, and consequent flooding and destabilization.

See Appendix D for license by rule standards for infiltration of stormwater.

NOTE: Lack of appropriate pollutant removal best management practices (BMPs) may result in violations of the groundwater quality standard established by 38 M.R.S.A. §465-C(1).

3. Fugitive sediment and dust. Actions must be taken to ensure that activities do not result in noticeable erosion of soils or fugitive dust emissions during or after construction. Oil may not be used for dust control, but other water additives may be considered as needed. A stabilized construction entrance (SCE) should be included to minimize tracking of mud and sediment. If off-site tracking occurs, public roads should be swept immediately and no less than once a week and prior to significant storm events. Operations during dry months, that experience fugitive dust problems, should wet down unpaved access roads once a week or more frequently as needed with a water additive to suppress fugitive sediment and dust.

NOTE: Dewatering a stream without a permit from the Department may violate state water quality standards and the Natural Resources Protection Act.

4. Debris and other materials. Minimize the exposure of construction debris, building and landscaping materials, trash, fertilizers, pesticides, herbicides, detergents, sanitary waste and other materials to precipitation and stormwater runoff. These materials must be prevented from becoming a pollutant source.

NOTE: To prevent these materials from becoming a source of pollutants, construction and post-construction activities related to a project may be required to comply with applicable provision of rules related to solid, universal, and hazardous waste, including, but not limited to, the Maine solid waste and hazardous waste management rules; Maine hazardous waste management rules; Maine oil conveyance and storage rules; and Maine pesticide requirements.

5. Excavation de-watering. Excavation de-watering is the removal of water from trenches, foundations, coffer dams, ponds, and other areas within the construction area that retain water after excavation. In most cases the collected water is heavily silted and hinders correct and safe construction practices. The collected water removed from the ponded area, either through gravity or pumping, must be spread through natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment possible, like a cofferdam sedimentation basin. Avoid allowing the water to flow over disturbed areas of the site. Equivalent measures may be taken if approved by the Department.

NOTE: Dewatering controls are discussed in the "Maine Erosion and Sediment Control BMPs, Maine Department of Environmental Protection."

6. 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:

(a) Discharges from firefighting activity;

(b) Fire hydrant flushings;

(c) Vehicle washwater if detergents are not used and washing is limited to the exterior of vehicles (engine, undercarriage and transmission washing is prohibited);

(d) Dust control runoff in accordance with permit conditions and Appendix (C)(3);

(e) Routine external building washdown, not including surface paint removal, that does not involve detergents;

(f) Pavement washwater (where spills/leaks of toxic or hazardous materials have not occurred, unless all spilled material had been removed) if detergents are not used;

(g) Uncontaminated air conditioning or compressor condensate;

(h) Uncontaminated groundwater or spring water;

(i) Foundation or footer drain-water where flows are not contaminated;

(j) Uncontaminated excavation dewatering (see requirements in Appendix C(5));

(k) Potable water sources including waterline flushings; and

(l) Landscape irrigation.

7. Unauthorized non-stormwater discharges . The Department's approval under this Chapter does not authorize a discharge that is mixed with a source of non_stormwater, other than those discharges in compliance with Appendix C (6). Specifically, the Department's approval does not authorize discharges of the following:

(a) Wastewater from the washout or cleanout of concrete, stucco, paint, form release oils, curing compounds or other construction materials;

(b) Fuels, oils or other pollutants used in vehicle and equipment operation and maintenance;

(c) Soaps, solvents, or detergents used in vehicle and equipment washing; and

(d) Toxic or hazardous substances from a spill or other release.

(8) Additional requirements. Additional requirements may be applied on a site-specific basis.

Maine DEP Chapter 500, APPENDIX A. Erosion and sedimentation control (2015 Update)

This appendix applies to all projects.

A person who conducts, or causes to be conducted, an activity that involves filling, displacing or exposing soil or other earthen materials shall take measures to prevent unreasonable erosion of soil or sediment beyond the project site or into a protected natural resource as defined in 38 M.R.S. §480-B. 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.

NOTE: Other requirements may apply, including, but not limited to the Natural Resources Protection Act 38 M.R.S. §480-B.

NOTE: The Department has prepared protocols for the control of erosion and sedimentation. See "Maine Erosion and Sediment Control BMPs Maine Department of Environmental Protection."

1. Pollution prevention. Minimize disturbed areas and protect natural downgradient buffer areas to the extent practicable. Control stormwater volume and velocity within the site to minimize soil erosion. Minimize the disturbance of steep slopes. Control stormwater discharges, including both peak flow rates and volume, to minimize erosion at outlets. The discharge may not result in erosion of any open drainage channels, swales, stream channels or stream banks, upland, or coastal or freshwater wetlands off the project site.

Whenever practicable, no disturbance activities should take place within 50 feet of any protected natural resource. If disturbance activities take place between 30 feet and 50 feet of any protected natural resource, and stormwater discharges through the disturbed areas toward the protected natural resource, perimeter erosion controls must be doubled. If disturbance activities take place less than 30 feet from any protected natural resource, and stormwater discharges through the disturbed areas toward the protected natural resource, perimeter erosion controls must be doubled and disturbed areas must be temporarily or permanently stabilized within 7 days.

NOTE: Buffers improve water quality by helping to filter pollutants in run-off both during and after construction. Minimizing disturbed areas through phasing limits the amount of exposed soil on the site through retention of natural cover and by retiring areas as permanently stabilized. Less exposed soil results in fewer erosion controls to install and maintain. If work within an area is not anticipated to begin within two weeks' time, consider leaving the area in its naturally existing cover.

NOTE: Many construction activities within 75 feet of a protected natural resource require a permit under the Natural Resources Protection Act prior to initiation. For more information regarding the applicability of the NRPA to your project, you can visit the Department's website at http://www.maine.gov/dep/land/nrpa/index.html or contact staff of the Division of Land Resource Regulation at the nearest regional office.

2. Sediment barriers. 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.

3. Stabilized construction entrance. 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.

4. Temporary stabilization. Within 7 days of the cessation of construction activities in an area that will not be worked for more than 7 days, stabilize any exposed soil with mulch, or other non-erodible cover. Stabilize areas within 75 feet of a wetland or waterbody within 48 hours of the initial disturbance of the soil or prior to any storm event, whichever comes first.

5. Removal of temporary measures. Remove any temporary control measures, such as silt fence, within 30 days after permanent stabilization is attained. Remove any accumulated sediments and stabilize.

NOTE: It is recommended that silt fences be removed by cutting the fence materials at ground level to avoid additional soil disturbance.

6. Permanent stabilization. If the area will not be worked for more than one year or has been brought to final grade, then permanently stabilize the area within 7 days by planting vegetation, seeding, sod, or through the use of permanent mulch, or riprap, or road sub-base. If using vegetation for stabilization, select the proper vegetation for the light, moisture, and soil conditions; amend areas of disturbed subsoils with topsoil, compost, or fertilizers; protect seeded areas with mulch or, if necessary, erosion control blankets; and schedule sodding, planting, and seeding so to avoid die-off from summer drought and fall frosts. Newly seeded or sodded areas must be protected from vehicle traffic, excessive pedestrian traffic, and concentrated runoff until the vegetation is well-established with 90% cover by healthy vegetation. If necessary, areas must be reworked and restabilized if germination is sparse, plant coverage is spotty, or topsoil erosion is evident. One or more of the following may apply to a particular site.

(a) Seeded areas. For seeded areas, permanent stabilization means a 90% cover of the disturbed area with mature, healthy plants with no evidence of washing or rilling of the topsoil.

(b) Sodded areas. For sodded areas, permanent stabilization means the complete binding of the sod roots into the underlying soil with no slumping of the sod or die-off.

(c) Permanent Mulch. For mulched areas, permanent mulching means total coverage of the exposed area with an approved mulch material. Erosion Control Mix may be used as mulch for permanent stabilization according to the approved application rates and limitations.

(d) Riprap. For areas stabilized with riprap, permanent stabilization means that slopes stabilized with riprap have an appropriate backing of a well-graded gravel or approved geotextile to prevent soil movement from behind the riprap. Stone must be sized appropriately. It is recommended that angular stone be used.

(e) Agricultural use. For construction projects on land used for agricultural purposes (e.g., pipelines across crop land), permanent stabilization may be accomplished by returning the disturbed land to agricultural use.

(f) Paved areas. For paved areas, permanent stabilization means the placement of the compacted gravel subbase is completed, provided it is free of fine materials that may runoff with a rain event

(g) Ditches, channels, and swales. For open channels, permanent stabilization means the channel is stabilized with a 90% cover of healthy vegetation, with a well-graded riprap lining, turf reinforcement mat, or with another non-erosive lining such as concrete or asphalt pavement. There must be no evidence of slumping of the channel lining, undercutting of the channel banks, or down-cutting of the channel.

7. Winter Construction. "Winter construction" is construction activity performed during the period from November 1 through April 15. If disturbed areas are not stabilized with permanent measures by November 1 or new soil disturbance occurs after November 1, but before April 15, then these areas must be protected and runoff from them must be controlled by additional measures and restrictions.

(a) Site Stabilization. For winter stabilization, hay mulch is applied at twice the standard temporary stabilization rate. At the end of each construction day, areas that have been brought to final grade must be stabilized. Mulch may not be spread on top of snow.

(b) Sediment Barriers. All areas within 75 feet of a protected natural resource must be protected with a double row of sediment barriers.

(c) Ditch. All vegetated ditch lines that have not been stabilized by November 1, or will be worked during the winter construction period, must be stabilized with an appropriate stone lining backed by an appropriate gravel bed or geotextile unless specifically released from this standard by the Department.

(d) Slopes. Mulch netting must be used to anchor mulch on all slopes greater than 8% unless erosion control blankets or erosion control mix is being used on these slopes.

NOTE: The Department has prepared protocols for the control of erosion and sedimentation during the winter months. See "Maine Erosion and Sediment Control BMPs Maine Department of Environmental Protection."

8. Stormwater channels. Ditches, swales, and other open stormwater channels must be designed, constructed, and stabilized using measures that achieve long-term erosion control. Ditches, swales and other open stormwater channels must be sized to handle, at a minimum, the expected volume run-off. Each channel should be constructed in sections so that the section's grading, shaping, and installation of the permanent lining can be completed the same day. If a channel's final grading or lining installation must be delayed, then diversion berms must be used to divert stormwater away from the channel, properly-spaced check dams must be installed in the channel to slow the water velocity, and a temporary lining installed along the channel to prevent scouring. Permanent stabilization for channels is addressed under Appendix A(5)(g) above.

(a) The channel should receive adequate routine maintenance to maintain capacity and prevent or correct any erosion of the channel's bottom or side slopes.

(b) When the watershed draining to a ditch or swale is less than 1 acre of total drainage and less than ¼ acre of impervious area, diversion of runoff to adjacent wooded or otherwise vegetated buffer areas is encouraged where the opportunity exists.

9. Sediment basins. Sediment basins must be designed to provide storage for either the calculated runoff from a 2-year, 24-hour storm or provide for 3,600 cubic feet of capacity per acre draining to the basin. Outlet structures must discharge water from the surface of the basin whenever possible. Erosion controls and velocity dissipation devices must be used if the discharging waters are likely to create erosion. Accumulated sediment must be removed as needed from the basin to maintain at least ½ of the design capacity of the basin.

The use of cationic treatment chemicals, such as polymers, flocculants, or other chemicals that contain an overall positive charge designed to reduce turbidity in stormwater must receive prior approval from the Department. When requesting approval to use cationic treatment chemicals, you must describe appropriate controls and implementation procedures to ensure the use will not lead to a violation of water quality standards. In addition, you must specify the type(s) of soil likely to be treated on the site, chemicals to be used and how they are to be applied and in what quantity, any manufacturer's recommendations, and any training had by personnel who will handle and apply the chemicals.

10. Roads. Gravel and paved roads must be designed and constructed with crowns or other measures, such as water bars, to ensure that stormwater is delivered immediately to adjacent stable ditches, vegetated buffer areas, catch basin inlets, or street gutters.

NOTE: (1) Gravel and paved roads should be maintained so that they continue to conform to this standard in order to prevent erosion problems. (2) The Department recommends that impervious surfaces, including roads, be designed and constructed so that stormwater is distributed in sheet flow to natural vegetated buffer areas wherever such areas are available. Road ditches should be designed so that stormwater is frequently (at least every 100 to 200 feet) discharged via ditch turnouts in sheet flow to adjacent natural buffer areas wherever possible.

11. Culverts. Culverts must be sized to avoid unintended flooding of upstream areas or frequent overtopping of roadways. Culvert inlets must be protected with appropriate materials for the expected entrance velocity, and protection must extend at least as high as the expected maximum elevation of storage behind the culvert. Culvert outlet design must incorporate measures, such as aprons, to prevent scour of the stream channel. Outlet protection measures must be designed to stay within the channel limits. The design must take account of tailwater depth.

12. Parking areas. Parking areas must be constructed to ensure runoff is delivered to adjacent swales, catch basins, curb gutters, or buffer areas without eroding areas downslope. The parking area's subbase compaction and grading must be done to ensure runoff is evenly distributed to adjacent buffers or side slopes. Catch basins must be located and set to provide enough storage depth at the inlet to allow inflow of peak runoff rates without by-pass of runoff to other areas.

13. Additional requirements. Additional requirements may be applied on a site-specific basis.

Maine DEP Chapter 500, APPENDIX B. Inspection and maintenance (2015 Update)

This appendix applies to all projects, except that a project that is eligible for stormwater PBR need only meet the standards in Section 1.

See Appendix D(5) for additional maintenance requirements related to infiltration of stormwater.

1. During construction. The following standards must be met during construction.

(a) Inspection and corrective action. Inspect disturbed and impervious areas, erosion control measures, materials storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site. Inspect these areas at least once a week as well as before and within 24 hours after a storm event (rainfall), and prior to completing permanent stabilization measures. A person with knowledge of erosion and stormwater control, including the standards and conditions in the permit, shall conduct the inspections.

(b) Maintenance. If best management practices (BMPs) need to be repaired, the repair work should be initiated upon discovery of the problem but no later than the end of the next workday. If additional BMPs or significant repair of BMPs are necessary, implementation must be completed within 7 calendar days and prior to any storm event (rainfall). All measures must be maintained in effective operating condition until areas are permanently stabilized.

(c) Documentation. Keep a log (report) summarizing the inspections and any corrective action taken. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of erosion and sedimentation controls, materials storage areas, and vehicles access points to the parcel. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and location(s) where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken.

The log must be made accessible to Department staff and a copy must be provided upon request. The permittee shall retain a copy of the log for a period of at least three years from the completion of permanent stabilization.

2. Post-construction. The following standards must be met after construction.

(a) 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.

(b) 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.

NOTE: Expanded and more-detailed descriptions for specific maintenance tasks may be found in the Maine DEP's "Stormwater Management for Maine: Best Management Practices."

(i) Inspect vegetated areas, particularly slopes and embankments, early in the growing season or after heavy rains to identify active or potential erosion problems. Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows. See permanent stabilization standards in Appendix A(5).

(ii) Inspect ditches, swales and other open stormwater channels in the spring, in late fall, and after heavy rains to remove any obstructions to flow, remove accumulated sediments and debris, to control vegetated growth that could obstruct flow, and to repair any erosion of the ditch lining. Vegetated ditches must be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity. Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable. If the ditch has a riprap lining, replace riprap on areas where any underlying filter fabric or underdrain gravel is showing through the stone or where stones have dislodged. The channel must receive adequate routine maintenance to maintain capacity and prevent or correct any erosion of the channel's bottom or sideslopes.

(iii) Inspect culverts in the spring, in late fall, and after heavy rains to remove any obstructions to flow; remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit; and to repair any erosion damage at the culvert's inlet and outlet.

(iv) Inspect and clean out catch basins. Clean-out must include the removal and legal disposal of any accumulated sediments and debris at the bottom of the basin, at any inlet grates, at any inflow channels to the basin, and at any pipes between basins. If the basin outlet is designed to trap floatable materials, then remove the floating debris and any floating oils (using oil-absorptive pads).

(v) Inspect resource and treatment buffers once a year for evidence of erosion, concentrating flow, and encroachment by development. If flows are concentrating within a buffer, site grading, level spreaders, or ditch turn-outs must be used to ensure a more even distribution of flow into a buffer. Check down slope of all spreaders and turn-outs for erosion. If erosion is present, adjust or modify the spreader's or turnout's lip to ensure a better distribution of flow into a buffer. Clean-out any accumulation of sediment within the spreader bays or turn-out pools.

(vi) Inspect at least once per year, each stormwater management pond or basin, including the pond's embankments, outlet structure, and emergency spillway. Remove and dispose of accumulated sediments in the pond. Control woody vegetation on the pond's embankments.

(vii) Inspect at least one per year, each underdrained filter, including the filter embankments, vegetation, underdrain piping, and overflow spillway. Remove and dispose of accumulated sediments in the filter. If needed, rehabilitate any clogged surface linings, and flush underdrain piping.

(viii) Inspect each manufactured system installed on the site, including the system's inlet, treatment chamber(s), and outlet at least once per year, or in accordance with the maintenance guidelines recommended by the manufacturer based on the estimated runoff and pollutant load expected to the system from the project. Remove and dispose of accumulated sediments, debris, and contaminated waters from the system and, if applicable, remove and replace any clogged or spent filter media.

(c) Regular maintenance

(i) 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 drains immediately off the road surface to adjacent buffer areas or stable ditches, and is not impeded by accumulations of graded material on the road shoulder or by excavation of false ditches in the shoulder. 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.

(ii) Manage each buffer's vegetation consistently with the requirements in any deed restrictions for the buffer. Wooded buffers must remain fully wooded and have no disturbance to the duff layer. Vegetation in non-wooded buffers may not be cut more than three times per year, and may not be cut shorter than six inches.

NOTE: Contact the Department's Division of Watershed Management (Maine DEP) for assistance developing inspection and maintenance requirements for other drainage control and runoff treatment measures installed on the site. The maintenance needs for most measures may be found in the Maine DEP's "Stormwater Management for Maine: Best Management Practices."

(d) Documentation. Keep a log (report) summarizing inspections, maintenance, and any corrective actions taken. The log must include the date on which each inspection or maintenance task was performed, a description of the inspection findings or maintenance completed, and the name of the inspector or maintenance personnel performing the task. If a maintenance task requires the clean-out of any sediments or debris, indicate where the sediment and debris was disposed after removal. The log must be made accessible to 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.

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

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

(b) Inspection and repair of stormwater control system. All aspects of the stormwater control system have been inspected for damage, wear, and malfunction, and appropriate steps have been taken to repair or replace the system, or portions of the system.

(c) Maintenance. The erosion and stormwater maintenance plan for the site is being implemented as written, or modifications to the plan have been submitted to and approved by the Department, and the maintenance log is being maintained.

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

4. Duration of maintenance. Perform maintenance as described and required in the permit unless and until the system is formally accepted by the municipality or quasi-municipal district, or is placed under the jurisdiction of a legally created association that will be responsible for the maintenance of the system. If a municipality or quasi-municipal district chooses to accept a stormwater management system, or a component of a stormwater system, it must provide a letter to the Department stating that it assumes responsibility for the system. The letter must specify the components of the system for which the municipality or district will assume responsibility, and that the municipality or district agrees to maintain those components of the system in compliance with Department standards. Upon such assumption of responsibility, and approval by the Department, the municipality, quasi-municipal district, or association becomes a co-permittee for this purpose only and must comply with all terms and conditions of the permit.

5. Additional requirements. Additional requirements may be applied on a site-specific basis.

4.	12-18-2020	No changes, Re-submit to Town	CSB
3.	6-15-2020	No changes, re-submit to Town and DEP	CSB
2.	2-24-2020	No changes this sheet, Re-submit to Town	CSB
1.	12-18-2019	Submit to Town and DEP	CSB

Erosion Control Notes

Cumberland Crossing - Phase 2
Tuttle and Greely Roads, Cumberland, Maine

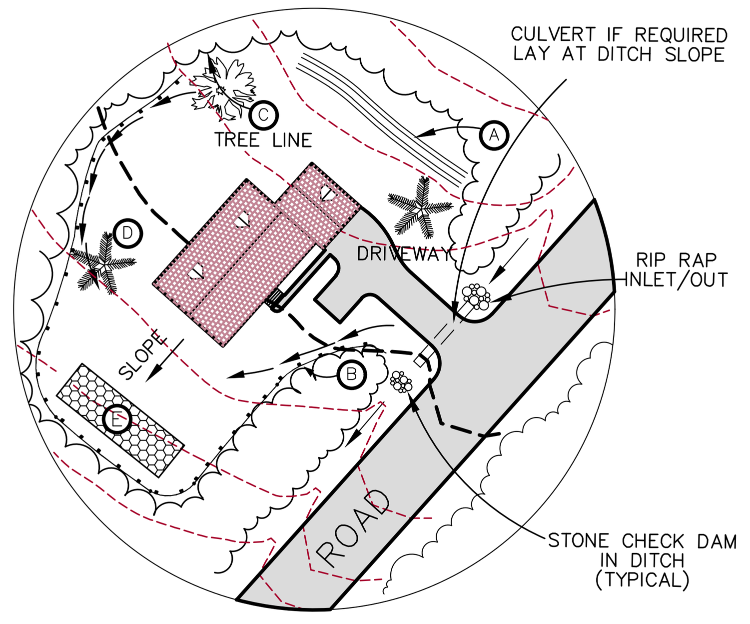
Seacoast Management Company
20 Blueberry Lane, Falmouth, Maine

STATE OF MAINE
CHRISTOPHER S. BELANGER 9098
LICENSED
PROFESSIONAL ENGINEER
12-18-2020

BELANGER ENGINEERING
CONSULTING ENGINEERS
63 Second Avenue , Augusta, Maine 04330
Email: cbelanger@roadrunner.com
Ph 207-622-1462, Cell 207-242-5713

- COMMERCIAL PROJECTS
- RESIDENTIAL SUBDIVISIONS
- TOWN AND STATE APPROVALS
- SITE PLANNING & DESIGN
- STORMWATER MANAGEMENT
- ROAD AND UTILITY DESIGN
- EROSION CONTROL PLANS

FIELD WK:	SCALE:	SHEET:
DRN BY:	JOB #: 109	C16
CH'D BY:	SS:	
DATE: 12-18-2020	FILE:	

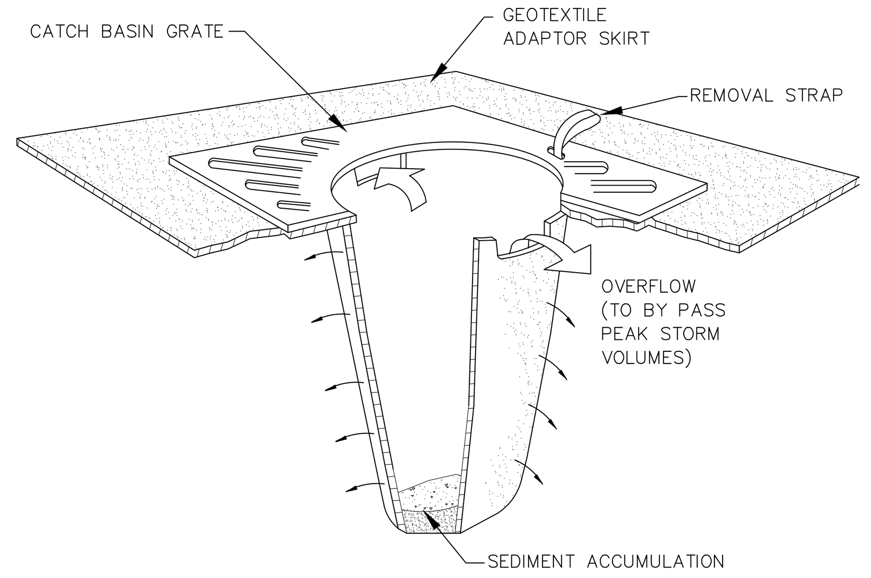


BUILDING SITE EROSION CONTROL

(TYPICAL DETAIL)

NOTES:
THIS SKETCH IS INDICATING THE INTENT OF THE SOIL EROSION MEASURES. ACTUAL SITE CONDITIONS AND LAYOUTS WILL VARY FROM SITE TO SITE. BUILDING CONTRACTORS MUST COMPLY WITH THE EROSION CONTROL NOTES SHOWN ON THESE DRAWINGS AND WITH THE "MAINE EROSION AND SEDIMENT CONTROL HANDBOOK FOR CONSTRUCTION: BEST MANAGEMENT PRACTICES."

A.) CONSTRUCT DIVERSION DITCH TO KEEP UPSLOPE DRAINAGE AREA FROM ENTERING SITE.
B.) INSTALL SILT FENCE BELOW ALL DISTURBED AREAS.
C.) KEEP CLEARING TO A MINIMUM.
D.) RE-SEED ALL DISTURBED AREAS. SEE SEEDING NOTES.



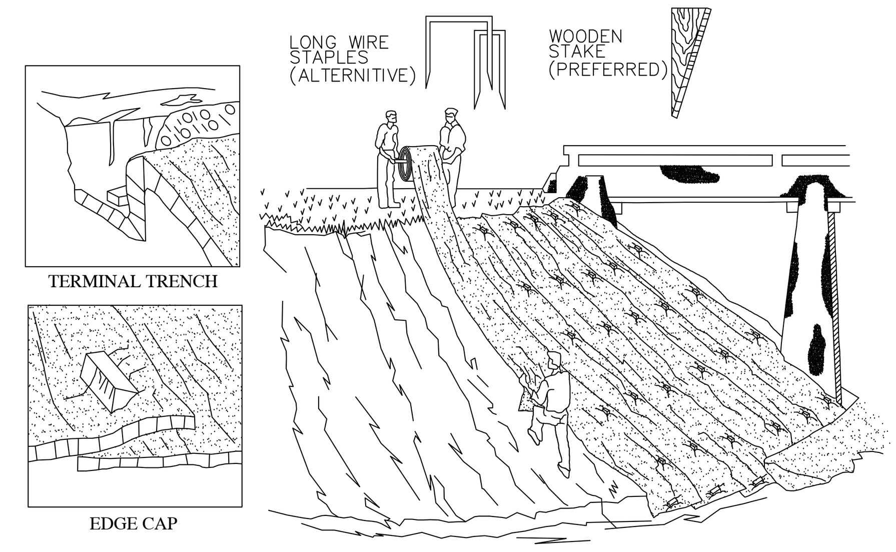
NOTES:
1. CATCH BASIN PROTECTION TO BE "SILTSTACK" (BY ACF ENVIRONMENTAL) OR "STREAM GUARD" (BY FOSS ENVIRONMENTAL SERVICES).

2. INSPECT INSERT AFTER ALL RAINFALL EVENTS, REPAIR AND MAINTAIN IN ACCORDANCE WITH MANUFACTURES SPECIFICATIONS.

3. INSTALL SILT SACK SEDIMENT BARRIER IN ALL CATCH BASIN AND MAINTAIN UNTIL PROJECT COMPLETION.

TEMPORARY INLET PROTECTION

NOT TO SCALE



-UNROLL MAT ONTO GROUND IN DIRECTION OF WATER FLOW.
-MAT SHOULD LIE FLAT. DO NOT STRETCH MAT OVER GROUND. STRETCHING MAY CAUSE MAT TO BRIDGE DEPRESSIONS IN THE SURFACE AND ALLOW EROSION UNDERNEATH.
-BURY TRANSVERSE TERMINAL ENDS OF MAT TO SECURE AND PREVENT EROSIVE FLOW UNDERNEATH.
-SECURE MAT SNUGLY INTO ALL TRANSVERSE CHECK SLOTS.
-BACKFILL AND COMPACT TRENCHES AND CHECK SLOTS AFTER STAKING THE MAT IN BOTTOM OF TRENCH.
-OVERLAP ROLL ENDS BY THREE (3) FEET (MIN.) WITH UPSLOPE MAT ON TOP TO PREVENT UPLIFT OF MAT END BY WATER FLOW. IF INSTALLING IN THE DIRECTION OF A CONCENTRATED WATER FLOW, START NEW ROLLS IN A TRANSVERSE DITCH.
-WOOD STAKES ARE RECOMMENDED FOR PINNING MAT TO THE GROUND SURFACE. STAKES SHOULD BE 1"x 3" NOMINAL STOCK CUT IN A TRIANGULAR SHAPE. STAKES SHOULD BE 12" TO 18" LONG, DEPENDING ON SOIL DENSITY.
-DRIVE WOODEN STAKES TO WITHIN THREE (3) INCHES OF GROUND SURFACE. DO NOT DRIVE FLUSH TO SURFACE.
-IN ALL TRANSVERSE TERMINAL TRENCHES AND CHECK SLOTS, STAKE EACH MAT AT IS CENTER AND OVERLAP EDGES BEFORE BACKFILLING AND COMPACTING.
-STAKE OVERLAPS LONGITUDINALLY AT THREE (3) TO FIVE (5) FOOT INTERVALS.

GENERAL INSTALLATION GUIDELINES FOR EROSION CONTROL BLANKET

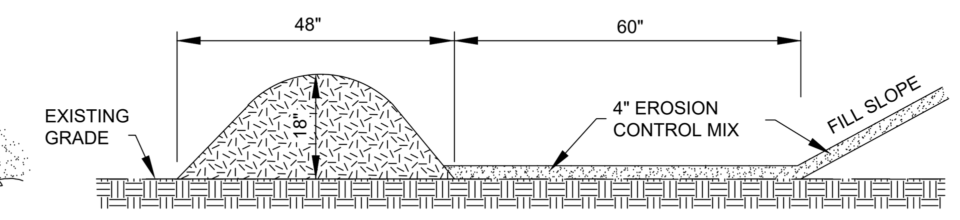
NOT TO SCALE

THE FILTER BERM SHALL CONSIST OF AN EROSION CONTROL MIX/BARK MULCH MIX OR RECYCLED COMPOSTED BARK FLUME GRIT AND FRAGMENTED WOOD GENERATED FROM WATER FLUME LOG HANDLING SYSTEMS. COMPARABLE COMPOSTED MIXES CAN BE USED UPON WRITTEN APPROVAL OF THE ENGINEER.

THE MIX SHALL CONFORM TO THE FOLLOWING: pH BETWEEN 5.0-8.0, PARTICLE SIZE - 100% PASSING THROUGH A 6" SCREEN AND 80% RETAINED ON A 3/4" SCREEN, SOLUBLE SALTS CONTENT SHALL BE LESS THAN 4.0 mmhos/cm.

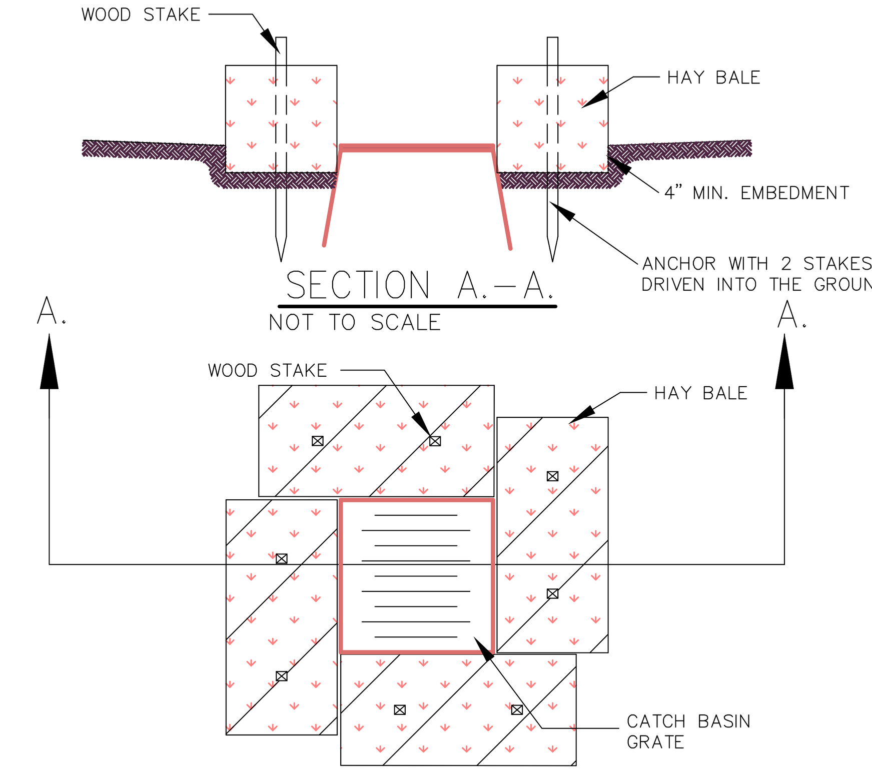
THE COMPOSTED BERM SHALL BE PLACED, UNCOMPACTED, ALONG A RELATIVELY LEVEL CONTOUR.

THE BERM MAY BE USED IN COMBINATION WITH SILT FENCE TO IMPROVE SEDIMENT REMOVAL AND PREVENT CLOGGING OF THE BERM BY LARGER SEDIMENT PARTICLES (SILT FENCE PLACED ON THE UPHILL SIDE OF BERM).



Erosion Control Mix Filter Berm

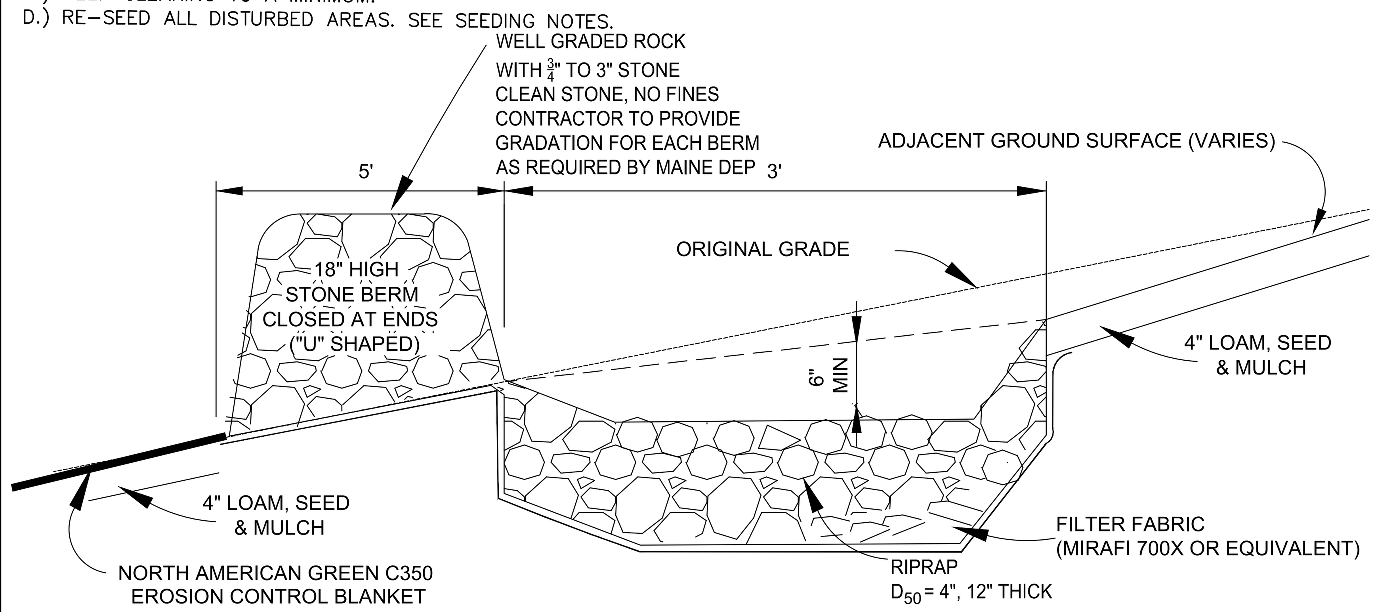
NOT TO SCALE



NOTE: INSTALL BARRIER AT EACH CATCH BASIN

CATCH BASIN HAY BALE BARRIER DETAIL

NOT TO SCALE



NOTE: THE DESIGN ENGINEER SHALL OVERSEE THE LOCATION AND INSTALLATON OF THE STONE BERM LEVEL SPREADER

THE STONE BERM SHALL BE INSTALLED ALONG THE CONTOUR TO THE EXTENT POSSIBLE

THE BERM MUST BE WELL-GRADED AND CONTAIN SOME SMALL STONE TO FORCE FLOWS TO SPREAD OUT BEHIND THE BERM

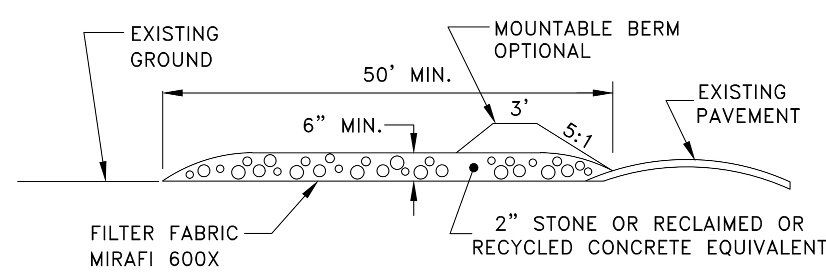
STONE BERM MUST BE AT LEAST 1.5' HIGH AND 2' ACROSS THE TOP WIDTH WITH 2:1 SIDE SLOPES.

SEE MAINE DEP BMP 5.2.2 BUFFER WITH STONE BERMED LEVEL LIP SPREADER

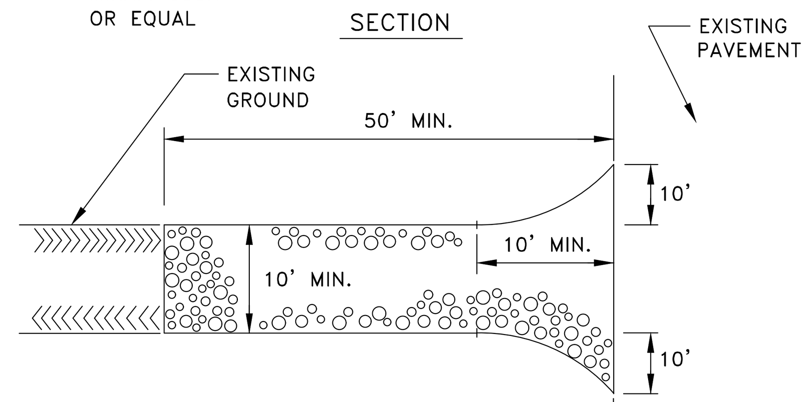
STONE BERM LEVEL SPREADER

NOT TO SCALE

Construction Oversight:
"The applicant will retain the services of a professional engineer to inspect the construction and stabilization of the stone bermed level spreaders to be built on the site. The engineer shall inspect the stone berm material and its placement, and the upgradient conveyance structure construction. If necessary, the inspecting engineer will interpret the stone bermed level lip spreader's location and construction plan for the contractor. Once the stone bermed level lip spreaders are constructed and stabilized, the inspecting engineer will notifJ the department in writing within 30 days to state that the level lips have been completed. Accompanying the engineer's notification must be a log of the engineer's inspections giving the date of each inspection, the time of each inspection, the items inspected on each visit, and include any testing data or sieve analysis data of the berm media."



SECTION

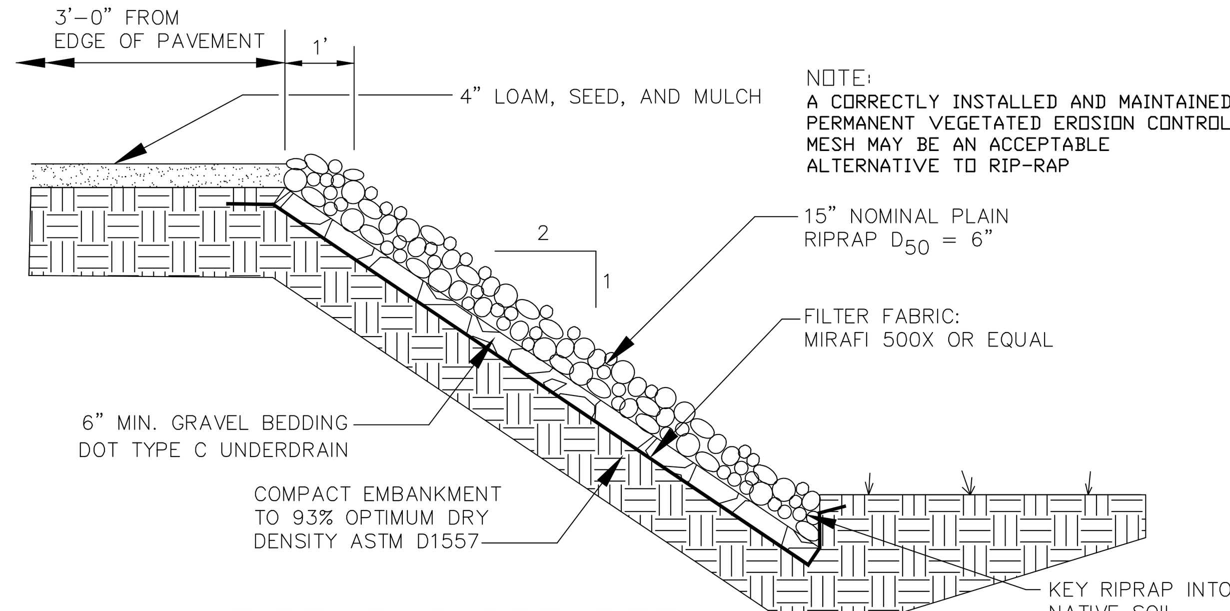


PLAN VIEW

NOTE: THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH AGGREGATE WHICH DRAINS INTO AN APPROVED SEDIMENT OR WATERWAYS.

STABILIZED CONSTRUCTION ENTRANCE

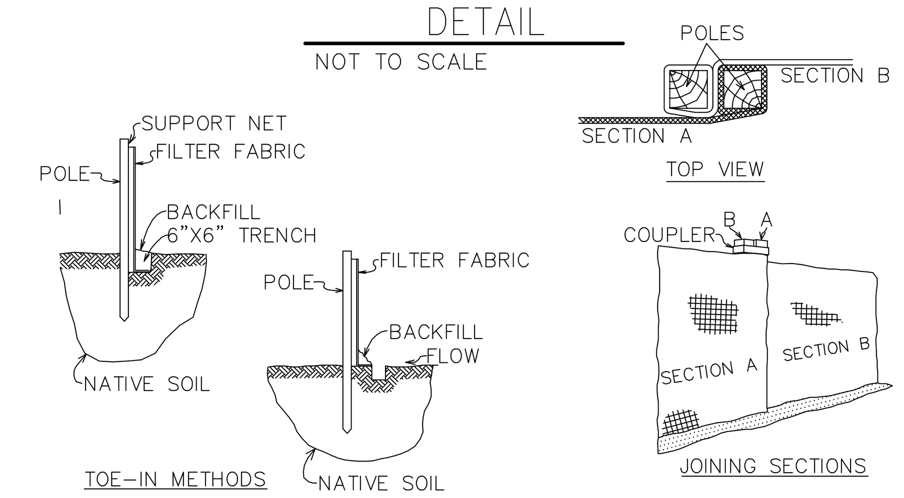
N.T.S.



NOTE:
A CORRECTLY INSTALLED AND MAINTAINED PERMANENT VEGETATED EROSION CONTROL MESH MAY BE AN ACCEPTABLE ALTERNATIVE TO RIP-RAP

RIPRAP SLOPE DETAIL

NOT TO SCALE

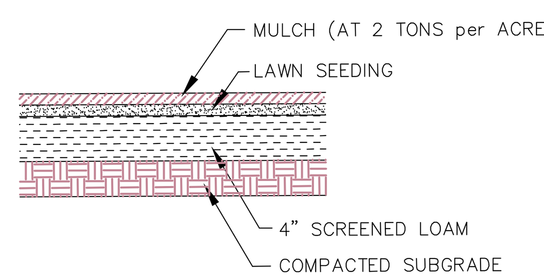


SILTATION FENCING

1. INSTALL DOWNSLOPE OF ALL CONSTRUCTION ACTIVITIES AS NECCESSARY.

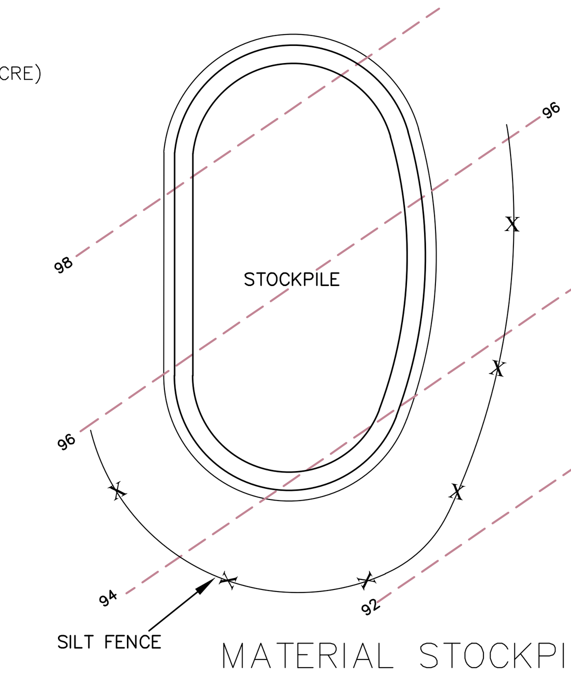
2. INSPECTION SHOULD BE FREQUENT AND REPAIR OR REPLACEMENT MADE PROMPTLY AS NEEDED. CHECK AFTER EACH RAINFALL.

3. BARRIERS SHOULD BE REMOVED WHEN THAY HAVE SERVED THEIR USEFULNESS, BUT NOT BEFORE THE UPSLOPE AREAS HAVE BEEN PERMANENTLY STABILIZED.



LOAM AND SEED

NOT TO SCALE



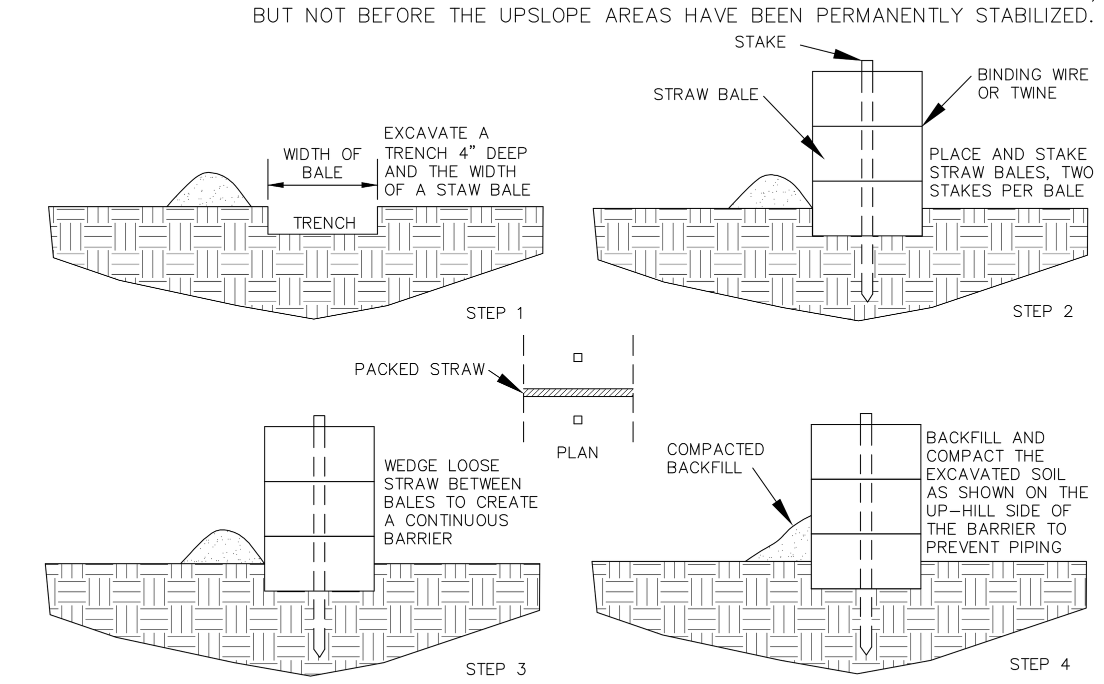
1) SEED TOPSOIL STOCKPILE WITH WINTER RYE AT THE RATE OF 3lbs PER 1000 sq.ft. BY OCTOBER 1st OF CONSTRUCTION SEASON. APPLY HAY MULCH AT THE RATE OF 100lbs PER 1000 sq,ft. OR APPLY A TACKIFIER BY HYDRO SEEDING METHODS AFTER SEEDING. MULCH SHALL BE REAPPLIED ON THE STOCKPILE IF GRASS GROWTH DOES NOT COVER AT LEAST 75% OF THE STOCKPILE SURFACE WITH SEEDLINGS AT LEAST 3" HIGH BY NOVEMBER 1st. THE USE OF RYE FOR STABILIZING STOCKPILES IS LIMITED TO TEMPORARY PILES STANDING NO LONGER THAN 1 YEAR OR CONSERVATION MIX FOR TIMES LONGER.

2) SILT FENCE TO BE INSTALLED PER THE SILT FENCE DETAIL.

3) ACCUMULATED SEDIMENTS WILL BE REMIXED INTO THE TOPSOIL.

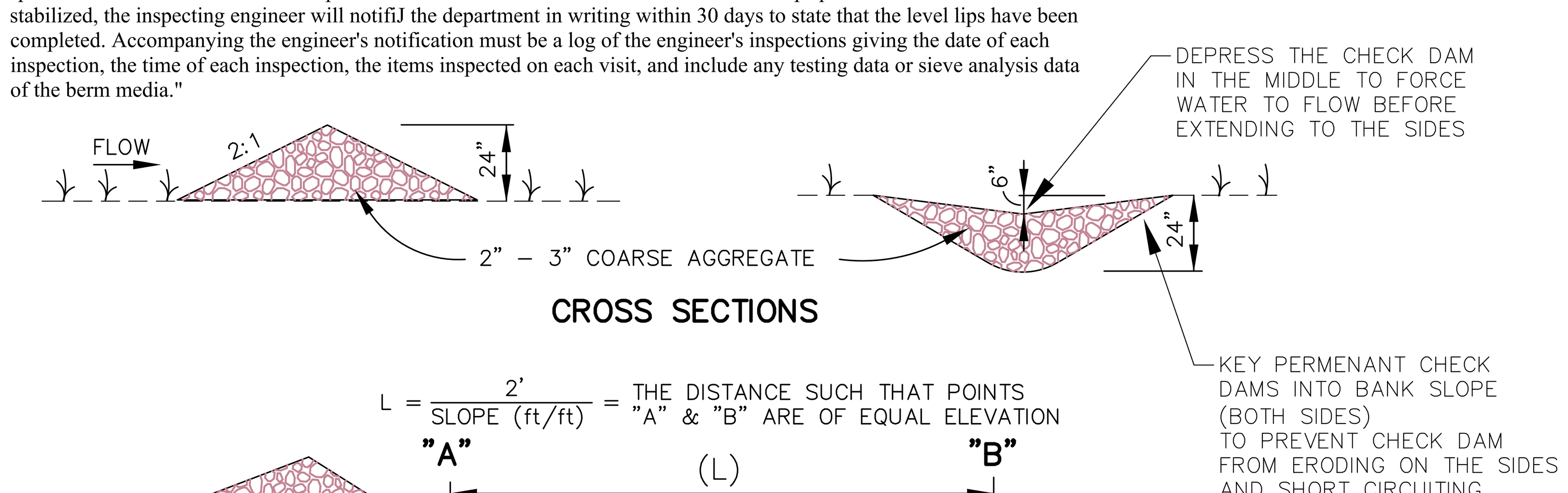
MATERIAL STOCKPILE EROSION PREVENTION DETAIL

NOT TO SCALE



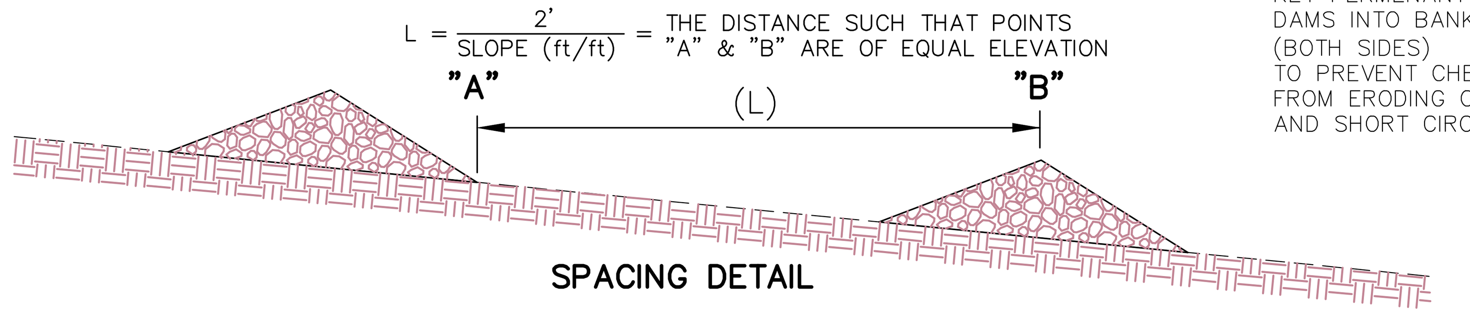
HAY BALE BARRIER INSTALLATION IN DITCHES

NOT TO SCALE



CROSS SECTIONS

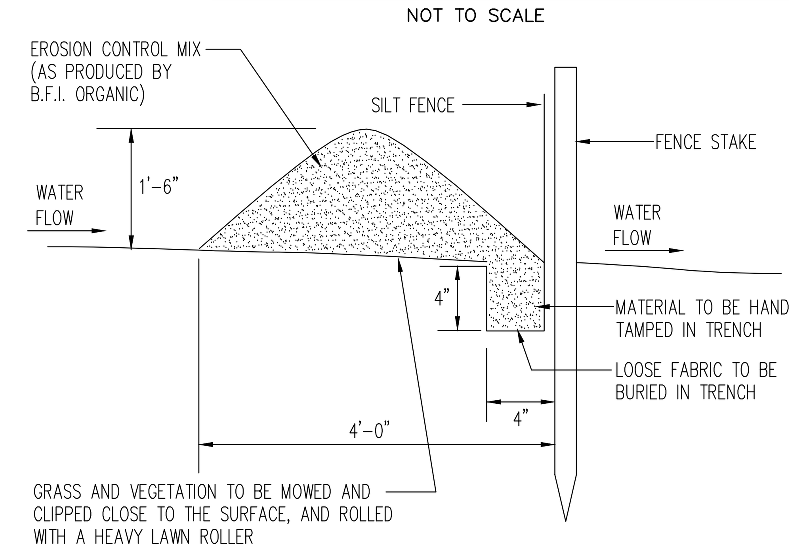
$$L = \frac{2'}{\text{SLOPE (ft/ft)}} = \text{THE DISTANCE SUCH THAT POINTS "A" \& "B" ARE OF EQUAL ELEVATION}$$



SPACING DETAIL

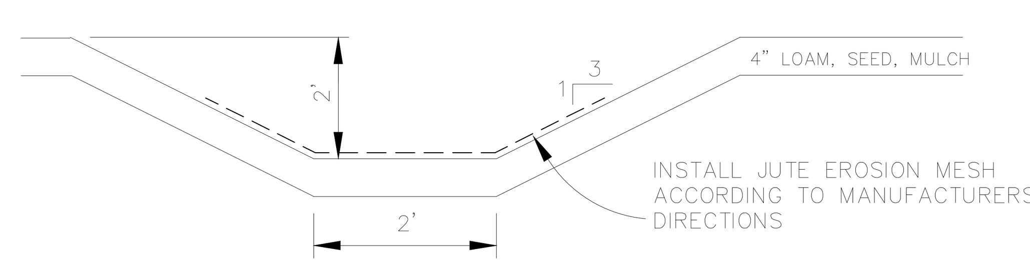
STONE CHECK DAM DETAILS

NOT TO SCALE



SILT FENCE AND FILTER BERM DETAIL

NOT TO SCALE



GRASSED DITCH CROSS SECTION

NOT TO SCALE

NOTE:
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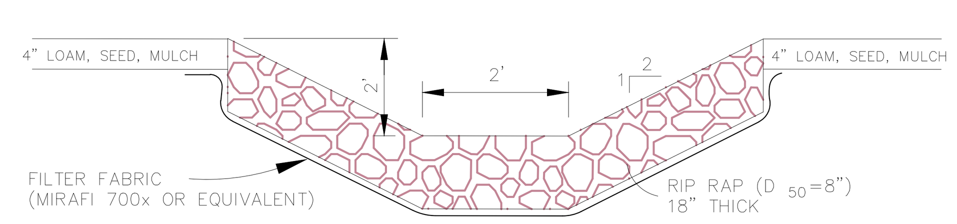
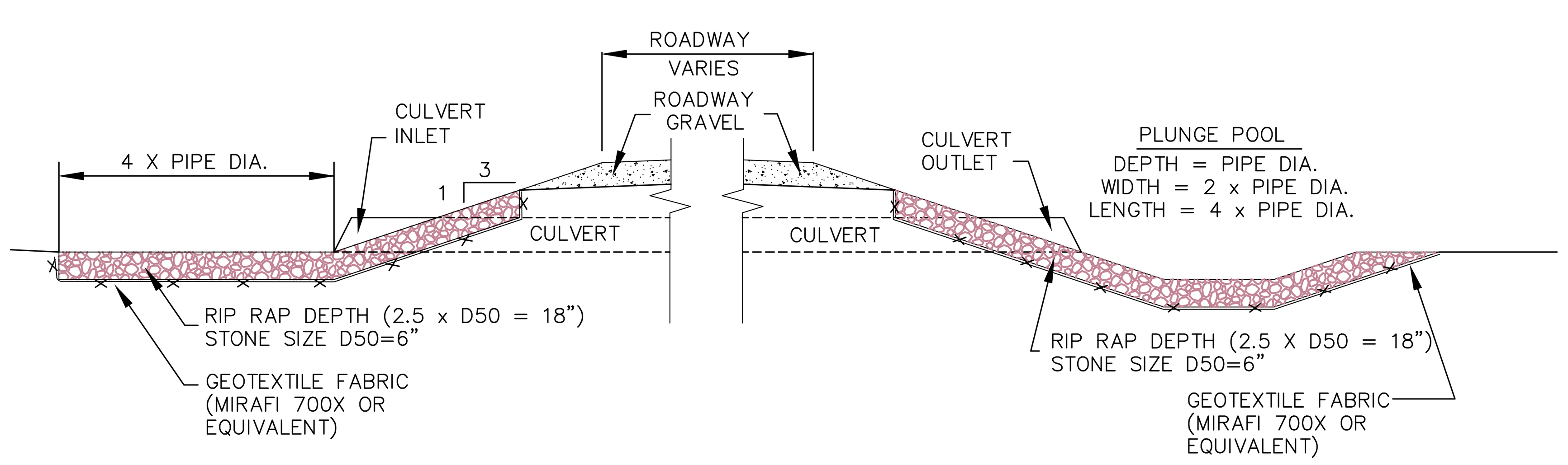


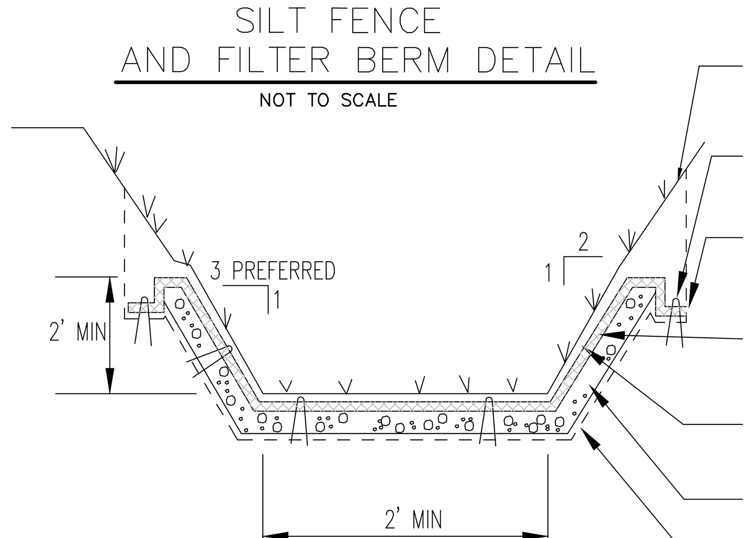
RIP RAP DITCH CROSS SECTION

NOT TO SCALE



TYPICAL CULVERT INLET & OUTLET DETAIL

NOT TO SCALE



APPROX EXISTING GRADE

HEAVY DUTY PINS OR PLASTIC PEGS AT SPACING PER MANUFACTURERS SPECIFICATIONS.

EDGE ANCHOR MAT PER MANUFACTURERS SPECIFICATIONS. (SEE DETAIL BELOW)

3 DIMENSIONAL POLYETHYLENE EROSION MAT 10' WIDE.

1/2" OF SANDY LOAM SPREAD AND BRUSHED TO FILL THE MAT VOIDS.

4" TOPSOIL, FERTILIZED AND SEEDED AT TWICE RECOMMENDED SEED APPLICATION RATE.

4"-5" EXCAVATION DEPTH OR AS REQUIRED TO OBTAINED SMOOTH CHANNEL BOTTOM.

EROSION MAT INSTALLATION IN DITCHES

NOT TO SCALE

4.	12-18-2020	No changes, Re-submit to Town	CSB
3.	6-15-2020	Erosion Control Details	CSB
2.	2-24-2020	No changes this sheet, Re-submit to Town	CSB
1.	12-18-2019	Submit to Town and Maine DEP	CSB

Erosion Control Details

Cumberland Crossing - Phase 2
Tuttle and Greely Roads, Cumberland, Maine

Seacoast Management Company
20 Blueberry Lane, Falmouth, Maine

STATE OF MAINE
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PROFESSIONAL ENGINEER
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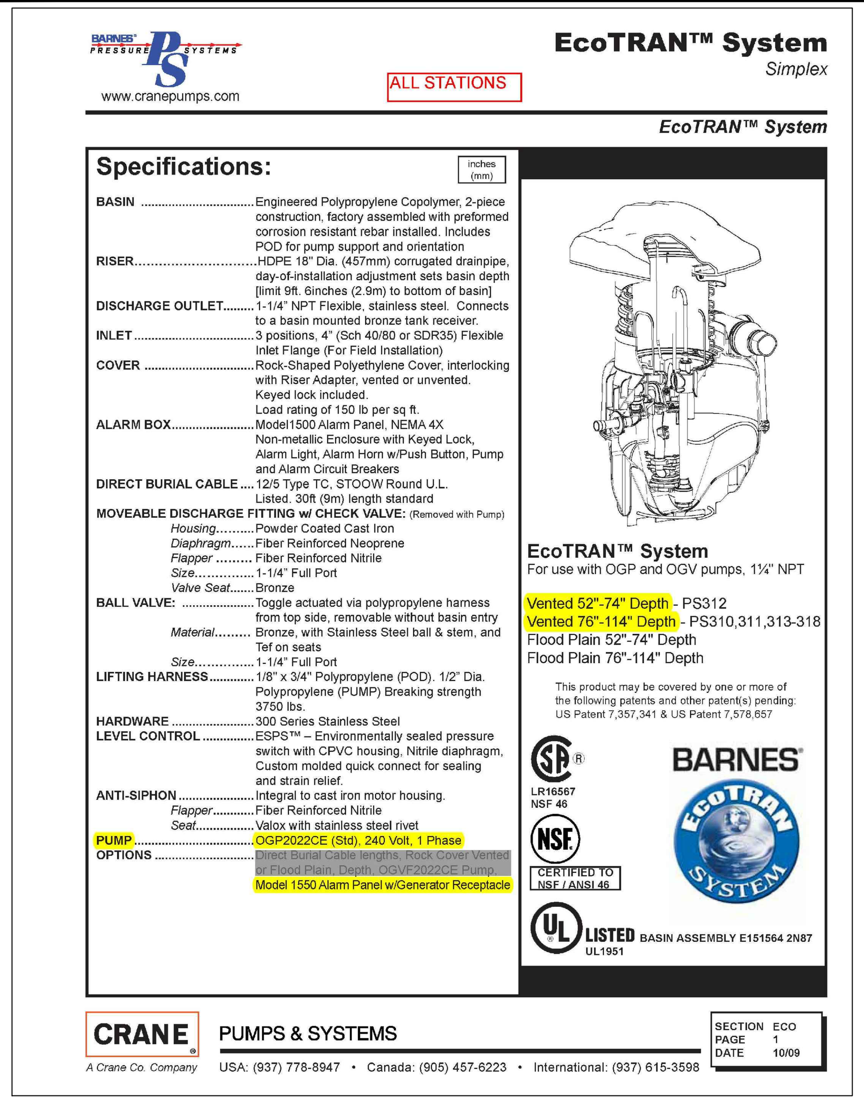
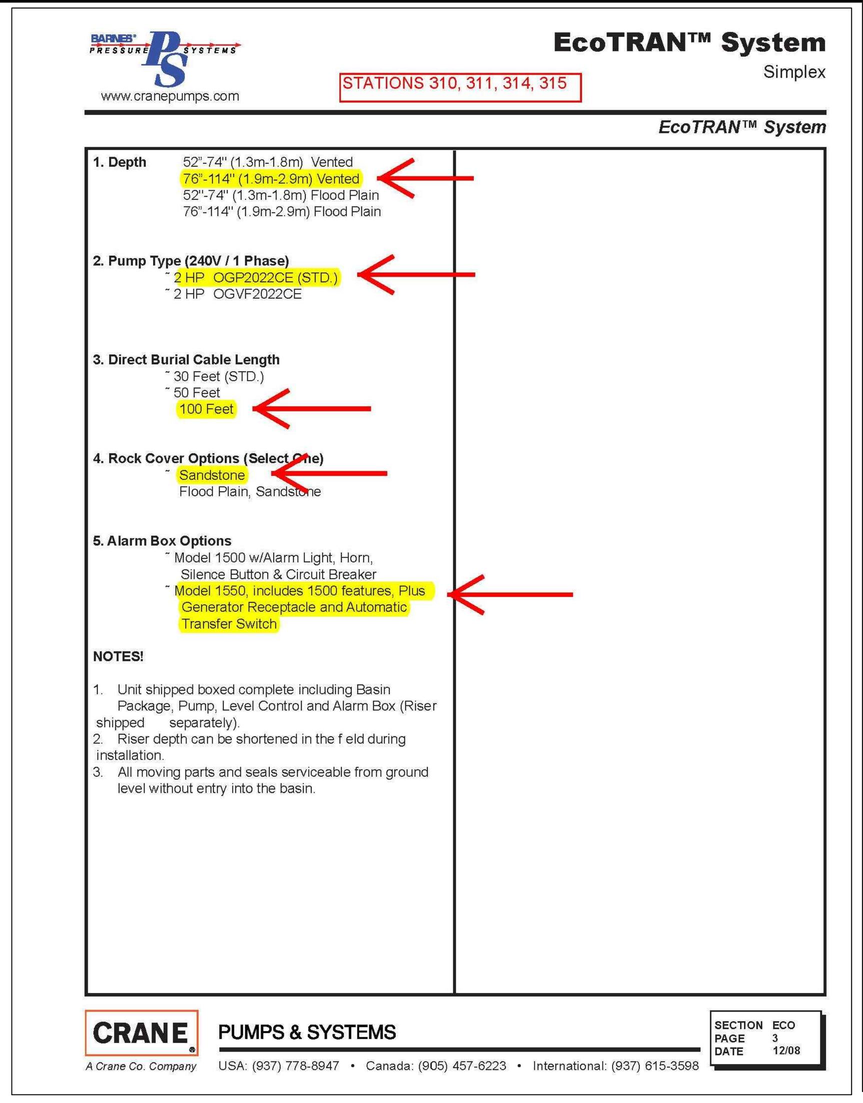
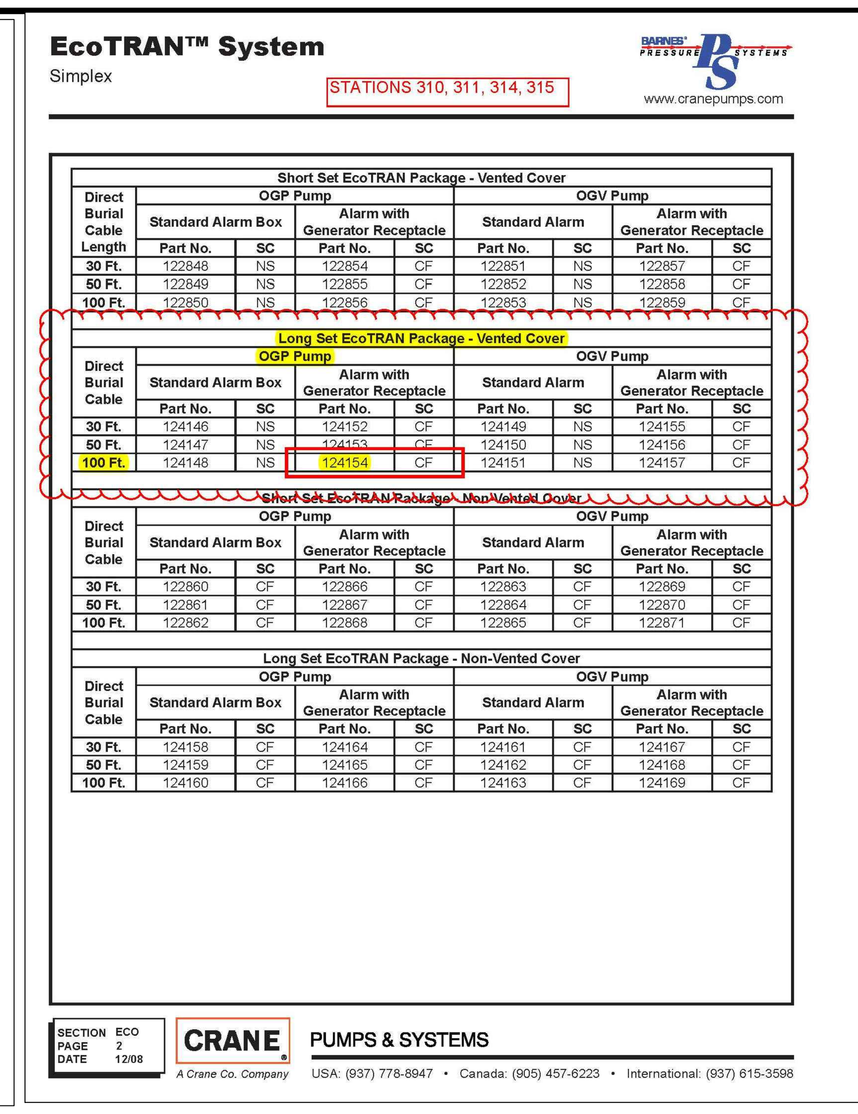
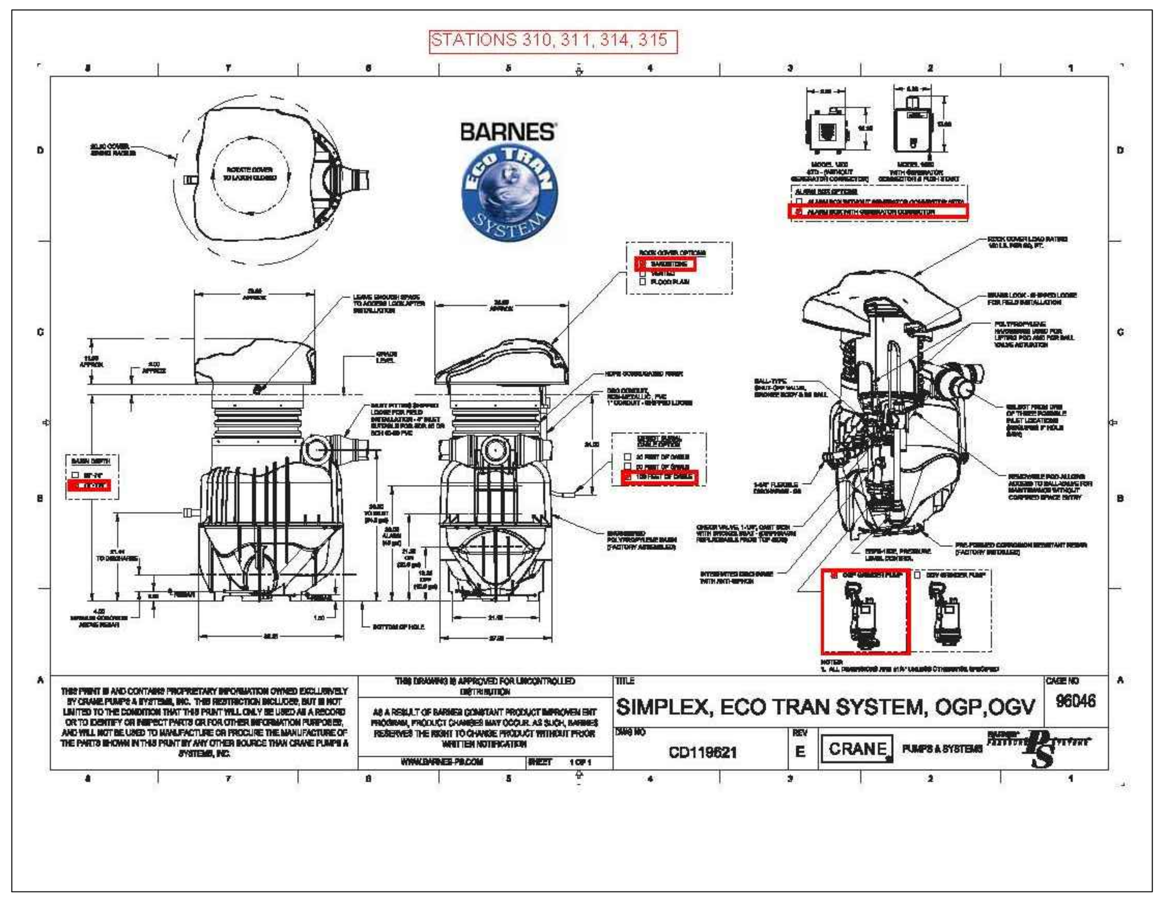
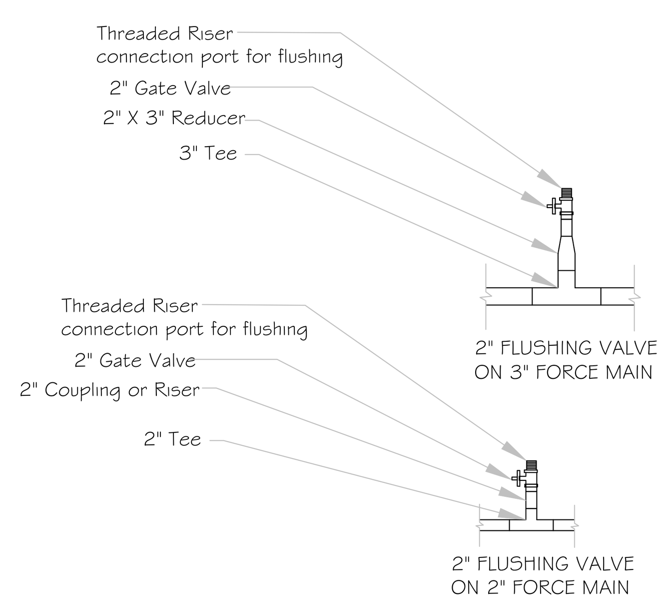




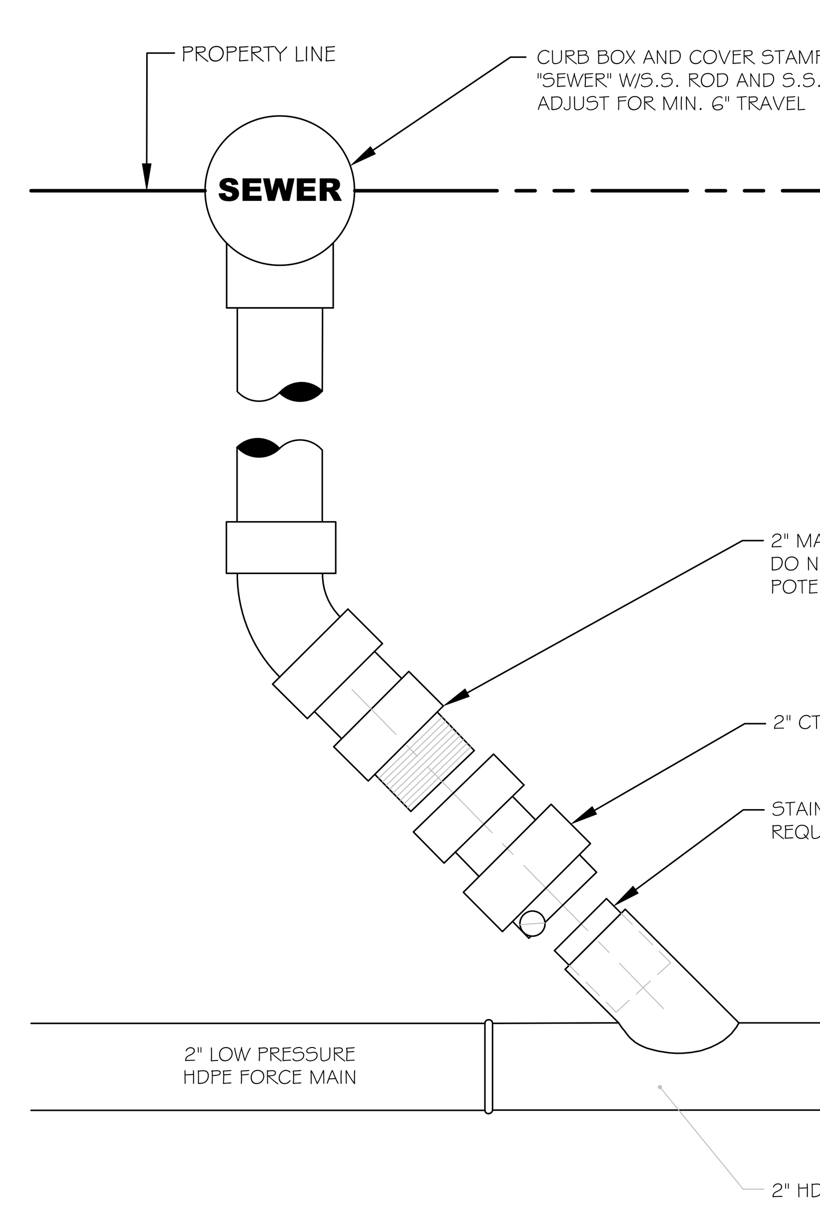






2" Sanitary Sewer Flushing Valve Detail

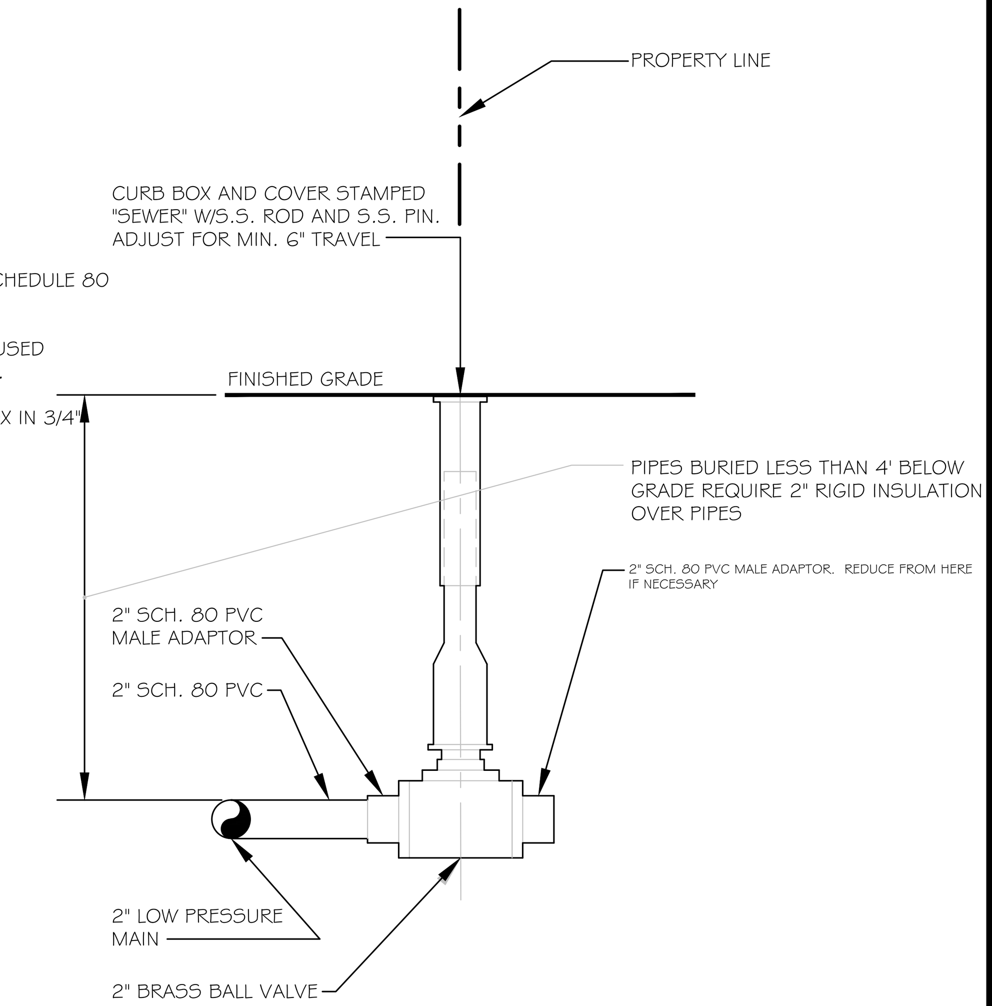
NOT TO SCALE



PLAN VIEW

NOTES

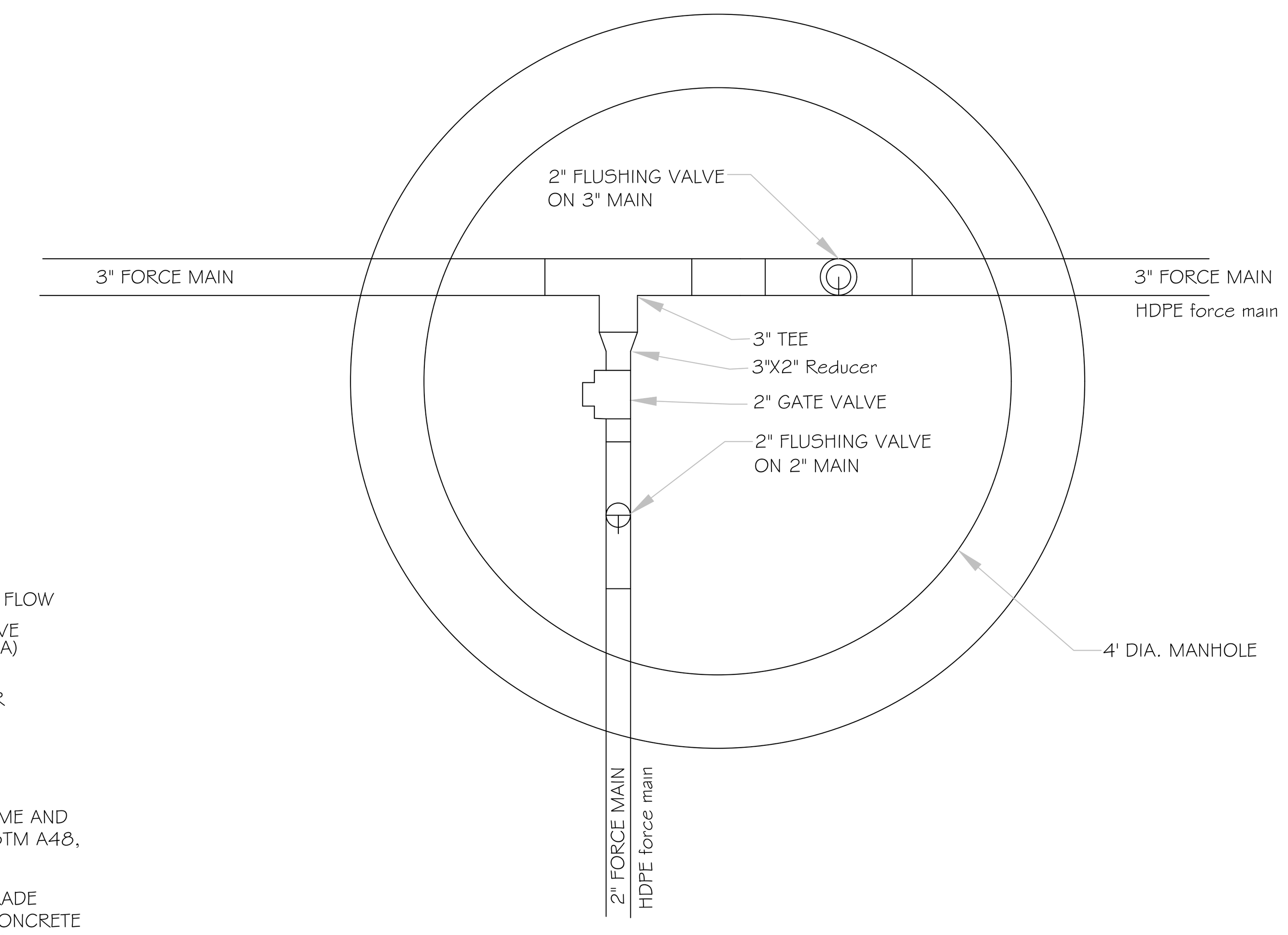
1. THE CONTRACTOR SHALL USE SCHEDULE 80 PVC FITTINGS.
2. PVC PRIMER/CLEANER SHALL BE USED BEFORE PVC CEMENT IS APPLIED.
3. BED ALL FITTINGS AND VALVE BOX IN 3/4" CRUSHED STONE.



