TOWN OF KITTERY

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Visit us: www.kitteryme.gov/planning-board

Planning Review Notes
March 14, 2024

ITEM 1—120 Route 1—Major Site Plan — Final Review

Action: Approve plan or continue review. Nicole Duquette, on behalf of owner/applicant Kittery Circle LLC, is proposing to re-develop the site of a former gas station into a hotel with 102 rooms and associated parking and utilities. The proposed hotel is located on the properties of 112 & 120 US Route 1 Bypass and 139 Old Post Road, Map 14 Lots 10, 12, & 12A, in the C-3 (Bypass/Old Post Road Commercial) Zone.

PROCESS SUMMARY

REQ'D	ACTION	COMMENTS	STATUS
NO	Sketch Plan Acceptance/Approval	6/8/23	Accepted
YES	Planning board determination of completeness	8/14/23	Accepted
NO	Site Visit	9/11/23	Held
YES	Public Hearing	9/28/23	Held
YES	Preliminary Plan Approval	11/16/23	Approved
YES	Final Plan Review and Decision	Scheduled for 3/14/24	Pending
Applicant: Prior to the signing of the approved Plan any **Conditions of Approval related to the Findings of Fact along with waivers and variances (by the BOA) must be placed on the Final Plan and, when applicable, recorded at the York County Registry of Deeds. PLACE THE MAP AND LOT NUMBER IN 1/4" HIGH LETTERS AT LOWER RIGHT BORDER OF ALL PLAN SHEETS.**			

OTHER POTENTIAL PERMITS AND REQUIREMENTS

- Wetland delineation
- State Fire Marshal NFPA #13 fire protection system approval.
- DEP construction permitting and site review.
- Traffic control plan for sewer utility installation.

PROJECT INTRODUCTION

This is the final review for a proposed 102-room hotel on the property of 3 adjacent parcels on US Route 1, as the redevelopment of a pre-existing gas station. The now demolished gas station, and most of the land proposed for development, is within the property of 120 US Route 1, abutting an exit from the Maine Turnpike onto the Kittery Traffic Circle. The other two properties within the proposal are located directly southwest of 120 US Route 1, abutting two single family residential dwellings, and containing 2 small, isolated wetland pockets.

The applicant proposes developing the three lots into a hotel with 102 rooms and associated parking and utilities. Access will be provided through a proposed driveway on Old Post Road. Water and wastewater services have the capacity for the development, and the applicant proposes building a sewer line to connect to existing utilities. A 7' high vinyl fence will be built around the abutting residential properties southwest of the development. The application proposes a sidewalk leading from the driveway along Old Post Road leading to the Kittery Traffic Circle, as well as a lighted crosswalk connecting the parcel to the commercial businesses on the other side of the road.

The planning board voted to accept the preliminary site plan application as complete on August 24th, 2023. A site walk was scheduled for September 11th, and a public hearing for September 14th. Since initial acceptance, the applicant increased the square footage of the proposed hotel to accommodate the request of the prospective tenant. To stay under the impervious surface maximum, the plan proposed reducing the parking lot by 5 spaces. The planning board approved this waiver, and all others listed below, along with the preliminary site plan application on November 16th, 2023.

The applicant has submitted a final site plan, which a third-party engineer review has deemed ready for approval. **Staff recommend final approval at this time and suggest the planning board discuss the submitted photometric plan.**

WAIVERS REQUESTED

The following waivers were approved by the planning board on November 16th:

1. Underground utility requirements: the applicant is requesting the planning board allow an overhanging electric utility wire to connect a CMP utility pole to the site, which is within their purview per **§16.4.21.E.(2).(m).** All other electric utilities will be underground on the property.
2. Drainage pipe size: the applicant is requesting a modification to the minimum pipe size of 12" for some of their drainage pipes.
3. Parking dimensions standards: the applicant is requesting to reduce the length of 27 parking spaces from 19' to 18' to help meet open space requirements.
4. Landscape strip requirements: the applicant is requesting relief to reduce part of the landscape strip along a portion of the property abutting the Route 1 Bypass from 15 ft to 7 ft.
5. Parking space minimums: the applicant is requesting to reduce the minimum requirement of parking spaces from 102 spaces to 97 spaces.

STAFF COMMENTS

Listed below are additional comments provided by staff in addition to general review of standards:

1. As requested by public works and police, the applicant is proposing a crosswalk to connect the driveway of the hotel to the abutting businesses across the street on Old Post Road, including a flashing light crossing and a 5' x 5' landing pad on the other side of the street.
2. The property possesses a sewer easement to connect to existing wastewater utilities. However, the applicant proposed building a sewer connection in a different location of the

easement to avoid disrupting the existing properties it would run through. All relevant departments have signed off on the proposed location of the sewer line.
    a. The Town requires a traffic control plan from the applicant detailing their plan to install the sewer connection with minimal disruption to traffic flow along the Kittery Traffic Circle. This plan will be provided and approved as part of the post-approval process.
3. The applicant has offered to provide a traffic safety assessment of the Kittery Traffic Circle, which would provide the Town a list of guided actions to improve safety along the circle.
    a. At the last meeting, the planning board was open to allowing this study to be provided after final plan approval, as the study would provide mitigation efforts for the area, rather than directly relate to the proposed development. Staff suggest a condition of approval requiring a third-party engineer review the study and provide feedback before occupancy may be issued.
4. The Kittery Traffic Circle is included on MDOT's high crash location list for 2019 through 2021. The traffic impact study provided recommendations to advance safety related improvements on the rotary. This includes maintaining vegetation and snow along the driveway to protect site lines and adding a stop sign at the exit of the property.
5. The site plan notates a side yard setback of 14.6 feet. This refers to the portion of the lot facing the Kittery Traffic Circle. The portion abutting residential properties meets the required 15-foot side setback.
6. The applicant originally proposed a permeable paver surface for the patio to compensate for an impervious surface maximum above the 70% allowed. The site plan no longer needs an impervious surface waiver but is still proposing a permeable paver for the patio to help with stormwater management.
7. The current address of the largest parcel is 120 US Route 1, even though the only entrance driveway is on Old Post Road. The Assessing department plans to re-address the area for Old Post Road, to avoid confusion.
8. The table of contents in the plan set show the listed approved waivers. The waivers (and all conditions of approval) must be on the site plan sheet itself, as this is the sheet that will be recorded at York County Registry of Deeds.
    a. The site plan sheet also typically contains the note about snow removal as well.
9. The table of contents has a note saying" to prevent tracking of sediment onto the existing roads, construction traffic can only exit on the construction exist show on the erosion control plan. Staff suggest this note be included on the erosion plan itself, not just the table of contents.

PROJECT ANALYSIS

Staff reviewed the application and provided materials and have provided their determination on the requirements and standards below. All requirements that have not been met or require further discussion are highlighted.

Code Ref.	§16.4 Land Use Zone Standards	
	Standard	Determination

§16.4.21.B/C.	Permitted/Special Exception Uses	The proposed use is permitted
§16.4.21.E.(2).(a).	Lot size: 40,000 sq ft. minimum	It appears the standard is satisfied.
§16.4.21.E.(2).(b).	Street frontage: no requirements in C-3 Zone	It appears the standard is satisfied. The applicant has provided a truck turning plan to show emergency vehicles can access the lot.
§16.4.21.E.(2).(c).	Front setback: • 15 ft maximum along Route 1 Bypass 15 ft minimum along Old Post Road	It appears the standard is satisfied.
§16.4.21.E.(2).(d).	Rear and side setbacks: 10 ft minimum. NOTE: side yard setback if 15 ft minimums where property abuts residential structures	It appears the standard is satisfied.
§16.4.21.E.(2).(e).	Building height: 40 ft maximum NOTE: structures along Old Post Road may not exceed 25 ft building heights within a 30 ft setback from the road	It appears the standard is satisfied.
§16.4.21.E.(2).(f).	Imperious surface: 70% maximum for currently developed lots	It appears the standard is satisfied.
§16.4.21.E.(2).(m)..	Underground utilities required	The applicant has received a waiver for a partial for an overhanging wire from a CMP utility pole. All other electric wiring and utilities are underground. The standard appears to be satisfied.
§16.4.21.E.(3).(a).	Parking standards: parking areas must be visually screened when abutting residential properties. NOTE: due to a deed restriction, the portion of M14 L10 abutting a paper road requires a metal guard rail	The plan indicates a 7' fence abutting residential properties and the required guard rail. It appears the standard is satisfied

§16.4.21.E.(3).(a).[2]	Parking space dimensions: minimum 19' x 9' NOTE: compact car spaces are allowed in this zone	The applicant received a waiver to reduce the parking space length to 18' for 27 spaces to meet open space requirements. Otherwise, it appears the standard is satisfied.
§16.4.21.E.(3).(b).	Building design standards	The standard appears to be satisfied.
§16.4.21.E.(3).(c).[2].	Landscaping improvements: minimum 15 ft vegetated landscape planter strips between the lot and adjacent all rights-of-way. NOTE: A planter strip is not required on the eastern portion of the lot. The exit from the highway does not count as a street, meaning the property does not count as a corner lot per the definition in **§16.3**	The applicant received a waiver to reduce part of the landscape strip along a portion of the property abutting the Route 1 Bypass (15 ft to 7 ft). All other areas meet the minimum width. It appears the standard is satisfied.
§16.4.21.E.(3).(d).	Traffic circulation standards: sidewalks are required along the entire portion of the lot facing Old Post Road. Additionally, Public Works staff requested the applicant provide a crosswalk connecting the lot to commercial businesses across the street	The applicant is providing the requested crosswalk and has added sidewalks to the entire portion of the lot facing Old Post Road. The standard appears to be met.
§16.4.21.E.(3).(e).	Open Space standards: 20% minimum. Designated open space areas must be notated on the plan	The standard appears to be met.
Code Ref.	§16.5 Performance Standards	
	Standard	Determination
§16.5.14.B	Double-fronted lots typically require a minimum 10 ft planting screen along lot lines abutting traffic arteries. In the C-3 Zone, the minimum is 15 ft	With the approved waiver along a portion of Route 1, the 15 ft standard appears to be met.
§16.5.10	Essential Services	Water and wastewater capacity has been confirmed for the proposed site. The applicant will present a traffic control plan

		detailing how they will be connecting to the sewer utility before construction may commence.
§16.5.23	Freestanding sign standards: * 20 ft minimum from any travel way * 20 ft maximum height 1 sign permitted per use	The proposed sign appears to meet standards. Proposed area of 300 sq ft.
§16.5.25	Sprinkler Systems are required in all buildings of three or more stories.	Sprinkler systems will meet NFPA standards before occupancy may be issued.
§16.5.27	Street Standards: sidewalks are required along the entire Old Post Road ROW	The applicant is providing sidewalks along the entire portion of Old Post Road, and the requested crosswalk connecting the site to abutting businesses.
§16.5.30	All wetlands of 501 sq ft.or greater trigger setbacks for parking areas	All wetlands on the site are smaller than 501 sq ft, meaning there are no setbacks from the parking area.
§16.7.11.F.(e).	A minimum of 102 parking spaces are required	The plan has received a waiver reducing this minimum to 97 spaces. The standard is now met. The plan appears to meet ADA space requirements
§13.1.6.5/§13.1.6.6	Sewer impact fees	Code Enforcement will estimate the cost of the sewer impact fee prior to the issuance of any building permits.
Code Ref.	§16.7.10 Final Site Plan Requirements	
	Standard	Determination