PROFILE VIEW

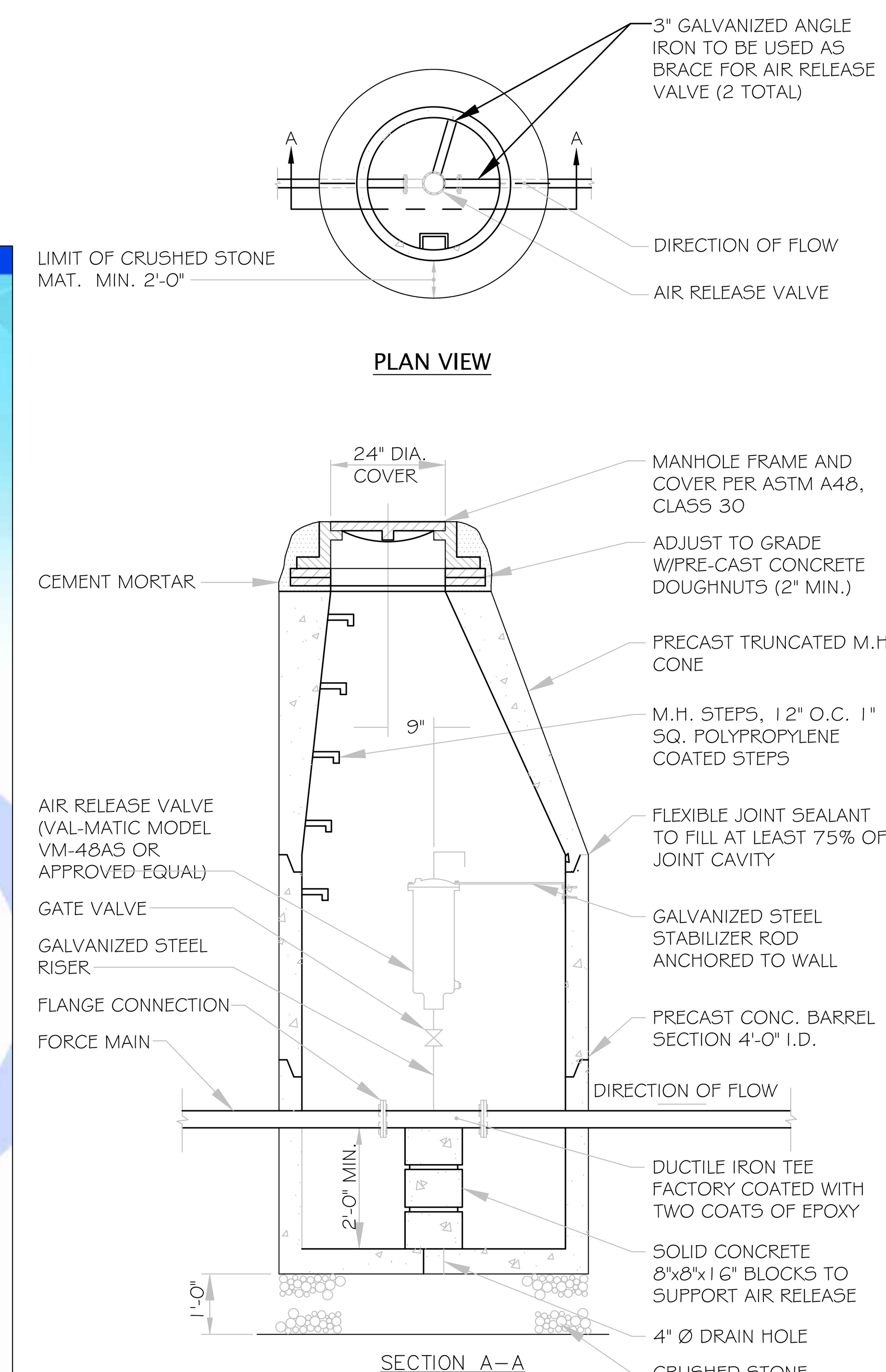
LOW PRESSURE SEWER CONNECTION SERVICE DETAIL

NOT TO SCALE



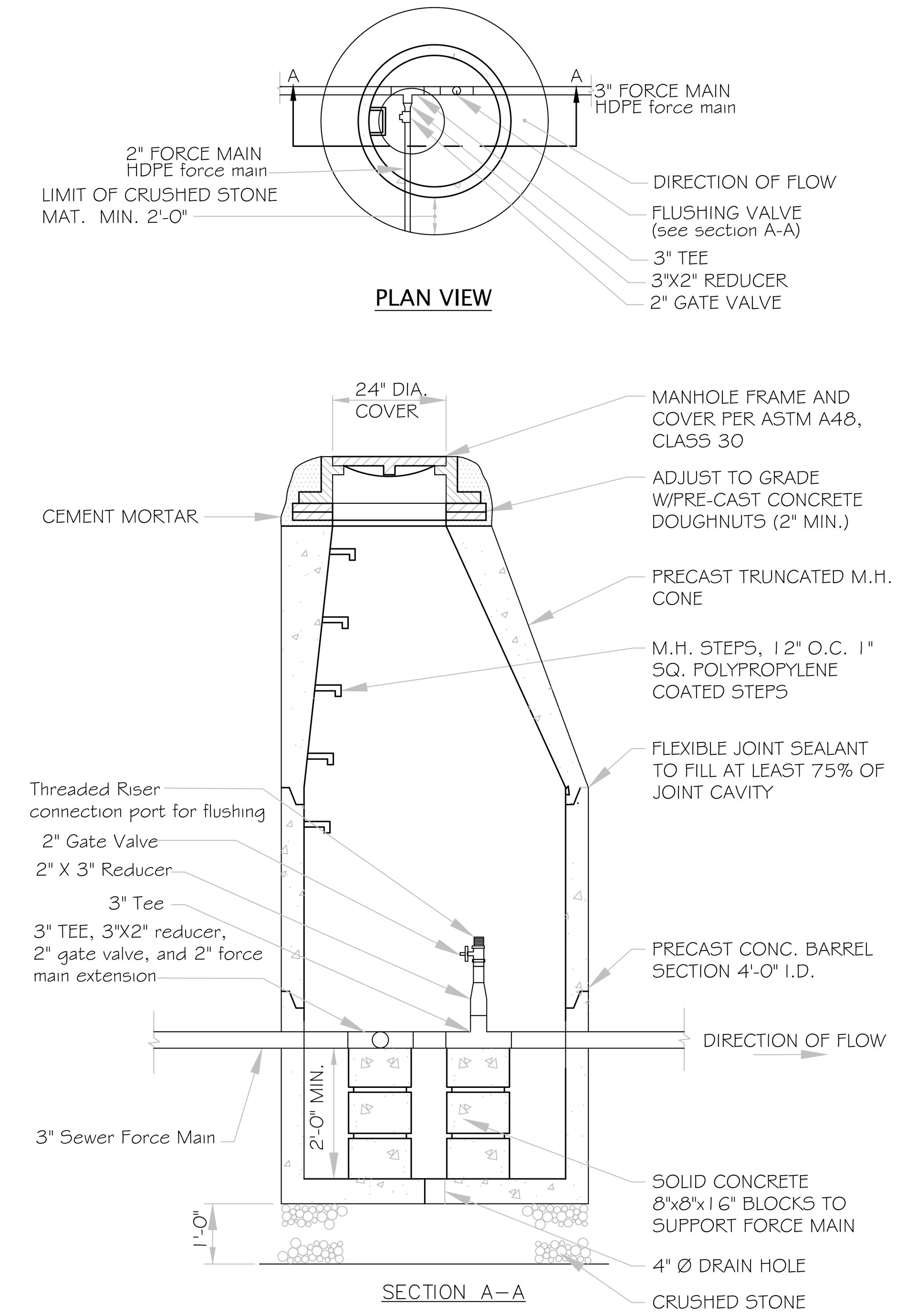
2" Sanitary Sewer Flushing Valve and 2" isolation valve inside SMH's 8 and 9

NOT TO SCALE



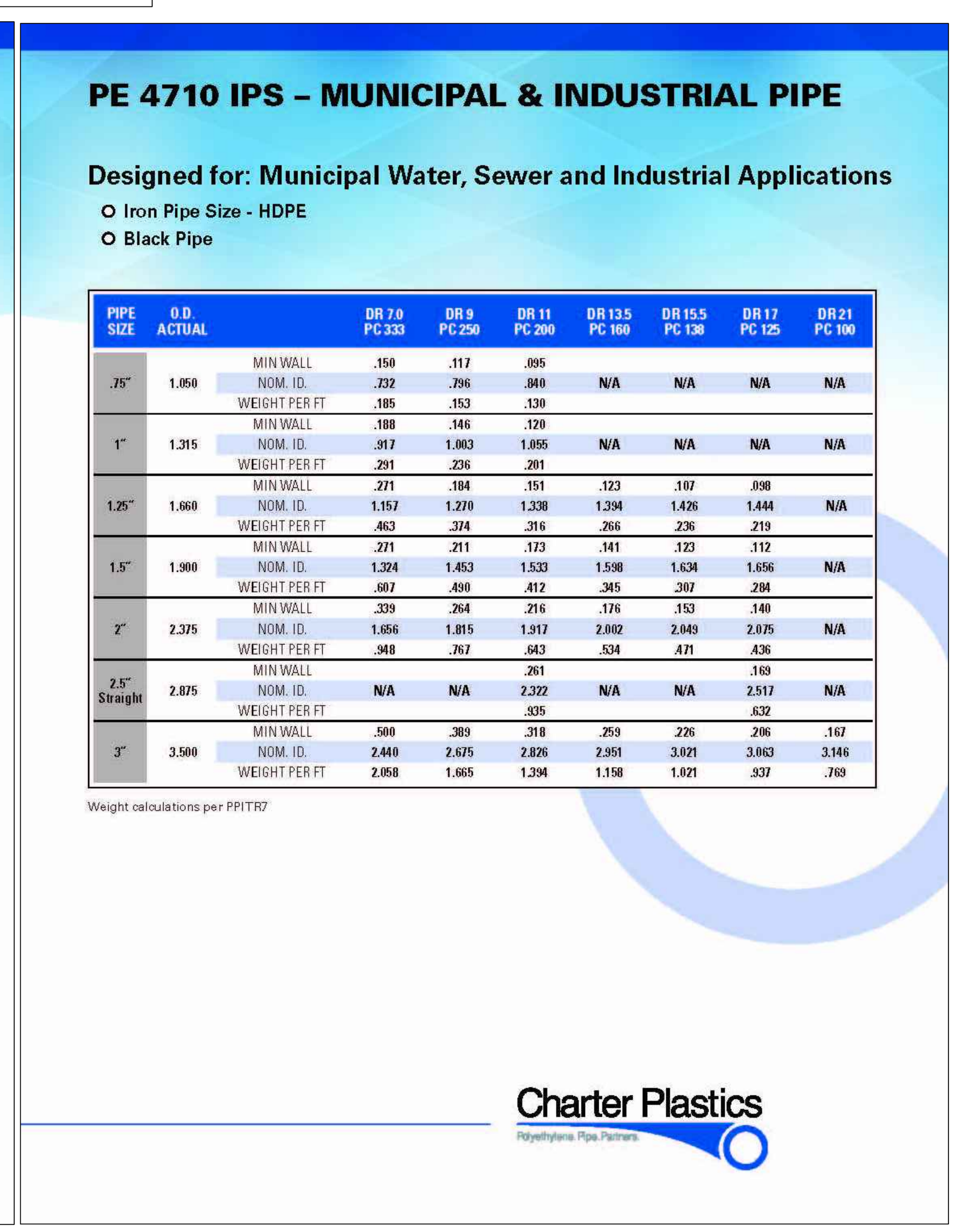
AIR RELEASE MANHOLE

NOT TO SCALE



2" Sanitary Sewer Flushing Valve and 2" isolation valve inside 4' dia. manhole

NOT TO SCALE



Rev.	Date	Description	By
4.	12-18-2020	No changes, re-submit to Town	CSB
3.	6-15-2020	No changes, re-submit to Town and DEP	CSB
2.	2-24-2020	No changes this sheet Re-submit to Town	CSB
1.	12-18-2019	Submit to Town and Maine DEP	CSB

Low Pressure Sewer Pump Details

Cumberland Crossing - Phase 2
Tuttle and Greely Roads, Cumberland, Maine

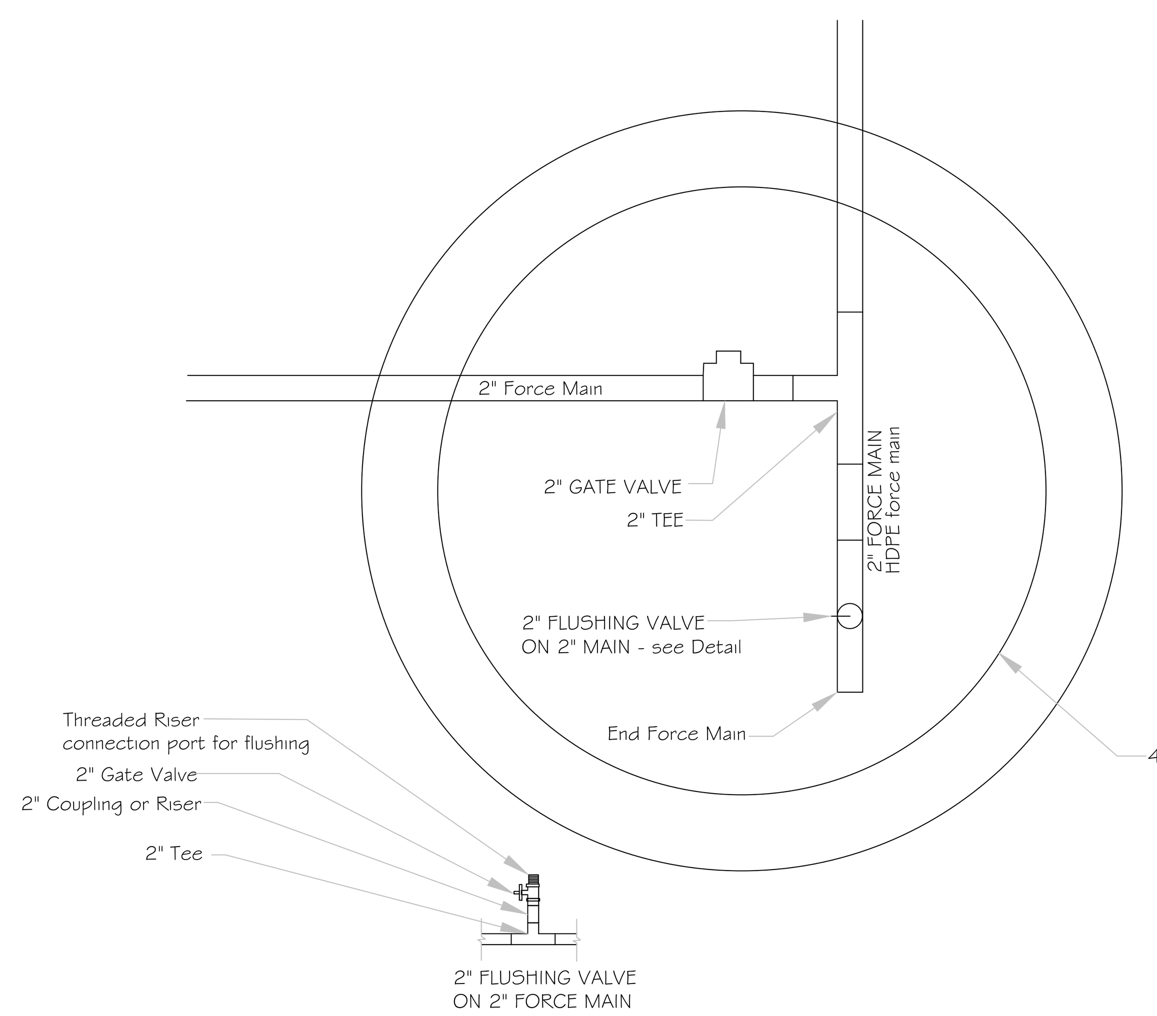
Seacoast Management Company
20 Blueberry Lane, Falmouth, Maine

STATE OF MAINE
CHRISTOPHER S. BELANGER
9098
LICENSED PROFESSIONAL ENGINEER
12-18-2020

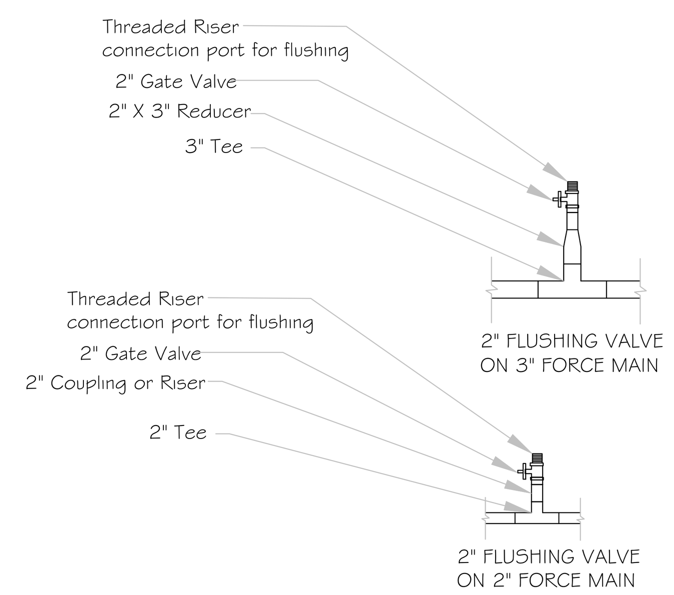
BELANGER ENGINEERING
CONSULTING ENGINEERS
- COMMERCIAL PROJECTS
- RESIDENTIAL SUBDIVISIONS
- TOWN AND STATE APPROVALS
- SITE PLANNING & DESIGN
- STORMWATER MANAGEMENT
- ROAD AND UTILITY DESIGN
- EROSION CONTROL PLANS

Email: cbelanger@roadrunner.com
63 Second Avenue , Augusta, Maine 04330 Ph 207-622-1462, Cell 207-242-5713

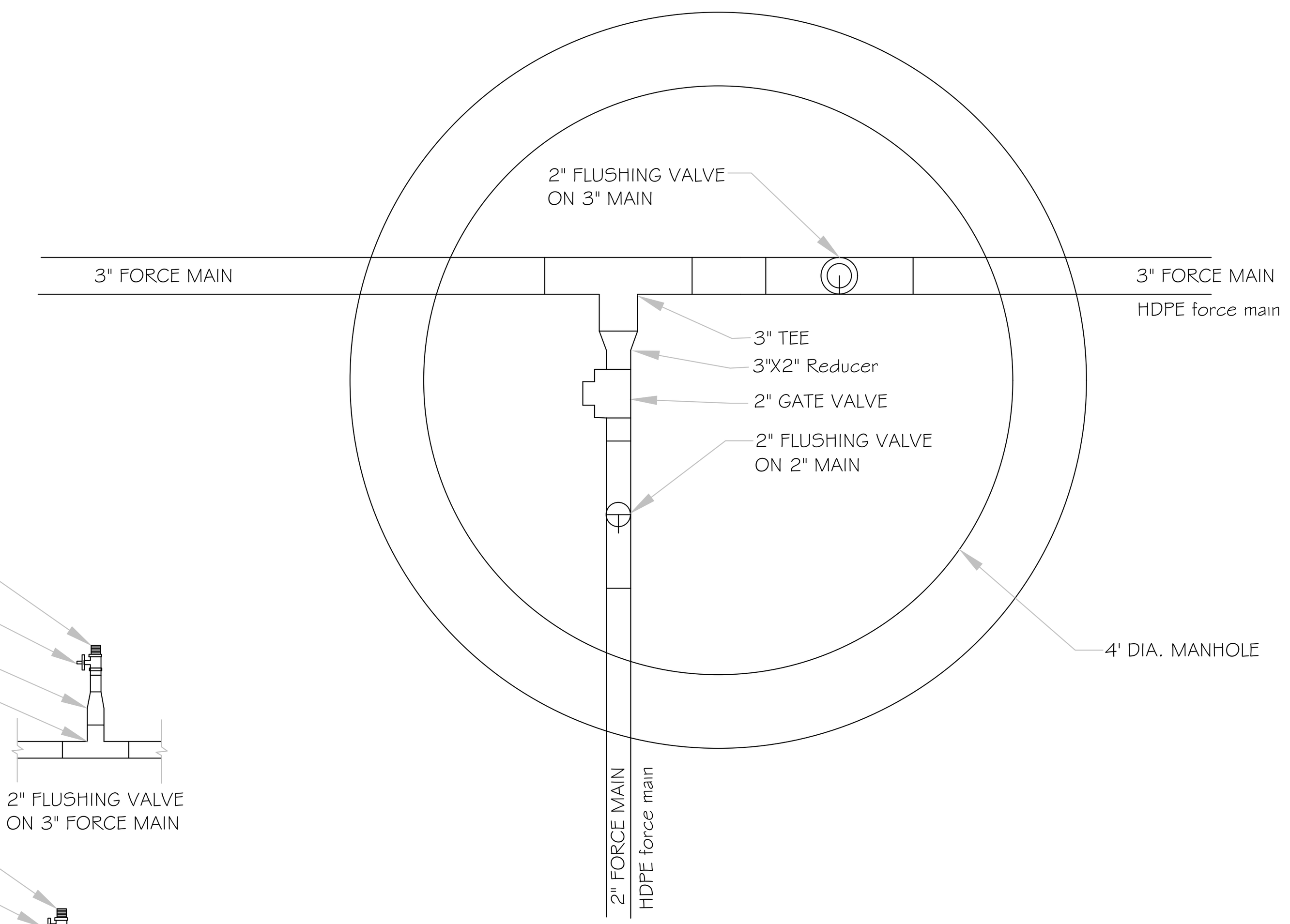
FIELD WK:	SCALE:	SHEET:
DRN BY:	JOB #: 109	C18
CH'D BY:	SS:	
DATE: 12-18-2020	FILE:	



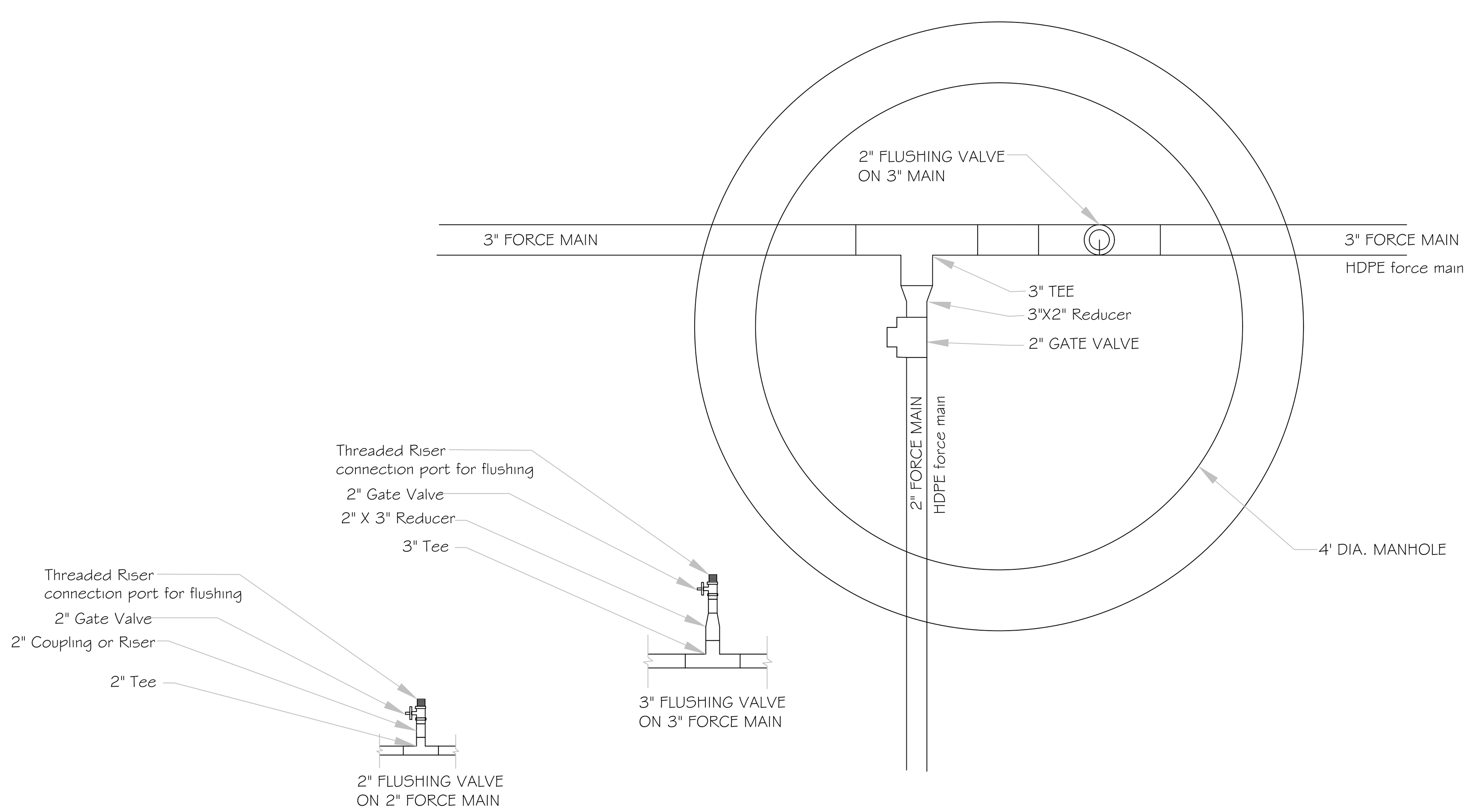
2" Sanitary Sewer Flushing Valve
and 2" isolation valve inside SMH 7
NOT TO SCALE



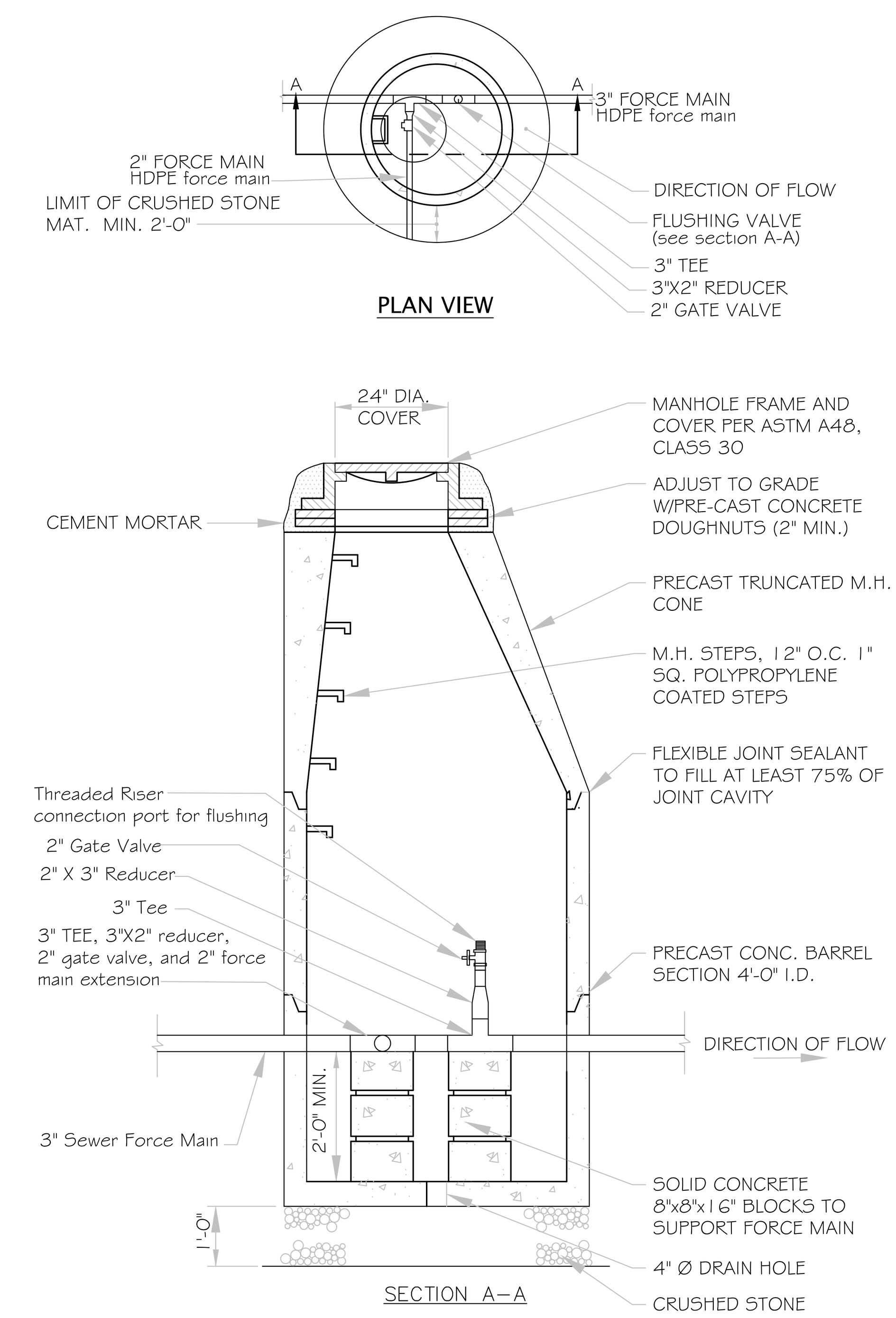
2" Sanitary Sewer Flushing Valve Detail
NOT TO SCALE



2" Sanitary Sewer Flushing Valve
and 2" isolation valve inside SMH's 8 and 9
NOT TO SCALE



2" Sanitary Sewer Flushing Valve
and 2" isolation valve inside SMH 6
NOT TO SCALE



2" Sanitary Sewer Flushing Valve
and 2" isolation valve inside 4' dia. manhole
NOT TO SCALE

4.	12-18-2020	No changes, re-submit to Town	CSB
3.	6-15-2020	No changes, re-submit to town and DEP	CSB
2.	2-24-2020	No changes this sheet Re-submit to Town	CSB
1.	12-6-2018	Add Sewer Flushing details	CSB

Low Pressure Sewer Pump Details

Oceanview at Cumberland
291 Tuttle Road, Cumberland, Maine

Seacoast Management Company
20 Blueberry Lane, Falmouth, Maine

STATE OF MAINE
CHRISTOPHER S. BELANGER 9098
LICENSED
PROFESSIONAL ENGINEER
12-18-2020

BELANGER ENGINEERING
CONSULTING ENGINEERS
63 Second Avenue , Augusta, Maine 04330
Email: cbelanger@roadrunner.com
Ph 207-622-1462, Cell 207-242-5713

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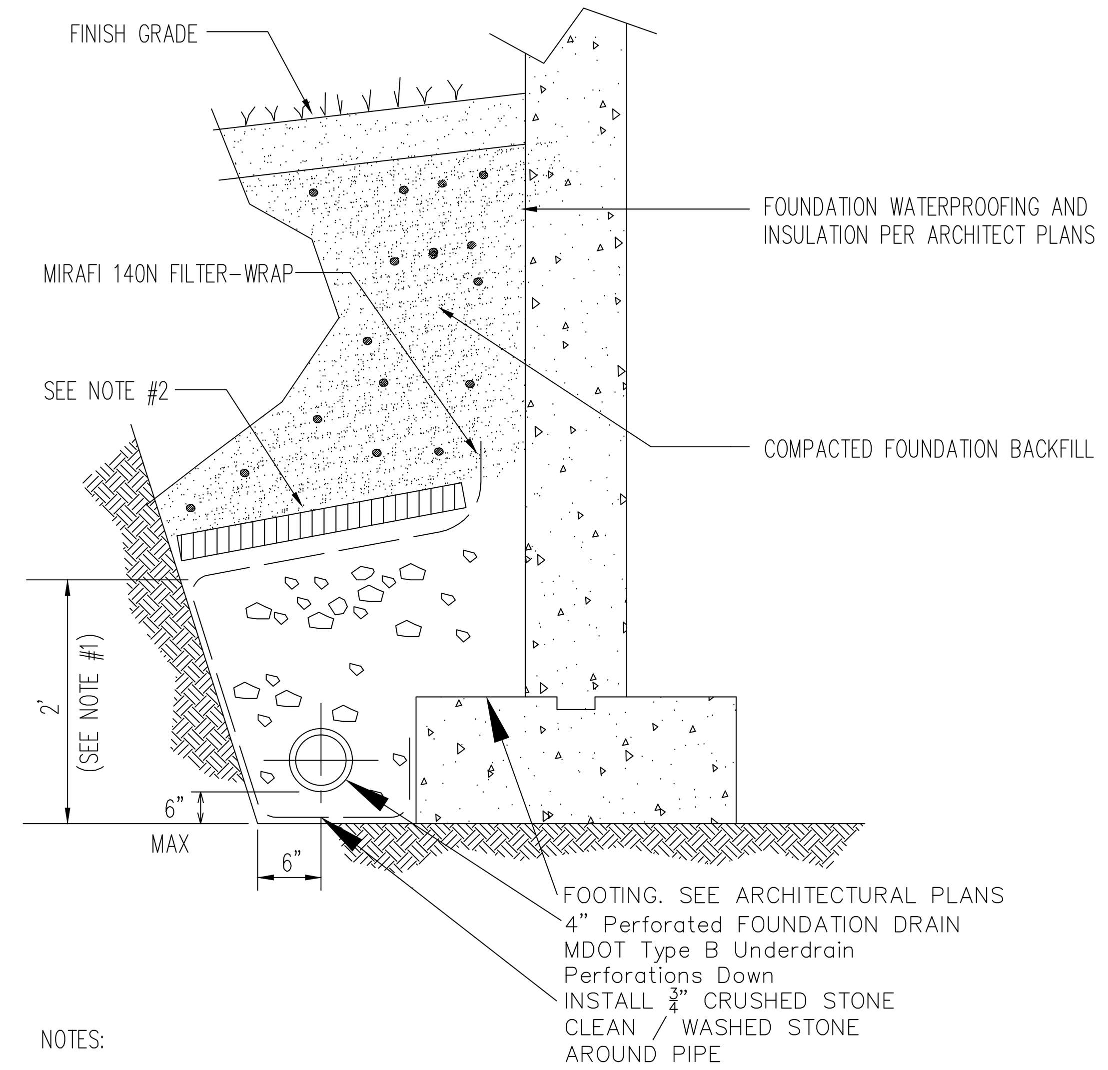
- EROSION CONTROL PLANS

FIELD WK:	SCALE:	SHEET:
DRN BY:	JOB #: 109	C18A
CH'D BY:	SS:	
DATE: 12-18-2020	FILE:	

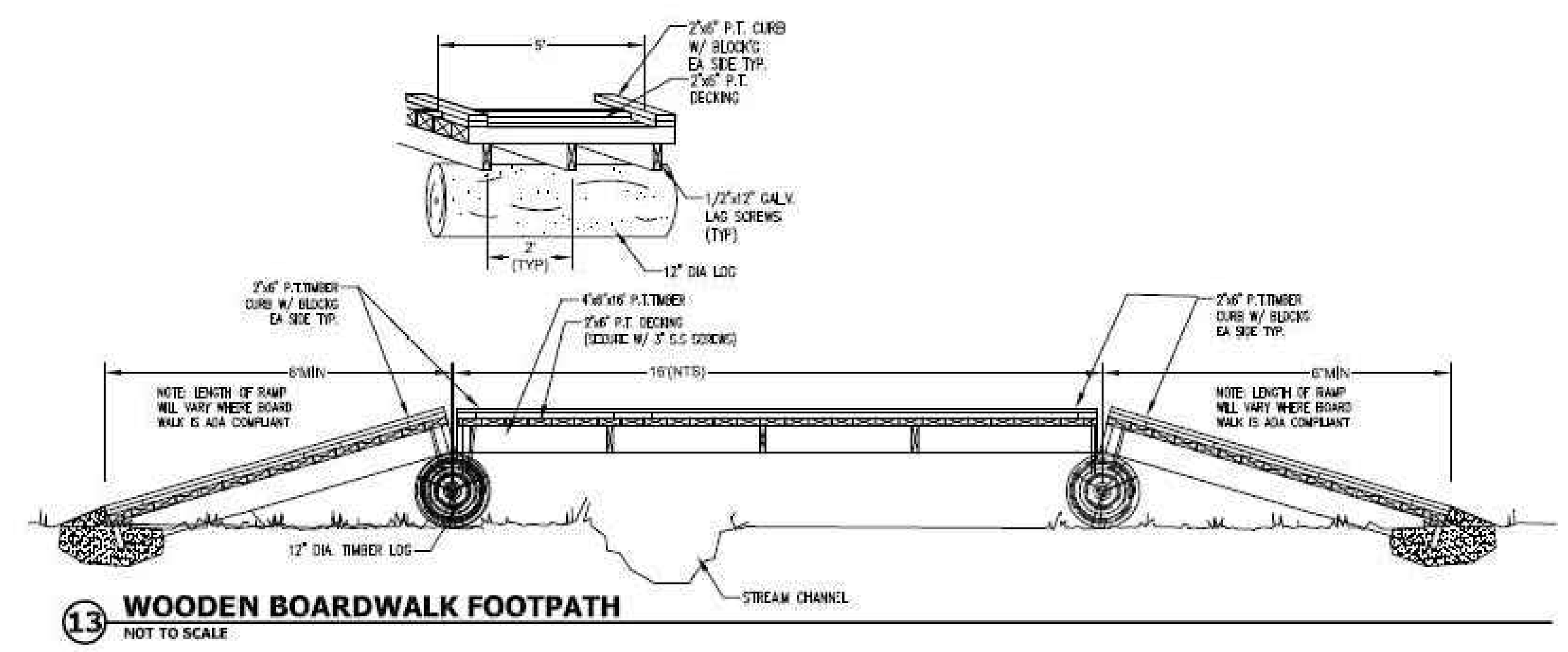


NOTES:

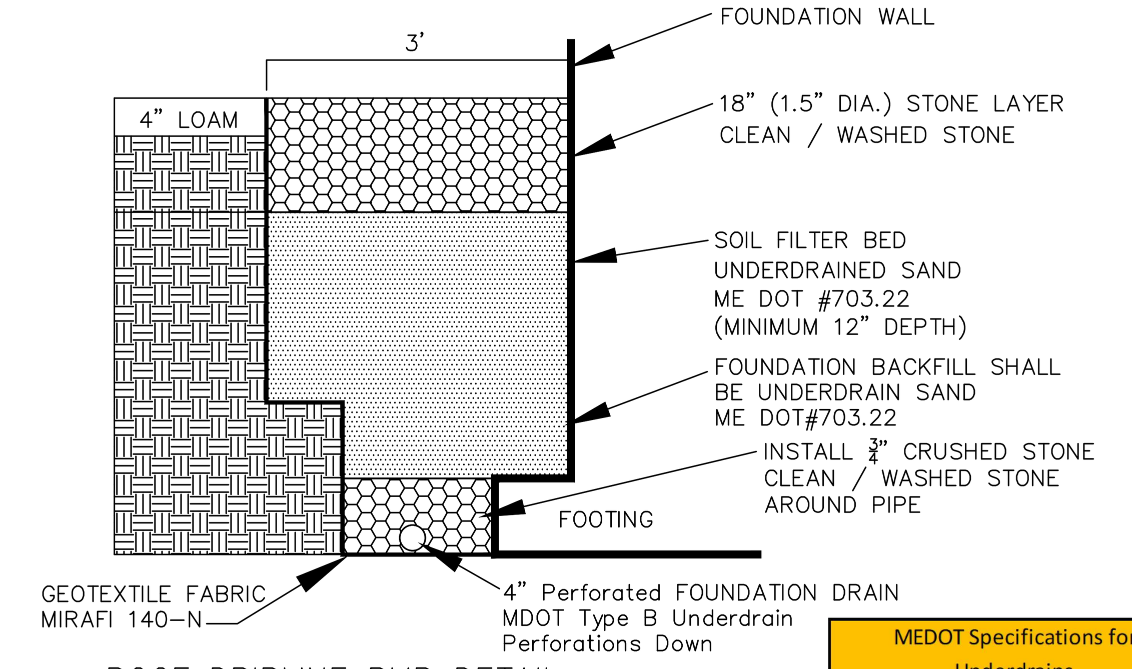
1. IN LEDGE THIS DEPTH MAY BE REDUCED IF FINISH GRADE IS LESS THAN 2 FT ABOVE FOOTING.
2. PROVIDE POLYSTYRENE INSULATION BOARD OVER PIPE WHERE COVER IS LESS THAN 4 FT AND/OR AS NOTED ON PLANS.
3. SEE PLANS FOR LOCATIONS OF DRAINBOARD AND PERIMETER DRAINS.

PERIMETER OR FOUNDATION DRAIN DETAIL

NOT TO SCALE ST-UD-FOUND/02-97



13 WOODEN BOARDWALK FOOTPATH
NOT TO SCALE



ROOF DRIPLINE BMP DETAIL

NOT TO SCALE OV @ CUMBERLAND SENIOR HOUSING

MEDOT Specifications for Underdrains (ME DOT #703.22)	
Sieve Size	% Passing by Weight
Underdrain Type B	
1"	90-100
1/2"	75-100
#4	50-100
#20	15-80
#50	0-15
#200	0-5
Underdrain Type C	
1"	100
3/4"	90-100
3/8"	0-75
#4	0-25
#10	0-5

CONSTRUCTION OVERSIGHT ROOF DRIPLINE INSTALLATION

The Contractor will retain the services of a professional engineer of the clients choosing to inspect the construction and stabilization of all stormwater management structures to be built as part of the project. If necessary, the inspecting engineer will interpret the construction plans for the contractor. Once all stormwater management structures are constructed and stabilized, the inspecting engineer will notify the department in writing within 30 days to state that the structures have been completed. Accompanying the engineer's notification must be a copy of the test results for any soil fill, aggregate, or mulch materials used in the construction of the stormwater management structures and a log of the engineer's inspections giving the date of each inspection, the time of each inspection, and the items inspected on each visit.

Roof Dripline Filtration

Construction inspections: At a minimum, the professional engineer's inspection will occur after foundation soil preparation but prior to placement of the geotextile lining, after the foundation drain pipe is installed but not yet backfilled, after the pipe bedding gravel is placed but prior to the placement of the gravel filter media, after the gravel filter media has been placed but prior to installing the crushed stone surface layer, and after the surface crushed stone surface layer is installed.

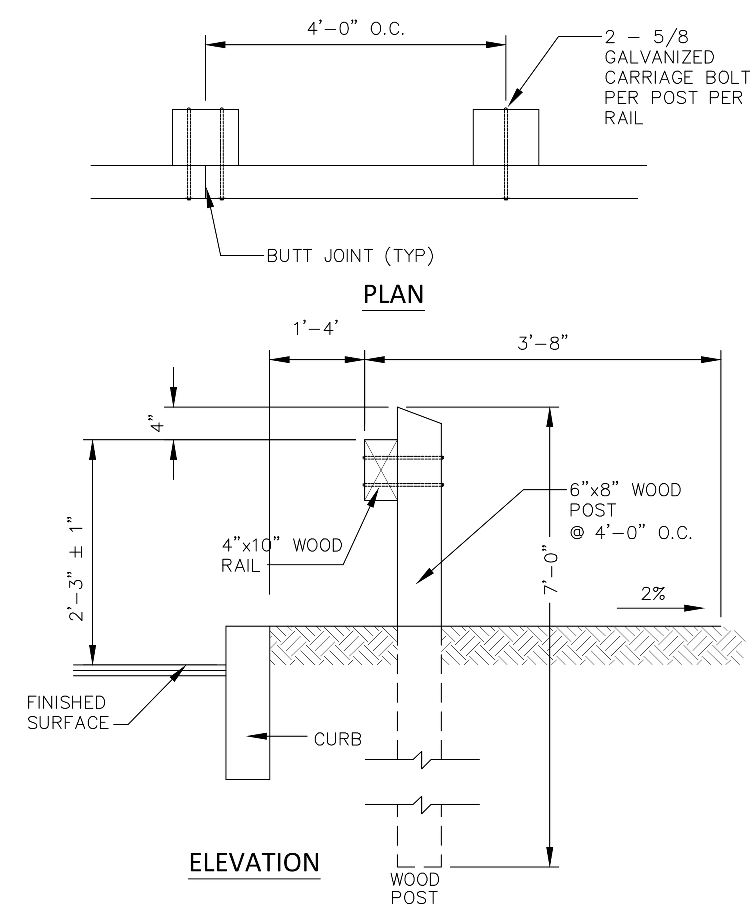
Testing and submittals: The gravel filter media and pipe bedding media used in the roof dripline filtration BMP must be confirmed as suitable by testing. The contractor shall identify the source of these gravels and obtain samples for testing. All testing must be done by a certified laboratory. All results of field and laboratory testing shall be submitted to the project engineer for confirmation. It shall be the contractor's responsibility to ensure completion of the following sampling and testing before the gravel is placed as part of the dripline filter's construction.

- Obtain a sample of the gravel filter media. The sample must be a composite of three different locations (grabs) from the gravel stockpile. The sample size required will be determined by the testing laboratory. Perform a sieve analysis conforming to ASTM C136 (Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates 1996A) of the sand filter media showing it meets the following gradation:

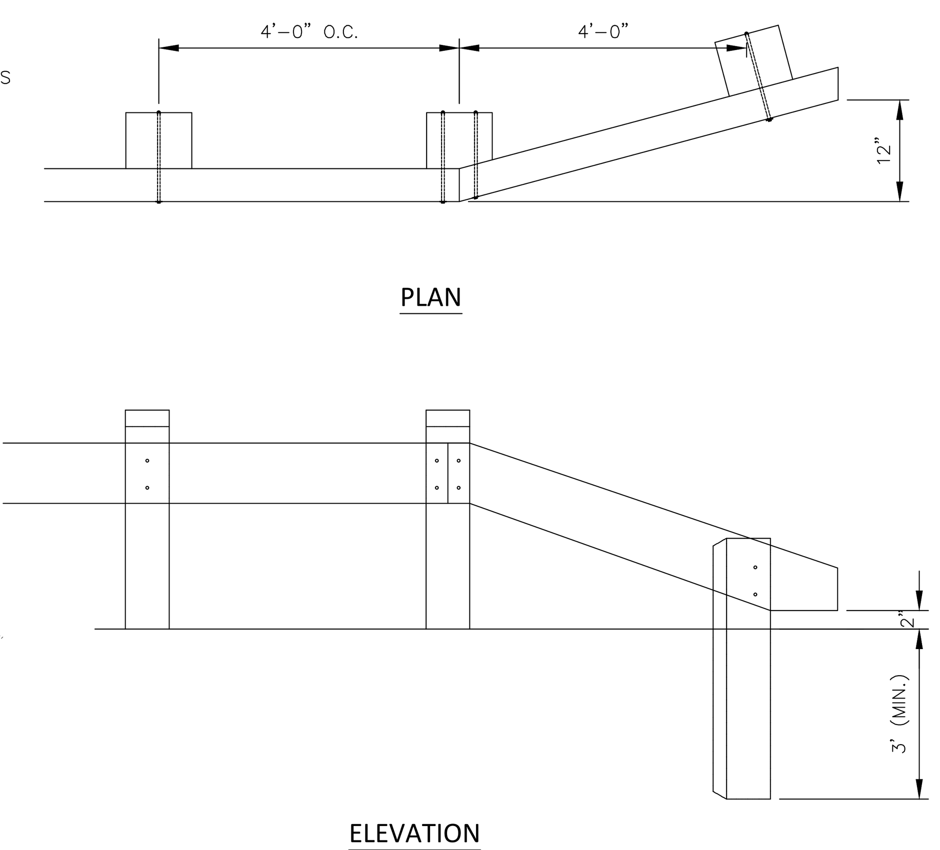
Sieve Size	% Passing by Weight
3"	100
#200	4-7

- If the underdrain pipes will be bedded in gravel, obtain a sample of the gravel fill to be used for the pipe bedding. The sample must be a composite of three different locations (grabs) from the stockpile or pit face. The sample size required will be determined by the testing laboratory. Perform a sieve analysis conforming to ASTM C136 (Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates 1996A) of the gravel to be used for the underdrain pipe bedding. The gravel fill must conform to MEDOT specification 703.22 Underdrain Type B.

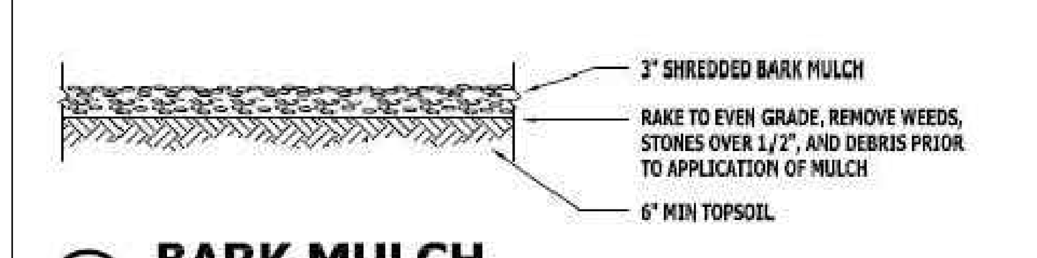
If the underdrain pipes will be bedded in crushed stone, obtain a sample of the crushed stone to be used for the pipe bedding. The sample must be a composite of three different locations (grabs) from the stockpile. The sample size required will be determined by the testing laboratory. Perform a sieve analysis conforming to ASTM C136 (Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates 1996A) of the crushed stone to be used for the underdrain pipe bedding. The crushed stone fill must conform to MEDOT specification 703.22 Underdrain Type C.



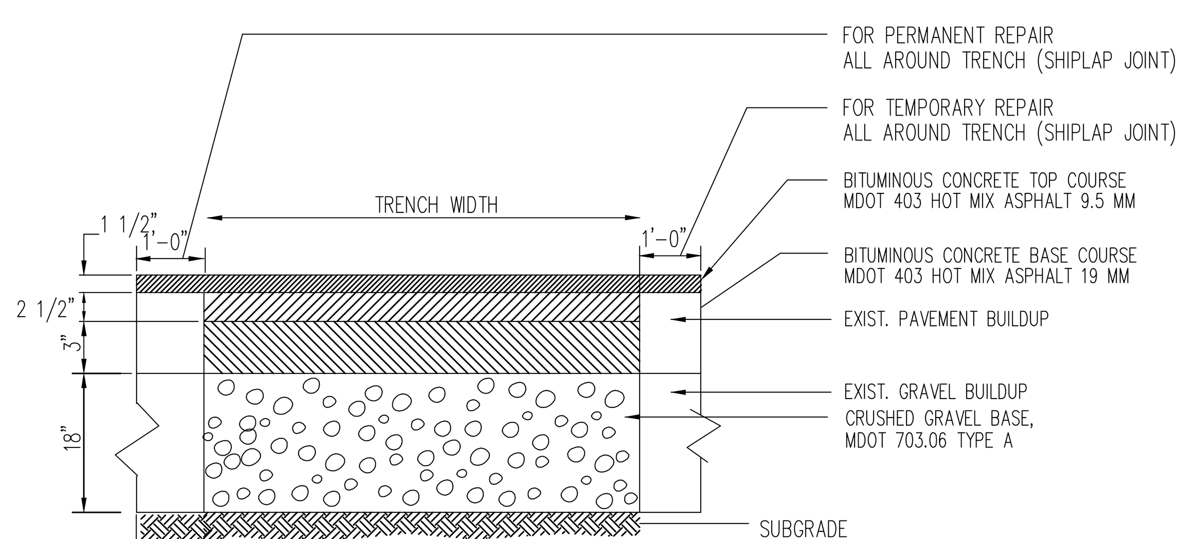
WOOD GUARD RAIL
NOT TO SCALE



WOOD GUARD RAIL- TAPERED END
NOT TO SCALE



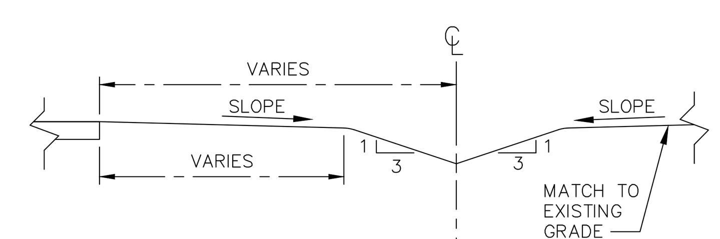
6 BARK MULCH
NOT TO SCALE



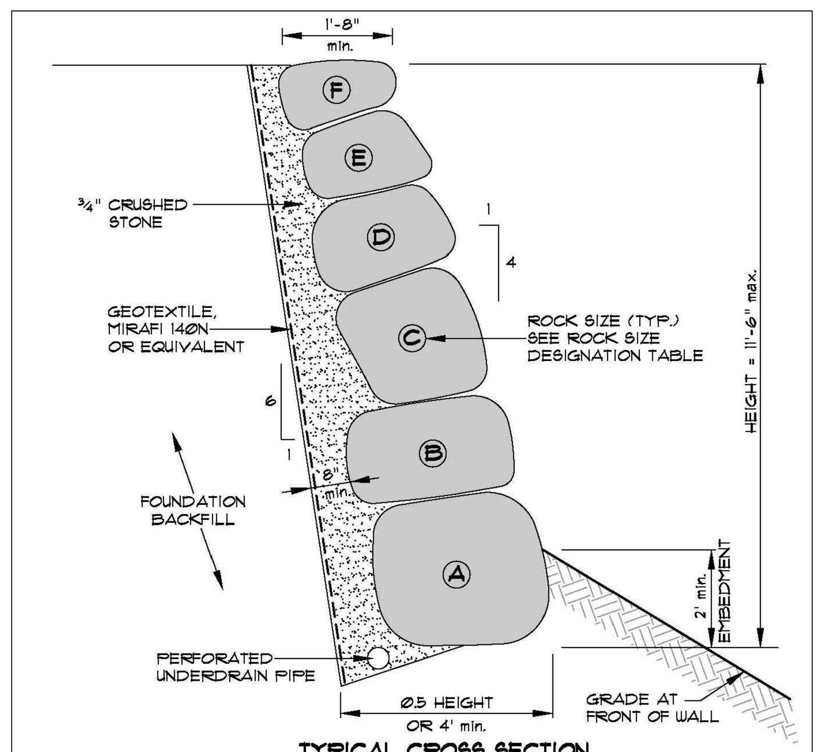
NOTE:
TRENCH REPAIR TO MEET TOWN OF CUMBERLAND DPW REQUIREMENTS

TRENCH REPAIR BITUMINOUS CONCRETE

NOT TO SCALE



TYPICAL DRAINGE SWALE
N.T.S.



TYPICAL CROSS SECTION

WALL HEIGHT	A	B	C	D	E	F
Ø TO 3'-3"	2	1	-	-	-	-
3'-3" TO 6'-6"	3	2	1	-	-	-
6'-6" TO 9'-9"	3	3	2	1	-	-
TALLER THAN 9'-9"	4	3	2	2	1	1

NUMBER IN TABLE CORRESPONDS TO ROCK TYPE

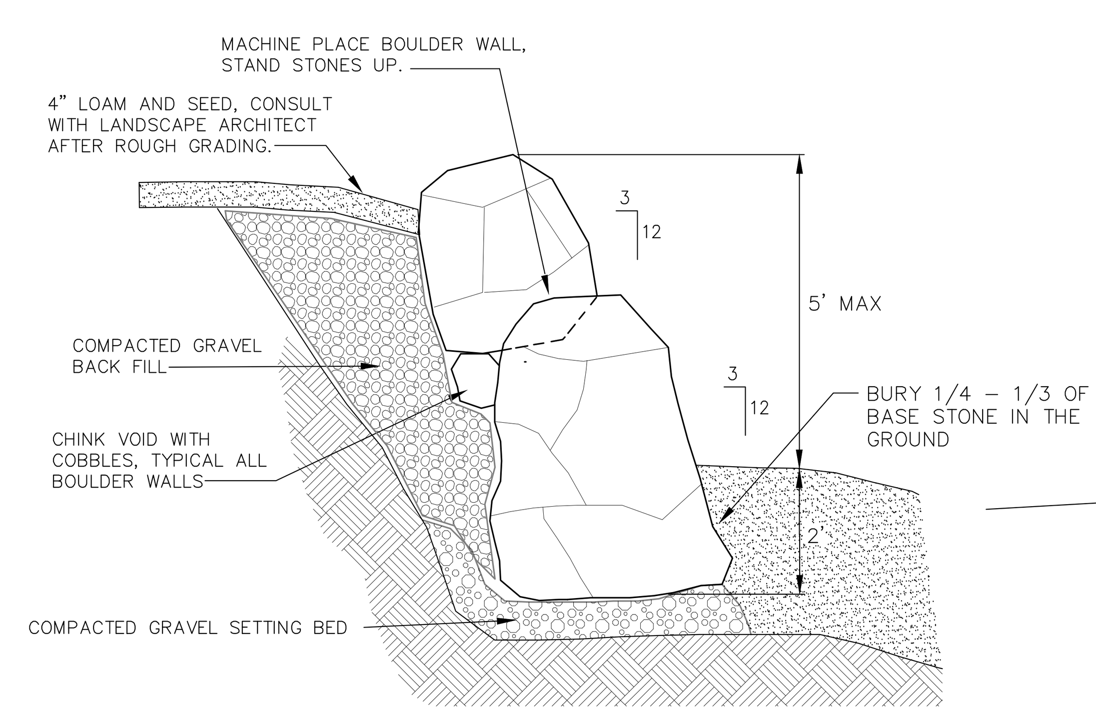
ROCK TYPE DESIGNATION

ROCK TYPE	ROCK WEIGHT (POUNDS)	AVERAGE DIMENSION
1	2ØØ - 66Ø	1'-6" TO 2'-4"
2	66Ø - 2ØØØ	2'-4" TO 3'-Ø"
3	2ØØØ - 4ØØØ	3'-Ø" TO 4'-Ø"
4	4ØØØ - 6ØØØ	4'-Ø" TO 4'-6"

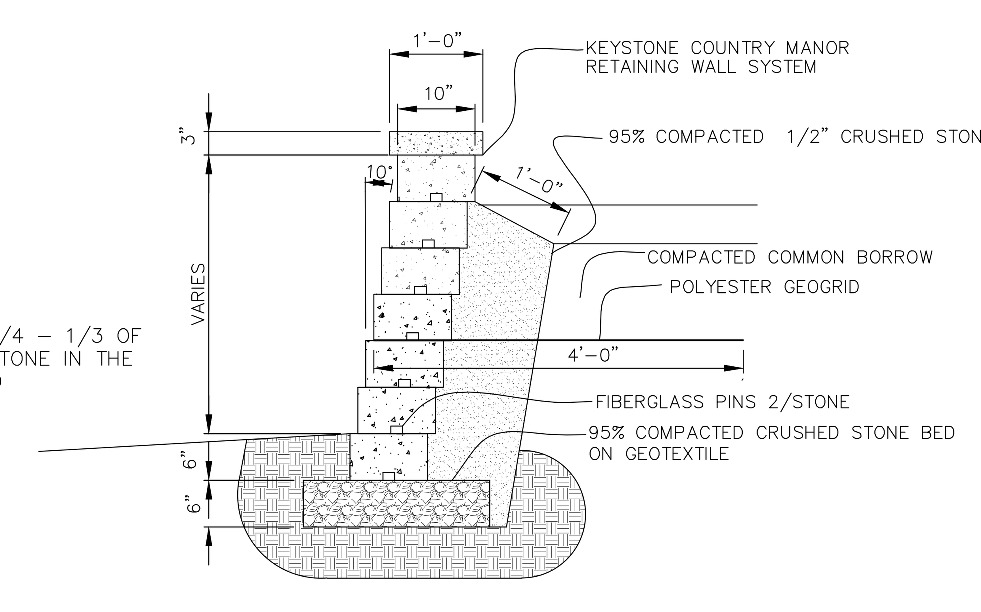
ROCK SIZING

BOULDER RETAINING WALL 4-11' HIGH

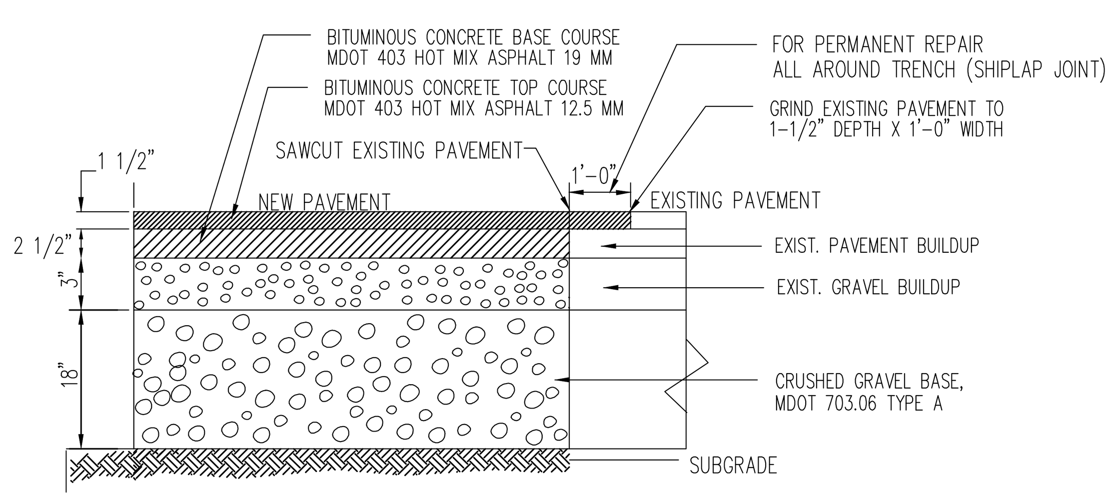
NOT TO SCALE



RETAINING BOULDER WALL
NOT TO SCALE



KEYSTONE COUNTRY MANOR
SEGMENTAL RETAINING WALL
NOT TO SCALE

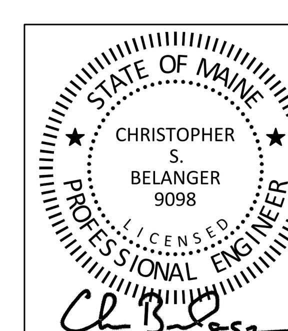


NOTE:
TRENCH REPAIR TO MEET TOWN OF CUMBERLAND DPW REQUIREMENTS

PAVEMENT BUTT JOINT DETAIL BITUMINOUS CONCRETE

NOT TO SCALE

4.	12-18-2020	No changes, Submit to Town	CSB
3.	6-15-2020	No changes, re-submit to Town and DEP	CSB
2.	2-24-2020	No changes this sheet Re-submit to Town	CSB
1.	12-18-2019	Submit to Town and Maine DEP	CSB



12-18-2020

Roof Dripline BMP and Misc. Details

Cumberland Crossing - Phase 2
Tuttle and Greely Road, Cumberland, Maine

Seacoast Management Company
20 Blueberry Lane, Falmouth, Maine

BELANGER ENGINEERING
CONSULTING ENGINEERS
63 Second Avenue , Augusta, Maine 04330
Email: cbelanger@roadrunner.com
Ph 207-622-1462, Cell 207-242-5713

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FIELD WK:	SCALE:	SHEET: C19
DRN BY:	JOB #: 109	
CH'D BY:	SS:	
DATE: 12-18-2020	FILE:	

Storm Drain Structure Table		
Structure Name	Structure Details	
CB1	RIM = 83.284 SUMP = 75.500 SD1 INV OUT = 79.500	Sta=45+14.88 OFF=10.000 R N=350434.6522 E=2934442.4111
CB2	RIM = 83.285 SUMP = 75.190 SD1 INV IN = 79.300 SD2 INV OUT = 79.190	Sta=45+14.88 OFF=-10.000 L N=350453.0695 E=2934450.2087
CB3	RIM = 84.702 SUMP = 73.316 SDOCS1 INV IN = 75.400 SD3 INV OUT = 75.316	Sta=46+75.53 OFF=-10.742 L N=350433.4933 E=2934602.2004
CB4	RIM = 86.340 SUMP = 72.232 SD3 INV IN = 74.300 SD4 INV OUT = 74.232	Sta=48+81.28 OFF=-13.133 L N=350496.9257 E=2934795.3215
CB5	RIM = 86.466 SUMP = 71.871 SD4 INV IN = 74.000 SD5 INV OUT = 73.871	Sta=49+27.61 OFF=-13.524 L N=350512.4640 E=2934838.9684
CB6	RIM = 85.904 SUMP = 71.357 SD5 INV IN = 73.500 SD6 INV OUT = 73.357	Sta=49+99.74 OFF=-8.870 L N=350526.2539 E=2934911.9748
CB7	RIM = 85.419 SUMP = 72.374 SD11 INV IN = 74.400 SD7 INV OUT = 74.374	Sta=50+09.97 OFF=19.227 R N=350499.5074 E=2934925.1992
CB8	RIM = 85.269 SUMP = 72.019 SD7 INV IN = 74.100 SD8 INV OUT = 74.019	Sta=50+67.08 OFF=10.578 R N=350508.2935 E=2934979.3596
CB9	RIM = 84.393 SUMP = 71.500 SD8 INV IN = 73.600 SD9 INV OUT = 73.500	Sta=51+51.03 OFF=10.233 R N=350499.1179 E=2935062.5590
CB10	RIM = 84.418 SUMP = 71.355 SD9 INV IN = 73.400 SD10 INV OUT = 73.355	Sta=51+49.80 OFF=-9.632 L N=350518.9925 E=2935063.6144
CB11	RIM = 81.102 SUMP = 75.304 SD12 INV IN = 75.400 CULV2 INV IN = 75.400 SD11 INV OUT = 75.304	Sta=22+00.67 OFF=10.128 R N=350319.0790 E=2934937.9827
CB12	RIM = 80.364 SUMP = 75.797 SD13 INV IN = 75.900 SD14 INV IN = 75.900 FD67 INV IN = 77.100 SD12 INV OUT = 75.797	Sta=22+77.68 OFF=10.000 R N=350240.2756 E=2934947.5071
CB13	RIM = 80.365 SUMP = 76.000 FD65 INV IN = 76.893 SD13 INV OUT = 76.000	Sta=22+77.68 OFF=-10.000 L N=350246.0265 E=2934966.6624
CB14	RIM = 80.737 SUMP = 75.200 SD16 INV IN = 76.600 SD15 INV IN = 75.200 SD14 INV OUT = 76.201	Sta=23+33.86 OFF=17.405 R N=350182.8712 E=2934965.9062
CB15	RIM = 80.916 SUMP = 75.369 FD71B INV IN = 77.500 FD66 INV IN = 77.100 SD15 INV OUT = 75.369	Sta=23+53.17 OFF=-10.000 L N=350182.8062 E=2934999.6062
CB16	RIM = 80.000 SUMP = 76.777 SD69 INV IN = 76.900 FD70 INV IN = 76.900 SD16 INV OUT = 76.777	Sta=23+41.01 OFF=33.693 R N=350167.1080 E=2934956.8661
CB17	RIM = 83.501 SUMP = 79.100 CULV3 INV IN = 79.100 SD17 INV OUT = 79.216	Sta=53+32.47 OFF=373.194 R N=350117.7509 E=2935201.2036
CB18	RIM = 83.395 SUMP = 78.981 SD19 INV IN = 79.100 SD17 INV IN = 79.100 SD18 INV OUT = 78.981	Sta=25+90.12 OFF=13.488 R N=350095.6682 E=2935208.2665
CB19	RIM = 83.833 SUMP = 79.316 SD19 INV OUT = 79.316	Sta=26+33.29 OFF=12.683 R N=350108.4962 E=2935249.4985
CB20	RIM = 81.985 SUMP = 78.200 SD21 INV IN = 78.300 SD18 INV IN = 78.300 SD20 INV OUT = 78.200	Sta=95+48.49 OFF=7.607 R N=349970.4768 E=2935261.8623
CB21	RIM = 81.984 SUMP = 78.394 SD21 INV OUT = 78.394	Sta=95+48.25 OFF=-7.798 L N=349975.4917 E=2935276.4301
CB23	RIM = 82.206 SUMP = 76.950 FD82 INV IN = 78.800 SD23 INV OUT = 76.950	Sta=97+36.34 OFF=14.173 R N=350180.9382 E=2935503.2990
CB24	RIM = 81.856 SUMP = 76.441 SD23 INV IN = 76.800 SD24 INV OUT = 76.441	Sta=97+35.39 OFF=-7.980 L N=350196.6347 E=2935518.9602
CB25	RIM = 82.300 SUMP = 75.964 SD24 INV IN = 76.100 FD78 INV IN = 79.188 SD25 INV OUT = 75.964	Sta=96+73.52 OFF=-19.285 L N=350246.5032 E=2935472.5774

Storm Drain Structure Table		
Structure Name	Structure Details	
CB26	RIM = 83.555 SUMP = 75.853 SD26 INV OUT = 75.853	Sta=28+13.44 OFF=10.108 R N=350209.6395 E=2935399.0317
CB27	RIM = 83.073 SUMP = 75.538 SD25 INV IN = 75.600 SD26 INV IN = 75.600 SD28 INV IN = 75.600 SD27 INV OUT = 75.538	Sta=28+59.74 OFF=10.594 R N=350260.2365 E=2935401.1737
CB28	RIM = 83.058 SUMP = 76.705 FD79B INV IN = 77.585 FD77 INV IN = 77.500 SD28 INV OUT = 76.705	Sta=28+61.68 OFF=-10.372 L N=350257.7985 E=2935380.2607
CB29	RIM = 81.155 SUMP = 74.500 SD27 INV IN = 74.600 FD80 INV IN = 77.661 SD29 INV OUT = 74.500	Sta=54+67.51 OFF=27.102 R N=350446.0829 E=2935375.0243
CB30	RIM = 81.255 SUMP = 72.300 SD29 INV IN = 74.383 FD87 INV IN = 76.000 SD30 INV OUT = 74.300	Sta=54+44.19 OFF=24.447 R N=350451.3932 E=2935352.1626
CB31	RIM = 81.830 SUMP = 73.947 SD30 INV IN = 74.053 SD31 INV OUT = 73.947	Sta=54+44.47 OFF=-25.027 L N=350500.5089 E=2935358.1130
CB32	RIM = 80.678 SUMP = 73.405 SD31 INV IN = 73.500 FD88 INV IN = 76.500 SD32 INV OUT = 73.405	Sta=54+52.86 OFF=-113.934 L N=350587.8687 E=2935376.6385
CB33	RIM = 79.732 SUMP = 73.000 SD32 INV IN = 73.100 FD89 INV IN = 76.361 SD33 INV OUT = 73.000	Sta=55+13.44 OFF=-121.057 L N=350588.0003 E=2935437.6330
CB34	RIM = 81.357 SUMP = 75.700 FD85B INV IN = 77.965 SD34 INV OUT = 77.700	Sta=54+23.02 OFF=9.686 R N=350468.4842 E=2935332.8211
CB35	RIM = 81.550 SUMP = 75.500 SD34 INV IN = 77.604 SD35 INV OUT = 77.500	Sta=54+23.58 OFF=-9.462 L N=350487.4416 E=2935335.5695
CB36	RIM = 79.416 SUMP = 72.500 SD35 INV IN = 74.600 SD36 INV OUT = 74.500	Sta=55+98.74 OFF=-9.893 L N=350484.0998 E=2935505.2634
CB37	RIM = 77.100 SUMP = 70.400 SD38 INV IN = 72.500 SD36 INV IN = 72.500 SD37 INV OUT = 72.400	Sta=56+99.14 OFF=-10.021 L N=350533.1821 E=2935585.9107
CB38	RIM = 77.113 SUMP = 70.599 SD38 INV OUT = 72.599	Sta=56+98.71 OFF=9.866 R N=350518.9483 E=2935599.8059
CB39	RIM = 73.175 SUMP = 65.442 SD37 INV IN = 67.540 SD39 INV OUT = 67.442	Sta=58+48.87 OFF=-10.114 L N=350660.4841 E=2935658.1590
CB40	RIM = 70.535 SUMP = 62.500 SD41 INV IN = 65.811 SD39 INV IN = 64.600 SD40 INV OUT = 64.500	Sta=59+61.06 OFF=-9.373 L N=350750.5150 E=2935727.5377
CB41	RIM = 70.528 SUMP = 64.000 SD41 INV OUT = 66.000	Sta=59+61.27 OFF=9.504 R N=350738.9112 E=2935742.4286
CB42	RIM = 70.122 SUMP = 62.500 SD43 INV IN = 64.825 SD42 INV OUT = 64.500	Sta=59+85.61 OFF=-16.679 L N=350774.2639 E=2935737.1218
CB43	RIM = 69.877 SUMP = 63.000 SD60 INV IN = 65.070 SD46 INV IN = 65.067 SD43 INV OUT = 65.000	Sta=60+20.50 OFF=-19.303 L N=350803.1863 E=2935756.8165
CB45	RIM = 69.511 SUMP = 63.500 SD45 INV OUT = 65.500	Sta=60+67.04 OFF=9.857 R N=350821.9096 E=2935808.6933
CB46	RIM = 69.507 SUMP = 63.300 SD45 INV IN = 65.400 SD46 INV OUT = 65.300	Sta=60+66.71 OFF=-10.078 L N=350833.3681 E=2935792.3776
CB47	RIM = 91.749 SUMP = 87.700 FD102 INV IN = 88.200 SD47 INV OUT = 87.700	Sta=??? OFF=??? ??? N=351624.6483 E=2935227.0229
CB48	RIM = 91.099 SUMP = 85.200 SD49 INV IN = 85.314 SD47 INV IN = 85.300 FD101 INV IN = 87.500 SD48 INV OUT = 85.200	Sta=102+90.74 OFF=-107.050 L N=351545.2972 E=2935187.3039
CB49	RIM = 89.625 SUMP = 85.600 FD100 INV IN = 86.500 SD49 INV OUT = 85.600	Sta=102+35.46 OFF=-121.516 L N=351493.9831 E=2935162.1676
CB50	RIM = 91.812 SUMP = 82.600 SD48 INV IN = 84.706 SD50 INV OUT = 84.600	Sta=102+93.07 OFF=-8.177 L N=351527.9882 E=2935284.6774

Storm Drain Structure Table		
Structure Name	Structure Details	
CB51	RIM = 90.087 SUMP = 81.231 SD50 INV IN = 84.206 SD51 INV OUT = 83.231	Sta=8+88.53 OFF=16.576 R N=351446.8892 E=2935260.5804
CB52	RIM = 89.852 SUMP = 80.800 SD51 INV IN = 82.900 SD52 INV OUT = 82.800	Sta=8+62.42 OFF=16.757 R N=351446.6652 E=2935293.0938
CB53	RIM = 88.063 SUMP = 78.900 SD52 INV IN = 81.068 SD54 INV IN = 81.100 FD96 INV IN = 84.183 SD53 INV OUT = 80.900	Sta=6+98.18 OFF=10.203 R N=351301.8399 E=2935313.9284
CB54	RIM = 88.434 SUMP = 79.725 FD97 INV IN = 84.962 SD54 INV OUT = 81.725	Sta=10+91.61 OFF=17.224 R N=351301.8297 E=2935282.6691
CB55	RIM = 85.100 SUMP = 77.316 SD53 INV IN = 79.400 SD56 INV IN = 79.400 FD92 INV IN = 81.626 SD55 INV OUT = 79.316	Sta=5+58.65 OFF=9.965 R N=351179.5650 E=2935379.8309
CB56	RIM = 85.155 SUMP = 77.529 SD57 INV IN = 79.600 FD93 INV IN = 81.538 SD56 INV OUT = 79.529	Sta=5+59.15 OFF=-15.867 L N=351166.4143 E=2935357.5916
CB57	RIM = 85.861 SUMP = 77.766 SD57 INV OUT = 79.766	Sta=5+91.27 OFF=-17.846 L N=351194.3751 E=2935339.7913
CB58	RIM = 76.229 SUMP = 71.700 SD58 INV OUT = 71.700	Sta=60+09.55 OFF=-301.413 L N=350970.4450 E=2935529.3724
CB59	RIM = 76.489 SUMP = 69.500 SD55 INV IN = 71.604 SD58 INV IN = 71.610 SD59 INV OUT = 71.500	Sta=3+01.81 OFF=9.099 R N=350983.9792 E=2935543.6747
CB60	RIM = 72.331 SUMP = 66.900 SD59 INV IN = 69.000 SD60 INV OUT = 68.900	Sta=1+73.46 OFF=10.018 R N=350893.5460 E=2935631.5958
DMH61	RIM = 69.953 SUMP = 57.780 CULV4 INV IN = 57.900 E-CULV 61 INV OUT = 57.780	Sta=60+34.24 OFF=2.153 R N=350800.5566 E=2935782.1566
J1	RIM = 77.089 SUMP = ??? UD2 INV IN = 76.523 UD1 INV OUT = 76.523	Sta=45+65.32 OFF=-35.315 L N=350462.5492 E=2934502.3222
J2	RIM = 77.395 SUMP = ??? UD2 INV OUT = 76.829	Sta=44+96.43 OFF=-35.858 L N=350483.9012 E=2934444.9622
J3	RIM = 76.605 SUMP = ??? UD4 INV IN = 76.214 UD3 INV OUT = 76.134	Sta=45+88.32 OFF=-51.693 L N=350474.8164 E=2934524.7698
J4	RIM = 76.660 SUMP = ??? UD5 INV IN = 76.270 UD4 INV OUT = 76.273	Sta=45+76.62 OFF=-58.664 L N=350483.3448 E=2934516.5793
J5	RIM = 76.791 SUMP = ??? UD6 INV IN = 76.400 UD5 INV OUT = 76.404	Sta=45+50.61 OFF=-76.254 L N=350505.1758 E=2934501.1359
J6	RIM = 76.927 SUMP = ??? UD7 INV IN = 76.540 UD6 INV OUT = 76.539	Sta=45+13.16 OFF=-77.216 L N=350515.4679 E=2934475.2408
J7	RIM = 77.061 SUMP = ??? UD8 INV IN = 76.670 UD7 INV OUT = 76.674	Sta=44+85.95 OFF=-65.835 L N=350515.4679 E=2934448.4082
J8	RIM = 77.298 SUMP = ??? UD8 INV OUT = 76.911	Sta=44+58.34 OFF=-26.238 L N=350491.6090 E=2934406.4457
J71B	RIM = 78.496 SUMP = ??? FD71A INV IN = 77.930 FD71B INV OUT = 77.930	Sta=51+48.56 OFF=351.906 R N=350159.9793 E=2935020.9471
J79B	RIM = 79.163 SUMP = ??? FD79A INV IN = 78.597 FD79B INV OUT = 78.597	Sta=54+60.23 OFF=118.252 R N=350356.3690 E=2935357.3389
J85B	RIM = 79.666 SUMP = ??? FD85A INV IN = 79.100 FD85B INV OUT = 79.098	Sta=53+30.23 OFF=10.027 R N=350478.7812 E=2935240.6066
OCS1	RIM = 81.997 SUMP = 73.872 O1 INV IN = 80.500 UD1 INV IN = 76.399 UD3 INV IN = 76.000 SDOCS1 INV OUT = 75.872	Sta=45+75.81 OFF=-27.284 L N=350452.6999 E=2934509.7911

Prepared in association with:

LICHT ENVIRONMENTAL DESIGN, LLC

Storm Drain Pipe Table						
NAME	SIZE	LENGTH	SLOPE			MATERIAL
Box Culvert 3	192"	71.08'	0.70%	INV IN=54.500	INV OUT=54.000	192 x 96 inch Concrete Box Culvert
CULV1	36"	72.28'	0.69%	INV IN=78.500	INV OUT=78.000	N-12 ADS
CULV2	18"	15.66'	10.22%	INV IN=77.000	INV OUT=75.400	N-12 ADS
CULV3	15"	23.90'	5.02%	INV IN=80.300	INV OUT=79.100	N-12 ADS
CULV4	36"	39.87'	1.00%	INV IN=58.299	INV OUT=57.900	N-12 ADS
CULV5	36"	68.65'	1.46%	INV IN=87.000	INV OUT=86.000	N-12 ADS
CULV6	36"	92.38'	1.08%	INV IN=61.000	INV OUT=60.000	N-12 ADS
CULV7	18"	73.66'	0.50%	INV IN=79.368	INV OUT=79.000	N-12 ADS
CULV8	15"	43.30'	1.15%	INV IN=78.500	INV OUT=78.000	N-12 ADS
E-CULV 61	24"	72.14'	1.48%	INV IN=57.780	INV OUT=56.710	N-12 ADS
FD54	6"	28.04'	1.00%	INV IN=81.100	INV OUT=80.820	6" Perforated FD
FD55	6"	22.13'	1.00%	INV IN=84.100	INV OUT=83.879	6" Perforated FD
FD56	6"	26.10'	1.00%	INV IN=85.100	INV OUT=84.839	6" Perforated FD
FD57	6"	30.70'	1.00%	INV IN=86.500	INV OUT=86.193	6" Perforated FD
FD58	6"	30.45'	1.00%	INV IN=88.500	INV OUT=88.196	6" Perforated FD
FD59	6"	45.61'	1.00%	INV IN=90.100	INV OUT=89.644	6" Perforated FD
FD60	6"	34.11'	1.00%	INV IN=87.400	INV OUT=87.059	6" Perforated FD
FD61	6"	28.82'	1.00%	INV IN=86.100	INV OUT=85.812	6" Perforated FD
FD62	6"	30.38'	1.00%	INV IN=85.100	INV OUT=84.796	6" Perforated FD
FD63	6"	29.06'	1.00%	INV IN=77.500	INV OUT=77.209	6" Perforated FD
FD64	6"	41.08'	1.00%	INV IN=81.500	INV OUT=81.089	6" Perforated FD
FD65	6"	70.88'	2.92%	INV IN=78.962	INV OUT=76.893	6" Perforated FD
FD66	6"	38.24'	2.62%	INV IN=78.100	INV OUT=77.100	6" Perforated FD
FD67	6"	59.18'	4.06%	INV IN=79.500	INV OUT=77.100	6" Perforated FD
FD68	6"	65.24'	1.00%	INV IN=80.500	INV OUT=79.848	6" Perforated FD
FD70	6"	60.61'	4.29%	INV IN=79.500	INV OUT=76.900	6" Perforated FD
FD71A	6"	72.11'	1.84%	INV IN=79.259	INV OUT=77.930	6" Perforated FD
FD71B	6"	31.25'	1.38%	INV IN=77.930	INV OUT=77.500	6" Perforated FD
FD72	6"	25.09'	1.59%	INV IN=79.500	INV OUT=79.100	6" Perforated FD
FD73	6"	31.57'	4.12%	INV IN=80.400	INV OUT=79.100	6" Perforated FD
FD74	6"	28.80'	1.39%	INV IN=79.500	INV OUT=79.100	6" Perforated FD
FD75	6"	33.89'	1.00%	INV IN=80.100	INV OUT=79.761	6" Perforated FD
FD76	6"	20.93'	1.08%	INV IN=81.500	INV OUT=81.274	6" Perforated FD
FD77	6"	30.95'	10.66%	INV IN=80.800	INV OUT=77.500	6" Perforated FD
FD78	6"	28.59'	4.11%	INV IN=80.362	INV OUT=79.188	6" Perforated FD
FD79A	6"	32.96'	3.35%	INV IN=79.700	INV OUT=78.597	6" Perforated FD
FD79B	6"	101.20'	1.00%	INV IN=78.597	INV OUT=77.585	6" Perforated FD
FD80	6"	64.51'	2.54%	INV IN=79.300	INV OUT=77.661	6" Perforated FD
FD81	6"	39.58'	2.53%	INV IN=80.100	INV OUT=79.100	6" Perforated FD
FD82	6"	41.82'	3.11%	INV IN=80.100	INV OUT=78.800	6" Perforated FD
FD83	6"	20.62'	1.00%	INV IN=81.300	INV OUT=81.094	6" Perforated FD
FD84	6"	24.10'	1.00%	INV IN=81.100	INV OUT=80.859	6" Perforated FD
FD85A	6"	52.75'	2.65%	INV IN=80.500	INV OUT=79.100	6" Perforated FD
FD85B	6"	92.79'	1.22%	INV IN=79.098	INV OUT=77.965	6" Perforated FD
FD86	6"	58.15'	1.00%	INV IN=80.100	INV OUT=79.518	6" Perforated FD
FD87	6"	65.26'	6.28%	INV IN=80.100	INV OUT=76.000	6" Perforated FD
FD88	6"	39.57'	6.57%	INV IN=79.100	INV OUT=76.500	6" Perforated FD
FD89	6"	29.87'	5.82%	INV IN=78.100	INV OUT=76.361	6" Perforated FD
FD90	6"	44.40'	0.90%	INV IN=81.500	INV OUT=81.100	6" Perforated FD
FD91	6"	23.38'	1.02%	INV IN=81.500	INV OUT=81.263	6" Perforated FD
FD92	6"	34.82'	5.38%	INV IN=83.500	INV OUT=81.626	6" Perforated FD
FD93	6"	39.49'	4.97%	INV IN=83.500	INV OUT=81.538	6" Perforated FD
FD94	6"	26.03'	1.33%	INV IN=84.400	INV OUT=84.055	6" Perforated FD
FD95	6"	51.20'	1.00%	INV IN=84.000	INV OUT=83.488	6" Perforated FD
FD96	6"	36.68'	3.95%	INV IN=85.600	INV OUT=84.183	6" Perforated FD
FD97	6"	34.86'	4.13%	INV IN=86.400	INV OUT=84.962	6" Perforated FD
FD98	6"	39.58'	1.00%	INV IN=87.100	INV OUT=86.704	6" Perforated FD
FD99	6"	32.11'	1.00%	INV IN=88.000	INV OUT=87.679	6" Perforated FD
FD100	6"	23.79'	1.68%	INV IN=86.900	INV OUT=86.500	6" Perforated FD
FD101	6"	25.86'	6.19%	INV IN=89.100	INV OUT=87.500	6" Perforated FD
FD102	6"	17.64'	7.37%	INV IN=89.500	INV OUT=88.200	6" Perforated FD
FD103	6"	20.97'	1.00%	INV IN=84.000	INV OUT=83.790	6" Perforated FD
FD104	6"	22.67'	1.00%	INV IN=81.300	INV OUT=81.073	6" Perforated FD
FD105	6"	36.50'	1.00%	INV IN=86.100	INV OUT=85.735	6" Perforated FD
O1	6"	8.18'	0.00%	INV IN=80.500	INV OUT=80.500	N-12 ADS
SD1	15"	20.00'	1.00%	INV IN=79.500	INV OUT=79.300	N-12 ADS
SD2	15"	19.02'	1.00%	INV IN=79.190	INV OUT=79.000	N-12 ADS

Storm Drain Pipe Table						
NAME	SIZE	LENGTH	SLOPE			MATERIAL
SD3	18"	203.27'	0.50%	INV IN=75.316	INV OUT=74.300	N-12 ADS
SD4	18"	46.33'	0.50%	INV IN=74.232	INV OUT=74.000	N-12 ADS
SD5	18"	74.30'	0.50%	INV IN=73.871	INV OUT=73.500	N-12 ADS
SD6	18"	200.27'	0.43%	INV IN=73.357	INV OUT=72.500	N-12 ADS
SD7	18"	54.87'	0.50%	INV IN=74.374	INV OUT=74.100	N-12 ADS
SD8	18"	83.70'	0.50%	INV IN=74.019	INV OUT=73.600	N-12 ADS
SD9	18"	19.90'	0.50%	INV IN=73.500	INV OUT=73.400	N-12 ADS
SD10	18"	62.46'	0.57%	INV IN=73.355	INV OUT=73.000	N-12 ADS
SD11	18"	180.88'	0.50%	INV IN=75.304	INV OUT=74.400	N-12 ADS
SD12	15"	79.38'	0.50%	INV IN=75.797	INV OUT=75.400	N-12 ADS
SD13	15"	20.00'	0.50%	INV IN=76.000	INV OUT=75.900	N-12 ADS
SD14	15"	60.28'	0.50%	INV IN=76.201	INV OUT=75.900	N-12 ADS
SD15	15"	33.70'	0.50%	INV IN=75.369	INV OUT=75.200	N-12 ADS
SD16	15"	18.17'	0.98%	INV IN=76.777	INV OUT=76.600	N-12 ADS
SD17	15"	23.18'	0.50%	INV IN=79.216	INV OUT=79.100	N-12 ADS
SD18	15"	136.18'	0.50%	INV IN=78.981	INV OUT=78.300	N-12 ADS
SD19	15"	43.18'	0.50%	INV IN=79.316	INV OUT=79.100	N-12 ADS
SD20	15"	41.59'	0.48%	INV IN=78.200	INV OUT=78.000	N-12 ADS
SD21	15"	15.41'	0.61%	INV IN=78.394	INV OUT=78.300	N-12 ADS
SD23	15"	22.17'	0.68%	INV IN=76.950	INV OUT=76.800	N-12 ADS
SD24	15"	68.10'	0.50%	INV IN=76.441	INV OUT=76.100	N-12 ADS
SD25	15"	72.71'	0.50%	INV IN=75.964	INV OUT=75.600	N-12 ADS
SD26	15"	50.64'	0.50%	INV IN=75.853	INV OUT=75.600	N-12 ADS
SD27	18"	187.68'	0.50%	INV IN=75.538	INV OUT=74.600	N-12 ADS
SD28	15"	21.05'	5.25%	INV IN=76.705	INV OUT=75.600	N-12 ADS
SD29	18"	23.47'	0.50%	INV IN=74.500	INV OUT=74.383	N-12 ADS
SD30	15"	49.47'	0.50%	INV IN=74.300	INV OUT=74.053	N-12 ADS
SD31	18"	89.30'	0.50%	INV IN=73.947	INV OUT=73.500	N-12 ADS
SD32	18"	60.99'	0.50%	INV IN=73.405	INV OUT=73.100	N-12 ADS
SD33	18"	54.31'	0.50%	INV IN=73.000	INV OUT=72.728	N-12 ADS
SD34	12"	19.16'	0.50%	INV IN=77.700	INV OUT=77.604	N-12 ADS
SD35	15"	169.73'	1.71%	INV IN=77.500	INV OUT=74.600	N-12 ADS
SD36	15"	94.41'	2.12%	INV IN=74.500	INV OUT=72.500	N-12 ADS
SD37	15"	146.37'	3.32%	INV IN=72.400	INV OUT=67.540	N-12 ADS
SD38	15"	19.89'	0.50%	INV IN=72.599	INV OUT=72.500	N-12 ADS
SD39	15"	113.66'	2.50%	INV IN=67.442	INV OUT=64.600	N-12 ADS
SD40	18"	24.44'	0.39%	INV IN=64.500	INV OUT=64.406	N-12 ADS
SD41	15"	18.88'	1.00%	INV IN=66.000	INV OUT=65.811	N-12 ADS
SD42	15"	16.34'	0.55%	INV IN=64.500	INV OUT=64.410	N-12 ADS
SD43	15"	34.99'	0.50%	INV IN=65.000	INV OUT=64.825	N-12 ADS
SD45	15"	19.94'	0.50%	INV IN=65.500	INV OUT=65.400	N-12 ADS
SD46	15"	46.64'	0.50%	INV IN=65.300	INV OUT=65.067	N-12 ADS
SD47	15"	88.74'	2.70%	INV IN=87.700	INV OUT=85.300	N-12 ADS
SD48	15"	98.90'	0.50%	INV IN=85.200	INV OUT=84.706	N-12 ADS
SD49	15"	57.14'	0.50%	INV IN=85.600	INV OUT=85.314	N-12 ADS
SD50	15"	78.87'	0.50%	INV IN=84.600	INV OUT=84.206	N-12 ADS
SD51	15"	33.10'	1.00%	INV IN=83.231	INV OUT=82.900	N-12 ADS
SD52	15"	146.32'	1.18%	INV IN=82.800	INV OUT=81.068	N-12 ADS
SD53	15"	138.90'	1.08%	INV IN=80.900	INV OUT=79.400	N-12 ADS
SD54	15"	31.26'	2.00%	INV IN=81.725	INV OUT=81.100	N-12 ADS
SD55	15"	255.14'	3.02%	INV IN=79.316	INV OUT=71.604	N-12 ADS
SD56	15"	25.84'	0.50%	INV IN=79.529	INV OUT=79.400	N-12 ADS
SD57	15"	33.15'	0.50%	INV IN=79.766	INV OUT=79.600	N-12 ADS
SD58	15"	19.69'	0.45%	INV IN=71.700	INV OUT=71.610	N-12 ADS
SD59	15"	126.13'	1.98%	INV IN=71.500	INV OUT=69.000	N-12 ADS
SD60	15"	154.42'	2.48%	INV IN=68.900	INV OUT=65.070	N-12 ADS
SD69	6"	62.74'	5.10%	INV IN=80.100	INV OUT=76.900	6" Perforated FD
SDOCS1	18"	94.38'	0.50%	INV IN=75.872	INV OUT=75.400	N-12 ADS
UD1	6"	12.36'	1.00%	INV IN=76.523	INV OUT=76.399	N-12 ADS
UD2	6"	61.21'	0.50%	INV IN=76.829	INV OUT=76.523	N-12 ADS
UD3	4"	26.71'	0.50%	INV IN=76.134	INV OUT=76.000	N-12 ADS
UD4	4"	11.82'	0.50%	INV IN=76.273	INV OUT=76.214	N-12 ADS
UD5	4"	26.74'	0.50%	INV IN=76.404	INV OUT=76.270	N-12 ADS
UD6	4"	27.87'	0.50%	INV IN=76.539	INV OUT=76.400	N-12 ADS
UD7	4"	26.83'	0.50%	INV IN=76.674	INV OUT=76.540	N-12 ADS
UD8	4"	48.27'	0.50%	INV IN=76.911	INV OUT=76.670	N-12 ADS

STATE OF MAINE
CHRISTOPHER S. BELANGER
9098
LICENSED
PROFESSIONAL ENGINEER
12-18-2020

PROGRESS PLAN
NOT FOR CONSTRUCTION
THIS DOCUMENT IS ISSUED FOR INFORMATIONAL PURPOSES ONLY. THE DATA SHOWN HEREON IS SUBJECT TO REVISION.

2. 12-18-2020 Re-submit to Town
1. 6-15-2020 Respond to SME memo dated 3-4-2020 Re-submit to Town and DEP

Structure and Pipe Tables

Cumberland Crossing – Phase 2

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63 Second Avenue
Augusta, Maine 04330

SCALE: 1"=40' H, 4' V
JOB #: 134
DATE: 12-18-2020
SHEET: C20

Sewer Structure Table

Structure Name	Structure Details	
SMH1	RIM = 84.924 SUMP = 79.400 SP1A INV IN = 79.400 SP1B INV IN = 79.400	Sta=43+99.90 OFF=-5.000 L N=350494.5846 E=2934342.4724
SMH2	RIM = 86.732 SUMP = 81.200 SP2A INV IN = 81.200 SP2B INV IN = 81.200 SP2C INV IN = 81.200	Sta=48+99.41 OFF=-5.049 L N=350495.2237 E=2934815.0977
SMH3	RIM = 85.876 SUMP = 80.400 SP3A INV IN = 80.400 SP3B INV IN = 80.400 SP3C INV IN = 80.400	Sta=50+34.74 OFF=-5.000 L N=350525.0549 E=2934947.9487
SMH4	RIM = 91.678 SUMP = 86.200 SP4A INV OUT = 86.200	Sta=48+40.43 OFF=-300.448 L N=350755.0294 E=2934662.6517
SMH5	RIM = 80.884 SUMP = 75.400 SP5A INV IN = 75.400 SP5C INV IN = 75.400 SP5B INV OUT = 75.400	Sta=23+27.44 OFF=-5.000 L N=350200.3211 E=2934981.4343
SMH6	RIM = 82.872 SUMP = 77.400 SP6A INV OUT = 77.400	Sta=91+30.69 OFF=-5.000 L N=350154.9023 E=2934853.0569
SMH7	RIM = 84.020 SUMP = 78.500 SP7A INV IN = 78.500 SP7B INV OUT = 78.500	Sta=26+14.19 OFF=-5.000 L N=350120.1402 E=2935226.2131
SMH8	RIM = 83.600 SUMP = 78.100 SP8A INV IN = 78.100 SP8C INV IN = 78.100 SP8B INV OUT = 78.100	Sta=28+34.49 OFF=-5.000 L N=350233.3004 E=2935387.6139
SMH9	RIM = 82.467 SUMP = 77.000 SP9A INV OUT = 77.000	Sta=55+63.39 OFF=278.027 R N=350191.3073 E=2935506.2240
SMH10	RIM = 81.492 SUMP = 76.000 SP10A INV IN = 76.000 SP10C INV IN = 76.000 SP10B INV OUT = 76.000	Sta=20+50.70 OFF=-419.004 L N=350479.7599 E=2935363.2191
SMH11	RIM = 72.091 SUMP = 66.600 SP11A INV IN = 66.600 SP11B INV OUT = 66.600	Sta=58+99.90 OFF=-5.000 L N=350699.9562 E=2935692.8365
SMH12	RIM = 70.172 SUMP = 64.700 SP12A INV IN = 64.700 SP12B INV IN = 64.700 SP12C INV OUT = 64.700	Sta=0+05.09 OFF=-5.000 L N=350777.9517 E=2935754.9320
SMH13	RIM = 85.586 SUMP = 78.900 SP13B INV IN = 78.900 SP13C INV IN = 78.900 SP13A INV OUT = 78.900	Sta=5+69.23 OFF=-5.137 L N=351180.9058 E=2935361.5033
SMH14	RIM = 86.820 SUMP = 82.000 SP14A INV OUT = 82.000	Sta=62+90.37 OFF=-602.197 L N=351158.7028 E=2935276.4339
SMH15	RIM = 88.909 SUMP = 83.400 SP15A INV IN = 83.400 SP15B INV OUT = 83.400	Sta=10+99.74 OFF=-5.000 L N=351325.7116 E=2935283.8559
SMH16	RIM = 90.349 SUMP = 84.900 SP16B INV IN = 84.900 SP16C INV IN = 84.900 SP16A INV OUT = 84.900	Sta=8+80.63 OFF=-5.000 L N=351431.0100 E=2935268.3075
SMH17	RIM = 92.492 SUMP = 87.000 SP17A INV OUT = 87.000	Sta=103+34.53 OFF=-5.000 L N=351567.9900 E=2935296.0087
SMH18	RIM = 89.867 SUMP = 84.400 SP18A INV OUT = 84.400	Sta=10+47.69 OFF=-5.000 L N=351327.1942 E=2935237.6466
SMH19	RIM = 81.310 SUMP = 75.800 SP19A INV IN = 75.800 SP19B INV OUT = 75.800	Sta=65+13.45 OFF=-5.000 L N=351252.7254 E=2935928.6468
SMH20	RIM = 84.621 SUMP = 79.900 SP20A INV IN = 79.900 SP20B INV OUT = 79.900	Sta=68+22.94 OFF=-4.929 L N=351549.5533 E=2935969.6804

Sewer Pipe Table

NAME	SIZE	LENGTH	SLOPE	MATERIAL
SP1A	4"	3.16'	0.00%	4" HDPE FM
SP1B	4"	4.73'	0.00%	4" HDPE FM
SP2A	4"	3.73'	0.00%	4" HDPE FM
SP2B	4"	5.49'	0.00%	4" HDPE FM
SP2C	4"	5.80'	0.00%	4" HDPE FM
SP3A	4"	4.36'	0.00%	4" HDPE FM
SP3B	4"	3.55'	0.00%	4" HDPE FM
SP3C	4"	5.54'	0.00%	4" HDPE FM
SP4A	4"	3.46'	0.00%	4" HDPE FM
SP5A	4"	3.80'	0.00%	4" HDPE FM
SP5B	4"	5.05'	0.00%	4" HDPE FM
SP5C	4"	4.34'	0.00%	4" HDPE FM
SP6A	4"	5.17'	0.00%	4" HDPE FM
SP7A	4"	4.18'	0.00%	4" HDPE FM
SP7B	4"	2.93'	0.00%	4" HDPE FM
SP8A	4"	4.22'	0.00%	4" HDPE FM
SP8B	4"	4.76'	0.00%	4" HDPE FM
SP8C	4"	5.61'	0.00%	4" HDPE FM
SP9A	4"	2.88'	0.00%	4" HDPE FM
SP10A	4"	4.23'	28.39%	4" HDPE FM
SP10B	4"	4.48'	-26.80%	4" HDPE FM
SP10C	4"	5.10'	23.51%	4" HDPE FM
SP11A	4"	5.25'	0.00%	4" HDPE FM
SP11B	4"	6.25'	0.00%	4" HDPE FM

Sewer Pipe Table

NAME	SIZE	LENGTH	SLOPE	MATERIAL
SP12A	4"	5.01'	0.00%	4" HDPE FM
SP12B	4"	5.36'	0.00%	4" HDPE FM
SP12C	4"	7.29'	0.00%	4" HDPE FM
SP13A	4"	6.20'	0.00%	4" HDPE FM
SP13B	4"	5.32'	0.00%	4" HDPE FM
SP13C	4"	8.68'	0.00%	4" HDPE FM
SP14A	4"	5.96'	0.00%	4" HDPE FM
SP15A	4"	5.40'	0.00%	4" HDPE FM
SP15B	4"	9.20'	0.00%	4" HDPE FM
SP16A	4"	7.54'	0.00%	4" HDPE FM
SP16B	4"	5.82'	0.00%	4" HDPE FM
SP16C	4"	4.87'	0.00%	4" HDPE FM
SP17A	4"	5.16'	0.00%	4" HDPE FM
SP18A	4"	4.59'	0.00%	4" HDPE FM
SP19A	4"	3.31'	30.22%	4" HDPE FM
SP19B	4"	3.93'	-25.46%	4" HDPE FM
SP20A	4"	3.76'	26.59%	4" HDPE FM
SP20B	4"	3.92'	-25.51%	4" HDPE FM

Little Acres Drive Extension

Number	Radius	Length	Line/Chord Direction	A Value
L31		120.47	N83° 42' 40.60"E	
C23	300.00	51.92	N78° 45' 11.90"E	
L32		111.93	N73° 47' 43.20"E	
C24	300.00	218.33	S85° 21' 21.92"E	
L33		55.45	S64° 30' 27.04"E	
C25	300.00	233.55	S86° 48' 35.01"E	
L34		204.33	N70° 53' 17.02"E	
C26	300.00	134.53	N83° 44' 06.12"E	
L35		442.92	S83° 25' 04.77"E	
C27	200.00	248.80	N60° 56' 40.75"E	
L36		68.42	N25° 18' 26.28"E	
C28	200.00	46.24	N31° 55' 48.61"E	
L37		175.54	N38° 33' 10.94"E	
C29	250.00	118.16	N25° 00' 48.22"E	
L38		200.78	N11° 28' 25.50"E	
C30	250.00	51.69	N17° 23' 47.61"E	
L39		146.87	N23° 19' 09.72"E	
C31	250.00	74.09	N14° 49' 47.28"E	
L40		73.15	N6° 20' 24.83"E	
C32	250.00	142.48	N9° 59' 13.41"W	
L41		226.96	N26° 18' 51.64"W	
C33	250.00	56.89	N32° 50' 02.20"W	
L42		216.36	N39° 21' 12.77"W	

Leonard Lane

Number	Radius	Length	Line/Chord Direction	A Value
L55		183.77	N51° 57' 10.65"W	
C41	250.00	48.59	N46° 23' 05.50"W	
L56		286.85	N40° 49' 00.36"W	
C42	250.00	54.91	N34° 31' 27.48"W	
L57		154.08	N28° 13' 54.59"W	
C43	60.00	375.91	S62° 16' 55.82"W	

Monarch Drive

Number	Radius	Length	Line/Chord Direction	A Value
L46		224.36	S1° 26' 12.44"E	
C36	200.00	365.74	S53° 49' 30.44"E	
L47		121.00	N73° 47' 11.56"E	
C37	100.00	151.85	N30° 17' 02.92"E	
L48		103.10	N13° 13' 05.72"W	
C38	200.00	69.12	N3° 19' 05.25"W	
L49		44.20	N6° 34' 55.23"E	

Cricket Lane

Number	Radius	Length	Line/Chord Direction	A Value
L58		18.69	S61° 46' 05.41"W	
C44	125.00	58.69	S75° 13' 08.64"W	
L59		65.33	S88° 40' 11.88"W	

Northwind Farm Road

Number	Radius	Length	Line/Chord Direction	A Value
L43		75.96	N18° 17' 12.28"W	
C34	160.00	35.26	N24° 36' 02.06"W	
L44		92.06	N30° 54' 51.84"W	
C35	160.00	28.48	N36° 00' 47.51"W	
L45		88.20	N41° 06' 43.17"W	

Skipper Way

Number	Radius	Length	Line/Chord Direction	A Value
L60		154.53	N11° 25' 57.44"E	

Firefly Lane

Number	Radius	Length	Line/Chord Direction	A Value
L50		60.53	S62° 33' 45.81"W	
C39	125.00	55.04	S75° 10' 37.43"W	
L51		24.03	S87° 47' 29.05"W	

Luna Lane

Number	Radius	Length	Line/Chord Direction	A Value
L52		150.01	S18° 05' 53.08"E	

PROGRESS PLAN
NOT FOR CONSTRUCTION

THIS DOCUMENT IS ISSUED FOR INFORMATIONAL PURPOSES ONLY. THE DATA SHOWN HEREON IS SUBJECT TO REVISION.

2. 12–18–2020 Re–submit to Town
1. 6–15–2020 Re–submit to Town and Maine DEP

Prepared in association with:

LICHT ENVIRONMENTAL DESIGN, LLC

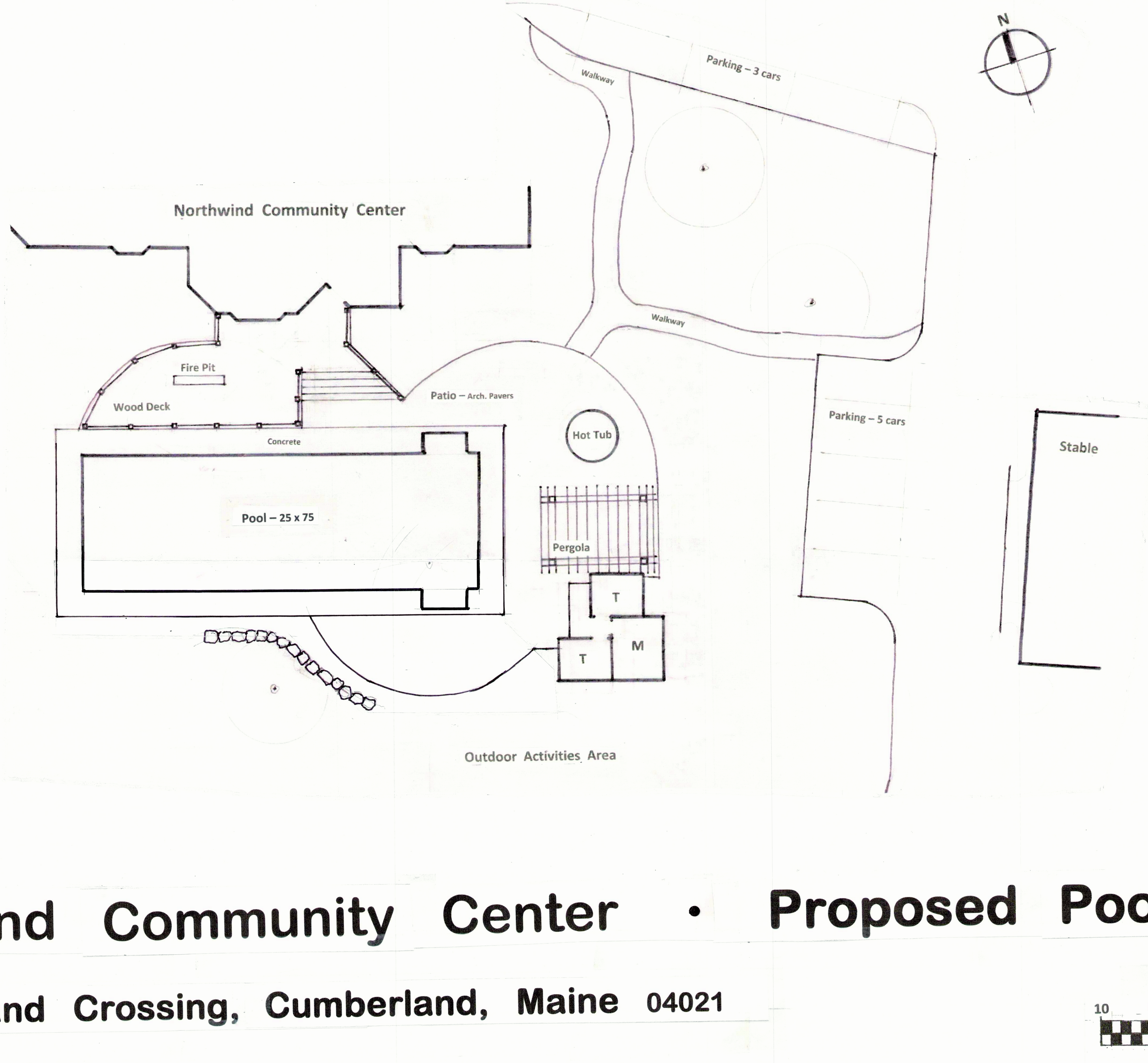
STATE OF MAINE
CHRISTOPHER S. BELANGER 9098
LICENSED
PROFESSIONAL ENGINEER
12-18-2020

Structure and Pipe Tables

Cumberland Crossing – Phase 2

BELANGER ENGINEERING
CONSULTING ENGINEERS
Email: cbelanger@roadrunner.com
Ph 207-622-1462, Cell 207-242-5713
63 Second Avenue
Augusta, Maine 04330

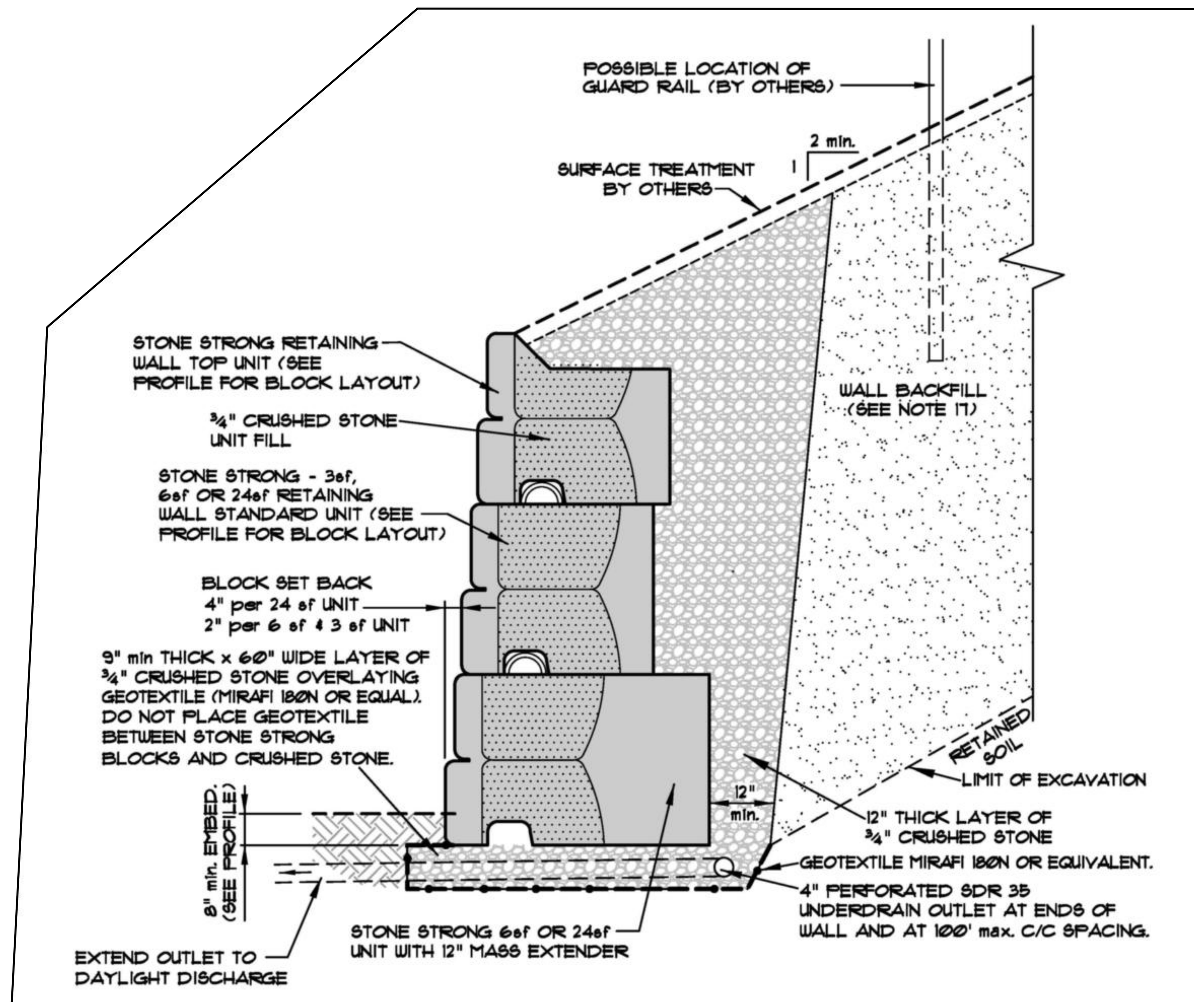
SCALE: 1"=40' H, 4' V	SHEET:
JOB #: 134	C21
DATE: 12-18-2020	



Northwind Community Center • Proposed Pool Facility

Cumberland Crossing, Cumberland, Maine 04021

C23



TYPICAL WALL CROSS SECTION

NOT TO SCALE

GENERAL NOTES

1) WALL PLAN & PROFILE IS BASED UPON A SET OF PLANS ENTITLED "OCEANVIEW AT CUMBERLAND", DATED AUGUST 21, 2018, PREPARED BY BELANGER ENGINEERING. REFERENCE IS SPECIFICALLY MADE TO SHEET C21 OF THE PLAN SET FOR BOX CULVERT INFORMATION.