§16.7.10.C.(4).(a-i).	• Paper plan sheets no smaller than 11" x 17" • Scale of drawing no greater than 1 inch = 30 feet • Code block in right-hand corner • Standard boundary survey of existing conditions • Compass with arrow pointing true north • Locus map of property • Vicinity map and aerial photograph • Surveyed acreage of parcel(s), rights-of-way, wetlands, and amount of street frontage • Names and addresses of owners of record abutting property	Provided
§16.7.10.C.(4).(j).	Existing conditions survey including all identified structures, natural resources, rights-of-way, and utilities located on and within 100 feet of the property.	Provided
§16.7.10.C.(4).(k).	• Proposed development area including: • Location and detail of proposed structures and signs • Proposed utilities including power, water, and sewer. • Sewage facilities type and placement. • Domestic water source • Lot lines, rights-of-way, and street alignments • Road and other paved area plans • Existing and proposed setbacks • Storage areas for waste or hazardous materials • Topographic contours of existing contours and finished grade elevations • Locations and dimensions of artificial features such as pedestrian ways, sidewalks, curb cuts, driveways, fences, retaining walls,	Provided
§16.7.10.C.(4).(l).	Natural features or site elements to be preserved.	Provided
§16.7.10.C.(4).(m).	Identified property encumbrances.	Provided
§16.7.10.C.(4).(n).	Kittery Water District approval letter.	Provided
§16.7.10.C.(4).(o).	Erosion and sedimentation control plan.	Provided

§16.7.10.C.(4).(p).	Stormwater management plan and drainage analysis.	Provided
§16.7.10.C.(4).(q).	Soil survey.	Provided
§16.7.10.C.(4).(r).	Vehicular traffic report.	Provided
§16.7.10.C.(4).(s).	Traffic impact analysis.	Provided
§16.7.10.C.(4).(t).	Test pit analysis.	Not applicable
§16.7.10.C.(4).(u).	Approval letter from Town sewage.	Provided
§16.7.10.C.(4).(v).	Evaluation of development by Technical Review Committee department heads.	Provided
§16.7.10.C.(4).(w).	Additional submissions as required.	None identified at this time
§16.7.10.D.(3).(a-l).	Additional final plan requirements including: • Proposed streets, pedestrian ways, lots, easements, and areas dedicated to public use • Location of any markers or permanent monuments • Location and description of all structures, including signs. • Floor plans and elevations of principal structures • Building materials and colors • Fences, retaining walls, and other artificial features • Stormwater management plan and drainage	Provided
§16.7.10.D.(3).(g).	Outdoor lighting and signage plan showing: • All buildings, parking areas, driveways, services areas, proposed exteriors and snow storage areas • All proposed lighting fixture specifications • Photometric data, including cutoff fixtures and color rendering index • Mounting height of all external lights • Lighting analysis of proposed installation to show minimum, maximum, and average luminance	Provided
§16.7.10.D.(3).(g).[1].	Snow storage areas.	Provided
§16.7.10.D.(3).(h).	Locations of machinery in permanently installed locations likely to cause noise along lot lines	Provided

§16.7.10.D.(3).(i).	Storage areas for materials (raw, finished, or waste), and list of any types of toxic/hazardous materials stored on-site.	Provided
§16.7.10.D.(3).(j).	Location of fences, retaining walls, and other artificial features	Provided
§16.7.10.D.(3).(k).	Landscaping plan including location, size, and type of plan material	Provided
§16.7.10.D.(3).(l).	Stormwater management plan for stormwater and other surface water drainage	Provided

DISCUSSION, NEXT STEPS, AND RECOMMENDATIONS

The purpose of final review is to allow the applicant to address any final outstanding issues that must be addressed before planning board approval can be granted. The requested waivers were approved during preliminary review, and the peer review engineer believes the issues identified are minor enough to be revised before plan recording. Staff believe the plan is ready to receive final approval at this time.

RECOMMENDED MOTIONS

Below are recommended motions for the Board's use and consideration:

Motion to approve the application

Move to approve the final site plan by Nicole Duquette, on behalf of owner/applicant Kittery Circle LLC.

Kittery Planning Board
Findings of Fact
For 120 US Route 1
Site Plan Review

DRAFT
M 14 L 10, 12, & 12A

Note: This approval by the Planning Board constitutes an agreement between the Town and the Developer incorporating the Development plan and supporting documentation, the Findings of Fact, and all waivers and/or conditions approved and required by the Planning Board.

WHEREAS: Nicole Duquette, on behalf of owner/applicant Kittery Circle LLC, is proposing to re-develop the site of a former gas station into a hotel with 102 rooms and associated parking and utilities. The proposed hotel is located on the properties of 112 & 120 US Route 1 Bypass and 139 Old Post Road, Map 14 Lots 10, 12, & 12A, in the C-3 (Bypass/Old Post Road Commercial) Zone.

Pursuant to the Plan Review meetings conducted by the Planning Board as noted in the Plan Review Notes dated 3/7/24.

REQ'D	ACTION	COMMENTS	STATUS
NO	Sketch Plan	6/8/23	Accepted
YES	Completeness/Acceptance	8/14/23	Accepted
NO	Site Visit	9/11/23	Held
YES	Public Hearing	9/28/23	Held
YES	Preliminary Plan Approval	11/16/23	Approved
YES	Final Plan Approval	3/14/24	Approved

Pursuant to the application and plan and other documents considered to be a part of a plan review decision by the Planning Board in this Finding of Fact consisting of the following (hereinafter the "Plan"):

1. Final site plan application received 1/29/24 from Nicole Duquette of Greenman-Pedersen, Inc.
2. Stormwater Management Report received 1/29/24 from Nicole Duquette of Greenman-Pedersen, Inc.