2) IT IS THE RESPONSIBILITY OF THE OWNER, CONTRACTOR OR THEIR RESPECTIVE REPRESENTATIVES TO ENSURE THAT CONSTRUCTION OF THE WALL AND MATERIALS USED IN THE CONSTRUCTION OF THE WALL ARE IN ACCORDANCE WITH THESE SPECIFICATIONS AND/OR THE CONTRACT SPECIFICATIONS WHICH EVER ARE MORE STRINGENT.

3) THE CONTRACTOR SHALL VERIFY THE CULVERT LOCATION PRIOR TO INSTALLING THE WALLS. THE CONTRACTOR SHALL CONTACT SGS PRIOR TO INSTALLING ANY BLOCKS IN IF ADJUSTMENTS ARE NEEDED BASED ON THE CULVERT LOCATION.

4) SUMMIT GEOENGINEERING SERVICES (SGS) ACCEPTS NO RESPONSIBILITY NOR LIABILITY IN THE DETERMINATION OF THE ADEQUACY OF SITE MATERIALS AND WALL LAYOUT.

5) PRIOR TO THE START OF CONSTRUCTION THE CONTRACTOR SHALL VERIFY THAT ALL ELEVATIONS AND ASSUMED SITE CONDITIONS SHOWN ON THESE DRAWINGS ARE ACCURATE TO THE GIVEN SITE CONDITIONS. ANY DISCREPANCY SHALL BE BROUGHT TO THE ATTENTION OF SGS PRIOR TO THE START OF CONSTRUCTION.

6) TEST PITS WERE PERFORMED AT THE SITE BY SGS. THE FOLLOWING PARAMETERS WERE USED IN THE DESIGN:
   A) SLOPE AT TOP : 2(H) : 1(V)
   B) SLOPE AT BASE = LEVEL
   C) GROUNDWATER CONTROLLED TO BELOW BASE OF WALL
   D) MAXIMUM CONTACT PRESSURE AT WALL BASE 2,400 psf
   E) RETAINED SOIL - uw = 135 pcf, phi = 32°
   F) FOUNDATION SOIL - uw = 120 pcf, phi = 32°
   G) PEAK GROUND ACCELERATION COEFFICIENT = 0.20
   IF ACTUAL CONDITIONS VARY FROM THOSE LISTED ABOVE, SGS SHALL BE NOTIFIED IMMEDIATELY.

7) WALL INSPECTION AND CERTIFICATION ARE NOT PART OF THE SGS SCOPE OF DESIGN SERVICES. IT IS THE OWNERS RESPONSIBILITY TO CONFIRM WITH THE JURISDICTIONAL AUTHORITY PRIOR TO CONSTRUCTION OF THE WALL WHETHER A CONSTRUCTION CERTIFICATION IS REQUIRED. A CONSTRUCTION CERTIFICATION WILL REQUIRE ON-SITE INSPECTIONS, MATERIAL TESTING, PHOTOGRAPHIC DOCUMENTATION AND OTHER QUALITY CONTROL MEASURES AND AS-BUILT DOCUMENTATION. SGS CAN PROVIDE CERTIFICATION, IF REQUIRED, UNDER A SEPARATE CONTRACT.

8) THE OWNER IS RESPONSIBLE TO RETAIN THE SERVICES OF A QUALIFIED CONSTRUCTION MATERIALS FIRM TO PERFORM COMPACTION TESTS ON WALL BACKFILL TO CONFIRM THAT THE MINIMUM COMPACTION REQUIREMENTS ARE MET.

WALL INSTALLATION

9) THE STONE STRONG WALL SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE STONE STRONG MANUALS (www.stonestrong.com).

10) FOUNDATION EXCAVATION SHALL EXTEND TO COMPETENT SOIL. ALL EXISTING TOPSOIL, LOOSE MATERIAL, FILL, ORGANIC SOIL AND OTHER SOFT OR UNSTABLE FOUNDATION SOILS SHALL BE REMOVED FROM THE AREA TO BE OCCUPIED BY THE WALL AND REPLACED WITH GEOTEXTILE AND ¾" CRUSHED STONE IN ACCORDANCE WITH THESE PLANS AND AS OTHERWISE DIRECTED BY THE GEOTECHNICAL ENGINEER.

11) UPON COMPLETION OF THE EXCAVATION, THE WALL BASE SUBGRADE SHALL BE PROOF ROLLED BY MAKING A MINIMUM OF 6 PASSES USING A LARGE VIBRATORY PLATE COMPACTOR. THE WALL SUBGRADE SHALL BE DE-WATERED TO A MINIMUM OF 12" BELOW THE CRUSHED STONE BASE.

12) INSTALL A 9" (MINIMUM THICK) LAYER OF COMPACTED ¾" CRUSHED STONE ON TOP OF THE GEOTEXTILE LAYER FOR BLOCK WALL LEVELING PAD. EXTEND LEVELING PAD (1) ONE FOOT HORIZONTALLY IN ALL DIRECTIONS BEYOND LIMITS OF THE STONE STRONG BLOCKS.

13) INSTALL THE BASE COURSE OF BLOCKS ON A PREPARED FOUNDATION LEVELING PAD. ENSURE THAT THE BASE COURSE IS LEVEL SIDE TO SIDE AND PLUMB. ADJUST BLOCKS AS REQUIRED TO PROVIDE A STRAIGHT AND LEVEL BASE COURSE. PLACE AND BACKFILL ONLY ONE COURSE OF BLOCKS AT A TIME. DO NOT STACK BLOCKS PRIOR TO BACKFILLING.

14) PLACE CRUSHED STONE AND WALL BACKFILL WITH A MAXIMUM LIFT THICKNESS OF 18", COMPACT WALL BACKFILL TO A MINIMUM OF 95% OF ASTM D1557. FIELD DENSITY TESTS SHALL BE PERFORMED AT A MINIMUM RATE OF 3 TESTS PER EVERY OTHER LIFT.

15) AT THE END OF EACH WORKDAY, BACKFILL SURFACE SHALL BE GRADED AWAY FROM THE WALL FACE A MINIMUM OF 2% SLOPE. THE BACKFILL SURFACE SHALL BE COMPACTED WITH A SMOOTH DRUM ROLLER TO MINIMIZE PONDING OF WATER AND SATURATION OF THE BACKFILL. A TEMPORARY SOIL BERM SHALL BE CONSTRUCTED NEAR THE CREST OF THE GRAVITY STRUCTURES TO PREVENT SURFACE WATER RUNOFF FROM OVERTOPPING THE WALLS.

MATERIAL SPECIFICATIONS

16) ¾" CRUSHED DRAINAGE STONE SHALL BE CLEAN ANGULAR CRUSHED STONE MEETING THE FOLLOWING GRADATION AS DETERMINED IN ACCORDANCE WITH ASTM D422.

SIEVE SIZE	PERCENT PASSING
1"	100
1/4"	90 - 100
3/8"	20 - 55
No. 4	0 -10
No. 8	0 - 5

17) WALL BACKFILL SHALL MEET THE FOLLOWING GRADATION SPECIFICATIONS (MDOT 703.06 TYPE D)

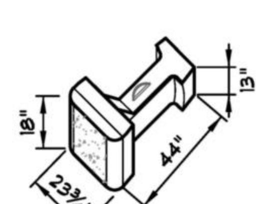
SIEVE SIZE	PERCENT PASSING
3"	100
1/2"	35 - 80
1/4"	25 - 65
No. 40	0 - 30
No. 200	0 - 7

18) THE MAXIMUM PARTICLE SIZE SHALL BE LIMITED TO 6".

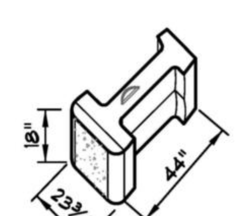
19) BLOCKS SHALL BE 3 s.f., 6 s.f., 9 s.f. AND 24 s.f. "STONE STRONG", MANUFACTURED BY PRECAST CONCRETE PRODUCTS OF MAINE, INC.

20) GEOTEXTILE SHALL CONSIST OF MIRAFI 180N OR APPROVED EQUIVALENT.

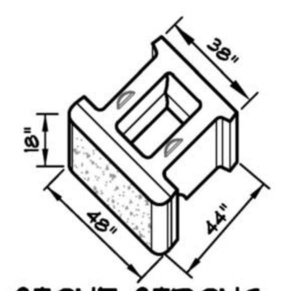
21) UNDERDRAIN PIPE SHALL CONSIST OF 4" PERFORATED SDR 35 PVC OR APPROVED EQUIVALENT.



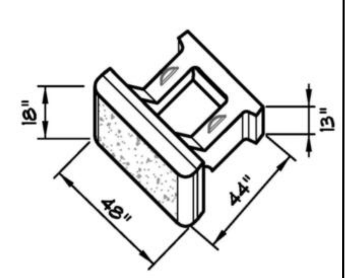
STONE STRONG 3 SF. TOP UNIT
NOT TO SCALE



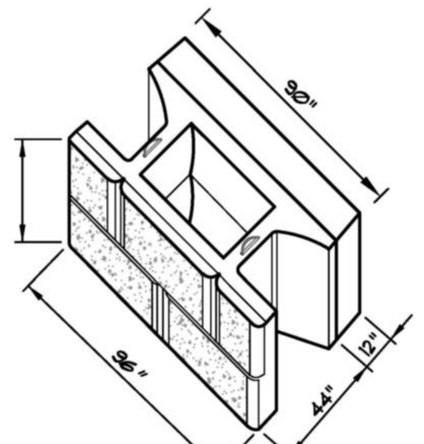
STONE STRONG 3 SF. UNIT
NOT TO SCALE



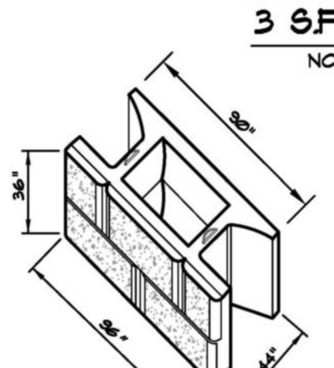
STONE STRONG 6 SF. UNIT
NOT TO SCALE



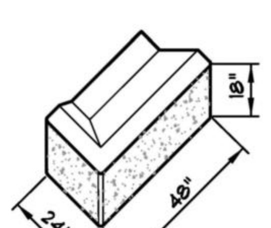
STONE STRONG 6 SF. TOP UNIT
NOT TO SCALE



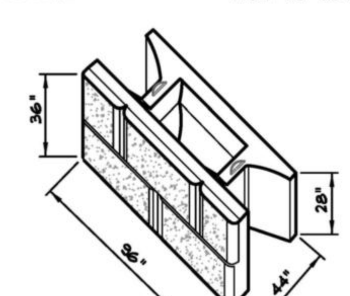
STONE STRONG 24 SF UNIT WITH 12" MASS EXTENDER
NOT TO SCALE



STONE STRONG 24 SF UNIT
NOT TO SCALE



STONE STRONG 9 SF. END UNIT
NOT TO SCALE



STONE STRONG 24 SF TOP UNIT
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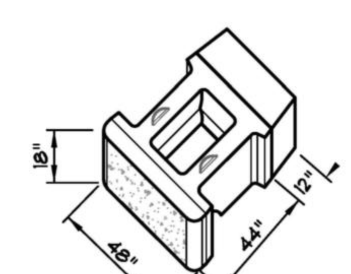


STONE STRONG 6 SF. UNIT WITH 12" MASS EXTENDER
NOT TO SCALE

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

Prepared in association with:

LICHT ENVIRONMENTAL DESIGN, LLC

STATE OF MAINE ★ CHRISTOPHER S. BELANGER 9098 ★ LICENSED PROFESSIONAL ENGINEER

12-18-2020

2.	12-18-2020 Re-submit to Town	CSB
1.	6-15-2020 Re-submit to Town and DEP	CSB

Stone Strong Block Notes and Detail (coordinate design with Summit Engineering)

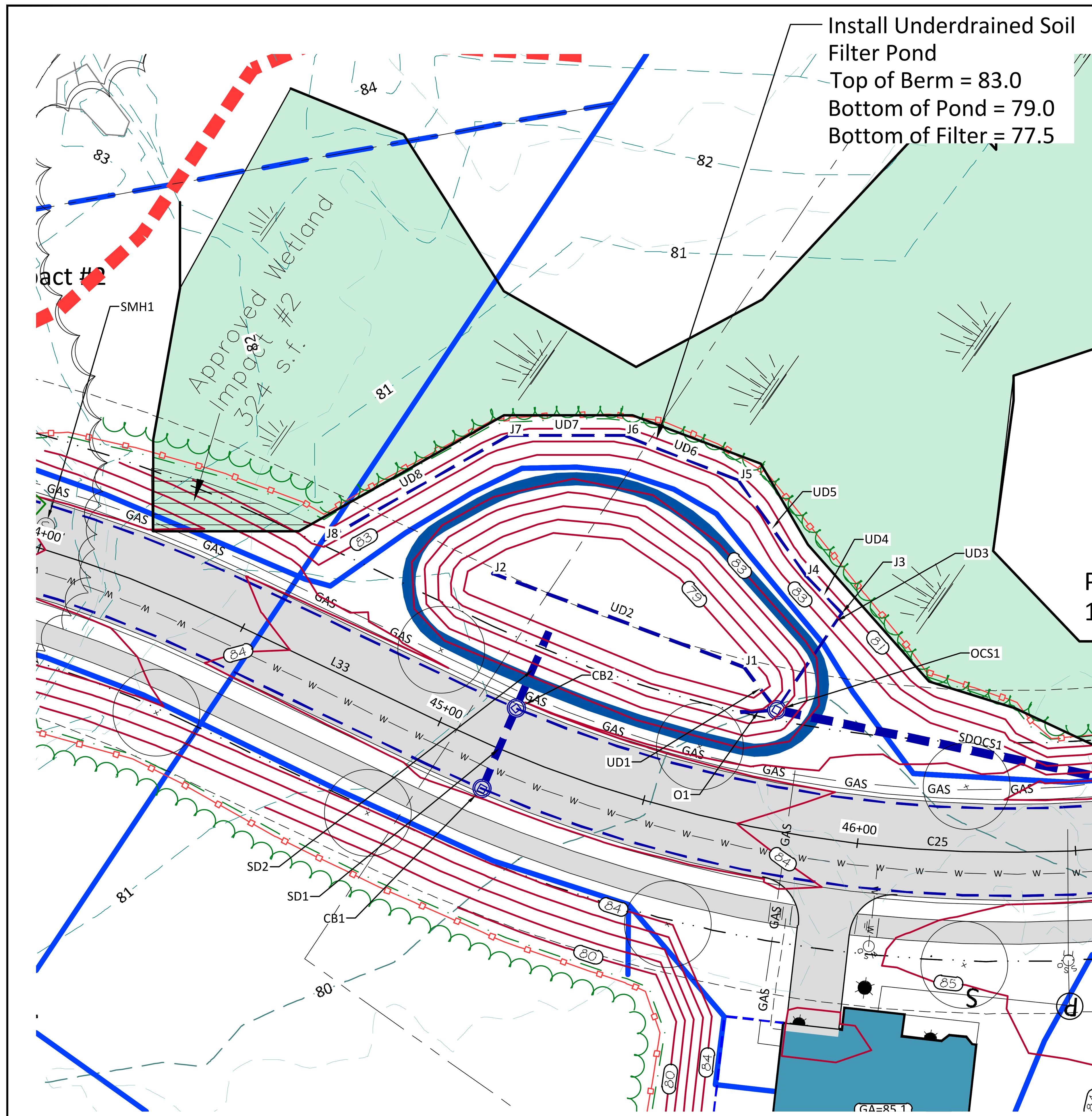
Cumberland Crossing – Phase 2
Tuttle and Greely Roads, Cumberland, Maine

Seacoast Management Company
20 Blueberry Lane, Falmouth, ME

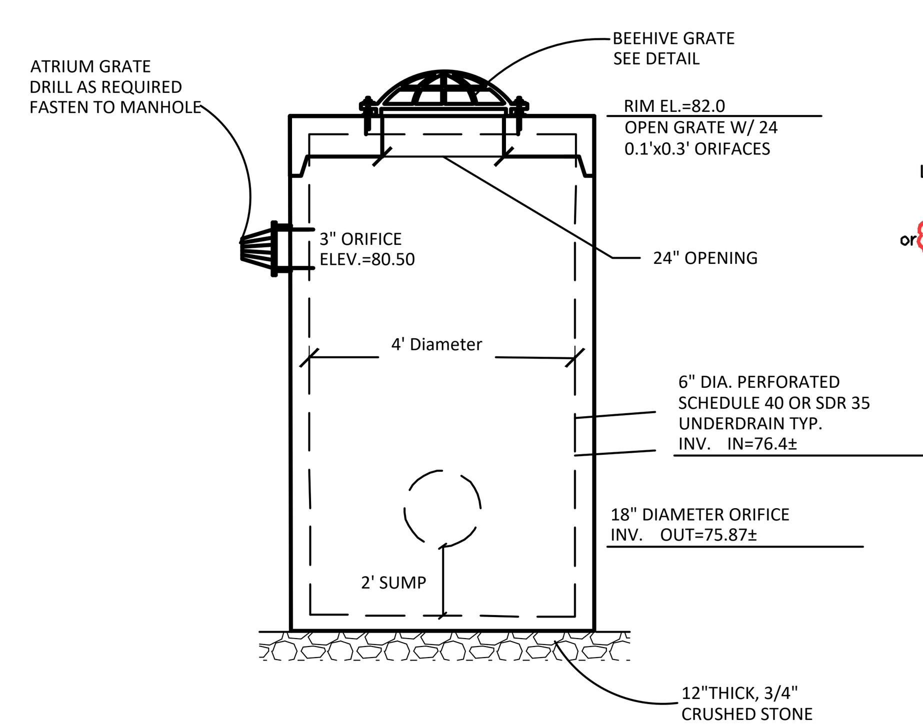
BELANGER ENGINEERING
CONSULTING ENGINEERS
63 Second Avenue , Augusta, Maine 04330
Email: cbelanger@roadrunner.com
Ph 207-622-1462, Cell 207-242-5713

- COMMERCIAL PROJECTS
- RESIDENTIAL SUBDIVISIONS
- TOWN AND STATE APPROVALS
- SITE PLANNING & DESIGN
- STORMWATER MANAGEMENT
- ROAD AND UTILITY DESIGN
- EROSION CONTROL PLANS

FIELD WK:	SCALE:	SHEET:
DRN BY:	JOB #:	C24
CH'D BY:	SS:	
DATE: 12-18-2020	FILE:	



Plan View
1"=40'



FILTER POND 47P CONTROL STRUCTURE DETAIL (OCS1)

(NOT TO SCALE)

CONSTRUCTION OVERSIGHT

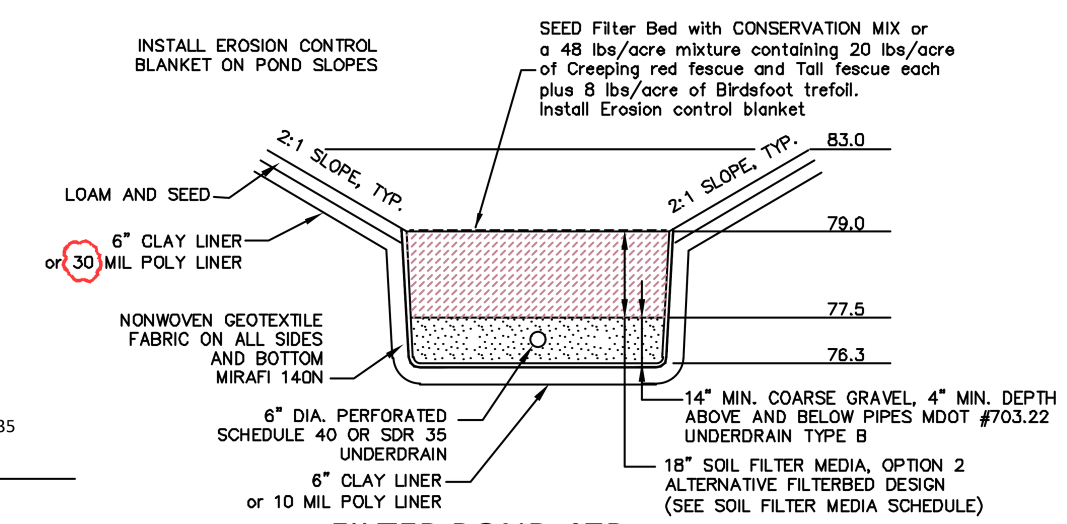
The applicant will retain the services of a professional engineer to inspect the construction and stabilization of all stormwater management structures to be built as part of the project. If necessary, the inspecting engineer will interpret the construction plans for the contractor. Once all stormwater management structures are constructed and stabilized, the inspecting engineer will notify the department in writing within 30 days to state that the structures have been completed. Accompanying the engineer's notification must be a copy of the test results for any soil fill, aggregate, or mulch materials used in the construction of the stormwater management structures and a log of the engineer's inspections giving the date of each inspection, the time of each inspection, and the items inspected on each visit.

VEGETATED UNDERDRAINED SOIL FILTER BASINS

Construction inspections: At a minimum, the professional engineer's inspection will occur after foundation soil preparation but prior to placement of the embankment fill, after the underdrain pipes are installed but not backfilled, after the pipe bedding fill is placed but prior to the placement of the filter media, and after the filter media has been placed and the filter surface seeded.

Testing and submittals: All the soil, mulch, and aggregate used for the construction of the vegetated underdrained soil filter basin must be confirmed as suitable by testing. The contractor shall identify the source of each material and obtain samples for each material for testing. All testing must be done by a certified laboratory. All results of field and laboratory testing shall be submitted to the project engineer for confirmation. It shall be the contractor's responsibility to ensure completion of the following sampling and testing before the fill or aggregate is placed as part of the vegetated underdrained soil filter basin's construction.

- Obtain a sample of the filter media consisting of a blend of sand, topsoil, and wood fiber mulch (or other approved organic source). The sample must be a composite of three different locations (grabs) from the stockpile. The sample size required will be determined by the testing laboratory. Perform analyses of the blended filter media showing it has 8% to 12% by weight passing the #200 sieve as determined by ASTM C136 (Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates 1996A), has a clay content of less than 2%, and has an organic matter content of no less than 10% by dry weight.
- If the underdrain pipes will be bedded in gravel, obtain a sample of the gravel fill to be used for the pipe bedding. The sample must be a composite of three different locations (grabs) from the stockpile or pit face. The sample size required will be determined by the testing laboratory. Perform a sieve analysis conforming to ASTM C136 (Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates 1996A) of the gravel to be used for the underdrain pipe bedding. The gravel fill must conform to MEDOT specification 703.22 Underdrain Type B.
- If the underdrain pipes will be bedded in crushed stone, obtain a sample of the crushed stone to be used for the pipe bedding. The sample must be a composite of three different locations (grabs) from the stockpile. The sample size required will be determined by the testing laboratory. Perform a sieve analysis conforming to ASTM C136 (Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates 1996A) of the crushed stone to be used for the underdrain pipe bedding. The crushed stone fill must conform to MEDOT specification 703.22 Underdrain Type C.



FILTER POND 47P SOIL FILTER DETAIL

(NOT TO SCALE)

NOTE:
FILTER POND SOIL FILTER DETAILS DEPICTS ELEVATIONS AT THE BOTTOM PERIMETER OF THE POND AND NOT THE LOW POINT OF THE POND. SEE SITE PLAN GRADING AND SECTION FOR LOW POINT OF ELEVATION (TYPICALY NEAR THE CONTROL STRUCTURE)

MEDOT Specifications for Underdrains (ME DOT #703.22)	
Sieve Size	% Passing by Weight
Underdrain Type B	
1"	90-100
1/2"	75-100
#4	50-100
#20	15-80
#50	0-15
#200	0-5
Underdrain Type C	
1"	100
3/4"	90-100
3/8"	0-75
#4	0-25
#10	0-5

SOIL FILTER MEDIA (OPTION 2)		
DEPTH	FILTER MEDIA	SPECIFICATION
0" – 4"	TOPSOIL	LOAMY COARSE SAND WITH 8–15% FINES PASSING THE #200 SIEVE SEE TABLE 7.1.3
4" – 6"	WOOD CHIPS	pH BETWEEN 5.0–8.0, SOLUBLE SALTS CONTENT SHALL BE LESS THAN 4.0 mmhos/cm.
6" – 18"	GRAVELY COARSE SAND MIX	GRAVELY COURSE SAND MIXED WITH 20–30% WOOD FIBER MULCH, LESS THAN 12% FINES PASSING THE #200 SIEVE

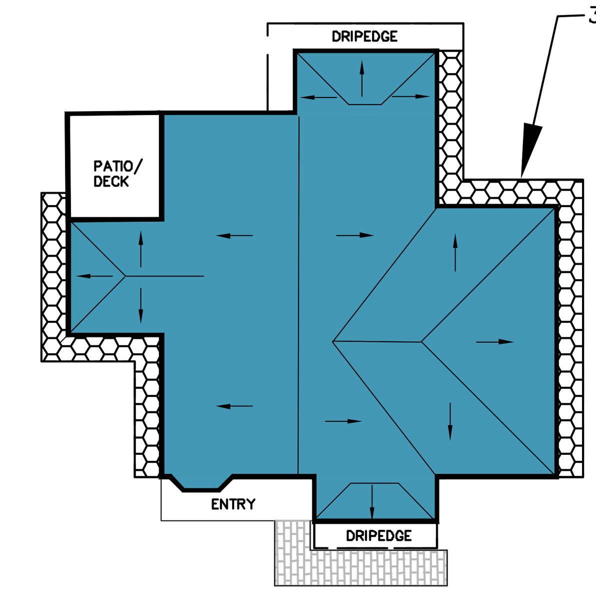
INSTALLATION NOTES:
THE FILTER MEDIA IS TO BE INSTALLED IN THE BASIN ONLY AFTER THE AREA DRAINING TO THE BASIN HAS BEEN STABILIZED WITH PERMANENT MEASURES.

THE FILTER MEDIA IN THE BASIN IS TO BE ONLY LIGHTLY COMPACTED TO NO MORE THAN 92% STANDARD PROCTOR.

Table 7.1.3 Loamy Coarse Sand Specifications	
Sieve Size #	% Passing by Weight
No. 10	85-100
No. 20	70-100
No. 60	15-40
No. 200	8-15
(200 Clay Size)	< 2.0

Table 7.1.2 Sandy Loam to Fine Sandy Loam Specifications	
Sieve Size #	% Passing by Weight
No. 4	75-95
No. 10	60-90
No. 40	35-85
No. 200	20-70
(200 Clay Size)	< 2.0

SOIL FILTER MEDIA SCHEDULE



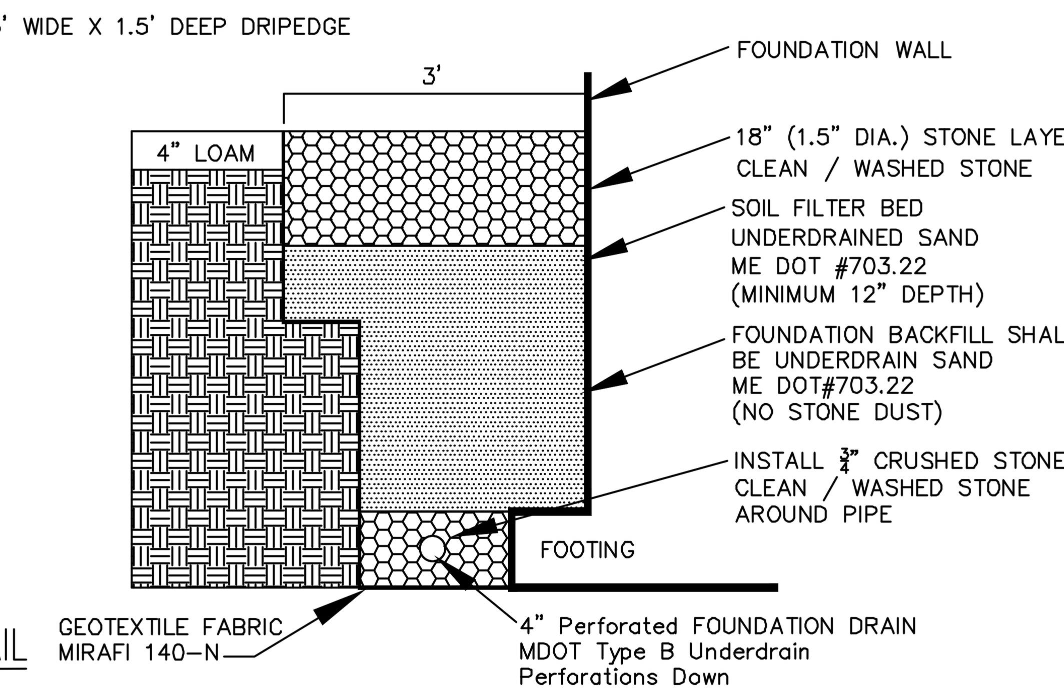
ROOF DRIPLINE BMP PLAN DETAIL

NOT TO SCALE HG COTTAGES – PHASES 4 A–C

Highland Green Cottage

Cross Sectional Area of Dripedge = (((3'X1.5')X0.4) = 1.8 s.f./l.f.
Linear Feet of Dripedge = 120'
Volume of voids = 1.8 s.f./l.f. X 120 l.f. = 216 c.f.

Area of building roof = 2,000 s.f.
Store 1"
Volume of dripedge required = 2,000 s.f. X .083' (1 inch) = 166 c.f.



ROOF DRIPLINE BMP SECTION DETAIL

NOT TO SCALE HG COTTAGES – PHASES 4 A–C

CONSTRUCTION OVERSIGHT ROOF DRIPLINE INSTALLATION

The applicant/owner will retain the services of a professional engineer to inspect the construction and stabilization of all stormwater management structures to be built as part of the project. If necessary, the inspecting engineer will interpret the construction plans for the contractor. Once all stormwater management structures are constructed and stabilized, the inspecting engineer will notify the department in writing within 30 days to state that the structures have been completed. Accompanying the engineer's notification must be a copy of the test results for any soil fill, aggregate, or mulch materials used in the construction of the stormwater management structures and a log of the engineer's inspections giving the date of each inspection, the time of each inspection, and the items inspected on each visit.

Roof Dripline Filtration

Construction inspections: At a minimum, the professional engineer's inspection will occur after foundation soil preparation but prior to placement of the geotextile lining, after the foundation drain pipe is installed but not yet backfilled, after the pipe bedding gravel is placed but prior to the placement of the gravel filter media, after the gravel filter media has been placed but prior to installing the crushed stone surface layer, and after the surface crushed stone surface layer is installed.

Testing and submittals: The gravel filter media and pipe bedding media used in the roof dripline filtration BMP must be confirmed as suitable by testing. The contractor shall identify the source of these gravels and obtain samples for testing. All testing must be done by a certified laboratory. All results of field and laboratory testing shall be submitted to the project engineer for confirmation. It shall be the contractor's responsibility to ensure completion of the following sampling and testing before the gravel is placed as part of the dripline filter's construction.

- Obtain a sample of the gravel filter media. The sample must be a composite of three different locations (grabs) from the gravel stockpile. The sample size required will be determined by the testing laboratory. Perform a sieve analysis conforming to ASTM C136 (Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates 1996A) of the sand filter media showing it meets the following gradation:

Sieve Size	% Passing by Weight
3"	100
#200	4-7

- If the underdrain pipes will be bedded in gravel, obtain a sample of the gravel fill to be used for the pipe bedding. The sample must be a composite of three different locations (grabs) from the stockpile or pit face. The sample size required will be determined by the testing laboratory. Perform a sieve analysis conforming to ASTM C136 (Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates 1996A) of the gravel to be used for the underdrain pipe bedding. The gravel fill must conform to MEDOT specification 703.22 Underdrain Type B.

If the underdrain pipes will be bedded in crushed stone, obtain a sample of the crushed stone to be used for the pipe bedding. The sample must be a composite of three different locations (grabs) from the stockpile. The sample size required will be determined by the testing laboratory. Perform a sieve analysis conforming to ASTM C136 (Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates 1996A) of the crushed stone to be used for the underdrain pipe bedding. The crushed stone fill must conform to MEDOT specification 703.22 Underdrain Type C.

MEDOT Specifications for Underdrains (ME DOT #703.22)	
Sieve Size	% Passing by Weight
Underdrain Type B	
1"	90-100
1/2"	75-100
#4	50-100
#20	15-80
#50	0-15
#200	0-5
Underdrain Type C	
1"	100
3/4"	90-100
3/8"	0-75
#4	0-25
#10	0-5

2. 12–18–2020 Re–submit to Town CSB
1. 6–15–2020 Re–submit to Town and DEP CSB

Underdrained Soil Filter Pond Details
Cottage Roof Drip Line Details

Cumberland Crossing – Phase 2
Tuttle and Greely Roads, Cumberland, Maine

Seacoast Management Company
20 Blueberry Lane, Falmouth, ME

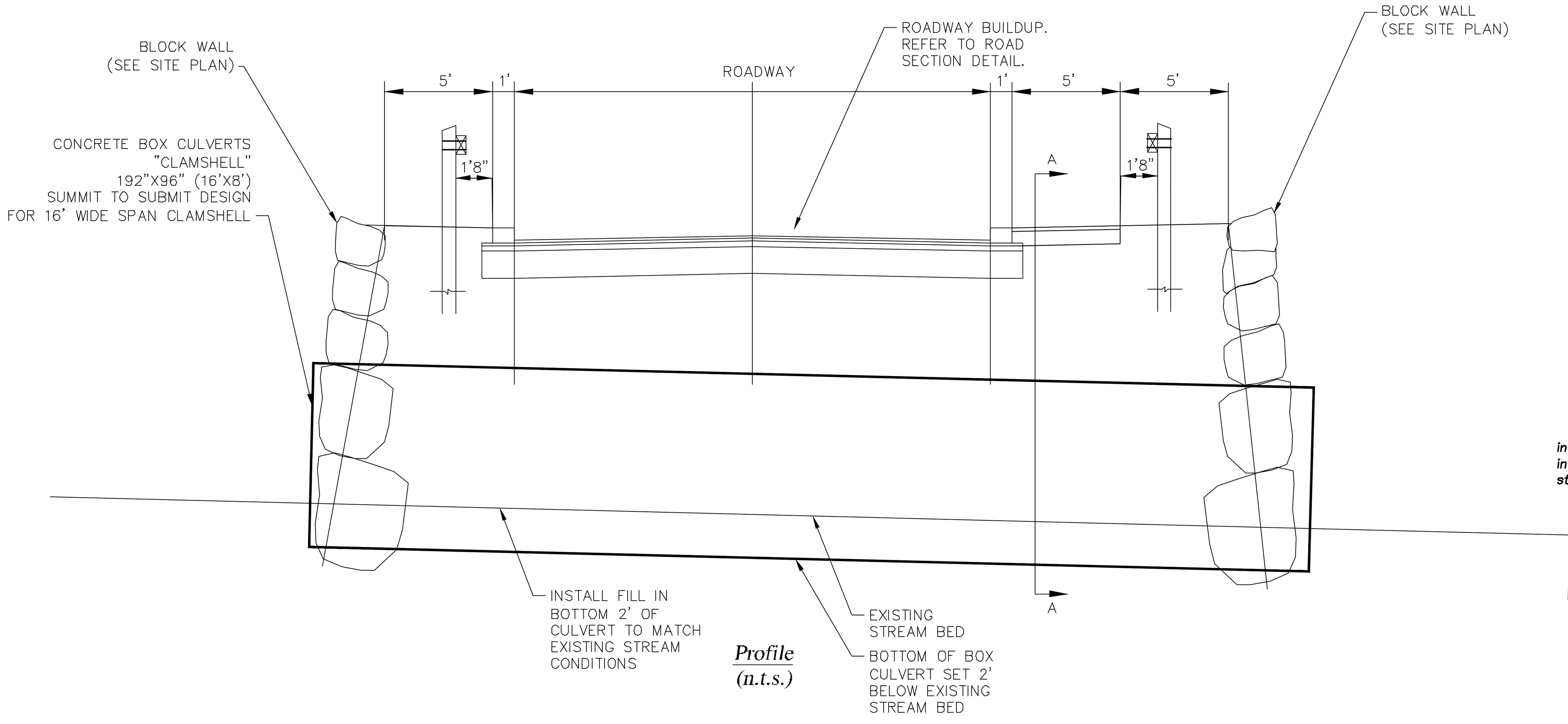
STATE OF MAINE
CHRISTOPHER S. BELANGER 9098
LICENSED
PROFESSIONAL ENGINEER
12-18-2020

BELANGER ENGINEERING
CONSULTING ENGINEERS
63 Second Avenue , Augusta, Maine 04330
Email: cbelanger@roadrunner.com
Ph 207-622-1462, Cell 207-242-5713

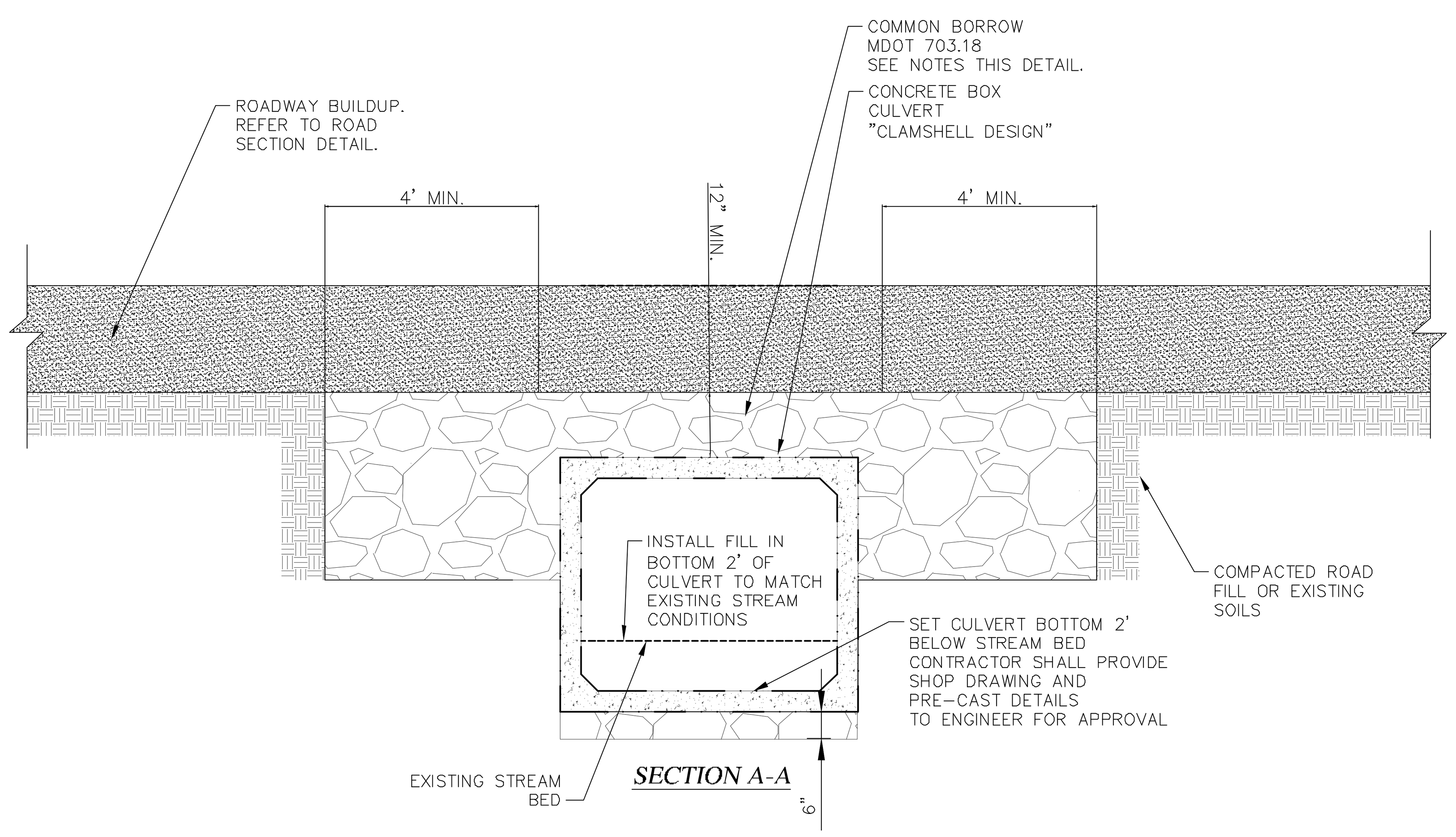
- COMMERCIAL PROJECTS
- RESIDENTIAL SUBDIVISIONS
- TOWN AND STATE APPROVALS
- SITE PLANNING & DESIGN
- STORMWATER MANAGEMENT
- ROAD AND UTILITY DESIGN
- EROSION CONTROL PLANS

FIELD WK:	SCALE:	SHEET:
DRN BY:	JOB #:	C25
CH'D BY:	SS:	
DATE: 12-18-2020	FILE:	

NOTES:
1. COMMON BORROW USED FOR BACKFILL SHALL CONSIST OF EARTH, SUITABLE FOR EMBANKMENT CONSTRUCTION. IT SHALL BE FREE FROM FROZEN MATERIAL, PERISHABLE RUBISSH, PEAT, AND OTHER UNSUITABLE MATERIALS INCLUDING MATERIAL CURRENTLY OR PREVIOUSLY CONTAMINATED BY CHEMICAL, RADIOLOGICAL, OR BIOLOGIAL AGENTS. ALL MATERIAL SHALL HAVE NO ROCKS WITH A MAXIMUM DIMENSION OVER 6 INCHES. ON-SITE MATERIAL MAY BE USED IF IT MEETS THE ABOVE SPECIFIED REQUIREMENTS.

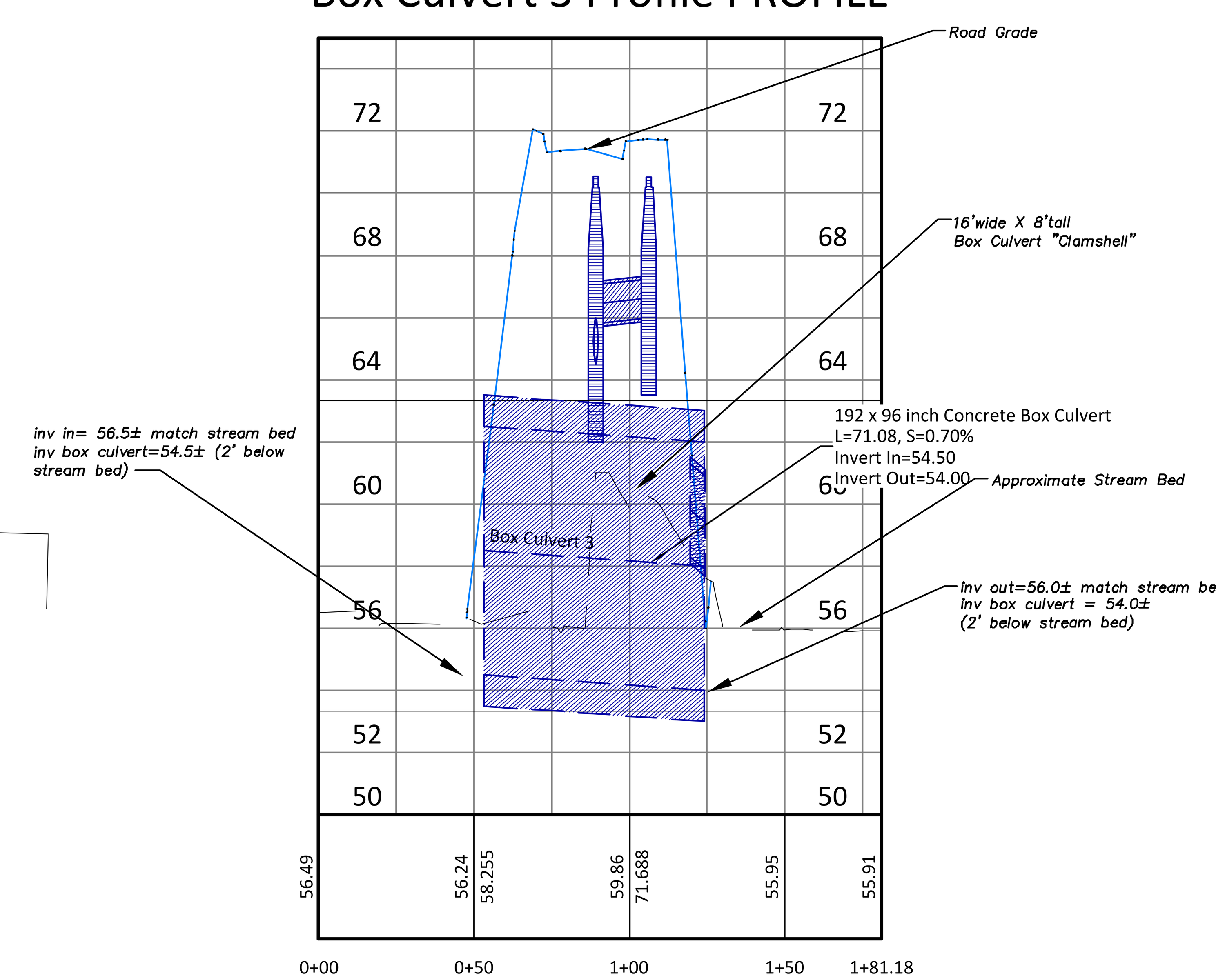


Profile
(n.t.s.)



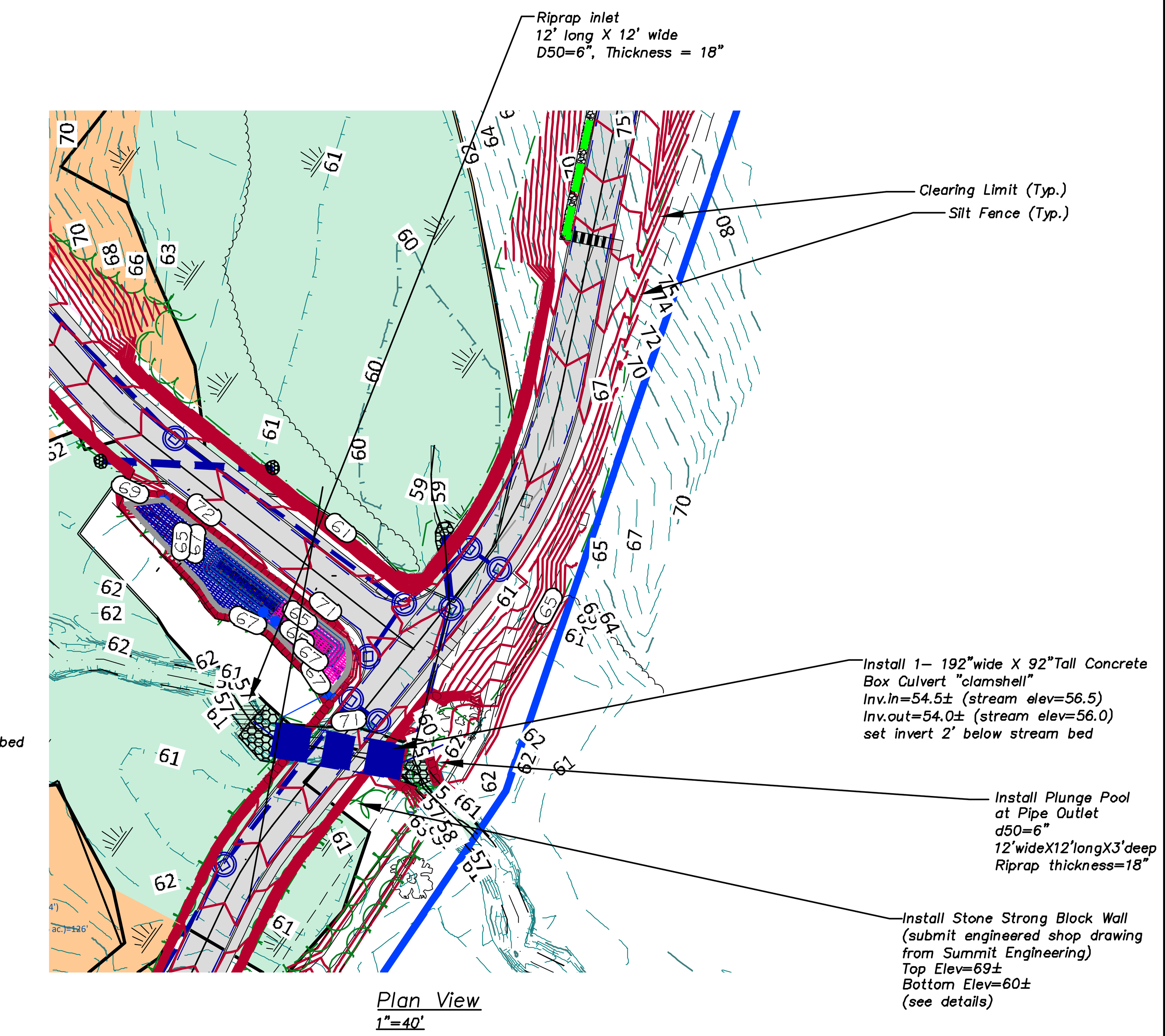
SECTION A-A

Box Culvert 3 Profile PROFILE

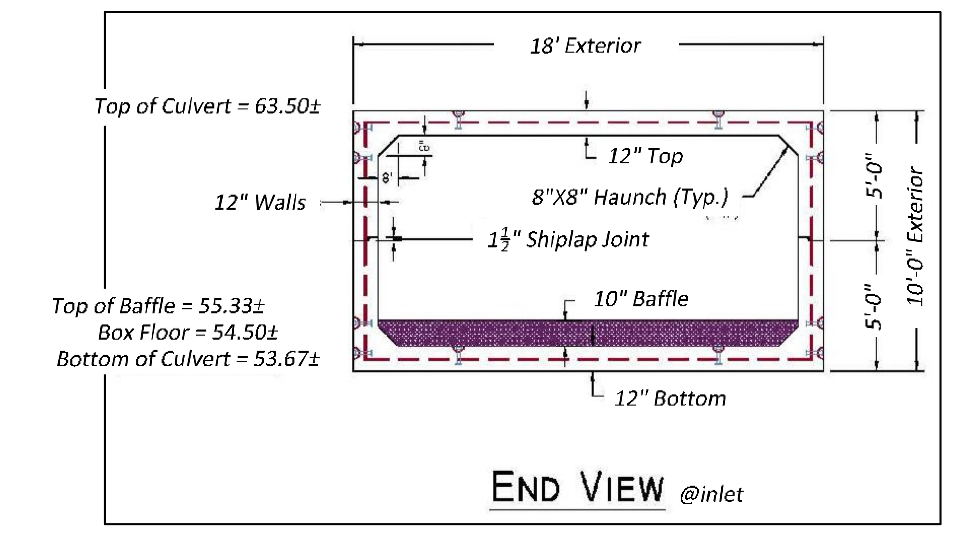


Profile View
1"=40'Horizontal
1"=4'Vertical

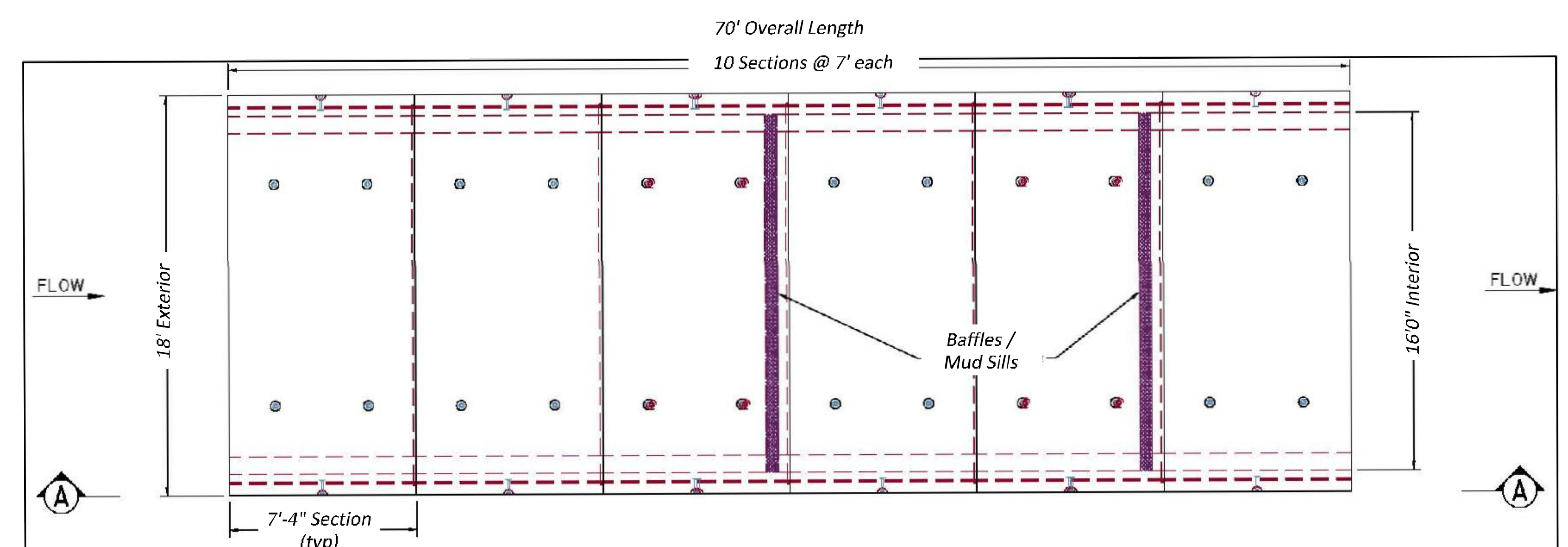
Note:
1. CONTRACTOR SHALL PROVIDE SHOP DRAWING TO ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.



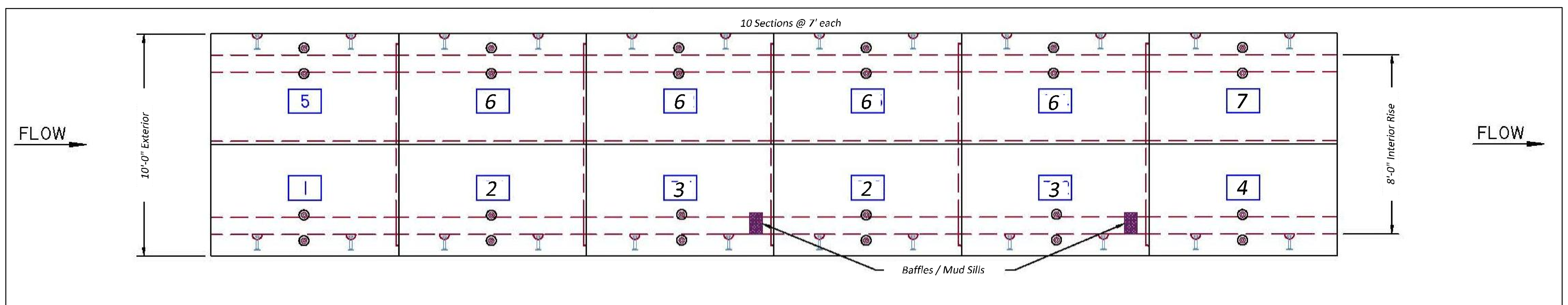
Plan View
1"=40'



END VIEW @inlet



PLAN VIEW



ELEVATION A-A

American Concrete Industries
1717 Stillwater Ave. Veazie, ME
Tel: 207-947-8334
Fax: 207-947-3580

982 Minot Ave. Auburn, ME
Tel: 207-784-1388
Fax: 207-783-4039

ITEM	QTY	BILL OF MATERIALS
1	(1)	7'-4" UPSTREAM END BOTTOM (21,150 #)
5	(1)	7' 4" UPSTREAM END TOP (20,975 #)
2	(4)	7' 4" MID SECTION BOTTOM (21,350 # EA)
6	(8)	7'-4" MID SECTION TOP (21,150 # EA)
3	(4)	7'-4" MID BOTTOM W/ MUDSILL (22,200 # EA)
4	(1)	7'-4" DOWNSTREAM END BOTTOM (21,550 #)
7	(1)	7'-4" DOWNSTREAM END TOP (21,350 #)

Prepared in association with:

LICHT ENVIRONMENTAL DESIGN, LLC

STATE OF MAINE
CHRISTOPHER S. BELANGER
9098
LICENSED
PROFESSIONAL ENGINEER
12-18-2020

2.	12-18-2020 Re-submit to Town	CSB
1.	6-15-2020 Re-submit to Town and Maine DEP	CSB

Box Culvert 3 Details
Clamshell Box Culvert

Cumberland Crossing – Phase 2
Tuttle and Greely Roads, Cumberland, Maine

Seacoast Management Company
20 Blueberry Lane, Falmouth, ME

BELANGER ENGINEERING
CONSULTING ENGINEERS
63 Second Avenue, Augusta, Maine 04330
Email: cbelanger@roadrunner.com
Ph 207-622-1462, Cell 207-242-5713

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- SITE PLANNING & DESIGN
- STORMWATER MANAGEMENT
- ROAD AND UTILITY DESIGN
- EROSION CONTROL PLANS

FIELD WK:	SCALE:	SHEET:
DRN BY:	JOB #:	C26
CH'D BY:	SS:	
DATE: 12-18-2020	FILE:	

2.	12-18-2020 Re-submit to Town	CSB
1.	6-15-2020 Respond to SME memo dated 3-4-2020 Re-submit to Town and DEP	CSB

Culvert and Wall Site Plan

Cumberland Crossing – Phase 2
Tuttle and Greely Roads, Cumberland, Maine

Seacoast Management Company
20 Blueberry Lane, Falmouth, ME

STATE OF MAINE CHRISTOPHER S. BELANGER 9098 LICENSED PROFESSIONAL ENGINEER
12-18-2020

BELANGER ENGINEERING CONSULTING ENGINEERS
63 Second Avenue, Augusta, Maine 04330
Email: cbelanger@roadrunner.com
Ph 207-622-1462, Cell 207-242-5713

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FIELD WK:	SCALE: 1"=20'	SHEET:
DRN BY:	JOB #:	C26a
CH'D BY:	SS:	
DATE: 12-18-2020	FILE:	


GRAPHIC SCALE
(IN FEET)
1 inch = 10 ft.
PROGRESS PLAN
NOT FOR CONSTRUCTION
THIS DOCUMENT IS ISSUED FOR INFORMATIONAL PURPOSES ONLY. THE DATA SHOWN HEREON IS SUBJECT TO REVISION.
4' DIAMETER OUTLET CONTROL STRUCTURE
RIM= TBD
INV IN=58.21
INV OUT=58.1
18" outlet elev=58.0
Proposed 468 s.f. (5.5' X 85') Focalpoint Biofilter
Top of Mulch elev: 64.0
Top of R-tank elev: 61.75
Invert of R-tank double-mini: 58.21
Existing Maine DEP Stream
Existing wetland (typ)
R-TANK STORAGE SYSTEM
557 R-TANK DOUBLE+MINI HD MODULES
TANK INVERT ELEV= 58.21
R-TANK STORAGE SYSTEM
557 R-TANK DOUBLE+MINI HD MODULES
WRAPPED IN 30 ML PVC LINER ON TOP AND SIDES
INCLUDING CURTAIN WALL BETWEEN ADJACENT R-TANK STORAGE SYSTEM
TANK INVERT ELEV= 58.21
R-TANK MAINTENANCE ROW SYSTEM
306 R-TANK DOUBLE+MINI HD MODULES
WRAPPED IN 30 ML PVC LINER ON TOP AND SIDES
INCLUDING CURTAIN WALL BETWEEN ADJACENT R-TANK STORAGE SYSTEM
TANK INVERT ELEV= 58.21
Maintain Minimum 25' buffer adjacent to wetland and stream.
2 Feet Stone Perimeter (typ)
12" wide decorative Riverstone Border
25' BUFFER
Concrete Box Culvert
L=71.08, S=0.70%
Invert In=54.50
Invert Out=54.00
Box Culvert 3
6 inch dia. U.D. inv elev 58.21
24" Riser with Solid Cover
RIM=TBD
INV IN=58.21
(for flushing)
12" dia. inspection port (typical of 5)
24" DIA. PVC RISER W SOLID COVER
RIM ELEV=TBD
12" INV IN=60.75
12" INV OUT=60.75
Proposed 24" dia. domed pvc riser w filter insert
Rim Elev=65.0
12" inv in: 60.75
12" inv. out: 60.75
CB40
CB41
CB42
CB43
CB45
CB46
CB60
SD40
SD41
SD42
SD43
SD45
SD46
SD60
DMH61
SMH12
CULV4
CULV6
L37
L55
2. 12-18-2020 Re-submit to Town CSB
1. 6-15-2020 Respond to SME memo dated 3-4-2020 Re-submit to Town and DEP CSB
Focal Point Site Plan
Cumberland Crossing – Phase 2
Tuttle and Greely Roads, Cumberland, Maine
Seacoast Management Company
20 Blueberry Lane, Falmouth, ME
BELANGER ENGINEERING
CONSULTING ENGINEERS
63 Second Avenue, Augusta, Maine 04330
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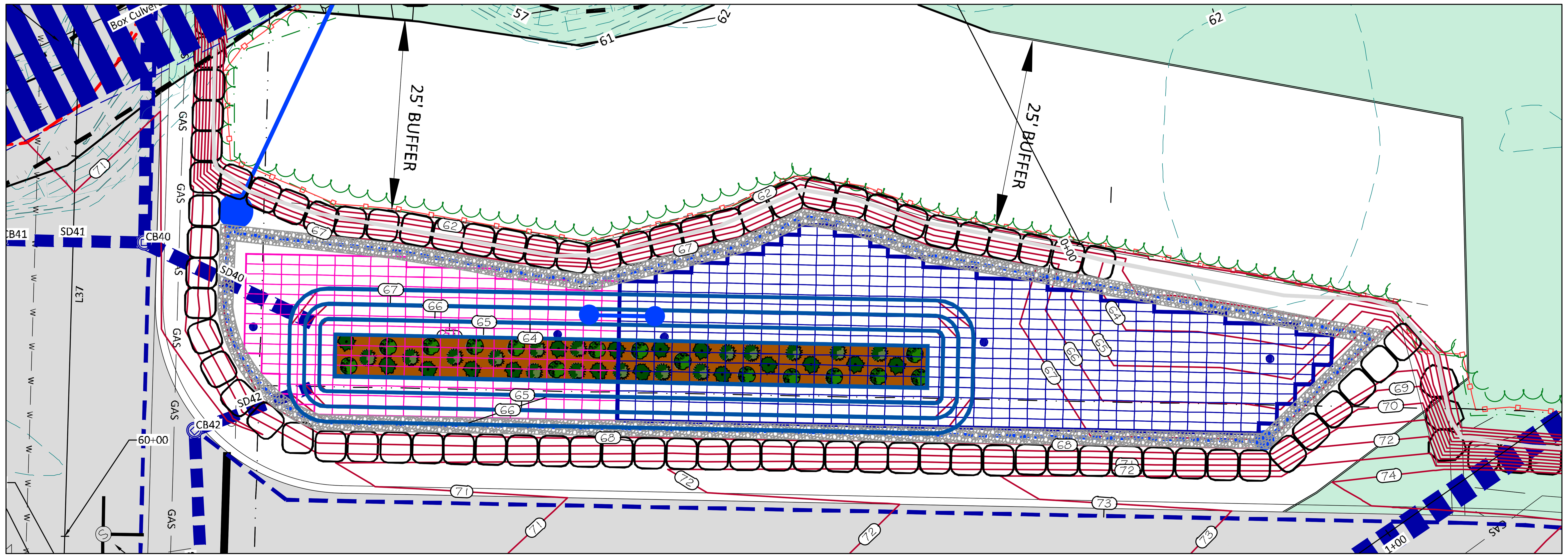
STATE OF MAINE
CHRISTOPHER S. BELANGER 9098
LICENSED PROFESSIONAL ENGINEER
12-18-2020
Prepared in association with:
LICHT ENVIRONMENTAL DESIGN, LLC
FIELD WK:
DRN BY:
CH'D BY:
DATE: 12-18-2020
SCALE: 1"=10'
JOB #:
SS:
FILE:
SHEET:
C27

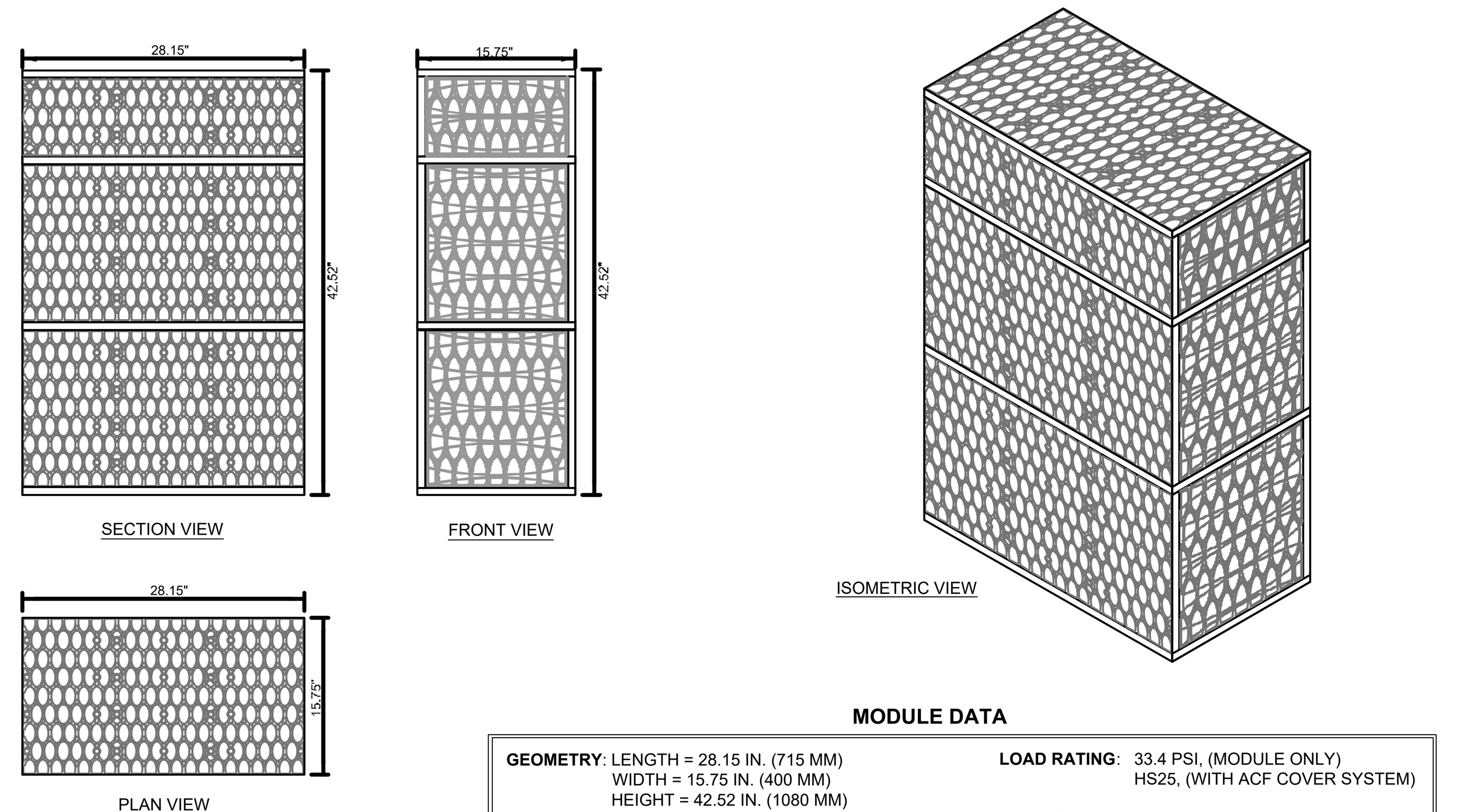


EXPANDED R-TANK SYSTEM LAYOUT (10 SCALE)

R-TANK SYSTEM DIMESIONAL DATA			
R-TANK SYSTEM I.D.	FP-1		
R-TANK^{HD} MODULE	Double-Mini		
# TANKS WIDE	see plan		
# TANKS LONG	see plan		
STONE PERIMETER WIDTH	2 FT		
SYSTEM WIDTH	26.25'		
SYSTEM LENGTH	110.25'		
R-TANK INVERT	58.21		
STONE BASE ELEV	57.71'		
R-TANK TOP ELEV	61.76		
MIN COVER (20")	2'		
MAX COVER (7 FT)	2'		

STATE OF MAINE
CHRISTOPHER S. BELANGER 9098
LICENSED PROFESSIONAL ENGINEER
12-18-2020

DATE	REVISION
-	-



MODULE DATA

GEOMETRY: LENGTH = 28.15 IN. (715 MM)
WIDTH = 15.75 IN. (400 MM)
HEIGHT = 42.52 IN. (1080 MM)
TANK VOLUME = 10.91 CF
STORAGE VOLUME = 10.36 CF
VOID INTERNAL VOLUME: 95%
VOID SURFACE AREA: 90%

LOAD RATING: 33.4 PSI, (MODULE ONLY)
HS25, (WITH ACF COVER SYSTEM)

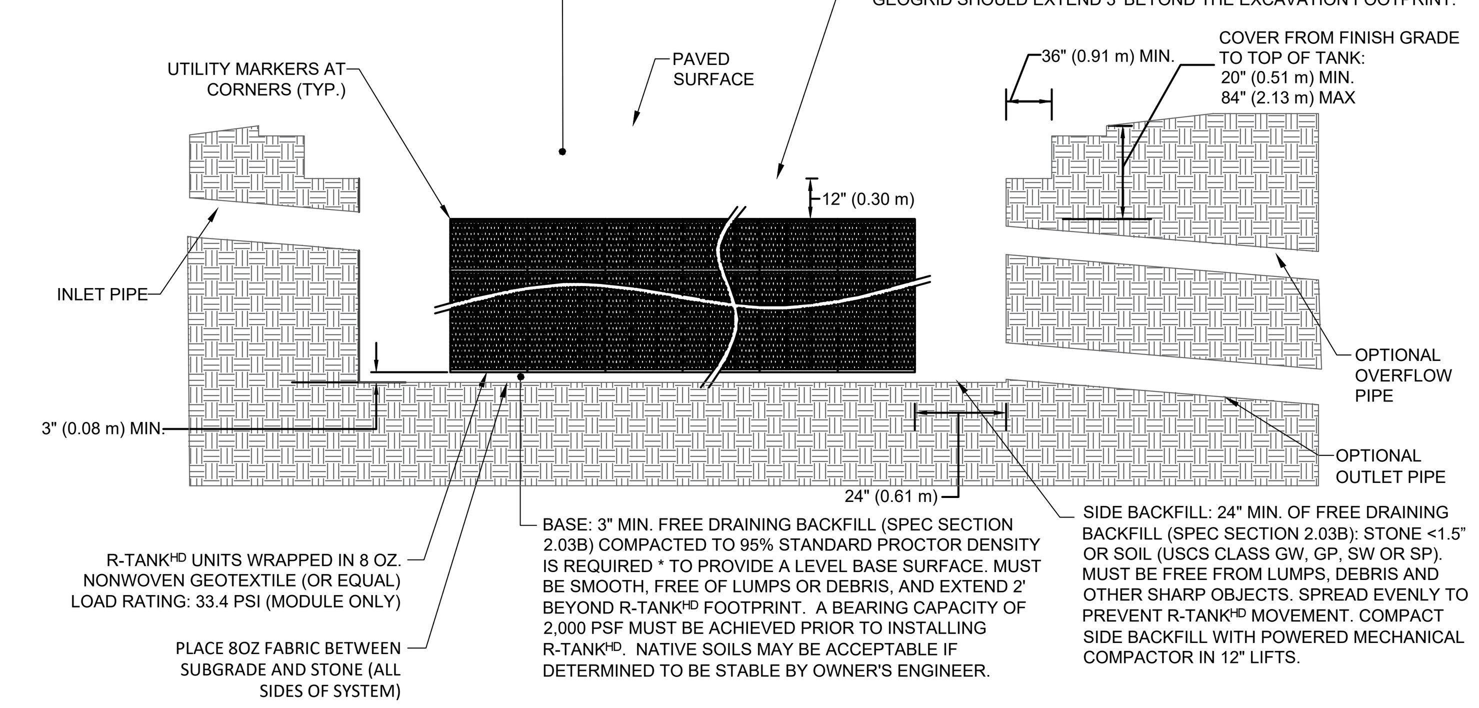
MATERIAL: 100% RECYCLED POLYPROPYLENE

SMALL PLATES PER SEGMENT/TOTAL: 5/15

1 R-TANK^{HD} - DOUBLE + MINI MODULES

TOTAL COVER: 20" MINIMUM AND 84" MAXIMUM. FIRST 12" MUST BE FREE DRAINING BACKFILL (SPEC SECTION 2.03B): STONE <1.5" OR SOIL (USCS CLASS GW, GP, SW OR SP). ADDITIONAL FILL MAY BE STRUCTURAL FILL (SPEC SECTION 2.03C): STONE OR SOIL (USCS CLASS SM, SP, SW, GM, GP OR GW) WITH MAX CLAY CONTENT<10%, MAX 25% PASSING NO. 200 SIEVE, AND MAX PLASTICITY INDEX OF 4. A MIN. 12" COVER MUST BE MAINTAINED BETWEEN BACKFILL EQUIPMENT AND THE TOP OF THE R-TANK™ SYSTEM AT ALL TIMES. TOTAL HEIGHT OF TOP BACKFILL SHOULD NOT EXCEED 7'. CONTACT ACF ENVIRONMENTAL IF MORE THAN 7' OR LESS THAN 20" OF TOP BACKFILL IS REQUIRED (FROM TOP OF TANK TO TOP OF PAVEMENT).

NOTES:
- FOR COMPLETE MODULE DATA, SEE APPROPRIATE R-TANK^{HD} MODULE SHEET
- INSTALLATIONS PER THIS DETAIL MEET GUIDELINES OF H20 LOADING PER THE 1983, 13TH EDITION OF THE AMERICAN ASSOCIATION OF STATE, HIGHWAY AND TRAFFIC OFFICIALS (AASHTO) STANDARD SPECIFICATIONS
- PRE-TREATMENT STRUCTURES NOT SHOWN

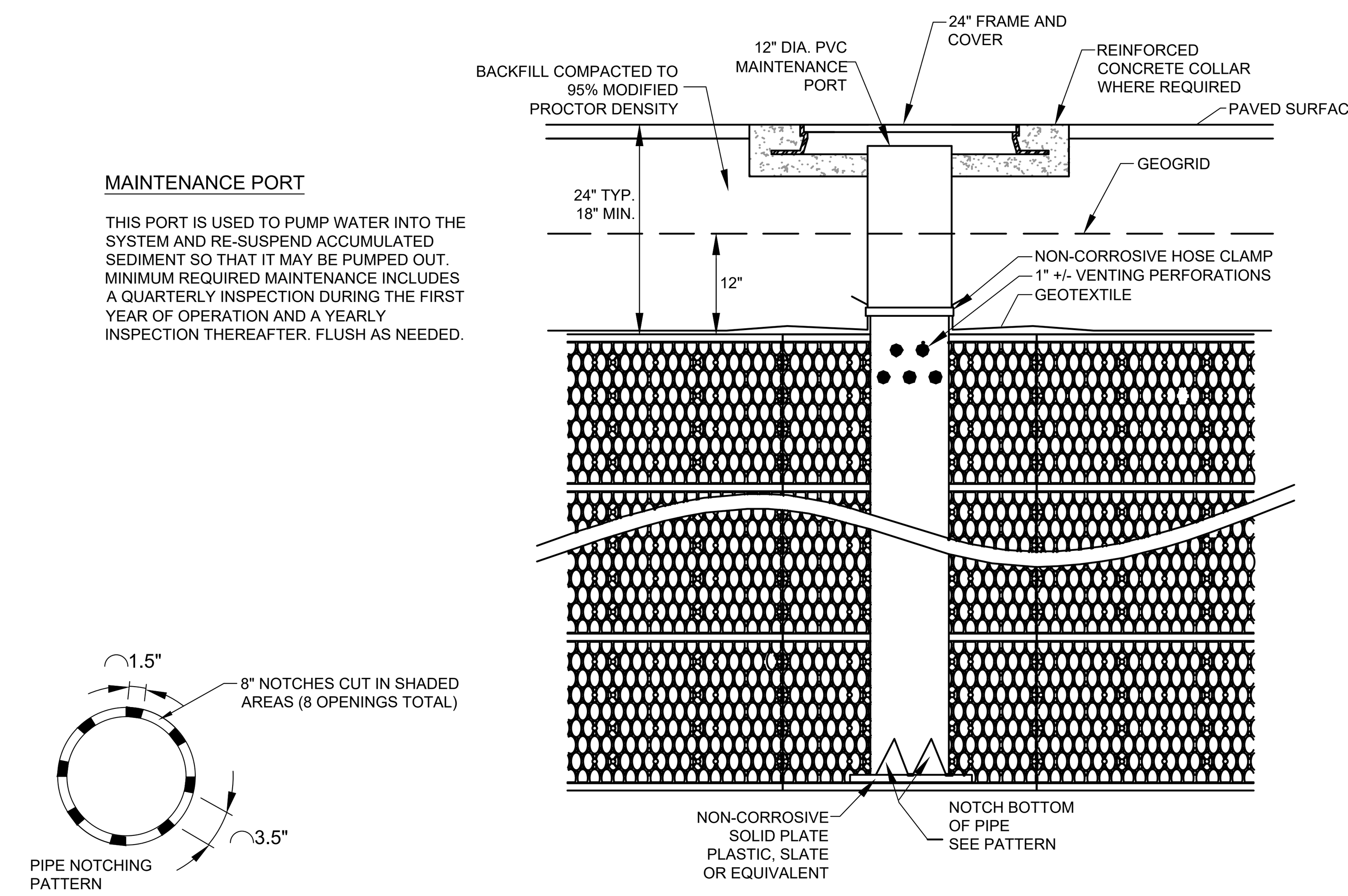


* FOR INFILTRATION APPLICATIONS, BASE SHALL BE 4" MIN. UNCOMPACTED FREE DRAINING BACKFILL (SPEC SECTION 2.03B) TO PROVIDE A LEVEL BASE SURFACE. MUST BE SMOOTH, FREE OF LUMPS OR DEBRIS, AND EXTEND 2' BEYOND R-TANK^{HD} FOOTPRINT. A BEARING CAPACITY OF 2,000 PSF MUST BE ACHIEVED PRIOR TO INSTALLING R-TANK^{HD}.

2 R-TANK^{HD} - H-20 LOADS

MAINTENANCE PORT

THIS PORT IS USED TO PUMP WATER INTO THE SYSTEM AND RE-SUSPEND ACCUMULATED SEDIMENT SO THAT IT MAY BE PUMPED OUT. MINIMUM REQUIRED MAINTENANCE INCLUDES A QUARTERLY INSPECTION DURING THE FIRST YEAR OF OPERATION AND A YEARLY INSPECTION THEREAFTER. FLUSH AS NEEDED.



3 R-TANK^{HD} TYPICAL MAINTENANCE PORT

FOR ADDITIONAL INFORMATION PLEASE CONTACT:
ACF ENVIRONMENTAL 1-800-448-3636
www.acfenvironmental.com

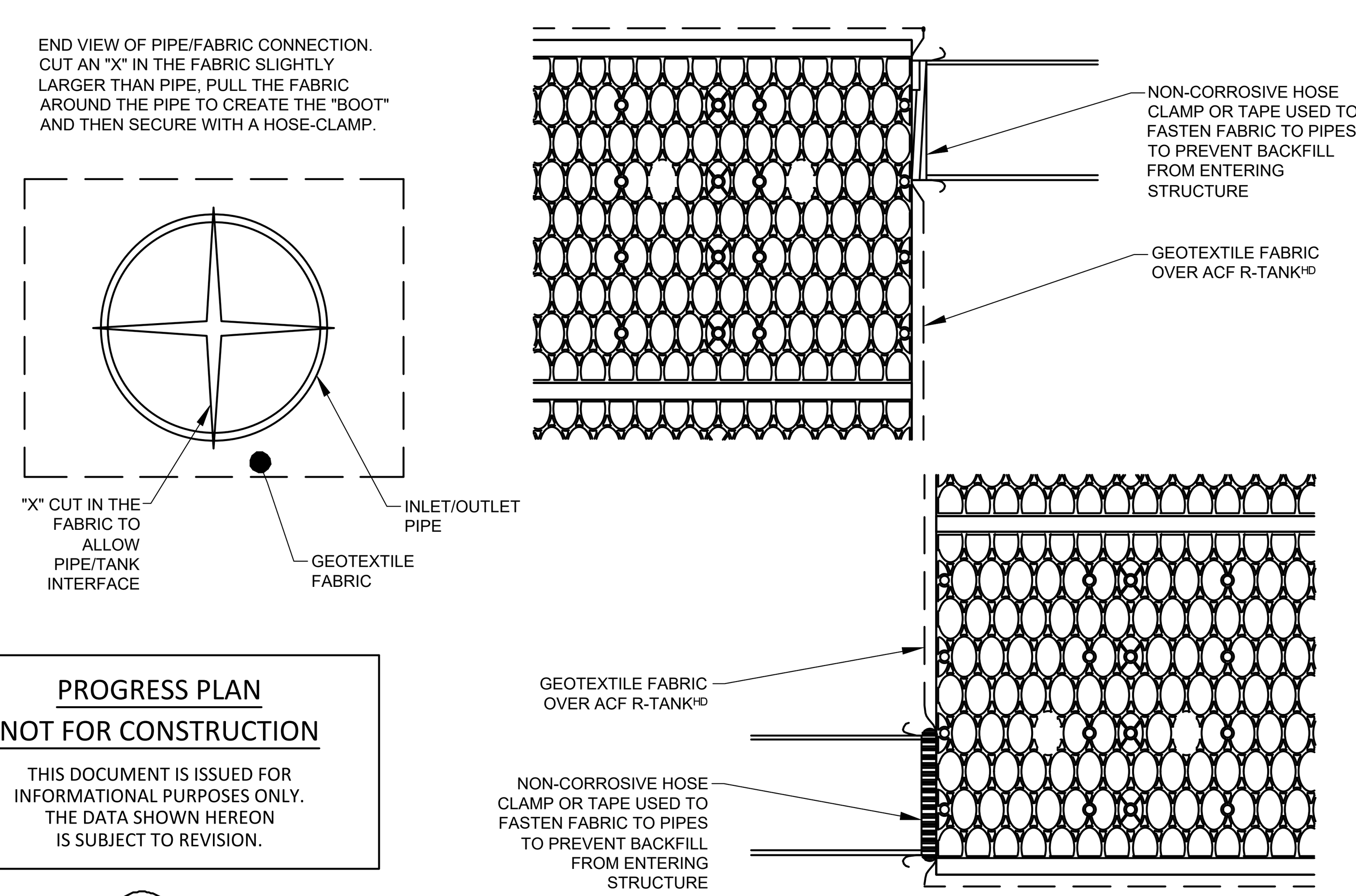
LET'S GET IT DONE

R-TANK^{HD} DETAILS FOR EXPANDED FOCALPOINT SYSTEM UNDERDRAINS

CUMBERLAND CROSSING PHASE 2

GREELY ROAD, CUMBERLAND, MAINE

END VIEW OF PIPE/FABRIC CONNECTION. CUT AN "X" IN THE FABRIC SLIGHTLY LARGER THAN PIPE, PULL THE FABRIC AROUND THE PIPE TO CREATE THE "BOOT" AND THEN SECURE WITH A HOSE-CLAMP.



PROGRESS PLAN
NOT FOR CONSTRUCTION
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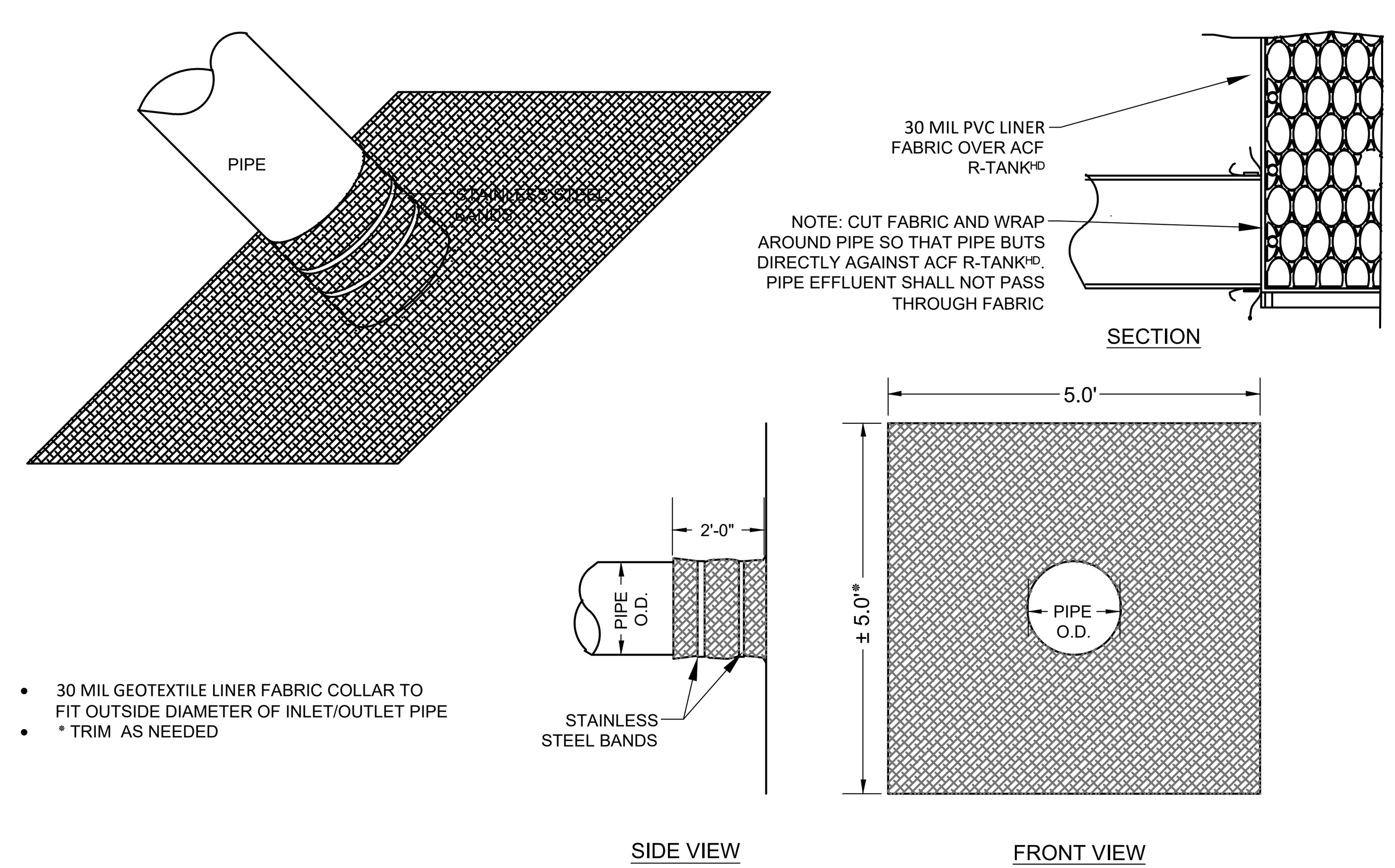
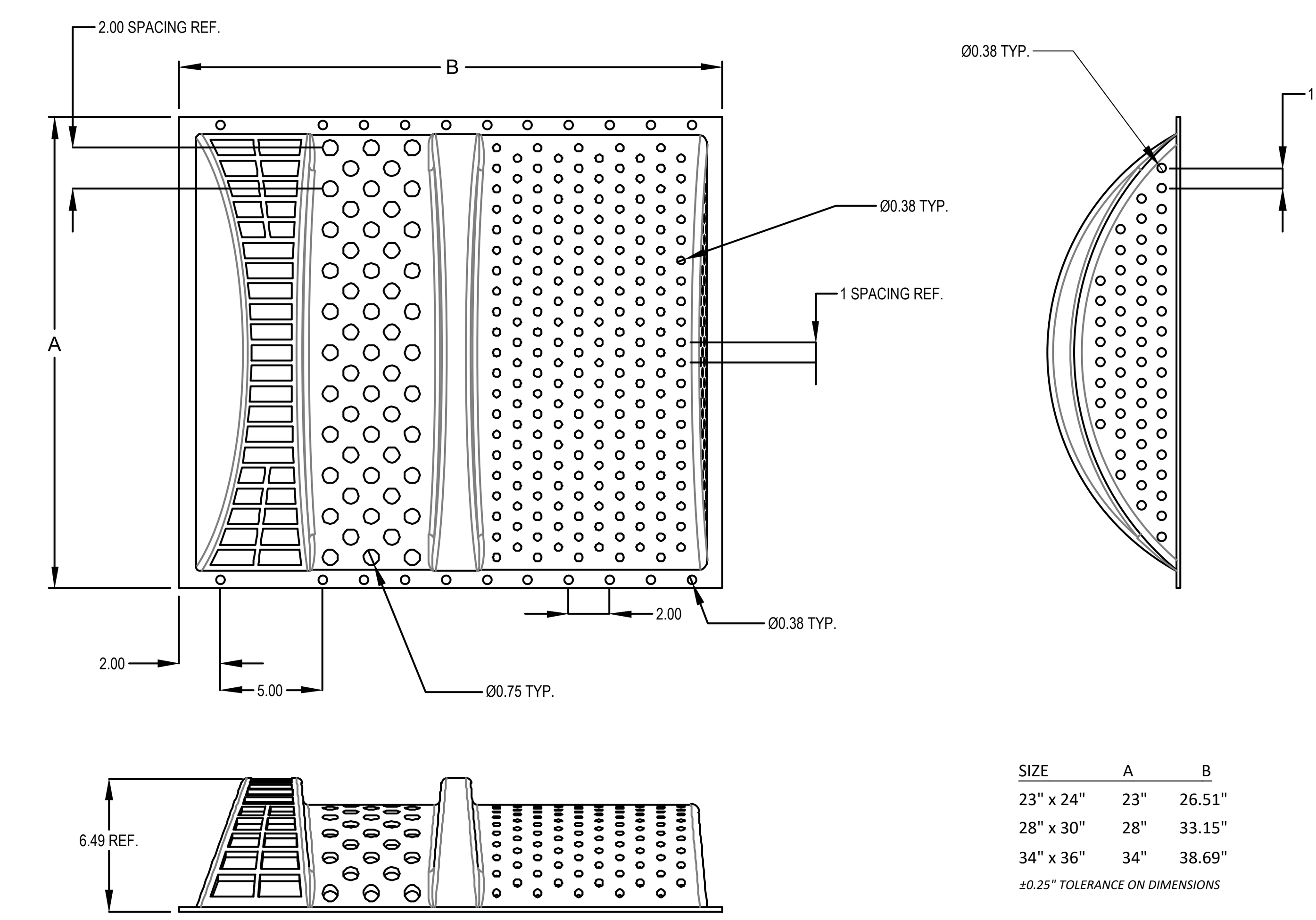
4 R-TANK^{HD} TYPICAL TANK INLET/OUTLET DETAIL



- 30 MIL GEOTEXTILE LINER FABRIC COLLAR TO FIT OUTSIDE DIAMETER OF INLET/OUTLET PIPE
- * TRIM AS NEEDED

5 GEOTEXTILE PIPE BOOT FOR R-TANK^{HD}



SIZE	A	B
23" x 24"	23"	26.51"
28" x 30"	28"	33.15"
34" x 36"	34"	38.69"

±0.25" TOLERANCE ON DIMENSIONS

6 TRASH GUARD PLUS DETAIL

PROJECT NO.
109

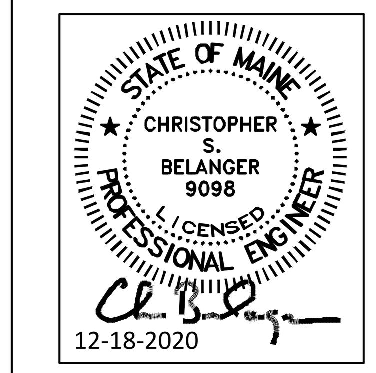
DATE
December 18, 2020

SHEET NO.
C28

REV 3/18/16

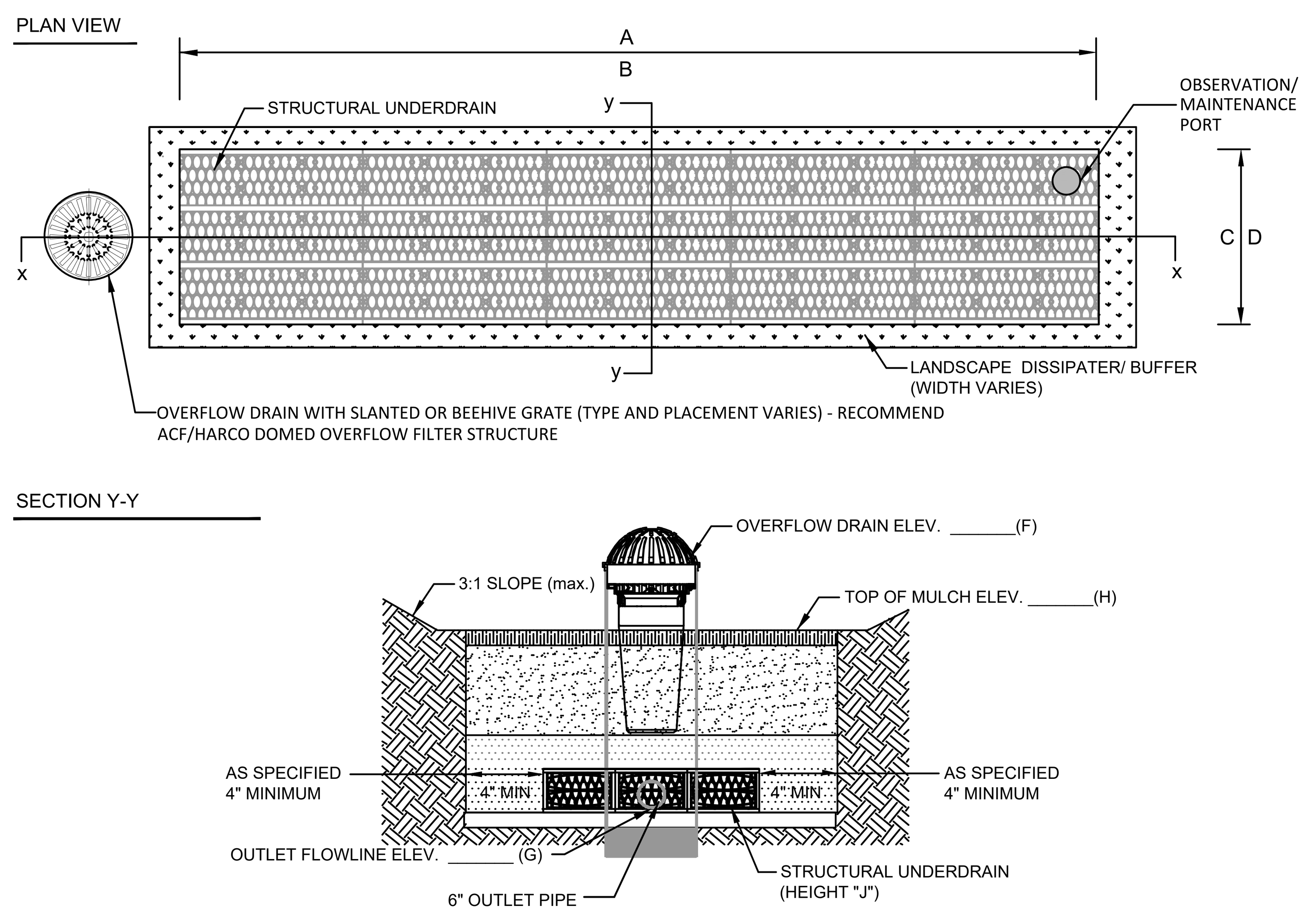
FOCALPOINT KEY DIMENSIONAL DATA							
FOCALPOINT I.D.		#1-Sta 60+00 lt.					
A	FOCALPOINT LENGTH	25.83'					
B	# UNDERDRAIN LONG	see expanded R-tank					
C	FOCALPOINT WIDTH	18'					
D	# UNDERDRAIN WIDE	see expanded R-tank					
E	WATER QUALITY VOLUME	9683 c.f.					
F	OVERFLOW ELEVATION	65.0					
G	OUTLET FLOWLINE	60.75					
H	TOP OF MULCH	64.0					
J	UNDERDRAIN HEIGHT	Double + MINI = 3.54'					

PROGRESS PLAN
NOT FOR CONSTRUCTION
THIS DOCUMENT IS ISSUED FOR INFORMATIONAL PURPOSES ONLY. THE DATA SHOWN HEREON IS SUBJECT TO REVISION.

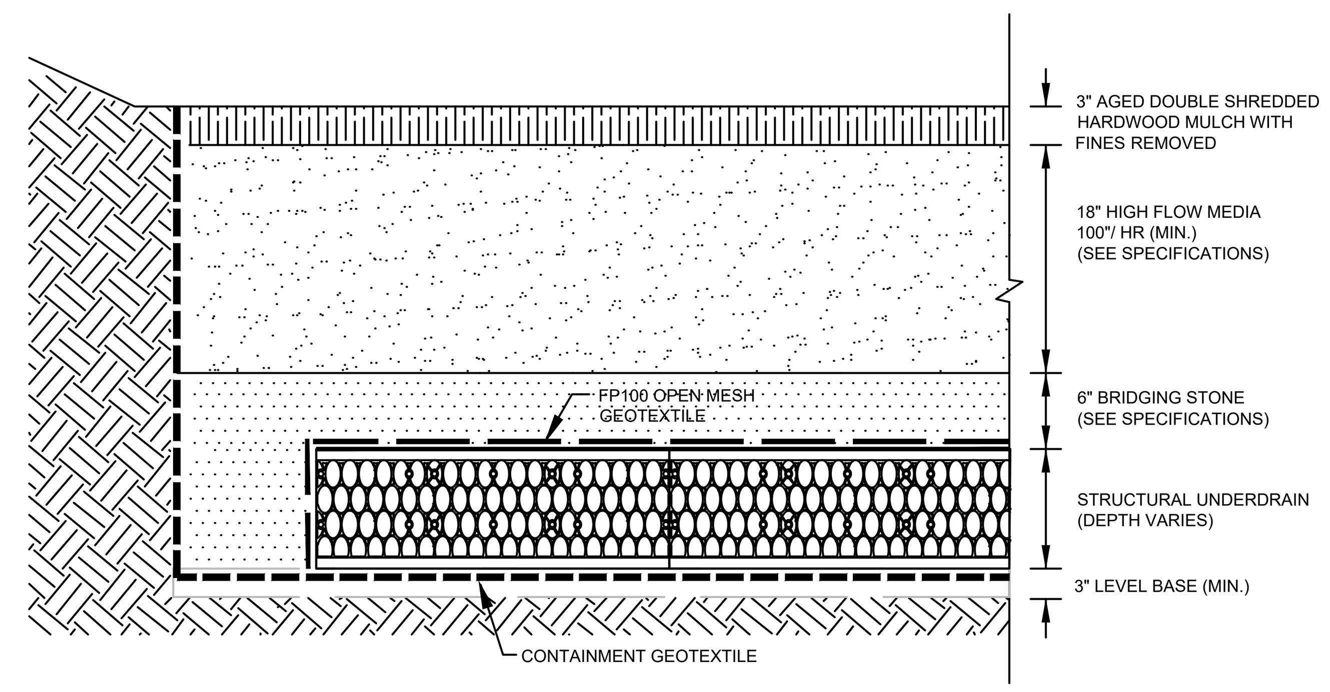


DATE	REVISION
-	-

FOR ADDITIONAL INFORMATION PLEASE CONTACT:
ACF ENVIRONMENTAL 1-800-448-3636
www.acfenvironmental.com



1 FOCALPOINT CONSTRUCTION GUIDE



FOCALPOINT HP PERFORMANCE SPECIFICATION:

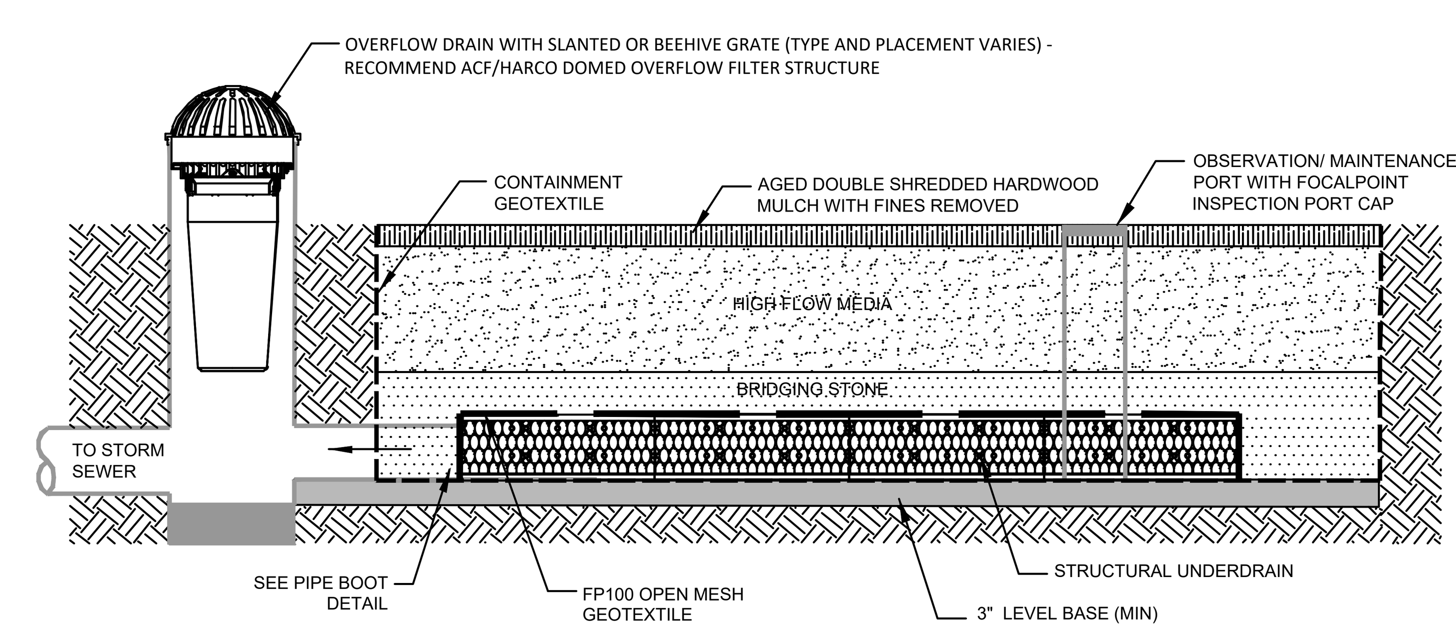
HIGH PERFORMANCE MEDIA

HIGH PERFORMANCE MEDIA MUST MEET A MINIMUM OF 100" PER HOUR INFILTRATION RATE.

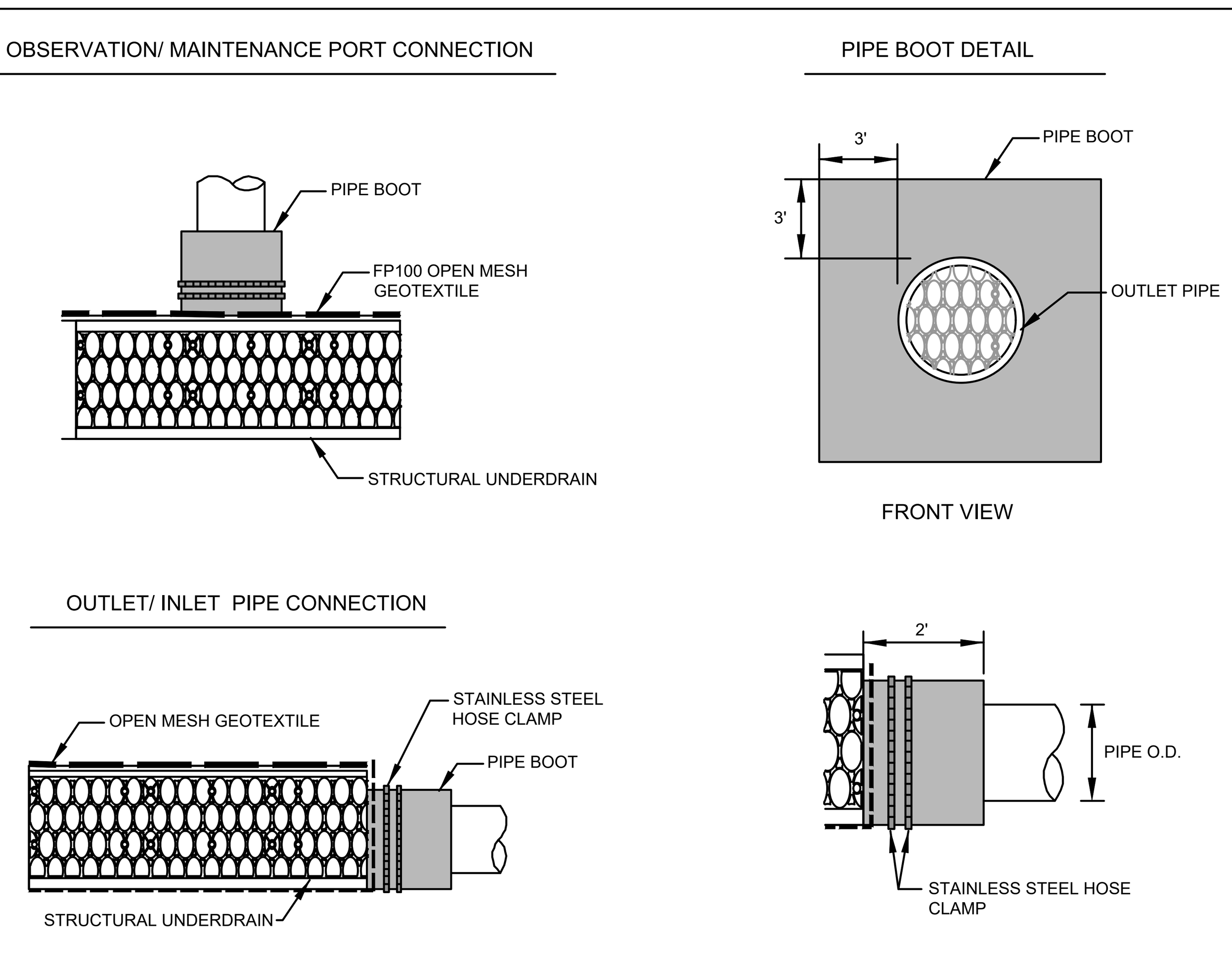
HIGH PERFORMANCE STRUCTURAL UNDERDRAIN

MUST HAVE A MINIMUM OF 19 SQUARE INCHES OF ORIFICE OPENING PER SQUARE FOOT.
MUST MEET H20 LOADING REQUIREMENTS.
MUST BE MODULAR IN NATURE AND ASSEMBLED ON SITE.
MUST HAVE MINIMUM 90% INTERIOR VOID SPACE.

2 FOCALPOINT DETAILED CROSS SECTION



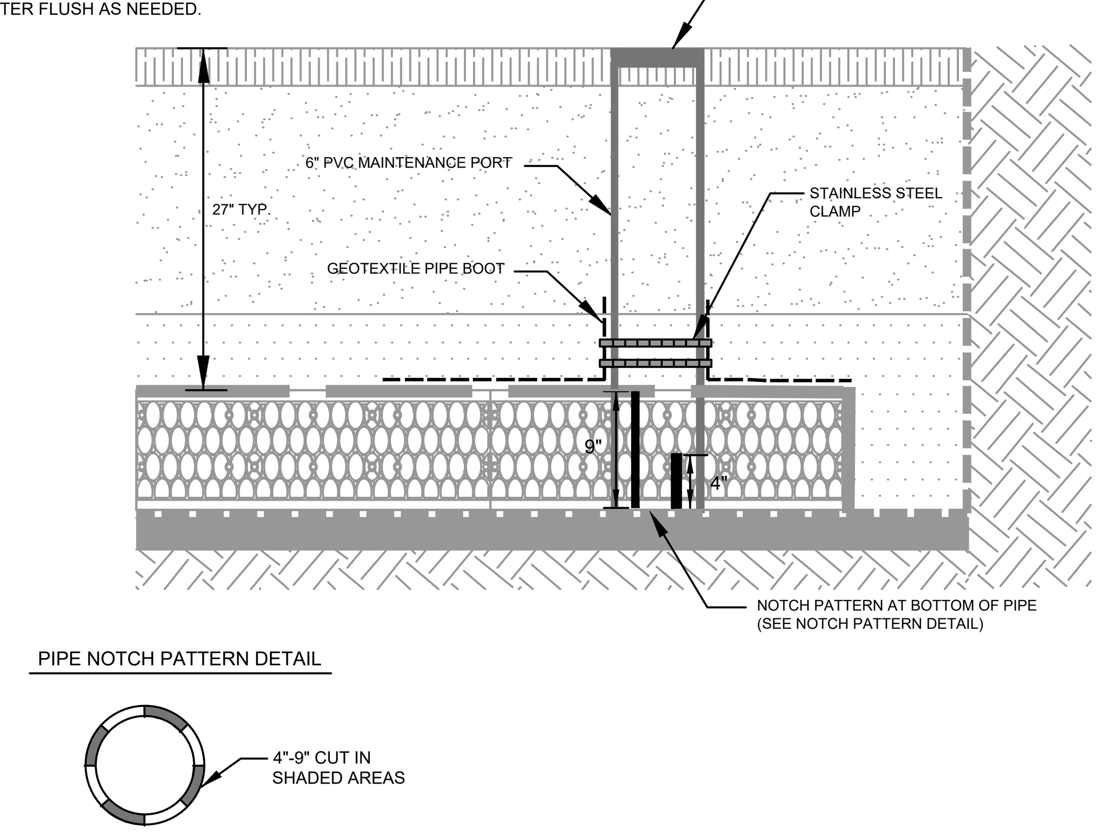
3 FOCALPOINT SECTION X-X



4 FOCALPOINT PIPE CONNECTION DETAIL

OBSERVATION/ MAINTENANCE PORT

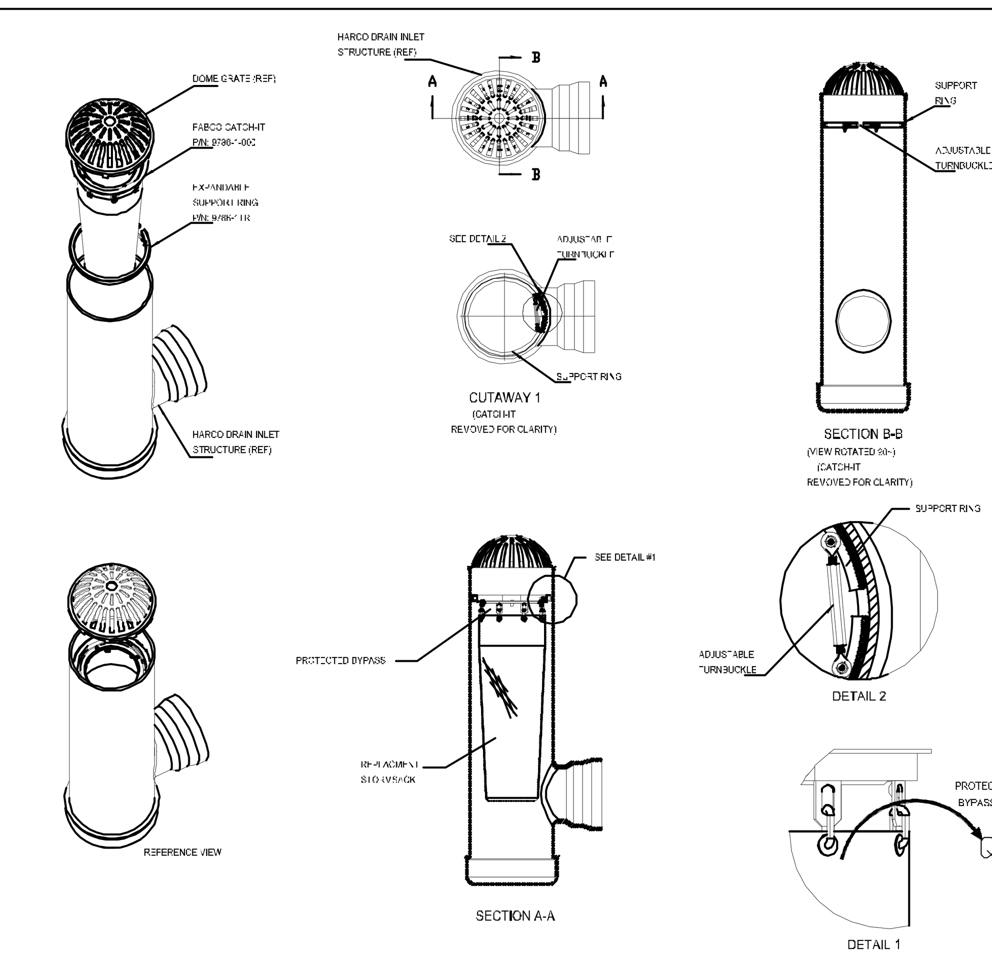
PORT USED FOR INSPECTION PURPOSES AND FOR SYSTEM MAINTENANCE AS REQUIRED. WATER SHALL BE PUMPED INTO THE SYSTEM AND RESUSPEND ACCUMULATED SEDIMENT. MINIMUM REQUIRED MAINTENANCE INCLUDES A QUARTERLY INSPECTION FOR THE FIRST YEAR OF OPERATION AND A YEARLY INSPECTION THEREAFTER FLUSH AS NEEDED.



5 FOCALPOINT OBSERVATION PORT DETAIL

NOTES:
1. STORMSACK WEIGHT (EMPTY): 12 LB MAX
2. MATERIAL:
A) SHROUD: HIGH DENSITY POLYETHYLENE (TYPICAL WALL THICKNESS .125")
B) SUPPORT HUB: CRS, POWDER COATED
C) STORMSACK: WOVEN POLYPROPYLENE GEOTEXTILE (GEOTEX 117F)
D) HARDWARE: ALUMINUM POP-RIVETS
3. RECOMMENDED MINIMUM VAULT DEPTH: 2-IN BELOW CARTRIDGE
4. TYPICAL INSTALLATION: RAISE STORM GRATE, PUSH CATCH-IT SHROUD DOWN ON FRAME SUPPORT LEDGE UNTIL LOCKING-CLIPS CLICK IN PLACE, LOWER STORM GRATE.
5. USE ONLY WITH FABCO REPLACEABLE STORMSACK.

STRUCTURE DIAMETER (INCHES)	DEBRIS CAPACITY (CF)	FILTERED FLOWRATE (CFS)	BYPASS FLOWRATE (CFS)	TOTAL SYSTEM FLOWRATE (CFS)
12	0.77	2.2	1.2	3.4
18	1.65	2.5	1.0	3.5
24	3.80	4.9	2.4	7.3
30	6.20	4.9	2.4	7.3



6 ACF/HARCO DOMED OVERFLOW FILTER RISER

FOCALPOINT SYSTEM DETAILS

Oceanview @ Cumberland

Tuttle Road, Cumberland, Maine

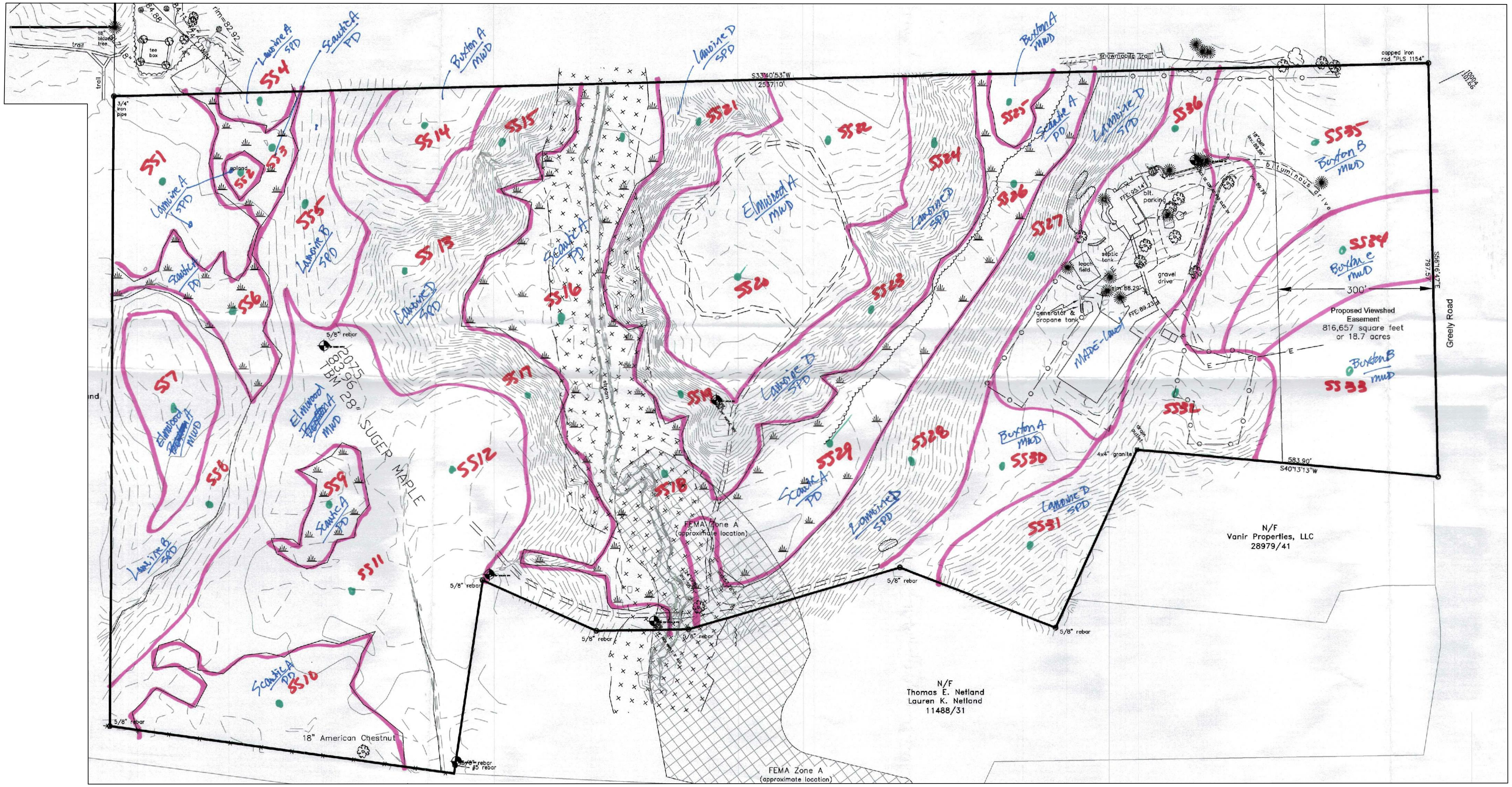
PROJECT NO.
134

DATE
December 18, 2020

SHEET NO.
C29

REV. 12/14/19

NOTE: ENGINEER OF RECORD TO REVIEW, APPROVE AND ENDORSE FINAL SITE SPECIFIC DESIGN.



Legend for Soil Maps

1. *Drainage Class*

Excessively Well Drained	*EWD*
Well Drained	*WD*
Moderately Well Drained	*MWD*
Somewhat Poorly Drained	*SPD*
Poorly Drained	*PD*
Very Poorly Drained	*VPD*

2. *Slope Designation*

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

3. *Note: High Intensity Soil Survey has been prepared by Mark Hampton Associates, Inc. in accordance with the standards adopted by the Maine Association of Professional Soil Scientists, and the Maine Board of Certification of Geologists and Soil Scientists.*

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

STATE OF MAINE
MARK J. HAMPTON
#216
CERTIFIED SOIL SCIENTIST

STATE OF MAINE
CHRISTOPHER S. BELANGER
9098
LICENSED PROFESSIONAL ENGINEER
12-18-2020

2.	12-18-2020 Re-submit to Town	CSB
1.	6-15-2020 No changes, resubmit to Town and DEP	CSB

Class B High Intensity Soil Survey

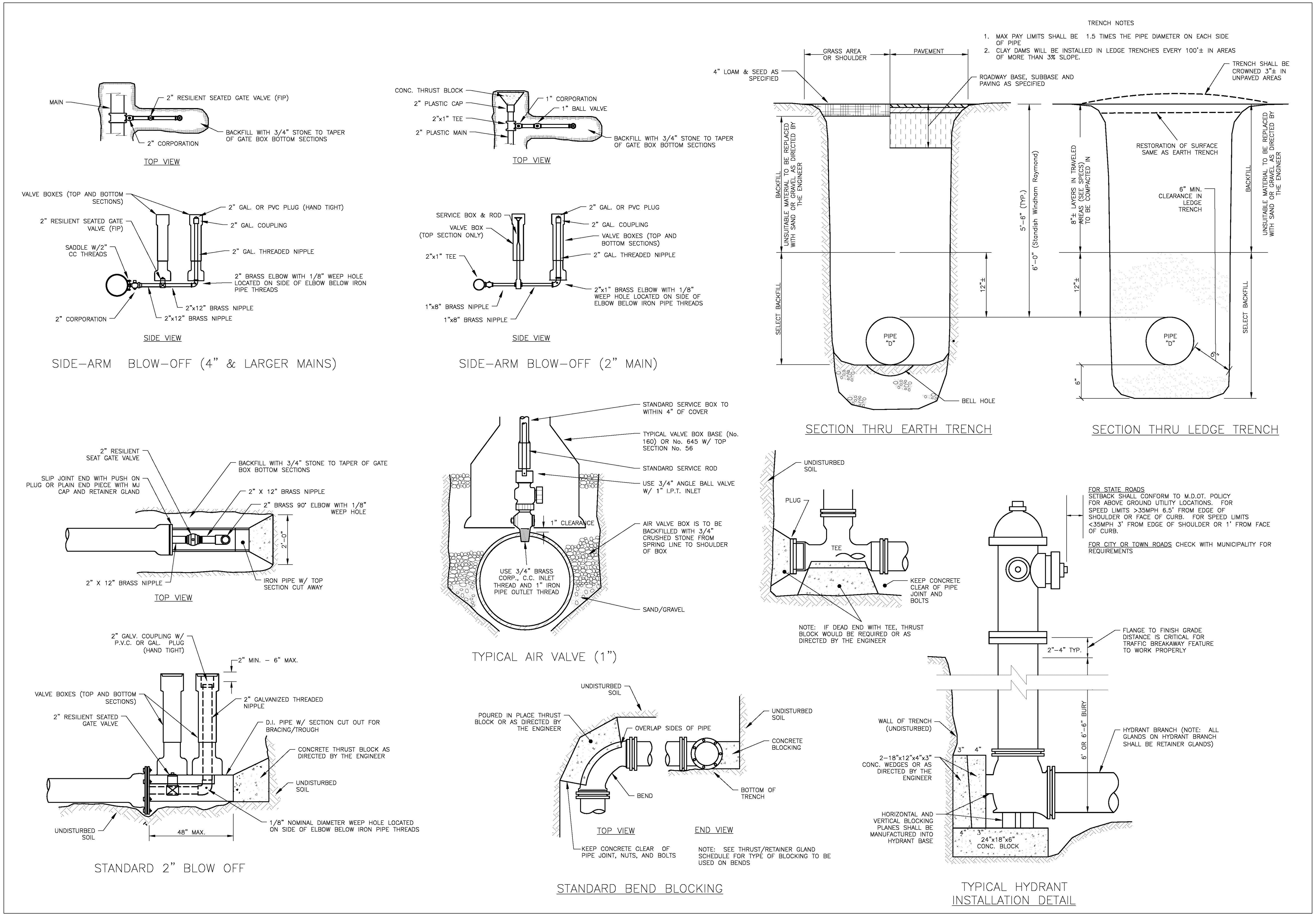
Cumberland Crossing – Phase 2
Tuttle and Greely Roads, Cumberland, Maine

Seacoast Management Company
20 Blueberry Lane, Falmouth, ME

BELANGER ENGINEERING
CONSULTING ENGINEERS
63 Second Avenue , Augusta, Maine 04330
Email: cbelanger@roadrunner.com
Ph 207-622-1462, Cell 207-242-5713

- COMMERCIAL PROJECTS
- RESIDENTIAL SUBDIVISIONS
- TOWN AND STATE APPROVALS
- SITE PLANNING & DESIGN
- STORMWATER MANAGEMENT
- ROAD AND UTILITY DESIGN
- EROSION CONTROL PLANS

FIELD WK:	SCALE: 1"=100'	SHEET:
DRN BY:	JOB #:	C32
CH'D BY:	SS:	
DATE: 12-18-2020	FILE:	



4.	12-18-2020	No changes, Submit to Town	CSB
3.	6-15-2020	No changes, re-submit to Town and DEP	CSB
2.	2-24-2020	No changes this sheet Re-submit to Town	CSB
1.	12-18-2019	Submit to Town and Maine DEP	CSB

PORTLAND WATER DISTRICT STANDARD DETAILS 1

Cumberland Crossing
Tuttle and Greely Roads, Cumberland, Maine

Seacoast Management Company
20 Blueberry Lane, Falmouth, Maine

STATE OF MAINE
CHRISTOPHER S. BELANGER
9098
LICENSED
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12-18-2020

BELANGER ENGINEERING
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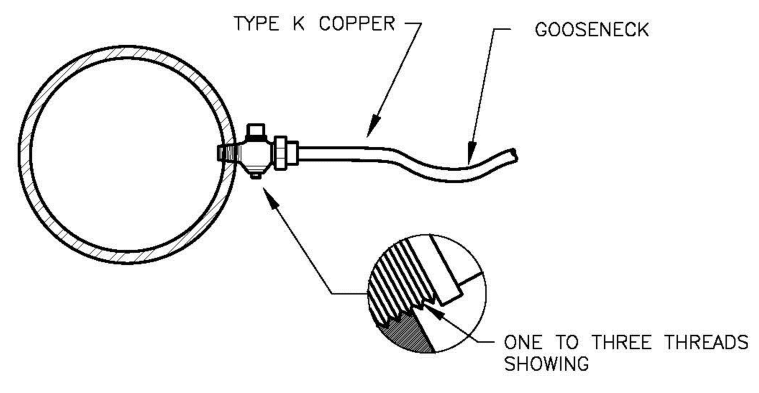
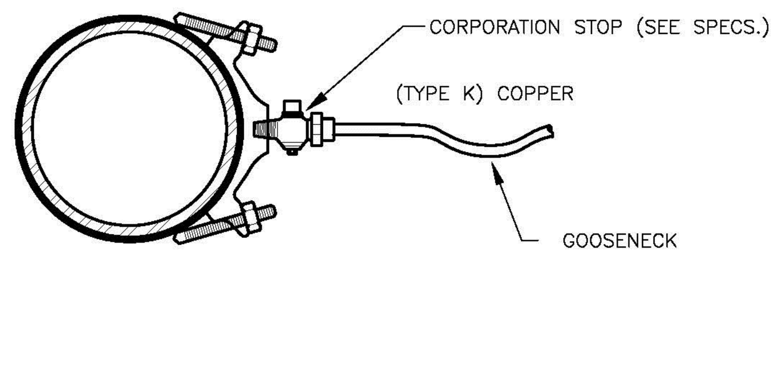
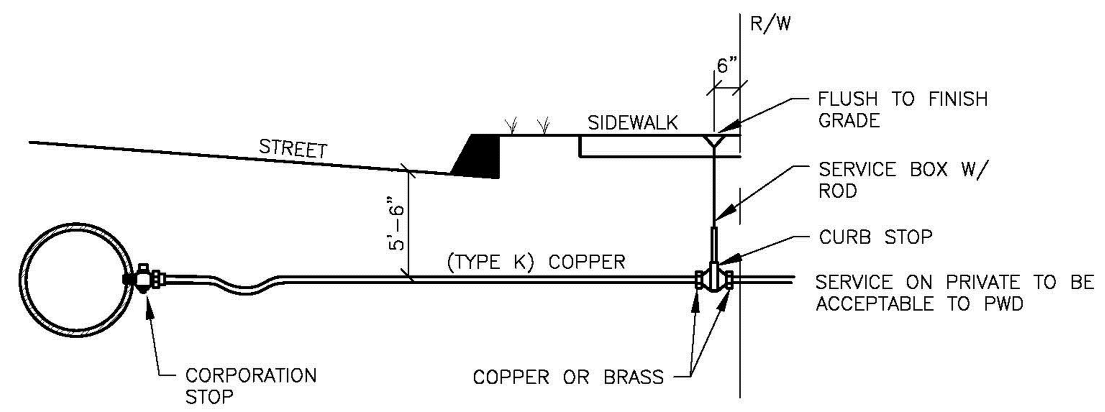
FIELD WK:	SCALE:	SHEET:
DRN BY:	JOB #: 109	C33
CH'D BY:	SS:	
DATE: 12-18-2020	FILE:	



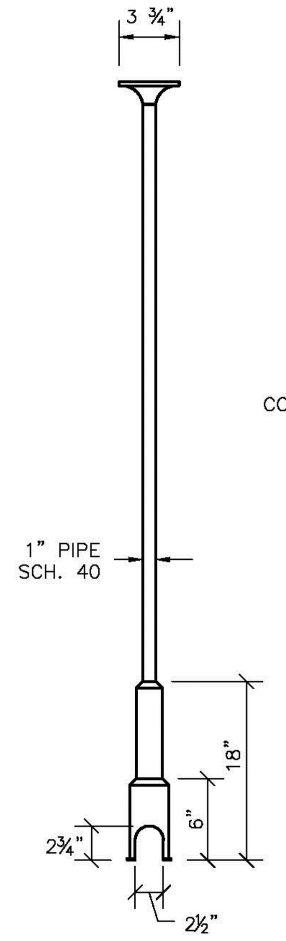
SERVICE TAP
(3/4" AND 1" C.C. THREAD)



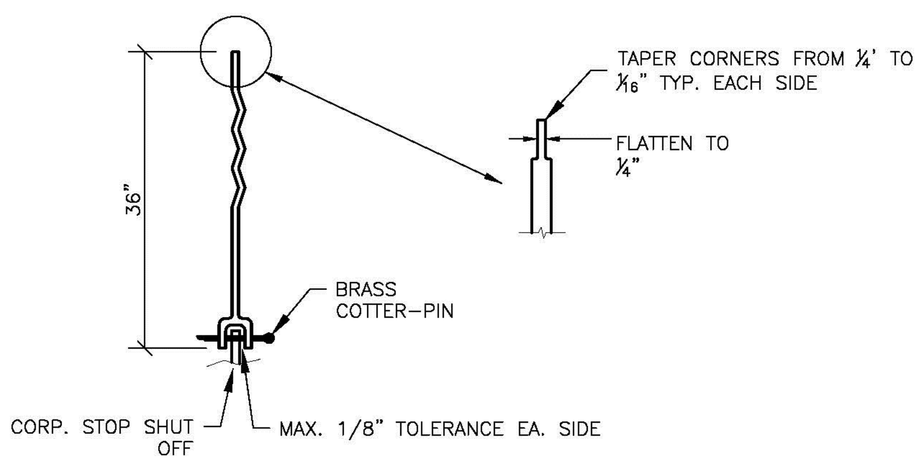
SERVICE SADDLE
(1-1/2" AND 2" C.C. THREAD)



TYPICAL SERVICE CONNECTION

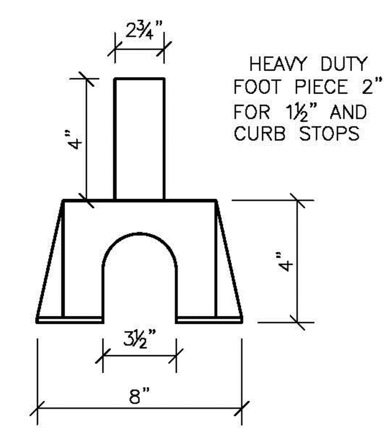


SERVICE BOX



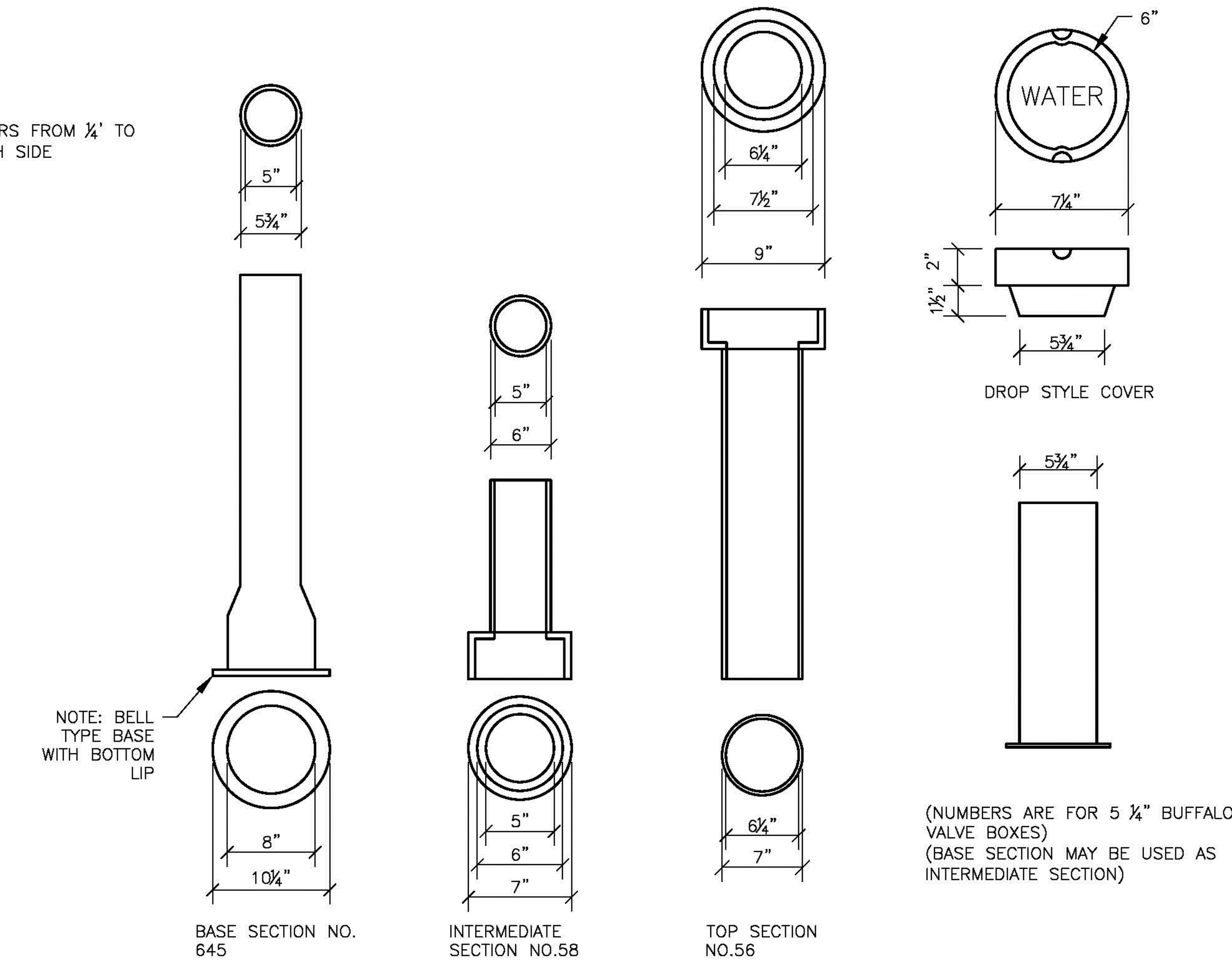
SERVICE ROD

COVER

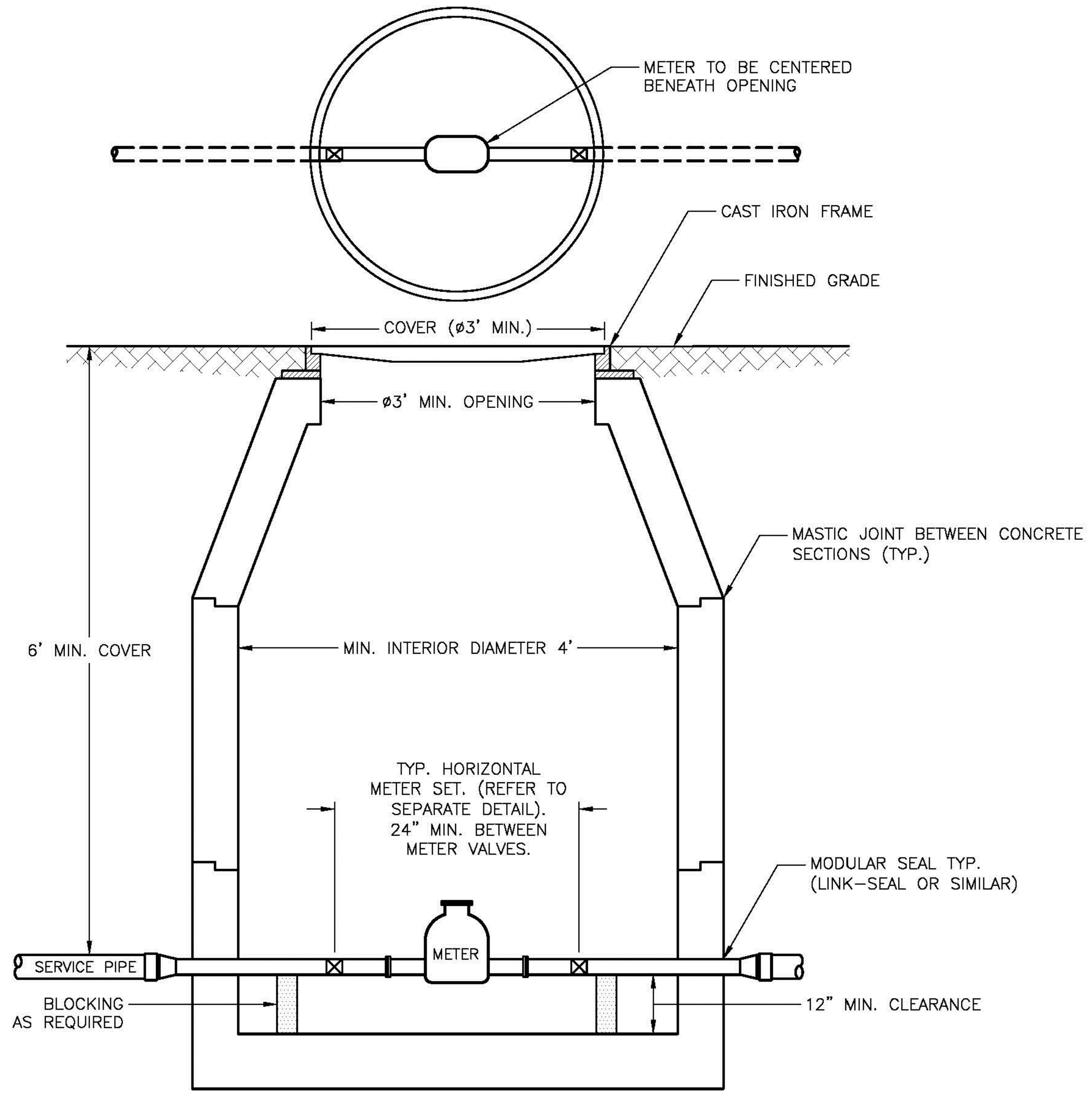


FOOT PIECE

NOTE: ANY EXTENSION OF SERVICE BOX REQUIRES:
1. 1" FEMALE IRON PIPE COUPLING
2. 1" THREADED PIPE (THIS IS TO BE A NON-WELDED, TWO PIECE ARRANGEMENT. SLIP ON ADAPTERS ARE NOT PERMISSIBLE.)



VALVE BOX & COVER



TYPICAL SMALL METER PIT
(⅝" TO 2" METER)

METER PIT AND COVER NOTES

1. THE METER PIT SHALL BE SUPPLIED AND INSTALLED BY THE CUSTOMER AND LOCATED ON PRIVATE PROPERTY BETWEEN 10' AND 20' FROM THE PROPERTY LINE.

2. THE METER PIT SHALL BE MADE OF PRECAST CONCRETE OF SUFFICIENT SIZE TO PROVIDE 5.5' MINIMUM GROUND COVER FROM FINISHED GRADE TO THE TOP OF THE SERVICE PIPE. ANY SEAMS BETWEEN CONCRETE SECTIONS SHALL BE SEALED WITH MASTIC JOINT. ALL OPENINGS IN THE CONCRETE FOR SERVICE PIPING SHALL BE SEALED WITH A MODULAR SEAL (LINK-SEAL OR SIMILAR).

3. THE INTERIOR OF THE METER PIT SHALL BE A MINIMUM OF 4' IN DIAMETER, AND THE METER PIT OPENING SHALL BE A MINIMUM OF 30" IN DIAMETER WITH A CAST IRON FRAME. THE METER PIT COVER SHALL BE CAST IRON, 32" MINIMUM IN DIAMETER, AND BE EITHER PERMANENTLY LABELED "WATER" OR HAVE NO LABEL. ANY STEEL PLATE MATERIAL SHALL BE COATED WITH A RUST INHIBITOR PAINT.

4. WALL-MOUNTED LADDER RUNGS SHALL NOT BE INSTALLED WITHIN METER PIT.

5. ALL PIPING INSIDE AND EXTENDING THROUGH THE METER PIT SHALL BE MADE OF COPPER, WITH A MINIMUM OF 6" CLEARANCE FROM THE METER PIT FLOOR. BLOCKING SHALL BE INSTALLED AS REQUIRED TO SUPPORT THE PIPE.

6. CUSTOMER SHALL ENSURE THE METER PIT AND COVER ARE PROPERLY RATED FOR TRAFFIC FLOW, IF APPLICABLE.

METER NOTES

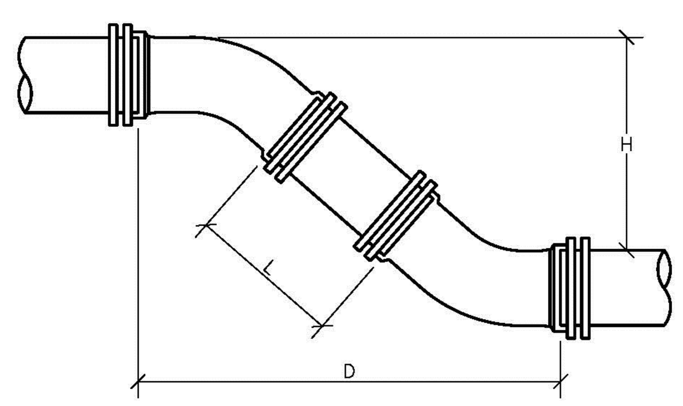
7. ONLY PWD PERSONNEL ARE AUTHORIZED TO INSTALL WATER METERS. PWD PERSONNEL ARE ADDITIONALLY AUTHORIZED TO OPERATE METER VALVES AS NEEDED FOR INSTALLATION AND MAINTENANCE.

8. PWD WILL SUPPLY THE WATER METER. ALL OTHER FITTINGS, INCLUDING A METER RESETTER FOR 1" OR SMALLER METERS, SHALL BE SUPPLIED AND INSTALLED BY CUSTOMER.

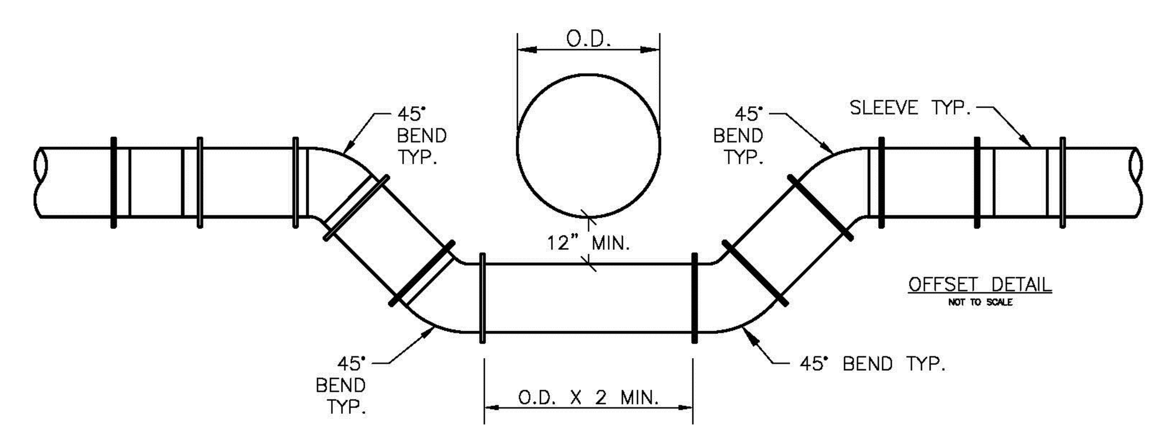
9. FOR 1.5" AND 2" METERS, CUSTOMER SHALL INSTALL A FLANGED METER SPOOL PIECE, SUPPLIED BY PWD AT NO ADDITIONAL CHARGE, PRIOR TO METER SET. THE METER SPOOL WILL BE MADE AVAILABLE FOR CUSTOMER PICKUP AT PWD CUSTOMER SERVICE, 225 DOUGLASS STREET, PORTLAND DURING NORMAL BUSINESS HOURS.

10. CUSTOMER WILL INSTALL TWO BALL VALVES AT LEAST 24" APART FOR METER INSTALLATION, ALLOWING FOR THE WATER METER TO BE CENTERED UNDER THE METER PIT OPENING. THE BALL VALVES SHALL BE SOLDERED IN PLACE.

11. THE METER PIT MAY HOUSE UP TO TWO 5/8", 3/4" OR 1" METERS WITH PRIOR APPROVAL FROM PWD.



	6" PIPE		8" PIPE		12" PIPE	
H	D	L	D	L	D	L
12"	1' 6-1/2"	0' 10-1/2"	1' 7-1/2"	0' 9-1/2"	1' 11-1/2"	0' 5-1/2"
13"	1' 7-1/2"	0' 11-7/8"	1' 8-1/2"	0' 10-7/8"	2' 0-1/2"	0' 6-7/8"
14"	1' 8-1/2"	1' 1-5/16"	1' 9-1/2"	1' 0-5/16"	2' 1-1/2"	0' 8-5/16"
15"	1' 9-1/2"	1' 2-11/16"	1' 10-1/2"	1' 1-11/16"	2' 2-1/2"	0' 9-11/16"
16"	1' 10-1/2"	1' 4-1/8"	1' 11-1/2"	1' 3-1/8"	2' 3-1/2"	0' 11-1/8"
17"	1' 11-1/2"	1' 5-9/16"	2' 0-1/2"	1' 4-9/16"	2' 4-1/2"	1' 0-9/16"
18"	2' 0-1/2"	1' 6-15/16"	2' 1-1/2"	1' 5-15/16"	2' 5-1/2"	1' 1-15/16"
19"	2' 1-1/2"	1' 8-3/8"	2' 2-1/2"	1' 7-3/8"	2' 6-1/2"	1' 3-3/8"
20"	2' 2-1/2"	1' 9-13/16"	2' 3-1/2"	1' 8-13/16"	2' 7-1/2"	1' 4-13/16"
21"	2' 3-1/2"	1' 11-3/16"	2' 4-1/2"	1' 10-3/16"	2' 8-1/2"	1' 6-3/16"
22"	2' 4-1/2"	2' 0-5/8"	2' 5-1/2"	1' 11-5/8"	2' 9-1/2"	1' 7-5/8"
23"	2' 5-1/2"	2' 2"	2' 6-1/2"	2' 1"	2' 10-1/2"	1' 9"
24"	2' 6-1/2"	2' 3-7/16"	2' 7-1/2"	2' 2-7/16"	2' 11-1/2"	1' 10-7/16"
25"	2' 7-1/2"	2' 4-7/8"	2' 8-1/2"	2' 3-7/8"	3' 0-1/2"	1' 11-7/8"
26"	2' 8-1/2"	2' 6-1/4"	2' 9-1/2"	2' 5-1/4"	3' 1-1/2"	2' 1-1/4"
27"	2' 9-1/2"	2' 7-11/16"	2' 10-1/2"	2' 6-11/16"	3' 2-1/2"	2' 2-11/16"
28"	2' 10-1/2"	2' 9-1/8"	2' 11-1/2"	2' 8-1/8"	3' 3-1/2"	2' 4-1/8"
29"	2' 11-1/2"	2' 10-1/2"	3' 0-1/2"	2' 9-1/2"	3' 4-1/2"	2' 5-1/2"
30"	3' 0-1/2"	2' 11-15/16"	3' 1-1/2"	2' 10-15/16"	3' 5-1/2"	2' 6-15/16"
31"	3' 1-1/2"	3' 1-5/16"	3' 2-1/2"	3' 0-5/16"	3' 6-1/2"	2' 8-5/16"
32"	3' 2-1/2"	3' 2-3/4"	3' 3-1/2"	3' 1-3/4"	3' 7-1/2"	2' 9-3/4"
33"	3' 3-1/2"	3' 4-3/16"	3' 4-1/2"	3' 3-3/16"	3' 8-1/2"	2' 11-3/16"
34"	3' 4-1/2"	3' 5-9/16"	3' 5-1/2"	3' 4-9/16"	3' 9-1/2"	3' 0-9/16"
35"	3' 5-1/2"	3' 7"	3' 6-1/2"	3' 6"	3' 10-1/2"	3' 2"
36"	3' 6-1/2"	3' 8-7/16"	3' 7-1/2"	3' 7-7/16"	3' 11-1/2"	3' 3-7/16"
37"	3' 7-1/2"	3' 9-13/16"	3' 8-1/2"	3' 8-13/16"	4' 0-1/2"	3' 4-13/16"
38"	3' 8-1/2"	3' 11-1/4"	3' 9-1/2"	3' 10-1/4"	4' 1-1/2"	3' 6-1/4"
39"	3' 9-1/2"	4' 0-11/16"	3' 10-1/2"	3' 11-11/16"	4' 2-1/2"	3' 7-11/16"
40"	3' 10-1/2"	4' 2-1/16"	3' 11-1/2"	4' 1-1/16"	4' 3-1/2"	3' 9-1/16"
41"	3' 11-1/2"	4' 3-1/2"	4' 0-1/2"	4' 2-1/2"	4' 4-1/2"	3' 10-1/2"
42"	4' 0-1/2"	4' 4-7/8"	4' 1-1/2"	4' 3-7/8"	4' 5-1/2"	3' 11-7/8"
43"	4' 1-1/2"	4' 6-5/16"	4' 2-1/2"	4' 5-5/16"	4' 6-1/2"	4' 1-5/16"
44"	4' 2-1/2"	4' 7-3/4"	4' 3-1/2"	4' 6-3/4"	4' 7-1/2"	4' 2-3/4"
45"	4' 3-1/2"	4' 9-1/8"	4' 4-1/2"	4' 8-1/8"	4' 8-1/2"	4' 4-1/8"
46"	4' 4-1/2"	4' 10-9/16"	4' 5-1/2"	4' 9-9/16"	4' 9-1/2"	4' 5-9/16"
47"	4' 5-1/2"	4' 11-15/16"	4' 6-1/2"	4' 10-15/16"	4' 10-1/2"	4' 6-15/16"
48"	4' 6-1/2"	5' 1-3/8"	4' 7-1/2"	5' 0-3/8"	4' 11-1/2"	4' 8-3/8"
49"	4' 7-1/2"	5' 2-13/16"	4' 8-1/2"	5' 1-13/16"	5' 0-1/2"	4' 9-13/16"
50"	4' 8-1/2"	5' 4-3/16"	4' 9-1/2"	5' 3-3/16"	5' 1-1/2"	4' 11-3/16"
51"	4' 9-1/2"	5' 5-5/8"	4' 10-1/2"	5' 4-5/8"	5' 2-1/2"	5' 0-5/8"
52"	4' 10-1/2"	5' 7-1/16"	4' 11-1/2"	5' 6-1/16"	5' 3-1/2"	5' 2-1/16"
53"	4' 11-1/2"	5' 8-7/16"	5' 0-1/2"	5' 7-7/16"	5' 4-1/2"	5' 3-7/16"
54"	5' 0-1/2"	5' 9-7/8"	5' 1-1/2"	5' 8-7/8"	5' 5-1/2"	5' 4-7/8"
55"	5' 1-1/2"	5' 11-5/16"	5' 2-1/2"	5' 10-5/16"	5' 6-1/2"	5' 6-5/16"



NOTE: DIMENSIONS APPLICABLE FOR SIGMA COMPACT BENDS. FOR TYLER COMPACT BENDS, ADD 1/2" TO "D" DIMENSION AND SUBTRACT 1/2" FROM "L" DIMENSION. FOR OTHER FITTINGS REFER TO MANUFACTURER'S RECOMMENDATIONS.

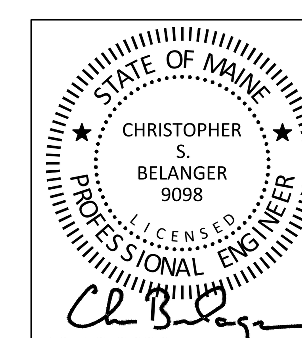
TYPICAL MAIN OFFSET

4.	12-18-2020	No changes, re-submit to Town	CSB
3.	6-15-2020	No changes, re-submit to Town and DEP	CSB
2.	2-24-2020	Respond to Town Comments Re-submit to Town	CSB
1.	12-18-2019	Submit to Town and Maine DEP	CSB

PORTLAND WATER DISTRICT
STANDARD DETAILS 2

Cumberland Crossing - Phase 2
Tuttle and Greely Roads, Cumberland, Maine

Seacoast Management Company
20 Blueberry Lane, Falmouth, Maine



12-18-2020

BELANGER ENGINEERING
CONSULTING ENGINEERS
• COMMERCIAL PROJECTS
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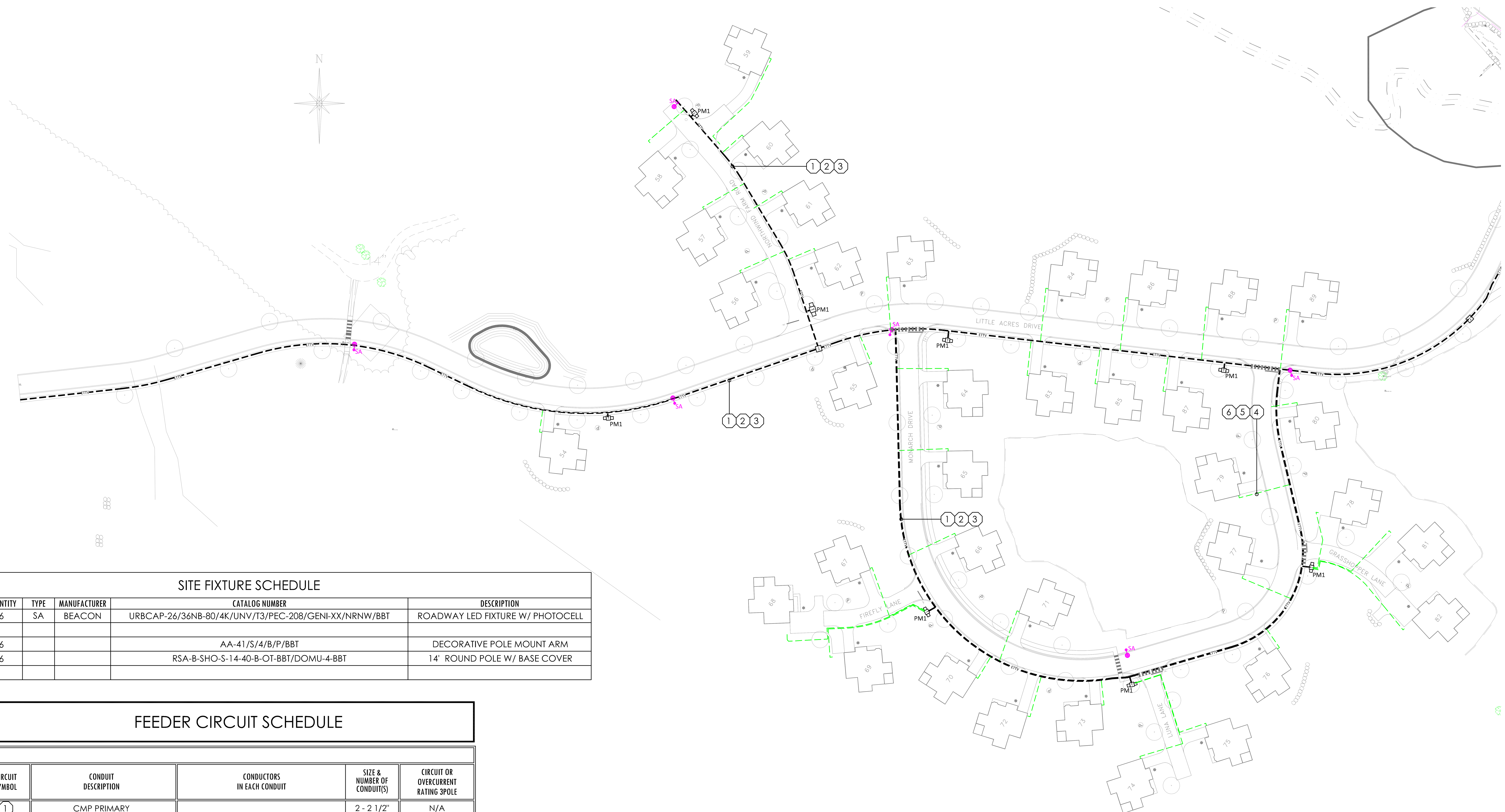
FIELD WK:	SCALE:	SHEET:
DRN BY:	JOB #: 109	C34
CH'D BY:	SS:	
DATE: 12-18-2020	FILE:	



SITE FIXTURE SCHEDULE

QUANTITY	TYPE	MANUFACTURER	CATALOG NUMBER	DESCRIPTION
6	SA	BEACON	URBCAP-26/36NB-80/4K/UNV/T3/PEC-208/GENI-XX/NRNW/BBT	ROADWAY LED FIXTURE W/ PHOTOCELL
6			AA-41/S/4/B/P/BBT	DECORATIVE POLE MOUNT ARM
6			RSA-B-SHO-S-14-40-B-OT-BBT/DOMU-4-BBT	14' ROUND POLE W/ BASE COVER

FEEDER CIRCUIT SCHEDULE

CIRCUIT SYMBOL	CONDUIT DESCRIPTION	CONDUCTORS IN EACH CONDUIT	SIZE & NUMBER OF CONDUIT(S)	CIRCUIT OR OVERCURRENT RATING 3POLE
1	CMP PRIMARY		2 - 2 1/2"	N/A
2	TELEPHONE PRIMARY		1 - 4"	N/A
3	CABLE TV PRIMARY		1 - 4"	N/A
4	BUILDING SECONDARY POWER	2-#4/0 & 1-#2/0 URD ALUMINUM	1 - 2 1/2"	N/A
5	TELEPHONE SECONDARY		1 - 2"	N/A
6	CABLE TV SECONDARY		1 - 2"	N/A
7	SITE LIGHTING	2-#8 & 1-#10 THHN COPPER	1 - 1"	N/A

GENERAL NOTES:

1. PROVIDE AN EXTRA CONDUIT FOR TELEPHONE & CABLE TV AT PRIMARY ROAD CROSSINGS.
2. DIRECTIONAL DRILLING AT STREAM TO BE LOCATED IN FIELD.

Anthony Mancini, Inc.
179 SHERIDAN ST.
PORTLAND, ME 04101
P: (207)774-5829 F: (207)772-1686
E: info@mancinielectric.com
"We appreciate Your Business."

NO.	DATE	DESCRIPTION

PROJECT NAME & ADDRESS:
Oceanview at Cumberland
291 Tuttle Road
Cumberland, Maine

SHEET NAME:
Site - Phase II

Checked By: G.MANCINI
Drawn By: A.AMES
Date: 12.18.2020
Scale: 1" = 60'-0"

SHEET:
SE-1

SITE FIXTURE SCHEDULE

QUANTITY	TYPE	MANUFACTURER	CATALOG NUMBER	DESCRIPTION
5	SA	BEACON	URBCAP-26/36NB-80/4K/UNV/T3/PEC-208/GENI-XX/NRNW/BBT	ROADWAY LED FIXTURE W/ PHOTOCELL
1	SB	BEACON	URBCAP-26/36NB-80/4K/UNV/T5W/PEC-208/GENI-XX/NRNW/BBT	ROADWAY LED FIXTURE W/ PHOTOCELL
6			AA-41/S/4/B/P/BBT	DECORATIVE POLE MOUNT ARM
6			RSA-B-SHO-S-14-40-B-OT-BBT/DOMU-4-BBT	14' ROUND POLE W/ BASE COVER

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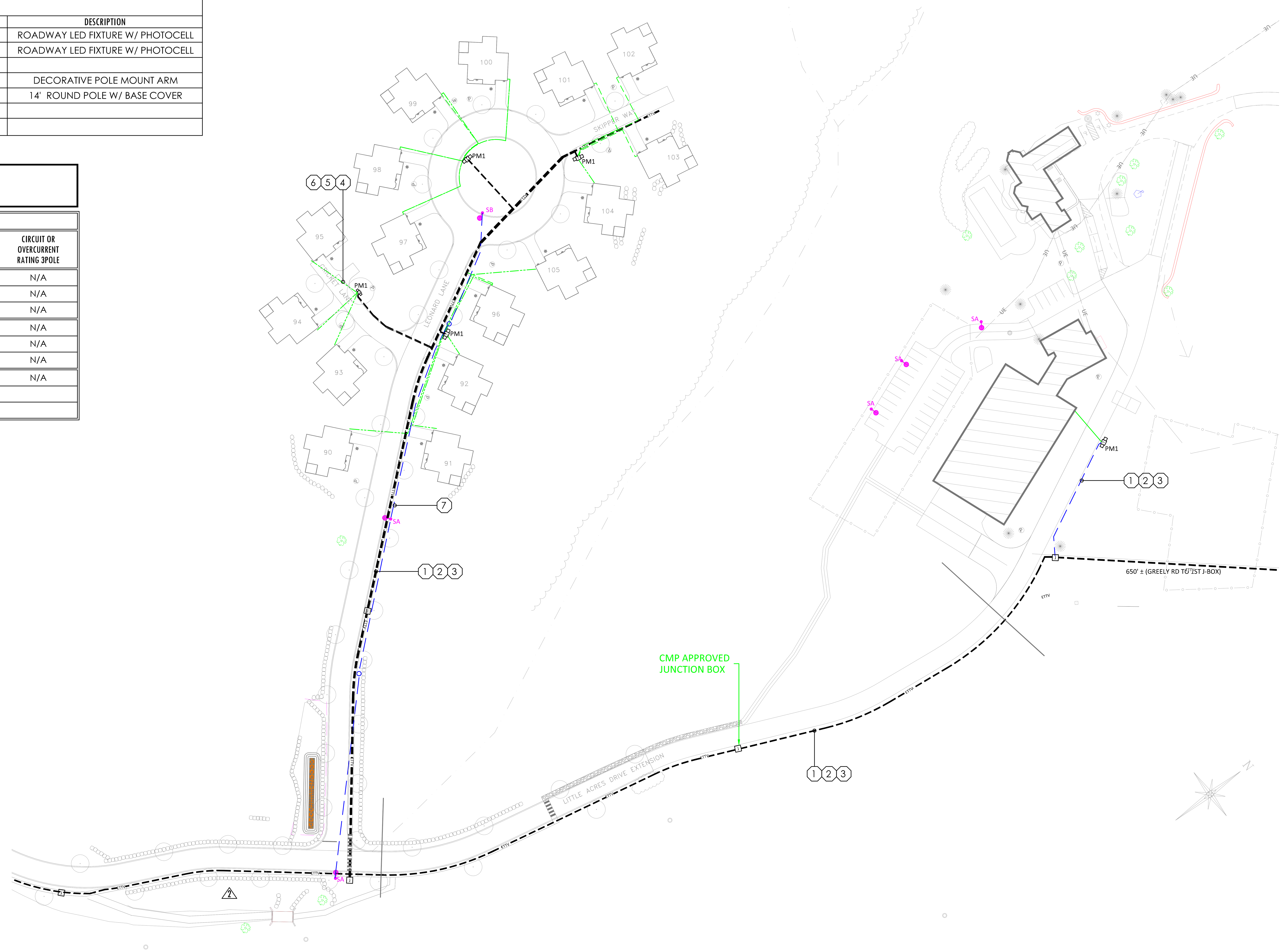
5	TELEPHONE SECONDARY		1 - 2"	N/A
6	CABLE TV SECONDARY		1 - 2"	N/A
7	SITE LIGHTING	2-#8 & 1-#10 THHN COPPER	1 - 1"	N/A

GENERAL NOTES:

1. PROVIDE AN EXTRA CONDUIT FOR TELEPHONE & CABLE TV AT PRIMARY ROAD CROSSINGS.
2. DIRECTIONAL DRILLING AT STREAM TO BE LOCATED IN FIELD.



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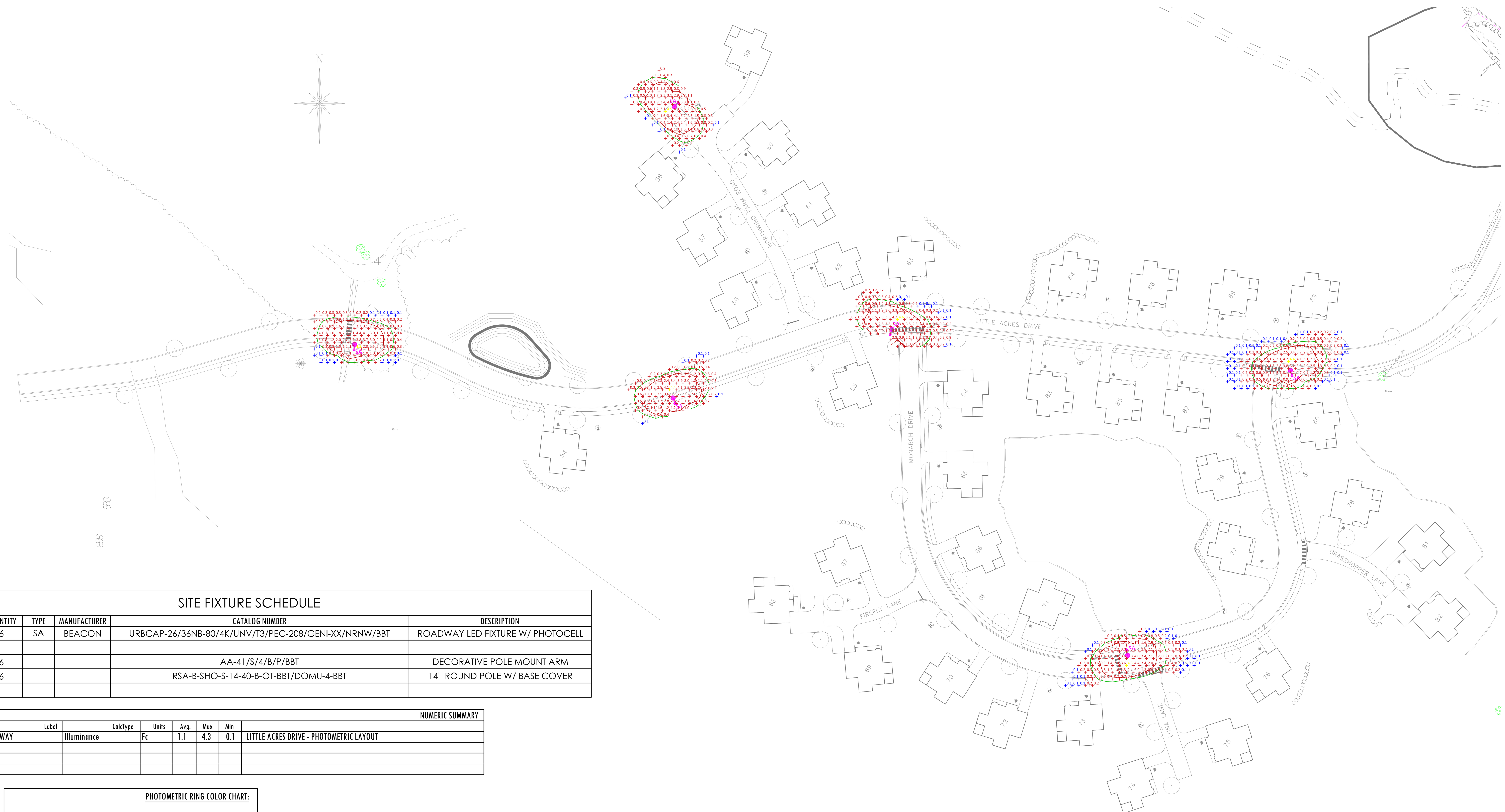
PROJECT NAME & ADDRESS:
Oceanview at Cumberland
291 Tuttle Road
Cumberland, Maine

SHEET NAME:
Site - Phase II

Checked By: G.MANCINI
Drawn By: A.AMES
Date: 12.18.2020
Scale: 1" = 60'-0"

SHEET:
SE-2



SITE FIXTURE SCHEDULE

QUANTITY	TYPE	MANUFACTURER	CATALOG NUMBER	DESCRIPTION
6	SA	BEACON	URBCAP-26/36NB-80/4K/UNV/T3/PEC-208/GENI-XX/NRNW/BBT	ROADWAY LED FIXTURE W/ PHOTOCELL
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6			RSA-B-SHO-S-14-40-B-OT-BBT/DOMU-4-BBT	14' ROUND POLE W/ BASE COVER

NUMERIC SUMMARY

Label	CalcType	Units	Avg.	Max	Min	
ROADWAY	Illuminance	Fc	1.1	4.3	0.1	LITTLE ACRES DRIVE - PHOTOMETRIC LAYOUT

PHOTOMETRIC RING COLOR CHART:

- 5 FOOT CANDLES
- 2 FOOT CANDLES
- 1 FOOT CANDLES
- 1/2 FOOT CANDLE

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Anthony Mancini Inc. 1966

NO.	DATE	DESCRIPTION

PROJECT NAME & ADDRESS:
Oceanview at Cumberland
291 Tuttle Road
Cumberland, Maine

SHEET NAME:
Site - Phase II - Photometrics

Checked By: G.MANCINI
Drawn By: A.AMES
Date: 12.18.2020
Scale: 1" = 60'-0"

SHEET:
SEP-1

SITE FIXTURE SCHEDULE				
QUANTITY	TYPE	MANUFACTURER	CATALOG NUMBER	DESCRIPTION
5	SA	BEACON	URBCAP-26/36NB-80/4K/UNV/T3/PEC-208/GENI-XX/NRNW/BBT	ROADWAY LED FIXTURE W/ PHOTOCELL
1	SB	BEACON	URBCAP-26/36NB-80/4K/UNV/T5W/PEC-208/GENI-XX/NRNW/BBT	ROADWAY LED FIXTURE W/ PHOTOCELL
6			AA-41/S/4/B/P/BBT	DECORATIVE POLE MOUNT ARM
6			RSA-B-SHO-S-14-40-B-OT-BBT/DOMU-4-BBT	14' ROUND POLE W/ BASE COVER

NUMERIC SUMMARY						
Label	CalcType	Units	Avg.	Max	Min	
ROADWAY	Illuminance	Fc	1.1	4.3	0.1	LITTLE ACRES DRIVE - PHOTOMETRIC LAYOUT
PARKING	Illuminance	Fc	1.5	4.7	0.1	COMMUNITY CENTER PARKING AREA

PHOTOMETRIC RING COLOR CHART:

5 FOOT CANDLES

2 FOOT CANDLES

1 FOOT CANDLES

1/2 FOOT CANDLE

LIGHTING NOTES:

COMMUNITY CENTER PARKING & COMMUNITY CENTER AREA LIGHTING CONTROLLED VIA TIME CLOCK.

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NO.	DATE	DESCRIPTION

PROJECT NAME & ADDRESS:

Oceanview at Cumberland
291 Tuttle Road
Cumberland, Maine

SHEET NAME:

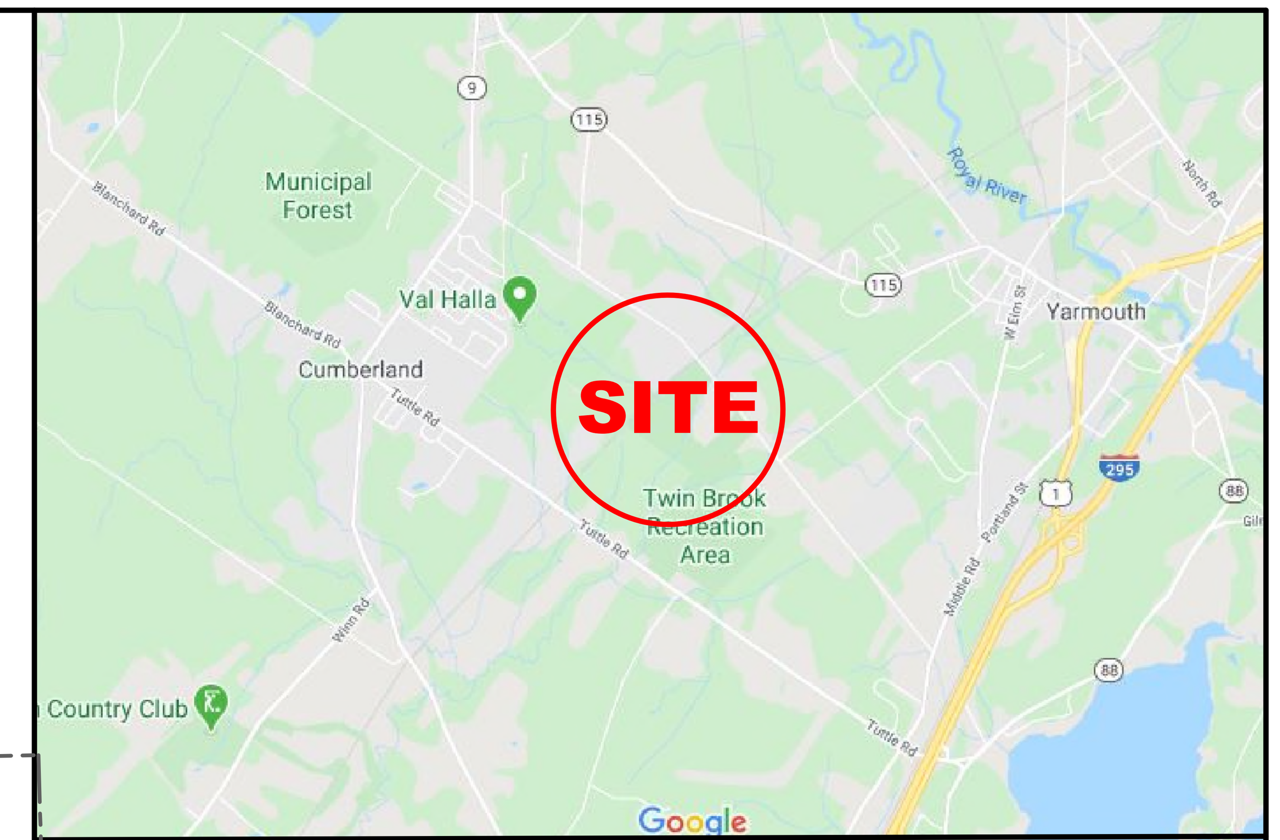
Site - Phase II - Photometrics

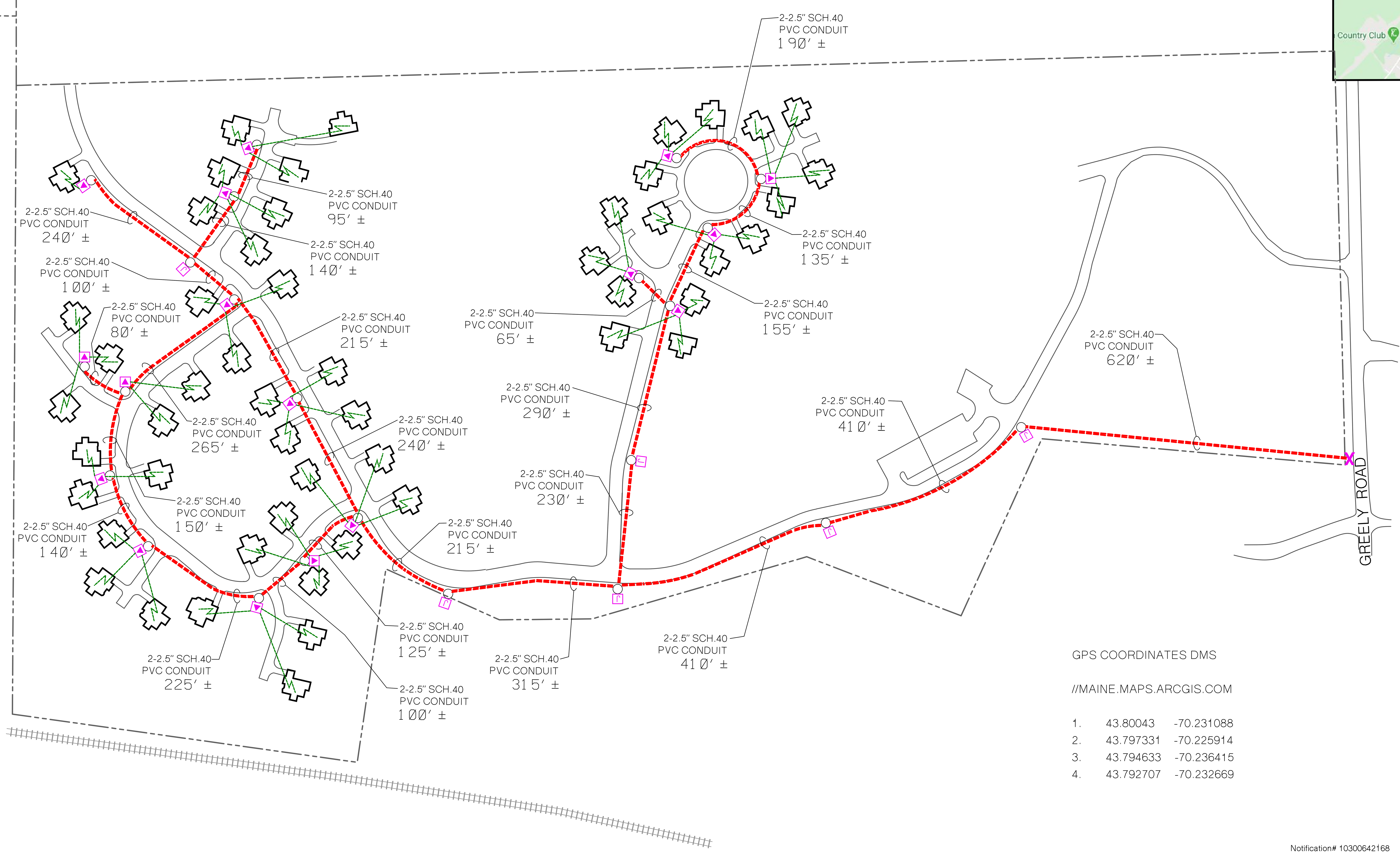
Checked By: G.MANCINI Date: 12.18.2020
Drawn By: A.AMES Scale: 1' = 60'-0"

SHEET:

SEP-2

This document and any attachments are considered:
BUSINESS CONFIDENTIAL
PROTECTED CRITICAL INFRASTRUCTURE INFORMATION





GPS COORDINATES DMS

//MAINE.MAPS.ARCGIS.COM

1. 43.80043 -70.231088
2. 43.797331 -70.225914
3. 43.794633 -70.236415
4. 43.792707 -70.232669

Customer:OCEANVIEW AT CUMBERLAND LLC
277 TUTTLE ROAD, CUMBERLAND, MAINE

Site Plan Produced By: BELANGER ENGINEERING
Address / Phone / Email:63 SECOND AVENUE
AUGUSTA, MAINE 04330
TEL:207-622-1462

Sheet Title: CUMBERLAND CROSSING PHASE 2 OVERALL PLAN
Revision #:N/A Date:12-18-19 Drawn By:N/A

THIS DRAWING SHALL BE REVISED ON THE CADD SYSTEM ONLY

X Primary Riser
Transformer Foundation
Junction Box
Primary UG
Secondary UG

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

Notification# 10300642168

NO.	REVISION	DATE	BY	CK	P.E. STAMPED BY	P. E. No.
		/ /				
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0	INITIAL DRAWING RELEASE	04/22/20	AJP	MLR	MLR	13430

Professional Engineer Seal

4/22/2020

STATE OF MAINE
MARSHALL LINWOOD RIPLEY
13430
LICENSED
PROFESSIONAL ENGINEER

DESIGNED MLR/
DRAWN AJP
CHECKED MLR/
APPROVED MLR
REVIEWED MLR

CUMBERLAND CROSSING
OFF POLE #76 GREELY ROAD
CUMBERLAND, MAINE

UNDERGROUND ELECTRICAL LAYOUT

CENTRAL MAINE POWER COMPANY
DISTRIBUTION DEPARTMENT
CENTRAL MAINE POWER

SCALE 1" =100' DATE 04/22/2020

905-5118
REV. 0

FILE NAME: 905-5118.dgn

Maine DEP SLODA
Permit Application

STORMWATER MANAGEMENT REPORT

Final Town Submittal

Project: Cumberland Crossing Phase 2
Greely Road, Cumberland, Maine

Prepared By:
Belanger Engineering
63 Second Avenue
Augusta, ME 04330
207-622-1462

Prepared For:
Seacoast Management Company
20 Blueberry Lane
Falmouth, Maine
207-233-4194 – Chris Wasileski

STATE OF MAINE
CHRISTOPHER S. BELANGER
9098
LICENSED
PROFESSIONAL ENGINEER

Date: November 20, 2020

Table of Contents
Cumberland Crossing Phase 2, Greely Road, Cumberland, Maine

Stormwater Narrative – November 20, 2020
Cumberland Crossing – Phase 2 Godsoe Farm Expansion
Greely Road, Cumberland, Maine

Belanger Engineering has evaluated the proposed stormwater impacts resulting from the creation of a new residential Senior Housing Community located off Tuttle and Greely Roads in Cumberland. The property is shown on Town Tax Map R4 Lot 34A and is approximately 59.53 acres in size.

This approval will focus on the proposed development expansions located on Lot 34A (a.k.a. Godsoe parcel). In particular, the project creates 7.66 acres of new impervious area and 18.93 acres of new developed area. Approximately 3.91 acres of road, 0.88 acres of driveway, and 2.87 acres of building roof will be created. We expect to construct 52 residential cottages and community facilities to support them. An expansion of the Godsoe farm is also planned to support the project. We have modeled 0.71 acres of new impervious area to include parking around the barn and expansion of the access road to 20' wide per Town standards.

Project Location: The project is located off Tuttle and Greely Roads in Cumberland, Maine. The site is located across the street from the Cumberland Town Hall building.

DEP Jurisdiction: The proposed project includes the development of 18.93 acres of developed area and 7.66 acres of impervious area. The project does trigger the Site Law. The project is not within an urban impaired stream or a severely blooming lake. As a result, the Basic Standards, General Standards, and the Flooding Standard apply to this project. See Section 4A and 4B of the Chapter 500 Rules, pages 4&5.

Basic Standards
1. Erosion and sedimentation control plan – See Appendix A of Chapter 500 Rules
2. Inspection and Maintenance Plan – See Appendix A and B of Chapter 500 Rules
3. Housekeeping – See Appendix C of the Chapter 500 Rules

General Standards
1. Narrative
2. Drainage Plans
3. Calculations
4. Details, designs, and specifications for Underdrained vegetated filters, & Buffers.

Flooding Standards
1. Stormwater Management System must detain, retain, or result in infiltration of stormwater for the 2,10,25 storms such that the peak flows do not exceed "pre-development" conditions.

Surface water on or abutting the site: Runoff from the site drains southerly toward an existing 5'X6' Box Culvert under the railroad. Part of the farm area drains to an off site pond. The pond outlets and crosses the railroad. We have assumed a 24" outlet in this case. Runoff continues to drain toward Mill Brook and the Piscataquis River.

Alterations to Land Cover: The drainage study is conducted on the sites 59.53 acres. The existing ground cover is 100% woods and meadow in the cottage area. The Godsoe farm is open and has existing for many years. The proposed ground cover will result in approximately: 18% impervious, 17% lawn, and 65% woods and meadow.

Downstream ponds and Lakes: Runoff from the site drains to Mill Brook and the Piscataquis River. Enclosed is a U.S.G.S. Map showing the site location.

Historic Flooding: The property is fairly uniform with mildly irregular topography and typical slopes between 2 % and 18 %. The stream area may have localized flooding but is located within ravine areas and outside development areas. A portion of the site in the vicinity of the railroad and culvert crossings are shown as flood areas on the FEMA maps. We have calculated the 100 year flood elevations for the box culvert. We found the 100 year flood is at approximately elevation 62.0. See enclosed Firm Maps.

Alterations to natural drainage ways: Natural drainage ways will not be altered as a result of the proposed development. Pipe Arch's and Box Culverts will be installed to maintain current drainage flow patterns.

Proposed BMP's: Steep slopes will be rip rapped. Silt fence is shown at the bottom of all fill slopes, hay bale barriers and stone check dams will be used in ditches and/or around catch basins. BMP's proposed for this project are shown and described on the enclosed plans.

Pre Development Watershed Areas for Cumberland Crossing Phase 2 - 11-20-2020						
					Existing	Existing
	Total	Total	Existing	Existing	Woods/Field	Developed
Subarea	Area	Area	Impervious	Lawn	Undeveloped	Area
	sf	acres	acres	acres	acres	acres
3s	1527053.00	35.06	0.00	4.00	31.06	4.00
8s	8026815.00	184.27	10.00	74.27	100.00	84.27
9s	3778966.00	86.75	13.00	23.75	50.00	36.75
10s	17683291.00	405.95	5.00	31.95	369.00	36.95
11s	10903205.00	250.30	5.00	123.30	122.00	128.30
81s	1354195.00	31.09	1.59	11.18	18.32	12.77
82s	2338359.00	53.68	2.00	7.68	44.00	9.68
83s	1363923.00	31.31	3.50	21.81	6.00	25.31
84s	890506.00	20.44	1.59	11.18	7.67	12.77
85s	358484.00	8.23	0.39	5.00	2.84	5.39
86s	2478341.00	56.89	2.36	54.53	0.00	56.89
	50703138.00	1163.98	44.43	368.65	750.90	413.08

Proposed Conditions – Cumberland Crossing

The project will be accessed from Little Acres Drive and will extend a new road to the project area. The main access road is approximately 2257' long, 22' wide, curbed, and a 5' sidewalk will be installed on the right side. Several other spurs are located off this road. The spur roads will be 18' and 22' wide. The roads create 3.09 acres of impervious area.

The developer is proposing to construct 52 residential homes. We have assumed each house will have approximately 2400 s.f. (.055 ac.) of building footprint area including an optional garage. We have also assumed each driveway will be 24' by 32' (.017 acres) in area. This will accommodate a 2 bay garage option. Impervious area per cottage is .072 acres each based on the above assumptions. The driveways create 0.88 acres of impervious area. The cottages create 2.87 acres of impervious area. We have assumed the farm area will expand the road and parking and add 0.71 acres of impervious area.

The project creates 7.66 acres of impervious area and 18.93 acres of developed area. This is the basis of the general standards calculations below.

OV Cumberland Phase 2 Impervious Area Summary 11-20-2020								
Description	Road	New Impervious		New Lawn		New Developed		Comments
	Length	Area		Area		Area		
	feet	s.f.	acres	s.f.	acres	s.f.	acres	
Little Acres Drive Extension	2257	66211	1.52					@22', curb, 5' sidewalk
Leonard Lane - Sta 0+00-Sta11+04	1104	24288	0.56					@22', curb, 5' sidewalk, 30' sac
Monarch - Sta 20+00-Sta30+80	1080	28750	0.66					@22', curb, 5' sidewalk
Skipper Way - Sta 80+00-Sta83+20	320	5760	0.13					18', no curb
Firefly Lane - Sta 90+00-Sta92+30	140	4140	0.10					18', no curb
Luna Lane - Sta 94+00-Sta95+50	150	2700	0.06					18', no curb
Grasshopper Lane - Sta 96+00-Sta98+00	140	3600	0.08					18' no curb
Crickett Lane & Northwind Farm Road	225	4050	0.09					18' no curb
52 Unit Driveways (.017 each)		38507	0.88					'32'X24' = 768 S.F. = 0.017 ACRES
52 Cottages (.055 each)		124800	2.87					2400 s.f. (includes second garage)
Project Developed Areas				459874	10.56	793607	18.22	Developed Area excludes Farm
Godsoe Farm		30927	0.71		0.00	30927	0.71	Farm Area
Totals	5416	333733	7.66	459874	10.56	824534	18.93	

General Standard Narrative and Selected BMP's:

The developer will utilize the following BMP's for stormwater treatment and storage.

1. Grassed Underdrained Soil Filter Pond (1) – Maine BMP's Chapter 7.
2. Roof Dripline BMP – Maine BMP's Chapter 7.5.
3. FocalPoint Proprietary Subsurface Treatment and Storage Systems.
4. Forested Buffers adjacent to development
5. Forested Buffers with Stone Bermed Level Lip Spreader

Filter Pond

One Pond will be developed to support the project. The pond has been sized to store 1" X the watershed impervious area and 0.4" X the watershed disturbed area. An outlet control structure and spillway has been implemented in the pond to provide emergency overflow as required. The outlet control structure will also be the gravel drain outlet. Runoff will discharge to the adjacent wetland.

Roof Dripline

Roof driplines with capture roof areas and drain them through foundation backfill and discharge to footing drains. The roof dripline will be 3' wide and 1.5' deep and will be installed in roof drainage areas. Once treated, 4" drain pipes will outlet into the street catch basins or can daylight in forested areas behind the buildings as conditions allow. The roof driplines will store 1" X roof areas utilizing 40% voids.

Focal Point Proprietary System

Along the main access road, **we will utilize focalpoint which is an approved proprietary stormwater treatment system at one location along Little Acres Drive Extension.** We have followed the sizing guidelines from the manufacturer and the Departments approval letter dated February 2, 2017. Utilizing the Chapter 500 Design Worksheet / Checklist enclosed, we have sized the focal point system based on the drainage area being captured and treated. The following design elements are included with each location.

1. FocalPoint Bed Area (min. 174 square feet per acre of impervious area (e.g. 0.2 acres=35 s.f.)).
2. Verify a 0.95 inch Type III rainfall event is treated prior to activation of the overflow (typically 6-12"). We have provided 12" of storage in each treatment area.
3. Maintain a ratio of filter media (s.f.) to the temporary ponding volume (c.f.) at 1:5.

4. Subsurface Chamber Treatment row must be sized to treat the peak flow from a 1 year-24 hr storm event. The cultic 150XLHD requires (1 chamber per 0.185 cfs).
5. The subsurface storage basin will provide storage of 1" X Impervious Area and will control release over 24-48 hrs.
6. The design has been reviewed by the Manufacturer. The letter is attached.

Stormwater from 1.71 acres of impervious area and 2.41 acres of lawn area will drain to the focal point system. Runoff passes through a grassed filter strip or sediment forebay prior to entering the focalpoint filter system. This forebay captures the majority of the coarse sediment and provides pre-treatment prior to draining into the focalpoint media. Runoff then drains from the focalpoint system to the subsurface treatment row sized for the 1 year peak flow. In this case the system treats 1.71 acres of impervious area and 2.41 acres of lawn area. The minimum focalpoint bed area is calculated to be 466 s.f.. We have provided a 18'X26' bed area (466' s.f.). The system was modeled with a 0.95 inch storm and stores the volume without breaching the overflow outlet as required. The ratio of surface area to temporary volume is approximately 1:5. The subsurface treatment row requires 36 units of cultic 150XLHD chambers by ACF environment. In addition, approximately 931 R-tank "double-mini" units are needed to provide storage of the Water quality volume.

Forested Buffer

Portions of the back yard lawn areas that cannot be practically captured will drain toward the buffers located along the stream protection corridor. The back yards are largely pervious and will be graded to sheet flow into the undeveloped forested area below the back yard area. Note that buildings and pavement are being routed to other BMP devices and will not drain to the buffers. We have provided 100' buffers below the back yard lawn areas along the stream corridor as required by site law projects. We will utilize BMP 5.1 – Buffer Adjacent to Residential, Largely Pervious or Small Impervious Area. The buffer slopes are 9-15% generally and they are HSG C soils. Maine DEP BMP 5.1 - Table 5.2 suggests a forested buffer of 90 feet for a C soil. Table 5.3 requires a 70' buffer width from single family residential areas. We have provided a minimum 100' buffers adjacent to the back yard lawn areas which exceeds the minimum lengths. The added buffer width compensates for portions of the buffer that exceed 15%.

Forested Buffer with Stone Berm Level Spreader

Three forest buffers will be used to treat the project. Forested Buffer #1 treats 1.07 acres of impervious area and 1.59 acres of lawns. Buffer #2 treats 0.58 acres of impervious area and 0.26 acres of lawn area. Buffer #3 treats 0.16 acres of impervious area and 0.23 acres of lawn area. Buffer #4 treats 0.54 acres of impervious area and 0.17 acres of lawn. Table 5.5 requires 180' of berm per acre of impervious area and 54' of berm per acre of lawn area for slopes 9-15%. Soils are listed as Lamoine which is a C soil.

Cumberland Crossing Phase 2

Buffer Treatment Table

Treatment BMP	Soil Name	HSG	Slope	Buffer Length	Impervious Area Treated	Lawn Area Treated	Stone Berm Level Spreader Width
							(180' X Imp.+54' X lawn) FB
							(240' X Imp.+72' X lawn) MB
				Feet	Acres	Acres	Linear Feet
Forest Buffer #1	Lamoine	C	9-15%	100'	1.07	1.59	278
Forest Buffer #2	Lamoine	C	9-15%	100'	0.58	0.26	118
Forest Buffer #3	Lamoine	C	0-8%	100'	0.16	0.23	34
Meadow Buffer #4	Lamoine	C	9-15%	100'	0.41	0.17	111
Meadow Buffer #5	Lamoine	C	9-15%	100'	0.16	0	38

General Standard Calculations

Calculations: BMP's will be utilized to treat impervious and developed areas as far as practical. The project is required to effectively treat 95% of the impervious area and 80% disturbed area as described in the rules as far as practical. Certain areas cannot practically receive treatment. Where treatment of 95% of the impervious area is not practical, the department may allow treatment as low as 90% of the impervious area if the applicant is able to demonstrate that treatment of a greater depth of runoff than specified in the standards will result in at least an equivalent amount of overall treatment for the impervious area. As described in the calculation, the project captures 98% of the "new" projects impervious area and 80% of the projects overall developed areas. At 90-95%, DEP recommends 05" & 0.02" additional storage per % below 95%. The BMP's captures proposed areas to the extent practical. The treatment area summary and general standard calculations are attached.

The project as developed meets the General Standards as outlined in the Chapter 500 stormwater rules. The General Standard calculation is shown on the post development drainage plan and is included in this report.

Post Area Summary and General Standard Calculation

Post Development Watershed Areas and General Standard Calculations for Cumberland Senior Housing - Phase 2 Greely Road - 11-20-2020

Subarea	Total Area sf	Total Area acres	Existing Impervious acres	New Impervious Area acres	New Impervious Area Treated acres	Existing Lawn acres	New Lawn acres	New Developed Area acres	New Developed Area Treated acres	Existing Woods/Field Undeveloped acres	Treatment BMP
3	949685	21.80	0.10	0.00	0.00	4.62	1.67	1.67	0.00	15.41	No treatment
8	7322083	168.09	10.39	0.00	0.00	78.00	1.56	1.56	1.56	78.14	100' wetland and stream buffer
9	3778966	86.75	13.00	0.00	0.00	23.75	0.00	0.00	0.00	50.00	No changes
10	17683291	405.95	5.00	0.00	0.00	31.95	0.00	0.00	0.00	369.00	No changes
11	10903205	250.30	5.00	0.00	0.00	123.30	0.00	0.00	0.00	122.00	No changes
31	412109	9.46	0.00	0.00	0.00	0.00	0.43	0.43	0.00	8.51	Zero Treatment
32	45611	1.05	0.00	0.56	0.56	0.00	0.49	1.05	1.05	0.00	Filter Pond Sta 45+00 Lt.
33	135803	3.12	0.00	1.07	1.07	0.00	1.59	2.66	2.66	0.32	279' Forested Buffer #1 - BMP 5.2
34	215045	4.94	0.00	1.71	1.71	0.00	2.31	4.02	4.03	0.86	Focal Point System
35	47089	1.08	0.00	0.58	0.58	0.00	0.36	0.94	0.94	0.00	119' Forrested Buffer #2 - BMP 5.2
36	18881	0.43	0.00	0.16	0.16	0.00	0.22	0.38	0.38	0.00	41' Forrested Buffer #3 - BMP 5.2
37	85560	1.96	0.00	0.00	0.00	0.00	0.72	0.72	0.00	1.24	No treatment
38	420140	9.65	0.00	0.00	0.00	0.00	0.89	0.89	0.00	8.76	No treatment
81	1326203	30.45	1.59	0.17	0.00	11.01	0.00	0.17	0.00	17.68	No treatment
82	2338359	53.68	2.00	0.00	0.00	7.68	0.00	0.00	0.00	44.00	No changes
83	1363923	31.31	3.50	0.00	0.00	21.81	0.00	0.00	0.00	3.20	No changes
84	890506	20.44	1.59	0.00	0.00	18.85	0.00	0.00	0.00	0.00	No changes
85	358484	8.23	0.39	0.00	0.00	7.84	0.00	0.00	0.00	0.00	No changes
86	2407831	55.28	2.36	0.54	0.54	51.30	1.03	1.57	1.57	0.05	100' Stream Buffer and 97' Forested Buffer #4
52	--	--	0.00	2.87	2.87	0.00	0.00	2.87	2.87	--	Roof Dripline BMP
	50702774	1163.98	44.92	7.66	7.49	380.11	11.27	18.93	15.06	719	
				>95%	98%	✓		>80%	80%	✓	

Flooding Standard

This drainage study will focus on the proposed impacts created by the Oceanview Cumberland Crossing residential project. The model compares flooding standard results as they cross the project boundary. The intent is to meet the pre-development peak flows.

The watershed has been estimated to be 1163 acres and is adjacent to Greely Road and Main Street. The top end of the watershed is above Main Street and is routed to several large road culverts installed under Greely Road and upper Main Street (Route 9). Runoff travels through the residential neighborhood and crosses through the Golf Course. Runoff travels overland through woods and field until it drains to a stream above the Cumberland Crossing Phase 2 site. Soils in the vicinity of the project site show the natural wooded areas to Lamoine soils which is a "C" soil. This stream drains through the development site and crosses the railroad by one 5'X6' box culvert.

These drainage areas are defined in our Stormwater Model as shown on the HydroCAD diagrams. Full-size drainage plans and stormwater calculations for the existing and developed site conditions are included with this report. Refer to the HydroCAD diagrams, calculations, report and drainage plans for modeling assumptions, subcatchments, flowpaths, drainage reaches, etc. Runoff calculations were performed for the 2-year, 10 year, and 25 year storm events in accordance with Cumberland Ordinances and DEP requirements. Results of the calculations are shown in the Summary Table for ease of comparison. In order to significantly reduce the volume of paper required to reproduce complete data and calculation reports for all design storms, partial HydroCAD reports were generated for the 2-10-25-year storm events (pre- & post-) for selected subcatchments.

Modeling assumptions: The flooding standard is required with this development because this is a Site Law Project. We have modeled the pond areas to demonstrate that the outlets have the required storage volume capacity and that they will pass the 25 year storm event without flooding the pond embankments. The "HydroCad" computer program was used to determine the peak storm water runoff for the pre- and post-development conditions. HydroCad is a storm water modeling system, which utilizes the TR-20 method developed by the Soil Conservation Service (SCS).