NOW THEREFORE, based on the entire record before the Planning Board and pursuant to the applicable standards in the Land Use and Development Code, the Planning Board makes the following factual findings and conclusions:

Chapter 16.7 GENERAL DEVELOPMENT REQUIREMENTS

16.7.10.D.(5).(b). Findings of Fact

Action by the Board shall be based upon findings of fact which certify or waive compliance with all the required standards of this title, and which certify that the development satisfies the following requirements:

Development Conforms to Local Ordinances.

Standard: *The proposed development conforms to a duly adopted comprehensive plan as per adopted provisions in the Town Code, zoning ordinance, subdivision regulation or ordinance, development plan or land use plan, if any. In making this determination, the municipal reviewing authority may interpret these ordinances and plans.*

Finding: The proposed development conforms to the requirements listed in Title 16 For the Commercial-3 Zone.

Conclusion: This standard appears to be met.

Vote of _ in favor _ against _ abstaining

Water Supply Sufficient.

Standard: *The proposed development has sufficient water available for the reasonably foreseeable needs of the development.*

Finding: The proposed development has received confirmation from Kittery Water District that sufficient capacity exists to service all water and fire suppression needs.

Conclusion: This standard appears to be met.

Vote of _ in favor _ against _ abstaining

Sewage Disposal Adequate.

Standard: *The proposed development will provide for adequate sewage waste disposal and will not cause an unreasonable burden on municipal services if they are utilized.*

Finding: The proposed development has received confirmation from the Town Wastewater Department confirming sufficient capacity for anticipated wastewater needs..

Conclusion: This standard appears to be met.

Vote of _ in favor _ against _ abstaining

Stormwater Managed.

Standard: *The proposed development will provide for adequate stormwater management.*

Finding: The proposed development necessitated a stormwater management system which was reviewed by the Town's peer review engineering firm and found to be satisfactory.

Conclusion: This standard appears to be met.

Vote of _ in favor _ against _ abstaining

Traffic Managed.

Standard: *The proposed development will:*

[a] 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; and

[b] Provide adequate traffic circulation, both on-site and off-site.

Finding: The proposed development generated enough traffic to require a relevant impact study. The study proposed mitigation methods to ensure the property would not have an adverse impact to traffic to the abutting rights-of-way. The applicant is providing a safety assessment of the Kittery Traffic Circle to provide guidance on future safety improvements unrelated to the project.

Conclusion: This standard appears to be met.

Vote of _ in favor _ against _ abstaining

Parking and Loading.

Standard: *Provisions have been made for safe internal vehicular circulation, loading and service areas, and parking associated with the proposed development.*

Finding: The proposed development has submitted a fire truck turning plan and has received a waiver to slightly reduce their minimum parking requirements.

Conclusion: This standard appears to be met.

Vote of _ in favor _ against _ abstaining

Utilities.

Standard: *The size, type, and locations of all public utilities and private utilities to serve the proposed development will be installed per accepted engineering practices*

Finding: All relevant departments have approved the proposed sewer utility crossing, and the applicant will work with staff to ensure minimal impact to traffic during installation. The utility plan has been found satisfactory after third-party engineer review.

Conclusion: This standard appears to be met.

Vote of _ in favor _ against _ abstaining

Erosion controlled.

Standard: *The proposed development 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.*

Finding: The proposed development will be required to provide erosion and sedimentation controls during construction and the approved stormwater management system will control the stormwater on-site.

Conclusion: This standard appears to be met.

Vote of _ in favor _ against _ abstaining

Groundwater protected.

Standard: *The proposed development will not, alone or in conjunction with existing activities, adversely affect the quality or quantity of groundwater.*

Finding: It appears the proposed development will not cause any unreasonable adverse effects of the quantity or quality of groundwater.

Conclusion: This standard appears to be met.

Vote of _ in favor _ against _ abstaining

Freshwater wetlands identified.

Standard: *All freshwater wetlands within the project area have been identified on any maps submitted as part of the application, regardless of the size of these wetlands.*

Finding: All freshwater wetland pockets are noted in the plan set.

Conclusion: This standard appears to be met.

Vote of _ in favor _ against _ abstaining

River, stream or brook identified.

Standard: *Any river, stream or brook within or abutting the proposed project area has been identified on any maps submitted as part of the application. For purposes of this section, "river, stream or brook" has the same meaning as in 38 M.R.S. § 480-B, subsection 9. Municipal solid waste disposal available. The proposed development will not cause an unreasonable burden on the municipality's ability to dispose of solid waste, if municipal services are to be used.*

Finding: It appears that a stream does not exist in or abutting the property within 75 feet.

Conclusion: This standard appears to be met.

Vote of _ in favor _ against _ abstaining

Water body quality and shoreline protected.

Standard: *Whenever situated entirely or partially within 250 feet of any wetland, the proposed development will not adversely affect the quality of that body of water or unreasonably affect the shoreline of that body of water. Flood areas identified and development conditioned. All flood-prone areas within the project area have been identified on maps submitted as part of the application. Water and air pollution minimized. The proposed development will not result in undue water or air pollution. In making this determination, the following must be considered:*

[a] Elevation of the land above sea level and its relation to the floodplains;

[b] Nature of soils and subsoils and their ability to adequately support waste disposal;

[c] Slope of the land and its effect on effluents;

[d] Availability of streams for disposal of effluents;

[e] Applicable state and local health and water resource rules and regulations; and

[f] Safe transportation, disposal and storage of hazardous materials.

Finding: It appears that the proposed development will not adversely affect the quality of any water or wetland body.

Conclusion: This standard appears to be met.

Vote of _ in favor _ against _ abstaining

Aesthetic, cultural and natural values protected.

Standard: *The proposed development 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.*

Finding: The proposed development does not appear to have an adverse effect on aesthetic, cultural and natural values as described in the standard.

Conclusion: This standard appears to be met.

Vote of _ in favor _ against _ abstaining

Environmental considerations.