The design assumptions used for this project are:
Design storm: 24 hour, Type III rainfall distribution.
Rainfall: 24 hour precipitation values from U.S. Weather Bureau Technical Release No. 40:
2 year storm = 3.1 inches
10 year storm = 4.6 inches
25 year storm = 5.80 inches
50 year storm = 6.90 inches
100 year storm = 8.10 inches
500 year storm = 12.10 inches

Site specific parameters for the project are listed below:

Soils: Soils information to determine the hydrologic soil group for the site, are derived from the Soil Survey of Cumberland County by the United States Department of Agriculture Soil Conservation Service. The soils and hydrologic group are listed below:

Soil Classification	Hydrologic Group
BgB – Belgrade very fine Sandy Loam	HSG B
BuB – Lamoine silt loam	HSG C
BuC2 – Buxton Silt Loam	HSG D
DeB - Deerfield Loam Sand	HSG B
EmB – Elmwood Fine Sandy Loam	HSG C
Ls – Limerick – Saco silt loams	HSG C
Sn – Scantic Silt Loam	HSG D
SuC2 – Suffield Silt Loam	HSG C
SuD2 – Suffield Silt Loam	HSG C
SuE2 – Suffield Silt Loam	HSG C
WmB – Windsor Loamy Sand	HSG A
MeC – Melrose fine sandy loam	HSG C
Sz – Swanton fine sandy loam	HSG C/D

Ground Cover:

Pre-& Post Development: The watershed ground cover is modeled as woods, grass, meadow and impervious.

Cover Description	Curve Number:
Impervious	98
Woods	70
Lawn	74

PRE- & POST-DEVELOPMENT HYDROLOGIC RESULTS

Pond 38P – 5'X6' Box Culvert at Railroad

FLOODING STANDARD RESULTS POND 38P			
Storm	PRE	POST	DIFFERENCE
	C.F.S.	C.F.S.	%
2 YEAR	25.26	24.49	-3%
10 YEAR	83.43	81.71	-2%
25 YEAR	125.6	124.84	-1%
50 YEAR	178.55	163.58	-9%
100 YEAR	242.48	234.46	-3%

Pre Pond 38P Summary	
Storm	Flood Elevation (ft.)
2 YEAR	56.45
10 YEAR	58.1
25 YEAR	59.19
100 YEAR	61.82

Post Pond 38P Summary	
Storm	Flood Elevation (ft.)
2 YEAR	56.42
10 YEAR	58.06
25 YEAR	59.17
100 YEAR	61.65

Pond 81P – Pond and outlet at Railroad

FLOODING STANDARD RESULTS POND 81P			
Storm	PRE	POST	DIFFERENCE
	C.F.S.	C.F.S.	%
2 YEAR	15.27	15.11	-1%
10 YEAR	28.06	27.57	-2%
25 YEAR	52.21	51.54	-1%
50 YEAR	71.76	70.92	-1%
100 YEAR	92.03	90.88	-1%

Pre Pond 81P Summary	
Storm	Flood Elevation (ft.)
2 YEAR	64.13
10 YEAR	66.15
25 YEAR	67.01
100 YEAR	67.97

Post Pond 81P Summary	
Storm	Flood Elevation (ft.)
2 YEAR	64.12
10 YEAR	66.12
25 YEAR	66.99
100 YEAR	67.94

Pond 3P – outlet at Railroad

FLOODING STANDARD RESULTS POND 3P			
Storm	PRE	POST	DIFFERENCE
	C.F.S.	C.F.S.	%
2 YEAR	11.17	10.19	-10%
10 YEAR	24.28	21.89	-11%
25 YEAR	38.78	29.58	-31%
50 YEAR	60.55	47.97	-26%
100 YEAR	80.5	64.95	-24%

Pre Pond 3P Summary	
Storm	Flood Elevation (ft.)
2 YEAR	55.56
10 YEAR	57.58
25 YEAR	59.23
100 YEAR	59.8

Post Pond 3P Summary	
Storm	Flood Elevation (ft.)
2 YEAR	55.47
10 YEAR	57.09
25 YEAR	58.82
100 YEAR	59.61

Conclusion:

The above analysis points are located where the project crosses the property line and points of interest along the railroad. (See Ponds 3P, 34P, and 81P above). Peak flows are being maintained for the 2, 10 and 25 year storms at the existing 5'X6' Box Culvert at the Railroad Crossing (pond 38P). Peak flows are less than pre development flows. Pond 3P is located toward the back and drains toward a culvert at the RR crossings. Peak flows are being maintained in all three locations below the site. The project will maintain the pre-development peak flow as required for the existing project. Reach 43R, 55R and Pond 81P model the stream, wetland, and off site pond as it crosses the property line. These locations also maintain the pre-development flows as required.

One Filter Pond, 4 Buffers, stream buffer, and a focal point drainage system provide water quality and quantity treatment. The proposed pond has the capacity to control flow from the 100 year storm which exceeds the DEP Flooding Standards. Adjacent properties will not be flooded as a result of this project. The project does not significantly impact downstream structures or properties. We submit that the Flooding Standard has been met or exceeded with this development.

The proposed project captures 98% of the newly developed impervious area and 80% of the developed area as required to meet the General Standards. One Pond will be constructed to provide impervious treatment and storage. Each cottage will provide roof driplines (BMP 7.6) to provide building roof treatment and storage. The access road will install focal point devices to provide treatment and storage along the road. Finally, back yard lawn areas, that cannot be practically captured, adjacent to the stream will be sent to the forested buffer for treatment. The General Standard will be met with the above BMP's installed.

The Basic Standards will be met with the proposed erosion control plans and stabilization details provided. No additional water quality or quantity measures are warranted for the Cumberland Crossing Phase 2 Expansion Project. We submit that the project meets the Basic, General, and the Flooding standard as outlined in the Maine DEP Chapter 500 Stormwater Rules. The proposal maintains these standards as required.

Cumberland Crossing Property Maintenance:

PART 1: RESPONSIBILITY FOR MAINTENANCE

Cumberland Crossing Retirement Community will be responsible for maintenance of the stormwater systems. Contact Chris Wasileski at Seacoast Management Company.

PART 2: INSPECTIONS – During Construction and Post Construction

- Detention Facilities: One (1) Grassed Under drained Filter Pond
  Two (2) wet ponds
  Embankment inspection and maintenance
  Spillway maintenance
  Outlet Structure sump cleaning and maintenance
  Sediment removal and disposal
  Stone Bermed Level Spreader Maintenance at outlet

- Detention Facilities: Focalpoint Devices and Detention Ponds
  Debris removal from stone storage area (leaves, branches, trash, etc.)
  Sediment removal and disposal

- Ditches, Swales, or other open stormwater channels
  Embankment inspection and maintenance
  Channel inspection
  Sediment removal and disposal

- Culverts, catch basins, stormwater control structures
  Embankment inspection and maintenance
  Inlet and Outlet inspection
  Debris removal and disposal
  Stone Bermed Level Spreader Maintenance

- Buffers with Stone Bermed Level Spreaders
  Buffer inspection and maintenance
  Outlet inspection
  Debris removal and disposal
  Stone Bermed Level Spreader Maintenance

- Roof Dripline Filter BMP Maintenance
  Sediment removal and disposal
  Filter and Underdrain replacement
  Debris removal and disposal
  Stone Dripline Replacement
  Foundation Sealant
  Foundation Backfill

- Focalpoint filter media and underground pipe storage
  - Embankment inspection and maintenance
  - Channel inspection
  - Sediment removal and disposal
  - Pipe flushing and cleaning
  - Filter media replacement
  - Coarse sediment removal at focalpoint media inlet

The owners representative will inspect the detention ponds, roof driplines, swales, channels, stormwater structures, focalpoint devices to determine if the soil blockage or impaired capacity to pass flow exists. Inspections will be performed on a monthly basis from March to November, and quarterly during the remainder of the year. A record of inspections and maintenance or corrective measures shall be kept by the owner (see part 4).

PART 3: MAINTENANCE AND CLEANING

The owner will regularly inspect for sediment accumulation, obstructions, debris, and other potential causes for operational difficulty in the conveyance and detention system as described in Part 2. Immediate action shall be taken to remedy detrimental obstructions. This may include replacing the filter pond and roof driplines filter beds as necessary to allow infiltration and treatment to occur.

Cleaning out of catch basins, culvert cleaning, and other means necessary to ensure the stormwater system is maintained. Some additional measures (but not limited to) are shown below:

- Under drained filter Maintenance (One Filter Pond – Pond 47):
  - Soil Filter Inspection
  - Soil Filter replacement
  - Sediment removal and disposal
  - Mowing
  - Harvesting and Weeding

The owner will regularly inspect the soil filter after every major storm event in the first few months to ensure proper function. There after the filter should be inspected bi-annually to ensure that it is draining within 24 hours. The top several inches of the filter shall be replaced with fresh material when water ponds on the surface of the bed for more than 72 hours. Sediment shall be removed from the filter bed annually. The bed shall be hand raked and re-seeded as necessary. The removed sediment shall be hauled off site and disposed of in a stabilized area. Mowing of the filter area shall be limited to 2 times per year to maintain grass heights to less than 12”. Weeding and pruning of growth within the filter zone will be completed as necessary.

- Stormwater Facilities: Stormwater Buffers with Stone Berm Level Lip Spreaders

Inspect the culvert outlets to ensure it is working and in proper function. Inspect the stone berm level spreader to ensure the level lip is working and that runoff is evenly distributed along the entire stone berm. Inspect the buffer below the stone berm to ensure it is stable. Repair erosion areas immediately. Install erosion blanket if needed to prevent additional erosion.

- Wet Pond maintenance – (2 Total) Periwinkle Wet Pond and Mallard Way Wet Pond
  - Gravel Drain Inspection
  - Gravel Drain replacement
  - Outlet Structure sump cleaning and maintenance
  - Sediment removal and disposal
  - Mowing
  - Harvesting and Weeding

The owner will regularly inspect the wet pond after every major storm event in the first few months to ensure proper function. There after the pond should be inspected bi-annually to ensure that it is draining within 24 hours. Sediment shall be removed from the pond when sediment reduces the pond volume by 25%. The removed sediment shall be hauled off site and disposed of. Mowing of the pond area shall be limited to 2 times per year to maintain grass heights to less than 12”. Weeding and pruning of growth within the pond and pond back slopes will be completed as necessary. The pond outlet shall be inspected for erosion and make repairs as needed annually.

- Focalpoint filter Maintenance – one (1) locations Sta 19+50 right side along Little Acres Drive:
  - Soil Filter Inspection
  - Soil Filter replacement
  - Outlet Structure sump cleaning and maintenance
  - Sediment removal and disposal
  - Mowing
  - Harvesting and Weeding

The owner will regularly inspect the soil filter after every major storm event in the first few months to ensure proper function. There after the filter should be inspected bi-annually to ensure that it is draining within 24 hours. The top several inches of the filter shall be replaced with fresh material when water ponds on the surface of the bed for more than 72 hours. Sediment shall be removed from the filter bed annually. The bed shall be hand raked and re-seeded as necessary. The removed sediment shall be hauled off site and disposed of in a stabilized area. Mowing of the filter area shall be limited to 2 times per year to maintain grass heights to less than 12”. Weeding and pruning of growth within the filter zone will be completed as necessary. Replacement of the Treatment Row and sediment removal will be completed when 40% full or when the system is bypassed and no longer treating stormwater. The R-Tanks storage units shall be maintained as suggested by the manufacturer.

- Stormwater Facilities: Catch basins, Wet Ponds, Culverts,

A mandatory scheduled maintenance will be performed every four weeks for a period of one hundred and twenty (120) days and will begin after satisfactory completion and acceptance of landscape construction. Ongoing maintenance will be required as necessary.

- Parking/Display Areas:

All sand, salt, etc. accumulated when sweeping the parking and display areas, shall be trucked off-site for disposal. The parking lot shall be swept annually in the spring.

PART 4: RECORD KEEPING

The owner will maintain inspection records, with recordings of condition of basins, and pipes and annotation of substantial precipitation events or mitigating circumstances in the intervening time for trending to develop the anticipated preventive maintenance schedule.

PART 5: MAINTENANCE CONTRACT

Should proprietary devices be utilized, a maintenance contract will be established with the manufacturer for regular maintenance and cleaning of the device. Focalpoint manufactures will be on site through the installation process. A maintenance contract will be maintained as necessary to ensure proper system performance of the focal point system. Other facilities included catch basins, culverts, wet ponds will also be maintained annually or as required by inspection. The intent being to maintain a working system.

PART 6: RE-CERTIFICATION

The owner shall submit a certification to Maine DEP within three months of the expiration of each five year interval from the date of issuance of the permit. The owner shall submit the maintenance log which identifies inspections completed, erosion problems found, when corrective action was taken, and who completed the work. The certification will include a statement indicating that the stormwater system is working and is being maintained in working condition in accordance with the permit requirements.

Maintenance Log Sheet

Cumberland Crossing Retirement Community

Name	Maintenance Task Completed	Date

Maine DEP Chapter 500 Appendix C. Housekeeping – Updated 2020

These performance standards apply to all projects.

1. Spill prevention. Controls must be used to prevent pollutants from construction and waste materials stored on site to enter stormwater, which includes storage practices to minimize exposure of the materials to stormwater. The site contractor or operator must develop, and implement as necessary, appropriate spill prevention, containment, and response planning measures.

NOTE: Any spill or release of toxic or hazardous substances must be reported to the Department. For oil spills, call 1-800-482-0777 which is available 24 hours a day. For spills of toxic or hazardous material, call 1-800-452-4664 which is available 24 hours a day. For more information, visit the Department's website at
http://www.maine.gov/dep/spills/emergspillresp/

2. Groundwater protection. During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. An "infiltration area" is any area of the site that by design or as a result of soils, topography and other relevant factors accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials. Any project proposing infiltration of stormwater must provide adequate pre-treatment of stormwater prior to discharge of stormwater to the infiltration area, or provide for treatment within the infiltration area, in order to prevent the accumulation of fines, reduction in infiltration rate, and consequent flooding and destabilization.

See Appendix D for license by rule standards for infiltration of stormwater.

NOTE: Lack of appropriate pollutant removal best management practices (BMPs) may result in violations of the groundwater quality standard established by 38 M.R.S.A. §465-C(1).

3. Fugitive sediment and dust. Actions must be taken to ensure that activities do not result in noticeable erosion of soils or fugitive dust emissions during or after construction. Oil may not be used for dust control, but other water additives may be considered as needed. A stabilized construction entrance (SCE) should be included to minimize tracking of mud and sediment. If off-site tracking occurs, public roads should be swept immediately and no less than once a week and prior to significant storm events. Operations during dry months, that experience fugitive dust problems, should wet down unpaved access roads once a week or more frequently as needed with a water additive to suppress fugitive sediment and dust.

NOTE: Dewatering a stream without a permit from the Department may violate state water quality standards and the Natural Resources Protection Act.

4. Debris and other materials. Minimize the exposure of construction debris, building and landscaping materials, trash, fertilizers, pesticides, herbicides, detergents, sanitary waste and other materials to precipitation and stormwater runoff. These materials must be prevented from becoming a pollutant source.

NOTE: To prevent these materials from becoming a source of pollutants, construction and post-construction activities related to a project may be required to comply with applicable provision of rules related to solid, universal, and hazardous waste, including, but not limited to, the Maine solid waste and hazardous waste management rules; Maine hazardous waste management rules; Maine oil conveyance and storage rules; and Maine pesticide requirements.

5. Excavation de-watering. Excavation de-watering is the removal of water from trenches, foundations, coffer dams, ponds, and other areas within the construction area that retain water after excavation. In most cases the collected water is heavily silted and hinders correct and safe construction practices. The collected water removed from the ponded area, either through gravity or pumping, must be spread through natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment possible, like a cofferdam sedimentation basin. Avoid allowing the water to flow over disturbed areas of the site. Equivalent measures may be taken if approved by the Department.
NOTE: Dewatering controls are discussed in the "Maine Erosion and Sediment Control BMPs, Maine Department of Environmental Protection."

6. 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:
(a) Discharges from firefighting activity;
(b) Fire hydrant flushings;
(c) Vehicle washwater if detergents are not used and washing is limited to the exterior of vehicles (engine, undercarriage and transmission washing is prohibited);
(d) Dust control runoff in accordance with permit conditions and Appendix (C)(3);
(e) Routine external building washdown, not including surface paint removal, that does not involve detergents;
(f) Pavement washwater (where spills/leaks of toxic or hazardous materials have not occurred, unless all spilled material had been removed) if detergents are not used;
(g) Uncontaminated air conditioning or compressor condensate;
(h) Uncontaminated groundwater or spring water;
(i) Foundation or footer drain-water where flows are not contaminated;
(j) Uncontaminated excavation dewatering (see requirements in Appendix C(5));
(k) Potable water sources including waterline flushings; and
(l) Landscape irrigation.

7. Unauthorized non-stormwater discharges. The Department's approval under this Chapter does not authorize a discharge that is mixed with a source of non_stormwater, other than those discharges in compliance with Appendix C (6). Specifically, the Department's approval does not authorize discharges of the following:
(a) Wastewater from the washout or cleanout of concrete, stucco, paint, form release oils, curing compounds or other construction materials;
(b) Fuels, oils or other pollutants used in vehicle and equipment operation and maintenance;
(c) Soaps, solvents, or detergents used in vehicle and equipment washing; and
(d) Toxic or hazardous substances from a spill or other release.
(8) Additional requirements. Additional requirements may be applied on a site-specific basis.

Pre Development Watershed Areas for Cumberland Crossing Phase 2 - 11-20-2020						
Subarea	Total Area sf	Total Area acres	Existing Impervious acres	Existing Lawn acres	Existing Woods/Field Undeveloped acres	Existing Developed Area acres
3s	1527053.00	35.06	0.00	4.00	31.06	4.00
8s	8026815.00	184.27	10.00	74.27	100.00	84.27
9s	3778966.00	86.75	13.00	23.75	50.00	36.75
10s	17683291.00	405.95	5.00	31.95	369.00	36.95
11s	10903205.00	250.30	5.00	123.30	122.00	128.30
81s	1354195.00	31.09	1.59	11.18	18.32	12.77
82s	2338359.00	53.68	2.00	7.68	44.00	9.68
83s	1363923.00	31.31	3.50	21.81	6.00	25.31
84s	890506.00	20.44	1.59	11.18	7.67	12.77
85s	358484.00	8.23	0.39	5.00	2.84	5.39
86s	2478341.00	56.89	2.36	54.53	0.00	56.89
	50703138.00	1163.98	44.43	368.65	750.90	413.08

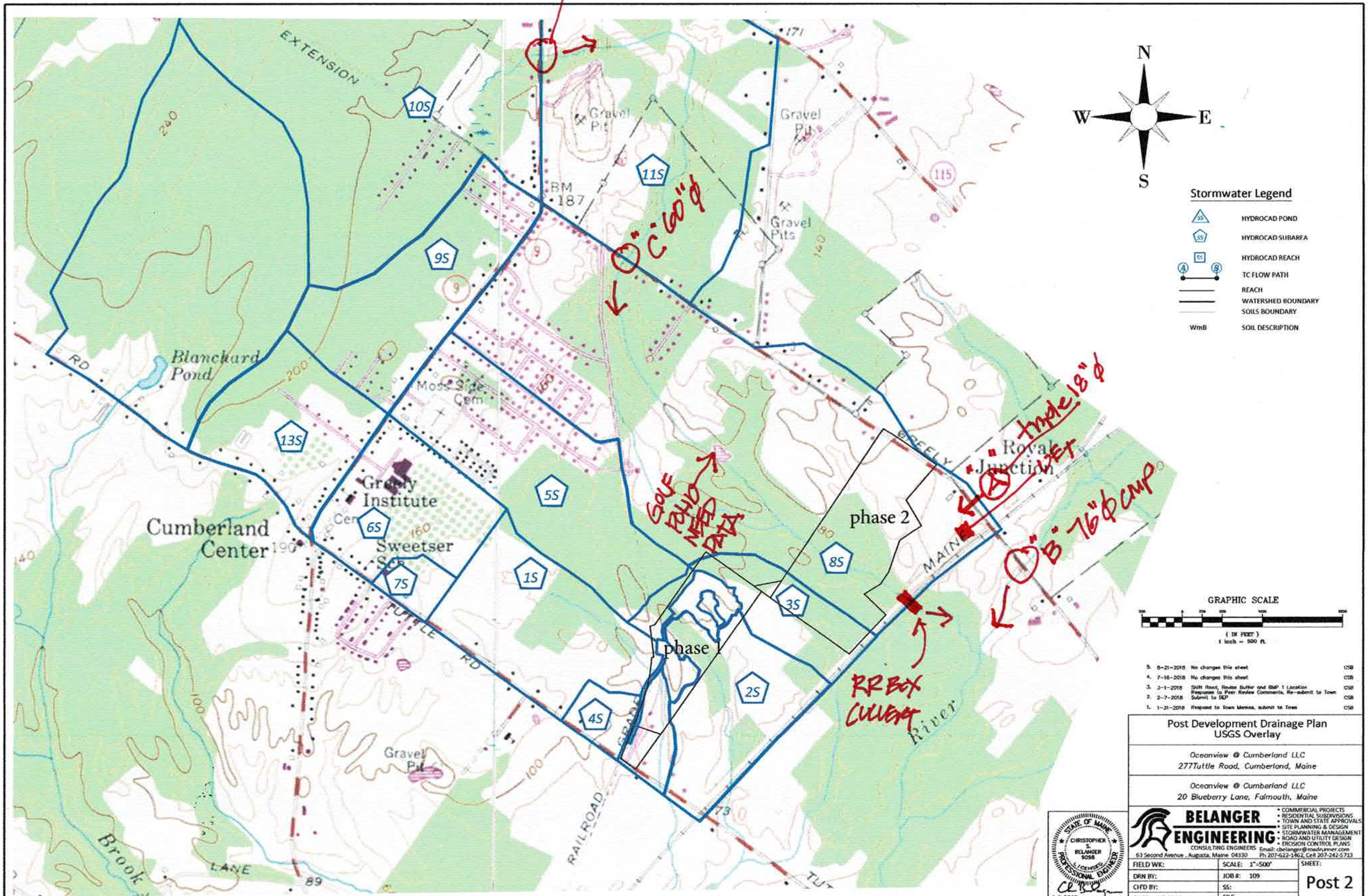
OV Cumberland Phase 2 Impervious Area Summary 11-20-2020

Description	Road Length	New Impervious Area		New Lawn Area		New Developed Area		Comments
	feet	s.f.	acres	s.f.	acres	s.f.	acres	
Little Acres Drive Extension	2257	66211	1.52					@22', curb, 5' sidewalk
Leonard Lane - Sta 0+00-Sta11+04	1104	24288	0.56					@22', curb, 5' sidewalk, 30' sac
Monarch - Sta 20+00-Sta30+80	1080	28750	0.66					@22', curb, 5' sidewalk
Skipper Way - Sta 80+00-Sta83+20	320	5760	0.13					18', no curb
Firefly Lane - Sta 90+00-Sta92+30	140	4140	0.10					18', no curb
Luna Lane - Sta 94+00-Sta95+50	150	2700	0.06					18', no curb
Grasshopper Lane - Sta 96+00-Sta98+00	140	3600	0.08					18' no curb
Crickett Lane & Northwind Farm Road	225	4050	0.09					18' no curb
52 Unit Driveways (.017 each)		38507	0.88					'32'X24' = 768 S.F. = 0.017 ACRES
52 Cottages (.055 each)		124800	2.87					2400 s.f. (includes second garage)
Project Developed Areas				459874	10.56	793607	18.22	Developed Area excludes Farm
Godsoe Farm		30927	0.71		0.00	30927	0.71	Farm Area
Totals	5416	333733	7.66	459874	10.56	824534	18.93	

Post Development Watershed Areas and General Standard Calculations for Cumberland Senior Housing - Phase 2 Greely Road - 11-20-2020

Subarea	Total Area	Total Area	Existing Impervious	New Impervious Area	New Impervious Area Treated	Existing Lawn	New Lawn	New Developed Area	New Developed Area Treated	Existing Woods/Field Undeveloped	Treatment BMP
	sf	acres	acres	acres	acres	acres	acres	acres	acres	acres	
3	949685	21.80	0.10	0.00	0.00	4.62	1.67	1.67	0.00	15.41	No treatment
8	7322083	168.09	10.39	0.00	0.00	78.00	1.56	1.56	1.56	78.14	100' wetland and stream buffer
9	3778966	86.75	13.00	0.00	0.00	23.75	0.00	0.00	0.00	50.00	No changes
10	17683291	405.95	5.00	0.00	0.00	31.95	0.00	0.00	0.00	369.00	No changes
11	10903205	250.30	5.00	0.00	0.00	123.30	0.00	0.00	0.00	122.00	No changes
31	412109	9.46	0.00	0.00	0.00	0.00	0.43	0.43	0.00	8.51	Zero Treatment
32	45611	1.05	0.00	0.56	0.56	0.00	0.49	1.05	1.05	0.00	Filter Pond Sta 45+00 Lt.
33	135803	3.12	0.00	1.07	1.07	0.00	1.59	2.66	2.66	0.32	279' Forested Buffer #1 - BMP 5.2
34	215045	4.94	0.00	1.71	1.71	0.00	2.31	4.02	4.03	0.86	Focal Point System
35	47089	1.08	0.00	0.58	0.58	0.00	0.36	0.94	0.94	0.00	119' Forrested Buffer #2 - BMP 5.2
36	18881	0.43	0.00	0.16	0.16	0.00	0.22	0.38	0.38	0.00	41' Forrested Buffer #3 - BMP 5.2
37	85560	1.96	0.00	0.00	0.00	0.00	0.72	0.72	0.00	1.24	No treatment
38	420140	9.65	0.00	0.00	0.00	0.00	0.89	0.89	0.00	8.76	No treatment
81	1326203	30.45	1.59	0.17	0.00	11.01	0.00	0.17	0.00	17.68	No treatment
82	2338359	53.68	2.00	0.00	0.00	7.68	0.00	0.00	0.00	44.00	No changes
83	1363923	31.31	3.50	0.00	0.00	21.81	0.00	0.00	0.00	3.20	No changes
84	890506	20.44	1.59	0.00	0.00	18.85	0.00	0.00	0.00	0.00	No changes
85	358484	8.23	0.39	0.00	0.00	7.84	0.00	0.00	0.00	0.00	No changes
86	2407831	55.28	2.36	0.54	0.54	51.30	1.03	1.57	1.57	0.05	100' Stream Buffer and 97' Forested Buffer #4
52	--	--	0.00	2.87	2.87	0.00	0.00	2.87	2.87	--	Roof Dripline BMP
	50702774	1163.98	44.92	7.66	7.49	380.11	11.27	18.93	15.06	719	
				>95%	98%	✓		>80%	80%	✓	

"D" ROUTE 9. 48"Ø



• 4/3/19 FIELD DATA STREAM/CULVERTS.

• REFERENCE : March 2019 LED Photos

Culvert C outlet Greely Road at main brook

Culvert D - 48 inch HDPE inlet and embankment
At Route 9 at main brook

BELANGER ENGINEERING
CONSULTING ENGINEERS

LICHT
ENVIRONMENTAL DESIGN, LLC

- PREPARED FOR:

CUMBERLAND CROSSING
PHASE 2
CUMBERLAND, MAINE

- TITLE:

SITE PHOTOS

- SCALE: NA
- DATE: 12-30-19
- JOB NO: 16.084.1

EX.

• REFERENCE : March 2019 LED Photos

Golf Course Pond above Outlet

Golf Course Pond outlet structure from Bridge Above

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CONSULTING ENGINEERS

LICHT
ENVIRONMENTAL DESIGN, LLC

- PREPARED FOR:

CUMBERLAND CROSSING
PHASE 2
CUMBERLAND, MAINE

- TITLE:

SITE PHOTOS

- SCALE: NA
- DATE: 12-30-19
- JOB NO: 16.084.1

EX.

• REFERENCE : March 2019 LED Photos

Main brook along Hole 17 at eddy/widening

Main Brook at Golf Course Hole 17 above Cartpath Crossing

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CONSULTING ENGINEERS

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- PREPARED FOR:

CUMBERLAND CROSSING
PHASE 2
CUMBERLAND, MAINE

- TITLE:

SITE PHOTOS

- SCALE: NA
- DATE: 12-30-19
- JOB NO: 16.084.1

EX.

• REFERENCE : March 2019 LED Photos


Inlet 60 inch dia. Greely Road Culvert C –Main Brook to Golf Course and Site


Upstream Floodplain Watershed and Main Brook at Greely Road Culvert C

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CUMBERLAND CROSSING
PHASE 2
CUMBERLAND, MAINE

- TITLE:

SITE PHOTOS

- SCALE: NA
- DATE: 12-30-19
- JOB NO: 16.084.1

EX.

• REFERENCE : March 2019 LED Photos

76 inch dia. Greely Road Culvert B- at Maxfield Brook – East of Site & RR Tracks

Culvert A - Three partially buried 18 inch dla HDPE culverts (inlet) across from Cumberland Animal Hospital wetland drainage

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ENVIRONMENTAL DESIGN, LLC

- PREPARED FOR:

CUMBERLAND CROSSING
PHASE 2
CUMBERLAND, MAINE

- TITLE:

SITE PHOTOS

- SCALE: NA
- DATE: 12-30-19
- JOB NO: 16.084.1

EX.

• REFERENCE : March 2019 LED Photos

Maine Central RR Culvert Inlet

Existing Wood Farm Bridge and Stream looking north

BELANGER ENGINEERING
CONSULTING ENGINEERS

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ENVIRONMENTAL DESIGN, LLC

▪ PREPARED FOR:

OCEANVIEW AT CUMBERLAND SENIOR COMMUNITY

▪ TITLE:

SITE PHOTOS

▪ SCALE: NA
▪ DATE: 01-30-18

▪ JOB NO: 16.084.1

EX.

• REFERENCE : March 2019 LED Photos

Upstream 100 ft from Proposed Road Crossing looking South (Downstream)

Proposed Road/Box Culvert Crossing location north of existing farm bridge

BELANGER ENGINEERING
CONSULTING ENGINEERS

LICHT ENVIRONMENTAL DESIGN, LLC

▪ PREPARED FOR:

CUMBERLAND CROSSING PHASE 2
CUMBERLAND, MAINE

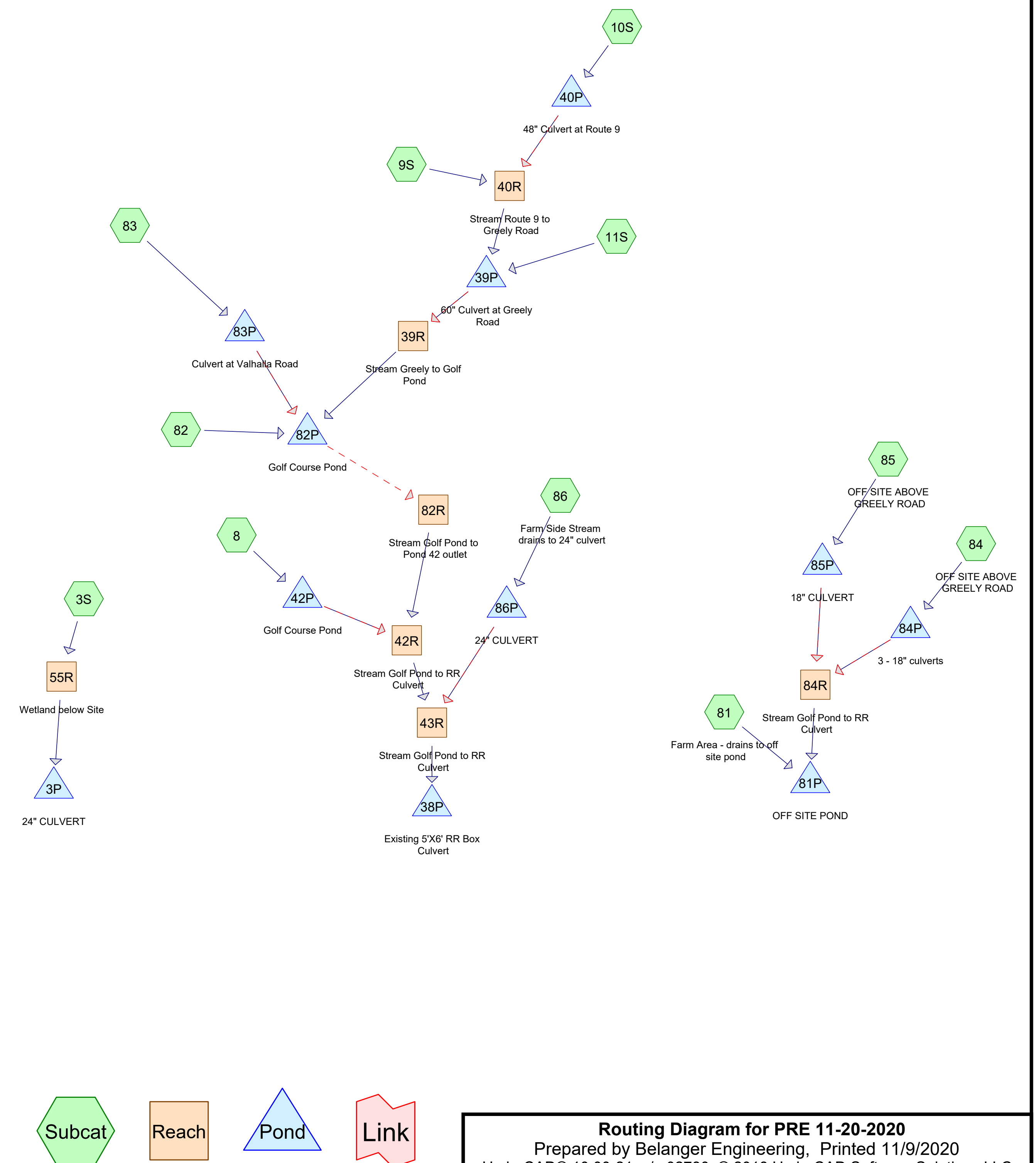
▪ TITLE:

SITE PHOTOS

▪ SCALE: NA
▪ DATE: 12-30-19

▪ JOB NO:
16.084.1

EX.



Routing Diagram for PRE 11-20-2020
Prepared by Belanger Engineering, Printed 11/9/2020
HydroCAD® 10.00-21 s/n 02780 © 2018 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
20.000	70	1/2 acre lots, 25% imp, HSG B (11S)
15.000	75	1/4 acre lots, 38% imp, HSG B (10S)
103.300	61	>75% Grass cover, Good, HSG B (11S)
0.520	98	EXISTING BARN AND HOUSE (81, 84)
0.130	98	EXISTING GRAVEL/PAVED FARM (86)
0.260	98	EXISTING HOUSE AND BARN (86)
1.100	98	EXISTING HOUSE LOTS 11 - OFF SITE (86)
13.000	98	EXISTING IMPERVIOUS AREA (9S)
112.060	74	EXISTING LAWN C (3S, 9S, 10S, 81, 82, 83, 84, 85)
74.270	61	EXISTING LAWNS B (8)
54.530	61	EXISTING LAWNS B - OFF SITE (86)
1.640	98	EXISTING PAVED/GRAVEL FARM (81, 84)
21.910	98	EXISTING ROADS (8, 10S, 81, 82, 83, 84, 85)
0.870	98	EXISTING ROADS-OFF SITE (86)
5.000	98	ROADS (11S)
31.060	70	WOODS / FIELD HSG C (3S)
18.320	74	WOODS / FIELD HSG C/D (81)
205.000	30	Woods, Good, HSG A (8, 9S, 10S, 11S)
178.000	55	Woods, Good, HSG B (8, 9S, 10S, 11S, 82, 83)
244.000	70	Woods, Good, HSG C (8, 9S, 10S, 11S)
64.000	77	Woods, Good, HSG D (10S, 11S)
1,163.970	**61**	**TOTAL AREA**

Summary for Subcatchment 3S:

Runoff = 12.36 cfs @ 12.75 hrs, Volume= 1.984 af, Depth> 0.68"

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 Rainfall=3.10"

	Area (ac)	CN	Description
*	31.060	70	WOODS / FIELD HSG C
*	0.000	98	EXISTING IMPERVIOUS AREA
*	4.000	74	EXISTING LAWN C
	35.060	70	Weighted Average
	35.060		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.8	100	0.0400	0.06		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
20.0	600	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
48.8	700	Total			

Summary for Subcatchment 8:

Runoff = 12.23 cfs @ 13.91 hrs, Volume= 4.095 af, Depth> 0.27"

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 Rainfall=3.10"

	Area (ac)	CN	Description
	32.000	30	Woods, Good, HSG A
	20.000	55	Woods, Good, HSG B
	48.000	70	Woods, Good, HSG C
*	10.000	98	EXISTING ROADS
*	74.270	61	EXISTING LAWNS B
*	0.000	98	EXISTING PAVED / GRAVEL FARM
*	0.000	98	EXISTING HOUSE AND BARN
	184.270	59	Weighted Average
	174.270		94.57% Pervious Area
	10.000		5.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
69.3	150	0.0100	0.04		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
9.7	3,700	0.0100	6.33	253.05	**Trap/Vee/Rect Channel Flow, CD** Bot.W=10.00' D=4.00' n= 0.040 Winding stream, pools & shoals
109.0	4,750	Total			

Summary for Subcatchment 9S:

Runoff = 16.96 cfs @ 13.28 hrs, Volume= 3.916 af, Depth> 0.54"

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 Rainfall=3.10"

	Area (ac)	CN	Description
	15.000	30	Woods, Good, HSG A
	10.000	55	Woods, Good, HSG B
	25.000	70	Woods, Good, HSG C
*	13.000	98	EXISTING IMPERVIOUS AREA
*	23.750	74	EXISTING LAWN C
	86.750	67	Weighted Average
	73.750		85.01% Pervious Area
	13.000		14.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0200	0.05		**Sheet Flow, AB**
					Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC**
					Forest w/Heavy Litter Kv= 2.5 fps
82.5	1,050	Total			

Summary for Subcatchment 10S:

Runoff = 23.03 cfs @ 13.52 hrs, Volume= 7.443 af, Depth> 0.22"

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 Rainfall=3.10"

	Area (ac)	CN	Description
	118.000	30	Woods, Good, HSG A
	74.000	55	Woods, Good, HSG B
	129.000	70	Woods, Good, HSG C
	48.000	77	Woods, Good, HSG D
	15.000	75	1/4 acre lots, 38% imp, HSG B
*	16.950	74	EXISTING LAWN C
*	5.000	98	EXISTING ROADS
	405.950	57	Weighted Average
	395.250		97.36% Pervious Area
	10.700		2.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0200	0.05		**Sheet Flow, AB**
					Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC**
					Forest w/Heavy Litter Kv= 2.5 fps
82.5	1,050	Total			

Summary for Subcatchment 11S:

Runoff = 19.38 cfs @ 13.45 hrs, Volume= 5.703 af, Depth> 0.27"

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 Rainfall=3.10"

	Area (ac)	CN	Description
	40.000	30	Woods, Good, HSG A
	24.000	55	Woods, Good, HSG B
	42.000	70	Woods, Good, HSG C
	16.000	77	Woods, Good, HSG D
	20.000	70	1/2 acre lots, 25% imp, HSG B
	103.300	61	>75% Grass cover, Good, HSG B
*	5.000	98	ROADS
	250.300	59	Weighted Average
	240.300		96.00% Pervious Area
	10.000		4.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0200	0.05		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
82.5	1,050	Total			

Summary for Subcatchment 81: Farm Area - drains to off site pond

Runoff = 15.02 cfs @ 12.77 hrs, Volume= 2.377 af, Depth> 0.92"

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 Rainfall=3.10"

	Area (ac)	CN	Description
*	18.320	74	WOODS / FIELD HSG C/D
*	0.510	98	EXISTING ROADS
*	11.180	74	EXISTING LAWN C
*	0.820	98	EXISTING PAVED/GRAVEL FARM
*	0.260	98	EXISTING BARN AND HOUSE
	31.090	75	Weighted Average
	29.500		94.89% Pervious Area
	1.590		5.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
50.1	100	0.0100	0.03		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
2.4	100	0.0800	0.71		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
52.5	200	Total			

Summary for Subcatchment 82:

Runoff = 4.29 cfs @ 13.37 hrs, Volume= 1.228 af, Depth> 0.27"

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 Rainfall=3.10"

	Area (ac)	CN	Description
	44.000	55	Woods, Good, HSG B
*	2.000	98	EXISTING ROADS
*	7.680	74	EXISTING LAWN C
	53.680	59	Weighted Average
	51.680		96.27% Pervious Area
	2.000		3.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
69.3	150	0.0100	0.04		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
7.3	220	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
1.8	700	0.0100	6.33	253.05	**Trap/Vee/Rect Channel Flow, CD** Bot.W=10.00' D=4.00' n= 0.040 Winding stream, pools & shoals
78.4	1,070	Total			

Summary for Subcatchment 83:

Runoff = 10.04 cfs @ 13.17 hrs, Volume= 2.098 af, Depth> 0.80"

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 Rainfall=3.10"

	Area (ac)	CN	Description
	6.000	55	Woods, Good, HSG B
*	3.500	98	EXISTING ROADS
*	21.810	74	EXISTING LAWN C
	31.310	73	Weighted Average
	27.810		88.82% Pervious Area
	3.500		11.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
69.3	150	0.0100	0.04		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
12.3	370	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
81.6	520	Total			

Summary for Subcatchment 84: OFF SITE ABOVE GREELY ROAD

Runoff = 10.52 cfs @ 12.76 hrs, Volume= 1.653 af, Depth> 0.97"

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 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.510	98	EXISTING ROADS
*	18.850	74	EXISTING LAWN C
*	0.820	98	EXISTING PAVED/GRAVEL FARM
*	0.260	98	EXISTING BARN AND HOUSE
	20.440	76	Weighted Average
	18.850		92.22% Pervious Area
	1.590		7.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
50.1	100	0.0100	0.03		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
2.4	100	0.0800	0.71		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
52.5	200	Total			

Summary for Subcatchment 85: OFF SITE ABOVE GREELY ROAD

Runoff = 3.98 cfs @ 12.77 hrs, Volume= 0.629 af, Depth> 0.92"

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 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.390	98	EXISTING ROADS
*	7.840	74	EXISTING LAWN C
	8.230	75	Weighted Average
	7.840		95.26% Pervious Area
	0.390		4.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
50.1	100	0.0100	0.03		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
2.4	100	0.0800	0.71		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
52.5	200	Total			

Summary for Subcatchment 86: Farm Side Stream drains to 24" culvert

Runoff = 6.29 cfs @ 13.75 hrs, Volume= 1.842 af, Depth> 0.39"

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 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.870	98	EXISTING ROADS-OFF SITE
*	54.530	61	EXISTING LAWNS B - OFF SITE
*	1.100	98	EXISTING HOUSE LOTS 11 - OFF SITE
*	0.260	98	EXISTING HOUSE AND BARN
*	0.130	98	EXISTING GRAVEL/PAVED FARM
	56.890	63	Weighted Average
	54.530		95.85% Pervious Area
	2.360		4.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
69.3	150	0.0100	0.04		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
8.2	3,100	0.0100	6.33	253.05	**Trap/Vee/Rect Channel Flow, CD** Bot.W=10.00' D=4.00' n= 0.040 Winding stream, pools & shoals
107.5	4,150	Total			

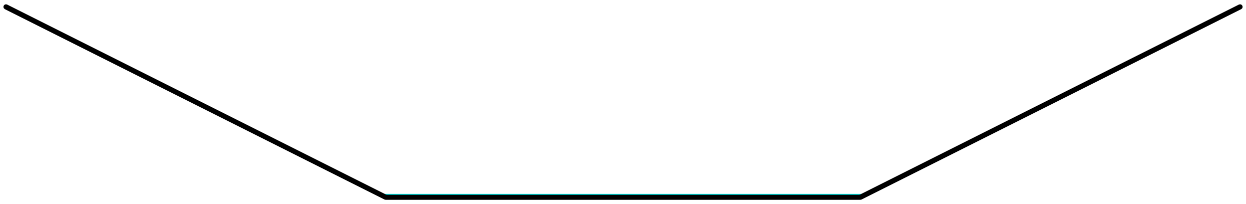
Summary for Reach 39R: Stream Greely to Golf Pond

Inflow Area = 743.000 ac, 4.54% Impervious, Inflow Depth > 0.00" for 2 YEAR event
Inflow = 0.83 cfs @ 20.00 hrs, Volume= 0.082 af
Outflow = 0.20 cfs @ 20.00 hrs, Volume= 0.008 af, Atten= 76%, Lag= 0.0 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= 53.6 min
Avg. Velocity = 0.62 fps, Avg. Travel Time= 71.8 min

Peak Storage= 1,886 cf @ 20.00 hrs
Average Depth at Peak Storage= 0.07'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 641.98 cfs

10.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 2,650.0' Slope= 0.0125 '/'
Inlet Invert= 115.00', Outlet Invert= 82.00'



Summary for Reach 40R: Stream Route 9 to Greely Road

Inflow Area = 492.700 ac, 4.81% Impervious, Inflow Depth > 0.22" for 2 YEAR event
Inflow = 17.23 cfs @ 15.31 hrs, Volume= 8.944 af
Outflow = 17.12 cfs @ 16.23 hrs, Volume= 7.939 af, Atten= 1%, Lag= 55.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.44 fps, Min. Travel Time= 32.8 min
Avg. Velocity = 2.06 fps, Avg. Travel Time= 38.8 min

Peak Storage= 33,658 cf @ 15.68 hrs
Average Depth at Peak Storage= 0.74'
Bank-Full Depth= 4.00' Flow Area= 64.0 sf, Capacity= 392.75 cfs

8.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 24.00'
Length= 4,800.0' Slope= 0.0063 '/'
Inlet Invert= 150.00', Outlet Invert= 120.00'

Summary for Reach 42R: Stream Golf Pond to RR Culvert

Inflow Area = 184.270 ac, 5.43% Impervious, Inflow Depth > 0.44" for 2 YEAR event
Inflow = 20.63 cfs @ 14.42 hrs, Volume= 6.765 af
Outflow = 20.49 cfs @ 14.72 hrs, Volume= 6.556 af, Atten= 1%, Lag= 17.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.44 fps, Min. Travel Time= 10.1 min
Avg. Velocity = 1.73 fps, Avg. Travel Time= 14.3 min

Peak Storage= 12,440 cf @ 14.55 hrs
Average Depth at Peak Storage= 0.73'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 448.47 cfs

10.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 1,481.0' Slope= 0.0061 '/'
Inlet Invert= 65.00', Outlet Invert= 56.00'

Summary for Reach 43R: Stream Golf Pond to RR Culvert

Inflow Area = 241.160 ac, 5.13% Impervious, Inflow Depth > 0.42" for 2 YEAR event
Inflow = 25.34 cfs @ 14.62 hrs, Volume= 8.388 af
Outflow = 25.30 cfs @ 14.75 hrs, Volume= 8.271 af, Atten= 0%, Lag= 8.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.81 fps, Min. Travel Time= 4.6 min
Avg. Velocity = 1.31 fps, Avg. Travel Time= 6.4 min

Peak Storage= 7,006 cf @ 14.67 hrs
Average Depth at Peak Storage= 1.14'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 257.28 cfs

10.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 500.0' Slope= 0.0020 '/'
Inlet Invert= 56.00', Outlet Invert= 55.00'

Summary for Reach 55R: Wetland below Site

Inflow Area = 35.060 ac, 0.00% Impervious, Inflow Depth > 0.68" for 2 YEAR event
Inflow = 12.36 cfs @ 12.75 hrs, Volume= 1.984 af
Outflow = 11.99 cfs @ 12.98 hrs, Volume= 1.949 af, Atten= 3%, Lag= 13.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.36 fps, Min. Travel Time= 8.0 min
Avg. Velocity = 1.77 fps, Avg. Travel Time= 15.1 min

Peak Storage= 5,731 cf @ 12.84 hrs
Average Depth at Peak Storage= 0.42'
Bank-Full Depth= 5.00' Flow Area= 65.0 sf, Capacity= 840.41 cfs

8.00' x 5.00' deep channel, n= 0.030 Stream, clean & straight
Side Slope Z-value= 1.0 '/' Top Width= 18.00'
Length= 1,604.0' Slope= 0.0162 '/'
Inlet Invert= 86.00', Outlet Invert= 60.00'

Summary for Reach 82R: Stream Golf Pond to Pond 42 outlet

Inflow	=	10.97 cfs @	13.81 hrs, Volume=	3.117 af
Outflow	=	10.64 cfs @	14.30 hrs, Volume=	2.986 af, Atten= 3%, Lag= 29.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.73 fps, Min. Travel Time= 15.9 min
Avg. Velocity = 1.13 fps, Avg. Travel Time= 24.4 min

Peak Storage= 10,164 cf @ 14.03 hrs
Average Depth at Peak Storage= 0.55'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 374.71 cfs

10.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 1,650.0' Slope= 0.0042 '/'
Inlet Invert= 72.00', Outlet Invert= 65.00'

Summary for Reach 84R: Stream Golf Pond to RR Culvert

Inflow Area =		28.670 ac,	6.91% Impervious, Inflow Depth > 0.93"	for 2 YEAR event
Inflow	=	13.43 cfs @	12.88 hrs, Volume=	2.227 af
Outflow	=	13.11 cfs @	13.12 hrs, Volume=	2.190 af, Atten= 2%, Lag= 14.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.45 fps, Min. Travel Time= 8.2 min
Avg. Velocity = 1.23 fps, Avg. Travel Time= 16.2 min

Peak Storage= 6,419 cf @ 12.98 hrs
Average Depth at Peak Storage= 0.49'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 575.29 cfs

10.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 1,200.0' Slope= 0.0100 '/'
Inlet Invert= 78.00', Outlet Invert= 66.00'

Summary for Pond 3P: 24" CULVERT

Inflow Area =	35.060 ac,	0.00% Impervious, Inflow Depth > 0.67"	for 2 YEAR event
Inflow =	11.99 cfs @	12.98 hrs, Volume=	1.949 af
Outflow =	11.17 cfs @	13.13 hrs, Volume=	1.924 af, Atten= 7%, Lag= 9.2 min
Primary =	11.17 cfs @	13.13 hrs, Volume=	1.924 af
Secondary =	0.00 cfs @	5.00 hrs, Volume=	0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 55.56' @ 13.13 hrs Surf.Area= 5,969 sf Storage= 6,494 cf

Plug-Flow detention time= 12.3 min calculated for 1.917 af (98% of inflow)
Center-of-Mass det. time= 8.3 min (884.4 - 876.1)

Volume	Invert	Avail.Storage	Storage Description
#1	54.00'	56,342 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
54.00	2,362	0	0
56.00	6,990	9,352	9,352
58.00	10,000	16,990	26,342
60.00	20,000	30,000	56,342

Device	Routing	Invert	Outlet Devices
#1	Primary	54.00'	**24.0" Round Culvert** L= 50.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 54.00' / 53.00' S= 0.0200 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Secondary	59.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=11.15 cfs @ 13.13 hrs HW=55.56' (Free Discharge)
1=Culvert (Inlet Controls 11.15 cfs @ 4.25 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=54.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 38P: Existing 5'X6' RR Box Culvert

Inflow Area = 241.160 ac, 5.13% Impervious, Inflow Depth > 0.41" for 2 YEAR event
Inflow = 25.30 cfs @ 14.75 hrs, Volume= 8.271 af
Outflow = 25.26 cfs @ 14.82 hrs, Volume= 8.243 af, Atten= 0%, Lag= 3.9 min
Primary = 25.26 cfs @ 14.82 hrs, Volume= 8.243 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 56.45' @ 14.82 hrs Surf.Area= 6,257 sf Storage= 3,946 cf

Plug-Flow detention time= 2.5 min calculated for 8.243 af (100% of inflow)
Center-of-Mass det. time= 1.7 min (974.8 - 973.1)

Volume	Invert	Avail.Storage	Storage Description
#1	55.00'	4,415,983 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
55.00	1,320	0	0
56.00	2,578	1,949	1,949
57.00	10,714	6,646	8,595
60.00	57,013	101,591	110,186
62.00	234,474	291,487	401,673
66.00	504,090	1,477,128	1,878,801
70.00	764,501	2,537,182	4,415,983

Device	Routing	Invert	Outlet Devices
#1	Primary	55.10'	**60.0" W x 74.0" H Box Box Culvert** L= 90.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 55.10' / 53.70' S= 0.0156 '/' Cc= 0.900 n= 0.022 Earth, clean & straight, Flow Area= 30.83 sf
#2	Secondary	69.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=25.23 cfs @ 14.82 hrs HW=56.45' (Free Discharge)
↑—**1=Box Culvert** (Inlet Controls 25.23 cfs @ 3.73 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=55.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 39P: 60" Culvert at Greely Road

Inflow Area = 743.000 ac, 4.54% Impervious, Inflow Depth > 0.22" for 2 YEAR event
Inflow = 29.22 cfs @ 14.17 hrs, Volume= 13.642 af
Outflow = 0.83 cfs @ 20.00 hrs, Volume= 0.082 af, Atten= 97%, Lag= 349.7 min
Primary = 0.83 cfs @ 20.00 hrs, Volume= 0.082 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

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

Peak Elev= 120.64' @ 20.00 hrs Surf.Area= 953,534 sf Storage= 588,117 cf

Plug-Flow detention time= 403.8 min calculated for 0.082 af (1% of inflow)
Center-of-Mass det. time= 188.3 min (1,155.6 - 967.3)

Volume	Invert	Avail.Storage	Storage Description
#1	120.00'	149,235,760 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 2

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.00	439,044	0	0
140.00	1,613,877	20,529,210	20,529,210
160.00	3,794,990	54,088,670	74,617,880

Device	Routing	Invert	Outlet Devices
#1	Primary	120.50'	**60.0" Round 60" Culvert w/ 6.0" inside fill** L= 90.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 120.00' / 118.20' S= 0.0200 '/' Cc= 0.900 n= 0.022 Earth, clean & straight, Flow Area= 18.61 sf
#2	Secondary	131.50'	**25.0' long x 100.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.55 cfs @ 20.00 hrs HW=120.64' (Free Discharge)
└─**1=60" Culvert** (Inlet Controls 0.55 cfs @ 1.21 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=120.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 40P: 48" Culvert at Route 9

Inflow Area = 405.950 ac, 2.64% Impervious, Inflow Depth > 0.22" for 2 YEAR event
Inflow = 23.03 cfs @ 13.52 hrs, Volume= 7.443 af
Outflow = 11.94 cfs @ 16.18 hrs, Volume= 5.028 af, Atten= 48%, Lag= 159.6 min
Primary = 11.94 cfs @ 16.18 hrs, Volume= 5.028 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 161.48' @ 16.18 hrs Surf.Area= 108,987 sf Storage= 131,360 cf

Plug-Flow detention time= 152.2 min calculated for 5.028 af (68% of inflow)
Center-of-Mass det. time= 82.6 min (1,012.5 - 929.9)

Volume	Invert	Avail.Storage	Storage Description
#1	160.00'	22,928,710 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
160.00	68,874	0	0
180.00	611,999	6,808,730	6,808,730
200.00	999,999	16,119,980	22,928,710

Device	Routing	Invert	Outlet Devices
#1	Primary	160.50'	**60.0" Round 48" Culvert w/ 6.0" inside fill** L= 90.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 160.00' / 158.70' S= 0.0144 '/' Cc= 0.900 n= 0.022 Earth, clean & straight, Flow Area= 18.61 sf
#2	Secondary	180.00'	**25.0' long x 100.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=11.69 cfs @ 16.18 hrs HW=161.48' (Free Discharge)
1=48" Culvert (Inlet Controls 11.69 cfs @ 3.05 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=160.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 42P: Golf Course Pond

Inflow Area =	184.270 ac,	5.43% Impervious,	Inflow Depth > 0.27"	for 2 YEAR event
Inflow =	12.23 cfs @	13.91 hrs, Volume=	4.095 af	
Outflow =	10.24 cfs @	14.65 hrs, Volume=	3.779 af,	Atten= 16%, Lag= 44.4 min
Primary =	10.24 cfs @	14.65 hrs, Volume=	3.779 af	
Secondary =	0.00 cfs @	5.00 hrs, Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 71.43' @ 14.65 hrs Surf.Area= 25,628 sf Storage= 29,187 cf

Plug-Flow detention time= 50.6 min calculated for 3.766 af (92% of inflow)
Center-of-Mass det. time= 31.7 min (969.4 - 937.7)

Volume	Invert	Avail.Storage	Storage Description
#1	70.00'	514,000 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
70.00	15,328	0	0
72.00	29,781	45,109	45,109
74.00	42,804	72,585	117,694
76.00	59,373	102,177	219,871
78.00	73,726	133,099	352,970
80.00	87,304	161,030	514,000

Device	Routing	Invert	Outlet Devices
#1	Primary	70.00'	**30.0" Round Culvert** L= 80.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 70.00' / 69.50' S= 0.0063 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 4.91 sf
#2	Secondary	78.00'	**80.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=10.24 cfs @ 14.65 hrs HW=71.43' (Free Discharge)
└─**1=Culvert** (Barrel Controls 10.24 cfs @ 5.11 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=70.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 81P: OFF SITE POND

Inflow Area =	59.760 ac,	5.97% Impervious, Inflow Depth > 0.92"	for 2 YEAR event	
Inflow =	25.75 cfs @	12.95 hrs, Volume=	4.567 af	
Outflow =	15.27 cfs @	13.60 hrs, Volume=	4.245 af,	Atten= 41%, Lag= 39.2 min
Primary =	15.27 cfs @	13.60 hrs, Volume=	4.245 af	
Secondary =	0.00 cfs @	5.00 hrs, Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Starting Elev= 62.00' Surf.Area= 20,254 sf Storage= 139,510 cf
Peak Elev= 64.13' @ 13.60 hrs Surf.Area= 31,763 sf Storage= 194,644 cf (55,134 cf above start)

Plug-Flow detention time= 316.2 min calculated for 1.039 af (23% of inflow)
Center-of-Mass det. time= 45.6 min (909.5 - 863.9)

Volume	Invert	Avail.Storage	Storage Description
#1	52.00'	393,587 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
52.00	7,648	0	0
62.00	20,254	139,510	139,510
64.00	30,728	50,982	190,492
66.00	46,299	77,027	267,519
67.00	63,288	54,794	322,313
68.00	79,261	71,275	393,587

Device	Routing	Invert	Outlet Devices
#1	Primary	62.00'	**24.0" Round Culvert** L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 62.00' / 61.50' S= 0.0050 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 3.14 sf
#2	Secondary	66.00'	**8.0' 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=15.28 cfs @ 13.60 hrs HW=64.13' (Free Discharge)
└─**1=Culvert** (Barrel Controls 15.28 cfs @ 5.67 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=62.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 82P: Golf Course Pond

Inflow Area = 827.990 ac, 4.73% Impervious, Inflow Depth > 0.05" for 2 YEAR event
Inflow = 14.17 cfs @ 13.31 hrs, Volume= 3.329 af
Outflow = 10.97 cfs @ 13.81 hrs, Volume= 3.117 af, Atten= 23%, Lag= 30.1 min
Secondary = 10.97 cfs @ 13.81 hrs, Volume= 3.117 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 76.64' @ 13.81 hrs Surf.Area= 46,588 sf Storage= 27,999 cf

Plug-Flow detention time= 50.8 min calculated for 3.107 af (93% of inflow)
Center-of-Mass det. time= 32.9 min (928.0 - 895.1)

Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	395,691 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
76.00	41,373	0	0
82.00	90,524	395,691	395,691

Device	Routing	Invert	Outlet Devices
#1	Secondary	76.00'	**8.0' 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

Secondary OutFlow Max=10.96 cfs @ 13.81 hrs HW=76.64' (Free Discharge)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 10.96 cfs @ 2.15 fps)

Summary for Pond 83P: Culvert at Valhalla Road

Inflow Area = 31.310 ac, 11.18% Impervious, Inflow Depth > 0.80" for 2 YEAR event
Inflow = 10.04 cfs @ 13.17 hrs, Volume= 2.098 af
Outflow = 9.93 cfs @ 13.27 hrs, Volume= 2.093 af, Atten= 1%, Lag= 5.8 min
Primary = 9.93 cfs @ 13.27 hrs, Volume= 2.093 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 122.11' @ 13.27 hrs Surf.Area= 1,142 sf Storage= 1,593 cf

Plug-Flow detention time= 2.5 min calculated for 2.093 af (100% of inflow)
Center-of-Mass det. time= 1.8 min (880.7 - 878.8)

Volume	Invert	Avail.Storage	Storage Description
#1	120.00'	648,610 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.00	366	0	0
130.00	4,041	22,035	22,035
140.00	30,637	173,390	195,425
150.00	60,000	453,185	648,610

Device	Routing	Invert	Outlet Devices
#1	Primary	120.00'	**18.0" Round Culvert** L= 80.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 120.00' / 119.00' S= 0.0125 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	148.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=9.93 cfs @ 13.27 hrs HW=122.11' (Free Discharge)
└─**1=Culvert** (Inlet Controls 9.93 cfs @ 5.62 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=120.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 84P: 3 - 18" culverts

Inflow Area = 20.440 ac, 7.78% Impervious, Inflow Depth > 0.97" for 2 YEAR event
Inflow = 10.52 cfs @ 12.76 hrs, Volume= 1.653 af
Outflow = 10.31 cfs @ 12.85 hrs, Volume= 1.602 af, Atten= 2%, Lag= 5.0 min
Primary = 10.31 cfs @ 12.85 hrs, Volume= 1.602 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 81.38' @ 12.85 hrs Surf.Area= 5,564 sf Storage= 5,483 cf

Plug-Flow detention time= 19.5 min calculated for 1.602 af (97% of inflow)
Center-of-Mass det. time= 9.5 min (859.6 - 850.2)

Volume	Invert	Avail.Storage	Storage Description
#1	80.00'	297,916 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
80.00	2,362	0	0
82.00	6,990	9,352	9,352
84.00	90,787	97,777	107,129
86.00	100,000	190,787	297,916

Device	Routing	Invert	Outlet Devices
#1	Primary	80.50'	**18.0" Round Culvert X 3.00** L= 50.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 80.50' / 80.00' S= 0.0100 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	84.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir**

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=10.30 cfs @ 12.85 hrs HW=81.38' (Free Discharge)
1=Culvert (Barrel Controls 10.30 cfs @ 4.56 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=80.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 85P: 18" CULVERT

Inflow Area =	8.230 ac,	4.74% Impervious, Inflow Depth > 0.92"		for 2 YEAR event
Inflow =	3.98 cfs @	12.77 hrs, Volume=	0.629 af	
Outflow =	3.31 cfs @	13.03 hrs, Volume=	0.625 af,	Atten= 17%, Lag= 15.9 min
Primary =	3.31 cfs @	13.03 hrs, Volume=	0.625 af	
Secondary =	0.00 cfs @	5.00 hrs, Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 90.93' @ 13.03 hrs Surf.Area= 6,258 sf Storage= 3,475 cf

Plug-Flow detention time= 16.2 min calculated for 0.625 af (99% of inflow)
Center-of-Mass det. time= 13.7 min (866.2 - 852.5)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	29,280 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.00	1,196	0	0
92.00	12,056	13,252	13,252
93.00	20,000	16,028	29,280

Device	Routing	Invert	Outlet Devices
#1	Primary	89.86'	**18.0" Round Culvert** L= 28.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 89.86' / 89.79' S= 0.0025 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	92.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=3.31 cfs @ 13.03 hrs HW=90.93' (Free Discharge)
1=Culvert (Barrel Controls 3.31 cfs @ 3.43 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=90.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 86P: 24" CULVERT

Inflow Area = 56.890 ac, 4.15% Impervious, Inflow Depth > 0.39" for 2 YEAR event
Inflow = 6.29 cfs @ 13.75 hrs, Volume= 1.842 af
Outflow = 6.17 cfs @ 13.91 hrs, Volume= 1.832 af, Atten= 2%, Lag= 9.8 min
Primary = 6.17 cfs @ 13.91 hrs, Volume= 1.832 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 58.86' @ 13.91 hrs Surf.Area= 5,642 sf Storage= 3,087 cf

Plug-Flow detention time= 7.7 min calculated for 1.832 af (99% of inflow)
Center-of-Mass det. time= 6.1 min (928.9 - 922.8)

Volume	Invert	Avail.Storage	Storage Description
#1	58.00'	44,762 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
58.00	1,500	0	0
60.00	11,084	12,584	12,584
62.00	21,094	32,178	44,762

Device	Routing	Invert	Outlet Devices
#1	Primary	57.78'	**24.0" Round Culvert** L= 73.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 57.78' / 56.17' S= 0.0221 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Secondary	61.00'	**100.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=6.17 cfs @ 13.91 hrs HW=58.86' (Free Discharge)
└─**1=Culvert** (Inlet Controls 6.17 cfs @ 3.55 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=58.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Subcatchment 3S:

Runoff = 30.71 cfs @ 12.71 hrs, Volume= 4.595 af, Depth> 1.57"

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 Rainfall=4.60"

	Area (ac)	CN	Description
*	31.060	70	WOODS / FIELD HSG C
*	0.000	98	EXISTING IMPERVIOUS AREA
*	4.000	74	EXISTING LAWN C
	35.060	70	Weighted Average
	35.060		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.8	100	0.0400	0.06		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
20.0	600	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
48.8	700	Total			

Summary for Subcatchment 8:

Runoff = 48.84 cfs @ 13.67 hrs, Volume= 13.109 af, Depth> 0.85"

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 Rainfall=4.60"

	Area (ac)	CN	Description
	32.000	30	Woods, Good, HSG A
	20.000	55	Woods, Good, HSG B
	48.000	70	Woods, Good, HSG C
*	10.000	98	EXISTING ROADS
*	74.270	61	EXISTING LAWNS B
*	0.000	98	EXISTING PAVED / GRAVEL FARM
*	0.000	98	EXISTING HOUSE AND BARN
	184.270	59	Weighted Average
	174.270		94.57% Pervious Area
	10.000		5.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
69.3	150	0.0100	0.04		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
9.7	3,700	0.0100	6.33	253.05	**Trap/Vee/Rect Channel Flow, CD** Bot.W=10.00' D=4.00' n= 0.040 Winding stream, pools & shoals
109.0	4,750	Total			

Summary for Subcatchment 9S:

Runoff = 47.02 cfs @ 13.17 hrs, Volume= 9.735 af, Depth> 1.35"

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 Rainfall=4.60"

	Area (ac)	CN	Description
	15.000	30	Woods, Good, HSG A
	10.000	55	Woods, Good, HSG B
	25.000	70	Woods, Good, HSG C
*	13.000	98	EXISTING IMPERVIOUS AREA
*	23.750	74	EXISTING LAWN C
	86.750	67	Weighted Average
	73.750		85.01% Pervious Area
	13.000		14.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0200	0.05		**Sheet Flow, AB**
					Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC**
					Forest w/Heavy Litter Kv= 2.5 fps
82.5	1,050	Total			

Summary for Subcatchment 10S:

Runoff = 110.28 cfs @ 13.29 hrs, Volume= 25.827 af, Depth> 0.76"

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 Rainfall=4.60"

	Area (ac)	CN	Description
	118.000	30	Woods, Good, HSG A
	74.000	55	Woods, Good, HSG B
	129.000	70	Woods, Good, HSG C
	48.000	77	Woods, Good, HSG D
	15.000	75	1/4 acre lots, 38% imp, HSG B
*	16.950	74	EXISTING LAWN C
*	5.000	98	EXISTING ROADS
	405.950	57	Weighted Average
	395.250		97.36% Pervious Area
	10.700		2.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0200	0.05		**Sheet Flow, AB**
					Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC**
					Forest w/Heavy Litter Kv= 2.5 fps
82.5	1,050	Total			

Summary for Subcatchment 11S:

Runoff = 80.13 cfs @ 13.27 hrs, Volume= 18.133 af, Depth> 0.87"

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 Rainfall=4.60"

	Area (ac)	CN	Description
	40.000	30	Woods, Good, HSG A
	24.000	55	Woods, Good, HSG B
	42.000	70	Woods, Good, HSG C
	16.000	77	Woods, Good, HSG D
	20.000	70	1/2 acre lots, 25% imp, HSG B
	103.300	61	>75% Grass cover, Good, HSG B
*	5.000	98	ROADS
	250.300	59	Weighted Average
	240.300		96.00% Pervious Area
	10.000		4.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0200	0.05		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
82.5	1,050	Total			

Summary for Subcatchment 81: Farm Area - drains to off site pond

Runoff = 32.62 cfs @ 12.74 hrs, Volume= 5.015 af, Depth> 1.94"

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 Rainfall=4.60"

	Area (ac)	CN	Description
*	18.320	74	WOODS / FIELD HSG C/D
*	0.510	98	EXISTING ROADS
*	11.180	74	EXISTING LAWN C
*	0.820	98	EXISTING PAVED/GRAVEL FARM
*	0.260	98	EXISTING BARN AND HOUSE
	31.090	75	Weighted Average
	29.500		94.89% Pervious Area
	1.590		5.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
50.1	100	0.0100	0.03		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
2.4	100	0.0800	0.71		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
52.5	200	Total			

Summary for Subcatchment 82:

Runoff = 17.74 cfs @ 13.18 hrs, Volume= 3.899 af, Depth> 0.87"

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 Rainfall=4.60"

	Area (ac)	CN	Description
	44.000	55	Woods, Good, HSG B
*	2.000	98	EXISTING ROADS
*	7.680	74	EXISTING LAWN C
	53.680	59	Weighted Average
	51.680		96.27% Pervious Area
	2.000		3.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
69.3	150	0.0100	0.04		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
7.3	220	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
1.8	700	0.0100	6.33	253.05	**Trap/Vee/Rect Channel Flow, CD** Bot.W=10.00' D=4.00' n= 0.040 Winding stream, pools & shoals
78.4	1,070	Total			

Summary for Subcatchment 83:

Runoff = 23.03 cfs @ 13.14 hrs, Volume= 4.598 af, Depth> 1.76"

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 Rainfall=4.60"

	Area (ac)	CN	Description
	6.000	55	Woods, Good, HSG B
*	3.500	98	EXISTING ROADS
*	21.810	74	EXISTING LAWN C
	31.310	73	Weighted Average
	27.810		88.82% Pervious Area
	3.500		11.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
69.3	150	0.0100	0.04		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
12.3	370	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
81.6	520	Total			

Summary for Subcatchment 84: OFF SITE ABOVE GREELY ROAD

Runoff = 22.32 cfs @ 12.73 hrs, Volume= 3.428 af, Depth> 2.01"

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 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.510	98	EXISTING ROADS
*	18.850	74	EXISTING LAWN C
*	0.820	98	EXISTING PAVED/GRAVEL FARM
*	0.260	98	EXISTING BARN AND HOUSE
	20.440	76	Weighted Average
	18.850		92.22% Pervious Area
	1.590		7.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
50.1	100	0.0100	0.03		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
2.4	100	0.0800	0.71		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
52.5	200	Total			

Summary for Subcatchment 85: OFF SITE ABOVE GREELY ROAD

Runoff = 8.63 cfs @ 12.74 hrs, Volume= 1.327 af, Depth> 1.94"

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 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.390	98	EXISTING ROADS
*	7.840	74	EXISTING LAWN C
	8.230	75	Weighted Average
	7.840		95.26% Pervious Area
	0.390		4.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
50.1	100	0.0100	0.03		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
2.4	100	0.0800	0.71		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
52.5	200	Total			

Summary for Subcatchment 86: Farm Side Stream drains to 24" culvert

Runoff = 20.31 cfs @ 13.55 hrs, Volume= 5.122 af, Depth> 1.08"

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 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.870	98	EXISTING ROADS-OFF SITE
*	54.530	61	EXISTING LAWNS B - OFF SITE
*	1.100	98	EXISTING HOUSE LOTS 11 - OFF SITE
*	0.260	98	EXISTING HOUSE AND BARN
*	0.130	98	EXISTING GRAVEL/PAVED FARM
	56.890	63	Weighted Average
	54.530		95.85% Pervious Area
	2.360		4.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
69.3	150	0.0100	0.04		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
8.2	3,100	0.0100	6.33	253.05	**Trap/Vee/Rect Channel Flow, CD** Bot.W=10.00' D=4.00' n= 0.040 Winding stream, pools & shoals
107.5	4,150	Total			

Summary for Reach 39R: Stream Greely to Golf Pond

Inflow Area = 743.000 ac, 4.54% Impervious, Inflow Depth > 0.10" for 10 YEAR event
Inflow = 20.44 cfs @ 20.00 hrs, Volume= 6.126 af
Outflow = 19.97 cfs @ 20.00 hrs, Volume= 5.325 af, Atten= 2%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.07 fps, Min. Travel Time= 14.4 min
Avg. Velocity = 2.28 fps, Avg. Travel Time= 19.4 min

Peak Storage= 17,477 cf @ 20.00 hrs
Average Depth at Peak Storage= 0.59'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 641.98 cfs

10.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 2,650.0' Slope= 0.0125 '/'
Inlet Invert= 115.00', Outlet Invert= 82.00'

Summary for Reach 40R: Stream Route 9 to Greely Road

Inflow Area = 492.700 ac, 4.81% Impervious, Inflow Depth > 0.78" for 10 YEAR event
Inflow = 85.67 cfs @ 13.80 hrs, Volume= 31.827 af
Outflow = 83.71 cfs @ 14.48 hrs, Volume= 30.222 af, Atten= 2%, Lag= 40.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.00 fps, Min. Travel Time= 20.0 min
Avg. Velocity = 2.82 fps, Avg. Travel Time= 28.4 min

Peak Storage= 100,395 cf @ 14.15 hrs
Average Depth at Peak Storage= 1.80'
Bank-Full Depth= 4.00' Flow Area= 64.0 sf, Capacity= 392.75 cfs

8.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 24.00'
Length= 4,800.0' Slope= 0.0063 '/'
Inlet Invert= 150.00', Outlet Invert= 120.00'

Summary for Reach 42R: Stream Golf Pond to RR Culvert

Inflow Area = 184.270 ac, 5.43% Impervious, Inflow Depth > 1.60" for 10 YEAR event
Inflow = 67.66 cfs @ 14.16 hrs, Volume= 24.547 af
Outflow = 67.44 cfs @ 14.36 hrs, Volume= 23.887 af, Atten= 0%, Lag= 11.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.60 fps, Min. Travel Time= 6.9 min
Avg. Velocity = 2.38 fps, Avg. Travel Time= 10.4 min

Peak Storage= 27,730 cf @ 14.25 hrs
Average Depth at Peak Storage= 1.45'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 448.47 cfs

10.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 1,481.0' Slope= 0.0061 '/'
Inlet Invert= 65.00', Outlet Invert= 56.00'

Summary for Reach 43R: Stream Golf Pond to RR Culvert

Inflow Area = 241.160 ac, 5.13% Impervious, Inflow Depth > 1.44" for 10 YEAR event
Inflow = 84.81 cfs @ 14.29 hrs, Volume= 28.983 af
Outflow = 84.74 cfs @ 14.38 hrs, Volume= 28.645 af, Atten= 0%, Lag= 5.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.62 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 1.77 fps, Avg. Travel Time= 4.7 min

Peak Storage= 16,189 cf @ 14.33 hrs
Average Depth at Peak Storage= 2.24'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 257.28 cfs

10.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 500.0' Slope= 0.0020 '/'
Inlet Invert= 56.00', Outlet Invert= 55.00'

Summary for Reach 55R: Wetland below Site

Inflow Area = 35.060 ac, 0.00% Impervious, Inflow Depth > 1.57" for 10 YEAR event
Inflow = 30.71 cfs @ 12.71 hrs, Volume= 4.595 af
Outflow = 30.29 cfs @ 12.87 hrs, Volume= 4.545 af, Atten= 1%, Lag= 9.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.69 fps, Min. Travel Time= 5.7 min
Avg. Velocity = 2.19 fps, Avg. Travel Time= 12.2 min

Peak Storage= 10,372 cf @ 12.77 hrs
Average Depth at Peak Storage= 0.74'
Bank-Full Depth= 5.00' Flow Area= 65.0 sf, Capacity= 840.41 cfs

8.00' x 5.00' deep channel, n= 0.030 Stream, clean & straight
Side Slope Z-value= 1.0 '/' Top Width= 18.00'
Length= 1,604.0' Slope= 0.0162 '/'
Inlet Invert= 86.00', Outlet Invert= 60.00'

Summary for Reach 82R: Stream Golf Pond to Pond 42 outlet

Inflow = 32.90 cfs @ 13.71 hrs, Volume= 12.716 af
Outflow = 32.47 cfs @ 14.03 hrs, Volume= 11.989 af, Atten= 1%, Lag= 19.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.53 fps, Min. Travel Time= 10.9 min
Avg. Velocity = 1.68 fps, Avg. Travel Time= 16.4 min

Peak Storage= 21,227 cf @ 13.85 hrs
Average Depth at Peak Storage= 1.06'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 374.71 cfs

10.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 1,650.0' Slope= 0.0042 '/'
Inlet Invert= 72.00', Outlet Invert= 65.00'

Summary for Reach 84R: Stream Golf Pond to RR Culvert

Inflow Area = 28.670 ac, 6.91% Impervious, Inflow Depth > 1.96" for 10 YEAR event
Inflow = 28.07 cfs @ 12.87 hrs, Volume= 4.690 af
Outflow = 27.76 cfs @ 13.04 hrs, Volume= 4.638 af, Atten= 1%, Lag= 10.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.19 fps, Min. Travel Time= 6.3 min
Avg. Velocity = 1.48 fps, Avg. Travel Time= 13.5 min

Peak Storage= 10,452 cf @ 12.94 hrs
Average Depth at Peak Storage= 0.76'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 575.29 cfs

10.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 1,200.0' Slope= 0.0100 '/'
Inlet Invert= 78.00', Outlet Invert= 66.00'

Summary for Pond 3P: 24" CULVERT

Inflow Area = 35.060 ac, 0.00% Impervious, Inflow Depth > 1.56" for 10 YEAR event
Inflow = 30.29 cfs @ 12.87 hrs, Volume= 4.545 af
Outflow = 24.28 cfs @ 13.15 hrs, Volume= 4.508 af, Atten= 20%, Lag= 17.2 min
Primary = 24.28 cfs @ 13.15 hrs, Volume= 4.508 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 57.58' @ 13.15 hrs Surf.Area= 9,361 sf Storage= 22,233 cf

Plug-Flow detention time= 12.5 min calculated for 4.508 af (99% of inflow)
Center-of-Mass det. time= 9.8 min (864.4 - 854.6)

Volume	Invert	Avail.Storage	Storage Description
#1	54.00'	56,342 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
54.00	2,362	0	0
56.00	6,990	9,352	9,352
58.00	10,000	16,990	26,342
60.00	20,000	30,000	56,342

Device	Routing	Invert	Outlet Devices
#1	Primary	54.00'	**24.0" Round Culvert** L= 50.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 54.00' / 53.00' S= 0.0200 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Secondary	59.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=24.27 cfs @ 13.15 hrs HW=57.57' (Free Discharge)
└─**1=Culvert** (Inlet Controls 24.27 cfs @ 7.73 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=54.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 38P: Existing 5'X6' RR Box Culvert

Inflow Area = 241.160 ac, 5.13% Impervious, Inflow Depth > 1.43" for 10 YEAR event
Inflow = 84.74 cfs @ 14.38 hrs, Volume= 28.645 af
Outflow = 83.43 cfs @ 14.57 hrs, Volume= 28.508 af, Atten= 2%, Lag= 11.3 min
Primary = 83.43 cfs @ 14.57 hrs, Volume= 28.508 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 58.10' @ 14.57 hrs Surf.Area= 27,754 sf Storage= 29,832 cf

Plug-Flow detention time= 4.2 min calculated for 28.508 af (100% of inflow)
Center-of-Mass det. time= 3.1 min (967.1 - 963.9)

Volume	Invert	Avail.Storage	Storage Description
#1	55.00'	4,415,983 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
55.00	1,320	0	0
56.00	2,578	1,949	1,949
57.00	10,714	6,646	8,595
60.00	57,013	101,591	110,186
62.00	234,474	291,487	401,673
66.00	504,090	1,477,128	1,878,801
70.00	764,501	2,537,182	4,415,983

Device	Routing	Invert	Outlet Devices
#1	Primary	55.10'	**60.0" W x 74.0" H Box Box Culvert** L= 90.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 55.10' / 53.70' S= 0.0156 '/' Cc= 0.900 n= 0.022 Earth, clean & straight, Flow Area= 30.83 sf
#2	Secondary	69.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=83.55 cfs @ 14.57 hrs HW=58.10' (Free Discharge)
↑—**1=Box Culvert** (Inlet Controls 83.55 cfs @ 5.56 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=55.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 39P: 60" Culvert at Greely Road

Inflow Area = 743.000 ac, 4.54% Impervious, Inflow Depth > 0.78" for 10 YEAR event
Inflow = 129.01 cfs @ 14.01 hrs, Volume= 48.355 af
Outflow = 20.44 cfs @ 20.00 hrs, Volume= 6.126 af, Atten= 84%, Lag= 359.5 min
Primary = 20.44 cfs @ 20.00 hrs, Volume= 6.126 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

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

Peak Elev= 121.86' @ 20.00 hrs Surf.Area= 1,096,574 sf Storage= 1,836,157 cf

Plug-Flow detention time= 291.0 min calculated for 6.105 af (13% of inflow)
Center-of-Mass det. time= 138.6 min (1,073.5 - 934.9)

Volume	Invert	Avail.Storage	Storage Description
#1	120.00'	149,235,760 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 2

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.00	439,044	0	0
140.00	1,613,877	20,529,210	20,529,210
160.00	3,794,990	54,088,670	74,617,880

Device	Routing	Invert	Outlet Devices
#1	Primary	120.50'	**60.0" Round 60" Culvert w/ 6.0" inside fill** L= 90.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 120.00' / 118.20' S= 0.0200 '/' Cc= 0.900 n= 0.022 Earth, clean & straight, Flow Area= 18.61 sf
#2	Secondary	131.50'	**25.0' long x 100.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=20.21 cfs @ 20.00 hrs HW=121.86' (Free Discharge)
↑—**1=60" Culvert** (Inlet Controls 20.21 cfs @ 3.59 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=120.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 40P: 48" Culvert at Route 9

Inflow Area = 405.950 ac, 2.64% Impervious, Inflow Depth > 0.76" for 10 YEAR event
Inflow = 110.28 cfs @ 13.29 hrs, Volume= 25.827 af
Outflow = 60.02 cfs @ 14.38 hrs, Volume= 22.091 af, Atten= 46%, Lag= 65.4 min
Primary = 60.02 cfs @ 14.38 hrs, Volume= 22.091 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 163.13' @ 14.38 hrs Surf.Area= 153,871 sf Storage= 348,586 cf

Plug-Flow detention time= 98.1 min calculated for 22.091 af (86% of inflow)
Center-of-Mass det. time= 61.2 min (957.0 - 895.8)

Volume	Invert	Avail.Storage	Storage Description
#1	160.00'	22,928,710 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
160.00	68,874	0	0
180.00	611,999	6,808,730	6,808,730
200.00	999,999	16,119,980	22,928,710

Device	Routing	Invert	Outlet Devices
#1	Primary	160.50'	**60.0" Round 48" Culvert w/ 6.0" inside fill** L= 90.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 160.00' / 158.70' S= 0.0144 '/' Cc= 0.900 n= 0.022 Earth, clean & straight, Flow Area= 18.61 sf
#2	Secondary	180.00'	**25.0' long x 100.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=59.93 cfs @ 14.38 hrs HW=163.13' (Free Discharge)
└─**1=48" Culvert** (Inlet Controls 59.93 cfs @ 5.03 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=160.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 42P: Golf Course Pond

Inflow Area = 184.270 ac, 5.43% Impervious, Inflow Depth > 0.85" for 10 YEAR event
Inflow = 48.84 cfs @ 13.67 hrs, Volume= 13.109 af
Outflow = 36.22 cfs @ 14.41 hrs, Volume= 12.558 af, Atten= 26%, Lag= 44.5 min
Primary = 36.22 cfs @ 14.41 hrs, Volume= 12.558 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 73.72' @ 14.41 hrs Surf.Area= 40,958 sf Storage= 105,820 cf

Plug-Flow detention time= 44.4 min calculated for 12.517 af (95% of inflow)
Center-of-Mass det. time= 32.9 min (942.5 - 909.6)

Volume	Invert	Avail.Storage	Storage Description
#1	70.00'	514,000 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
70.00	15,328	0	0
72.00	29,781	45,109	45,109
74.00	42,804	72,585	117,694
76.00	59,373	102,177	219,871
78.00	73,726	133,099	352,970
80.00	87,304	161,030	514,000

Device	Routing	Invert	Outlet Devices
#1	Primary	70.00'	**30.0" Round Culvert** L= 80.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 70.00' / 69.50' S= 0.0063 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 4.91 sf
#2	Secondary	78.00'	**80.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=36.22 cfs @ 14.41 hrs HW=73.72' (Free Discharge)
└—**1=Culvert** (Barrel Controls 36.22 cfs @ 7.38 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=70.00' (Free Discharge)
└—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 81P: OFF SITE POND

Inflow Area = 59.760 ac, 5.97% Impervious, Inflow Depth > 1.94" for 10 YEAR event
Inflow = 56.76 cfs @ 12.87 hrs, Volume= 9.653 af
Outflow = 28.06 cfs @ 13.66 hrs, Volume= 9.204 af, Atten= 51%, Lag= 46.9 min
Primary = 26.83 cfs @ 13.66 hrs, Volume= 9.160 af
Secondary = 1.23 cfs @ 13.66 hrs, Volume= 0.044 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Starting Elev= 62.00' Surf.Area= 20,254 sf Storage= 139,510 cf
Peak Elev= 66.15' @ 13.66 hrs Surf.Area= 48,771 sf Storage= 274,436 cf (134,926 cf above start)

Plug-Flow detention time= 184.2 min calculated for 5.981 af (62% of inflow)
Center-of-Mass det. time= 56.1 min (902.7 - 846.6)

Volume	Invert	Avail.Storage	Storage Description
#1	52.00'	393,587 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
52.00	7,648	0	0
62.00	20,254	139,510	139,510
64.00	30,728	50,982	190,492
66.00	46,299	77,027	267,519
67.00	63,288	54,794	322,313
68.00	79,261	71,275	393,587

Device	Routing	Invert	Outlet Devices
#1	Primary	62.00'	**24.0" Round Culvert** L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 62.00' / 61.50' S= 0.0050 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 3.14 sf
#2	Secondary	66.00'	**8.0' 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=26.83 cfs @ 13.66 hrs HW=66.15' (Free Discharge)
└—**1=Culvert** (Inlet Controls 26.83 cfs @ 8.54 fps)

Secondary OutFlow Max=1.10 cfs @ 13.66 hrs HW=66.15' (Free Discharge)
└—**2=Broad-Crested Rectangular Weir** (Weir Controls 1.10 cfs @ 0.95 fps)

Summary for Pond 82P: Golf Course Pond

Inflow Area = 827.990 ac, 4.73% Impervious, Inflow Depth > 0.20" for 10 YEAR event
Inflow = 38.10 cfs @ 13.28 hrs, Volume= 13.816 af
Outflow = 32.90 cfs @ 13.71 hrs, Volume= 12.716 af, Atten= 14%, Lag= 25.9 min
Secondary = 32.90 cfs @ 13.71 hrs, Volume= 12.716 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 77.33' @ 13.71 hrs Surf.Area= 52,279 sf Storage= 62,339 cf

Plug-Flow detention time= 34.4 min calculated for 12.674 af (92% of inflow)
Center-of-Mass det. time= 14.8 min (972.6 - 957.8)

Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	395,691 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
76.00	41,373	0	0
82.00	90,524	395,691	395,691

Device	Routing	Invert	Outlet Devices
#1	Secondary	76.00'	**8.0' 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

Secondary OutFlow Max=32.88 cfs @ 13.71 hrs HW=77.33' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 32.88 cfs @ 3.09 fps)

Summary for Pond 83P: Culvert at Valhalla Road

Inflow Area = 31.310 ac, 11.18% Impervious, Inflow Depth > 1.76" for 10 YEAR event
Inflow = 23.03 cfs @ 13.14 hrs, Volume= 4.598 af
Outflow = 20.81 cfs @ 13.41 hrs, Volume= 4.591 af, Atten= 10%, Lag= 16.3 min
Primary = 20.81 cfs @ 13.41 hrs, Volume= 4.591 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 126.73' @ 13.41 hrs Surf.Area= 2,841 sf Storage= 10,797 cf

Plug-Flow detention time= 4.6 min calculated for 4.576 af (100% of inflow)
Center-of-Mass det. time= 4.2 min (867.2 - 863.1)

Volume	Invert	Avail.Storage	Storage Description
#1	120.00'	648,610 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.00	366	0	0
130.00	4,041	22,035	22,035
140.00	30,637	173,390	195,425
150.00	60,000	453,185	648,610

Device	Routing	Invert	Outlet Devices
#1	Primary	120.00'	**18.0" Round Culvert** L= 80.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 120.00' / 119.00' S= 0.0125 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	148.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=20.81 cfs @ 13.41 hrs HW=126.73' (Free Discharge)
└─**1=Culvert** (Inlet Controls 20.81 cfs @ 11.77 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=120.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 84P: 3 - 18" culverts

Inflow Area =	20.440 ac,	7.78% Impervious, Inflow Depth > 2.01"	for 10 YEAR event
Inflow =	22.32 cfs @	12.73 hrs, Volume=	3.428 af
Outflow =	21.66 cfs @	12.83 hrs, Volume=	3.372 af, Atten= 3%, Lag= 6.1 min
Primary =	21.66 cfs @	12.83 hrs, Volume=	3.372 af
Secondary =	0.00 cfs @	5.00 hrs, Volume=	0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 81.96' @ 12.83 hrs Surf.Area= 6,905 sf Storage= 9,098 cf

Plug-Flow detention time= 13.4 min calculated for 3.372 af (98% of inflow)
Center-of-Mass det. time= 7.7 min (842.5 - 834.8)

Volume	Invert	Avail.Storage	Storage Description
#1	80.00'	297,916 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
80.00	2,362	0	0
82.00	6,990	9,352	9,352
84.00	90,787	97,777	107,129
86.00	100,000	190,787	297,916

Device	Routing	Invert	Outlet Devices
#1	Primary	80.50'	**18.0" Round Culvert X 3.00** L= 50.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 80.50' / 80.00' S= 0.0100 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	84.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir**

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=21.67 cfs @ 12.83 hrs HW=81.96' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 21.67 cfs @ 4.12 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=80.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 85P: 18" CULVERT

Inflow Area = 8.230 ac, 4.74% Impervious, Inflow Depth > 1.94" for 10 YEAR event
Inflow = 8.63 cfs @ 12.74 hrs, Volume= 1.327 af
Outflow = 6.77 cfs @ 13.05 hrs, Volume= 1.318 af, Atten= 22%, Lag= 18.6 min
Primary = 6.77 cfs @ 13.05 hrs, Volume= 1.318 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 91.56' @ 13.05 hrs Surf.Area= 9,665 sf Storage= 8,470 cf

Plug-Flow detention time= 17.9 min calculated for 1.314 af (99% of inflow)
Center-of-Mass det. time= 15.4 min (852.2 - 836.8)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	29,280 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.00	1,196	0	0
92.00	12,056	13,252	13,252
93.00	20,000	16,028	29,280

Device	Routing	Invert	Outlet Devices
#1	Primary	89.86'	**18.0" Round Culvert** L= 28.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 89.86' / 89.79' S= 0.0025 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	92.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=6.77 cfs @ 13.05 hrs HW=91.56' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 6.77 cfs @ 4.23 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=90.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 86P: 24" CULVERT

Inflow Area =	56.890 ac,	4.15% Impervious,	Inflow Depth > 1.08"	for 10 YEAR event	
Inflow =	20.31 cfs @	13.55 hrs,	Volume=	5.122 af	
Outflow =	18.43 cfs @	13.95 hrs,	Volume=	5.097 af,	Atten= 9%, Lag= 23.8 min
Primary =	18.43 cfs @	13.95 hrs,	Volume=	5.097 af	
Secondary =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 60.27' @ 13.95 hrs Surf.Area= 12,411 sf Storage= 15,699 cf

Plug-Flow detention time= 10.4 min calculated for 5.097 af (99% of inflow)
Center-of-Mass det. time= 8.9 min (909.7 - 900.7)

Volume	Invert	Avail.Storage	Storage Description
#1	58.00'	44,762 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
58.00	1,500	0	0
60.00	11,084	12,584	12,584
62.00	21,094	32,178	44,762

Device	Routing	Invert	Outlet Devices
#1	Primary	57.78'	**24.0" Round Culvert** L= 73.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 57.78' / 56.17' S= 0.0221 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Secondary	61.00'	**100.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=18.43 cfs @ 13.95 hrs HW=60.27' (Free Discharge)
└─**1=Culvert** (Inlet Controls 18.43 cfs @ 5.87 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=58.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Subcatchment 3S:

Runoff = 47.62 cfs @ 12.68 hrs, Volume= 7.037 af, Depth> 2.41"

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 Rainfall=5.80"

	Area (ac)	CN	Description
*	31.060	70	WOODS / FIELD HSG C
*	0.000	98	EXISTING IMPERVIOUS AREA
*	4.000	74	EXISTING LAWN C
	35.060	70	Weighted Average
	35.060		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.8	100	0.0400	0.06		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
20.0	600	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
48.8	700	Total			

Summary for Subcatchment 8:

Runoff = 89.59 cfs @ 13.56 hrs, Volume= 22.609 af, Depth> 1.47"

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 Rainfall=5.80"

	Area (ac)	CN	Description
	32.000	30	Woods, Good, HSG A
	20.000	55	Woods, Good, HSG B
	48.000	70	Woods, Good, HSG C
*	10.000	98	EXISTING ROADS
*	74.270	61	EXISTING LAWNS B
*	0.000	98	EXISTING PAVED / GRAVEL FARM
*	0.000	98	EXISTING HOUSE AND BARN
	184.270	59	Weighted Average
	174.270		94.57% Pervious Area
	10.000		5.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
69.3	150	0.0100	0.04		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
9.7	3,700	0.0100	6.33	253.05	**Trap/Vee/Rect Channel Flow, CD** Bot.W=10.00' D=4.00' n= 0.040 Winding stream, pools & shoals
109.0	4,750	Total			

Summary for Subcatchment 9S:

Runoff = 75.94 cfs @ 13.13 hrs, Volume= 15.334 af, Depth> 2.12"

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 Rainfall=5.80"

	Area (ac)	CN	Description
	15.000	30	Woods, Good, HSG A
	10.000	55	Woods, Good, HSG B
	25.000	70	Woods, Good, HSG C
*	13.000	98	EXISTING IMPERVIOUS AREA
*	23.750	74	EXISTING LAWN C
	86.750	67	Weighted Average
	73.750		85.01% Pervious Area
	13.000		14.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0200	0.05		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
82.5	1,050	Total			

Summary for Subcatchment 10S:

Runoff = 212.15 cfs @ 13.21 hrs, Volume= 45.706 af, Depth> 1.35"

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 Rainfall=5.80"

	Area (ac)	CN	Description
	118.000	30	Woods, Good, HSG A
	74.000	55	Woods, Good, HSG B
	129.000	70	Woods, Good, HSG C
	48.000	77	Woods, Good, HSG D
	15.000	75	1/4 acre lots, 38% imp, HSG B
*	16.950	74	EXISTING LAWN C
*	5.000	98	EXISTING ROADS
	405.950	57	Weighted Average
	395.250		97.36% Pervious Area
	10.700		2.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0200	0.05		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
82.5	1,050	Total			

Summary for Subcatchment 11S:

Runoff = 147.70 cfs @ 13.19 hrs, Volume= 31.202 af, Depth> 1.50"

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 Rainfall=5.80"

	Area (ac)	CN	Description
	40.000	30	Woods, Good, HSG A
	24.000	55	Woods, Good, HSG B
	42.000	70	Woods, Good, HSG C
	16.000	77	Woods, Good, HSG D
	20.000	70	1/2 acre lots, 25% imp, HSG B
	103.300	61	>75% Grass cover, Good, HSG B
*	5.000	98	ROADS
	250.300	59	Weighted Average
	240.300		96.00% Pervious Area
	10.000		4.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0200	0.05		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
82.5	1,050	Total			

Summary for Subcatchment 81: Farm Area - drains to off site pond

Runoff = 48.09 cfs @ 12.72 hrs, Volume= 7.385 af, Depth> 2.85"

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 Rainfall=5.80"

	Area (ac)	CN	Description
*	18.320	74	WOODS / FIELD HSG C/D
*	0.510	98	EXISTING ROADS
*	11.180	74	EXISTING LAWN C
*	0.820	98	EXISTING PAVED/GRAVEL FARM
*	0.260	98	EXISTING BARN AND HOUSE
	31.090	75	Weighted Average
	29.500		94.89% Pervious Area
	1.590		5.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
50.1	100	0.0100	0.03		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
2.4	100	0.0800	0.71		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
52.5	200	Total			

Summary for Subcatchment 82:

Runoff = 32.74 cfs @ 13.14 hrs, Volume= 6.707 af, Depth> 1.50"

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 Rainfall=5.80"

	Area (ac)	CN	Description
	44.000	55	Woods, Good, HSG B
*	2.000	98	EXISTING ROADS
*	7.680	74	EXISTING LAWN C
	53.680	59	Weighted Average
	51.680		96.27% Pervious Area
	2.000		3.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
69.3	150	0.0100	0.04		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
7.3	220	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
1.8	700	0.0100	6.33	253.05	**Trap/Vee/Rect Channel Flow, CD** Bot.W=10.00' D=4.00' n= 0.040 Winding stream, pools & shoals
78.4	1,070	Total			

Summary for Subcatchment 83:

Runoff = 34.66 cfs @ 13.13 hrs, Volume= 6.881 af, Depth> 2.64"

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 Rainfall=5.80"

	Area (ac)	CN	Description
	6.000	55	Woods, Good, HSG B
*	3.500	98	EXISTING ROADS
*	21.810	74	EXISTING LAWN C
	31.310	73	Weighted Average
	27.810		88.82% Pervious Area
	3.500		11.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
69.3	150	0.0100	0.04		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
12.3	370	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
81.6	520	Total			

Summary for Subcatchment 84: OFF SITE ABOVE GREELY ROAD

Runoff = 32.62 cfs @ 12.72 hrs, Volume= 5.013 af, Depth> 2.94"

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 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.510	98	EXISTING ROADS
*	18.850	74	EXISTING LAWN C
*	0.820	98	EXISTING PAVED/GRAVEL FARM
*	0.260	98	EXISTING BARN AND HOUSE
	20.440	76	Weighted Average
	18.850		92.22% Pervious Area
	1.590		7.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
50.1	100	0.0100	0.03		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
2.4	100	0.0800	0.71		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
52.5	200	Total			

Summary for Subcatchment 85: OFF SITE ABOVE GREELY ROAD

Runoff = 12.73 cfs @ 12.72 hrs, Volume= 1.955 af, Depth> 2.85"

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 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.390	98	EXISTING ROADS
*	7.840	74	EXISTING LAWN C
	8.230	75	Weighted Average
	7.840		95.26% Pervious Area
	0.390		4.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
50.1	100	0.0100	0.03		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
2.4	100	0.0800	0.71		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
52.5	200	Total			

Summary for Subcatchment 86: Farm Side Stream drains to 24" culvert

Runoff = 34.82 cfs @ 13.51 hrs, Volume= 8.415 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 25 YEAR Rainfall=5.80"

	Area (ac)	CN	Description
*	0.870	98	EXISTING ROADS-OFF SITE
*	54.530	61	EXISTING LAWNS B - OFF SITE
*	1.100	98	EXISTING HOUSE LOTS 11 - OFF SITE
*	0.260	98	EXISTING HOUSE AND BARN
*	0.130	98	EXISTING GRAVEL/PAVED FARM
	56.890	63	Weighted Average
	54.530		95.85% Pervious Area
	2.360		4.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
69.3	150	0.0100	0.04		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
8.2	3,100	0.0100	6.33	253.05	**Trap/Vee/Rect Channel Flow, CD** Bot.W=10.00' D=4.00' n= 0.040 Winding stream, pools & shoals
107.5	4,150	Total			

Summary for Reach 39R: Stream Greely to Golf Pond

Inflow Area = 743.000 ac, 4.54% Impervious, Inflow Depth > 0.29" for 25 YEAR event
Inflow = 48.78 cfs @ 20.00 hrs, Volume= 17.951 af
Outflow = 48.68 cfs @ 20.00 hrs, Volume= 16.519 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.14 fps, Min. Travel Time= 10.7 min
Avg. Velocity = 3.28 fps, Avg. Travel Time= 13.5 min

Peak Storage= 31,184 cf @ 20.00 hrs
Average Depth at Peak Storage= 0.98'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 641.98 cfs

10.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 2,650.0' Slope= 0.0125 '/'
Inlet Invert= 115.00', Outlet Invert= 82.00'

Summary for Reach 40R: Stream Route 9 to Greely Road

Inflow Area = 492.700 ac, 4.81% Impervious, Inflow Depth > 1.37" for 25 YEAR event
Inflow = 161.60 cfs @ 13.61 hrs, Volume= 56.283 af
Outflow = 157.75 cfs @ 14.18 hrs, Volume= 54.212 af, Atten= 2%, Lag= 34.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.79 fps, Min. Travel Time= 16.7 min
Avg. Velocity = 3.13 fps, Avg. Travel Time= 25.5 min

Peak Storage= 157,984 cf @ 13.90 hrs
Average Depth at Peak Storage= 2.52'
Bank-Full Depth= 4.00' Flow Area= 64.0 sf, Capacity= 392.75 cfs

8.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 24.00'
Length= 4,800.0' Slope= 0.0063 '/'
Inlet Invert= 150.00', Outlet Invert= 120.00'

Summary for Reach 42R: Stream Golf Pond to RR Culvert

Inflow Area = 184.270 ac, 5.43% Impervious, Inflow Depth > 3.16" for 25 YEAR event
Inflow = 102.43 cfs @ 14.10 hrs, Volume= 48.482 af
Outflow = 102.29 cfs @ 14.28 hrs, Volume= 47.307 af, Atten= 0%, Lag= 10.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.09 fps, Min. Travel Time= 6.0 min
Avg. Velocity = 2.78 fps, Avg. Travel Time= 8.9 min

Peak Storage= 37,020 cf @ 14.18 hrs
Average Depth at Peak Storage= 1.83'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 448.47 cfs

10.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 1,481.0' Slope= 0.0061 '/'
Inlet Invert= 65.00', Outlet Invert= 56.00'

Summary for Reach 43R: Stream Golf Pond to RR Culvert

Inflow Area = 241.160 ac, 5.13% Impervious, Inflow Depth > 2.77" for 25 YEAR event
Inflow = 129.97 cfs @ 14.03 hrs, Volume= 55.683 af
Outflow = 129.92 cfs @ 14.12 hrs, Volume= 55.087 af, Atten= 0%, Lag= 5.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.96 fps, Min. Travel Time= 2.8 min
Avg. Velocity = 2.02 fps, Avg. Travel Time= 4.1 min

Peak Storage= 21,954 cf @ 14.07 hrs
Average Depth at Peak Storage= 2.81'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 257.28 cfs

10.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 500.0' Slope= 0.0020 '/'
Inlet Invert= 56.00', Outlet Invert= 55.00'

Summary for Reach 55R: Wetland below Site

Inflow Area = 35.060 ac, 0.00% Impervious, Inflow Depth > 2.41" for 25 YEAR event
Inflow = 47.62 cfs @ 12.68 hrs, Volume= 7.037 af
Outflow = 47.07 cfs @ 12.83 hrs, Volume= 6.976 af, Atten= 1%, Lag= 8.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.46 fps, Min. Travel Time= 4.9 min
Avg. Velocity = 2.43 fps, Avg. Travel Time= 11.0 min

Peak Storage= 13,855 cf @ 12.74 hrs
Average Depth at Peak Storage= 0.96'
Bank-Full Depth= 5.00' Flow Area= 65.0 sf, Capacity= 840.41 cfs

8.00' x 5.00' deep channel, n= 0.030 Stream, clean & straight
Side Slope Z-value= 1.0 '/' Top Width= 18.00'
Length= 1,604.0' Slope= 0.0162 '/'
Inlet Invert= 86.00', Outlet Invert= 60.00'

Summary for Reach 82R: Stream Golf Pond to Pond 42 outlet

Inflow = 53.64 cfs @ 20.00 hrs, Volume= 28.006 af
Outflow = 53.54 cfs @ 20.00 hrs, Volume= 26.636 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.96 fps, Min. Travel Time= 9.3 min
Avg. Velocity = 2.05 fps, Avg. Travel Time= 13.4 min

Peak Storage= 29,848 cf @ 20.00 hrs
Average Depth at Peak Storage= 1.41'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 374.71 cfs

10.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 1,650.0' Slope= 0.0042 '/'
Inlet Invert= 72.00', Outlet Invert= 65.00'

Summary for Reach 84R: Stream Golf Pond to RR Culvert

Inflow Area = 28.670 ac, 6.91% Impervious, Inflow Depth > 2.89" for 25 YEAR event
Inflow = 38.03 cfs @ 13.01 hrs, Volume= 6.894 af
Outflow = 37.70 cfs @ 13.16 hrs, Volume= 6.832 af, Atten= 1%, Lag= 9.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.54 fps, Min. Travel Time= 5.7 min
Avg. Velocity = 1.63 fps, Avg. Travel Time= 12.3 min

Peak Storage= 12,802 cf @ 13.07 hrs
Average Depth at Peak Storage= 0.90'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 575.29 cfs

10.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 1,200.0' Slope= 0.0100 '/'
Inlet Invert= 78.00', Outlet Invert= 66.00'

Summary for Pond 3P: 24" CULVERT

Inflow Area =	35.060 ac,	0.00% Impervious, Inflow Depth >	2.39"	for 25 YEAR event	
Inflow =	47.07 cfs @	12.83 hrs, Volume=	6.976 af		
Outflow =	38.78 cfs @	13.10 hrs, Volume=	6.931 af,	Atten= 18%,	Lag= 16.2 min
Primary =	31.13 cfs @	13.10 hrs, Volume=	6.767 af		
Secondary =	7.65 cfs @	13.10 hrs, Volume=	0.164 af		

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 59.23' @ 13.10 hrs Surf.Area= 16,172 sf Storage= 42,496 cf

Plug-Flow detention time= 14.9 min calculated for 6.908 af (99% of inflow)
Center-of-Mass det. time= 12.7 min (856.9 - 844.3)

Volume	Invert	Avail.Storage	Storage Description
#1	54.00'	56,342 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
54.00	2,362	0	0
56.00	6,990	9,352	9,352
58.00	10,000	16,990	26,342
60.00	20,000	30,000	56,342

Device	Routing	Invert	Outlet Devices
#1	Primary	54.00'	**24.0" Round Culvert** L= 50.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 54.00' / 53.00' S= 0.0200 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Secondary	59.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=31.12 cfs @ 13.10 hrs HW=59.23' (Free Discharge)
1=Culvert (Inlet Controls 31.12 cfs @ 9.91 fps)

Secondary OutFlow Max=7.57 cfs @ 13.10 hrs HW=59.23' (Free Discharge)
2=Broad-Crested Rectangular Weir (Weir Controls 7.57 cfs @ 1.30 fps)

Summary for Pond 38P: Existing 5'X6' RR Box Culvert

Inflow Area =	241.160 ac,	5.13% Impervious, Inflow Depth > 2.74"	for 25 YEAR event	
Inflow =	129.92 cfs @	14.12 hrs, Volume=	55.087 af	
Outflow =	125.60 cfs @	14.49 hrs, Volume=	54.586 af,	Atten= 3%, Lag= 22.0 min
Primary =	125.60 cfs @	14.49 hrs, Volume=	54.586 af	
Secondary =	0.00 cfs @	5.00 hrs, Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 59.19' @ 14.49 hrs Surf.Area= 44,572 sf Storage= 69,240 cf

Plug-Flow detention time= 7.1 min calculated for 54.405 af (99% of inflow)
Center-of-Mass det. time= 5.0 min (979.3 - 974.3)

Volume	Invert	Avail.Storage	Storage Description
#1	55.00'	4,415,983 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
55.00	1,320	0	0
56.00	2,578	1,949	1,949
57.00	10,714	6,646	8,595
60.00	57,013	101,591	110,186
62.00	234,474	291,487	401,673
66.00	504,090	1,477,128	1,878,801
70.00	764,501	2,537,182	4,415,983

Device	Routing	Invert	Outlet Devices
#1	Primary	55.10'	**60.0" W x 74.0" H Box Box Culvert** L= 90.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 55.10' / 53.70' S= 0.0156 '/' Cc= 0.900 n= 0.022 Earth, clean & straight, Flow Area= 30.83 sf
#2	Secondary	69.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=125.59 cfs @ 14.49 hrs HW=59.19' (Free Discharge)
↑—**1=Box Culvert** (Barrel Controls 125.59 cfs @ 8.18 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=55.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 39P: 60" Culvert at Greely Road

Inflow Area =	743.000 ac,	4.54% Impervious, Inflow Depth > 1.38"	for 25 YEAR event	
Inflow =	250.10 cfs @	13.75 hrs, Volume=	85.414 af	
Outflow =	48.78 cfs @	20.00 hrs, Volume=	17.951 af,	Atten= 80%, Lag= 375.0 min
Primary =	48.78 cfs @	20.00 hrs, Volume=	17.951 af	
Secondary =	0.00 cfs @	5.00 hrs, Volume=	0.000 af	

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

Peak Elev= 122.82' @ 20.00 hrs Surf.Area= 1,208,890 sf Storage= 2,938,188 cf

Plug-Flow detention time= 265.8 min calculated for 17.951 af (21% of inflow)
Center-of-Mass det. time= 131.9 min (1,054.7 - 922.8)

Volume	Invert	Avail.Storage	Storage Description
#1	120.00'	149,235,760 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 2

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.00	439,044	0	0
140.00	1,613,877	20,529,210	20,529,210
160.00	3,794,990	54,088,670	74,617,880

Device	Routing	Invert	Outlet Devices
#1	Primary	120.50'	**60.0" Round 60" Culvert w/ 6.0" inside fill** L= 90.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 120.00' / 118.20' S= 0.0200 '/' Cc= 0.900 n= 0.022 Earth, clean & straight, Flow Area= 18.61 sf
#2	Secondary	131.50'	**25.0' long x 100.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=48.75 cfs @ 20.00 hrs HW=122.82' (Free Discharge)
↑—**1=60" Culvert** (Inlet Controls 48.75 cfs @ 4.70 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=120.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 40P: 48" Culvert at Route 9

Inflow Area = 405.950 ac, 2.64% Impervious, Inflow Depth > 1.35" for 25 YEAR event
Inflow = 212.15 cfs @ 13.21 hrs, Volume= 45.706 af
Outflow = 114.67 cfs @ 14.19 hrs, Volume= 40.949 af, Atten= 46%, Lag= 58.9 min
Primary = 114.67 cfs @ 14.19 hrs, Volume= 40.949 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 164.65' @ 14.19 hrs Surf.Area= 195,136 sf Storage= 613,755 cf

Plug-Flow detention time= 87.6 min calculated for 40.813 af (89% of inflow)
Center-of-Mass det. time= 59.5 min (942.8 - 883.3)

Volume	Invert	Avail.Storage	Storage Description
#1	160.00'	22,928,710 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
160.00	68,874	0	0
180.00	611,999	6,808,730	6,808,730
200.00	999,999	16,119,980	22,928,710

Device	Routing	Invert	Outlet Devices
#1	Primary	160.50'	**60.0" Round 48" Culvert w/ 6.0" inside fill** L= 90.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 160.00' / 158.70' S= 0.0144 '/' Cc= 0.900 n= 0.022 Earth, clean & straight, Flow Area= 18.61 sf
#2	Secondary	180.00'	**25.0' long x 100.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=114.72 cfs @ 14.19 hrs HW=164.65' (Free Discharge)
↑—**1=48" Culvert** (Barrel Controls 114.72 cfs @ 8.10 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=160.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 42P: Golf Course Pond

Inflow Area = 184.270 ac, 5.43% Impervious, Inflow Depth > 1.47" for 25 YEAR event
Inflow = 89.59 cfs @ 13.56 hrs, Volume= 22.609 af
Outflow = 53.52 cfs @ 14.67 hrs, Volume= 21.846 af, Atten= 40%, Lag= 66.4 min
Primary = 53.52 cfs @ 14.67 hrs, Volume= 21.846 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 76.38' @ 14.67 hrs Surf.Area= 62,082 sf Storage= 242,793 cf

Plug-Flow detention time= 58.9 min calculated for 21.773 af (96% of inflow)
Center-of-Mass det. time= 49.2 min (948.0 - 898.8)

Volume	Invert	Avail.Storage	Storage Description
#1	70.00'	514,000 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
70.00	15,328	0	0
72.00	29,781	45,109	45,109
74.00	42,804	72,585	117,694
76.00	59,373	102,177	219,871
78.00	73,726	133,099	352,970
80.00	87,304	161,030	514,000

Device	Routing	Invert	Outlet Devices
#1	Primary	70.00'	**30.0" Round Culvert** L= 80.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 70.00' / 69.50' S= 0.0063 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 4.91 sf
#2	Secondary	78.00'	**80.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=53.52 cfs @ 14.67 hrs HW=76.38' (Free Discharge)
└─**1=Culvert** (Inlet Controls 53.52 cfs @ 10.90 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=70.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 81P: OFF SITE POND

Inflow Area =	59.760 ac,	5.97% Impervious,	Inflow Depth > 2.85"	for 25 YEAR event
Inflow =	79.69 cfs @	12.82 hrs, Volume=	14.217 af	
Outflow =	52.21 cfs @	13.48 hrs, Volume=	13.672 af,	Atten= 34%, Lag= 39.8 min
Primary =	30.31 cfs @	13.48 hrs, Volume=	11.812 af	
Secondary =	21.90 cfs @	13.48 hrs, Volume=	1.860 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Starting Elev= 62.00' Surf.Area= 20,254 sf Storage= 139,510 cf
Peak Elev= 67.01' @ 13.48 hrs Surf.Area= 63,513 sf Storage= 323,207 cf (183,697 cf above start)

Plug-Flow detention time= 149.9 min calculated for 10.469 af (74% of inflow)
Center-of-Mass det. time= 54.5 min (892.7 - 838.2)

Volume	Invert	Avail.Storage	Storage Description
#1	52.00'	393,587 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
52.00	7,648	0	0
62.00	20,254	139,510	139,510
64.00	30,728	50,982	190,492
66.00	46,299	77,027	267,519
67.00	63,288	54,794	322,313
68.00	79,261	71,275	393,587

Device	Routing	Invert	Outlet Devices
#1	Primary	62.00'	**24.0" Round Culvert** L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 62.00' / 61.50' S= 0.0050 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 3.14 sf
#2	Secondary	66.00'	**8.0' 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=30.30 cfs @ 13.48 hrs HW=67.01' (Free Discharge)
└─**1=Culvert** (Inlet Controls 30.30 cfs @ 9.65 fps)

Secondary OutFlow Max=21.87 cfs @ 13.48 hrs HW=67.01' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 21.87 cfs @ 2.70 fps)

Summary for Pond 82P: Golf Course Pond

Inflow Area = 827.990 ac, 4.73% Impervious, Inflow Depth > 0.44" for 25 YEAR event
Inflow = 58.82 cfs @ 13.22 hrs, Volume= 30.100 af
Outflow = 53.64 cfs @ 20.00 hrs, Volume= 28.006 af, Atten= 9%, Lag= 407.0 min
Secondary = 53.64 cfs @ 20.00 hrs, Volume= 28.006 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 77.86' @ 20.00 hrs Surf.Area= 56,623 sf Storage= 91,213 cf

Plug-Flow detention time= 28.7 min calculated for 27.913 af (93% of inflow)
Center-of-Mass det. time= 13.0 min (990.0 - 977.0)

Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	395,691 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
76.00	41,373	0	0
82.00	90,524	395,691	395,691

Device	Routing	Invert	Outlet Devices
#1	Secondary	76.00'	**8.0' 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

Secondary OutFlow Max=53.64 cfs @ 20.00 hrs HW=77.86' (Free Discharge)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 53.64 cfs @ 3.60 fps)

Summary for Pond 83P: Culvert at Valhalla Road

Inflow Area = 31.310 ac, 11.18% Impervious, Inflow Depth > 2.64" for 25 YEAR event
Inflow = 34.66 cfs @ 13.13 hrs, Volume= 6.881 af
Outflow = 27.51 cfs @ 13.55 hrs, Volume= 6.874 af, Atten= 21%, Lag= 25.4 min
Primary = 27.51 cfs @ 13.55 hrs, Volume= 6.874 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 131.20' @ 13.55 hrs Surf.Area= 7,245 sf Storage= 28,832 cf

Plug-Flow detention time= 8.6 min calculated for 6.874 af (100% of inflow)
Center-of-Mass det. time= 8.2 min (863.0 - 854.8)

Volume	Invert	Avail.Storage	Storage Description
#1	120.00'	648,610 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.00	366	0	0
130.00	4,041	22,035	22,035
140.00	30,637	173,390	195,425
150.00	60,000	453,185	648,610

Device	Routing	Invert	Outlet Devices
#1	Primary	120.00'	**18.0" Round Culvert** L= 80.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 120.00' / 119.00' S= 0.0125 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	148.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=27.51 cfs @ 13.55 hrs HW=131.20' (Free Discharge)
└—**1=Culvert** (Inlet Controls 27.51 cfs @ 15.57 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=120.00' (Free Discharge)
└—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 84P: 3 - 18" culverts

Inflow Area = 20.440 ac, 7.78% Impervious, Inflow Depth > 2.94" for 25 YEAR event
Inflow = 32.62 cfs @ 12.72 hrs, Volume= 5.013 af
Outflow = 28.13 cfs @ 12.95 hrs, Volume= 4.952 af, Atten= 14%, Lag= 14.0 min
Primary = 28.13 cfs @ 12.95 hrs, Volume= 4.952 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 82.46' @ 12.95 hrs Surf.Area= 26,457 sf Storage= 17,122 cf

Plug-Flow detention time= 12.3 min calculated for 4.952 af (99% of inflow)
Center-of-Mass det. time= 8.0 min (834.6 - 826.6)

Volume	Invert	Avail.Storage	Storage Description
#1	80.00'	297,916 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
80.00	2,362	0	0
82.00	6,990	9,352	9,352
84.00	90,787	97,777	107,129
86.00	100,000	190,787	297,916

Device	Routing	Invert	Outlet Devices
#1	Primary	80.50'	**18.0" Round Culvert X 3.00** L= 50.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 80.50' / 80.00' S= 0.0100 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	84.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir**

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=28.13 cfs @ 12.95 hrs HW=82.46' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 28.13 cfs @ 5.31 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=80.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 85P: 18" CULVERT

Inflow Area =	8.230 ac,	4.74% Impervious, Inflow Depth >	2.85"	for 25 YEAR event
Inflow =	12.73 cfs @	12.72 hrs, Volume=	1.955 af	
Outflow =	10.00 cfs @	13.03 hrs, Volume=	1.942 af,	Atten= 21%, Lag= 18.6 min
Primary =	9.08 cfs @	13.03 hrs, Volume=	1.927 af	
Secondary =	0.91 cfs @	13.03 hrs, Volume=	0.016 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 92.06' @ 13.03 hrs Surf.Area= 12,502 sf Storage= 13,941 cf

Plug-Flow detention time= 19.9 min calculated for 1.936 af (99% of inflow)
Center-of-Mass det. time= 17.5 min (846.0 - 828.5)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	29,280 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.00	1,196	0	0
92.00	12,056	13,252	13,252
93.00	20,000	16,028	29,280

Device	Routing	Invert	Outlet Devices
#1	Primary	89.86'	**18.0" Round Culvert** L= 28.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 89.86' / 89.79' S= 0.0025 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	92.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=9.08 cfs @ 13.03 hrs HW=92.06' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 9.08 cfs @ 5.14 fps)

Secondary OutFlow Max=0.87 cfs @ 13.03 hrs HW=92.06' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.87 cfs @ 0.63 fps)

Summary for Pond 86P: 24" CULVERT

Inflow Area = 56.890 ac, 4.15% Impervious, Inflow Depth > 1.77" for 25 YEAR event
Inflow = 34.82 cfs @ 13.51 hrs, Volume= 8.415 af
Outflow = 34.73 cfs @ 13.56 hrs, Volume= 8.376 af, Atten= 0%, Lag= 3.0 min
Primary = 23.15 cfs @ 13.56 hrs, Volume= 7.731 af
Secondary = 11.58 cfs @ 13.56 hrs, Volume= 0.644 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 61.12' @ 13.56 hrs Surf.Area= 16,704 sf Storage= 28,186 cf

Plug-Flow detention time= 13.2 min calculated for 8.348 af (99% of inflow)
Center-of-Mass det. time= 11.7 min (902.9 - 891.2)

Volume	Invert	Avail.Storage	Storage Description
#1	58.00'	44,762 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
58.00	1,500	0	0
60.00	11,084	12,584	12,584
62.00	21,094	32,178	44,762

Device	Routing	Invert	Outlet Devices
#1	Primary	57.78'	**24.0" Round Culvert** L= 73.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 57.78' / 56.17' S= 0.0221 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Secondary	61.00'	**100.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=23.15 cfs @ 13.56 hrs HW=61.12' (Free Discharge)
1=Culvert (Inlet Controls 23.15 cfs @ 7.37 fps)

Secondary OutFlow Max=11.52 cfs @ 13.56 hrs HW=61.12' (Free Discharge)
2=Broad-Crested Rectangular Weir (Weir Controls 11.52 cfs @ 0.94 fps)

Summary for Subcatchment 3S:

Runoff = 82.86 cfs @ 12.67 hrs, Volume= 12.221 af, Depth> 4.18"

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 100 YEAR Rainfall=8.10"

	Area (ac)	CN	Description
*	31.060	70	WOODS / FIELD HSG C
*	0.000	98	EXISTING IMPERVIOUS AREA
*	4.000	74	EXISTING LAWN C
	35.060	70	Weighted Average
	35.060		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.8	100	0.0400	0.06		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
20.0	600	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
48.8	700	Total			

Summary for Subcatchment 8:

Runoff = 184.27 cfs @ 13.47 hrs, Volume= 44.480 af, Depth> 2.90"

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 100 YEAR Rainfall=8.10"

	Area (ac)	CN	Description
	32.000	30	Woods, Good, HSG A
	20.000	55	Woods, Good, HSG B
	48.000	70	Woods, Good, HSG C
*	10.000	98	EXISTING ROADS
*	74.270	61	EXISTING LAWNS B
*	0.000	98	EXISTING PAVED / GRAVEL FARM
*	0.000	98	EXISTING HOUSE AND BARN
	184.270	59	Weighted Average
	174.270		94.57% Pervious Area
	10.000		5.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
69.3	150	0.0100	0.04		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
9.7	3,700	0.0100	6.33	253.05	**Trap/Vee/Rect Channel Flow, CD** Bot.W=10.00' D=4.00' n= 0.040 Winding stream, pools & shoals
109.0	4,750	Total			

Summary for Subcatchment 9S:

Runoff = 137.65 cfs @ 13.11 hrs, Volume= 27.456 af, Depth> 3.80"

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 100 YEAR Rainfall=8.10"

	Area (ac)	CN	Description
	15.000	30	Woods, Good, HSG A
	10.000	55	Woods, Good, HSG B
	25.000	70	Woods, Good, HSG C
*	13.000	98	EXISTING IMPERVIOUS AREA
*	23.750	74	EXISTING LAWN C
	86.750	67	Weighted Average
	73.750		85.01% Pervious Area
	13.000		14.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0200	0.05		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
82.5	1,050	Total			

Summary for Subcatchment 10S:

Runoff = 453.25 cfs @ 13.14 hrs, Volume= 92.235 af, Depth> 2.73"

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 100 YEAR Rainfall=8.10"

	Area (ac)	CN	Description
	118.000	30	Woods, Good, HSG A
	74.000	55	Woods, Good, HSG B
	129.000	70	Woods, Good, HSG C
	48.000	77	Woods, Good, HSG D
	15.000	75	1/4 acre lots, 38% imp, HSG B
*	16.950	74	EXISTING LAWN C
*	5.000	98	EXISTING ROADS
	405.950	57	Weighted Average
	395.250		97.36% Pervious Area
	10.700		2.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0200	0.05		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
82.5	1,050	Total			

Summary for Subcatchment 11S:

Runoff = 303.09 cfs @ 13.13 hrs, Volume= 61.245 af, Depth> 2.94"

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 100 YEAR Rainfall=8.10"

	Area (ac)	CN	Description
	40.000	30	Woods, Good, HSG A
	24.000	55	Woods, Good, HSG B
	42.000	70	Woods, Good, HSG C
	16.000	77	Woods, Good, HSG D
	20.000	70	1/2 acre lots, 25% imp, HSG B
	103.300	61	>75% Grass cover, Good, HSG B
*	5.000	98	ROADS
	250.300	59	Weighted Average
	240.300		96.00% Pervious Area
	10.000		4.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0200	0.05		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
82.5	1,050	Total			

Summary for Subcatchment 81: Farm Area - drains to off site pond

Runoff = 79.28 cfs @ 12.71 hrs, Volume= 12.280 af, Depth> 4.74"

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 100 YEAR Rainfall=8.10"

	Area (ac)	CN	Description
*	18.320	74	WOODS / FIELD HSG C/D
*	0.510	98	EXISTING ROADS
*	11.180	74	EXISTING LAWN C
*	0.820	98	EXISTING PAVED/GRAVEL FARM
*	0.260	98	EXISTING BARN AND HOUSE
	31.090	75	Weighted Average
	29.500		94.89% Pervious Area
	1.590		5.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
50.1	100	0.0100	0.03		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
2.4	100	0.0800	0.71		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
52.5	200	Total			

Summary for Subcatchment 82:

Runoff = 66.86 cfs @ 13.10 hrs, Volume= 13.161 af, Depth> 2.94"

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 100 YEAR Rainfall=8.10"

	Area (ac)	CN	Description
	44.000	55	Woods, Good, HSG B
*	2.000	98	EXISTING ROADS
*	7.680	74	EXISTING LAWN C
	53.680	59	Weighted Average
	51.680		96.27% Pervious Area
	2.000		3.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
69.3	150	0.0100	0.04		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
7.3	220	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
1.8	700	0.0100	6.33	253.05	**Trap/Vee/Rect Channel Flow, CD** Bot.W=10.00' D=4.00' n= 0.040 Winding stream, pools & shoals
78.4	1,070	Total			

Summary for Subcatchment 83:

Runoff = 58.33 cfs @ 13.10 hrs, Volume= 11.651 af, Depth> 4.47"

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 100 YEAR Rainfall=8.10"

	Area (ac)	CN	Description
	6.000	55	Woods, Good, HSG B
*	3.500	98	EXISTING ROADS
*	21.810	74	EXISTING LAWN C
	31.310	73	Weighted Average
	27.810		88.82% Pervious Area
	3.500		11.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
69.3	150	0.0100	0.04		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
12.3	370	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
81.6	520	Total			

Summary for Subcatchment 84: OFF SITE ABOVE GREELY ROAD

Runoff = 53.26 cfs @ 12.70 hrs, Volume= 8.267 af, Depth> 4.85"

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 100 YEAR Rainfall=8.10"

	Area (ac)	CN	Description
*	0.510	98	EXISTING ROADS
*	18.850	74	EXISTING LAWN C
*	0.820	98	EXISTING PAVED/GRAVEL FARM
*	0.260	98	EXISTING BARN AND HOUSE
	20.440	76	Weighted Average
	18.850		92.22% Pervious Area
	1.590		7.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
50.1	100	0.0100	0.03		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
2.4	100	0.0800	0.71		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
52.5	200	Total			

Summary for Subcatchment 85: OFF SITE ABOVE GREELY ROAD

Runoff = 20.99 cfs @ 12.71 hrs, Volume= 3.251 af, Depth> 4.74"

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 100 YEAR Rainfall=8.10"

	Area (ac)	CN	Description
*	0.390	98	EXISTING ROADS
*	7.840	74	EXISTING LAWN C
	8.230	75	Weighted Average
	7.840		95.26% Pervious Area
	0.390		4.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
50.1	100	0.0100	0.03		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
2.4	100	0.0800	0.71		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
52.5	200	Total			

Summary for Subcatchment 86: Farm Side Stream drains to 24" culvert

Runoff = 66.64 cfs @ 13.49 hrs, Volume= 15.754 af, Depth> 3.32"

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 100 YEAR Rainfall=8.10"

	Area (ac)	CN	Description
*	0.870	98	EXISTING ROADS-OFF SITE
*	54.530	61	EXISTING LAWNS B - OFF SITE
*	1.100	98	EXISTING HOUSE LOTS 11 - OFF SITE
*	0.260	98	EXISTING HOUSE AND BARN
*	0.130	98	EXISTING GRAVEL/PAVED FARM
	56.890	63	Weighted Average
	54.530		95.85% Pervious Area
	2.360		4.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
69.3	150	0.0100	0.04		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
8.2	3,100	0.0100	6.33	253.05	**Trap/Vee/Rect Channel Flow, CD** Bot.W=10.00' D=4.00' n= 0.040 Winding stream, pools & shoals
107.5	4,150	Total			

Summary for Reach 39R: Stream Greely to Golf Pond

Inflow Area = 743.000 ac, 4.54% Impervious, Inflow Depth > 0.80" for 100 YEAR event
Inflow = 118.36 cfs @ 19.21 hrs, Volume= 49.310 af
Outflow = 118.34 cfs @ 19.44 hrs, Volume= 46.702 af, Atten= 0%, Lag= 13.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.49 fps, Min. Travel Time= 8.0 min
Avg. Velocity = 4.54 fps, Avg. Travel Time= 9.7 min

Peak Storage= 57,110 cf @ 19.30 hrs
Average Depth at Peak Storage= 1.63'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 641.98 cfs

10.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 2,650.0' Slope= 0.0125 '/'
Inlet Invert= 115.00', Outlet Invert= 82.00'

Summary for Reach 40R: Stream Route 9 to Greely Road

Inflow Area = 492.700 ac, 4.81% Impervious, Inflow Depth > 2.74" for 100 YEAR event
Inflow = 290.98 cfs @ 13.29 hrs, Volume= 112.352 af
Outflow = 284.54 cfs @ 13.86 hrs, Volume= 109.040 af, Atten= 2%, Lag= 33.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.63 fps, Min. Travel Time= 14.2 min
Avg. Velocity = 3.58 fps, Avg. Travel Time= 22.3 min

Peak Storage= 242,556 cf @ 13.62 hrs
Average Depth at Peak Storage= 3.41'
Bank-Full Depth= 4.00' Flow Area= 64.0 sf, Capacity= 392.75 cfs

8.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 24.00'
Length= 4,800.0' Slope= 0.0063 '/'
Inlet Invert= 150.00', Outlet Invert= 120.00'

Summary for Reach 42R: Stream Golf Pond to RR Culvert

Inflow Area = 184.270 ac, 5.43% Impervious, Inflow Depth > 7.01" for 100 YEAR event
Inflow = 261.29 cfs @ 13.80 hrs, Volume= 107.599 af
Outflow = 259.22 cfs @ 13.96 hrs, Volume= 105.450 af, Atten= 1%, Lag= 9.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.36 fps, Min. Travel Time= 4.6 min
Avg. Velocity = 3.25 fps, Avg. Travel Time= 7.6 min

Peak Storage= 71,695 cf @ 13.88 hrs
Average Depth at Peak Storage= 3.02'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 448.47 cfs

10.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 1,481.0' Slope= 0.0061 '/'
Inlet Invert= 65.00', Outlet Invert= 56.00'

Summary for Reach 43R: Stream Golf Pond to RR Culvert

Inflow Area = 241.160 ac, 5.13% Impervious, Inflow Depth > 6.03" for 100 YEAR event
Inflow = 317.05 cfs @ 13.92 hrs, Volume= 121.136 af
Outflow = 316.18 cfs @ 13.99 hrs, Volume= 120.037 af, Atten= 0%, Lag= 4.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.76 fps, Min. Travel Time= 2.2 min
Avg. Velocity = 2.32 fps, Avg. Travel Time= 3.6 min

Peak Storage= 42,060 cf @ 13.96 hrs
Average Depth at Peak Storage= 4.47'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 257.28 cfs

10.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 500.0' Slope= 0.0020 '/'
Inlet Invert= 56.00', Outlet Invert= 55.00'

Summary for Reach 55R: Wetland below Site

Inflow Area = 35.060 ac, 0.00% Impervious, Inflow Depth > 4.18" for 100 YEAR event
Inflow = 82.86 cfs @ 12.67 hrs, Volume= 12.221 af
Outflow = 82.03 cfs @ 12.79 hrs, Volume= 12.140 af, Atten= 1%, Lag= 7.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.56 fps, Min. Travel Time= 4.1 min
Avg. Velocity = 2.79 fps, Avg. Travel Time= 9.6 min

Peak Storage= 20,085 cf @ 12.72 hrs
Average Depth at Peak Storage= 1.34'
Bank-Full Depth= 5.00' Flow Area= 65.0 sf, Capacity= 840.41 cfs

8.00' x 5.00' deep channel, n= 0.030 Stream, clean & straight
Side Slope Z-value= 1.0 '/' Top Width= 18.00'
Length= 1,604.0' Slope= 0.0162 '/'
Inlet Invert= 86.00', Outlet Invert= 60.00'

Summary for Reach 82R: Stream Golf Pond to Pond 42 outlet

Inflow = 127.26 cfs @ 19.31 hrs, Volume= 67.347 af
Outflow = 127.24 cfs @ 19.52 hrs, Volume= 64.849 af, Atten= 0%, Lag= 12.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.85 fps, Min. Travel Time= 7.1 min
Avg. Velocity = 2.46 fps, Avg. Travel Time= 11.2 min

Peak Storage= 54,587 cf @ 19.40 hrs
Average Depth at Peak Storage= 2.27'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 374.71 cfs

10.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 1,650.0' Slope= 0.0042 '/'
Inlet Invert= 72.00', Outlet Invert= 65.00'

Summary for Reach 84R: Stream Golf Pond to RR Culvert

Inflow Area = 28.670 ac, 6.91% Impervious, Inflow Depth > 4.78" for 100 YEAR event
Inflow = 55.03 cfs @ 12.87 hrs, Volume= 11.430 af
Outflow = 54.68 cfs @ 13.02 hrs, Volume= 11.350 af, Atten= 1%, Lag= 9.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.99 fps, Min. Travel Time= 5.0 min
Avg. Velocity = 1.85 fps, Avg. Travel Time= 10.8 min

Peak Storage= 16,434 cf @ 12.94 hrs
Average Depth at Peak Storage= 1.12'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 575.29 cfs

10.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 1,200.0' Slope= 0.0100 '/'
Inlet Invert= 78.00', Outlet Invert= 66.00'

Summary for Pond 3P: 24" CULVERT

Inflow Area =	35.060 ac,	0.00% Impervious, Inflow Depth > 4.16"	for 100 YEAR event	
Inflow =	82.03 cfs @	12.79 hrs, Volume=	12.140 af	
Outflow =	80.50 cfs @	12.87 hrs, Volume=	12.080 af,	Atten= 2%, Lag= 4.8 min
Primary =	33.14 cfs @	12.87 hrs, Volume=	9.759 af	
Secondary =	47.36 cfs @	12.87 hrs, Volume=	2.322 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 59.80' @ 12.87 hrs Surf.Area= 19,003 sf Storage= 52,455 cf

Plug-Flow detention time= 13.3 min calculated for 12.080 af (100% of inflow)
Center-of-Mass det. time= 11.6 min (842.6 - 831.0)

Volume	Invert	Avail.Storage	Storage Description
#1	54.00'	56,342 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
54.00	2,362	0	0
56.00	6,990	9,352	9,352
58.00	10,000	16,990	26,342
60.00	20,000	30,000	56,342

Device	Routing	Invert	Outlet Devices
#1	Primary	54.00'	**24.0" Round Culvert** L= 50.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 54.00' / 53.00' S= 0.0200 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Secondary	59.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=33.14 cfs @ 12.87 hrs HW=59.80' (Free Discharge)
└—**1=Culvert** (Inlet Controls 33.14 cfs @ 10.55 fps)

Secondary OutFlow Max=47.09 cfs @ 12.87 hrs HW=59.80' (Free Discharge)
└—**2=Broad-Crested Rectangular Weir** (Weir Controls 47.09 cfs @ 2.36 fps)

Summary for Pond 38P: Existing 5'X6' RR Box Culvert

Inflow Area = 241.160 ac, 5.13% Impervious, Inflow Depth > 5.97" for 100 YEAR event
Inflow = 316.18 cfs @ 13.99 hrs, Volume= 120.037 af
Outflow = 242.48 cfs @ 14.74 hrs, Volume= 117.051 af, Atten= 23%, Lag= 44.9 min
Primary = 242.48 cfs @ 14.74 hrs, Volume= 117.051 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 61.82' @ 14.74 hrs Surf.Area= 218,567 sf Storage= 361,063 cf

Plug-Flow detention time= 17.3 min calculated for 117.051 af (98% of inflow)
Center-of-Mass det. time= 11.6 min (984.3 - 972.6)

Volume	Invert	Avail.Storage	Storage Description
#1	55.00'	4,415,983 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
55.00	1,320	0	0
56.00	2,578	1,949	1,949
57.00	10,714	6,646	8,595
60.00	57,013	101,591	110,186
62.00	234,474	291,487	401,673
66.00	504,090	1,477,128	1,878,801
70.00	764,501	2,537,182	4,415,983

Device	Routing	Invert	Outlet Devices
#1	Primary	55.10'	**60.0" W x 74.0" H Box Box Culvert** L= 90.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 55.10' / 53.70' S= 0.0156 '/' Cc= 0.900 n= 0.022 Earth, clean & straight, Flow Area= 30.83 sf
#2	Secondary	69.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=242.46 cfs @ 14.74 hrs HW=61.82' (Free Discharge)
└─**1=Box Culvert** (Barrel Controls 242.46 cfs @ 9.62 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=55.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 39P: 60" Culvert at Greely Road

Inflow Area = 743.000 ac, 4.54% Impervious, Inflow Depth > 2.75" for 100 YEAR event
Inflow = 523.45 cfs @ 13.47 hrs, Volume= 170.286 af
Outflow = 118.36 cfs @ 19.21 hrs, Volume= 49.310 af, Atten= 77%, Lag= 344.6 min
Primary = 118.36 cfs @ 19.21 hrs, Volume= 49.310 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

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

Peak Elev= 124.62' @ 19.21 hrs Surf.Area= 1,420,388 sf Storage= 5,304,855 cf

Plug-Flow detention time= 250.0 min calculated for 49.310 af (29% of inflow)
Center-of-Mass det. time= 121.4 min (1,039.2 - 917.7)

Volume	Invert	Avail.Storage	Storage Description
#1	120.00'	149,235,760 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 2

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.00	439,044	0	0
140.00	1,613,877	20,529,210	20,529,210
160.00	3,794,990	54,088,670	74,617,880

Device	Routing	Invert	Outlet Devices
#1	Primary	120.50'	**60.0" Round 60" Culvert w/ 6.0" inside fill** L= 90.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 120.00' / 118.20' S= 0.0200 '/' Cc= 0.900 n= 0.022 Earth, clean & straight, Flow Area= 18.61 sf
#2	Secondary	131.50'	**25.0' long x 100.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=118.47 cfs @ 19.21 hrs HW=124.62' (Free Discharge)
1=60" Culvert (Inlet Controls 118.47 cfs @ 6.61 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=120.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 40P: 48" Culvert at Route 9

Inflow Area =	405.950 ac,	2.64% Impervious, Inflow Depth >	2.73"	for 100 YEAR event
Inflow =	453.25 cfs @	13.14 hrs, Volume=	92.235 af	
Outflow =	197.63 cfs @	14.34 hrs, Volume=	84.896 af,	Atten= 56%, Lag= 72.2 min
Primary =	197.63 cfs @	14.34 hrs, Volume=	84.896 af	
Secondary =	0.00 cfs @	5.00 hrs, Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 168.07' @ 14.34 hrs Surf.Area= 288,151 sf Storage= 1,441,429 cf

Plug-Flow detention time= 100.7 min calculated for 84.614 af (92% of inflow)
Center-of-Mass det. time= 78.0 min (947.2 - 869.2)

Volume	Invert	Avail.Storage	Storage Description
#1	160.00'	22,928,710 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
160.00	68,874	0	0
180.00	611,999	6,808,730	6,808,730
200.00	999,999	16,119,980	22,928,710

Device	Routing	Invert	Outlet Devices
#1	Primary	160.50'	**60.0" Round 48" Culvert w/ 6.0" inside fill** L= 90.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 160.00' / 158.70' S= 0.0144 '/' Cc= 0.900 n= 0.022 Earth, clean & straight, Flow Area= 18.61 sf
#2	Secondary	180.00'	**25.0' long x 100.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=197.65 cfs @ 14.34 hrs HW=168.07' (Free Discharge)
↑**1=48" Culvert** (Barrel Controls 197.65 cfs @ 10.62 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=160.00' (Free Discharge)
↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 42P: Golf Course Pond

Inflow Area = 184.270 ac, 5.43% Impervious, Inflow Depth > 2.90" for 100 YEAR event
Inflow = 184.27 cfs @ 13.47 hrs, Volume= 44.480 af
Outflow = 173.11 cfs @ 13.80 hrs, Volume= 42.750 af, Atten= 6%, Lag= 19.8 min
Primary = 64.23 cfs @ 13.80 hrs, Volume= 33.301 af
Secondary = 108.88 cfs @ 13.80 hrs, Volume= 9.449 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 78.63' @ 13.80 hrs Surf.Area= 78,033 sf Storage= 401,106 cf

Plug-Flow detention time= 63.0 min calculated for 42.608 af (96% of inflow)
Center-of-Mass det. time= 51.7 min (937.5 - 885.8)

Volume	Invert	Avail.Storage	Storage Description
#1	70.00'	514,000 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
70.00	15,328	0	0
72.00	29,781	45,109	45,109
74.00	42,804	72,585	117,694
76.00	59,373	102,177	219,871
78.00	73,726	133,099	352,970
80.00	87,304	161,030	514,000

Device	Routing	Invert	Outlet Devices
#1	Primary	70.00'	**30.0" Round Culvert** L= 80.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 70.00' / 69.50' S= 0.0063 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 4.91 sf
#2	Secondary	78.00'	**80.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=64.23 cfs @ 13.80 hrs HW=78.63' (Free Discharge)
└─**1=Culvert** (Inlet Controls 64.23 cfs @ 13.08 fps)

Secondary OutFlow Max=108.71 cfs @ 13.80 hrs HW=78.63' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 108.71 cfs @ 2.14 fps)

Summary for Pond 81P: OFF SITE POND

Inflow Area = 59.760 ac, 5.97% Impervious, Inflow Depth > 4.74" for 100 YEAR event
Inflow = 126.47 cfs @ 12.83 hrs, Volume= 23.629 af
Outflow = 92.03 cfs @ 13.30 hrs, Volume= 22.900 af, Atten= 27%, Lag= 28.0 min
Primary = 33.71 cfs @ 13.30 hrs, Volume= 15.692 af
Secondary = 58.32 cfs @ 13.30 hrs, Volume= 7.208 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Starting Elev= 62.00' Surf.Area= 20,254 sf Storage= 139,510 cf
Peak Elev= 67.97' @ 13.30 hrs Surf.Area= 78,744 sf Storage= 391,029 cf (251,519 cf above start)

Plug-Flow detention time= 115.2 min calculated for 19.697 af (83% of inflow)
Center-of-Mass det. time= 48.2 min (876.0 - 827.7)

Volume	Invert	Avail.Storage	Storage Description
#1	52.00'	393,587 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
52.00	7,648	0	0
62.00	20,254	139,510	139,510
64.00	30,728	50,982	190,492
66.00	46,299	77,027	267,519
67.00	63,288	54,794	322,313
68.00	79,261	71,275	393,587

Device	Routing	Invert	Outlet Devices
#1	Primary	62.00'	**24.0" Round Culvert** L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 62.00' / 61.50' S= 0.0050 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 3.14 sf
#2	Secondary	66.00'	**8.0' 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=33.71 cfs @ 13.30 hrs HW=67.97' (Free Discharge)
└─**1=Culvert** (Inlet Controls 33.71 cfs @ 10.73 fps)

Secondary OutFlow Max=58.28 cfs @ 13.30 hrs HW=67.97' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 58.28 cfs @ 3.70 fps)

Summary for Pond 82P: Golf Course Pond

Inflow Area =	827.990 ac,	4.73% Impervious,	Inflow Depth > 1.04"	for 100 YEAR event
Inflow =	127.45 cfs @	18.93 hrs, Volume=	71.503 af	
Outflow =	127.26 cfs @	19.31 hrs, Volume=	67.347 af,	Atten= 0%, Lag= 22.9 min
Secondary =	127.26 cfs @	19.31 hrs, Volume=	67.347 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 79.31' @ 19.31 hrs Surf.Area= 68,498 sf Storage= 181,901 cf

Plug-Flow detention time= 24.1 min calculated for 67.123 af (94% of inflow)
Center-of-Mass det. time= 11.5 min (995.5 - 984.0)

Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	395,691 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
76.00	41,373	0	0
82.00	90,524	395,691	395,691

Device	Routing	Invert	Outlet Devices
#1	Secondary	76.00'	**8.0' 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

Secondary OutFlow Max=127.25 cfs @ 19.31 hrs HW=79.31' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 127.25 cfs @ 4.80 fps)

Summary for Pond 83P: Culvert at Valhalla Road

Inflow Area =	31.310 ac,	11.18% Impervious,	Inflow Depth > 4.47"	for 100 YEAR event
Inflow =	58.33 cfs @	13.10 hrs, Volume=	11.651 af	
Outflow =	33.38 cfs @	13.86 hrs, Volume=	11.640 af,	Atten= 43%, Lag= 45.3 min
Primary =	33.38 cfs @	13.86 hrs, Volume=	11.640 af	
Secondary =	0.00 cfs @	5.00 hrs, Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 136.14' @ 13.86 hrs Surf.Area= 20,365 sf Storage= 96,933 cf

Plug-Flow detention time= 24.1 min calculated for 11.602 af (100% of inflow)
Center-of-Mass det. time= 23.7 min (867.4 - 843.6)

Volume	Invert	Avail.Storage	Storage Description
#1	120.00'	648,610 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.00	366	0	0
130.00	4,041	22,035	22,035
140.00	30,637	173,390	195,425
150.00	60,000	453,185	648,610

Device	Routing	Invert	Outlet Devices
#1	Primary	120.00'	**18.0" Round Culvert** L= 80.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 120.00' / 119.00' S= 0.0125 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	148.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=33.38 cfs @ 13.86 hrs HW=136.14' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 33.38 cfs @ 18.89 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=120.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 84P: 3 - 18" culverts

Inflow Area = 20.440 ac, 7.78% Impervious, Inflow Depth > 4.85" for 100 YEAR event
Inflow = 53.26 cfs @ 12.70 hrs, Volume= 8.267 af
Outflow = 35.95 cfs @ 13.12 hrs, Volume= 8.199 af, Atten= 32%, Lag= 24.7 min
Primary = 35.95 cfs @ 13.12 hrs, Volume= 8.199 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 83.23' @ 13.12 hrs Surf.Area= 58,674 sf Storage= 49,853 cf

Plug-Flow detention time= 15.4 min calculated for 8.172 af (99% of inflow)
Center-of-Mass det. time= 12.5 min (827.9 - 815.4)

Volume	Invert	Avail.Storage	Storage Description
#1	80.00'	297,916 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
80.00	2,362	0	0
82.00	6,990	9,352	9,352
84.00	90,787	97,777	107,129
86.00	100,000	190,787	297,916

Device	Routing	Invert	Outlet Devices
#1	Primary	80.50'	**18.0" Round Culvert X 3.00** L= 50.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 80.50' / 80.00' S= 0.0100 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	84.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir**

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=35.94 cfs @ 13.12 hrs HW=83.23' (Free Discharge)
└─**1=Culvert** (Inlet Controls 35.94 cfs @ 6.78 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=80.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 85P: 18" CULVERT

Inflow Area = 8.230 ac, 4.74% Impervious, Inflow Depth > 4.74" for 100 YEAR event
Inflow = 20.99 cfs @ 12.71 hrs, Volume= 3.251 af
Outflow = 20.43 cfs @ 12.81 hrs, Volume= 3.231 af, Atten= 3%, Lag= 6.2 min
Primary = 10.34 cfs @ 12.81 hrs, Volume= 2.768 af
Secondary = 10.09 cfs @ 12.81 hrs, Volume= 0.463 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 92.28' @ 12.81 hrs Surf.Area= 14,299 sf Storage= 16,973 cf

Plug-Flow detention time= 18.1 min calculated for 3.220 af (99% of inflow)
Center-of-Mass det. time= 15.8 min (833.0 - 817.2)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	29,280 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.00	1,196	0	0
92.00	12,056	13,252	13,252
93.00	20,000	16,028	29,280

Device	Routing	Invert	Outlet Devices
#1	Primary	89.86'	**18.0" Round Culvert** L= 28.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 89.86' / 89.79' S= 0.0025 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	92.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=10.34 cfs @ 12.81 hrs HW=92.28' (Free Discharge)
└─**1=Culvert** (Barrel Controls 10.34 cfs @ 5.85 fps)

Secondary OutFlow Max=10.05 cfs @ 12.81 hrs HW=92.28' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 10.05 cfs @ 1.43 fps)

Summary for Pond 86P: 24" CULVERT

Inflow Area =	56.890 ac,	4.15% Impervious, Inflow Depth > 3.32"	for 100 YEAR event
Inflow =	66.64 cfs @	13.49 hrs, Volume=	15.754 af
Outflow =	66.55 cfs @	13.50 hrs, Volume=	15.686 af, Atten= 0%, Lag= 0.9 min
Primary =	23.98 cfs @	13.50 hrs, Volume=	10.862 af
Secondary =	42.57 cfs @	13.50 hrs, Volume=	4.824 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 61.29' @ 13.50 hrs Surf.Area= 17,552 sf Storage= 31,088 cf

Plug-Flow detention time= 11.3 min calculated for 15.634 af (99% of inflow)
Center-of-Mass det. time= 9.9 min (889.0 - 879.1)

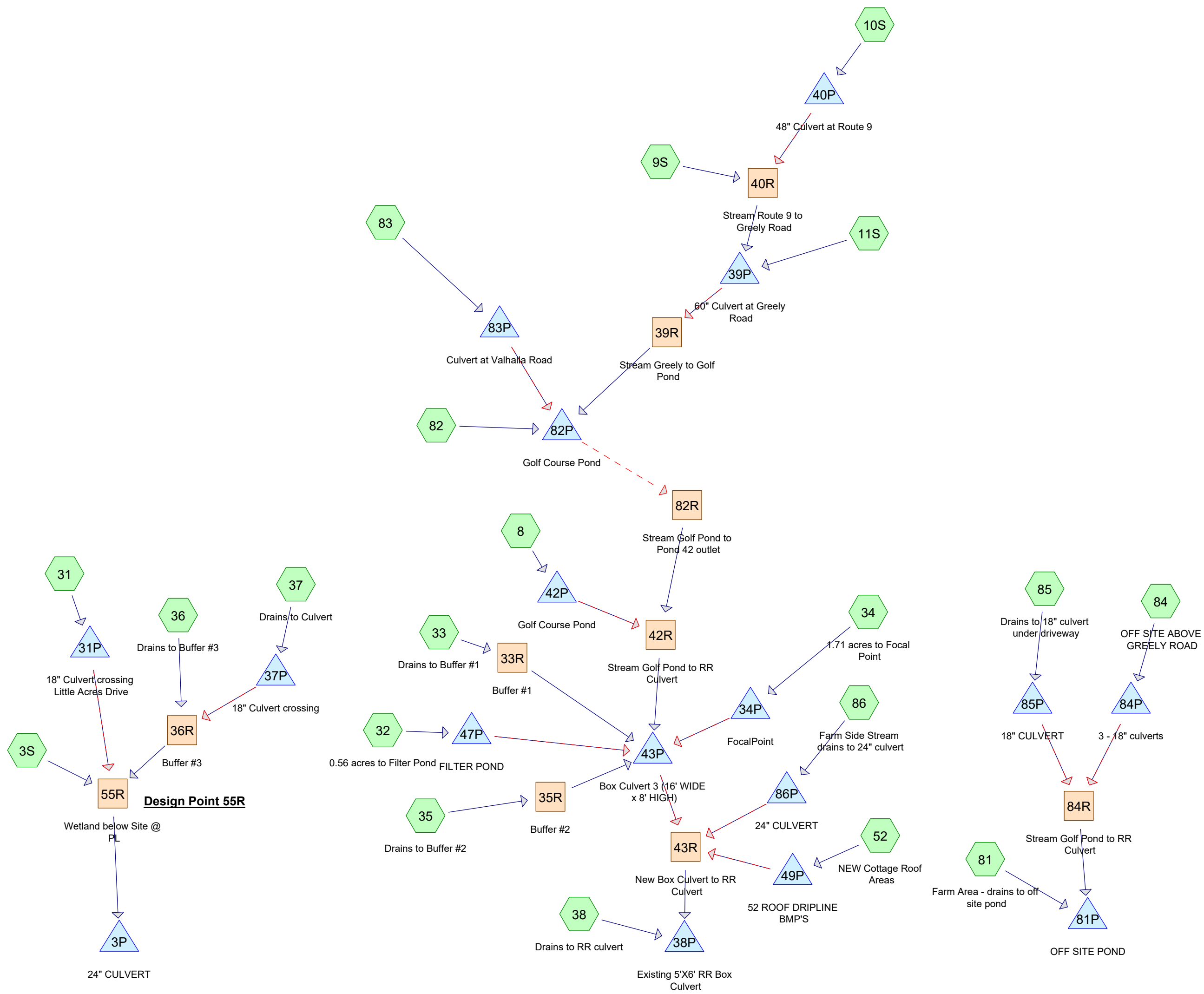
Volume	Invert	Avail.Storage	Storage Description
#1	58.00'	44,762 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

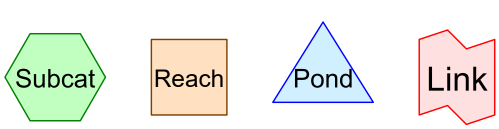
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
58.00	1,500	0	0
60.00	11,084	12,584	12,584
62.00	21,094	32,178	44,762

Device	Routing	Invert	Outlet Devices
#1	Primary	57.78'	**24.0" Round Culvert** L= 73.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 57.78' / 56.17' S= 0.0221 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Secondary	61.00'	**100.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=23.98 cfs @ 13.50 hrs HW=61.29' (Free Discharge)
└─**1=Culvert** (Inlet Controls 23.98 cfs @ 7.63 fps)

Secondary OutFlow Max=42.49 cfs @ 13.50 hrs HW=61.29' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 42.49 cfs @ 1.45 fps)





Routing Diagram for POST11-20-2020

Prepared by Belanger Engineering, Printed 11/9/2020

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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
15.000	75	1/4 acre lots, 38% imp, HSG B (10S)
2.860	98	52 Cottage Roofs (52)
0.620	74	Approved LAWN C phase 1 (3S)
0.100	98	Approved Trails-phase 1 (3S)
0.520	98	EXISTING BARN AND HOUSE (81, 84)
0.130	98	EXISTING GRAVEL/PAVED FARM (86)
0.260	98	EXISTING HOUSE AND BARN (86)
1.100	98	EXISTING HOUSE LOTS 11 - OFF SITE (86)
13.000	98	EXISTING IMPERVIOUS AREA (9S)
103.300	61	EXISTING LAWN B (11S)
111.520	74	EXISTING LAWN C (3S, 9S, 10S, 81, 82, 83, 84, 85)
129.300	61	EXISTING LAWNS B (8, 86)
20.000	70	EXISTING LOTS B (11S)
1.640	98	EXISTING PAVED/GRAVEL FARM (81, 84)
26.910	98	EXISTING ROADS (8, 10S, 11S, 81, 82, 83, 84, 85)
0.870	98	EXISTING ROADS-OFF SITE (86)
0.170	98	NEW IMPERVIOUS (81)
4.080	98	NEW IMPERVIOUS PAVED AREA (32, 33, 34, 35, 36)
10.010	74	NEW LAWN C (3S, 8, 32, 33, 34, 35, 36, 37, 38)
0.430	70	NEW LAWN C (31)
0.860	74	NEW LAWNS C (86)
0.540	98	NEW PAVED - FARM (86)
0.540	98	NEW PAVEMENT - FARM (8)
24.080	70	WOODS / FIELD HSG C (3S, 31)
18.050	74	WOODS / FIELD HSG C/D (81)
205.000	30	Woods, Good, HSG A (8, 9S, 10S, 11S)
178.000	55	Woods, Good, HSG B (8, 9S, 10S, 11S, 82, 83)
231.090	70	Woods, Good, HSG C (8, 9S, 10S, 11S, 37, 38)
64.000	77	Woods, Good, HSG D (10S, 11S)
1,163.980	**61**	**TOTAL AREA**

Summary for Subcatchment 3S:

Runoff = 8.68 cfs @ 12.68 hrs, Volume= 1.297 af, Depth> 0.73"

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 2 YEAR Rainfall=3.10"

	Area (ac)	CN	Description
*	15.050	70	WOODS / FIELD HSG C
*	0.000	98	EXISTING IMPERVIOUS AREA
*	4.000	74	EXISTING LAWN C
*	0.620	74	Approved LAWN C phase 1
*	0.100	98	Approved Trails-phase 1
*	1.670	74	NEW LAWN C
*	0.000	98	NEW ROOF (1/2-11 UNITS=0.31 AC))
	21.440	71	Weighted Average
	21.340		99.53% Pervious Area
	0.100		0.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.8	100	0.0400	0.06		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
15.0	450	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
43.8	550	Total			

Summary for Subcatchment 8:

Runoff = 9.66 cfs @ 13.94 hrs, Volume= 3.346 af, Depth> 0.24"

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 Rainfall=3.10"

	Area (ac)	CN	Description
	32.000	30	Woods, Good, HSG A
	20.000	55	Woods, Good, HSG B
	25.450	70	Woods, Good, HSG C
*	10.000	98	EXISTING ROADS
*	0.000	98	EXISTING PAVED / GRAVEL FARM
*	0.000	98	EXISTING HOUSE AND BARN
*	78.000	61	EXISTING LAWNS B
*	1.560	74	NEW LAWN C
*	0.000	98	NEW COTTAGES (0.54 ac) (see sub 52) 1/2 27 units
*	0.540	98	NEW PAVEMENT - FARM
	167.550	58	Weighted Average
	157.010		93.71% Pervious Area
	10.540		6.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
69.3	150	0.0100	0.04		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
9.7	3,700	0.0100	6.33	253.05	**Trap/Vee/Rect Channel Flow, CD** Bot.W=10.00' D=4.00' n= 0.040 Winding stream, pools & shoals
109.0	4,750	Total			

Summary for Subcatchment 9S:

Runoff = 16.96 cfs @ 13.28 hrs, Volume= 3.916 af, Depth> 0.54"

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 Rainfall=3.10"

	Area (ac)	CN	Description
	15.000	30	Woods, Good, HSG A
	10.000	55	Woods, Good, HSG B
	25.000	70	Woods, Good, HSG C
*	13.000	98	EXISTING IMPERVIOUS AREA
*	23.750	74	EXISTING LAWN C
	86.750	67	Weighted Average
	73.750		85.01% Pervious Area
	13.000		14.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0200	0.05		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
82.5	1,050	Total			

Summary for Subcatchment 10S:

Runoff = 23.03 cfs @ 13.52 hrs, Volume= 7.443 af, Depth> 0.22"

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 Rainfall=3.10"

	Area (ac)	CN	Description
	118.000	30	Woods, Good, HSG A
	74.000	55	Woods, Good, HSG B
	129.000	70	Woods, Good, HSG C
	48.000	77	Woods, Good, HSG D
	15.000	75	1/4 acre lots, 38% imp, HSG B
*	16.950	74	EXISTING LAWN C
*	5.000	98	EXISTING ROADS
	405.950	57	Weighted Average
	395.250		97.36% Pervious Area
	10.700		2.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0200	0.05		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
82.5	1,050	Total			

Summary for Subcatchment 11S:

Runoff = 19.38 cfs @ 13.45 hrs, Volume= 5.703 af, Depth> 0.27"

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 Rainfall=3.10"

	Area (ac)	CN	Description
	40.000	30	Woods, Good, HSG A
	24.000	55	Woods, Good, HSG B
	42.000	70	Woods, Good, HSG C
	16.000	77	Woods, Good, HSG D
*	20.000	70	EXISTING LOTS B
*	103.300	61	EXISTING LAWN B
*	5.000	98	EXISTING ROADS
	250.300	59	Weighted Average
	245.300		98.00% Pervious Area
	5.000		2.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0200	0.05		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
82.5	1,050	Total			

Summary for Subcatchment 31:

Runoff = 3.40 cfs @ 12.73 hrs, Volume= 0.536 af, Depth> 0.68"

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 Rainfall=3.10"

	Area (ac)	CN	Description
*	9.030	70	WOODS / FIELD HSG C
*	0.430	70	NEW LAWN C
	9.460	70	Weighted Average
	9.460		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.8	100	0.0400	0.06		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
18.3	550	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
47.1	650	Total			

Summary for Subcatchment 32: 0.56 acres to Filter Pond

Runoff = 2.45 cfs @ 12.03 hrs, Volume= 0.150 af, Depth> 1.71"

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 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.560	98	NEW IMPERVIOUS PAVED AREA
*	0.490	74	NEW LAWN C
	1.050	87	Weighted Average
	0.490		46.67% Pervious Area
	0.560		53.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0300	1.02		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.10"
1.4	300	0.0300	3.52		**Shallow Concentrated Flow, BC** Paved Kv= 20.3 fps
1.6	311	Total			

Summary for Subcatchment 33: Drains to Buffer #1

Runoff = 5.33 cfs @ 12.03 hrs, Volume= 0.323 af, Depth> 1.49"

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 Rainfall=3.10"

	Area (ac)	CN	Description
*	1.070	98	NEW IMPERVIOUS PAVED AREA
*	0.790	74	NEW LAWN C
*	0.000	98	0.52 ac (1/2) of 19 Roofs
*	0.740	74	NEW LAWN C
	2.600	84	Weighted Average
	1.530		58.85% Pervious Area
	1.070		41.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0300	1.02		**Sheet Flow, AB**
					Smooth surfaces n= 0.011 P2= 3.10"
1.4	300	0.0300	3.52		**Shallow Concentrated Flow, BC**
					Paved Kv= 20.3 fps
1.6	311	Total			

Summary for Subcatchment 34: 1.71 acres to Focal Point

Runoff = 8.77 cfs @ 12.03 hrs, Volume= 0.531 af, Depth> 1.49"

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 Rainfall=3.10"

	Area (ac)	CN	Description
*	1.710	98	NEW IMPERVIOUS PAVED AREA
*	2.570	74	NEW LAWN C
*	0.000	98	0.66 ac (1/2) of 24 Roofs
	4.280	84	Weighted Average
	2.570		60.05% Pervious Area
	1.710		39.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0300	1.02		**Sheet Flow, AB**
					Smooth surfaces n= 0.011 P2= 3.10"
1.4	300	0.0300	3.52		**Shallow Concentrated Flow, BC**
					Paved Kv= 20.3 fps
1.6	311	Total			

Summary for Subcatchment 35: Drains to Buffer #2

Runoff = 2.38 cfs @ 12.03 hrs, Volume= 0.146 af, Depth> 1.87"

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 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.580	98	NEW IMPERVIOUS PAVED AREA
*	0.360	74	NEW LAWN C
*	0.000	98	0.14 ac (1/2) of 5 Roofs
*	0.000	74	NEW LAWN C
	0.940	89	Weighted Average
	0.360		38.30% Pervious Area
	0.580		61.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0300	1.02		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.10"
1.4	300	0.0300	3.52		**Shallow Concentrated Flow, BC** Paved Kv= 20.3 fps
1.6	311	Total			

Summary for Subcatchment 36: Drains to Buffer #3

Runoff = 0.80 cfs @ 12.01 hrs, Volume= 0.047 af, Depth> 1.49"

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 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.160	98	NEW IMPERVIOUS PAVED AREA
*	0.220	74	NEW LAWN C
*	0.000	98	0.055 ac (1/2) of 2 Roofs
*	0.000	74	NEW LAWN C
	0.380	84	Weighted Average
	0.220		57.89% Pervious Area
	0.160		42.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0200	0.87		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.10"
0.6	120	0.0300	3.52		**Shallow Concentrated Flow, BC** Paved Kv= 20.3 fps
0.8	131	Total			

Summary for Subcatchment 37: Drains to Culvert

Runoff = 0.80 cfs @ 12.59 hrs, Volume= 0.110 af, Depth> 0.77"

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 2 YEAR Rainfall=3.10"

	Area (ac)	CN	Description
	0.990	70	Woods, Good, HSG C
*	0.000	98	NEW IMPERVIOUS PAVED AREA
*	0.720	74	NEW LAWN C
*	0.000	98	0.25 ac (1/2) of 9 Roofs
*	0.000	74	NEW LAWN C
	1.710	72	Weighted Average
	1.710		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
32.3	100	0.0300	0.05		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
5.8	150	0.0300	0.43		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
38.1	250	Total			

Summary for Subcatchment 38: Drains to RR culvert

Runoff = 4.13 cfs @ 12.52 hrs, Volume= 0.544 af, Depth> 0.68"

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 Rainfall=3.10"

	Area (ac)	CN	Description
	8.650	70	Woods, Good, HSG C
*	0.000	98	NEW IMPERVIOUS PAVED AREA
*	0.890	74	NEW LAWN C
*	0.000	98	0.11 ac (1/2) of 2 Roofs + 2 fulll
	9.540	70	Weighted Average
	9.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.8	100	0.0400	0.06		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
4.1	150	0.0600	0.61		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
32.9	250	Total			

Summary for Subcatchment 52: NEW Cottage Roof Areas

Runoff = 9.84 cfs @ 12.00 hrs, Volume= 0.639 af, Depth> 2.68"

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 Rainfall=3.10"

	Area (ac)	CN	Description
*	2.860	98	52 Cottage Roofs
	2.860		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	20	0.4000	3.25		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.10"

Summary for Subcatchment 81: Farm Area - drains to off site pond

Runoff = 14.71 cfs @ 12.77 hrs, Volume= 2.328 af, Depth> 0.92"

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 Rainfall=3.10"

	Area (ac)	CN	Description
*	18.050	74	WOODS / FIELD HSG C/D
*	0.510	98	EXISTING ROADS
*	10.640	74	EXISTING LAWN C
*	0.820	98	EXISTING PAVED/GRAVEL FARM
*	0.260	98	EXISTING BARN AND HOUSE
*	0.170	98	NEW IMPERVIOUS
	30.450	75	Weighted Average
	28.690		94.22% Pervious Area
	1.760		5.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
50.1	100	0.0100	0.03		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
2.4	100	0.0800	0.71		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
52.5	200	Total			

Summary for Subcatchment 82:

Runoff = 4.29 cfs @ 13.37 hrs, Volume= 1.228 af, Depth> 0.27"

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 Rainfall=3.10"

	Area (ac)	CN	Description
	44.000	55	Woods, Good, HSG B
*	2.000	98	EXISTING ROADS
*	7.680	74	EXISTING LAWN C
	53.680	59	Weighted Average
	51.680		96.27% Pervious Area
	2.000		3.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
69.3	150	0.0100	0.04		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
7.3	220	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
1.8	700	0.0100	6.33	253.05	**Trap/Vee/Rect Channel Flow, CD** Bot.W=10.00' D=4.00' n= 0.040 Winding stream, pools & shoals
78.4	1,070	Total			

Summary for Subcatchment 83:

Runoff = 10.04 cfs @ 13.17 hrs, Volume= 2.098 af, Depth> 0.80"

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 Rainfall=3.10"

	Area (ac)	CN	Description
	6.000	55	Woods, Good, HSG B
*	3.500	98	EXISTING ROADS
*	21.810	74	EXISTING LAWN C
	31.310	73	Weighted Average
	27.810		88.82% Pervious Area
	3.500		11.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
69.3	150	0.0100	0.04		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
12.3	370	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
81.6	520	Total			

Summary for Subcatchment 84: OFF SITE ABOVE GREELY ROAD

Runoff = 10.52 cfs @ 12.76 hrs, Volume= 1.653 af, Depth> 0.97"

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 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.510	98	EXISTING ROADS
*	18.850	74	EXISTING LAWN C
*	0.820	98	EXISTING PAVED/GRAVEL FARM
*	0.260	98	EXISTING BARN AND HOUSE
	20.440	76	Weighted Average
	18.850		92.22% Pervious Area
	1.590		7.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
50.1	100	0.0100	0.03		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
2.4	100	0.0800	0.71		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
52.5	200	Total			

Summary for Subcatchment 85: Drains to 18" culvert under driveway

Runoff = 3.98 cfs @ 12.77 hrs, Volume= 0.629 af, Depth> 0.92"

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 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.390	98	EXISTING ROADS
*	7.840	74	EXISTING LAWN C
	8.230	75	Weighted Average
	7.840		95.26% Pervious Area
	0.390		4.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
50.1	100	0.0100	0.03		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
2.4	100	0.0800	0.71		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
52.5	200	Total			

Summary for Subcatchment 86: Farm Side Stream drains to 24" culvert

Runoff = 6.08 cfs @ 13.75 hrs, Volume= 1.783 af, Depth> 0.39"

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 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.870	98	EXISTING ROADS-OFF SITE
*	51.300	61	EXISTING LAWNS B
*	1.100	98	EXISTING HOUSE LOTS 11 - OFF SITE
*	0.260	98	EXISTING HOUSE AND BARN
*	0.130	98	EXISTING GRAVEL/PAVED FARM
*	0.540	98	NEW PAVED - FARM
*	0.000	98	COTTAGE ROOFS - 0.22 (see 52s)
*	0.860	74	NEW LAWNS C
	55.060	63	Weighted Average
	52.160		94.73% Pervious Area
	2.900		5.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
69.3	150	0.0100	0.04		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
8.2	3,100	0.0100	6.33	253.05	**Trap/Vee/Rect Channel Flow, CD** Bot.W=10.00' D=4.00' n= 0.040 Winding stream, pools & shoals
107.5	4,150	Total			

Summary for Reach 33R: Buffer #1

Inflow Area = 2.600 ac, 41.15% Impervious, Inflow Depth > 1.49" for 2 YEAR event
Inflow = 5.33 cfs @ 12.03 hrs, Volume= 0.323 af
Outflow = 3.51 cfs @ 12.31 hrs, Volume= 0.315 af, Atten= 34%, Lag= 16.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.14 fps, Min. Travel Time= 11.9 min
Avg. Velocity = 0.05 fps, Avg. Travel Time= 35.1 min

Peak Storage= 2,503 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.11'
Bank-Full Depth= 1.00' Flow Area= 222.0 sf, Capacity= 132.82 cfs

222.00' x 1.00' deep channel, n= 0.800 Sheet flow: Woods+dense brush
Length= 100.0' Slope= 0.1050 '/'
Inlet Invert= 72.50', Outlet Invert= 62.00'

Summary for Reach 35R: Buffer #2

Inflow Area = 0.940 ac, 61.70% Impervious, Inflow Depth > 1.87" for 2 YEAR event
Inflow = 2.38 cfs @ 12.03 hrs, Volume= 0.146 af
Outflow = 1.49 cfs @ 12.34 hrs, Volume= 0.143 af, Atten= 37%, Lag= 18.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.13 fps, Min. Travel Time= 13.2 min
Avg. Velocity = 0.04 fps, Avg. Travel Time= 40.2 min

Peak Storage= 1,212 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.10'
Bank-Full Depth= 1.00' Flow Area= 126.0 sf, Capacity= 75.05 cfs

126.00' x 1.00' deep channel, n= 0.800 Sheet flow: Woods+dense brush
Length= 100.0' Slope= 0.1050 '/'
Inlet Invert= 72.50', Outlet Invert= 62.00'

Summary for Reach 36R: Buffer #3

Inflow Area =	2.090 ac,	7.66% Impervious,	Inflow Depth > 0.70"	for 2 YEAR event	
Inflow =	0.80 cfs @	12.01 hrs,	Volume=	0.121 af	
Outflow =	0.42 cfs @	12.43 hrs,	Volume=	0.116 af,	Atten= 48%, Lag= 25.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.09 fps, Min. Travel Time= 18.3 min
Avg. Velocity = 0.05 fps, Avg. Travel Time= 33.3 min

Peak Storage= 466 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.10'
Bank-Full Depth= 1.00' Flow Area= 45.0 sf, Capacity= 18.16 cfs

45.00' x 1.00' deep channel, n= 0.800 Sheet flow: Woods+dense brush
Length= 100.0' Slope= 0.0500 '/'
Inlet Invert= 78.00', Outlet Invert= 73.00'

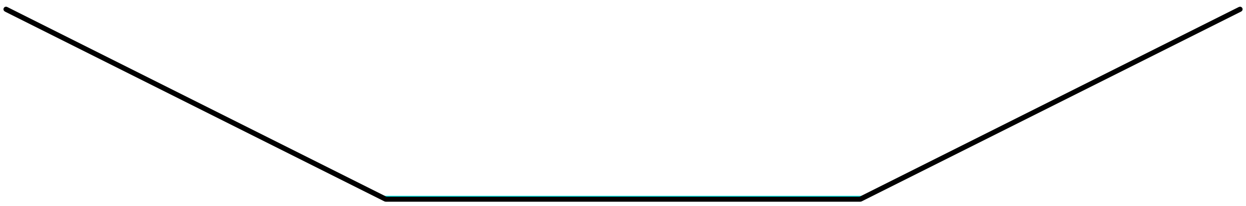
Summary for Reach 39R: Stream Greely to Golf Pond

Inflow Area =	743.000 ac,	3.86% Impervious,	Inflow Depth > 0.00"	for 2 YEAR event	
Inflow =	0.83 cfs @	20.00 hrs,	Volume=	0.082 af	
Outflow =	0.20 cfs @	20.00 hrs,	Volume=	0.008 af,	Atten= 76%, Lag= 0.0 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= 53.6 min
Avg. Velocity = 0.62 fps, Avg. Travel Time= 71.8 min

Peak Storage= 1,886 cf @ 20.00 hrs
Average Depth at Peak Storage= 0.07'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 641.98 cfs

10.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 2,650.0' Slope= 0.0125 '/'
Inlet Invert= 115.00', Outlet Invert= 82.00'



Summary for Reach 40R: Stream Route 9 to Greely Road

Inflow Area = 492.700 ac, 4.81% Impervious, Inflow Depth > 0.22" for 2 YEAR event
Inflow = 17.23 cfs @ 15.31 hrs, Volume= 8.944 af
Outflow = 17.12 cfs @ 16.23 hrs, Volume= 7.939 af, Atten= 1%, Lag= 55.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.44 fps, Min. Travel Time= 32.8 min
Avg. Velocity = 2.06 fps, Avg. Travel Time= 38.8 min

Peak Storage= 33,658 cf @ 15.68 hrs
Average Depth at Peak Storage= 0.74'
Bank-Full Depth= 4.00' Flow Area= 64.0 sf, Capacity= 392.75 cfs

8.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 24.00'
Length= 4,800.0' Slope= 0.0063 '/'
Inlet Invert= 150.00', Outlet Invert= 120.00'

Summary for Reach 42R: Stream Golf Pond to RR Culvert

Inflow Area = 167.550 ac, 6.29% Impervious, Inflow Depth > 0.43" for 2 YEAR event
Inflow = 18.36 cfs @ 14.43 hrs, Volume= 6.045 af
Outflow = 18.22 cfs @ 14.74 hrs, Volume= 5.848 af, Atten= 1%, Lag= 18.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.34 fps, Min. Travel Time= 10.5 min
Avg. Velocity = 1.66 fps, Avg. Travel Time= 14.9 min

Peak Storage= 11,518 cf @ 14.57 hrs
Average Depth at Peak Storage= 0.68'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 448.47 cfs

10.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 1,481.0' Slope= 0.0061 '/'
Inlet Invert= 65.00', Outlet Invert= 56.00'

Summary for Reach 43R: New Box Culvert to RR Culvert

Inflow Area =	234.340 ac,	8.63% Impervious, Inflow Depth >	0.43"	for 2 YEAR event
Inflow =	23.94 cfs @	14.67 hrs, Volume=	8.422 af	
Outflow =	23.89 cfs @	14.83 hrs, Volume=	8.290 af,	Atten= 0%, Lag= 10.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.58 fps, Min. Travel Time= 5.3 min
Avg. Velocity = 0.85 fps, Avg. Travel Time= 9.8 min

Peak Storage= 7,543 cf @ 14.75 hrs
Average Depth at Peak Storage= 0.85'
Bank-Full Depth= 4.00' Flow Area= 96.0 sf, Capacity= 364.94 cfs

16.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 32.00'
Length= 500.0' Slope= 0.0020 '/'
Inlet Invert= 56.00', Outlet Invert= 55.00'

‡

Summary for Reach 55R: Wetland below Site @ PL

Inflow Area =	32.990 ac,	0.79% Impervious, Inflow Depth >	0.71"	for 2 YEAR event
Inflow =	11.22 cfs @	12.71 hrs, Volume=	1.943 af	
Outflow =	10.87 cfs @	12.95 hrs, Volume=	1.908 af,	Atten= 3%, Lag= 14.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.24 fps, Min. Travel Time= 8.3 min
Avg. Velocity = 1.57 fps, Avg. Travel Time= 17.1 min

Peak Storage= 5,392 cf @ 12.81 hrs
Average Depth at Peak Storage= 0.40'
Bank-Full Depth= 5.00' Flow Area= 65.0 sf, Capacity= 840.41 cfs

8.00' x 5.00' deep channel, n= 0.030 Stream, clean & straight
Side Slope Z-value= 1.0 '/' Top Width= 18.00'
Length= 1,604.0' Slope= 0.0162 '/'
Inlet Invert= 86.00', Outlet Invert= 60.00'

Summary for Reach 82R: Stream Golf Pond to Pond 42 outlet

Inflow	=	10.97 cfs @	13.81 hrs, Volume=	3.117 af
Outflow	=	10.64 cfs @	14.30 hrs, Volume=	2.986 af, Atten= 3%, Lag= 29.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.73 fps, Min. Travel Time= 15.9 min
Avg. Velocity = 1.13 fps, Avg. Travel Time= 24.4 min

Peak Storage= 10,164 cf @ 14.03 hrs
Average Depth at Peak Storage= 0.55'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 374.71 cfs

10.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 1,650.0' Slope= 0.0042 '/'
Inlet Invert= 72.00', Outlet Invert= 65.00'

Summary for Reach 84R: Stream Golf Pond to RR Culvert

Inflow Area =		28.670 ac,	6.91% Impervious, Inflow Depth > 0.93"	for 2 YEAR event
Inflow	=	13.43 cfs @	12.88 hrs, Volume=	2.227 af
Outflow	=	13.11 cfs @	13.12 hrs, Volume=	2.190 af, Atten= 2%, Lag= 14.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.45 fps, Min. Travel Time= 8.2 min
Avg. Velocity = 1.23 fps, Avg. Travel Time= 16.2 min

Peak Storage= 6,419 cf @ 12.98 hrs
Average Depth at Peak Storage= 0.49'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 575.29 cfs

10.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 1,200.0' Slope= 0.0100 '/'
Inlet Invert= 78.00', Outlet Invert= 66.00'

Summary for Pond 3P: 24" CULVERT

Inflow Area =	32.990 ac,	0.79% Impervious, Inflow Depth >	0.69"	for 2 YEAR event	
Inflow =	10.87 cfs @	12.95 hrs, Volume=	1.908 af		
Outflow =	10.19 cfs @	13.11 hrs, Volume=	1.883 af,	Atten= 6%,	Lag= 9.5 min
Primary =	10.19 cfs @	13.11 hrs, Volume=	1.883 af		
Secondary =	0.00 cfs @	5.00 hrs, Volume=	0.000 af		

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 55.47' @ 13.11 hrs Surf.Area= 5,758 sf Storage= 5,958 cf

Plug-Flow detention time= 12.4 min calculated for 1.877 af (98% of inflow)
Center-of-Mass det. time= 8.4 min (886.3 - 877.9)

Volume	Invert	Avail.Storage	Storage Description
#1	54.00'	56,342 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
54.00	2,362	0	0
56.00	6,990	9,352	9,352
58.00	10,000	16,990	26,342
60.00	20,000	30,000	56,342

Device	Routing	Invert	Outlet Devices
#1	Primary	54.00'	**24.0" Round Culvert** L= 50.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 54.00' / 53.00' S= 0.0200 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Secondary	59.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=10.18 cfs @ 13.11 hrs HW=55.47' (Free Discharge)
└**1=Culvert** (Inlet Controls 10.18 cfs @ 4.12 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=54.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 31P: 18" Culvert crossing Little Acres Drive

Inflow Area = 9.460 ac, 0.00% Impervious, Inflow Depth > 0.68" for 2 YEAR event
Inflow = 3.40 cfs @ 12.73 hrs, Volume= 0.536 af
Outflow = 2.74 cfs @ 13.00 hrs, Volume= 0.530 af, Atten= 19%, Lag= 16.4 min
Primary = 2.74 cfs @ 13.00 hrs, Volume= 0.530 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 80.29' @ 13.00 hrs Surf.Area= 7,883 sf Storage= 2,824 cf

Plug-Flow detention time= 15.8 min calculated for 0.530 af (99% of inflow)
Center-of-Mass det. time= 12.4 min (872.9 - 860.5)

Volume	Invert	Avail.Storage	Storage Description
#1	79.50'	262,372 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
79.50	366	0	0
80.00	4,041	1,102	1,102
82.00	30,637	34,678	35,780
87.00	60,000	226,593	262,372

Device	Routing	Invert	Outlet Devices
#1	Primary	79.50'	**18.0" Round Culvert** L= 62.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 79.50' / 79.00' S= 0.0081 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	86.00'	**80.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=2.74 cfs @ 13.00 hrs HW=80.29' (Free Discharge)
1=Culvert (Barrel Controls 2.74 cfs @ 4.23 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=79.50' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 34P: FocalPoint

Inflow Area = 4.280 ac, 39.95% Impervious, Inflow Depth > 1.49" for 2 YEAR event
Inflow = 8.77 cfs @ 12.03 hrs, Volume= 0.531 af
Outflow = 8.06 cfs @ 12.04 hrs, Volume= 0.531 af, Atten= 8%, Lag= 0.4 min
Primary = 8.06 cfs @ 12.04 hrs, Volume= 0.531 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 57.35' @ 12.05 hrs Surf.Area= 3,500 sf Storage= 213 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.3 min (791.3 - 791.0)

Volume	Invert	Avail.Storage	Storage Description
#1	57.20'	1,400 cf	**25.00'W x 140.00'L x 1.00'H crushed stone** 3,500 cf Overall x 40.0% Voids
#2	58.21'	9,160 cf	**1.30'W x 2.30'L x 3.55'H R-tank units** x 863
#3	61.00'	192 cf	**20.00'W x 15.00'L x 3.20'H FocalPoint** 960 cf Overall x 20.0% Voids
#4	64.00'	2,896 cf	**Surface Storage above focal point (Prismatic)** Listed below (Recalc) -Impe
		13,648 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
64.00	429	0	0
64.50	600	257	257
65.00	778	345	602
65.50	919	424	1,026
66.00	1,153	518	1,544
66.50	1,350	626	2,170
67.00	1,553	726	2,896

Device	Routing	Invert	Outlet Devices
#1	Primary	57.20'	**100.000 in/hr Exfiltration over Surface area** Phase-In= 0.10'
#2	Device 4	65.50'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 4	58.21'	**12.0" Vert. Orifice/Grate** C= 0.600
#4	Primary	58.21'	**18.0" Round Culvert** L= 26.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 58.21' / 58.00' S= 0.0081 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.10 cfs @ 12.04 hrs HW=57.34' (Free Discharge)
1=Exfiltration (Exfiltration Controls 8.10 cfs)
4=Culvert (Controls 0.00 cfs)
2=Orifice/Grate (Controls 0.00 cfs)
3=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 37P: 18" Culvert crossing

Inflow Area = 1.710 ac, 0.00% Impervious, Inflow Depth > 0.77" for 2 YEAR event
Inflow = 0.80 cfs @ 12.59 hrs, Volume= 0.110 af
Outflow = 0.27 cfs @ 13.42 hrs, Volume= 0.074 af, Atten= 67%, Lag= 50.0 min
Primary = 0.27 cfs @ 13.42 hrs, Volume= 0.074 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 80.52' @ 13.42 hrs Surf.Area= 4,011 sf Storage= 2,092 cf

Plug-Flow detention time= 148.1 min calculated for 0.074 af (67% of inflow)
Center-of-Mass det. time= 76.8 min (925.7 - 848.9)

Volume	Invert	Avail.Storage	Storage Description
#1	80.00'	133,356 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
80.00	4,000	0	0
82.00	4,041	8,041	8,041
84.00	30,637	34,678	42,719
86.00	60,000	90,637	133,356

Device	Routing	Invert	Outlet Devices
#1	Primary	80.30'	**18.0" Round Culvert** L= 28.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 80.30' / 80.00' S= 0.0107 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	85.50'	**20.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.26 cfs @ 13.42 hrs HW=80.52' (Free Discharge)
└─**1=Culvert** (Inlet Controls 0.26 cfs @ 1.61 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=80.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 38P: Existing 5'X6' RR Box Culvert

Inflow Area = 243.880 ac, 8.29% Impervious, Inflow Depth > 0.43" for 2 YEAR event
Inflow = 24.55 cfs @ 14.83 hrs, Volume= 8.834 af
Outflow = 24.49 cfs @ 14.90 hrs, Volume= 8.794 af, Atten= 0%, Lag= 4.6 min
Primary = 24.49 cfs @ 14.90 hrs, Volume= 8.794 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 56.42' @ 14.90 hrs Surf.Area= 6,939 sf Storage= 5,365 cf

Plug-Flow detention time= 3.7 min calculated for 8.765 af (99% of inflow)
Center-of-Mass det. time= 2.6 min (958.4 - 955.8)

Volume	Invert	Avail.Storage	Storage Description
#1	55.00'	3,745,747 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
55.00	1,320	0	0
56.00	4,539	2,930	2,930
58.00	15,848	20,387	23,317
60.00	56,417	72,265	95,582
62.00	198,504	254,921	350,503
64.00	274,621	473,125	823,628
66.00	372,832	647,453	1,471,081
70.00	764,501	2,274,666	3,745,747

Device	Routing	Invert	Outlet Devices
#1	Primary	55.10'	**60.0" W x 74.0" H Box I** L= 90.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 55.10' / 53.70' S= 0.0156 '/' Cc= 0.900 n= 0.022 Earth, clean & straight, Flow Area= 30.83 sf
#2	Secondary	69.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=24.46 cfs @ 14.90 hrs HW=56.42' (Free Discharge)
↑—**1=I** (Inlet Controls 24.46 cfs @ 3.69 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=55.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 39P: 60" Culvert at Greely Road

Inflow Area =	743.000 ac,	3.86% Impervious, Inflow Depth > 0.22"	for 2 YEAR event
Inflow =	29.22 cfs @	14.17 hrs, Volume=	13.642 af
Outflow =	0.83 cfs @	20.00 hrs, Volume=	0.082 af, Atten= 97%, Lag= 349.7 min
Primary =	0.83 cfs @	20.00 hrs, Volume=	0.082 af
Secondary =	0.00 cfs @	5.00 hrs, Volume=	0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 120.64' @ 20.00 hrs Surf.Area= 953,534 sf Storage= 588,117 cf

Plug-Flow detention time= 403.8 min calculated for 0.082 af (1% of inflow)
Center-of-Mass det. time= 188.3 min (1,155.6 - 967.3)

Volume	Invert	Avail.Storage	Storage Description
#1	120.00'	149,235,760 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 2

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.00	439,044	0	0
140.00	1,613,877	20,529,210	20,529,210
160.00	3,794,990	54,088,670	74,617,880

Device	Routing	Invert	Outlet Devices
#1	Primary	120.50'	**60.0" Round 60" Culvert w/ 6.0" inside fill** L= 90.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 120.00' / 118.20' S= 0.0200 '/' Cc= 0.900 n= 0.022 Earth, clean & straight, Flow Area= 18.61 sf
#2	Secondary	131.50'	**25.0' long x 100.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.55 cfs @ 20.00 hrs HW=120.64' (Free Discharge)
└─**1=60" Culvert** (Inlet Controls 0.55 cfs @ 1.21 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=120.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 40P: 48" Culvert at Route 9

Inflow Area = 405.950 ac, 2.64% Impervious, Inflow Depth > 0.22" for 2 YEAR event
Inflow = 23.03 cfs @ 13.52 hrs, Volume= 7.443 af
Outflow = 11.94 cfs @ 16.18 hrs, Volume= 5.028 af, Atten= 48%, Lag= 159.6 min
Primary = 11.94 cfs @ 16.18 hrs, Volume= 5.028 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 161.48' @ 16.18 hrs Surf.Area= 108,987 sf Storage= 131,360 cf

Plug-Flow detention time= 152.2 min calculated for 5.028 af (68% of inflow)
Center-of-Mass det. time= 82.6 min (1,012.5 - 929.9)

Volume	Invert	Avail.Storage	Storage Description
#1	160.00'	22,928,710 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
160.00	68,874	0	0
180.00	611,999	6,808,730	6,808,730
200.00	999,999	16,119,980	22,928,710

Device	Routing	Invert	Outlet Devices
#1	Primary	160.50'	**60.0" Round 48" Culvert w/ 6.0" inside fill** L= 90.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 160.00' / 158.70' S= 0.0144 '/' Cc= 0.900 n= 0.022 Earth, clean & straight, Flow Area= 18.61 sf
#2	Secondary	180.00'	**25.0' long x 100.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=11.69 cfs @ 16.18 hrs HW=161.48' (Free Discharge)
└─**1=48" Culvert** (Inlet Controls 11.69 cfs @ 3.05 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=160.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 42P: Golf Course Pond

Inflow Area =	167.550 ac,	6.29% Impervious, Inflow Depth > 0.24"	for 2 YEAR event
Inflow =	9.66 cfs @	13.94 hrs, Volume=	3.346 af
Outflow =	8.09 cfs @	14.77 hrs, Volume=	3.060 af, Atten= 16%, Lag= 49.9 min
Primary =	8.09 cfs @	14.77 hrs, Volume=	3.060 af
Secondary =	0.00 cfs @	5.00 hrs, Volume=	0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 71.24' @ 14.77 hrs Surf.Area= 24,278 sf Storage= 24,528 cf

Plug-Flow detention time= 53.6 min calculated for 3.049 af (91% of inflow)
Center-of-Mass det. time= 33.0 min (975.0 - 942.0)

Volume	Invert	Avail.Storage	Storage Description
#1	70.00'	514,000 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
70.00	15,328	0	0
72.00	29,781	45,109	45,109
74.00	42,804	72,585	117,694
76.00	59,373	102,177	219,871
78.00	73,726	133,099	352,970
80.00	87,304	161,030	514,000

Device	Routing	Invert	Outlet Devices
#1	Primary	70.00'	**30.0" Round Culvert** L= 80.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 70.00' / 69.50' S= 0.0063 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 4.91 sf
#2	Secondary	78.00'	**80.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=8.08 cfs @ 14.77 hrs HW=71.24' (Free Discharge)
1=Culvert (Barrel Controls 8.08 cfs @ 4.87 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=70.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 43P: Box Culvert 3 (16' WIDE x 8' HIGH)

Inflow Area =	176.420 ac,	8.20% Impervious, Inflow Depth > 0.47"	for 2 YEAR event
Inflow =	19.21 cfs @	14.73 hrs, Volume=	6.920 af
Outflow =	19.22 cfs @	14.74 hrs, Volume=	6.920 af, Atten= 0%, Lag= 0.8 min
Primary =	19.22 cfs @	14.74 hrs, Volume=	6.920 af
Secondary =	0.00 cfs @	5.00 hrs, Volume=	0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 56.03' @ 14.74 hrs Surf.Area= 1,417 sf Storage= 42 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (952.6 - 952.5)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	2,789,378 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	1,320	0	0
58.00	7,722	9,042	9,042
60.00	9,674	17,396	26,438
62.00	63,671	73,345	99,783
64.00	169,090	232,761	332,544
66.00	252,914	422,004	754,548
70.00	764,501	2,034,830	2,789,378

Device	Routing	Invert	Outlet Devices
#1	Primary	54.70'	**192.0" W x 96.0" H Box 192"X 108" Box Culvert** L= 70.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 54.70' / 54.00' S= 0.0100 '/' Cc= 0.900 n= 0.022 Earth, clean & straight, Flow Area= 128.00 sf
#2	Secondary	68.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=78.81 cfs @ 14.74 hrs HW=56.03' (Free Discharge)
1=192"X 108" Box Culvert (Inlet Controls 78.81 cfs @ 3.70 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=56.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 47P: FILTER POND

Inflow Area = 1.050 ac, 53.33% Impervious, Inflow Depth > 1.71" for 2 YEAR event
Inflow = 2.45 cfs @ 12.03 hrs, Volume= 0.150 af
Outflow = 0.39 cfs @ 12.50 hrs, Volume= 0.084 af, Atten= 84%, Lag= 28.1 min
Primary = 0.39 cfs @ 12.50 hrs, Volume= 0.084 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 80.92' @ 12.50 hrs Surf.Area= 2,413 sf Storage= 3,580 cf

Plug-Flow detention time= 173.5 min calculated for 0.084 af (56% of inflow)
Center-of-Mass det. time= 95.0 min (877.2 - 782.2)

Volume	Invert	Avail.Storage	Storage Description
#1	79.00'	10,009 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
79.00	1,343	0	0
80.00	1,873	1,608	1,608
81.00	2,460	2,167	3,775
82.00	3,103	2,782	6,556
83.00	3,803	3,453	10,009

Device	Routing	Invert	Outlet Devices
#1	Primary	75.87'	**18.0" Round Culvert** L= 31.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 75.87' / 75.00' S= 0.0281 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Device 1	80.50'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	82.00'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	82.50'	**10.0' 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=0.39 cfs @ 12.50 hrs HW=80.92' (Free Discharge)
1=Culvert (Passes 0.39 cfs of 17.64 cfs potential flow)
2=Orifice/Grate (Orifice Controls 0.39 cfs @ 2.21 fps)
3=Orifice/Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=79.00' (Free Discharge)
4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 49P: 52 ROOF DRIPLINE BMP'S

Inflow Area = 2.860 ac,100.00% Impervious, Inflow Depth > 2.68" for 2 YEAR event
Inflow = 9.84 cfs @ 12.00 hrs, Volume= 0.639 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 100.08' @ 20.00 hrs Surf.Area= 851,760 sf Storage= 27,843 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	12,675 cf	**3.00'W x 105.00'L x 2.00'H Prismatoid** x 52 32,760 cf Overall - 1,072 cf Embedded = 31,688 cf x 40.0% Voids
#2	100.00'	1,072 cf	**6.0" Round Pipe Storage** x 52 Inside #1 L= 105.0' S= 0.0050 '/'
		13,747 cf	x 52.00 = 714,857 cf Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	101.50'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir X 52.00** 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=0.00 cfs @ 5.00 hrs HW=100.00' (Free Discharge)
└─**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 81P: OFF SITE POND

Inflow Area = 59.120 ac, 6.33% Impervious, Inflow Depth > 0.92" for 2 YEAR event
Inflow = 25.47 cfs @ 12.95 hrs, Volume= 4.518 af
Outflow = 15.11 cfs @ 13.61 hrs, Volume= 4.198 af, Atten= 41%, Lag= 39.2 min
Primary = 15.11 cfs @ 13.61 hrs, Volume= 4.198 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Starting Elev= 62.00' Surf.Area= 20,254 sf Storage= 139,510 cf
Peak Elev= 64.12' @ 13.61 hrs Surf.Area= 31,625 sf Storage= 194,083 cf (54,573 cf above start)

Plug-Flow detention time= 320.2 min calculated for 0.992 af (22% of inflow)
Center-of-Mass det. time= 45.6 min (909.7 - 864.0)

Volume	Invert	Avail.Storage	Storage Description
#1	52.00'	393,079 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
52.00	7,648	0	0
62.00	20,254	139,510	139,510
64.00	30,728	50,982	190,492
66.00	46,299	77,027	267,519
68.00	79,261	125,560	393,079

Device	Routing	Invert	Outlet Devices
#1	Primary	62.00'	**24.0" Round Culvert** L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 62.00' / 61.50' S= 0.0050 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 3.14 sf
#2	Secondary	66.00'	**8.0' 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=15.12 cfs @ 13.61 hrs HW=64.11' (Free Discharge)
└─**1=Culvert** (Barrel Controls 15.12 cfs @ 5.66 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=62.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 82P: Golf Course Pond

Inflow Area = 827.990 ac, 4.13% Impervious, Inflow Depth > 0.05" for 2 YEAR event
Inflow = 14.17 cfs @ 13.31 hrs, Volume= 3.329 af
Outflow = 10.97 cfs @ 13.81 hrs, Volume= 3.117 af, Atten= 23%, Lag= 30.1 min
Secondary = 10.97 cfs @ 13.81 hrs, Volume= 3.117 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 76.64' @ 13.81 hrs Surf.Area= 46,588 sf Storage= 27,999 cf

Plug-Flow detention time= 50.8 min calculated for 3.107 af (93% of inflow)
Center-of-Mass det. time= 32.9 min (928.0 - 895.1)

Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	395,691 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
76.00	41,373	0	0
82.00	90,524	395,691	395,691

Device	Routing	Invert	Outlet Devices
#1	Secondary	76.00'	**8.0' 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

Secondary OutFlow Max=10.96 cfs @ 13.81 hrs HW=76.64' (Free Discharge)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 10.96 cfs @ 2.15 fps)

Summary for Pond 83P: Culvert at Valhalla Road

Inflow Area = 31.310 ac, 11.18% Impervious, Inflow Depth > 0.80" for 2 YEAR event
Inflow = 10.04 cfs @ 13.17 hrs, Volume= 2.098 af
Outflow = 9.93 cfs @ 13.27 hrs, Volume= 2.093 af, Atten= 1%, Lag= 5.8 min
Primary = 9.93 cfs @ 13.27 hrs, Volume= 2.093 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 122.11' @ 13.27 hrs Surf.Area= 1,142 sf Storage= 1,593 cf

Plug-Flow detention time= 2.5 min calculated for 2.093 af (100% of inflow)
Center-of-Mass det. time= 1.8 min (880.7 - 878.8)

Volume	Invert	Avail.Storage	Storage Description
#1	120.00'	648,610 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.00	366	0	0
130.00	4,041	22,035	22,035
140.00	30,637	173,390	195,425
150.00	60,000	453,185	648,610

Device	Routing	Invert	Outlet Devices
#1	Primary	120.00'	**18.0" Round Culvert** L= 80.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 120.00' / 119.00' S= 0.0125 '/' Cc= 0.900

			n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	148.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=9.93 cfs @ 13.27 hrs HW=122.11' (Free Discharge)
└─**1=Culvert** (Inlet Controls 9.93 cfs @ 5.62 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=120.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 84P: 3 - 18" culverts

Inflow Area = 20.440 ac, 7.78% Impervious, Inflow Depth > 0.97" for 2 YEAR event
Inflow = 10.52 cfs @ 12.76 hrs, Volume= 1.653 af
Outflow = 10.31 cfs @ 12.85 hrs, Volume= 1.602 af, Atten= 2%, Lag= 5.0 min
Primary = 10.31 cfs @ 12.85 hrs, Volume= 1.602 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 81.38' @ 12.85 hrs Surf.Area= 5,564 sf Storage= 5,483 cf

Plug-Flow detention time= 19.5 min calculated for 1.602 af (97% of inflow)
Center-of-Mass det. time= 9.5 min (859.6 - 850.2)