Standard: *The proposed development will not result in undue levels of lighting, noise, vibrations, smoke, heat, glare, fumes, dust, toxic matter, odors, or electromagnetic interference.*

Finding: The proposed development will not produce any adverse effects that would cause undue environmental degradation. Existing mature vegetation will be preserved to the greatest practical extent, and the proposed development would provide for the removal of identified invasive species on the property.

Conclusion: This standard appears to be met.

Vote of _ in favor _ against _ abstaining

Utilization of the site.

Standard: *The proposed development does reflect the natural capabilities of the site to support development.*

Finding: It appears that the proposed development is designed in a manner that respects the natural capabilities of the lot.

Conclusion: This standard appears to be met.

Vote of _ in favor _ against _ abstaining

Developer financially and technically capable.

Standard: *Developer is financially and technically capable to meet the standards of this section.*

Finding: It appears the developer is financially and technically capable to execute the project. A cost estimate and performance guarantee will be provided to Planning Staff prior to any permitting.

Conclusion: This standard appears to be met.
Vote of _ in favor _ against _ abstaining

Based on the foregoing Findings, the Kittery Planning Board finds the applicant has satisfied each of the review standards for approval and, therefore, the Kittery Planning Board hereby grants final approval for the Development at the above referenced property, including any waivers granted or conditions as noted.

Waivers:

1. Modification of underground utility requirements, to allow an overhanging electric utility wire to connect a CMP utility pole to the site, with all other electric wires being installed underground (approved 5-0-0 on November 16, 2023)
2. Modification of the minimum drainage pipe size of 12" (approved 4-1-0 on November 16th, 2023)
3. Modification of the length of 27 parking spaces from 19' to 18' to help meet open space minimum requirements. (approved 5-0-0 on November 16th, 2023)
4. Modification of the landscape planter strip minimum along the portion of the property abutting the Route 1 Bypass from 15 ft to 7 ft (approved 4-1-0 on November 16th, 2023)
5. Modification of the minimum number of parking spaces from 102 to 97, to help meet impervious surface maximums. (approved 4-1-0 on November 16th, 2023)

Conditions of Approval (to be included as notes on the final plan in addition to the existing notes):

1. Without prior approval, no changes, erasures, modifications or revisions may be made to any Planning Board approved final plan.
2. Applicant/contractor will follow Maine DEP Best Management Practices for all work associated with site and building construction to ensure adequate erosion control and slope stabilization.
3. Prior to the commencement of grading and/or construction within a building envelope, as shown on the Plan, the owner and/or developer must stake all corners of the envelope. These markers must remain in place until the Code Enforcement Officer determines construction is completed and there is no danger of damage to areas that are, per Planning Board approval, to remain undisturbed.
4. The applicant will provide a safety assessment for the Kittery Traffic Circle, which will be reviewed by a third-party engineer, prior to issuance of occupancy.
5. All Notices to Applicant contained in the Findings of Fact (dated: 3/14/24).

Conditions of Approval (Not to be included as notes on the final plan):

1. Incorporate any plan revisions on the site plan as recommended by Staff, Planning Board, or Peer Review Engineer, and submit for Staff review prior to endorsement and recording of the plan.

Notices to Applicant:

1. Prior to the release of the signed plans, the applicant must pay all outstanding fees associated with review, including, but not limited to, Town Attorney fees, peer review, newspaper advertisements and abutter notification.
2. State law requires all subdivision and shoreland development plans, and any plans receiving waivers or variances, be recorded at the York County Registry of Deeds within 90 days of the final approval.
3. Three (3) paper copies of the final recorded plan and any and all related state/federal permits or legal documents that may be required, must be submitted to the Town Planning Department. Date of Planning Board approval shall be included on the final plan in the Signature Block.
4. This approval by the Town Planning Board constitutes an agreement between the Town and the Developer, incorporating the Plan and supporting documentation, the Findings of Fact, and any Conditions of Approval.

The Planning Board authorizes the Planning Board Chair, or Vice Chair, to sign the Final Plan and the Findings of Fact upon confirmation of compliance with any conditions of approval.

Vote of _ in favor __ against __ abstaining

APPROVED BY THE KITTERY PLANNING BOARD ON 3/14/24

_____

Dutch Dunkelberger, Planning Board Chair

Per Title 16.2.12.B(1) - An aggrieved party with legal standing may appeal a final decision of the Planning Board to the York County Superior Court in accordance with Maine Rules of Civil Procedures Section 80B, within forty-five (45) days from the date the decision by the Planning Board was rendered.

January 25, 2024

NEX-2200380.00

Mr. Maxim Zakian, Town Planner
Town of Kittery
200 Rogers Road
Kittery, Maine 03904

SUBJECT: Response to CMA Engineers, Inc. Comments – 11/6/2023
Proposed Hotel Development
Tax Map 14, Lots 10, 12 & 12A

Dear Mr. Zakian:

Greenman Pedersen, Inc. (GPI) has prepared this Response to Comments (RTC) letter to respond to the comments provided in the review letter from CMA Engineers, Inc. (CMA), dated November 6, 2023 regarding the proposed hotel development on Old Post Road. We have reviewed the comments and this letter has been prepared to summarize our responses. The review comments have been provided below followed by our responses to each, **in bold text**.

16.4.21.E.(3)(b). The applicant should provide architectural drawings to show conformance with the Ordinances.
Response: Revised building elevation plans have been provided with the Site Plan Set.

16.4.21.E.(3)(c)[2]. The plans should call out the planter strip to show conformance with the Ordinance.
Response: A modification is requested to reduce the Landscape Planter Strip from 15 ft to 7ft along Route 1 Bypass.

16.7.11.A. *Water supply:* The applicant should secure information from Kittery Water District with respect to design approval and capacity.
Response: A letter from the Kittery Water District was uploaded to the online portal on August 2, 2023 confirming the treatment facility has the capacity to supply the proposed 102 room hotel development.