Volume	Invert	Avail.Storage	Storage Description
#1	80.00'	297,916 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
80.00	2,362	0	0
82.00	6,990	9,352	9,352
84.00	90,787	97,777	107,129
86.00	100,000	190,787	297,916

Device	Routing	Invert	Outlet Devices
#1	Primary	80.50'	**18.0" Round Culvert X 3.00**
			L= 50.0' RCP, sq.cut end projecting, Ke= 0.500
			Inlet / Outlet Invert= 80.50' / 80.00' S= 0.0100 '/' Cc= 0.900
			n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	84.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=10.30 cfs @ 12.85 hrs HW=81.38' (Free Discharge)
└─**1=Culvert** (Barrel Controls 10.30 cfs @ 4.56 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=80.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 85P: 18" CULVERT

Inflow Area = 8.230 ac, 4.74% Impervious, Inflow Depth > 0.92" for 2 YEAR event
Inflow = 3.98 cfs @ 12.77 hrs, Volume= 0.629 af
Outflow = 3.31 cfs @ 13.03 hrs, Volume= 0.625 af, Atten= 17%, Lag= 15.9 min
Primary = 3.31 cfs @ 13.03 hrs, Volume= 0.625 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 90.93' @ 13.03 hrs Surf.Area= 6,258 sf Storage= 3,475 cf

Plug-Flow detention time= 16.2 min calculated for 0.625 af (99% of inflow)
Center-of-Mass det. time= 13.7 min (866.2 - 852.5)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	29,280 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.00	1,196	0	0
92.00	12,056	13,252	13,252
93.00	20,000	16,028	29,280

Device	Routing	Invert	Outlet Devices
#1	Primary	89.86'	**18.0" Round Culvert** L= 28.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 89.86' / 89.79' S= 0.0025 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	92.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=3.31 cfs @ 13.03 hrs HW=90.93' (Free Discharge)
└─**1=Culvert** (Barrel Controls 3.31 cfs @ 3.43 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=90.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 86P: 24" CULVERT

Inflow Area = 55.060 ac, 5.27% Impervious, Inflow Depth > 0.39" for 2 YEAR event
Inflow = 6.08 cfs @ 13.75 hrs, Volume= 1.783 af
Outflow = 4.85 cfs @ 14.43 hrs, Volume= 1.503 af, Atten= 20%, Lag= 41.1 min
Primary = 4.85 cfs @ 14.43 hrs, Volume= 1.503 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 58.73' @ 14.43 hrs Surf.Area= 14,824 sf Storage= 18,559 cf

Plug-Flow detention time= 79.1 min calculated for 1.498 af (84% of inflow)
Center-of-Mass det. time= 42.0 min (964.8 - 922.8)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	401,091 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	758	0	0
58.00	9,115	9,873	9,873
60.00	24,850	33,965	43,838
62.00	43,236	68,086	111,924
64.00	72,382	115,618	227,542
66.00	101,167	173,549	401,091

Device	Routing	Invert	Outlet Devices
#1	Primary	57.78'	**24.0" Round Culvert** L= 73.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 57.78' / 56.17' S= 0.0221 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Secondary	61.00'	**100.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=4.84 cfs @ 14.43 hrs HW=58.73' (Free Discharge)
└─**1=Culvert** (Inlet Controls 4.84 cfs @ 3.31 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=56.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Subcatchment 3S:

Runoff = 20.91 cfs @ 12.63 hrs, Volume= 2.942 af, Depth> 1.65"

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 10 YEAR Rainfall=4.60"

	Area (ac)	CN	Description
*	15.050	70	WOODS / FIELD HSG C
*	0.000	98	EXISTING IMPERVIOUS AREA
*	4.000	74	EXISTING LAWN C
*	0.620	74	Approved LAWN C phase 1
*	0.100	98	Approved Trails-phase 1
*	1.670	74	NEW LAWN C
*	0.000	98	NEW ROOF (1/2-11 UNITS=0.31 AC))
	21.440	71	Weighted Average
	21.340		99.53% Pervious Area
	0.100		0.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.8	100	0.0400	0.06		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
15.0	450	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
43.8	550	Total			

Summary for Subcatchment 8:

Runoff = 41.06 cfs @ 13.68 hrs, Volume= 11.178 af, Depth> 0.80"

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 Rainfall=4.60"

	Area (ac)	CN	Description
	32.000	30	Woods, Good, HSG A
	20.000	55	Woods, Good, HSG B
	25.450	70	Woods, Good, HSG C
*	10.000	98	EXISTING ROADS
*	0.000	98	EXISTING PAVED / GRAVEL FARM
*	0.000	98	EXISTING HOUSE AND BARN
*	78.000	61	EXISTING LAWNS B
*	1.560	74	NEW LAWN C
*	0.000	98	NEW COTTAGES (0.54 ac) (see sub 52) 1/2 27 units
*	0.540	98	NEW PAVEMENT - FARM
	167.550	58	Weighted Average
	157.010		93.71% Pervious Area
	10.540		6.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
69.3	150	0.0100	0.04		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
9.7	3,700	0.0100	6.33	253.05	**Trap/Vee/Rect Channel Flow, CD** Bot.W=10.00' D=4.00' n= 0.040 Winding stream, pools & shoals
109.0	4,750	Total			

Summary for Subcatchment 9S:

Runoff = 47.02 cfs @ 13.17 hrs, Volume= 9.735 af, Depth> 1.35"

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 Rainfall=4.60"

	Area (ac)	CN	Description
	15.000	30	Woods, Good, HSG A
	10.000	55	Woods, Good, HSG B
	25.000	70	Woods, Good, HSG C
*	13.000	98	EXISTING IMPERVIOUS AREA
*	23.750	74	EXISTING LAWN C
	86.750	67	Weighted Average
	73.750		85.01% Pervious Area
	13.000		14.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0200	0.05		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
82.5	1,050	Total			

Summary for Subcatchment 10S:

Runoff = 110.28 cfs @ 13.29 hrs, Volume= 25.827 af, Depth> 0.76"

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 Rainfall=4.60"

	Area (ac)	CN	Description
	118.000	30	Woods, Good, HSG A
	74.000	55	Woods, Good, HSG B
	129.000	70	Woods, Good, HSG C
	48.000	77	Woods, Good, HSG D
	15.000	75	1/4 acre lots, 38% imp, HSG B
*	16.950	74	EXISTING LAWN C
*	5.000	98	EXISTING ROADS
	405.950	57	Weighted Average
	395.250		97.36% Pervious Area
	10.700		2.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0200	0.05		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
82.5	1,050	Total			

Summary for Subcatchment 11S:

Runoff = 80.13 cfs @ 13.27 hrs, Volume= 18.133 af, Depth> 0.87"

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 Rainfall=4.60"

	Area (ac)	CN	Description
	40.000	30	Woods, Good, HSG A
	24.000	55	Woods, Good, HSG B
	42.000	70	Woods, Good, HSG C
	16.000	77	Woods, Good, HSG D
*	20.000	70	EXISTING LOTS B
*	103.300	61	EXISTING LAWN B
*	5.000	98	EXISTING ROADS
	250.300	59	Weighted Average
	245.300		98.00% Pervious Area
	5.000		2.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0200	0.05		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
82.5	1,050	Total			

Summary for Subcatchment 31:

Runoff = 8.46 cfs @ 12.68 hrs, Volume= 1.241 af, Depth> 1.57"

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 Rainfall=4.60"

	Area (ac)	CN	Description
*	9.030	70	WOODS / FIELD HSG C
*	0.430	70	NEW LAWN C
	9.460	70	Weighted Average
	9.460		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.8	100	0.0400	0.06		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
18.3	550	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
47.1	650	Total			

Summary for Subcatchment 32: 0.56 acres to Filter Pond

Runoff = 4.22 cfs @ 12.03 hrs, Volume= 0.263 af, Depth> 3.01"

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 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.560	98	NEW IMPERVIOUS PAVED AREA
*	0.490	74	NEW LAWN C
	1.050	87	Weighted Average
	0.490		46.67% Pervious Area
	0.560		53.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0300	1.02		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.10"
1.4	300	0.0300	3.52		**Shallow Concentrated Flow, BC** Paved Kv= 20.3 fps
1.6	311	Total			

Summary for Subcatchment 33: Drains to Buffer #1

Runoff = 9.62 cfs @ 12.03 hrs, Volume= 0.591 af, Depth> 2.73"

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 Rainfall=4.60"

	Area (ac)	CN	Description
*	1.070	98	NEW IMPERVIOUS PAVED AREA
*	0.790	74	NEW LAWN C
*	0.000	98	0.52 ac (1/2) of 19 Roofs
*	0.740	74	NEW LAWN C
	2.600	84	Weighted Average
	1.530		58.85% Pervious Area
	1.070		41.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0300	1.02		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.10"
1.4	300	0.0300	3.52		**Shallow Concentrated Flow, BC** Paved Kv= 20.3 fps
1.6	311	Total			

Summary for Subcatchment 34: 1.71 acres to Focal Point

Runoff = 15.83 cfs @ 12.03 hrs, Volume= 0.973 af, Depth> 2.73"

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 Rainfall=4.60"

	Area (ac)	CN	Description
*	1.710	98	NEW IMPERVIOUS PAVED AREA
*	2.570	74	NEW LAWN C
*	0.000	98	0.66 ac (1/2) of 24 Roofs
	4.280	84	Weighted Average
	2.570		60.05% Pervious Area
	1.710		39.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0300	1.02		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.10"
1.4	300	0.0300	3.52		**Shallow Concentrated Flow, BC** Paved Kv= 20.3 fps
1.6	311	Total			

Summary for Subcatchment 35: Drains to Buffer #2

Runoff = 3.96 cfs @ 12.03 hrs, Volume= 0.251 af, Depth> 3.20"

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 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.580	98	NEW IMPERVIOUS PAVED AREA
*	0.360	74	NEW LAWN C
*	0.000	98	0.14 ac (1/2) of 5 Roofs
*	0.000	74	NEW LAWN C
	0.940	89	Weighted Average
	0.360		38.30% Pervious Area
	0.580		61.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0300	1.02		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.10"
1.4	300	0.0300	3.52		**Shallow Concentrated Flow, BC** Paved Kv= 20.3 fps
1.6	311	Total			

Summary for Subcatchment 36: Drains to Buffer #3

Runoff = 1.45 cfs @ 12.01 hrs, Volume= 0.086 af, Depth> 2.73"

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 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.160	98	NEW IMPERVIOUS PAVED AREA
*	0.220	74	NEW LAWN C
*	0.000	98	0.055 ac (1/2) of 2 Roofs
*	0.000	74	NEW LAWN C
	0.380	84	Weighted Average
	0.220		57.89% Pervious Area
	0.160		42.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0200	0.87		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.10"
0.6	120	0.0300	3.52		**Shallow Concentrated Flow, BC** Paved Kv= 20.3 fps
0.8	131	Total			

Summary for Subcatchment 37: Drains to Culvert

Runoff = 1.88 cfs @ 12.55 hrs, Volume= 0.245 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 Rainfall=4.60"

	Area (ac)	CN	Description
	0.990	70	Woods, Good, HSG C
*	0.000	98	NEW IMPERVIOUS PAVED AREA
*	0.720	74	NEW LAWN C
*	0.000	98	0.25 ac (1/2) of 9 Roofs
*	0.000	74	NEW LAWN C
	1.710	72	Weighted Average
	1.710		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
32.3	100	0.0300	0.05		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
5.8	150	0.0300	0.43		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
38.1	250	Total			

Summary for Subcatchment 38: Drains to RR culvert

Runoff = 10.24 cfs @ 12.49 hrs, Volume= 1.259 af, Depth> 1.58"

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 Rainfall=4.60"

	Area (ac)	CN	Description
	8.650	70	Woods, Good, HSG C
*	0.000	98	NEW IMPERVIOUS PAVED AREA
*	0.890	74	NEW LAWN C
*	0.000	98	0.11 ac (1/2) of 2 Roofs + 2 fulll
	9.540	70	Weighted Average
	9.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.8	100	0.0400	0.06		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
4.1	150	0.0600	0.61		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
32.9	250	Total			

Summary for Subcatchment 52: NEW Cottage Roof Areas

Runoff = 14.71 cfs @ 12.00 hrs, Volume= 0.966 af, Depth> 4.05"

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 Rainfall=4.60"

	Area (ac)	CN	Description
*	2.860	98	52 Cottage Roofs
	2.860		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	20	0.4000	3.25		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.10"

Summary for Subcatchment 81: Farm Area - drains to off site pond

Runoff = 31.95 cfs @ 12.74 hrs, Volume= 4.911 af, Depth> 1.94"

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 Rainfall=4.60"

	Area (ac)	CN	Description
*	18.050	74	WOODS / FIELD HSG C/D
*	0.510	98	EXISTING ROADS
*	10.640	74	EXISTING LAWN C
*	0.820	98	EXISTING PAVED/GRAVEL FARM
*	0.260	98	EXISTING BARN AND HOUSE
*	0.170	98	NEW IMPERVIOUS
	30.450	75	Weighted Average
	28.690		94.22% Pervious Area
	1.760		5.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
50.1	100	0.0100	0.03		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
2.4	100	0.0800	0.71		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
52.5	200	Total			

Summary for Subcatchment 82:

Runoff = 17.74 cfs @ 13.18 hrs, Volume= 3.899 af, Depth> 0.87"

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 Rainfall=4.60"

	Area (ac)	CN	Description
	44.000	55	Woods, Good, HSG B
*	2.000	98	EXISTING ROADS
*	7.680	74	EXISTING LAWN C
	53.680	59	Weighted Average
	51.680		96.27% Pervious Area
	2.000		3.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
69.3	150	0.0100	0.04		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
7.3	220	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
1.8	700	0.0100	6.33	253.05	**Trap/Vee/Rect Channel Flow, CD** Bot.W=10.00' D=4.00' n= 0.040 Winding stream, pools & shoals
78.4	1,070	Total			

Summary for Subcatchment 83:

Runoff = 23.03 cfs @ 13.14 hrs, Volume= 4.598 af, Depth> 1.76"

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 Rainfall=4.60"

	Area (ac)	CN	Description
	6.000	55	Woods, Good, HSG B
*	3.500	98	EXISTING ROADS
*	21.810	74	EXISTING LAWN C
	31.310	73	Weighted Average
	27.810		88.82% Pervious Area
	3.500		11.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
69.3	150	0.0100	0.04		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
12.3	370	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
81.6	520	Total			

Summary for Subcatchment 84: OFF SITE ABOVE GREELY ROAD

Runoff = 22.32 cfs @ 12.73 hrs, Volume= 3.428 af, Depth> 2.01"

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 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.510	98	EXISTING ROADS
*	18.850	74	EXISTING LAWN C
*	0.820	98	EXISTING PAVED/GRAVEL FARM
*	0.260	98	EXISTING BARN AND HOUSE
	20.440	76	Weighted Average
	18.850		92.22% Pervious Area
	1.590		7.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
50.1	100	0.0100	0.03		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
2.4	100	0.0800	0.71		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
52.5	200	Total			

Summary for Subcatchment 85: Drains to 18" culvert under driveway

Runoff = 8.63 cfs @ 12.74 hrs, Volume= 1.327 af, Depth> 1.94"

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 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.390	98	EXISTING ROADS
*	7.840	74	EXISTING LAWN C
	8.230	75	Weighted Average
	7.840		95.26% Pervious Area
	0.390		4.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
50.1	100	0.0100	0.03		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
2.4	100	0.0800	0.71		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
52.5	200	Total			

Summary for Subcatchment 86: Farm Side Stream drains to 24" culvert

Runoff = 19.65 cfs @ 13.55 hrs, Volume= 4.958 af, Depth> 1.08"

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 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.870	98	EXISTING ROADS-OFF SITE
*	51.300	61	EXISTING LAWNS B
*	1.100	98	EXISTING HOUSE LOTS 11 - OFF SITE
*	0.260	98	EXISTING HOUSE AND BARN
*	0.130	98	EXISTING GRAVEL/PAVED FARM
*	0.540	98	NEW PAVED - FARM
*	0.000	98	COTTAGE ROOFS - 0.22 (see 52s)
*	0.860	74	NEW LAWNS C
	55.060	63	Weighted Average
	52.160		94.73% Pervious Area
	2.900		5.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
69.3	150	0.0100	0.04		**Sheet Flow, AB**
					Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC**
					Forest w/Heavy Litter Kv= 2.5 fps
8.2	3,100	0.0100	6.33	253.05	**Trap/Vee/Rect Channel Flow, CD**
					Bot.W=10.00' D=4.00'
					n= 0.040 Winding stream, pools & shoals
107.5	4,150	Total			

Summary for Reach 33R: Buffer #1

Inflow Area = 2.600 ac, 41.15% Impervious, Inflow Depth > 2.73" for 10 YEAR event
Inflow = 9.62 cfs @ 12.03 hrs, Volume= 0.591 af
Outflow = 7.06 cfs @ 12.25 hrs, Volume= 0.581 af, Atten= 27%, Lag= 13.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.19 fps, Min. Travel Time= 9.0 min
Avg. Velocity = 0.06 fps, Avg. Travel Time= 30.2 min

Peak Storage= 3,805 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.17'
Bank-Full Depth= 1.00' Flow Area= 222.0 sf, Capacity= 132.82 cfs

222.00' x 1.00' deep channel, n= 0.800 Sheet flow: Woods+dense brush
Length= 100.0' Slope= 0.1050 '/'
Inlet Invert= 72.50', Outlet Invert= 62.00'

Summary for Reach 35R: Buffer #2

Inflow Area = 0.940 ac, 61.70% Impervious, Inflow Depth > 3.20" for 10 YEAR event
Inflow = 3.96 cfs @ 12.03 hrs, Volume= 0.251 af
Outflow = 2.75 cfs @ 12.27 hrs, Volume= 0.246 af, Atten= 31%, Lag= 14.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.16 fps, Min. Travel Time= 10.4 min
Avg. Velocity = 0.05 fps, Avg. Travel Time= 34.9 min

Peak Storage= 1,745 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 1.00' Flow Area= 126.0 sf, Capacity= 75.05 cfs

126.00' x 1.00' deep channel, n= 0.800 Sheet flow: Woods+dense brush
Length= 100.0' Slope= 0.1050 '/'
Inlet Invert= 72.50', Outlet Invert= 62.00'

Summary for Reach 36R: Buffer #3

Inflow Area =	2.090 ac,	7.66% Impervious, Inflow Depth > 1.68"	for 10 YEAR event
Inflow =	1.45 cfs @	12.01 hrs, Volume=	0.293 af
Outflow =	1.34 cfs @	13.20 hrs, Volume=	0.286 af, Atten= 8%, Lag= 71.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.14 fps, Min. Travel Time= 11.6 min
Avg. Velocity = 0.06 fps, Avg. Travel Time= 26.8 min

Peak Storage= 928 cf @ 13.01 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 1.00' Flow Area= 45.0 sf, Capacity= 18.16 cfs

45.00' x 1.00' deep channel, n= 0.800 Sheet flow: Woods+dense brush
Length= 100.0' Slope= 0.0500 '/'
Inlet Invert= 78.00', Outlet Invert= 73.00'

Summary for Reach 39R: Stream Greely to Golf Pond

Inflow Area =	743.000 ac,	3.86% Impervious, Inflow Depth > 0.10"	for 10 YEAR event
Inflow =	20.44 cfs @	20.00 hrs, Volume=	6.126 af
Outflow =	19.97 cfs @	20.00 hrs, Volume=	5.325 af, Atten= 2%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.07 fps, Min. Travel Time= 14.4 min
Avg. Velocity = 2.28 fps, Avg. Travel Time= 19.4 min

Peak Storage= 17,477 cf @ 20.00 hrs
Average Depth at Peak Storage= 0.59'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 641.98 cfs

10.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 2,650.0' Slope= 0.0125 '/'
Inlet Invert= 115.00', Outlet Invert= 82.00'

Summary for Reach 40R: Stream Route 9 to Greely Road

Inflow Area = 492.700 ac, 4.81% Impervious, Inflow Depth > 0.78" for 10 YEAR event
Inflow = 85.67 cfs @ 13.80 hrs, Volume= 31.827 af
Outflow = 83.71 cfs @ 14.48 hrs, Volume= 30.222 af, Atten= 2%, Lag= 40.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.00 fps, Min. Travel Time= 20.0 min
Avg. Velocity = 2.82 fps, Avg. Travel Time= 28.4 min

Peak Storage= 100,395 cf @ 14.15 hrs
Average Depth at Peak Storage= 1.80'
Bank-Full Depth= 4.00' Flow Area= 64.0 sf, Capacity= 392.75 cfs

8.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 24.00'
Length= 4,800.0' Slope= 0.0063 '/'
Inlet Invert= 150.00', Outlet Invert= 120.00'

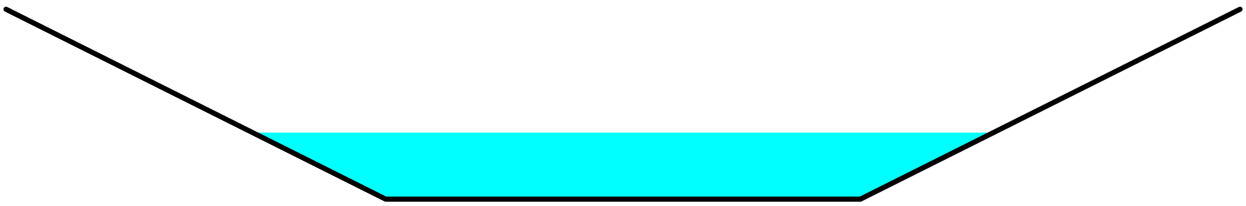
Summary for Reach 42R: Stream Golf Pond to RR Culvert

Inflow Area = 167.550 ac, 6.29% Impervious, Inflow Depth > 1.62" for 10 YEAR event
Inflow = 63.53 cfs @ 14.11 hrs, Volume= 22.665 af
Outflow = 63.29 cfs @ 14.32 hrs, Volume= 22.017 af, Atten= 0%, Lag= 12.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.53 fps, Min. Travel Time= 7.0 min
Avg. Velocity = 2.32 fps, Avg. Travel Time= 10.6 min

Peak Storage= 26,548 cf @ 14.20 hrs
Average Depth at Peak Storage= 1.40'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 448.47 cfs

10.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 1,481.0' Slope= 0.0061 '/'
Inlet Invert= 65.00', Outlet Invert= 56.00'



Summary for Reach 43R: New Box Culvert to RR Culvert

Inflow Area = 234.340 ac, 8.63% Impervious, Inflow Depth > 1.47" for 10 YEAR event
Inflow = 80.86 cfs @ 14.27 hrs, Volume= 28.630 af
Outflow = 80.78 cfs @ 14.39 hrs, Volume= 28.261 af, Atten= 0%, Lag= 6.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.40 fps, Min. Travel Time= 3.5 min
Avg. Velocity = 1.17 fps, Avg. Travel Time= 7.1 min

Peak Storage= 16,846 cf @ 14.33 hrs
Average Depth at Peak Storage= 1.73'
Bank-Full Depth= 4.00' Flow Area= 96.0 sf, Capacity= 364.94 cfs

16.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 32.00'
Length= 500.0' Slope= 0.0020 '/'
Inlet Invert= 56.00', Outlet Invert= 55.00'

‡

Summary for Reach 55R: Wetland below Site @ PL

Inflow Area = 32.990 ac, 0.79% Impervious, Inflow Depth > 1.62" for 10 YEAR event
Inflow = 26.31 cfs @ 12.68 hrs, Volume= 4.460 af
Outflow = 25.96 cfs @ 12.85 hrs, Volume= 4.410 af, Atten= 1%, Lag= 10.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.44 fps, Min. Travel Time= 6.0 min
Avg. Velocity = 1.89 fps, Avg. Travel Time= 14.2 min

Peak Storage= 9,378 cf @ 12.75 hrs
Average Depth at Peak Storage= 0.67'
Bank-Full Depth= 5.00' Flow Area= 65.0 sf, Capacity= 840.41 cfs

8.00' x 5.00' deep channel, n= 0.030 Stream, clean & straight
Side Slope Z-value= 1.0 '/' Top Width= 18.00'
Length= 1,604.0' Slope= 0.0162 '/'
Inlet Invert= 86.00', Outlet Invert= 60.00'

Summary for Reach 82R: Stream Golf Pond to Pond 42 outlet

Inflow	=	32.90 cfs @	13.71 hrs, Volume=	12.716 af
Outflow	=	32.47 cfs @	14.03 hrs, Volume=	11.989 af, Atten= 1%, Lag= 19.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.53 fps, Min. Travel Time= 10.9 min
Avg. Velocity = 1.68 fps, Avg. Travel Time= 16.4 min

Peak Storage= 21,227 cf @ 13.85 hrs
Average Depth at Peak Storage= 1.06'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 374.71 cfs

10.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 1,650.0' Slope= 0.0042 '/'
Inlet Invert= 72.00', Outlet Invert= 65.00'

Summary for Reach 84R: Stream Golf Pond to RR Culvert

Inflow Area =		28.670 ac,	6.91% Impervious, Inflow Depth > 1.96"	for 10 YEAR event
Inflow	=	28.07 cfs @	12.87 hrs, Volume=	4.690 af
Outflow	=	27.76 cfs @	13.04 hrs, Volume=	4.638 af, Atten= 1%, Lag= 10.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.19 fps, Min. Travel Time= 6.3 min
Avg. Velocity = 1.48 fps, Avg. Travel Time= 13.5 min

Peak Storage= 10,452 cf @ 12.94 hrs
Average Depth at Peak Storage= 0.76'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 575.29 cfs

10.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 1,200.0' Slope= 0.0100 '/'
Inlet Invert= 78.00', Outlet Invert= 66.00'

Summary for Pond 3P: 24" CULVERT

Inflow Area = 32.990 ac, 0.79% Impervious, Inflow Depth > 1.60" for 10 YEAR event
Inflow = 25.96 cfs @ 12.85 hrs, Volume= 4.410 af
Outflow = 21.89 cfs @ 13.14 hrs, Volume= 4.374 af, Atten= 16%, Lag= 17.7 min
Primary = 21.89 cfs @ 13.14 hrs, Volume= 4.374 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 57.09' @ 13.14 hrs Surf.Area= 8,637 sf Storage= 17,901 cf

Plug-Flow detention time= 12.0 min calculated for 4.359 af (99% of inflow)
Center-of-Mass det. time= 9.3 min (866.1 - 856.8)

Volume	Invert	Avail.Storage	Storage Description
#1	54.00'	56,342 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
54.00	2,362	0	0
56.00	6,990	9,352	9,352
58.00	10,000	16,990	26,342
60.00	20,000	30,000	56,342

Device	Routing	Invert	Outlet Devices
#1	Primary	54.00'	**24.0" Round Culvert** L= 50.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 54.00' / 53.00' S= 0.0200 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Secondary	59.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=21.88 cfs @ 13.14 hrs HW=57.09' (Free Discharge)
↑**1=Culvert** (Inlet Controls 21.88 cfs @ 6.97 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=54.00' (Free Discharge)
↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 31P: 18" Culvert crossing Little Acres Drive

Inflow Area =	9.460 ac,	0.00% Impervious,	Inflow Depth > 1.57"	for 10 YEAR event
Inflow =	8.46 cfs @	12.68 hrs, Volume=	1.241 af	
Outflow =	6.10 cfs @	13.03 hrs, Volume=	1.231 af,	Atten= 28%, Lag= 20.6 min
Primary =	6.10 cfs @	13.03 hrs, Volume=	1.231 af	
Secondary =	0.00 cfs @	5.00 hrs, Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 80.81' @ 13.03 hrs Surf.Area= 14,854 sf Storage= 8,784 cf

Plug-Flow detention time= 18.9 min calculated for 1.227 af (99% of inflow)
Center-of-Mass det. time= 16.2 min (858.6 - 842.4)

Volume	Invert	Avail.Storage	Storage Description
#1	79.50'	262,372 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
79.50	366	0	0
80.00	4,041	1,102	1,102
82.00	30,637	34,678	35,780
87.00	60,000	226,593	262,372

Device	Routing	Invert	Outlet Devices
#1	Primary	79.50'	**18.0" Round Culvert** L= 62.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 79.50' / 79.00' S= 0.0081 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	86.00'	**80.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=6.10 cfs @ 13.03 hrs HW=80.81' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 6.10 cfs @ 4.96 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=79.50' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 34P: FocalPoint

Inflow Area =	4.280 ac,	39.95% Impervious,	Inflow Depth > 2.73"	for 10 YEAR event
Inflow =	15.83 cfs @	12.03 hrs, Volume=	0.973 af	
Outflow =	14.87 cfs @	12.07 hrs, Volume=	0.973 af,	Atten= 6%, Lag= 2.7 min
Primary =	14.87 cfs @	12.07 hrs, Volume=	0.973 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 58.34' @ 12.07 hrs Surf.Area= 6,080 sf Storage= 1,745 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.6 min (777.6 - 777.0)

Volume	Invert	Avail.Storage	Storage Description
#1	57.20'	1,400 cf	**25.00'W x 140.00'L x 1.00'H crushed stone** 3,500 cf Overall x 40.0% Voids
#2	58.21'	9,160 cf	**1.30'W x 2.30'L x 3.55'H R-tank units** x 863
#3	61.00'	192 cf	**20.00'W x 15.00'L x 3.20'H FocalPoint** 960 cf Overall x 20.0% Voids
#4	64.00'	2,896 cf	**Surface Storage above focal point (Prismatic)**Listed below (Recalc) -Impe
		13,648 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
64.00	429	0	0
64.50	600	257	257
65.00	778	345	602
65.50	919	424	1,026
66.00	1,153	518	1,544
66.50	1,350	626	2,170
67.00	1,553	726	2,896

Device	Routing	Invert	Outlet Devices
#1	Primary	57.20'	**100.000 in/hr Exfiltration over Surface area** Phase-In= 0.10'
#2	Device 4	65.50'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 4	58.21'	**12.0" Vert. Orifice/Grate** C= 0.600
#4	Primary	58.21'	**18.0" Round Culvert** L= 26.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 58.21' / 58.00' S= 0.0081 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=14.09 cfs @ 12.07 hrs HW=58.27' (Free Discharge)
- **1=Exfiltration** (Exfiltration Controls 14.07 cfs)
- **4=Culvert** (Passes 0.02 cfs of 0.02 cfs potential flow)
  - **2=Orifice/Grate** (Controls 0.00 cfs)
  - **3=Orifice/Grate** (Orifice Controls 0.02 cfs @ 0.84 fps)

Summary for Pond 37P: 18" Culvert crossing

Inflow Area = 1.710 ac, 0.00% Impervious, Inflow Depth > 1.72" for 10 YEAR event
Inflow = 1.88 cfs @ 12.55 hrs, Volume= 0.245 af
Outflow = 1.28 cfs @ 12.88 hrs, Volume= 0.206 af, Atten= 32%, Lag= 19.9 min
Primary = 1.28 cfs @ 12.88 hrs, Volume= 0.206 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 80.82' @ 12.88 hrs Surf.Area= 4,017 sf Storage= 3,275 cf

Plug-Flow detention time= 84.5 min calculated for 0.206 af (84% of inflow)
Center-of-Mass det. time= 41.7 min (873.3 - 831.6)

Volume	Invert	Avail.Storage	Storage Description
#1	80.00'	133,356 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
80.00	4,000	0	0
82.00	4,041	8,041	8,041
84.00	30,637	34,678	42,719
86.00	60,000	90,637	133,356

Device	Routing	Invert	Outlet Devices
#1	Primary	80.30'	**18.0" Round Culvert** L= 28.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 80.30' / 80.00' S= 0.0107 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	85.50'	**20.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=1.28 cfs @ 12.88 hrs HW=80.82' (Free Discharge)
└─**1=Culvert** (Barrel Controls 1.28 cfs @ 3.53 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=80.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 38P: Existing 5'X6' RR Box Culvert

Inflow Area = 243.880 ac, 8.29% Impervious, Inflow Depth > 1.45" for 10 YEAR event
Inflow = 82.26 cfs @ 14.38 hrs, Volume= 29.520 af
Outflow = 81.71 cfs @ 14.51 hrs, Volume= 29.344 af, Atten= 1%, Lag= 7.8 min
Primary = 81.71 cfs @ 14.51 hrs, Volume= 29.344 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 58.06' @ 14.51 hrs Surf.Area= 17,091 sf Storage= 24,326 cf

Plug-Flow detention time= 4.3 min calculated for 29.246 af (99% of inflow)
Center-of-Mass det. time= 2.8 min (955.0 - 952.2)

Volume	Invert	Avail.Storage	Storage Description
#1	55.00'	3,745,747 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
55.00	1,320	0	0
56.00	4,539	2,930	2,930
58.00	15,848	20,387	23,317
60.00	56,417	72,265	95,582
62.00	198,504	254,921	350,503
64.00	274,621	473,125	823,628
66.00	372,832	647,453	1,471,081
70.00	764,501	2,274,666	3,745,747

Device	Routing	Invert	Outlet Devices
#1	Primary	55.10'	**60.0" W x 74.0" H Box I** L= 90.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 55.10' / 53.70' S= 0.0156 '/' Cc= 0.900 n= 0.022 Earth, clean & straight, Flow Area= 30.83 sf
#2	Secondary	69.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=81.78 cfs @ 14.51 hrs HW=58.06' (Free Discharge)
└─**1=I** (Inlet Controls 81.78 cfs @ 5.52 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=55.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 39P: 60" Culvert at Greely Road

Inflow Area = 743.000 ac, 3.86% Impervious, Inflow Depth > 0.78" for 10 YEAR event
Inflow = 129.01 cfs @ 14.01 hrs, Volume= 48.355 af
Outflow = 20.44 cfs @ 20.00 hrs, Volume= 6.126 af, Atten= 84%, Lag= 359.5 min
Primary = 20.44 cfs @ 20.00 hrs, Volume= 6.126 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 121.86' @ 20.00 hrs Surf.Area= 1,096,574 sf Storage= 1,836,157 cf

Plug-Flow detention time= 291.0 min calculated for 6.105 af (13% of inflow)
Center-of-Mass det. time= 138.6 min (1,073.5 - 934.9)

Volume	Invert	Avail.Storage	Storage Description
#1	120.00'	149,235,760 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 2

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.00	439,044	0	0
140.00	1,613,877	20,529,210	20,529,210
160.00	3,794,990	54,088,670	74,617,880

Device	Routing	Invert	Outlet Devices
#1	Primary	120.50'	**60.0" Round 60" Culvert w/ 6.0" inside fill** L= 90.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 120.00' / 118.20' S= 0.0200 '/' Cc= 0.900 n= 0.022 Earth, clean & straight, Flow Area= 18.61 sf
#2	Secondary	131.50'	**25.0' long x 100.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=20.21 cfs @ 20.00 hrs HW=121.86' (Free Discharge)
↑—**1=60" Culvert** (Inlet Controls 20.21 cfs @ 3.59 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=120.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 40P: 48" Culvert at Route 9

Inflow Area = 405.950 ac, 2.64% Impervious, Inflow Depth > 0.76" for 10 YEAR event
Inflow = 110.28 cfs @ 13.29 hrs, Volume= 25.827 af
Outflow = 60.02 cfs @ 14.38 hrs, Volume= 22.091 af, Atten= 46%, Lag= 65.4 min
Primary = 60.02 cfs @ 14.38 hrs, Volume= 22.091 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 163.13' @ 14.38 hrs Surf.Area= 153,871 sf Storage= 348,586 cf

Plug-Flow detention time= 98.1 min calculated for 22.091 af (86% of inflow)
Center-of-Mass det. time= 61.2 min (957.0 - 895.8)

Volume	Invert	Avail.Storage	Storage Description
#1	160.00'	22,928,710 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
160.00	68,874	0	0
180.00	611,999	6,808,730	6,808,730
200.00	999,999	16,119,980	22,928,710

Device	Routing	Invert	Outlet Devices
#1	Primary	160.50'	**60.0" Round 48" Culvert w/ 6.0" inside fill** L= 90.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 160.00' / 158.70' S= 0.0144 '/' Cc= 0.900 n= 0.022 Earth, clean & straight, Flow Area= 18.61 sf
#2	Secondary	180.00'	**25.0' long x 100.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=59.93 cfs @ 14.38 hrs HW=163.13' (Free Discharge)
↑—**1=48" Culvert** (Inlet Controls 59.93 cfs @ 5.03 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=160.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 42P: Golf Course Pond

Inflow Area = 167.550 ac, 6.29% Impervious, Inflow Depth > 0.80" for 10 YEAR event
Inflow = 41.06 cfs @ 13.68 hrs, Volume= 11.178 af
Outflow = 31.62 cfs @ 14.37 hrs, Volume= 10.677 af, Atten= 23%, Lag= 41.1 min
Primary = 31.62 cfs @ 14.37 hrs, Volume= 10.677 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 73.18' @ 14.37 hrs Surf.Area= 37,485 sf Storage= 84,903 cf

Plug-Flow detention time= 43.0 min calculated for 10.641 af (95% of inflow)
Center-of-Mass det. time= 30.8 min (942.6 - 911.8)

Volume	Invert	Avail.Storage	Storage Description
#1	70.00'	514,000 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
70.00	15,328	0	0
72.00	29,781	45,109	45,109
74.00	42,804	72,585	117,694
76.00	59,373	102,177	219,871
78.00	73,726	133,099	352,970
80.00	87,304	161,030	514,000

Device	Routing	Invert	Outlet Devices
#1	Primary	70.00'	**30.0" Round Culvert** L= 80.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 70.00' / 69.50' S= 0.0063 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 4.91 sf
#2	Secondary	78.00'	**80.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=31.63 cfs @ 14.37 hrs HW=73.18' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 31.63 cfs @ 6.55 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=70.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 43P: Box Culvert 3 (16' WIDE x 8' HIGH)

Inflow Area = 176.420 ac, 8.20% Impervious, Inflow Depth > 1.63" for 10 YEAR event
Inflow = 65.19 cfs @ 14.30 hrs, Volume= 24.013 af
Outflow = 65.17 cfs @ 14.31 hrs, Volume= 24.012 af, Atten= 0%, Lag= 0.3 min
Primary = 65.17 cfs @ 14.31 hrs, Volume= 24.012 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 56.10' @ 14.31 hrs Surf.Area= 1,649 sf Storage= 153 cf

Plug-Flow detention time= 0.0 min calculated for 24.012 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (957.2 - 957.2)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	2,789,378 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	1,320	0	0
58.00	7,722	9,042	9,042
60.00	9,674	17,396	26,438
62.00	63,671	73,345	99,783
64.00	169,090	232,761	332,544
66.00	252,914	422,004	754,548
70.00	764,501	2,034,830	2,789,378

Device	Routing	Invert	Outlet Devices
#1	Primary	54.70'	**192.0" W x 96.0" H Box 192"X 108" Box Culvert** L= 70.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 54.70' / 54.00' S= 0.0100 '/' Cc= 0.900 n= 0.022 Earth, clean & straight, Flow Area= 128.00 sf
#2	Secondary	68.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=85.33 cfs @ 14.31 hrs HW=56.10' (Free Discharge)
└─**1=192"X 108" Box Culvert** (Inlet Controls 85.33 cfs @ 3.80 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=56.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 47P: FILTER POND

Inflow Area = 1.050 ac, 53.33% Impervious, Inflow Depth > 3.01" for 10 YEAR event
Inflow = 4.22 cfs @ 12.03 hrs, Volume= 0.263 af
Outflow = 0.93 cfs @ 12.41 hrs, Volume= 0.196 af, Atten= 78%, Lag= 23.1 min
Primary = 0.93 cfs @ 12.41 hrs, Volume= 0.196 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 81.73' @ 12.41 hrs Surf.Area= 2,927 sf Storage= 5,732 cf

Plug-Flow detention time= 134.6 min calculated for 0.195 af (74% of inflow)
Center-of-Mass det. time= 74.2 min (843.1 - 768.9)

Volume	Invert	Avail.Storage	Storage Description
#1	79.00'	10,009 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
79.00	1,343	0	0
80.00	1,873	1,608	1,608
81.00	2,460	2,167	3,775
82.00	3,103	2,782	6,556
83.00	3,803	3,453	10,009

Device	Routing	Invert	Outlet Devices
#1	Primary	75.87'	**18.0" Round Culvert** L= 31.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 75.87' / 75.00' S= 0.0281 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Device 1	80.50'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	82.00'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	82.50'	**10.0' 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=0.93 cfs @ 12.41 hrs HW=81.73' (Free Discharge)
└─**1=Culvert** (Passes 0.93 cfs of 19.23 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.93 cfs @ 4.76 fps)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=79.00' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 49P: 52 ROOF DRIPLINE BMP'S

Inflow Area =	2.860 ac,100.00% Impervious, Inflow Depth > 4.05" for 10 YEAR event		
Inflow =	14.71 cfs @ 12.00 hrs,	Volume=	0.966 af
Outflow =	0.00 cfs @ 5.00 hrs,	Volume=	0.000 af, Atten= 100%, Lag= 0.0 min
Primary =	0.00 cfs @ 5.00 hrs,	Volume=	0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 100.12' @ 20.00 hrs Surf.Area= 851,760 sf Storage= 42,079 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	12,675 cf	**3.00'W x 105.00'L x 2.00'H Prismatoid** x 52 32,760 cf Overall - 1,072 cf Embedded = 31,688 cf x 40.0% Voids
#2	100.00'	1,072 cf	**6.0" Round Pipe Storage** x 52 Inside #1 L= 105.0' S= 0.0050 '/'
		13,747 cf	x 52.00 = 714,857 cf Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	101.50'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir X 52.00** 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=0.00 cfs @ 5.00 hrs HW=100.00' (Free Discharge)
└─**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 81P: OFF SITE POND

Inflow Area = 59.120 ac, 6.33% Impervious, Inflow Depth > 1.94" for 10 YEAR event
Inflow = 56.13 cfs @ 12.88 hrs, Volume= 9.550 af
Outflow = 27.57 cfs @ 13.66 hrs, Volume= 9.103 af, Atten= 51%, Lag= 47.3 min
Primary = 26.70 cfs @ 13.66 hrs, Volume= 9.075 af
Secondary = 0.87 cfs @ 13.66 hrs, Volume= 0.028 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Starting Elev= 62.00' Surf.Area= 20,254 sf Storage= 139,510 cf
Peak Elev= 66.12' @ 13.66 hrs Surf.Area= 48,200 sf Storage= 272,968 cf (133,458 cf above start)

Plug-Flow detention time= 185.6 min calculated for 5.900 af (62% of inflow)
Center-of-Mass det. time= 56.0 min (902.7 - 846.7)

Volume	Invert	Avail.Storage	Storage Description
#1	52.00'	393,079 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
52.00	7,648	0	0
62.00	20,254	139,510	139,510
64.00	30,728	50,982	190,492
66.00	46,299	77,027	267,519
68.00	79,261	125,560	393,079

Device	Routing	Invert	Outlet Devices
#1	Primary	62.00'	**24.0" Round Culvert** L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 62.00' / 61.50' S= 0.0050 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 3.14 sf
#2	Secondary	66.00'	**8.0' 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=26.70 cfs @ 13.66 hrs HW=66.11' (Free Discharge)
└─**1=Culvert** (Inlet Controls 26.70 cfs @ 8.50 fps)

Secondary OutFlow Max=0.77 cfs @ 13.66 hrs HW=66.11' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 0.77 cfs @ 0.84 fps)

Summary for Pond 82P: Golf Course Pond

Inflow Area = 827.990 ac, 4.13% Impervious, Inflow Depth > 0.20" for 10 YEAR event
Inflow = 38.10 cfs @ 13.28 hrs, Volume= 13.816 af
Outflow = 32.90 cfs @ 13.71 hrs, Volume= 12.716 af, Atten= 14%, Lag= 25.9 min
Secondary = 32.90 cfs @ 13.71 hrs, Volume= 12.716 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 77.33' @ 13.71 hrs Surf.Area= 52,279 sf Storage= 62,339 cf

Plug-Flow detention time= 34.4 min calculated for 12.674 af (92% of inflow)
Center-of-Mass det. time= 14.8 min (972.6 - 957.8)

Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	395,691 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
76.00	41,373	0	0
82.00	90,524	395,691	395,691

Device	Routing	Invert	Outlet Devices
#1	Secondary	76.00'	**8.0' 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

Secondary OutFlow Max=32.88 cfs @ 13.71 hrs HW=77.33' (Free Discharge)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 32.88 cfs @ 3.09 fps)

Summary for Pond 83P: Culvert at Valhalla Road

Inflow Area =	31.310 ac, 11.18% Impervious, Inflow Depth > 1.76"	for 10 YEAR event	
Inflow =	23.03 cfs @ 13.14 hrs, Volume=	4.598 af	
Outflow =	20.81 cfs @ 13.41 hrs, Volume=	4.591 af,	Atten= 10%, Lag= 16.3 min
Primary =	20.81 cfs @ 13.41 hrs, Volume=	4.591 af	
Secondary =	0.00 cfs @ 5.00 hrs, Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 126.73' @ 13.41 hrs Surf.Area= 2,841 sf Storage= 10,797 cf

Plug-Flow detention time= 4.6 min calculated for 4.576 af (100% of inflow)
Center-of-Mass det. time= 4.2 min (867.2 - 863.1)

Volume	Invert	Avail.Storage	Storage Description
#1	120.00'	648,610 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.00	366	0	0
130.00	4,041	22,035	22,035
140.00	30,637	173,390	195,425
150.00	60,000	453,185	648,610

Device	Routing	Invert	Outlet Devices
#1	Primary	120.00'	**18.0" Round Culvert** L= 80.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 120.00' / 119.00' S= 0.0125 '/' Cc= 0.900

			n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	148.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=20.81 cfs @ 13.41 hrs HW=126.73' (Free Discharge)
1=Culvert (Inlet Controls 20.81 cfs @ 11.77 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=120.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 84P: 3 - 18" culverts

Inflow Area = 20.440 ac, 7.78% Impervious, Inflow Depth > 2.01" for 10 YEAR event
Inflow = 22.32 cfs @ 12.73 hrs, Volume= 3.428 af
Outflow = 21.66 cfs @ 12.83 hrs, Volume= 3.372 af, Atten= 3%, Lag= 6.1 min
Primary = 21.66 cfs @ 12.83 hrs, Volume= 3.372 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 81.96' @ 12.83 hrs Surf.Area= 6,905 sf Storage= 9,098 cf

Plug-Flow detention time= 13.4 min calculated for 3.372 af (98% of inflow)
Center-of-Mass det. time= 7.7 min (842.5 - 834.8)

Volume	Invert	Avail.Storage	Storage Description
#1	80.00'	297,916 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
80.00	2,362	0	0
82.00	6,990	9,352	9,352
84.00	90,787	97,777	107,129
86.00	100,000	190,787	297,916

Device	Routing	Invert	Outlet Devices
#1	Primary	80.50'	**18.0" Round Culvert X 3.00**
			L= 50.0' RCP, sq.cut end projecting, Ke= 0.500
			Inlet / Outlet Invert= 80.50' / 80.00' S= 0.0100 '/' Cc= 0.900
			n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	84.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=21.67 cfs @ 12.83 hrs HW=81.96' (Free Discharge)
1=Culvert (Inlet Controls 21.67 cfs @ 4.12 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=80.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 85P: 18" CULVERT

Inflow Area = 8.230 ac, 4.74% Impervious, Inflow Depth > 1.94" for 10 YEAR event
Inflow = 8.63 cfs @ 12.74 hrs, Volume= 1.327 af
Outflow = 6.77 cfs @ 13.05 hrs, Volume= 1.318 af, Atten= 22%, Lag= 18.6 min
Primary = 6.77 cfs @ 13.05 hrs, Volume= 1.318 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 91.56' @ 13.05 hrs Surf.Area= 9,665 sf Storage= 8,470 cf

Plug-Flow detention time= 17.9 min calculated for 1.314 af (99% of inflow)
Center-of-Mass det. time= 15.4 min (852.2 - 836.8)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	29,280 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.00	1,196	0	0
92.00	12,056	13,252	13,252
93.00	20,000	16,028	29,280

Device	Routing	Invert	Outlet Devices
#1	Primary	89.86'	**18.0" Round Culvert** L= 28.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 89.86' / 89.79' S= 0.0025 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	92.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=6.77 cfs @ 13.05 hrs HW=91.56' (Free Discharge)
└─**1=Culvert** (Barrel Controls 6.77 cfs @ 4.23 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=90.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 86P: 24" CULVERT

Inflow Area = 55.060 ac, 5.27% Impervious, Inflow Depth > 1.08" for 10 YEAR event
Inflow = 19.65 cfs @ 13.55 hrs, Volume= 4.958 af
Outflow = 15.75 cfs @ 14.16 hrs, Volume= 4.618 af, Atten= 20%, Lag= 36.6 min
Primary = 15.75 cfs @ 14.16 hrs, Volume= 4.618 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 59.86' @ 14.16 hrs Surf.Area= 23,785 sf Storage= 40,546 cf

Plug-Flow detention time= 48.3 min calculated for 4.603 af (93% of inflow)
Center-of-Mass det. time= 30.0 min (930.7 - 900.7)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	401,091 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	758	0	0
58.00	9,115	9,873	9,873
60.00	24,850	33,965	43,838
62.00	43,236	68,086	111,924
64.00	72,382	115,618	227,542
66.00	101,167	173,549	401,091

Device	Routing	Invert	Outlet Devices
#1	Primary	57.78'	**24.0" Round Culvert** L= 73.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 57.78' / 56.17' S= 0.0221 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Secondary	61.00'	**100.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=15.75 cfs @ 14.16 hrs HW=59.86' (Free Discharge)
└─**1=Culvert** (Inlet Controls 15.75 cfs @ 5.01 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=56.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Subcatchment 3S:

Runoff = 32.10 cfs @ 12.62 hrs, Volume= 4.468 af, Depth> 2.50"

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 Rainfall=5.80"

	Area (ac)	CN	Description
*	15.050	70	WOODS / FIELD HSG C
*	0.000	98	EXISTING IMPERVIOUS AREA
*	4.000	74	EXISTING LAWN C
*	0.620	74	Approved LAWN C phase 1
*	0.100	98	Approved Trails-phase 1
*	1.670	74	NEW LAWN C
*	0.000	98	NEW ROOF (1/2-11 UNITS=0.31 AC))
	21.440	71	Weighted Average
	21.340		99.53% Pervious Area
	0.100		0.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.8	100	0.0400	0.06		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
15.0	450	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
43.8	550	Total			

Summary for Subcatchment 8:

Runoff = 76.77 cfs @ 13.58 hrs, Volume= 19.547 af, Depth> 1.40"

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 Rainfall=5.80"

	Area (ac)	CN	Description
	32.000	30	Woods, Good, HSG A
	20.000	55	Woods, Good, HSG B
	25.450	70	Woods, Good, HSG C
*	10.000	98	EXISTING ROADS
*	0.000	98	EXISTING PAVED / GRAVEL FARM
*	0.000	98	EXISTING HOUSE AND BARN
*	78.000	61	EXISTING LAWNS B
*	1.560	74	NEW LAWN C
*	0.000	98	NEW COTTAGES (0.54 ac) (see sub 52) 1/2 27 units
*	0.540	98	NEW PAVEMENT - FARM
	167.550	58	Weighted Average
	157.010		93.71% Pervious Area
	10.540		6.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
69.3	150	0.0100	0.04		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
9.7	3,700	0.0100	6.33	253.05	**Trap/Vee/Rect Channel Flow, CD** Bot.W=10.00' D=4.00' n= 0.040 Winding stream, pools & shoals
109.0	4,750	Total			

Summary for Subcatchment 9S:

Runoff = 75.94 cfs @ 13.13 hrs, Volume= 15.334 af, Depth> 2.12"

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 Rainfall=5.80"

	Area (ac)	CN	Description
	15.000	30	Woods, Good, HSG A
	10.000	55	Woods, Good, HSG B
	25.000	70	Woods, Good, HSG C
*	13.000	98	EXISTING IMPERVIOUS AREA
*	23.750	74	EXISTING LAWN C
	86.750	67	Weighted Average
	73.750		85.01% Pervious Area
	13.000		14.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0200	0.05		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
82.5	1,050	Total			

Summary for Subcatchment 10S:

Runoff = 212.15 cfs @ 13.21 hrs, Volume= 45.706 af, Depth> 1.35"

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 Rainfall=5.80"

	Area (ac)	CN	Description
	118.000	30	Woods, Good, HSG A
	74.000	55	Woods, Good, HSG B
	129.000	70	Woods, Good, HSG C
	48.000	77	Woods, Good, HSG D
	15.000	75	1/4 acre lots, 38% imp, HSG B
*	16.950	74	EXISTING LAWN C
*	5.000	98	EXISTING ROADS
	405.950	57	Weighted Average
	395.250		97.36% Pervious Area
	10.700		2.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0200	0.05		**Sheet Flow, AB**
					Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC**
					Forest w/Heavy Litter Kv= 2.5 fps
82.5	1,050	Total			

Summary for Subcatchment 11S:

Runoff = 147.70 cfs @ 13.19 hrs, Volume= 31.202 af, Depth> 1.50"

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 Rainfall=5.80"

	Area (ac)	CN	Description
	40.000	30	Woods, Good, HSG A
	24.000	55	Woods, Good, HSG B
	42.000	70	Woods, Good, HSG C
	16.000	77	Woods, Good, HSG D
*	20.000	70	EXISTING LOTS B
*	103.300	61	EXISTING LAWN B
*	5.000	98	EXISTING ROADS
	250.300	59	Weighted Average
	245.300		98.00% Pervious Area
	5.000		2.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0200	0.05		**Sheet Flow, AB**
					Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC**
					Forest w/Heavy Litter Kv= 2.5 fps
82.5	1,050	Total			

Summary for Subcatchment 31:

Runoff = 13.11 cfs @ 12.67 hrs, Volume= 1.900 af, Depth> 2.41"

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 Rainfall=5.80"

	Area (ac)	CN	Description
*	9.030	70	WOODS / FIELD HSG C
*	0.430	70	NEW LAWN C
	9.460	70	Weighted Average
	9.460		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.8	100	0.0400	0.06		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
18.3	550	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
47.1	650	Total			

Summary for Subcatchment 32: 0.56 acres to Filter Pond

Runoff = 5.63 cfs @ 12.03 hrs, Volume= 0.358 af, Depth> 4.09"

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 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.560	98	NEW IMPERVIOUS PAVED AREA
*	0.490	74	NEW LAWN C
	1.050	87	Weighted Average
	0.490		46.67% Pervious Area
	0.560		53.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0300	1.02		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.10"
1.4	300	0.0300	3.52		**Shallow Concentrated Flow, BC** Paved Kv= 20.3 fps
1.6	311	Total			

Summary for Subcatchment 33: Drains to Buffer #1

Runoff = 13.12 cfs @ 12.03 hrs, Volume= 0.819 af, Depth> 3.78"

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 25 YEAR Rainfall=5.80"

	Area (ac)	CN	Description
*	1.070	98	NEW IMPERVIOUS PAVED AREA
*	0.790	74	NEW LAWN C
*	0.000	98	0.52 ac (1/2) of 19 Roofs
*	0.740	74	NEW LAWN C
	2.600	84	Weighted Average
	1.530		58.85% Pervious Area
	1.070		41.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0300	1.02		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.10"
1.4	300	0.0300	3.52		**Shallow Concentrated Flow, BC** Paved Kv= 20.3 fps
1.6	311	Total			

Summary for Subcatchment 34: 1.71 acres to Focal Point

Runoff = 21.60 cfs @ 12.03 hrs, Volume= 1.347 af, Depth> 3.78"

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 25 YEAR Rainfall=5.80"

	Area (ac)	CN	Description
*	1.710	98	NEW IMPERVIOUS PAVED AREA
*	2.570	74	NEW LAWN C
*	0.000	98	0.66 ac (1/2) of 24 Roofs
	4.280	84	Weighted Average
	2.570		60.05% Pervious Area
	1.710		39.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0300	1.02		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.10"
1.4	300	0.0300	3.52		**Shallow Concentrated Flow, BC** Paved Kv= 20.3 fps
1.6	311	Total			

Summary for Subcatchment 35: Drains to Buffer #2

Runoff = 5.23 cfs @ 12.03 hrs, Volume= 0.337 af, Depth> 4.30"

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 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.580	98	NEW IMPERVIOUS PAVED AREA
*	0.360	74	NEW LAWN C
*	0.000	98	0.14 ac (1/2) of 5 Roofs
*	0.000	74	NEW LAWN C
	0.940	89	Weighted Average
	0.360		38.30% Pervious Area
	0.580		61.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0300	1.02		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.10"
1.4	300	0.0300	3.52		**Shallow Concentrated Flow, BC** Paved Kv= 20.3 fps
1.6	311	Total			

Summary for Subcatchment 36: Drains to Buffer #3

Runoff = 1.98 cfs @ 12.01 hrs, Volume= 0.120 af, Depth> 3.78"

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 25 YEAR Rainfall=5.80"

	Area (ac)	CN	Description
*	0.160	98	NEW IMPERVIOUS PAVED AREA
*	0.220	74	NEW LAWN C
*	0.000	98	0.055 ac (1/2) of 2 Roofs
*	0.000	74	NEW LAWN C
	0.380	84	Weighted Average
	0.220		57.89% Pervious Area
	0.160		42.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0200	0.87		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.10"
0.6	120	0.0300	3.52		**Shallow Concentrated Flow, BC** Paved Kv= 20.3 fps
0.8	131	Total			

Summary for Subcatchment 37: Drains to Culvert

Runoff = 2.85 cfs @ 12.54 hrs, Volume= 0.370 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 Rainfall=5.80"

	Area (ac)	CN	Description
	0.990	70	Woods, Good, HSG C
*	0.000	98	NEW IMPERVIOUS PAVED AREA
*	0.720	74	NEW LAWN C
*	0.000	98	0.25 ac (1/2) of 9 Roofs
*	0.000	74	NEW LAWN C
	1.710	72	Weighted Average
	1.710		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
32.3	100	0.0300	0.05		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
5.8	150	0.0300	0.43		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
38.1	250	Total			

Summary for Subcatchment 38: Drains to RR culvert

Runoff = 15.88 cfs @ 12.47 hrs, Volume= 1.927 af, Depth> 2.42"

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 Rainfall=5.80"

	Area (ac)	CN	Description
	8.650	70	Woods, Good, HSG C
*	0.000	98	NEW IMPERVIOUS PAVED AREA
*	0.890	74	NEW LAWN C
*	0.000	98	0.11 ac (1/2) of 2 Roofs + 2 fulll
	9.540	70	Weighted Average
	9.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.8	100	0.0400	0.06		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
4.1	150	0.0600	0.61		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
32.9	250	Total			

Summary for Subcatchment 52: NEW Cottage Roof Areas

Runoff = 18.59 cfs @ 12.00 hrs, Volume= 1.227 af, Depth> 5.15"

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 Rainfall=5.80"

	Area (ac)	CN	Description
*	2.860	98	52 Cottage Roofs
	2.860		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	20	0.4000	3.25		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.10"

Summary for Subcatchment 81: Farm Area - drains to off site pond

Runoff = 47.10 cfs @ 12.72 hrs, Volume= 7.233 af, Depth> 2.85"

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 Rainfall=5.80"

	Area (ac)	CN	Description
*	18.050	74	WOODS / FIELD HSG C/D
*	0.510	98	EXISTING ROADS
*	10.640	74	EXISTING LAWN C
*	0.820	98	EXISTING PAVED/GRAVEL FARM
*	0.260	98	EXISTING BARN AND HOUSE
*	0.170	98	NEW IMPERVIOUS
	30.450	75	Weighted Average
	28.690		94.22% Pervious Area
	1.760		5.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
50.1	100	0.0100	0.03		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
2.4	100	0.0800	0.71		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
52.5	200	Total			

Summary for Subcatchment 82:

Runoff = 32.74 cfs @ 13.14 hrs, Volume= 6.707 af, Depth> 1.50"

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 Rainfall=5.80"

	Area (ac)	CN	Description
	44.000	55	Woods, Good, HSG B
*	2.000	98	EXISTING ROADS
*	7.680	74	EXISTING LAWN C
	53.680	59	Weighted Average
	51.680		96.27% Pervious Area
	2.000		3.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
69.3	150	0.0100	0.04		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
7.3	220	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
1.8	700	0.0100	6.33	253.05	**Trap/Vee/Rect Channel Flow, CD** Bot.W=10.00' D=4.00' n= 0.040 Winding stream, pools & shoals
78.4	1,070	Total			

Summary for Subcatchment 83:

Runoff = 34.66 cfs @ 13.13 hrs, Volume= 6.881 af, Depth> 2.64"

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 Rainfall=5.80"

	Area (ac)	CN	Description
	6.000	55	Woods, Good, HSG B
*	3.500	98	EXISTING ROADS
*	21.810	74	EXISTING LAWN C
	31.310	73	Weighted Average
	27.810		88.82% Pervious Area
	3.500		11.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
69.3	150	0.0100	0.04		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
12.3	370	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
81.6	520	Total			

Summary for Subcatchment 84: OFF SITE ABOVE GREELY ROAD

Runoff = 32.62 cfs @ 12.72 hrs, Volume= 5.013 af, Depth> 2.94"

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 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.510	98	EXISTING ROADS
*	18.850	74	EXISTING LAWN C
*	0.820	98	EXISTING PAVED/GRAVEL FARM
*	0.260	98	EXISTING BARN AND HOUSE
	20.440	76	Weighted Average
	18.850		92.22% Pervious Area
	1.590		7.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
50.1	100	0.0100	0.03		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
2.4	100	0.0800	0.71		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
52.5	200	Total			

Summary for Subcatchment 85: Drains to 18" culvert under driveway

Runoff = 12.73 cfs @ 12.72 hrs, Volume= 1.955 af, Depth> 2.85"

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 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.390	98	EXISTING ROADS
*	7.840	74	EXISTING LAWN C
	8.230	75	Weighted Average
	7.840		95.26% Pervious Area
	0.390		4.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
50.1	100	0.0100	0.03		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
2.4	100	0.0800	0.71		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
52.5	200	Total			

Summary for Subcatchment 86: Farm Side Stream drains to 24" culvert

Runoff = 33.70 cfs @ 13.51 hrs, Volume= 8.144 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 25 YEAR Rainfall=5.80"

	Area (ac)	CN	Description
*	0.870	98	EXISTING ROADS-OFF SITE
*	51.300	61	EXISTING LAWNS B
*	1.100	98	EXISTING HOUSE LOTS 11 - OFF SITE
*	0.260	98	EXISTING HOUSE AND BARN
*	0.130	98	EXISTING GRAVEL/PAVED FARM
*	0.540	98	NEW PAVED - FARM
*	0.000	98	COTTAGE ROOFS - 0.22 (see 52s)
*	0.860	74	NEW LAWNS C
	55.060	63	Weighted Average
	52.160		94.73% Pervious Area
	2.900		5.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
69.3	150	0.0100	0.04		**Sheet Flow, AB**
					Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC**
					Forest w/Heavy Litter Kv= 2.5 fps
8.2	3,100	0.0100	6.33	253.05	**Trap/Vee/Rect Channel Flow, CD**
					Bot.W=10.00' D=4.00'
					n= 0.040 Winding stream, pools & shoals
107.5	4,150	Total			

Summary for Reach 33R: Buffer #1

Inflow Area = 2.600 ac, 41.15% Impervious, Inflow Depth > 3.78" for 25 YEAR event
Inflow = 13.12 cfs @ 12.03 hrs, Volume= 0.819 af
Outflow = 9.86 cfs @ 12.22 hrs, Volume= 0.806 af, Atten= 25%, Lag= 11.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.21 fps, Min. Travel Time= 7.8 min
Avg. Velocity = 0.06 fps, Avg. Travel Time= 27.7 min

Peak Storage= 4,707 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 1.00' Flow Area= 222.0 sf, Capacity= 132.82 cfs

222.00' x 1.00' deep channel, n= 0.800 Sheet flow: Woods+dense brush
Length= 100.0' Slope= 0.1050 '/'
Inlet Invert= 72.50', Outlet Invert= 62.00'

Summary for Reach 35R: Buffer #2

Inflow Area = 0.940 ac, 61.70% Impervious, Inflow Depth > 4.30" for 25 YEAR event
Inflow = 5.23 cfs @ 12.03 hrs, Volume= 0.337 af
Outflow = 3.85 cfs @ 12.24 hrs, Volume= 0.331 af, Atten= 26%, Lag= 13.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.18 fps, Min. Travel Time= 9.1 min
Avg. Velocity = 0.05 fps, Avg. Travel Time= 31.4 min

Peak Storage= 2,113 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.17'
Bank-Full Depth= 1.00' Flow Area= 126.0 sf, Capacity= 75.05 cfs

126.00' x 1.00' deep channel, n= 0.800 Sheet flow: Woods+dense brush
Length= 100.0' Slope= 0.1050 '/'
Inlet Invert= 72.50', Outlet Invert= 62.00'

Summary for Reach 36R: Buffer #3

Inflow Area =	2.090 ac,	7.66% Impervious, Inflow Depth >	2.57"	for 25 YEAR event
Inflow =	2.47 cfs @	12.77 hrs, Volume=	0.448 af	
Outflow =	2.38 cfs @	13.02 hrs, Volume=	0.441 af,	Atten= 3%, Lag= 15.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.18 fps, Min. Travel Time= 9.2 min
Avg. Velocity = 0.07 fps, Avg. Travel Time= 24.3 min

Peak Storage= 1,315 cf @ 12.87 hrs
Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 1.00' Flow Area= 45.0 sf, Capacity= 18.16 cfs

45.00' x 1.00' deep channel, n= 0.800 Sheet flow: Woods+dense brush
Length= 100.0' Slope= 0.0500 '/'
Inlet Invert= 78.00', Outlet Invert= 73.00'

Summary for Reach 39R: Stream Greely to Golf Pond

Inflow Area =	743.000 ac,	3.86% Impervious, Inflow Depth >	0.29"	for 25 YEAR event
Inflow =	48.78 cfs @	20.00 hrs, Volume=	17.951 af	
Outflow =	48.68 cfs @	20.00 hrs, Volume=	16.519 af,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.14 fps, Min. Travel Time= 10.7 min
Avg. Velocity = 3.28 fps, Avg. Travel Time= 13.5 min

Peak Storage= 31,184 cf @ 20.00 hrs
Average Depth at Peak Storage= 0.98'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 641.98 cfs

10.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 2,650.0' Slope= 0.0125 '/'
Inlet Invert= 115.00', Outlet Invert= 82.00'

Summary for Reach 40R: Stream Route 9 to Greely Road

Inflow Area = 492.700 ac, 4.81% Impervious, Inflow Depth > 1.37" for 25 YEAR event
Inflow = 161.60 cfs @ 13.61 hrs, Volume= 56.283 af
Outflow = 157.75 cfs @ 14.18 hrs, Volume= 54.212 af, Atten= 2%, Lag= 34.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.79 fps, Min. Travel Time= 16.7 min
Avg. Velocity = 3.13 fps, Avg. Travel Time= 25.5 min

Peak Storage= 157,984 cf @ 13.90 hrs
Average Depth at Peak Storage= 2.52'
Bank-Full Depth= 4.00' Flow Area= 64.0 sf, Capacity= 392.75 cfs

8.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 24.00'
Length= 4,800.0' Slope= 0.0063 '/'
Inlet Invert= 150.00', Outlet Invert= 120.00'

Summary for Reach 42R: Stream Golf Pond to RR Culvert

Inflow Area = 167.550 ac, 6.29% Impervious, Inflow Depth > 3.26" for 25 YEAR event
Inflow = 98.34 cfs @ 14.08 hrs, Volume= 45.498 af
Outflow = 98.19 cfs @ 14.27 hrs, Volume= 44.342 af, Atten= 0%, Lag= 10.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.04 fps, Min. Travel Time= 6.1 min
Avg. Velocity = 2.73 fps, Avg. Travel Time= 9.1 min

Peak Storage= 35,977 cf @ 14.16 hrs
Average Depth at Peak Storage= 1.79'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 448.47 cfs

10.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 1,481.0' Slope= 0.0061 '/'
Inlet Invert= 65.00', Outlet Invert= 56.00'

Summary for Reach 43R: New Box Culvert to RR Culvert

Inflow Area = 234.340 ac, 8.63% Impervious, Inflow Depth > 2.81" for 25 YEAR event
Inflow = 126.91 cfs @ 14.16 hrs, Volume= 54.871 af
Outflow = 126.78 cfs @ 14.25 hrs, Volume= 54.238 af, Atten= 0%, Lag= 5.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.77 fps, Min. Travel Time= 3.0 min
Avg. Velocity = 1.45 fps, Avg. Travel Time= 5.8 min

Peak Storage= 22,894 cf @ 14.20 hrs
Average Depth at Peak Storage= 2.24'
Bank-Full Depth= 4.00' Flow Area= 96.0 sf, Capacity= 364.94 cfs

16.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 32.00'
Length= 500.0' Slope= 0.0020 '/'
Inlet Invert= 56.00', Outlet Invert= 55.00'

‡

Summary for Reach 55R: Wetland below Site @ PL

Inflow Area = 32.990 ac, 0.79% Impervious, Inflow Depth > 2.47" for 25 YEAR event
Inflow = 40.27 cfs @ 12.67 hrs, Volume= 6.796 af
Outflow = 39.81 cfs @ 12.81 hrs, Volume= 6.735 af, Atten= 1%, Lag= 8.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.15 fps, Min. Travel Time= 5.2 min
Avg. Velocity = 2.08 fps, Avg. Travel Time= 12.8 min

Peak Storage= 12,402 cf @ 12.73 hrs
Average Depth at Peak Storage= 0.87'
Bank-Full Depth= 5.00' Flow Area= 65.0 sf, Capacity= 840.41 cfs

8.00' x 5.00' deep channel, n= 0.030 Stream, clean & straight
Side Slope Z-value= 1.0 '/' Top Width= 18.00'
Length= 1,604.0' Slope= 0.0162 '/'
Inlet Invert= 86.00', Outlet Invert= 60.00'

Summary for Reach 82R: Stream Golf Pond to Pond 42 outlet

Inflow = 53.64 cfs @ 20.00 hrs, Volume= 28.006 af
Outflow = 53.54 cfs @ 20.00 hrs, Volume= 26.636 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.96 fps, Min. Travel Time= 9.3 min
Avg. Velocity = 2.05 fps, Avg. Travel Time= 13.4 min

Peak Storage= 29,848 cf @ 20.00 hrs
Average Depth at Peak Storage= 1.41'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 374.71 cfs

10.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 1,650.0' Slope= 0.0042 '/'
Inlet Invert= 72.00', Outlet Invert= 65.00'

Summary for Reach 84R: Stream Golf Pond to RR Culvert

Inflow Area = 28.670 ac, 6.91% Impervious, Inflow Depth > 2.89" for 25 YEAR event
Inflow = 38.03 cfs @ 13.01 hrs, Volume= 6.894 af
Outflow = 37.70 cfs @ 13.16 hrs, Volume= 6.832 af, Atten= 1%, Lag= 9.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.54 fps, Min. Travel Time= 5.7 min
Avg. Velocity = 1.63 fps, Avg. Travel Time= 12.3 min

Peak Storage= 12,802 cf @ 13.07 hrs
Average Depth at Peak Storage= 0.90'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 575.29 cfs

10.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 1,200.0' Slope= 0.0100 '/'
Inlet Invert= 78.00', Outlet Invert= 66.00'

Summary for Pond 3P: 24" CULVERT

Inflow Area = 32.990 ac, 0.79% Impervious, Inflow Depth > 2.45" for 25 YEAR event
Inflow = 39.81 cfs @ 12.81 hrs, Volume= 6.735 af
Outflow = 29.58 cfs @ 13.22 hrs, Volume= 6.691 af, Atten= 26%, Lag= 24.1 min
Primary = 29.58 cfs @ 13.22 hrs, Volume= 6.691 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 58.82' @ 13.22 hrs Surf.Area= 14,122 sf Storage= 36,286 cf

Plug-Flow detention time= 14.4 min calculated for 6.669 af (99% of inflow)
Center-of-Mass det. time= 12.2 min (859.5 - 847.3)

Volume	Invert	Avail.Storage	Storage Description
#1	54.00'	56,342 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
54.00	2,362	0	0
56.00	6,990	9,352	9,352
58.00	10,000	16,990	26,342
60.00	20,000	30,000	56,342

Device	Routing	Invert	Outlet Devices
#1	Primary	54.00'	**24.0" Round Culvert** L= 50.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 54.00' / 53.00' S= 0.0200 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Secondary	59.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=29.57 cfs @ 13.22 hrs HW=58.82' (Free Discharge)
└**1=Culvert** (Inlet Controls 29.57 cfs @ 9.41 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=54.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 31P: 18" Culvert crossing Little Acres Drive

Inflow Area =	9.460 ac,	0.00% Impervious,	Inflow Depth >	2.41"	for 25 YEAR event
Inflow =	13.11 cfs @	12.67 hrs,	Volume=	1.900 af	
Outflow =	8.38 cfs @	13.09 hrs,	Volume=	1.887 af,	Atten= 36%, Lag= 25.2 min
Primary =	8.38 cfs @	13.09 hrs,	Volume=	1.887 af	
Secondary =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 81.22' @ 13.09 hrs Surf.Area= 20,261 sf Storage= 15,922 cf

Plug-Flow detention time= 22.5 min calculated for 1.887 af (99% of inflow)
Center-of-Mass det. time= 20.0 min (853.4 - 833.4)

Volume	Invert	Avail.Storage	Storage Description
#1	79.50'	262,372 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
79.50	366	0	0
80.00	4,041	1,102	1,102
82.00	30,637	34,678	35,780
87.00	60,000	226,593	262,372

Device	Routing	Invert	Outlet Devices
#1	Primary	79.50'	**18.0" Round Culvert** L= 62.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 79.50' / 79.00' S= 0.0081 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	86.00'	**80.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=8.38 cfs @ 13.09 hrs HW=81.22' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 8.38 cfs @ 4.74 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=79.50' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 34P: FocalPoint

Inflow Area =	4.280 ac,	39.95% Impervious,	Inflow Depth >	3.78"	for 25 YEAR event
Inflow =	21.60 cfs @	12.03 hrs,	Volume=	1.347 af	
Outflow =	15.63 cfs @	12.09 hrs,	Volume=	1.347 af,	Atten= 28%, Lag= 4.0 min
Primary =	15.63 cfs @	12.09 hrs,	Volume=	1.347 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 58.88' @ 12.09 hrs Surf.Area= 6,080 sf Storage= 3,129 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.9 min (770.1 - 769.2)

Volume	Invert	Avail.Storage	Storage Description
#1	57.20'	1,400 cf	**25.00'W x 140.00'L x 1.00'H crushed stone** 3,500 cf Overall x 40.0% Voids
#2	58.21'	9,160 cf	**1.30'W x 2.30'L x 3.55'H R-tank units** x 863
#3	61.00'	192 cf	**20.00'W x 15.00'L x 3.20'H FocalPoint** 960 cf Overall x 20.0% Voids
#4	64.00'	2,896 cf	**Surface Storage above focal point (Prismatic)**Listed below (Recalc) -Impe
		13,648 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
64.00	429	0	0
64.50	600	257	257
65.00	778	345	602
65.50	919	424	1,026
66.00	1,153	518	1,544
66.50	1,350	626	2,170
67.00	1,553	726	2,896

Device	Routing	Invert	Outlet Devices
#1	Primary	57.20'	**100.000 in/hr Exfiltration over Surface area** Phase-In= 0.10'
#2	Device 4	65.50'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 4	58.21'	**12.0" Vert. Orifice/Grate** C= 0.600
#4	Primary	58.21'	**18.0" Round Culvert** L= 26.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 58.21' / 58.00' S= 0.0081 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=15.56 cfs @ 12.09 hrs HW=58.86' (Free Discharge)
1=Exfiltration (Exfiltration Controls 14.07 cfs)
4=Culvert (Passes 1.48 cfs of 1.76 cfs potential flow)
2=Orifice/Grate (Controls 0.00 cfs)
3=Orifice/Grate (Orifice Controls 1.48 cfs @ 2.74 fps)

Summary for Pond 37P: 18" Culvert crossing

Inflow Area = 1.710 ac, 0.00% Impervious, Inflow Depth > 2.59" for 25 YEAR event
Inflow = 2.85 cfs @ 12.54 hrs, Volume= 0.370 af
Outflow = 2.28 cfs @ 12.77 hrs, Volume= 0.329 af, Atten= 20%, Lag= 14.1 min
Primary = 2.28 cfs @ 12.77 hrs, Volume= 0.329 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 81.03' @ 12.77 hrs Surf.Area= 4,021 sf Storage= 4,113 cf

Plug-Flow detention time= 66.3 min calculated for 0.328 af (89% of inflow)
Center-of-Mass det. time= 33.9 min (856.7 - 822.8)

Volume	Invert	Avail.Storage	Storage Description
#1	80.00'	133,356 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
80.00	4,000	0	0
82.00	4,041	8,041	8,041
84.00	30,637	34,678	42,719
86.00	60,000	90,637	133,356

Device	Routing	Invert	Outlet Devices
#1	Primary	80.30'	**18.0" Round Culvert** L= 28.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 80.30' / 80.00' S= 0.0107 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	85.50'	**20.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=2.27 cfs @ 12.77 hrs HW=81.02' (Free Discharge)
1=Culvert (Barrel Controls 2.27 cfs @ 3.94 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=80.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 38P: Existing 5'X6' RR Box Culvert

Inflow Area = 243.880 ac, 8.29% Impervious, Inflow Depth > 2.76" for 25 YEAR event
Inflow = 129.00 cfs @ 14.25 hrs, Volume= 56.165 af
Outflow = 124.84 cfs @ 14.53 hrs, Volume= 55.711 af, Atten= 3%, Lag= 17.1 min
Primary = 124.84 cfs @ 14.53 hrs, Volume= 55.711 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 59.17' @ 14.53 hrs Surf.Area= 39,679 sf Storage= 55,934 cf

Plug-Flow detention time= 5.7 min calculated for 55.526 af (99% of inflow)
Center-of-Mass det. time= 3.8 min (967.3 - 963.5)

Volume	Invert	Avail.Storage	Storage Description
#1	55.00'	3,745,747 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
55.00	1,320	0	0
56.00	4,539	2,930	2,930
58.00	15,848	20,387	23,317
60.00	56,417	72,265	95,582
62.00	198,504	254,921	350,503
64.00	274,621	473,125	823,628
66.00	372,832	647,453	1,471,081
70.00	764,501	2,274,666	3,745,747

Device	Routing	Invert	Outlet Devices
#1	Primary	55.10'	**60.0" W x 74.0" H Box I** L= 90.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 55.10' / 53.70' S= 0.0156 '/' Cc= 0.900 n= 0.022 Earth, clean & straight, Flow Area= 30.83 sf
#2	Secondary	69.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=124.82 cfs @ 14.53 hrs HW=59.17' (Free Discharge)
└─**1=I** (Barrel Controls 124.82 cfs @ 8.17 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=55.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 39P: 60" Culvert at Greely Road

Inflow Area = 743.000 ac, 3.86% Impervious, Inflow Depth > 1.38" for 25 YEAR event
Inflow = 250.10 cfs @ 13.75 hrs, Volume= 85.414 af
Outflow = 48.78 cfs @ 20.00 hrs, Volume= 17.951 af, Atten= 80%, Lag= 375.0 min
Primary = 48.78 cfs @ 20.00 hrs, Volume= 17.951 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 122.82' @ 20.00 hrs Surf.Area= 1,208,890 sf Storage= 2,938,188 cf

Plug-Flow detention time= 265.8 min calculated for 17.951 af (21% of inflow)
Center-of-Mass det. time= 131.9 min (1,054.7 - 922.8)

Volume	Invert	Avail.Storage	Storage Description
#1	120.00'	149,235,760 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 2

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.00	439,044	0	0
140.00	1,613,877	20,529,210	20,529,210
160.00	3,794,990	54,088,670	74,617,880

Device	Routing	Invert	Outlet Devices
#1	Primary	120.50'	**60.0" Round 60" Culvert w/ 6.0" inside fill** L= 90.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 120.00' / 118.20' S= 0.0200 '/' Cc= 0.900 n= 0.022 Earth, clean & straight, Flow Area= 18.61 sf
#2	Secondary	131.50'	**25.0' long x 100.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=48.75 cfs @ 20.00 hrs HW=122.82' (Free Discharge)
↑—**1=60" Culvert** (Inlet Controls 48.75 cfs @ 4.70 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=120.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 40P: 48" Culvert at Route 9

Inflow Area = 405.950 ac, 2.64% Impervious, Inflow Depth > 1.35" for 25 YEAR event
Inflow = 212.15 cfs @ 13.21 hrs, Volume= 45.706 af
Outflow = 114.67 cfs @ 14.19 hrs, Volume= 40.949 af, Atten= 46%, Lag= 58.9 min
Primary = 114.67 cfs @ 14.19 hrs, Volume= 40.949 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 164.65' @ 14.19 hrs Surf.Area= 195,136 sf Storage= 613,755 cf

Plug-Flow detention time= 87.6 min calculated for 40.813 af (89% of inflow)
Center-of-Mass det. time= 59.5 min (942.8 - 883.3)

Volume	Invert	Avail.Storage	Storage Description
#1	160.00'	22,928,710 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
160.00	68,874	0	0
180.00	611,999	6,808,730	6,808,730
200.00	999,999	16,119,980	22,928,710

Device	Routing	Invert	Outlet Devices
#1	Primary	160.50'	**60.0" Round 48" Culvert w/ 6.0" inside fill** L= 90.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 160.00' / 158.70' S= 0.0144 '/' Cc= 0.900 n= 0.022 Earth, clean & straight, Flow Area= 18.61 sf
#2	Secondary	180.00'	**25.0' long x 100.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=114.72 cfs @ 14.19 hrs HW=164.65' (Free Discharge)
↑—**1=48" Culvert** (Barrel Controls 114.72 cfs @ 8.10 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=160.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 42P: Golf Course Pond

Inflow Area =	167.550 ac,	6.29% Impervious,	Inflow Depth > 1.40"	for 25 YEAR event
Inflow =	76.77 cfs @	13.58 hrs, Volume=	19.547 af	
Outflow =	48.97 cfs @	14.57 hrs, Volume=	18.863 af,	Atten= 36%, Lag= 59.8 min
Primary =	48.97 cfs @	14.57 hrs, Volume=	18.863 af	
Secondary =	0.00 cfs @	5.00 hrs, Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 75.54' @ 14.57 hrs Surf.Area= 55,585 sf Storage= 193,591 cf

Plug-Flow detention time= 52.9 min calculated for 18.800 af (96% of inflow)
Center-of-Mass det. time= 43.0 min (943.5 - 900.5)

Volume	Invert	Avail.Storage	Storage Description
#1	70.00'	514,000 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
70.00	15,328	0	0
72.00	29,781	45,109	45,109
74.00	42,804	72,585	117,694
76.00	59,373	102,177	219,871
78.00	73,726	133,099	352,970
80.00	87,304	161,030	514,000

Device	Routing	Invert	Outlet Devices
#1	Primary	70.00'	**30.0" Round Culvert** L= 80.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 70.00' / 69.50' S= 0.0063 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 4.91 sf
#2	Secondary	78.00'	**80.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=48.97 cfs @ 14.57 hrs HW=75.54' (Free Discharge)
└─**1=Culvert** (Inlet Controls 48.97 cfs @ 9.98 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=70.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 43P: Box Culvert 3 (16' WIDE x 8' HIGH)

Inflow Area =	176.420 ac,	8.20% Impervious,	Inflow Depth > 3.20"	for 25 YEAR event
Inflow =	100.77 cfs @	14.25 hrs, Volume=	47.116 af	
Outflow =	100.78 cfs @	14.25 hrs, Volume=	47.112 af,	Atten= 0%, Lag= 0.4 min
Primary =	100.78 cfs @	14.25 hrs, Volume=	47.112 af	
Secondary =	0.00 cfs @	5.00 hrs, Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 56.27' @ 14.25 hrs Surf.Area= 2,184 sf Storage= 473 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (971.1 - 971.0)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	2,789,378 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	1,320	0	0
58.00	7,722	9,042	9,042
60.00	9,674	17,396	26,438
62.00	63,671	73,345	99,783
64.00	169,090	232,761	332,544
66.00	252,914	422,004	754,548
70.00	764,501	2,034,830	2,789,378

Device	Routing	Invert	Outlet Devices
#1	Primary	54.70'	**192.0" W x 96.0" H Box 192"X 108" Box Culvert** L= 70.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 54.70' / 54.00' S= 0.0100 '/' Cc= 0.900 n= 0.022 Earth, clean & straight, Flow Area= 128.00 sf
#2	Secondary	68.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=100.79 cfs @ 14.25 hrs HW=56.27' (Free Discharge)
└─**1=192"X 108" Box Culvert** (Barrel Controls 100.79 cfs @ 5.35 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=56.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 47P: FILTER POND

Inflow Area = 1.050 ac, 53.33% Impervious, Inflow Depth > 4.09" for 25 YEAR event
Inflow = 5.63 cfs @ 12.03 hrs, Volume= 0.358 af
Outflow = 2.39 cfs @ 12.18 hrs, Volume= 0.289 af, Atten= 58%, Lag= 9.0 min
Primary = 2.39 cfs @ 12.18 hrs, Volume= 0.289 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 82.10' @ 12.18 hrs Surf.Area= 3,172 sf Storage= 6,865 cf

Plug-Flow detention time= 122.1 min calculated for 0.289 af (81% of inflow)
Center-of-Mass det. time= 69.7 min (831.3 - 761.5)

Volume	Invert	Avail.Storage	Storage Description
#1	79.00'	10,009 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
79.00	1,343	0	0
80.00	1,873	1,608	1,608
81.00	2,460	2,167	3,775
82.00	3,103	2,782	6,556
83.00	3,803	3,453	10,009

Device	Routing	Invert	Outlet Devices
#1	Primary	75.87'	**18.0" Round Culvert** L= 31.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 75.87' / 75.00' S= 0.0281 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Device 1	80.50'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	82.00'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	82.50'	**10.0' 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=2.35 cfs @ 12.18 hrs HW=82.10' (Free Discharge)
└─**1=Culvert** (Passes 2.35 cfs of 19.91 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.10 cfs @ 5.59 fps)
  └─**3=Orifice/Grate** (Weir Controls 1.25 cfs @ 1.02 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=79.00' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 49P: 52 ROOF DRIPLINE BMP'S

Inflow Area = 2.860 ac,100.00% Impervious, Inflow Depth > 5.15" for 25 YEAR event
Inflow = 18.59 cfs @ 12.00 hrs, Volume= 1.227 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 100.15' @ 20.00 hrs Surf.Area= 851,760 sf Storage= 53,417 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	12,675 cf	**3.00'W x 105.00'L x 2.00'H Prismatoid** x 52 32,760 cf Overall - 1,072 cf Embedded = 31,688 cf x 40.0% Voids
#2	100.00'	1,072 cf	**6.0" Round Pipe Storage** x 52 Inside #1 L= 105.0' S= 0.0050 '/'
		13,747 cf	x 52.00 = 714,857 cf Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	101.50'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir X 52.00** 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=0.00 cfs @ 5.00 hrs HW=100.00' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 81P: OFF SITE POND

Inflow Area =	59.120 ac,	6.33% Impervious, Inflow Depth > 2.85"	for 25 YEAR event	
Inflow =	78.72 cfs @	12.82 hrs, Volume=	14.065 af	
Outflow =	51.54 cfs @	13.49 hrs, Volume=	13.523 af,	Atten= 35%, Lag= 40.0 min
Primary =	30.23 cfs @	13.49 hrs, Volume=	11.738 af	
Secondary =	21.31 cfs @	13.49 hrs, Volume=	1.785 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Starting Elev= 62.00' Surf.Area= 20,254 sf Storage= 139,510 cf
Peak Elev= 66.99' @ 13.49 hrs Surf.Area= 62,678 sf Storage= 321,669 cf (182,159 cf above start)

Plug-Flow detention time= 150.8 min calculated for 10.321 af (73% of inflow)
Center-of-Mass det. time= 54.6 min (892.9 - 838.3)

Volume	Invert	Avail.Storage	Storage Description
#1	52.00'	393,079 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
52.00	7,648	0	0
62.00	20,254	139,510	139,510
64.00	30,728	50,982	190,492
66.00	46,299	77,027	267,519
68.00	79,261	125,560	393,079

Device	Routing	Invert	Outlet Devices
#1	Primary	62.00'	**24.0" Round Culvert** L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 62.00' / 61.50' S= 0.0050 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 3.14 sf
#2	Secondary	66.00'	**8.0' 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=30.23 cfs @ 13.49 hrs HW=66.99' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 30.23 cfs @ 9.62 fps)

Secondary OutFlow Max=21.21 cfs @ 13.49 hrs HW=66.99' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 21.21 cfs @ 2.67 fps)

Summary for Pond 82P: Golf Course Pond

Inflow Area =	827.990 ac,	4.13% Impervious, Inflow Depth > 0.44"	for 25 YEAR event	
Inflow =	58.82 cfs @	13.22 hrs, Volume=	30.100 af	
Outflow =	53.64 cfs @	20.00 hrs, Volume=	28.006 af,	Atten= 9%, Lag= 407.0 min
Secondary =	53.64 cfs @	20.00 hrs, Volume=	28.006 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 77.86' @ 20.00 hrs Surf.Area= 56,623 sf Storage= 91,213 cf

Plug-Flow detention time= 28.7 min calculated for 27.913 af (93% of inflow)
Center-of-Mass det. time= 13.0 min (990.0 - 977.0)

Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	395,691 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
76.00	41,373	0	0
82.00	90,524	395,691	395,691

Device	Routing	Invert	Outlet Devices
#1	Secondary	76.00'	**8.0' 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

Secondary OutFlow Max=53.64 cfs @ 20.00 hrs HW=77.86' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 53.64 cfs @ 3.60 fps)

Summary for Pond 83P: Culvert at Valhalla Road

Inflow Area = 31.310 ac, 11.18% Impervious, Inflow Depth > 2.64" for 25 YEAR event
Inflow = 34.66 cfs @ 13.13 hrs, Volume= 6.881 af
Outflow = 27.51 cfs @ 13.55 hrs, Volume= 6.874 af, Atten= 21%, Lag= 25.4 min
Primary = 27.51 cfs @ 13.55 hrs, Volume= 6.874 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 131.20' @ 13.55 hrs Surf.Area= 7,245 sf Storage= 28,832 cf

Plug-Flow detention time= 8.6 min calculated for 6.874 af (100% of inflow)
Center-of-Mass det. time= 8.2 min (863.0 - 854.8)

Volume	Invert	Avail.Storage	Storage Description
#1	120.00'	648,610 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.00	366	0	0
130.00	4,041	22,035	22,035
140.00	30,637	173,390	195,425
150.00	60,000	453,185	648,610

Device	Routing	Invert	Outlet Devices
#1	Primary	120.00'	**18.0" Round Culvert** L= 80.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 120.00' / 119.00' S= 0.0125 '/' Cc= 0.900

			n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	148.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=27.51 cfs @ 13.55 hrs HW=131.20' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 27.51 cfs @ 15.57 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=120.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 84P: 3 - 18" culverts

Inflow Area = 20.440 ac, 7.78% Impervious, Inflow Depth > 2.94" for 25 YEAR event
Inflow = 32.62 cfs @ 12.72 hrs, Volume= 5.013 af
Outflow = 28.13 cfs @ 12.95 hrs, Volume= 4.952 af, Atten= 14%, Lag= 14.0 min
Primary = 28.13 cfs @ 12.95 hrs, Volume= 4.952 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 82.46' @ 12.95 hrs Surf.Area= 26,457 sf Storage= 17,122 cf

Plug-Flow detention time= 12.3 min calculated for 4.952 af (99% of inflow)
Center-of-Mass det. time= 8.0 min (834.6 - 826.6)

Volume	Invert	Avail.Storage	Storage Description
#1	80.00'	297,916 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
80.00	2,362	0	0
82.00	6,990	9,352	9,352
84.00	90,787	97,777	107,129
86.00	100,000	190,787	297,916

Device	Routing	Invert	Outlet Devices
#1	Primary	80.50'	**18.0" Round Culvert X 3.00**
			L= 50.0' RCP, sq.cut end projecting, Ke= 0.500
			Inlet / Outlet Invert= 80.50' / 80.00' S= 0.0100 '/' Cc= 0.900
			n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	84.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=28.13 cfs @ 12.95 hrs HW=82.46' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 28.13 cfs @ 5.31 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=80.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 85P: 18" CULVERT

Inflow Area = 8.230 ac, 4.74% Impervious, Inflow Depth > 2.85" for 25 YEAR event
Inflow = 12.73 cfs @ 12.72 hrs, Volume= 1.955 af
Outflow = 10.00 cfs @ 13.03 hrs, Volume= 1.942 af, Atten= 21%, Lag= 18.6 min
Primary = 9.08 cfs @ 13.03 hrs, Volume= 1.927 af
Secondary = 0.91 cfs @ 13.03 hrs, Volume= 0.016 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 92.06' @ 13.03 hrs Surf.Area= 12,502 sf Storage= 13,941 cf

Plug-Flow detention time= 19.9 min calculated for 1.936 af (99% of inflow)
Center-of-Mass det. time= 17.5 min (846.0 - 828.5)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	29,280 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.00	1,196	0	0
92.00	12,056	13,252	13,252
93.00	20,000	16,028	29,280

Device	Routing	Invert	Outlet Devices
#1	Primary	89.86'	**18.0" Round Culvert** L= 28.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 89.86' / 89.79' S= 0.0025 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	92.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=9.08 cfs @ 13.03 hrs HW=92.06' (Free Discharge)
└─**1=Culvert** (Barrel Controls 9.08 cfs @ 5.14 fps)

Secondary OutFlow Max=0.87 cfs @ 13.03 hrs HW=92.06' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 0.87 cfs @ 0.63 fps)

Summary for Pond 86P: 24" CULVERT

Inflow Area = 55.060 ac, 5.27% Impervious, Inflow Depth > 1.77" for 25 YEAR event
Inflow = 33.70 cfs @ 13.51 hrs, Volume= 8.144 af
Outflow = 26.53 cfs @ 14.12 hrs, Volume= 7.759 af, Atten= 21%, Lag= 36.8 min
Primary = 22.76 cfs @ 14.12 hrs, Volume= 7.661 af
Secondary = 3.76 cfs @ 14.12 hrs, Volume= 0.098 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 61.04' @ 14.12 hrs Surf.Area= 34,451 sf Storage= 74,806 cf

Plug-Flow detention time= 48.7 min calculated for 7.759 af (95% of inflow)
Center-of-Mass det. time= 35.2 min (926.4 - 891.2)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	401,091 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	758	0	0
58.00	9,115	9,873	9,873
60.00	24,850	33,965	43,838
62.00	43,236	68,086	111,924
64.00	72,382	115,618	227,542
66.00	101,167	173,549	401,091

Device	Routing	Invert	Outlet Devices
#1	Primary	57.78'	**24.0" Round Culvert** L= 73.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 57.78' / 56.17' S= 0.0221 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Secondary	61.00'	**100.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=22.76 cfs @ 14.12 hrs HW=61.04' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 22.76 cfs @ 7.24 fps)

Secondary OutFlow Max=2.45 cfs @ 14.12 hrs HW=61.04' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 2.45 cfs @ 0.56 fps)

Summary for Subcatchment 3S:

Runoff = 55.13 cfs @ 12.60 hrs, Volume= 7.687 af, Depth> 4.30"

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 100 YEAR Rainfall=8.10"

	Area (ac)	CN	Description
*	15.050	70	WOODS / FIELD HSG C
*	0.000	98	EXISTING IMPERVIOUS AREA
*	4.000	74	EXISTING LAWN C
*	0.620	74	Approved LAWN C phase 1
*	0.100	98	Approved Trails-phase 1
*	1.670	74	NEW LAWN C
*	0.000	98	NEW ROOF (1/2-11 UNITS=0.31 AC))
	21.440	71	Weighted Average
	21.340		99.53% Pervious Area
	0.100		0.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.8	100	0.0400	0.06		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
15.0	450	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
43.8	550	Total			

Summary for Subcatchment 8:

Runoff = 160.95 cfs @ 13.47 hrs, Volume= 38.986 af, Depth> 2.79"

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 100 YEAR Rainfall=8.10"

	Area (ac)	CN	Description
	32.000	30	Woods, Good, HSG A
	20.000	55	Woods, Good, HSG B
	25.450	70	Woods, Good, HSG C
*	10.000	98	EXISTING ROADS
*	0.000	98	EXISTING PAVED / GRAVEL FARM
*	0.000	98	EXISTING HOUSE AND BARN
*	78.000	61	EXISTING LAWNS B
*	1.560	74	NEW LAWN C
*	0.000	98	NEW COTTAGES (0.54 ac) (see sub 52) 1/2 27 units
*	0.540	98	NEW PAVEMENT - FARM
	167.550	58	Weighted Average
	157.010		93.71% Pervious Area
	10.540		6.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
69.3	150	0.0100	0.04		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
9.7	3,700	0.0100	6.33	253.05	**Trap/Vee/Rect Channel Flow, CD** Bot.W=10.00' D=4.00' n= 0.040 Winding stream, pools & shoals
109.0	4,750	Total			

Summary for Subcatchment 9S:

Runoff = 137.65 cfs @ 13.11 hrs, Volume= 27.456 af, Depth> 3.80"

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 100 YEAR Rainfall=8.10"

	Area (ac)	CN	Description
	15.000	30	Woods, Good, HSG A
	10.000	55	Woods, Good, HSG B
	25.000	70	Woods, Good, HSG C
*	13.000	98	EXISTING IMPERVIOUS AREA
*	23.750	74	EXISTING LAWN C
	86.750	67	Weighted Average
	73.750		85.01% Pervious Area
	13.000		14.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0200	0.05		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
82.5	1,050	Total			

Summary for Subcatchment 10S:

Runoff = 453.25 cfs @ 13.14 hrs, Volume= 92.235 af, Depth> 2.73"

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 100 YEAR Rainfall=8.10"

	Area (ac)	CN	Description
	118.000	30	Woods, Good, HSG A
	74.000	55	Woods, Good, HSG B
	129.000	70	Woods, Good, HSG C
	48.000	77	Woods, Good, HSG D
	15.000	75	1/4 acre lots, 38% imp, HSG B
*	16.950	74	EXISTING LAWN C
*	5.000	98	EXISTING ROADS
	405.950	57	Weighted Average
	395.250		97.36% Pervious Area
	10.700		2.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0200	0.05		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
82.5	1,050	Total			

Summary for Subcatchment 11S:

Runoff = 303.09 cfs @ 13.13 hrs, Volume= 61.245 af, Depth> 2.94"

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 100 YEAR Rainfall=8.10"

	Area (ac)	CN	Description
	40.000	30	Woods, Good, HSG A
	24.000	55	Woods, Good, HSG B
	42.000	70	Woods, Good, HSG C
	16.000	77	Woods, Good, HSG D
*	20.000	70	EXISTING LOTS B
*	103.300	61	EXISTING LAWN B
*	5.000	98	EXISTING ROADS
	250.300	59	Weighted Average
	245.300		98.00% Pervious Area
	5.000		2.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0200	0.05		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
82.5	1,050	Total			

Summary for Subcatchment 31:

Runoff = 22.77 cfs @ 12.65 hrs, Volume= 3.300 af, Depth> 4.19"

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 100 YEAR Rainfall=8.10"

	Area (ac)	CN	Description
*	9.030	70	WOODS / FIELD HSG C
*	0.430	70	NEW LAWN C
	9.460	70	Weighted Average
	9.460		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.8	100	0.0400	0.06		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
18.3	550	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
47.1	650	Total			

Summary for Subcatchment 32: 0.56 acres to Filter Pond

Runoff = 8.33 cfs @ 12.03 hrs, Volume= 0.542 af, Depth> 6.19"

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 100 YEAR Rainfall=8.10"

	Area (ac)	CN	Description
*	0.560	98	NEW IMPERVIOUS PAVED AREA
*	0.490	74	NEW LAWN C
	1.050	87	Weighted Average
	0.490		46.67% Pervious Area
	0.560		53.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0300	1.02		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.10"
1.4	300	0.0300	3.52		**Shallow Concentrated Flow, BC** Paved Kv= 20.3 fps
1.6	311	Total			

Summary for Subcatchment 33: Drains to Buffer #1

Runoff = 19.85 cfs @ 12.03 hrs, Volume= 1.268 af, Depth> 5.85"

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 100 YEAR Rainfall=8.10"

	Area (ac)	CN	Description
*	1.070	98	NEW IMPERVIOUS PAVED AREA
*	0.790	74	NEW LAWN C
*	0.000	98	0.52 ac (1/2) of 19 Roofs
*	0.740	74	NEW LAWN C
	2.600	84	Weighted Average
	1.530		58.85% Pervious Area
	1.070		41.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0300	1.02		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.10"
1.4	300	0.0300	3.52		**Shallow Concentrated Flow, BC** Paved Kv= 20.3 fps
1.6	311	Total			

Summary for Subcatchment 34: 1.71 acres to Focal Point

Runoff = 32.67 cfs @ 12.03 hrs, Volume= 2.088 af, Depth> 5.85"

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 100 YEAR Rainfall=8.10"

	Area (ac)	CN	Description
*	1.710	98	NEW IMPERVIOUS PAVED AREA
*	2.570	74	NEW LAWN C
*	0.000	98	0.66 ac (1/2) of 24 Roofs
	4.280	84	Weighted Average
	2.570		60.05% Pervious Area
	1.710		39.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0300	1.02		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.10"
1.4	300	0.0300	3.52		**Shallow Concentrated Flow, BC** Paved Kv= 20.3 fps
1.6	311	Total			

Summary for Subcatchment 35: Drains to Buffer #2

Runoff = 7.63 cfs @ 12.03 hrs, Volume= 0.502 af, Depth> 6.41"

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 100 YEAR Rainfall=8.10"

	Area (ac)	CN	Description
*	0.580	98	NEW IMPERVIOUS PAVED AREA
*	0.360	74	NEW LAWN C
*	0.000	98	0.14 ac (1/2) of 5 Roofs
*	0.000	74	NEW LAWN C
	0.940	89	Weighted Average
	0.360		38.30% Pervious Area
	0.580		61.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0300	1.02		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.10"
1.4	300	0.0300	3.52		**Shallow Concentrated Flow, BC** Paved Kv= 20.3 fps
1.6	311	Total			

Summary for Subcatchment 36: Drains to Buffer #3

Runoff = 3.00 cfs @ 12.01 hrs, Volume= 0.185 af, Depth> 5.86"

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 100 YEAR Rainfall=8.10"

	Area (ac)	CN	Description
*	0.160	98	NEW IMPERVIOUS PAVED AREA
*	0.220	74	NEW LAWN C
*	0.000	98	0.055 ac (1/2) of 2 Roofs
*	0.000	74	NEW LAWN C
	0.380	84	Weighted Average
	0.220		57.89% Pervious Area
	0.160		42.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0200	0.87		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.10"
0.6	120	0.0300	3.52		**Shallow Concentrated Flow, BC** Paved Kv= 20.3 fps
0.8	131	Total			

Summary for Subcatchment 37: Drains to Culvert

Runoff = 4.83 cfs @ 12.52 hrs, Volume= 0.630 af, Depth> 4.42"

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 100 YEAR Rainfall=8.10"

	Area (ac)	CN	Description
	0.990	70	Woods, Good, HSG C
*	0.000	98	NEW IMPERVIOUS PAVED AREA
*	0.720	74	NEW LAWN C
*	0.000	98	0.25 ac (1/2) of 9 Roofs
*	0.000	74	NEW LAWN C
	1.710	72	Weighted Average
	1.710		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
32.3	100	0.0300	0.05		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
5.8	150	0.0300	0.43		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
38.1	250	Total			

Summary for Subcatchment 38: Drains to RR culvert

Runoff = 27.55 cfs @ 12.46 hrs, Volume= 3.344 af, Depth> 4.21"

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 100 YEAR Rainfall=8.10"

	Area (ac)	CN	Description
	8.650	70	Woods, Good, HSG C
*	0.000	98	NEW IMPERVIOUS PAVED AREA
*	0.890	74	NEW LAWN C
*	0.000	98	0.11 ac (1/2) of 2 Roofs + 2 fulll
	9.540	70	Weighted Average
	9.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.8	100	0.0400	0.06		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
4.1	150	0.0600	0.61		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
32.9	250	Total			

Summary for Subcatchment 52: NEW Cottage Roof Areas

Runoff = 26.02 cfs @ 12.00 hrs, Volume= 1.725 af, Depth> 7.24"

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 100 YEAR Rainfall=8.10"

	Area (ac)	CN	Description
*	2.860	98	52 Cottage Roofs
	2.860		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	20	0.4000	3.25		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.10"

Summary for Subcatchment 81: Farm Area - drains to off site pond

Runoff = 77.65 cfs @ 12.71 hrs, Volume= 12.027 af, Depth> 4.74"

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 100 YEAR Rainfall=8.10"

	Area (ac)	CN	Description
*	18.050	74	WOODS / FIELD HSG C/D
*	0.510	98	EXISTING ROADS
*	10.640	74	EXISTING LAWN C
*	0.820	98	EXISTING PAVED/GRAVEL FARM
*	0.260	98	EXISTING BARN AND HOUSE
*	0.170	98	NEW IMPERVIOUS
	30.450	75	Weighted Average
	28.690		94.22% Pervious Area
	1.760		5.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
50.1	100	0.0100	0.03		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
2.4	100	0.0800	0.71		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
52.5	200	Total			

Summary for Subcatchment 82:

Runoff = 66.86 cfs @ 13.10 hrs, Volume= 13.161 af, Depth> 2.94"

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 100 YEAR Rainfall=8.10"

	Area (ac)	CN	Description
	44.000	55	Woods, Good, HSG B
*	2.000	98	EXISTING ROADS
*	7.680	74	EXISTING LAWN C
	53.680	59	Weighted Average
	51.680		96.27% Pervious Area
	2.000		3.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
69.3	150	0.0100	0.04		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
7.3	220	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
1.8	700	0.0100	6.33	253.05	**Trap/Vee/Rect Channel Flow, CD** Bot.W=10.00' D=4.00' n= 0.040 Winding stream, pools & shoals
78.4	1,070	Total			

Summary for Subcatchment 83:

Runoff = 58.33 cfs @ 13.10 hrs, Volume= 11.651 af, Depth> 4.47"

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 100 YEAR Rainfall=8.10"

	Area (ac)	CN	Description
	6.000	55	Woods, Good, HSG B
*	3.500	98	EXISTING ROADS
*	21.810	74	EXISTING LAWN C
	31.310	73	Weighted Average
	27.810		88.82% Pervious Area
	3.500		11.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
69.3	150	0.0100	0.04		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
12.3	370	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
81.6	520	Total			

Summary for Subcatchment 84: OFF SITE ABOVE GREELY ROAD

Runoff = 53.26 cfs @ 12.70 hrs, Volume= 8.267 af, Depth> 4.85"

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 100 YEAR Rainfall=8.10"

	Area (ac)	CN	Description
*	0.510	98	EXISTING ROADS
*	18.850	74	EXISTING LAWN C
*	0.820	98	EXISTING PAVED/GRAVEL FARM
*	0.260	98	EXISTING BARN AND HOUSE
	20.440	76	Weighted Average
	18.850		92.22% Pervious Area
	1.590		7.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
50.1	100	0.0100	0.03		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
2.4	100	0.0800	0.71		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
52.5	200	Total			

Summary for Subcatchment 85: Drains to 18" culvert under driveway

Runoff = 20.99 cfs @ 12.71 hrs, Volume= 3.251 af, Depth> 4.74"

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 100 YEAR Rainfall=8.10"

	Area (ac)	CN	Description
*	0.390	98	EXISTING ROADS
*	7.840	74	EXISTING LAWN C
	8.230	75	Weighted Average
	7.840		95.26% Pervious Area
	0.390		4.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
50.1	100	0.0100	0.03		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
2.4	100	0.0800	0.71		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
52.5	200	Total			

Summary for Subcatchment 86: Farm Side Stream drains to 24" culvert

Runoff = 64.50 cfs @ 13.49 hrs, Volume= 15.247 af, Depth> 3.32"

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 100 YEAR Rainfall=8.10"

	Area (ac)	CN	Description
*	0.870	98	EXISTING ROADS-OFF SITE
*	51.300	61	EXISTING LAWNS B
*	1.100	98	EXISTING HOUSE LOTS 11 - OFF SITE
*	0.260	98	EXISTING HOUSE AND BARN
*	0.130	98	EXISTING GRAVEL/PAVED FARM
*	0.540	98	NEW PAVED - FARM
*	0.000	98	COTTAGE ROOFS - 0.22 (see 52s)
*	0.860	74	NEW LAWNS C
	55.060	63	Weighted Average
	52.160		94.73% Pervious Area
	2.900		5.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
69.3	150	0.0100	0.04		**Sheet Flow, AB** Woods: Dense underbrush n= 0.800 P2= 3.10"
30.0	900	0.0400	0.50		**Shallow Concentrated Flow, BC** Forest w/Heavy Litter Kv= 2.5 fps
8.2	3,100	0.0100	6.33	253.05	**Trap/Vee/Rect Channel Flow, CD** Bot.W=10.00' D=4.00' n= 0.040 Winding stream, pools & shoals
107.5	4,150	Total			

Summary for Reach 33R: Buffer #1

Inflow Area = 2.600 ac, 41.15% Impervious, Inflow Depth > 5.85" for 100 YEAR event
Inflow = 19.85 cfs @ 12.03 hrs, Volume= 1.268 af
Outflow = 15.73 cfs @ 12.19 hrs, Volume= 1.254 af, Atten= 21%, Lag= 9.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.26 fps, Min. Travel Time= 6.5 min
Avg. Velocity = 0.07 fps, Avg. Travel Time= 23.8 min

Peak Storage= 6,213 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.28'
Bank-Full Depth= 1.00' Flow Area= 222.0 sf, Capacity= 132.82 cfs

222.00' x 1.00' deep channel, n= 0.800 Sheet flow: Woods+dense brush
Length= 100.0' Slope= 0.1050 '/'
Inlet Invert= 72.50', Outlet Invert= 62.00'

Summary for Reach 35R: Buffer #2

Inflow Area = 0.940 ac, 61.70% Impervious, Inflow Depth > 6.41" for 100 YEAR event
Inflow = 7.63 cfs @ 12.03 hrs, Volume= 0.502 af
Outflow = 5.80 cfs @ 12.21 hrs, Volume= 0.496 af, Atten= 24%, Lag= 11.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.22 fps, Min. Travel Time= 7.7 min
Avg. Velocity = 0.06 fps, Avg. Travel Time= 26.9 min

Peak Storage= 2,730 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.22'
Bank-Full Depth= 1.00' Flow Area= 126.0 sf, Capacity= 75.05 cfs

126.00' x 1.00' deep channel, n= 0.800 Sheet flow: Woods+dense brush
Length= 100.0' Slope= 0.1050 '/'
Inlet Invert= 72.50', Outlet Invert= 62.00'

Summary for Reach 36R: Buffer #3

Inflow Area =	2.090 ac,	7.66% Impervious,	Inflow Depth > 4.43"	for 100 YEAR event
Inflow =	4.52 cfs @	12.70 hrs, Volume=	0.771 af	
Outflow =	4.42 cfs @	12.89 hrs, Volume=	0.762 af,	Atten= 2%, Lag= 11.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.23 fps, Min. Travel Time= 7.2 min
Avg. Velocity = 0.08 fps, Avg. Travel Time= 20.4 min

Peak Storage= 1,910 cf @ 12.77 hrs
Average Depth at Peak Storage= 0.42'
Bank-Full Depth= 1.00' Flow Area= 45.0 sf, Capacity= 18.16 cfs

45.00' x 1.00' deep channel, n= 0.800 Sheet flow: Woods+dense brush
Length= 100.0' Slope= 0.0500 '/'
Inlet Invert= 78.00', Outlet Invert= 73.00'

Summary for Reach 39R: Stream Greely to Golf Pond

Inflow Area =	743.000 ac,	3.86% Impervious,	Inflow Depth > 0.80"	for 100 YEAR event
Inflow =	118.36 cfs @	19.21 hrs, Volume=	49.310 af	
Outflow =	118.34 cfs @	19.44 hrs, Volume=	46.702 af,	Atten= 0%, Lag= 13.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.49 fps, Min. Travel Time= 8.0 min
Avg. Velocity = 4.54 fps, Avg. Travel Time= 9.7 min

Peak Storage= 57,110 cf @ 19.30 hrs
Average Depth at Peak Storage= 1.63'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 641.98 cfs

10.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 2,650.0' Slope= 0.0125 '/'
Inlet Invert= 115.00', Outlet Invert= 82.00'

Summary for Reach 40R: Stream Route 9 to Greely Road

Inflow Area = 492.700 ac, 4.81% Impervious, Inflow Depth > 2.74" for 100 YEAR event
Inflow = 290.98 cfs @ 13.29 hrs, Volume= 112.352 af
Outflow = 284.54 cfs @ 13.86 hrs, Volume= 109.040 af, Atten= 2%, Lag= 33.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.63 fps, Min. Travel Time= 14.2 min
Avg. Velocity = 3.58 fps, Avg. Travel Time= 22.3 min

Peak Storage= 242,556 cf @ 13.62 hrs
Average Depth at Peak Storage= 3.41'
Bank-Full Depth= 4.00' Flow Area= 64.0 sf, Capacity= 392.75 cfs

8.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 24.00'
Length= 4,800.0' Slope= 0.0063 '/'
Inlet Invert= 150.00', Outlet Invert= 120.00'

Summary for Reach 42R: Stream Golf Pond to RR Culvert

Inflow Area = 167.550 ac, 6.29% Impervious, Inflow Depth > 7.34" for 100 YEAR event
Inflow = 230.92 cfs @ 13.93 hrs, Volume= 102.455 af
Outflow = 228.72 cfs @ 14.09 hrs, Volume= 100.331 af, Atten= 1%, Lag= 9.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.17 fps, Min. Travel Time= 4.8 min
Avg. Velocity = 3.20 fps, Avg. Travel Time= 7.7 min

Peak Storage= 65,551 cf @ 14.01 hrs
Average Depth at Peak Storage= 2.83'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 448.47 cfs

10.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 1,481.0' Slope= 0.0061 '/'
Inlet Invert= 65.00', Outlet Invert= 56.00'

Summary for Reach 43R: New Box Culvert to RR Culvert

Inflow Area = 234.340 ac, 8.63% Impervious, Inflow Depth > 6.11" for 100 YEAR event
Inflow = 284.35 cfs @ 14.07 hrs, Volume= 119.364 af
Outflow = 283.56 cfs @ 14.14 hrs, Volume= 118.222 af, Atten= 0%, Lag= 4.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.53 fps, Min. Travel Time= 2.4 min
Avg. Velocity = 1.84 fps, Avg. Travel Time= 4.5 min

Peak Storage= 40,152 cf @ 14.10 hrs
Average Depth at Peak Storage= 3.49'
Bank-Full Depth= 4.00' Flow Area= 96.0 sf, Capacity= 364.94 cfs

16.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 32.00'
Length= 500.0' Slope= 0.0020 '/'
Inlet Invert= 56.00', Outlet Invert= 55.00'

‡

Summary for Reach 55R: Wetland below Site @ PL

Inflow Area = 32.990 ac, 0.79% Impervious, Inflow Depth > 4.27" for 100 YEAR event
Inflow = 67.64 cfs @ 12.63 hrs, Volume= 11.729 af
Outflow = 67.02 cfs @ 12.76 hrs, Volume= 11.650 af, Atten= 1%, Lag= 8.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.14 fps, Min. Travel Time= 4.4 min
Avg. Velocity = 2.44 fps, Avg. Travel Time= 10.9 min

Peak Storage= 17,525 cf @ 12.69 hrs
Average Depth at Peak Storage= 1.19'
Bank-Full Depth= 5.00' Flow Area= 65.0 sf, Capacity= 840.41 cfs

8.00' x 5.00' deep channel, n= 0.030 Stream, clean & straight
Side Slope Z-value= 1.0 '/' Top Width= 18.00'
Length= 1,604.0' Slope= 0.0162 '/'
Inlet Invert= 86.00', Outlet Invert= 60.00'

Summary for Reach 82R: Stream Golf Pond to Pond 42 outlet

Inflow = 127.26 cfs @ 19.31 hrs, Volume= 67.347 af
Outflow = 127.24 cfs @ 19.52 hrs, Volume= 64.849 af, Atten= 0%, Lag= 12.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.85 fps, Min. Travel Time= 7.1 min
Avg. Velocity = 2.46 fps, Avg. Travel Time= 11.2 min

Peak Storage= 54,587 cf @ 19.40 hrs
Average Depth at Peak Storage= 2.27'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 374.71 cfs

10.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 1,650.0' Slope= 0.0042 '/'
Inlet Invert= 72.00', Outlet Invert= 65.00'

Summary for Reach 84R: Stream Golf Pond to RR Culvert

Inflow Area = 28.670 ac, 6.91% Impervious, Inflow Depth > 4.78" for 100 YEAR event
Inflow = 55.03 cfs @ 12.87 hrs, Volume= 11.430 af
Outflow = 54.68 cfs @ 13.02 hrs, Volume= 11.350 af, Atten= 1%, Lag= 9.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.99 fps, Min. Travel Time= 5.0 min
Avg. Velocity = 1.85 fps, Avg. Travel Time= 10.8 min

Peak Storage= 16,434 cf @ 12.94 hrs
Average Depth at Peak Storage= 1.12'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 575.29 cfs

10.00' x 4.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 1,200.0' Slope= 0.0100 '/'
Inlet Invert= 78.00', Outlet Invert= 66.00'

Summary for Pond 3P: 24" CULVERT

Inflow Area = 32.990 ac, 0.79% Impervious, Inflow Depth > 4.24" for 100 YEAR event
Inflow = 67.02 cfs @ 12.76 hrs, Volume= 11.650 af
Outflow = 64.95 cfs @ 12.87 hrs, Volume= 11.591 af, Atten= 3%, Lag= 6.6 min
Primary = 32.49 cfs @ 12.87 hrs, Volume= 10.109 af
Secondary = 32.45 cfs @ 12.87 hrs, Volume= 1.483 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 59.61' @ 12.87 hrs Surf.Area= 18,072 sf Storage= 49,003 cf

Plug-Flow detention time= 14.3 min calculated for 11.591 af (99% of inflow)
Center-of-Mass det. time= 12.6 min (849.5 - 836.9)

Volume	Invert	Avail.Storage	Storage Description
#1	54.00'	56,342 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
54.00	2,362	0	0
56.00	6,990	9,352	9,352
58.00	10,000	16,990	26,342
60.00	20,000	30,000	56,342

Device	Routing	Invert	Outlet Devices
#1	Primary	54.00'	**24.0" Round Culvert** L= 50.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 54.00' / 53.00' S= 0.0200 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Secondary	59.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=32.48 cfs @ 12.87 hrs HW=59.61' (Free Discharge)
1=Culvert (Inlet Controls 32.48 cfs @ 10.34 fps)

Secondary OutFlow Max=32.25 cfs @ 12.87 hrs HW=59.61' (Free Discharge)
2=Broad-Crested Rectangular Weir (Weir Controls 32.25 cfs @ 2.11 fps)

Summary for Pond 31P: 18" Culvert crossing Little Acres Drive

Inflow Area = 9.460 ac, 0.00% Impervious, Inflow Depth > 4.19" for 100 YEAR event
Inflow = 22.77 cfs @ 12.65 hrs, Volume= 3.300 af
Outflow = 11.31 cfs @ 13.22 hrs, Volume= 3.280 af, Atten= 50%, Lag= 34.4 min
Primary = 11.31 cfs @ 13.22 hrs, Volume= 3.280 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 82.02' @ 13.22 hrs Surf.Area= 30,728 sf Storage= 36,255 cf

Plug-Flow detention time= 33.3 min calculated for 3.280 af (99% of inflow)
Center-of-Mass det. time= 31.1 min (852.5 - 821.4)

Volume	Invert	Avail.Storage	Storage Description
#1	79.50'	262,372 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
79.50	366	0	0
80.00	4,041	1,102	1,102
82.00	30,637	34,678	35,780
87.00	60,000	226,593	262,372

Device	Routing	Invert	Outlet Devices
#1	Primary	79.50'	**18.0" Round Culvert** L= 62.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 79.50' / 79.00' S= 0.0081 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	86.00'	**80.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=11.30 cfs @ 13.22 hrs HW=82.01' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 11.30 cfs @ 6.40 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=79.50' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 34P: FocalPoint

Inflow Area = 4.280 ac, 39.95% Impervious, Inflow Depth > 5.85" for 100 YEAR event
Inflow = 32.67 cfs @ 12.03 hrs, Volume= 2.088 af
Outflow = 19.30 cfs @ 12.12 hrs, Volume= 2.088 af, Atten= 41%, Lag= 5.4 min
Primary = 19.30 cfs @ 12.12 hrs, Volume= 2.088 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 60.62' @ 12.12 hrs Surf.Area= 6,080 sf Storage= 7,614 cf

Plug-Flow detention time= 1.9 min calculated for 2.088 af (100% of inflow)
Center-of-Mass det. time= 1.8 min (760.7 - 758.9)

Volume	Invert	Avail.Storage	Storage Description
#1	57.20'	1,400 cf	**25.00'W x 140.00'L x 1.00'H crushed stone**
			3,500 cf Overall x 40.0% Voids
#2	58.21'	9,160 cf	**1.30'W x 2.30'L x 3.55'H R-tank units** x 863
#3	61.00'	192 cf	**20.00'W x 15.00'L x 3.20'H FocalPoint**
			960 cf Overall x 20.0% Voids
#4	64.00'	2,896 cf	**Surface Storage above focal point (Prismatic)**Listed below (Recalc) -Impe
		13,648 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
64.00	429	0	0
64.50	600	257	257
65.00	778	345	602
65.50	919	424	1,026
66.00	1,153	518	1,544
66.50	1,350	626	2,170
67.00	1,553	726	2,896

Device	Routing	Invert	Outlet Devices
#1	Primary	57.20'	**100.000 in/hr Exfiltration over Surface area** Phase-In= 0.10'
#2	Device 4	65.50'	**48.0" Horiz. Orifice/Grate** C= 0.600
			Limited to weir flow at low heads
#3	Device 4	58.21'	**12.0" Vert. Orifice/Grate** C= 0.600
#4	Primary	58.21'	**18.0" Round Culvert**
			L= 26.0' RCP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 58.21' / 58.00' S= 0.0081 '/' Cc= 0.900
			n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=19.21 cfs @ 12.12 hrs HW=60.55' (Free Discharge)
├─**1=Exfiltration** (Exfiltration Controls 14.07 cfs)
└─**4=Culvert** (Passes 5.13 cfs of 10.73 cfs potential flow)
  ├─**2=Orifice/Grate** (Controls 0.00 cfs)
  └─**3=Orifice/Grate** (Orifice Controls 5.13 cfs @ 6.53 fps)

Summary for Pond 37P: 18" Culvert crossing

Inflow Area = 1.710 ac, 0.00% Impervious, Inflow Depth > 4.42" for 100 YEAR event
Inflow = 4.83 cfs @ 12.52 hrs, Volume= 0.630 af
Outflow = 4.22 cfs @ 12.70 hrs, Volume= 0.586 af, Atten= 13%, Lag= 10.8 min
Primary = 4.22 cfs @ 12.70 hrs, Volume= 0.586 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 81.36' @ 12.70 hrs Surf.Area= 4,028 sf Storage= 5,460 cf

Plug-Flow detention time= 50.4 min calculated for 0.584 af (93% of inflow)
Center-of-Mass det. time= 28.0 min (839.0 - 811.0)

Volume	Invert	Avail.Storage	Storage Description
#1	80.00'	133,356 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
80.00	4,000	0	0
82.00	4,041	8,041	8,041
84.00	30,637	34,678	42,719
86.00	60,000	90,637	133,356

Device	Routing	Invert	Outlet Devices
#1	Primary	80.30'	**18.0" Round Culvert** L= 28.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 80.30' / 80.00' S= 0.0107 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	85.50'	**20.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=4.22 cfs @ 12.70 hrs HW=81.36' (Free Discharge)
└─**1=Culvert** (Barrel Controls 4.22 cfs @ 4.44 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=80.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 38P: Existing 5'X6' RR Box Culvert

Inflow Area = 243.880 ac, 8.29% Impervious, Inflow Depth > 5.98" for 100 YEAR event
Inflow = 287.24 cfs @ 14.14 hrs, Volume= 121.566 af
Outflow = 234.46 cfs @ 14.76 hrs, Volume= 119.032 af, Atten= 18%, Lag= 37.6 min
Primary = 234.46 cfs @ 14.76 hrs, Volume= 119.032 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 61.65' @ 14.76 hrs Surf.Area= 173,916 sf Storage= 286,055 cf

Plug-Flow detention time= 14.3 min calculated for 119.032 af (98% of inflow)
Center-of-Mass det. time= 9.4 min (976.8 - 967.4)

Volume	Invert	Avail.Storage	Storage Description
#1	55.00'	3,745,747 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
55.00	1,320	0	0
56.00	4,539	2,930	2,930
58.00	15,848	20,387	23,317
60.00	56,417	72,265	95,582
62.00	198,504	254,921	350,503
64.00	274,621	473,125	823,628
66.00	372,832	647,453	1,471,081
70.00	764,501	2,274,666	3,745,747

Device	Routing	Invert	Outlet Devices
#1	Primary	55.10'	**60.0" W x 74.0" H Box I** L= 90.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 55.10' / 53.70' S= 0.0156 '/' Cc= 0.900 n= 0.022 Earth, clean & straight, Flow Area= 30.83 sf
#2	Secondary	69.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=234.43 cfs @ 14.76 hrs HW=61.65' (Free Discharge)
└─**1=I** (Barrel Controls 234.43 cfs @ 9.54 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=55.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 39P: 60" Culvert at Greely Road

Inflow Area = 743.000 ac, 3.86% Impervious, Inflow Depth > 2.75" for 100 YEAR event
Inflow = 523.45 cfs @ 13.47 hrs, Volume= 170.286 af
Outflow = 118.36 cfs @ 19.21 hrs, Volume= 49.310 af, Atten= 77%, Lag= 344.6 min
Primary = 118.36 cfs @ 19.21 hrs, Volume= 49.310 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 124.62' @ 19.21 hrs Surf.Area= 1,420,388 sf Storage= 5,304,855 cf

Plug-Flow detention time= 250.0 min calculated for 49.310 af (29% of inflow)
Center-of-Mass det. time= 121.4 min (1,039.2 - 917.7)

Volume	Invert	Avail.Storage	Storage Description
#1	120.00'	149,235,760 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) x 2

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.00	439,044	0	0
140.00	1,613,877	20,529,210	20,529,210
160.00	3,794,990	54,088,670	74,617,880

Device	Routing	Invert	Outlet Devices
#1	Primary	120.50'	**60.0" Round 60" Culvert w/ 6.0" inside fill** L= 90.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 120.00' / 118.20' S= 0.0200 '/' Cc= 0.900 n= 0.022 Earth, clean & straight, Flow Area= 18.61 sf
#2	Secondary	131.50'	**25.0' long x 100.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=118.47 cfs @ 19.21 hrs HW=124.62' (Free Discharge)
└─**1=60" Culvert** (Inlet Controls 118.47 cfs @ 6.61 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=120.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 40P: 48" Culvert at Route 9

Inflow Area =	405.950 ac,	2.64% Impervious,	Inflow Depth > 2.73"	for 100 YEAR event	
Inflow =	453.25 cfs @	13.14 hrs,	Volume=	92.235 af	
Outflow =	197.63 cfs @	14.34 hrs,	Volume=	84.896 af,	Atten= 56%, Lag= 72.2 min
Primary =	197.63 cfs @	14.34 hrs,	Volume=	84.896 af	
Secondary =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 168.07' @ 14.34 hrs Surf.Area= 288,151 sf Storage= 1,441,429 cf

Plug-Flow detention time= 100.7 min calculated for 84.614 af (92% of inflow)
Center-of-Mass det. time= 78.0 min (947.2 - 869.2)

Volume	Invert	Avail.Storage	Storage Description
#1	160.00'	22,928,710 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
160.00	68,874	0	0
180.00	611,999	6,808,730	6,808,730
200.00	999,999	16,119,980	22,928,710

Device	Routing	Invert	Outlet Devices
#1	Primary	160.50'	**60.0" Round 48" Culvert w/ 6.0" inside fill** L= 90.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 160.00' / 158.70' S= 0.0144 '/' Cc= 0.900 n= 0.022 Earth, clean & straight, Flow Area= 18.61 sf
#2	Secondary	180.00'	**25.0' long x 100.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=197.65 cfs @ 14.34 hrs HW=168.07' (Free Discharge)
└─**1=48" Culvert** (Barrel Controls 197.65 cfs @ 10.62 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=160.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 42P: Golf Course Pond

Inflow Area = 167.550 ac, 6.29% Impervious, Inflow Depth > 2.79" for 100 YEAR event
Inflow = 160.95 cfs @ 13.47 hrs, Volume= 38.986 af
Outflow = 142.68 cfs @ 13.93 hrs, Volume= 37.606 af, Atten= 11%, Lag= 27.5 min
Primary = 63.69 cfs @ 13.93 hrs, Volume= 31.749 af
Secondary = 78.99 cfs @ 13.93 hrs, Volume= 5.857 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 78.51' @ 13.93 hrs Surf.Area= 77,195 sf Storage= 391,523 cf

Plug-Flow detention time= 66.6 min calculated for 37.481 af (96% of inflow)
Center-of-Mass det. time= 56.2 min (943.5 - 887.3)

Volume	Invert	Avail.Storage	Storage Description
#1	70.00'	514,000 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
70.00	15,328	0	0
72.00	29,781	45,109	45,109
74.00	42,804	72,585	117,694
76.00	59,373	102,177	219,871
78.00	73,726	133,099	352,970
80.00	87,304	161,030	514,000

Device	Routing	Invert	Outlet Devices
#1	Primary	70.00'	**30.0" Round Culvert** L= 80.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 70.00' / 69.50' S= 0.0063 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 4.91 sf
#2	Secondary	78.00'	**80.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=63.68 cfs @ 13.93 hrs HW=78.51' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 63.68 cfs @ 12.97 fps)

Secondary OutFlow Max=78.66 cfs @ 13.93 hrs HW=78.51' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 78.66 cfs @ 1.93 fps)

Summary for Pond 43P: Box Culvert 3 (16' WIDE x 8' HIGH)

Inflow Area = 176.420 ac, 8.20% Impervious, Inflow Depth > 7.12" for 100 YEAR event
Inflow = 232.57 cfs @ 14.09 hrs, Volume= 104.640 af
Outflow = 232.52 cfs @ 14.10 hrs, Volume= 104.590 af, Atten= 0%, Lag= 1.1 min
Primary = 232.52 cfs @ 14.10 hrs, Volume= 104.590 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 57.56' @ 14.10 hrs Surf.Area= 6,324 sf Storage= 5,976 cf

Plug-Flow detention time= 0.3 min calculated for 104.590 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (977.7 - 977.5)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	2,789,378 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	1,320	0	0
58.00	7,722	9,042	9,042
60.00	9,674	17,396	26,438
62.00	63,671	73,345	99,783
64.00	169,090	232,761	332,544
66.00	252,914	422,004	754,548
70.00	764,501	2,034,830	2,789,378

Device	Routing	Invert	Outlet Devices
#1	Primary	54.70'	**192.0" W x 96.0" H Box 192"X 108" Box Culvert** L= 70.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 54.70' / 54.00' S= 0.0100 '/' Cc= 0.900 n= 0.022 Earth, clean & straight, Flow Area= 128.00 sf
#2	Secondary	68.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=232.43 cfs @ 14.10 hrs HW=57.56' (Free Discharge)
└─**1=192"X 108" Box Culvert** (Barrel Controls 232.43 cfs @ 6.77 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=56.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 47P: FILTER POND

Inflow Area = 1.050 ac, 53.33% Impervious, Inflow Depth > 6.19" for 100 YEAR event
Inflow = 8.33 cfs @ 12.03 hrs, Volume= 0.542 af
Outflow = 7.79 cfs @ 12.07 hrs, Volume= 0.471 af, Atten= 7%, Lag= 2.4 min
Primary = 7.79 cfs @ 12.07 hrs, Volume= 0.471 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 82.30' @ 12.07 hrs Surf.Area= 3,311 sf Storage= 7,509 cf

Plug-Flow detention time= 98.4 min calculated for 0.470 af (87% of inflow)
Center-of-Mass det. time= 58.3 min (810.9 - 752.6)

Volume	Invert	Avail.Storage	Storage Description
#1	79.00'	10,009 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
79.00	1,343	0	0
80.00	1,873	1,608	1,608
81.00	2,460	2,167	3,775
82.00	3,103	2,782	6,556
83.00	3,803	3,453	10,009

Device	Routing	Invert	Outlet Devices
#1	Primary	75.87'	**18.0" Round Culvert** L= 31.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 75.87' / 75.00' S= 0.0281 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Device 1	80.50'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	82.00'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	82.50'	**10.0' 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=7.29 cfs @ 12.07 hrs HW=82.28' (Free Discharge)
└─**1=Culvert** (Passes 7.29 cfs of 20.24 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.17 cfs @ 5.96 fps)
  └─**3=Orifice/Grate** (Weir Controls 6.12 cfs @ 1.73 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=79.00' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 49P: 52 ROOF DRIPLINE BMP'S

Inflow Area = 2.860 ac,100.00% Impervious, Inflow Depth > 7.24" for 100 YEAR event
Inflow = 26.02 cfs @ 12.00 hrs, Volume= 1.725 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 100.21' @ 20.00 hrs Surf.Area= 851,760 sf Storage= 75,085 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	12,675 cf	**3.00'W x 105.00'L x 2.00'H Prismatoid** x 52 32,760 cf Overall - 1,072 cf Embedded = 31,688 cf x 40.0% Voids
#2	100.00'	1,072 cf	**6.0" Round Pipe Storage** x 52 Inside #1 L= 105.0' S= 0.0050 '/'
		13,747 cf	x 52.00 = 714,857 cf Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	101.50'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir X 52.00** 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=0.00 cfs @ 5.00 hrs HW=100.00' (Free Discharge)
└─**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 81P: OFF SITE POND

Inflow Area =	59.120 ac,	6.33% Impervious, Inflow Depth >	4.74"	for 100 YEAR event
Inflow =	124.91 cfs @	12.83 hrs, Volume=	23.377 af	
Outflow =	90.88 cfs @	13.30 hrs, Volume=	22.653 af,	Atten= 27%, Lag= 28.1 min
Primary =	33.63 cfs @	13.30 hrs, Volume=	15.604 af	
Secondary =	57.25 cfs @	13.30 hrs, Volume=	7.050 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Starting Elev= 62.00' Surf.Area= 20,254 sf Storage= 139,510 cf
Peak Elev= 67.94' @ 13.30 hrs Surf.Area= 78,326 sf Storage= 388,610 cf (249,100 cf above start)

Plug-Flow detention time= 115.3 min calculated for 19.386 af (83% of inflow)
Center-of-Mass det. time= 48.3 min (876.2 - 827.9)

Volume	Invert	Avail.Storage	Storage Description
#1	52.00'	393,079 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
52.00	7,648	0	0
62.00	20,254	139,510	139,510
64.00	30,728	50,982	190,492
66.00	46,299	77,027	267,519
68.00	79,261	125,560	393,079

Device	Routing	Invert	Outlet Devices
#1	Primary	62.00'	**24.0" Round Culvert** L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 62.00' / 61.50' S= 0.0050 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 3.14 sf
#2	Secondary	66.00'	**8.0' 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=33.63 cfs @ 13.30 hrs HW=67.94' (Free Discharge)
└─**1=Culvert** (Inlet Controls 33.63 cfs @ 10.71 fps)

Secondary OutFlow Max=57.21 cfs @ 13.30 hrs HW=67.94' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 57.21 cfs @ 3.68 fps)

Summary for Pond 82P: Golf Course Pond

Inflow Area =	827.990 ac,	4.13% Impervious, Inflow Depth >	1.04"	for 100 YEAR event
Inflow =	127.45 cfs @	18.93 hrs, Volume=	71.503 af	
Outflow =	127.26 cfs @	19.31 hrs, Volume=	67.347 af,	Atten= 0%, Lag= 22.9 min
Secondary =	127.26 cfs @	19.31 hrs, Volume=	67.347 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 79.31' @ 19.31 hrs Surf.Area= 68,498 sf Storage= 181,901 cf

Plug-Flow detention time= 24.1 min calculated for 67.123 af (94% of inflow)
Center-of-Mass det. time= 11.5 min (995.5 - 984.0)

Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	395,691 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
76.00	41,373	0	0
82.00	90,524	395,691	395,691

Device	Routing	Invert	Outlet Devices
#1	Secondary	76.00'	**8.0' 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

Secondary OutFlow Max=127.25 cfs @ 19.31 hrs HW=79.31' (Free Discharge)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 127.25 cfs @ 4.80 fps)

Summary for Pond 83P: Culvert at Valhalla Road

Inflow Area = 31.310 ac, 11.18% Impervious, Inflow Depth > 4.47" for 100 YEAR event
Inflow = 58.33 cfs @ 13.10 hrs, Volume= 11.651 af
Outflow = 33.38 cfs @ 13.86 hrs, Volume= 11.640 af, Atten= 43%, Lag= 45.3 min
Primary = 33.38 cfs @ 13.86 hrs, Volume= 11.640 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 136.14' @ 13.86 hrs Surf.Area= 20,365 sf Storage= 96,933 cf

Plug-Flow detention time= 24.1 min calculated for 11.602 af (100% of inflow)
Center-of-Mass det. time= 23.7 min (867.4 - 843.6)

Volume	Invert	Avail.Storage	Storage Description
#1	120.00'	648,610 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.00	366	0	0
130.00	4,041	22,035	22,035
140.00	30,637	173,390	195,425
150.00	60,000	453,185	648,610

Device	Routing	Invert	Outlet Devices
#1	Primary	120.00'	**18.0" Round Culvert** L= 80.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 120.00' / 119.00' S= 0.0125 '/' Cc= 0.900

			n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	148.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=33.38 cfs @ 13.86 hrs HW=136.14' (Free Discharge)
└─**1=Culvert** (Inlet Controls 33.38 cfs @ 18.89 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=120.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 84P: 3 - 18" culverts

Inflow Area = 20.440 ac, 7.78% Impervious, Inflow Depth > 4.85" for 100 YEAR event
Inflow = 53.26 cfs @ 12.70 hrs, Volume= 8.267 af
Outflow = 35.95 cfs @ 13.12 hrs, Volume= 8.199 af, Atten= 32%, Lag= 24.7 min
Primary = 35.95 cfs @ 13.12 hrs, Volume= 8.199 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 83.23' @ 13.12 hrs Surf.Area= 58,674 sf Storage= 49,853 cf

Plug-Flow detention time= 15.4 min calculated for 8.172 af (99% of inflow)
Center-of-Mass det. time= 12.5 min (827.9 - 815.4)

Volume	Invert	Avail.Storage	Storage Description
#1	80.00'	297,916 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
80.00	2,362	0	0
82.00	6,990	9,352	9,352
84.00	90,787	97,777	107,129
86.00	100,000	190,787	297,916

Device	Routing	Invert	Outlet Devices
#1	Primary	80.50'	**18.0" Round Culvert X 3.00**
			L= 50.0' RCP, sq.cut end projecting, Ke= 0.500
			Inlet / Outlet Invert= 80.50' / 80.00' S= 0.0100 '/' Cc= 0.900
			n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	84.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=35.94 cfs @ 13.12 hrs HW=83.23' (Free Discharge)
└─**1=Culvert** (Inlet Controls 35.94 cfs @ 6.78 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=80.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 85P: 18" CULVERT

Inflow Area = 8.230 ac, 4.74% Impervious, Inflow Depth > 4.74" for 100 YEAR event
Inflow = 20.99 cfs @ 12.71 hrs, Volume= 3.251 af
Outflow = 20.43 cfs @ 12.81 hrs, Volume= 3.231 af, Atten= 3%, Lag= 6.2 min
Primary = 10.34 cfs @ 12.81 hrs, Volume= 2.768 af
Secondary = 10.09 cfs @ 12.81 hrs, Volume= 0.463 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 92.28' @ 12.81 hrs Surf.Area= 14,299 sf Storage= 16,973 cf

Plug-Flow detention time= 18.1 min calculated for 3.220 af (99% of inflow)
Center-of-Mass det. time= 15.8 min (833.0 - 817.2)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	29,280 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.00	1,196	0	0
92.00	12,056	13,252	13,252
93.00	20,000	16,028	29,280

Device	Routing	Invert	Outlet Devices
#1	Primary	89.86'	**18.0" Round Culvert** L= 28.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 89.86' / 89.79' S= 0.0025 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	92.00'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=10.34 cfs @ 12.81 hrs HW=92.28' (Free Discharge)
└─**1=Culvert** (Barrel Controls 10.34 cfs @ 5.85 fps)

Secondary OutFlow Max=10.05 cfs @ 12.81 hrs HW=92.28' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 10.05 cfs @ 1.43 fps)

Summary for Pond 86P: 24" CULVERT

Inflow Area = 55.060 ac, 5.27% Impervious, Inflow Depth > 3.32" for 100 YEAR event
Inflow = 64.50 cfs @ 13.49 hrs, Volume= 15.247 af
Outflow = 64.27 cfs @ 13.53 hrs, Volume= 14.774 af, Atten= 0%, Lag= 2.4 min
Primary = 23.92 cfs @ 13.53 hrs, Volume= 10.780 af
Secondary = 40.35 cfs @ 13.53 hrs, Volume= 3.994 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 61.28' @ 13.53 hrs Surf.Area= 36,626 sf Storage= 83,212 cf

Plug-Flow detention time= 37.4 min calculated for 14.774 af (97% of inflow)
Center-of-Mass det. time= 28.1 min (907.2 - 879.1)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	401,091 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	758	0	0
58.00	9,115	9,873	9,873
60.00	24,850	33,965	43,838
62.00	43,236	68,086	111,924
64.00	72,382	115,618	227,542
66.00	101,167	173,549	401,091

Device	Routing	Invert	Outlet Devices
#1	Primary	57.78'	**24.0" Round Culvert** L= 73.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 57.78' / 56.17' S= 0.0221 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Secondary	61.00'	**100.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=23.92 cfs @ 13.53 hrs HW=61.28' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 23.92 cfs @ 7.61 fps)

Secondary OutFlow Max=39.98 cfs @ 13.53 hrs HW=61.28' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 39.98 cfs @ 1.42 fps)

FOCALPOINT

HIGH PERFORMANCE MODULAR BIOFILTRATION SYSTEM

CUMBERLAND CROSSING PHASE 2 – JAN 7, 2020

MAINE – CHAPTER 500 DESIGN WORKSHEET/CHECKLIST

1. **FocalPoint Bed Area (min 174 square feet per acre of impervious area (e.g. 0.2 acres = 35 sf))**

- Tributary Impervious area = 1.71 ac. (A)
- Tributary Pervious area = 2.41 ac. (B)
- Min FocalPoint bed area req'd = (((A) x 1.0) + ((B) x 0.4)) * 174 = 465 sf.
- FocalPoint Bed Area provided * = 465 sf.
- Dimensions of Proposed FocalPoint = 18 ft x 25.83 ft

* see criteria 2. to determine if minimum size is appropriate.

2. **A 0.95 inch Type III 24hr rainfall event shall be modelled to demonstrate the entire storm volume is treated prior to activation of the overflow (typically set at 6-12" above the mulch)**

- Temporary storage depth provided = 12 inches (typ 6" to 12")
- Temporary storage volume provided at above depth = 607 cubic feet.
- Peak ponding depth from 0.95" 24hr storm event = 8 inches

3. **Ratio of the surface area of the filter media (sf) to the temporary ponding volume (cf) shall be no less that 1:5**

- Ratio of FocalPoint Bed Area : Temporary Storage Vol = 1 : 1.31

4. **Subsurface R-Tank or Chamber Treatment Row must be sized to treat the peak flow from a 1 yr-24hr storm event.**

- 1yr 24hr Peak Flowrate = 6.29 cfs
- Chamber model selected
  - Cultec 330 XLHD (1 chamber per 0.227 cfs) ☐
  - Cultec 150XLHD (1 chamber per 0.185 cfs) ☐
  - R-Tank modules (1 module per 0.02 cfs) ☒

- Number of Chambers/modules required = 315 (320 provided)

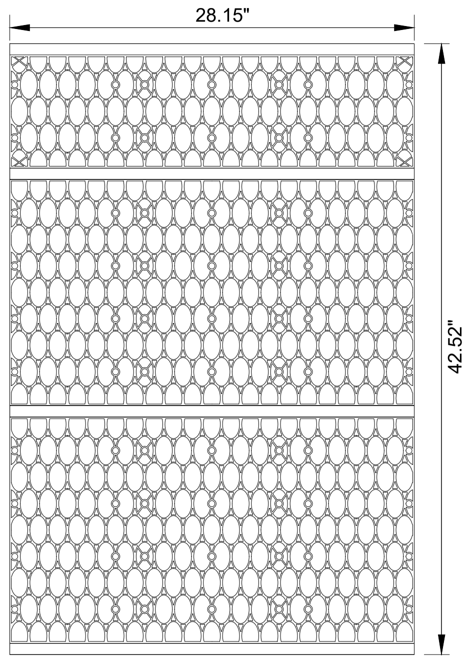
5. **Controlled release of the Channel Protection over 24-48 hrs**

- Controlled release of the channel protection volume is being achieved by:
  - Expanded subsurface storage basin with OCS ☒ **(320 maintenance modules + 620 standard modules (total of 940 Double+Mini modules)**
  - Surface detention basin with OCS ☐

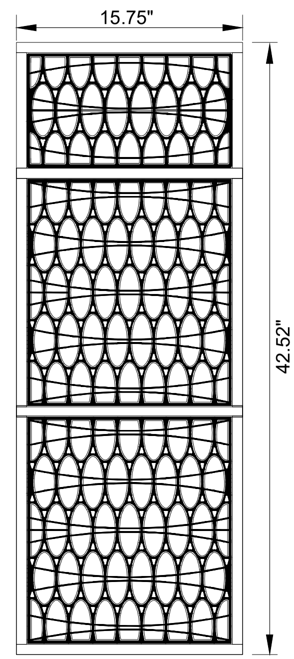
6. **A landscape plan for the FocalPoint bed area has been prepared** ☐

7. **The Design shall be reviewed by the manufacturer's representative prior to submission and installation will be overseen by the manufacturer's representative.**

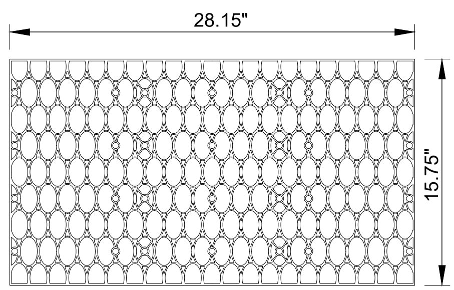
   - The Design has been reviewed by ACF Environmental ☒
   - Engineer will coordinate installation inspection with ACF ☒



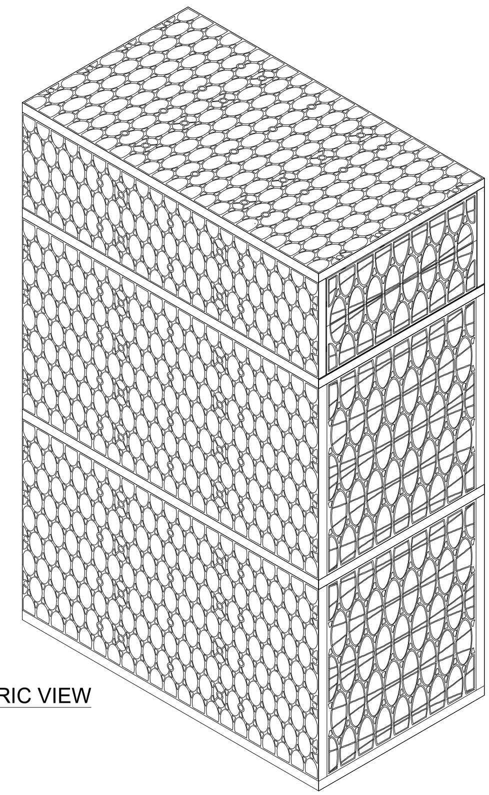
SECTION VIEW



FRONT VIEW



PLAN VIEW



ISOMETRIC VIEW

MODULE DATA

GEOMETRY: LENGTH = 28.15 IN. (715 MM)
WIDTH = 15.75 IN. (400 MM)
HEIGHT = 42.52 IN. (1080 MM)
TANK VOLUME = 10.91 CF
STORAGE VOLUME = 10.36 CF
VOID INTERNAL VOLUME: 95%
VOID SURFACE AREA: 90%

LOAD RATING: 33.4 PSI, (MODULE ONLY)
HS25, (WITH ACF COVER SYSTEM)

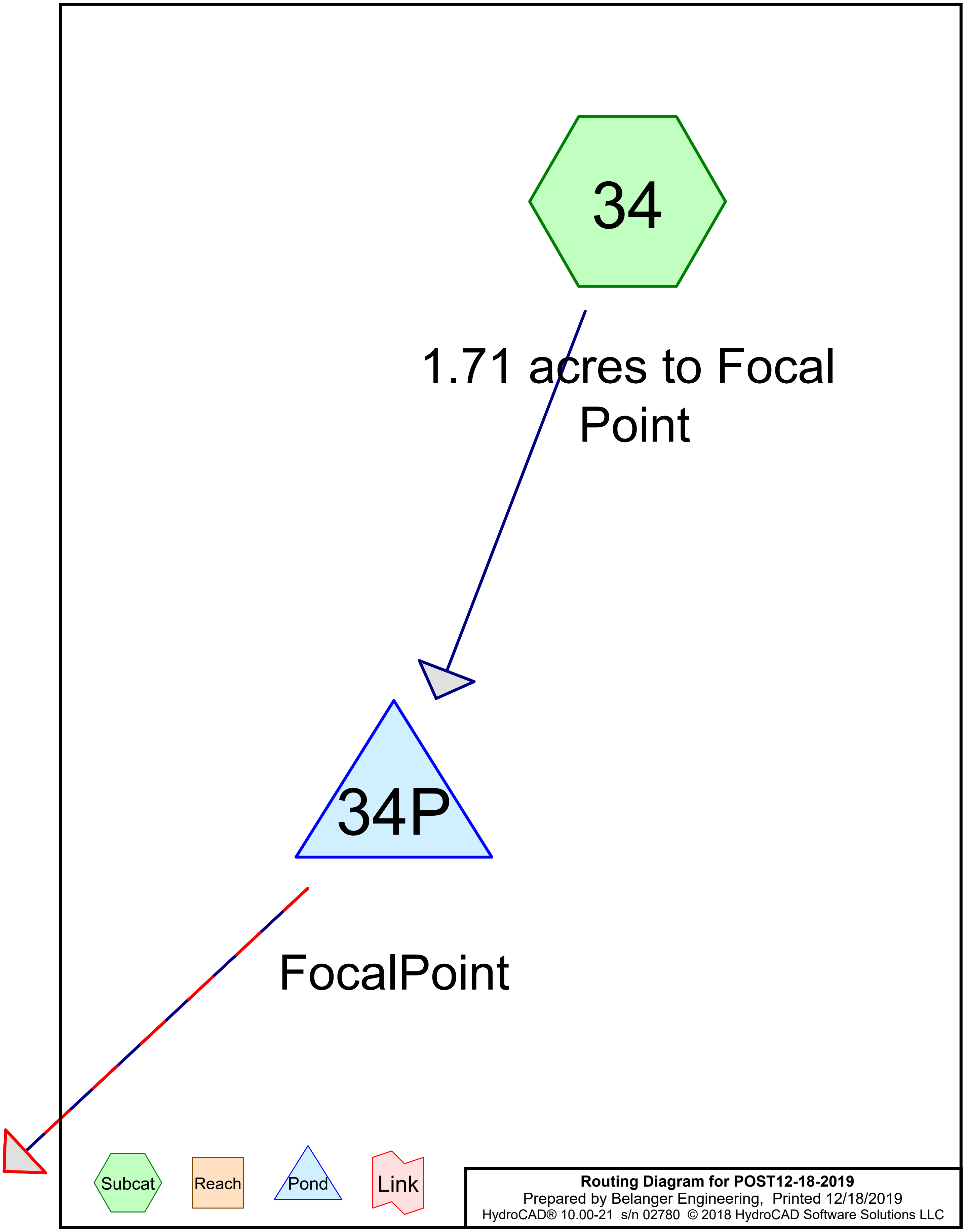
MATERIAL: 100% RECYCLED POLYPROPYLENE

SMALL PLATES PER SEGMENT/TOTAL: 5/15

ACF ENVIRONMENTAL

R-TANK^{HD} - DOUBLE + MINI MODULES

FOR ADDITIONAL INFORMATION PLEASE CONTACT: ACF ENVIRONMENTAL, 1-800-448-3636, www.acfenvironmental.com


34
1.71 acres to Focal Point
34P
FocalPoint
Subcat
Reach
Pond
Link
Routing Diagram for POST12-18-2019
Prepared by Belanger Engineering, Printed 12/18/2019
HydroCAD® 10.00-21 s/n 02780 © 2018 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.710	98	NEW IMPERVIOUS PAVED AREA (34)
2.660	74	NEW LAWN C (34)
4.370	**83**	**TOTAL AREA**

Summary for Subcatchment 34: 1.71 acres to Focal Point

Runoff = 0.47 cfs @ 12.06 hrs, Volume= 0.042 af, Depth> 0.12"

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 1 INCH Rainfall=1.00"

	Area (ac)	CN	Description
*	1.710	98	NEW IMPERVIOUS PAVED AREA
*	2.660	74	NEW LAWN C
*	0.000	98	0.66 ac (1/2) of 24 Roofs
	4.370	83	Weighted Average
	2.660		60.87% Pervious Area
	1.710		39.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0300	1.02		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.10"
1.4	300	0.0300	3.52		**Shallow Concentrated Flow, BC** Paved Kv= 20.3 fps
1.6	311	Total			

Summary for Pond 34P: FocalPoint

Inflow Area = 4.370 ac, 39.13% Impervious, Inflow Depth > 0.12" for 1 INCH event
Inflow = 0.47 cfs @ 12.06 hrs, Volume= 0.042 af
Outflow = 0.47 cfs @ 12.07 hrs, Volume= 0.042 af, Atten= 1%, Lag= 0.2 min
Primary = 0.47 cfs @ 12.07 hrs, Volume= 0.042 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 61.07' @ 12.06 hrs Surf.Area= 300 sf Storage= 4 cf

Plug-Flow detention time= 0.1 min calculated for 0.042 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (856.3 - 856.2)

Volume	Invert	Avail.Storage	Storage Description
#1	61.00'	192 cf	**20.00'W x 15.00'L x 3.20'H FocalPoint** 960 cf Overall x 20.0% Voids
#2	64.00'	2,785 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) -Impervious
		2,977 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
64.00	300	0	0
64.50	600	225	225
65.00	751	338	563
65.50	919	418	980
66.00	1,100	505	1,485
66.50	1,296	599	2,084
67.00	1,506	701	2,785

Device	Routing	Invert	Outlet Devices
#1	Primary	61.00'	**100.000 in/hr Exfiltration over Surface area** Phase-In= 0.10'
#2	Secondary	65.50'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.45 cfs @ 12.07 hrs HW=61.07' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.45 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=61.00' (Free Discharge)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Subcatchment 34: 1.71 acres to Focal Point

Runoff = 6.30 cfs @ 12.03 hrs, Volume= 0.381 af, Depth> 1.05"

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 1 YEAR Rainfall=2.60"

	Area (ac)	CN	Description
*	1.710	98	NEW IMPERVIOUS PAVED AREA
*	2.660	74	NEW LAWN C
*	0.000	98	0.66 ac (1/2) of 24 Roofs
	4.370	83	Weighted Average
	2.660		60.87% Pervious Area
	1.710		39.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0300	1.02		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.10"
1.4	300	0.0300	3.52		**Shallow Concentrated Flow, BC** Paved Kv= 20.3 fps
1.6	311	Total			

Summary for Pond 34P: FocalPoint

Inflow Area = 4.370 ac, 39.13% Impervious, Inflow Depth > 1.05" for 1 YEAR event
Inflow = 6.30 cfs @ 12.03 hrs, Volume= 0.381 af
Outflow = 6.42 cfs @ 12.05 hrs, Volume= 0.381 af, Atten= 0%, Lag= 0.8 min
Primary = 0.69 cfs @ 11.65 hrs, Volume= 0.271 af
Secondary = 5.73 cfs @ 12.05 hrs, Volume= 0.110 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 65.77' @ 12.05 hrs Surf.Area= 300 sf Storage= 1,432 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 8.3 min (808.9 - 800.6)

Volume	Invert	Avail.Storage	Storage Description
#1	61.00'	192 cf	**20.00'W x 15.00'L x 3.20'H FocalPoint** 960 cf Overall x 20.0% Voids
#2	64.00'	2,785 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) -Impervious
		2,977 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
64.00	300	0	0
64.50	600	225	225
65.00	751	338	563
65.50	919	418	980
66.00	1,100	505	1,485
66.50	1,296	599	2,084
67.00	1,506	701	2,785

Device	Routing	Invert	Outlet Devices
#1	Primary	61.00'	**100.000 in/hr Exfiltration over Surface area** Phase-In= 0.10'
#2	Secondary	65.50'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.69 cfs @ 11.65 hrs HW=61.32' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.69 cfs)

Secondary OutFlow Max=5.62 cfs @ 12.05 hrs HW=65.77' (Free Discharge)
└─**2=Orifice/Grate** (Weir Controls 5.62 cfs @ 1.68 fps)

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PAUL R. LEPAGE
GOVERNOR

PAUL MERCER
COMMISSIONER

February 2, 2017

Stormwater Systems ACF-Convergent Water Technologies Alliance
23 Faith Drive
Gorham, ME 04038
ATTN: Robert Woodman and Scott Gorneau

Dear Mr. Woodman and Mr. Gorneau:

This letter replaces the May 16, 2016 approval from the Department of Environmental Protection (Department) that authorized the use of the FocalPoint system. The FocalPoint system (a high performance modular biofiltration system), when installed in series with a subsurface chamber-based treatment row, meets the requirements of the General Standards (Section 4.C.) of the Stormwater Management Rules (Chapter 500), provided that the system is filled with the FocalPoint engineered filter media; it is sized to meet the requirements of the General Standards (Section 4.B.); and it is installed, operated and maintained in accordance with the following provisions:

1. The FocalPoint system must be sized in accordance with the manufacturer's latest field test results with the goal of treating 90% of the annual runoff volume. To accomplish this, the system must be modelled in HydroCAD (or similar TR-55 modelling software) to demonstrate that the entire volume of a 0.95 inch Type III 24-hr storm is treated prior to activation of the bypass/overflow (typically set at 6" to 12" above the mulch surface). When sizing the FocalPoint system to meet Chapter 500, note that runoff from the entire contributing drainage area, including pervious areas, must be included in the modeled runoff values.

2. The surface area of the media within the FocalPoint must be a minimum of 174 square feet per 1 acre of impervious area treated (26 sq. ft. per 0.15 acres). The thickness of the media is to be no less than 1.5 ft. (18 inches) and the ratio of the surface area of the filter media bed in square feet to the ponding volume in cubic feet must be no less than 1 to 5.

3. The FocalPoint system consists of five components that include: 1) an open cell underdrain; 2) a wide aperture separation mesh wrap around the underdrain; 3) a layer of clean washed, 3/8" diameter bridging stone; 4) advanced high flow rate engineered media with an infiltration rate of 100 inches per hour; and 5) double shredded hardwood mulch. These components are built from the bottom up to create a mostly permeable profile that measures 3 feet from bottom of underdrain to top of mulch. The ponding

AUGUSTA
17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
(207) 287-7688 FAX: (207) 287-7826

BANGOR
106 HOGAN ROAD, SUITE 6
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(207) 941-4570 FAX: (207) 941-4584

PORTLAND
312 CANCO ROAD
PORTLAND, MAINE 04103
(207) 822-6300 FAX: (207) 822-6303

PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04769
(207) 764-0477 FAX: (207) 760-3143

website: www.maine.gov/dep

depth above the mulch surface is typically 6 to 12 inches and varies based on site conditions. An overflow outlet should be placed above the ponding depth.

4. The FocalPoint system requires the establishment of vegetation that is tolerant of wet and dry conditions. Plants that are not performing as desired should be replaced as needed. A list of appropriate plants for use in the FocalPoint system is provided at: http://www.acfenvironmental.com/products/stormwater-management/filtration/focal-point/.

5. The FocalPoint biofiltration system must be placed in-line with a subsurface chamber-based treatment row that is approved by the Department such that both the treated discharge and the bypass discharge from the FocalPoint system drain to the treatment row. The treatment row must be sized to treat the peak flow from a 1-year, 24-hour storm event. The treatment row structure must be continuous and without obstacle for cleaning, and must have access at both ends for the removal of accumulated sediment and debris. The treatment row must be underlain with a bottom surface consisting of 2 layers of woven geotextile (e.g., ACF S300) that extends 18 to 24 inches beyond all sides of the bottom of the structure.

6. Additional storage downstream of the FocalPoint and treatment row will be required to store at least the sum of 1.0 inch of runoff from the impervious areas and 0.4 inches of runoff from the lawn and landscaped areas that drain to the system unless attenuation of the channel protection volume is not required (i.e. direct discharge to a lake, tidal waters, or a major river). An external outlet control structure must control the flow out of a downstream storage system, sized for the entire channel protection volume, and drain in no less than 24 hours or more than 48 hours.

7. If required for flooding control, the storage system can be sized to provide for the storage and release of the peak flow with a regulated flow rate from 24-hour storms of the 2, 10, and 25-year frequencies such that the peak flows from the project site do not exceed the peak flow prior to undertaking the project.

8. The applicant must demonstrate that the design meets all the manufacturer's specifications and shall be reviewed by the manufacturer prior to submission to the Department for approval. Review and approval of the design by the manufacturer will be sufficient to demonstrate conformance with the manufacturer's specifications. The FocalPoint system must be installed by a manufacturer's certified installer or under the supervision of a manufacturer's representative.

9. Components of the system that are delivered in bulk (i.e., mulch, high flow media and clean washed bridging stone), should be contained in nylon super sacks to promote ease of storage and protection during on-site construction activities.

10. The FocalPoint and treatment row system should be inspected and maintained if necessary at least once every six months to maintain the established efficiency for pollutant removal. Prior to construction, a five-year binding inspection and maintenance contract must be provided prior to the Department for review and approval, and must be renewed before contract expiration. The contract will be with a professional with knowledge of erosion and stormwater control, including experience with the proposed system.

11. The overall stormwater management design must meet all Department criteria and sizing specifications and will be reviewed and approved by the Department prior to use.

12. This approval is conditional on full-scale, cold climate field testing results, performed in accordance with the Department's protocols, confirming that the pollutant removal efficiency and sizing of the FocalPoint system are appropriate. The "permit shield" provision (Section 14) of the Chapter 500 rules will apply, and the Department will not require the replacement of the system if, with proper maintenance, pollutant removals do not satisfy the General Standard Best Management Practices.

Questions concerning this decision should be directed to David Waddell at (207) 215-6932 or Jeff Dennis at (207) 215-6376.

Sincerely,

Mark Bergeron, P.E.
Director
Bureau of Land Resources

cc: Don Witherill, Maine DEP

ACF Environmental
2831 Cardwell Rd
Richmond, VA 23234

Christopher S. Belanger, P.E.
Belanger Engineering
63 Second Avenue,
Augusta, Maine 04330

January 7, 2020,

SUBJECT: Cumberland Crossing Phase 2, Cumberland, Maine
Plan Review and Construction Oversight Commitment

Dear Chris,

Thank you for forwarding the permit plans for the proposed Cumberland Crossing Phase 2 project in Cumberland, Maine project to ACF environmental for review of the proposed FocalPoint biofiltration system with expanded R-Tank storage system.

Our team has reviewed the plans (with latest revision date of January 2020) and made the following observations:

- There is one FocalPoint system proposed on the plans – 464 sf (18 ft x 25.77 ft)
- The FocalPoint is set in a recessed vegetated 'bowl' area downgradient from the adjacent roadway.
- Runoff enters the system via a stabilized pipe outfall which conveys developed upstream area to the system.
- Based on the modelling and the elevations shown on the grading plan and details, the system has the approved FocalPoint section (3" mulch, 18" media, 6" bridging stone and modular underdrain.
- Based on the computation sheets. The system has a peak elevation of less than 12 inches of temporary ponding volume for the 0.95" storm – which is within the recommended temporary ponding range for the system.
- The volume associated with the 0.95" 24hr storm is treated prior to activation of the overflow device (WQ goal met).
- A 24" domed overflow drain is being provided for the system as the bypass for the system to convey larger storms to the expanded R-Tank "Double+Mini" system.
- The expanded R-Tank Double+Mini system has been provided channel protection, but also have been sized to meet the "Separator Row/treatment row" design

component required by the MeDEP FocalPoint design guidance and is sized per the State guidance.

Overall, ACF takes no exceptions to the location and application of the FocalPoint system for this project.

It appears that the system has been designed in accordance with the design criteria set forth by Maine DEP in the FocalPoint system approval letter and meet the system specifications etc.

With regard to the installation, ACF Environmental will host a preconstruction meeting with the site contractor and will be on-site during the entire installation to ensure that the installation is being conducted in accordance with our standard installation procedures.

ACF Environmental will also provide the first year’s maintenance on the FocalPoint bed area.

Please review and contact me with any questions from your office.

We look forward to working with you on this project.

Sincerely,

Robert J Woodman,
Senior Stormwater Engineer
ACF Environmental

Cc: Loren Joyce, ACF Environmental

January 6, 2020

Christopher L. Wasileski
Director of Development
Sea Coast Management Company
20 Blueberry Ln. Falmouth, ME 04105

Christopher,

Northeast Stormwater Services (NESS) is pleased to provide a proposal to perform biannual inspections and annual maintenance of the FocalPoint stormwater management system at the proposed Cumberland Crossing Phase 2 project in Cumberland, Maine. NESS serves several commercial landowners in Maine with professional inspection of stormwater systems. The NESS team is well versed in all stormwater management "best management practices" from wetponds and bioretention to proprietary treatment devices and subsurface stormwater detention systems and looks forward to serving you at this site. NESS staff are approved SWM BMP inspectors by MeDEP.

Site Overview and Understanding
In accordance with the Maine Department of Environmental Protection (MEDEP) permit requirements, every 5 years, the property owner is required to submit certification that the stormwater management system has been inspected and maintained per the approved Operations and Maintenance Manual submitted as part of the permit application. A draft contract is typically required as part of the permit application for proposed projects. This letter can be used for this purpose.

It is the understanding of NESS, based on construction plans with latest revision date of Jan 2020, that the proposed FocalPoint stormwater system with expanded R-Tank system comprises of the following

- 465 sf FocalPoint Biofiltration systems with a riprap inlet apron, and overflow riser.
- An expanded R-Tank storage system consisting of 940 R-Tank Double+Mini modules (including an R-Tank Maintenance row system)

*** NOTE: there are additional stormwater features on the site. These are not covered by the scope of this proposal. It is the understanding of NESS that these features are being inspected and maintained by other parties. Please contact our office if you would like a proposal for the rest of the BMPs on the site.**

Inspection Recommendations
In order to meet the certification requirements, NESS recommends biannual inspections of the FocalPoint system. Usually early spring (May) and late fall (Oct) are ideal times to inspect the site.

Note: NESS will provide the inspection, reporting and assist you with the completion of the recertification forms. NESS will perform the annual maintenance needed for the FocalPoint system bed mulch area – essentially annual removal and replacement of the mulch layer. Beyond the FocalPoint bed area, i.e. the R-Tank system, NESS **will not** conduct the maintenance work as recommended in the inspection reports.

Seacoast Management Company will need to contract a local maintenance company to complete the recommended maintenance activities. Our office can provide recommendations for qualified contractors who are experienced in maintaining similar stormwater systems.

Deliverables
Following each site inspection, NESS will prepare a detailed professional inspection report complete with maintenance recommendations and representative photos. All documents will be provided in electronic copy only (PDF format). Hard copies are available upon request.

These reports can be included with the 5yr recertification documentation.

Fee
The annual cost for the inspection of the FocalPoint system at the Cumberland Crossing Phase 2 project in Cumberland, Maine managed by Seacoast Management Company will be **$600.00 **** Payment will be due upon invoice of completed work. (i.e. $300 per visit). ** *note: this price assumes that NESS will continue to inspect the system installed in Phase 1 (i.e. the above price is the added cost to add Phase 2 to the existing contract).*

The annual cost for the maintenance of the Phase 2 FocalPoint system at the site will be **$4,000.00.** This will include removal and replacement of the surface mulch layer one time per year.

Should you wish to accept this proposal, please sign at the bottom of this page and scan and email to northeastsws@gmail.com. At the end of each calendar year, Seacoast Management Company can select to continue this agreement or work with another party.

The first maintenance visit is included with the price of the FocalPoint system as provided by ACF Environmental.

Please note: while the fee will be charged on an annual basis, the "inspection and reporting" portion of this contract is for the first 5 years after the BMPs are completed and brought "on line". The "maintenance" portion of this contract (for the FocalPoints only) is for the four year period after the initial maintenance visit (provided by ACF) is completed.

NESS shall maintain general liability insurance in amounts reasonably satisfactory to the landowner, provide the landowner with evidence of same upon request, and indemnify and hold harmless the landowner from any and all claims of injury or property damage relating to the services provided under this agreement by NESS or any employee, contractor, subcontractor, agent, or representative.

Closure
Thank you for the opportunity to provide this proposal for stormwater inspection services. NESS looks forward to partnering with you on this.

Sincerely,

Robert J Woodman,
Senior Stormwater Engineer/Certified SWM Inspector
Northeast Stormwater Services

cc Rick Fotino, Northeast Stormwater Services

Signed and Approved:

____

Christopher L. Wasileski, Seacoast Management Company

MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

4674

January 8, 2020

Mr. Rick Licht
Licht Environmental Design LLC
35 Fran Circle
Gray, ME 04039

Re: Soil Evaluation, Proposed Stormwater Devices, Cumberland Crossing, Phase 2, Cumberland, ME

Dear Rick,

I completed a soil evaluation for the proposed stormwater treatment program for development activities for the proposed phase 2 of Cumberland Crossing, Cumberland, ME. The soil evaluation was conducted in accordance with Section 7.D.4 of the Stormwater Management Rules. I evaluated a backhoe excavated soil test pit in proposed stormwater treatment pond. And four hand dug test pits at the four buffer locations. The soils found on the parcel are moderately well drained marine lacustrine soils. There is a seasonal high watertable ranging from 14 and 28 inches. There was no observed groundwater table in any of the soil test pits. The soil test pit log descriptions are attached.

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

Sincerely,

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

P.O. BOX 1931 • PORTLAND, ME 04104-1931 • 207-756-2900 • mhampto1@maine.rr.com

Quality services that meet your deadline

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FORM F Rev. 07/11

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name: Cumberland Crossing Phase 2 | Applicant Name: Oceanview at Cumberland LLC | Project Location (municipality): Cumberland

Exploration Symbol # STW-1 — ☒ Test Pit ☐ Boring ☐ Probe

______" Organic horizon thickness Ground surface elev. ______
______" Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Redox Features
0–~8	fine sandy loam	Friable	Dark Brown	
~8–~18	fine sandy loam	Friable	Brown	
~18–100	Silty Clay loam	Firm	olive gray	Common distinct

No water in hole

100

Soil Details by S.E.: Soil Classification 8 Profile, C Condition; Slope 2 Percent; Limiting Factor 16" Depth; ☐ Groundwater ☒ Restrictive Layer ☐ Bedrock

S.S.: Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric; Hydrologic ____ Soil Group

Exploration Symbol # B-1 — ☒ Test Pit ☐ Boring ☐ Probe

______" Organic horizon thickness Ground surface elev. ______
______" Depth of exploration or to refusal

Depth	Texture	Consistency	Color	Redox Features
0–~8	fine sandy loam	Friable	Dark Brown	
~8–~16	fine sandy loam	Friable	Brown	
~16–36	Silty Clay loam	Firm	olive gray	Common & Distinct

Depth of Excavation to 36"

Soil Details by S.E.: Soil Classification 8 Profile, D Condition; Slope 4 Percent; Limiting Factor 14" Depth; ☐ Groundwater ☒ Restrictive Layer ☐ Bedrock

S.S.: Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric; Hydrologic ____ Soil Group

Exploration Symbol # B-2 — ☒ Test Pit ☐ Boring ☐ Probe

______" Organic horizon thickness Ground surface elev. ______
______" Depth of exploration or to refusal

Depth	Texture	Consistency	Color	Redox Features
0–~7	fine sandy loam	Friable	Dark Brown	
~7–~16	fine sandy loam	Friable	Brown	
~16–36	Silty Clay loam	Firm	olive gray	Common & Distinct

Depth of Excavation to 36"

Soil Details by S.E.: Soil Classification 8 Profile, C Condition; Slope 12 Percent; Limiting Factor 16" Depth; ☐ Groundwater ☒ Restrictive Layer ☐ Bedrock

S.S.: Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric; Hydrologic ____ Soil Group

Exploration Symbol # B-3 — ☒ Test Pit ☐ Boring ☐ Probe

______" Organic horizon thickness Ground surface elev. ______
______" Depth of exploration or to refusal

Depth	Texture	Consistency	Color	Redox Features
0–~7	loamy sand	Friable	Dark Brown	
~7–~20	loamy sand	Friable	Brown	
~20–36	Silty clay loam	Firm	olive gray	Common distinct

Depth of Excavation to 36"

Soil Details by S.E.: Soil Classification 7 Profile, C Condition; Slope 4 Percent; Limiting Factor 18" Depth; ☐ Groundwater ☒ Restrictive Layer ☐ Bedrock

S.S.: Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric; Hydrologic ____ Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: [signature] | Date: 1/8/20

Name Printed: Mark J. Hampton | Cert/Lic/Reg. #: 263/216

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

affix professional seal

PAGE ____ OF ____

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FORM F Rev. 07/11

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Cumberland Crossing Phase 2	Oceanview at Cumberland LLC	Cumberland

Exploration Symbol # B-4 ☒ Test Pit ☐ Boring ☐ Probe

____ " Organic horizon thickness Ground surface elev. ____

____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0	fine sandy loam	Friable	Dark Brown	
10	fine sandy loam	Friable	Brown	
20–30	Silty Clay Loam	Firm	Olive Gray	Common & Distinct
40	Depth of Excavation – 38"			
50				
60				

Soil Details by S.E.:

Soil Classification		Slope	Limiting Factor	
8 (Profile)	C (Condition)	10 (Percent)	15 " (Depth)	☐ Groundwater ☒ Restrictive Layer ☐ Bedrock

S.S.: Soil Series/Phase Name: ____ ☐ Hydric ☐ Non-hydric Hydrologic ____ Soil Group

Exploration Symbol # ____ ☐ Test Pit ☐ Boring ☐ Probe

____ " Organic horizon thickness Ground surface elev. ____

____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0				
10				
20				
30				
40				
50				
60				

Soil Details by S.E.: Soil Classification ____ Profile ____ Condition; Slope ____ Percent; Limiting Factor ____ " Depth ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

S.S.: Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric Hydrologic ____ Soil Group

Exploration Symbol # ____ ☐ Test Pit ☐ Boring ☐ Probe

____ " Organic horizon thickness Ground surface elev. ____

____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0				
10				
20				
30				
40				
50				
60				

Soil Details by S.E.: Soil Classification ____ Profile ____ Condition; Slope ____ Percent; Limiting Factor ____ " Depth ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

S.S.: Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric Hydrologic ____ Soil Group

Exploration Symbol # ____ ☐ Test Pit ☐ Boring ☐ Probe

____ " Organic horizon thickness Ground surface elev. ____

____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0				
10				
20				
30				
40				
50				
60				

Soil Details by S.E.: Soil Classification ____ Profile ____ Condition; Slope ____ Percent; Limiting Factor ____ " Depth ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

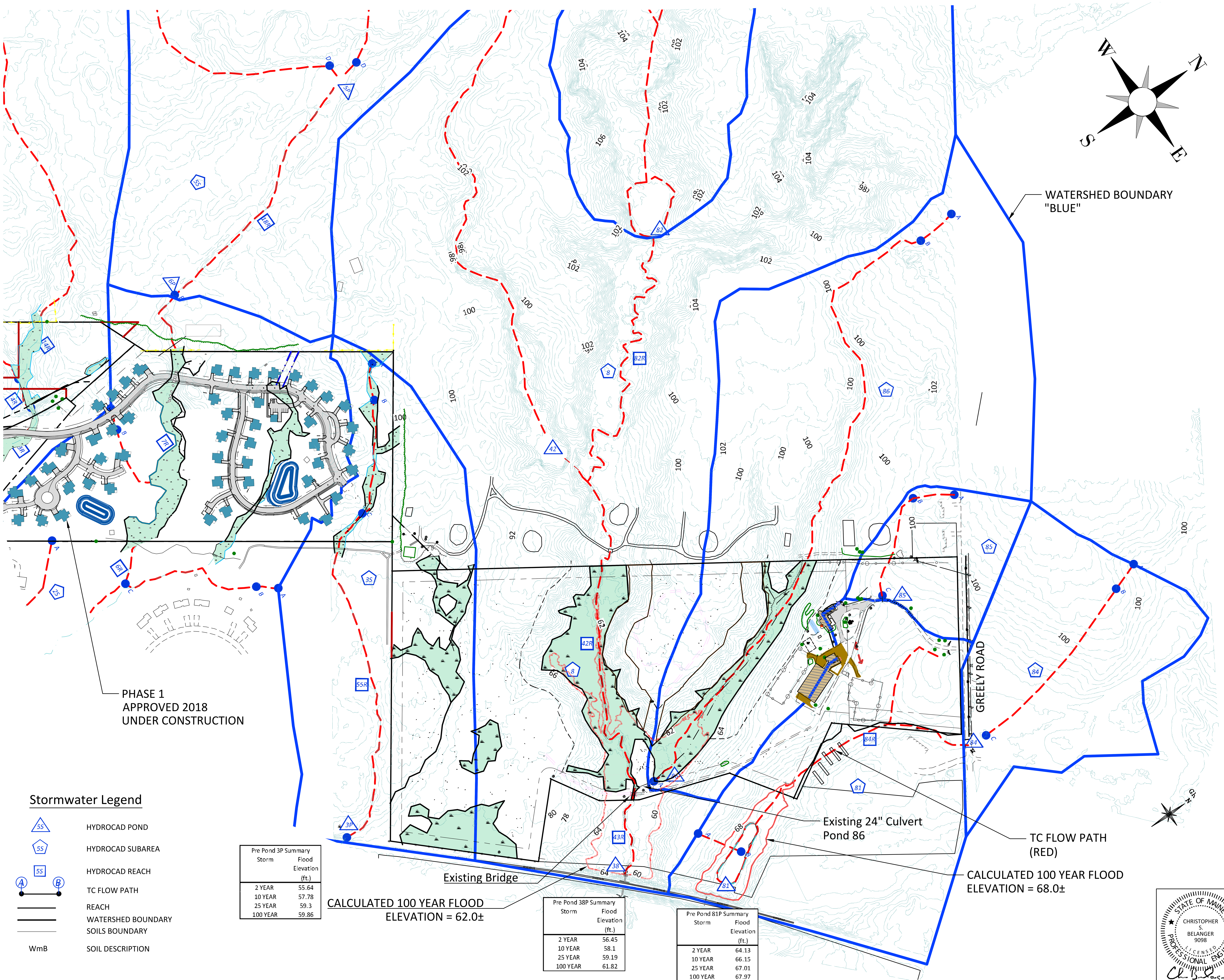
S.S.: Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric Hydrologic ____ Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature	Mark J. Hampton	Date	1/8/20
Name Printed	Mark J. Hampton	Cert/Lic/Reg. #	263/216

Title ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer

affix professional seal



Pre Development Watershed Areas for Cumberland Crossing Phase 2 - 11-20-2020						
Subarea	Total Area sf	Total Area acres	Existing Impervious acres	Existing Lawn acres	Existing Woods/Field Undeveloped acres	Existing Developed Area acres
3s	1527053.00	35.06	0.00	4.00	31.06	4.00
8s	8026815.00	184.27	10.00	74.27	100.00	84.27
9s	3778966.00	86.75	13.00	23.75	50.00	36.75
10s	17683291.00	405.95	5.00	31.95	369.00	36.95
11s	10903205.00	250.30	5.00	123.30	122.00	128.30
81s	1354195.00	31.09	1.59	11.18	18.32	12.77
82s	2338359.00	53.68	2.00	7.68	44.00	9.68
83s	1363923.00	31.31	3.50	21.81	6.00	25.31
84s	890506.00	20.44	1.59	11.18	7.67	12.77
85s	358484.00	8.23	0.39	5.00	2.84	5.39
86s	2478341.00	56.89	2.36	54.53	0.00	56.89
	50703138.00	1163.98	44.43	368.65	750.90	413.08

FLOODING STANDARD RESULTS POND 38P			
Storm	PRE C.F.S.	POST C.F.S.	DIFFERENCE %
2 YEAR	25.26	24.49	-3%
10 YEAR	83.43	81.71	-2%
25 YEAR	125.6	124.84	-1%
50 YEAR	178.55	163.58	-9%
100 YEAR	242.48	234.46	-3%

FLOODING STANDARD RESULTS POND 81P			
Storm	PRE C.F.S.	POST C.F.S.	DIFFERENCE %
2 YEAR	15.27	15.11	-1%
10 YEAR	28.06	27.57	-2%
25 YEAR	52.21	51.54	-1%
50 YEAR	71.76	70.92	-1%
100 YEAR	92.03	90.88	-1%

FLOODING STANDARD RESULTS POND 3P			
Storm	PRE C.F.S.	POST C.F.S.	DIFFERENCE %
2 YEAR	12.04	9.39	-28%
10 YEAR	25.22	20.78	-21%
25 YEAR	42.47	28.36	-50%
50 YEAR	64.8	42.3	-53%
100 YEAR	85.78	56.55	-52%

GRAPHIC SCALE

(IN FEET)
1 inch = 200 ft.

Pre Pond 3P Summary	
Storm	Flood Elevation (ft.)
2 YEAR	55.64
10 YEAR	57.78
25 YEAR	59.3
100 YEAR	59.86

Pre Pond 38P Summary	
Storm	Flood Elevation (ft.)
2 YEAR	56.45
10 YEAR	58.1
25 YEAR	59.19
100 YEAR	61.82

Pre Pond 81P Summary	
Storm	Flood Elevation (ft.)
2 YEAR	64.13
10 YEAR	66.15
25 YEAR	67.01
100 YEAR	67.97

PRE DEVELOPMENT DRAINAGE PLAN

Cumberland Crossing – Phase 2
Tuttle and Greely Roads, Cumberland, Maine

Seacoast Management Company
20 Blueberry Lane, Falmouth, ME

STATE OF MAINE
CHRISTOPHER S. BELANGER 9098
LICENSED
PROFESSIONAL ENGINEER
11-20-2020

BELANGER ENGINEERING
CONSULTING ENGINEERS
63 Second Avenue , Augusta, Maine 04330
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- ROAD AND UTILITY DESIGN
- EROSION CONTROL PLANS

Email: cbelanger@roadrunner.com
Ph 207-622-1462, Cell 207-242-5713

FIELD WK:	SCALE: 1"=200'	SHEET:
DRN BY:	JOB #:	PRE
CH'D BY:	SS:	
DATE: 11-20-2020	FILE:	

Stormwater Legend

HYDROCAD POND

HYDROCAD SUBAREA

HYDROCAD REACH

TC FLOW PATH

REACH

WATERSHED BOUNDARY

SOILS BOUNDARY

WmB SOIL DESCRIPTION

GRAPHIC SCALE

500 0 250 500 1000 2000

(IN FEET)
1 inch = 500 ft.

PRE DEVELOPMENT DRAINAGE PLAN

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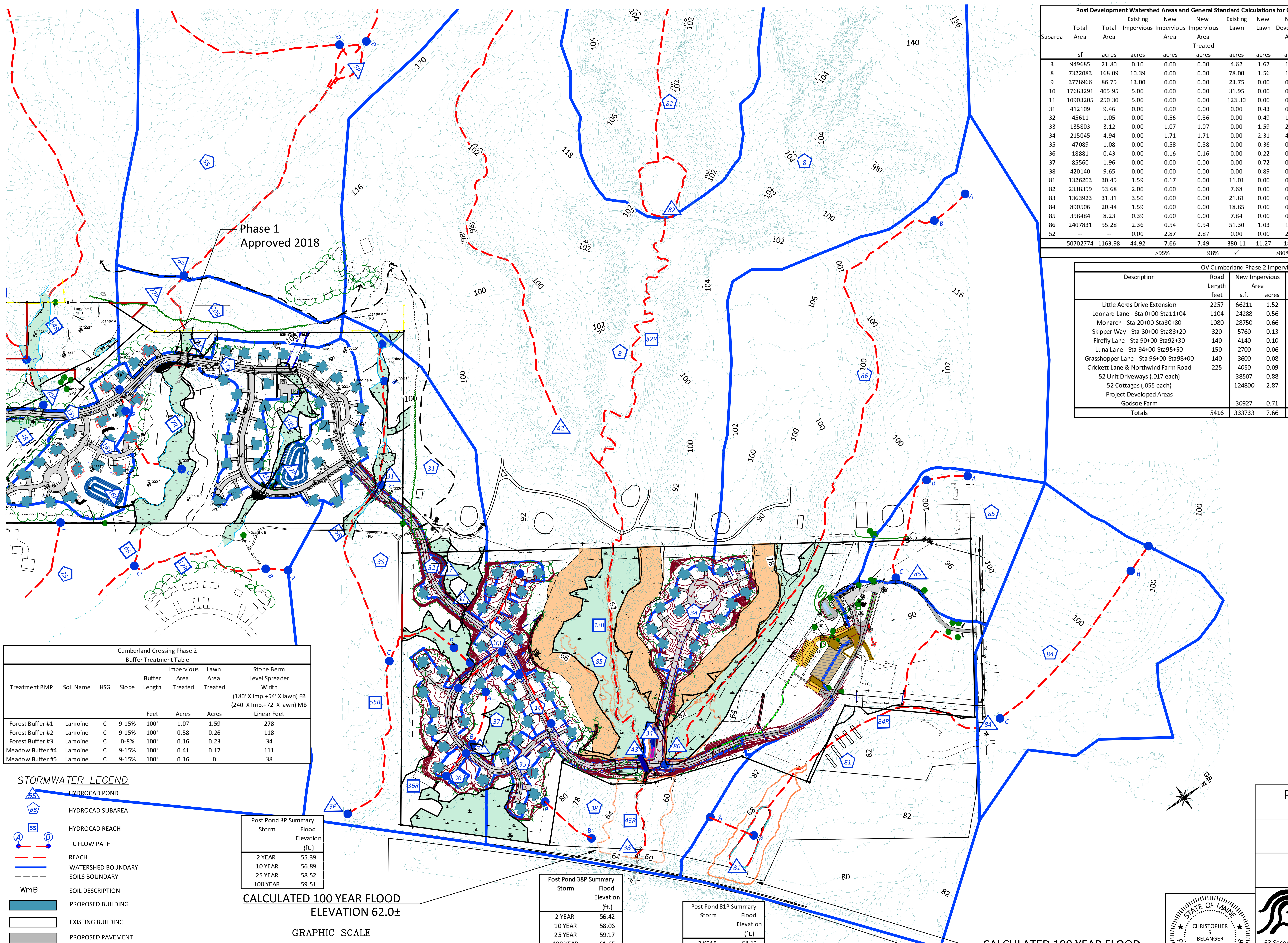
FIELD WK:	SCALE: 1"=500'	SHEET: PRE2
DRN BY:	JOB #:	
CH'D BY:	SS:	
DATE: 11-20-2020	FILE:	



Post Development Watershed Areas and General Standard Calculations for Cumberland Senior Housing - Phase 2 Greely Road - 11-20-2020

Subarea	Total Area sf	Total Area acres	Existing Impervious acres	New Impervious Area acres	New Impervious Area Treated acres	Existing Lawn acres	New Lawn acres	New Developed Area acres	New Developed Area Treated acres	Existing Woods/Field Undeveloped acres	Treatment BMP
3	949685	21.80	0.10	0.00	0.00	4.62	1.67	1.67	0.00	15.41	No treatment
8	7322083	168.09	10.39	0.00	0.00	78.00	1.56	1.56	1.56	78.14	100' wetland and stream buffer
9	3778966	86.75	13.00	0.00	0.00	23.75	0.00	0.00	0.00	50.00	No changes
10	17683291	405.95	5.00	0.00	0.00	31.95	0.00	0.00	0.00	369.00	No changes
11	10903205	250.30	5.00	0.00	0.00	123.30	0.00	0.00	0.00	122.00	No changes
31	412109	9.46	0.00	0.00	0.00	0.00	0.43	0.43	0.00	8.51	Zero Treatment
32	45611	1.05	0.00	0.56	0.56	0.00	0.49	1.05	1.05	0.00	Filter Pond Sta 45+00 Lt.
33	135803	3.12	0.00	1.07	1.07	0.00	1.59	2.66	2.66	0.32	279' Forested Buffer #1 - BMP 5.2
34	215045	4.94	0.00	1.71	1.71	0.00	2.31	4.02	4.03	0.86	Focal Point System
35	47089	1.08	0.00	0.58	0.58	0.00	0.36	0.94	0.94	0.00	119' Forrested Buffer #2 - BMP 5.2
36	18881	0.43	0.00	0.16	0.16	0.00	0.22	0.38	0.38	0.00	41' Forrested Buffer #3 - BMP 5.2
37	85560	1.96	0.00	0.00	0.00	0.00	0.72	0.72	0.00	1.24	No treatment
38	420140	9.65	0.00	0.00	0.00	0.00	0.89	0.89	0.00	8.76	No treatment
81	1326203	30.45	1.59	0.17	0.00	11.01	0.00	0.17	0.00	17.68	No treatment
82	2338359	53.68	2.00	0.00	0.00	7.68	0.00	0.00	0.00	44.00	No changes
83	1363923	31.31	3.50	0.00	0.00	21.81	0.00	0.00	0.00	3.20	No changes
84	890506	20.44	1.59	0.00	0.00	18.85	0.00	0.00	0.00	0.00	No changes
85	358484	8.23	0.39	0.00	0.00	7.84	0.00	0.00	0.00	0.00	No changes
86	2407831	55.28	2.36	0.54	0.54	51.30	1.03	1.57	1.57	0.05	100' Stream Buffer and 97' Forested Buffer #4
52	--	--	0.00	2.87	2.87	0.00	0.00	2.87	2.87	--	Roof Dripline BMP
	50702774	1163.98	44.92	7.66	7.49	380.11	11.27	18.93	15.06	719	
				>95%	98%	✓		>80%	80%	✓	

OV Cumberland Phase 2 Impervious Area Summary 11-20-2020

Description	Road Length feet	New Impervious Area s.f.	New Impervious Area acres	New Lawn Area s.f.	New Lawn Area acres	New Developed Area s.f.	New Developed Area acres	Comments
Little Acres Drive Extension	2257	66211	1.52					@22', curb, 5' sidewalk
Leonard Lane - Sta 0+00-Sta11+04	1104	24288	0.56					@22', curb, 5' sidewalk, 30' sac
Monarch - Sta 20+00-Sta30+80	1080	28750	0.66					@22', curb, 5' sidewalk
Skipper Way - Sta 80+00-Sta83+20	320	5760	0.13					18', no curb
Firefly Lane - Sta 90+00-Sta92+30	140	4140	0.10					18', no curb
Luna Lane - Sta 94+00-Sta95+50	150	2700	0.06					18', no curb
Grasshopper Lane - Sta 96+00-Sta98+00	140	3600	0.08					18' no curb
Crickett Lane & Northwind Farm Road	225	4050	0.09					18' no curb
52 Unit Driveways (.017 each)		38507	0.88					'32'X24' = 768 S.F. = 0.017 ACRES
52 Cottages (.055 each)		124800	2.87					2400 s.f. (includes second garage)
Project Developed Areas				459874	10.56	793607	18.22	Developed Area excludes Farm
Godsoe Farm		30927	0.71		0.00	30927	0.71	Farm Area
Totals	5416	333733	7.66	459874	10.56	824534	18.93	

FLOODING STANDARD RESULTS POND 38P

Storm	PRE C.F.S.	POST C.F.S.	DIFFERENCE %
2 YEAR	25.26	24.49	-3%
10 YEAR	83.43	81.71	-2%
25 YEAR	125.6	124.84	-1%
50 YEAR	178.55	163.58	-9%
100 YEAR	242.48	234.46	-3%

FLOODING STANDARD RESULTS POND 81P

Storm	PRE C.F.S.	POST C.F.S.	DIFFERENCE %
2 YEAR	15.27	15.11	-1%
10 YEAR	28.06	27.57	-2%
25 YEAR	52.21	51.54	-1%
50 YEAR	71.76	70.92	-1%
100 YEAR	92.03	90.88	-1%

FLOODING STANDARD RESULTS POND 3P

Storm	PRE C.F.S.	POST C.F.S.	DIFFERENCE %
2 YEAR	12.04	9.39	-28%
10 YEAR	25.22	20.78	-21%
25 YEAR	42.47	28.36	-50%
50 YEAR	64.8	42.3	-53%
100 YEAR	85.78	56.55	-52%

Cumberland Crossing Phase 2
Buffer Treatment Table

Treatment BMP	Soil Name	HSG	Slope	Buffer Length Feet	Impervious Area Treated Acres	Lawn Area Treated Acres	Stone Berm Level Spreader Width (180' X Imp.+54' X lawn) FB (240' X Imp.+72' X lawn) MB Linear Feet
Forest Buffer #1	Lamoine	C	9-15%	100'	1.07	1.59	278
Forest Buffer #2	Lamoine	C	9-15%	100'	0.58	0.26	118
Forest Buffer #3	Lamoine	C	0-8%	100'	0.16	0.23	34
Meadow Buffer #4	Lamoine	C	9-15%	100'	0.41	0.17	111
Meadow Buffer #5	Lamoine	C	9-15%	100'	0.16	0	38

STORMWATER LEGEND

- 5S HYDROCAD POND
- 5S HYDROCAD SUBAREA
- 5S HYDROCAD REACH
- A B TC FLOW PATH
- REACH
- WATERSHED BOUNDARY
- SOILS BOUNDARY
- WmB SOIL DESCRIPTION
- PROPOSED BUILDING
- EXISTING BUILDING
- PROPOSED PAVEMENT
- EXISTING / APPROVED PAVEMENT
- PAVEMENT REMOVED
- PROPOSED DEVELOPED AREA LAWNS

Post Pond 3P Summary

Storm	Flood Elevation (ft.)
2 YEAR	55.39
10 YEAR	56.89
25 YEAR	58.52
100 YEAR	59.51

Post Pond 38P Summary

Storm	Flood Elevation (ft.)
2 YEAR	56.42
10 YEAR	58.06
25 YEAR	59.17
100 YEAR	61.65

Post Pond 81P Summary

Storm	Flood Elevation (ft.)
2 YEAR	64.12
10 YEAR	66.12
25 YEAR	66.99
100 YEAR	67.94

GRAPHIC SCALE

200 0 100 200 400 800

(IN FEET)
1 inch = 200 ft.

POST DEVELOPMENT DRAINAGE PLAN

Cumberland Crossing – Phase 2
Tuttle and Greely Roads, Cumberland, Maine

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FIELD WK:	SCALE: 1"=200'	SHEET:
DRN BY:	JOB #:	POST
CH'D BY:	SS:	
DATE: 11-20-2020	FILE:	

Post Pond 3P Summary	
Storm	Flood Elevation (ft.)
2 YEAR	55.39
10 YEAR	56.89
25 YEAR	58.52
100 YEAR	59.51

FLOODING STANDARD RESULTS POND 3P

Storm	PRE C.F.S.	POST C.F.S.	DIFFERENCE %
2 YEAR	12.04	9.39	-28%
10 YEAR	25.22	20.78	-21%
25 YEAR	42.47	28.36	-50%
50 YEAR	64.8	42.3	-53%
100 YEAR	85.78	56.55	-52%

FLOODING STANDARD RESULTS POND 81P

Storm	PRE C.F.S.	POST C.F.S.	DIFFERENCE %
2 YEAR	15.27	15.11	-1%
10 YEAR	28.06	27.57	-2%
25 YEAR	52.21	51.54	-1%
50 YEAR	71.76	70.92	-1%
100 YEAR	92.03	90.88	-1%

FLOODING STANDARD RESULTS POND 38P

Storm	PRE C.F.S.	POST C.F.S.	DIFFERENCE %
2 YEAR	25.26	24.49	-3%
10 YEAR	83.43	81.71	-2%
25 YEAR	125.6	124.84	-1%
50 YEAR	178.55	163.58	-9%
100 YEAR	242.48	234.46	-3%

Post Pond 38P Summary	
Storm	Flood Elevation (ft.)
2 YEAR	56.42
10 YEAR	58.06
25 YEAR	59.17
100 YEAR	61.65

Post Pond 81P Summary	
Storm	Flood Elevation (ft.)
2 YEAR	64.12
10 YEAR	66.12
25 YEAR	66.99
100 YEAR	67.94

POST DEVELOPMENT DRAINAGE PLAN

Cumberland Crossing – Phase 2
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FIELD WK:	SCALE: 1"=100'	SHEET:
DRN BY:	JOB #:	POST2
CH'D BY:	SS:	
DATE: 11-20-2020	FILE:	

Pre Pond 81P Summary	
Storm	Flood Elevation (ft.)
2 YEAR	64.13
10 YEAR	66.15
25 YEAR	67.01
100 YEAR	67.97

FLOODING STANDARD RESULTS POND 81P			
Storm	PRE C.F.S.	POST C.F.S.	DIFFERENCE %
2 YEAR	15.27	15.11	-1%
10 YEAR	28.06	27.57	-2%
25 YEAR	52.21	51.54	-1%
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FLOODING STANDARD RESULTS POND 38P			
Storm	PRE C.F.S.	POST C.F.S.	DIFFERENCE %
2 YEAR	25.26	24.49	-3%
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25 YEAR	125.6	124.84	-1%
50 YEAR	178.55	163.58	-9%
100 YEAR	242.48	234.46	-3%

Pre Pond 38P Summary	
Storm	Flood Elevation (ft.)
2 YEAR	56.45
10 YEAR	58.1
25 YEAR	59.19
100 YEAR	61.82

PRE DEVELOPMENT 100 YEAR FLOOD PLAN

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Tuttle and Greely Roads, Cumberland, Maine

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FIELD WK:	SCALE: 1"=60'	SHEET:
DRN BY:	JOB #:	PRE 100
CH'D BY:	SS:	
DATE: 11-20-2020	FILE:	

Post Pond 81P Summary

Storm	Flood Elevation (ft.)
2 YEAR	64.12
10 YEAR	66.12
25 YEAR	66.99
100 YEAR	67.94

FLOODING STANDARD RESULTS POND 81P

Storm	PRE C.F.S.	POST C.F.S.	DIFFERENCE %
2 YEAR	15.27	15.11	-1%
10 YEAR	28.06	27.57	-2%
25 YEAR	52.21	51.54	-1%
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50 YEAR	178.55	163.58	-9%
100 YEAR	242.48	234.46	-3%

Post Pond 38P Summary

Storm	Flood Elevation (ft.)
2 YEAR	56.42
10 YEAR	58.06
25 YEAR	59.17
100 YEAR	61.65

POST DEVELOPMENT 100 YEAR FLOOD PLAN

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FIELD WK:	SCALE: 1"=60'	SHEET:
DRN BY:	JOB #:	Post100
CH'D BY:	SS:	
DATE: 11-20-2020	FILE:	