16.7.11.B. *Sewage disposal:* The applicant should secure information from Kittery Sewer Services with respect to design approval.
Response: A letter from the Kittery Sewer Department was uploaded to the online portal on August 2, 2023 confirming the treatment facility has the capacity and ability to handle the increased flow from the proposed 102 room hotel development.

16.7.11.B. *Stormwater and Surface Drainage:* A portion of offsite runoff from the Route 1 Bypass is proposed to be treated by a swale and infiltration basin in the State's right-of-way. The applicant has indicated coordination of the design and approval with Maine DOT. We note that the Town should be kept informed of developments.
Response: A Waiver License Application has been submitted to DOT to request permission for the applicant/owner to install and maintain the DOT drainage improvements and landscaping within the DOT right-of-way. The Town Planner has been cc'd on the submission to DOT and all correspondences.

The total area of disturbance exceeds the threshold for a Maine Construction General Permit from the Maine Department of Environmental Protection. We note that the Town should be copied on permitting correspondence.
Response: Agreed. The Town will be cc'd on the Notice of Intent to Comply and all following correspondences with Maine DEP.

16.7.11.C.(3)(a). The minimum pipe size is specified as 12". There are multiple pipes on site that are smaller. The applicant should apply for a waiver.
Response: A modification has been requested from the Kittery Planning Board.

Comments on the drainage analysis:

1. Section 3 references municipal water but should say Kittery Water District.
   Response: Section 3 has been revised.
2. It does not appear that any test pits were completed in the areas of the infiltrating stormwater features (permeable pavers and underdrained soil filter). On-site infiltration capacities at these locations should be verified.
   Response: Test pit TP-10 was performed within 10 feet of the underdrained soil filter however, no exfiltration credit is taken in the analysis of this soil filter and it is designed to discharge through the underdrain and 6 inch outlet pipe. No test pits were performed within the proposed permeable paver patio. A confirmatory test pit can be performed prior to construction to verify soil conditions in this area.
3. The model uses the same Manning's number of 0.012 for both existing pipes which are concrete and HDPE.
   Response: The typical Manning's roughness for finished concrete pipe is 0.012. ADS N-12 HDPE has a Manning's roughness of 0.012.
4. The detention pond outlet is modeled as 12" but shown on the plans on 10".
   Response: The 12" pipe diameter in the HydroCAD model represents the pipe discharging from OCS-1 directed to DMH-3. The outlet pipe configuration from the detention system has been revised to include an 18" pipe from the chambers to OCS-1 so that there is no restriction of flow besides the designed outlet devices within OCS-1.
5. Some of the times of concentration used in the post-development model are extremely low (0.5 min, 1.0 min, etc.) More conservative values may be better.
   Response: The times of concentration for each subcatchment are calculated based on site conditions. A shorter time of concentration value is more conservative than a longer one.
6. How are exfiltration numbers determined?
   Response: Exfiltration values are determined by Rawls rate. The exfiltration rate of the permeable pavers has been revised to 0.52 in/hr to align with a Rawls rate for loam. With this change, the pavers are still able to exfiltrate all runoff they receive without overtopping during a 25-year storm.
7. It is not clear where the outlet value from the permeable pavers comes from. The detail does not give paver thickness, elevation of bottom of the bedding stone or the crushed stone reservoir.
   Response: The detail shows a 2" thick bedding stone layer and a 6" thick crushed stone reservoir course. Elevations are not shown as they vary slightly with the pitch of the patio away from the building. The broad-crested weir outlet in HydroCAD represents overflow over the entire length of the patio at elevation 35.25. Due to the exfiltration outlet, no discharge occurs over the broad-crested weir during a 25-year storm.
8. The invert out for DMH4 is modeled as 26.5' but shown on the plans as a core in the existing catch basin as 27 (or as 25.4' into the next downstream catch basin).
   Response: The callout note has been revised to show the correct invert elevation of 26.50.
9. How does modeling the conceptual design of the detention basin in the Maine DOT right-of-way affect stormwater on site if the design changes?
   Response: The conceptual basin design includes an assumed volume and accounts for infiltration and flow rate reduction. If this design changes based on feedback from MaineDOT, the on-site detention can be increased in volume as necessary to compensate.

16.7.D.(3)(d)[c]. Section 1 of the Stormwater Inspection & Maintenance Plan should specify that reports of inspection and maintenance are due to the Town by July 1st.

Response: Section 1 has been revised as noted.

Additional comments on the Stormwater Inspection & Maintenance Plan:
1. Under the Grassed Underdrained Soil Filter section, a major storm is defined as less than 2.5". Is this correct?
Response: The description has been revised to by greater than 2.5"

16.7.11.F.(4)(d). The parking requirement is 102 spaces, but 97 are provided. Sheet 6 indicates "modification to the regulations requested". The applicant should apply for a waiver if one has not been submitted.
Response: A modification has been requested to reduce the required parking spaces from 102 to 97 spaces.

16.7.11.F.(4)(n). Compact car parking spaces should include signage.
Response: Signage has been added to the compact spaces.

Table 2 Parking Space Design: The minimum design depth for perpendicular parking spaces is 19'. The applicant is proposing multiple spaces with a depth of 18' and "modification to the regulations requested". The applicant should apply for a waiver if one has not been submitted.
Response: A modification has been requested from the Kittery Planning Board.

Sheet 2 – General Notes

1. Under site plan notes, note 17 lists two requested modifications from the planning board. Has the applicant applied for waivers and or variances? What is the requested reduction for the planter strip? Sheet 6 indicates a modification for the total number of parking spaces is also desired-this should be included in Note 17.
   Response: All modifications requested from the Kittery Planning Board have been added to Note 17.
2. Grading and Drainage Note 14 reference an Operation & Maintenance Manual but the submitted document is titled Stormwater Inspection and Maintenance Plan.
   Response: Note has been revised.
3. Utility Plan Notes Note 7 should reference Kittery Water District specifications.
   Response: Note has been revised.
4. Utility Plan Notes Note 8 should reference Kittery Water District (not municipal water).
   Response: Note has been revised.
5. Note 8 under Erosion & Sediment Control Plan Notes "by routing equipment to all areas or each layer" should be clarified.
   Response: The note has been revised
6. Temporary Erosion Control Measures Note 13 references "construction entrances shown on this plan". Please update to Sheet 10.
   Response: The note has been revised.

Sheet 6 – Demolition Plan

1. There is an area of brush/small trees that should be indicated as needing to be removed where the proposed grassed underdrained soil filter is going to be constructed.
   Response: The plan has been revised.
2. The site formerly housed a gas station, has an assessment of soil contamination been completed?
   Response: A Phase 2 Environmental Site Assessment has been completed for the site.
3. There is a concrete sign base that should be indicated as TBR on the bypass side of the property.
   Response: The plan has been revised.
4. Are the existing drainage pipes into and out of the wetland on the west of the site remaining post

construction? If not, please indicate so on the plan. Will removing them trigger wetland impacts?
Response: The existing drainage pipes will not be removed at the wetland to prevent wetland impact.

Sheet 7 – Site Plan

1. Multiple parking spaces are proposed to be 18' long but are required to be 19'. The plan indicates that "modifications to the regulations requested." Has the applicant applied for a waiver?
   Response: A modification has been requested from the Kittery Planning Board.
2. The applicant should list landscape buffer variances proposed.
   Response: A modification has been requested from the Kittery Planning Board.
3. The plan should show the location(s) of the proposed open space.
   Response: The open space is provided along the perimeter of the development.

Sheet 8 – Grading & Drainage Plan

1. The details of the "conceptual detention basin" should be included with the plan set and drainage analysis. The documentation of the coordination and design with Maine DOT should be provided to the Town.
   Response: Comments from Maine DOT have been addressed in the attached Site Plan set. The Town Planner has been cc'd on all emails with Maine DOT.
2. What is the black rectangle located near the eastern property line?
   Response: A retaining wall is proposed adjacent to the Route 1 Bypass right-of-way.
3. Is there a proposed fence through the wetland?
   Response: The fence location has been revised.
4. Has the condition of the existing structures in Old Post Road that are being cored into been assessed?
   Response: The existing structures have not been assessed. Notes have been added to the Demolition Plan instructing the contractor to inspect the structures and replace if necessary.
5. The proposed crosswalk should be shown on Old Post Road and proposed truncated dome and sidewalk piece on the east should be called out.
   Response: The striping for the crosswalk has been added to this plan sheet. The offsite crosswalk and components are provided on the Off-Site Improvements plan included in the plan set.
6. The rapid rectangular flashing beacon should be called out.
   Response: The offsite crosswalk and components are provided on the Off-Site Improvements plan included in the plan set.
7. Is grading in the right-of-way, owned by the State of Maine, permitted?
   Response: A Waiver License Application has been submitted to Maine DOT.

Sheet 9 – Utility Plan

1. The electric service is partially underground and partially aboveground including the installation of a new pole. Underground installation should be pursued.
   Response: A modification to allow the partial overhead line has been requested.
2. The details of the proposed sewer service and extension should be coordinated with Kittery sewer services.
   Response: Final plans will be submitted to the Kittery Sewer Department for formal review.

Sheet 10 – Sewer Connection Plan

1. A profile for the sewer should be provided.
   Response: A sewer profile has been added and the sheet has been relabeled Sewer Plan & Profile.
2. Has the condition of the existing manhole to be cored been assessed?

Response: The existing structures have not been assessed. Notes have been added to the Demolition Plan instructing the contractor to inspect the structures and replace if necessary.

3. The details of the proposed sewer service and extension should be coordinated with Kittery sewer services.
   Response: Final plans will be submitted to the Kittery Sewer Department for formal review.
4. A cleanout should be provided for the sewer service.
   Response: Cleanouts have been added adjacent to the building for both the domestic and kitchen waste lines.
5. Has the sewer design evaluated alternatives to a bend in the service? A cleanout at this location makes sense.
   Response: A cleanout has been added.

Sheet 11 – Erosion & Sediment Control Plan

1. The sediment control is going through the southern wetland.
   Response: The perimeter sediment control location has been revised.
2. The dimensions of the construction exit should be shown.
   Response: Dimensions have been added.

Sheet 12 – Landscape Plan

1. The plan includes plantings in the Maine DOT right-of-way and in the conceptual detention basin. These details require coordination with Maine DOT.
   Response: A Waiver License Application has been submitted to Maine DOT.

Sheet 14 – Detail Sheet

1. The Pavement Section should specify proposed materials- gravel type, pavement mix, etc.
   Response: The detail has been revised.
2. There should be a trench patch detail.
   Response: A typical pavement repair detail has been added.

Sheet 15 – Detail Sheet

1. The Typical Permeable Paver Patio detail should specify paver thickness.
   Response: The minimum paver thickness has been added to the detail.
2. Water details should be reviewed and approved by Kittery Water District.
   Response: No response necessary.
3. Sewer details should be reviewed and approved by Kittery Sewer Services.
   Response: No response necessary.

Sheet 16 – Detail Sheet

1. The detail is for a 3,000-gallon grease trap but Sheet 10 indicates it is 1,500 gallons.
   Response: The detail has been revised to show a 1,500 gallon grease trap.
2. Water details should be reviewed and approved by Kittery Water District.
   Response: No response necessary.
3. Sewer details should be reviewed and approved by Kittery Sewer Services.
   Response: No response necessary.

Sheet 17 – Detail Sheet

1. Does the green text have special significance.
   Response: No. The plot styles have been fixed to plot shades of gray and black.

Sheet 18 – Detail Sheet

1. There is a detail for an Infiltration Basin but the feature in the plans in the DOT ROW is called a

detention basin. Please clarify.
Response: Per Maine DOT comments, the basin has been removed on the Grading and Drainage Plan and the detail sheet.

2. Also, the landscape plan shows plantings in the detention basin and the Infiltration Basin shows grass.
Response: Per Maine DOT comments, the basin has been removed on the Grading and Drainage Plan and the detail sheet.
3. There are several colors on the plan that should be black or gray.
Response: The plot styles have been fixed to plot shades of gray and black.

If you have any questions or need additional information, please feel free to contact me by phone at 603-374-7906 or by email to nduquette@gpinet.com.

Sincerely,

GREENMAN-PEDERSEN, INC.

Nicole Duquette

Nicole Duquette, P.E., LEED AP
Project Manager

enclosure(s)

cc: James Mitchell, Kittery Circle, LLC

Vanasse & Associates inc
Transportation Engineers & Planners

35 New England Business Center Drive
Suite 140
Andover, MA 01810

Ref: 9555

September 13, 2023

Mr. Maxim Zakian
Town Planner
Town of Kittery
200 Rogers Road
Kittery, ME 03904

Re: Response to Traffic Impact Study Review
Proposed Extended Stay Hotel - 139 Old Post Road, 112 & 120 US Route 1 Bypass
Kittery, Maine

Dear Max:

Vanasse & Associates, Inc. (VAI) is providing responses to the comments that were raised in the September 6, 2023 *Traffic Impact Study Review* letter prepared by CMA Engineers (CMA) concerning their review of the July 2023 *Traffic Impact Study* (the "July 2023 TIS") that was prepared by VAI in support of the proposed extended stay hotel to be located at 139 Old Post Road, 112 & 120 US Route 1 Bypass in Kittery, Maine (hereafter referred to as the "Project"). Listed below are the comments that were identified by CMA in the subject letter followed by our response on behalf of the Project proponent.

Comment 1. *The proposed hotel driveway access is offset from the driveway to the commercial building across the street (Rising Tide Natural Foods), which will create conflicts for left turning vehicles.*

Response: The separation (off-set) between the driveways is approximately 50 feet, which is sufficient to avoid overlapping turning movements or conflicts such that the driveways can function independently. A specific review of the left-turn movements entering and exiting both driveways indicates that the vehicle paths for the driveways do not overlap.

Comment 2. *There will be pedestrians generated from the hotel that want to access adjacent commercial facilities (convenience store, grocery store, restaurants). To safely accommodate these pedestrians, the applicant should include appropriate offsite improvements.*

Response: When provided, it is desirable to accommodate pedestrian crossings at an intersection where drivers anticipate that conflicts may occur and not at mid-block locations. For this reason, a sidewalk is proposed along the Project site frontage on Old Post Road to link the Project site to the crosswalk across the Old Post Road approach to the Kittery Traffic Circle (Route 1 at Route 236 and Old Post Road) that was recently constructed by MaineDOT at the intersection. Vehicles approaching the crosswalk at the Kittery Traffic Circle will generally be traveling at a reduced travel speed when approaching the crosswalk which is also advantageous for safety.

To the extent that the Town would like a crosswalk across Old Post Road at the driveway to 165 State Road (the commercial plaza that includes Auto Drip and Rising Tides Natural Foods grocery store and bakery), the crossing should include the installation of a pedestrian actuated Rectangular Rapid Flashing Beacon (RRFB) with accompanying pedestrian crossing warning signs at and in advance of the crossing. In addition, Americans with Disabilities Act (ADA) compliant wheelchair ramps should be provided on both sides of the crossing.

Comment 3. *The applicant is proposing incremental impacts to failing traffic movements with no mitigation proposed.*

Response: The addition of Project-related traffic to the Kittery Traffic Circle was not shown to result in a change in overall intersection operations over No-Build conditions; however, independent of the Project, overall intersection operations, as well as specific movements entering the rotary, are currently operating over capacity (i.e., level-of-service (LOS) "F") during the weekday evening peak-hour. The Project's impact on these movements was identified to be minor and quantified as an incremental increase in average motorist delay that resulted in a corresponding increase in vehicle queuing of up to four (4) vehicles.

Additional improvements to the Kittery Traffic Circle to add capacity, while desirable, are not warranted based on the relatively minor impact of the Project. Capacity improvements would necessitate widening the approaches to the rotary or other geometric or traffic control improvements, the cost of which would be disproportionate to the impact of the Project.

Comment 4. *The applicant identifies the traffic circle as a High Crash Location and offers to complete an intersection safety assessment prior to Certificate of Occupancy. Completing this study now could help identify improvements to safety that could be funded in part by the applicant.*

Response: As identified by CMA, the Applicant has committed to the completion of a safety assessment for the Kittery Traffic Circle as a condition of the approval of the Project with the assessment to be performed prior to the issuance of a Certificate of Occupancy for the Project. The Applicant will commit to the completion of the recommended improvements that are an outcome of the safety assessment along Old Post Road to the extent that the improvements entail sign and pavement marking enhancements and can be completed within the public right-of-way with the requisite permits and approvals.

Comment 5. *The traffic impact study notes the sight distance is substandard (150' less than desired) looking south from the site driveway without clearing trees/vegetation. The applicant shall confirm they have control over the area that needs to be cleared and show the required sight triangle on the site plans.*

Response: The sight triangles have been added to the Site Plan and illustrate that the subject areas are located within the Project site or the public right-of-way along Old Post Road. As such, the recommended trimming/removal of vegetation within the sight triangle areas can occur with the requisite permits and approvals from the Town.

We trust that this information is responsive to the comments that were identified in the September 6, 2023 letter prepared by CMA concerning their review of the July 2023 TIS prepared in support of the Project. If you should have any questions or would like to discuss our responses in more detail, please feel free to contact me.

Sincerely,

VANASSE & ASSOCIATES, INC.

Jeffrey Dirk

Jeffrey S. Dirk, P.E., PTOE, FITE
Managing Partner

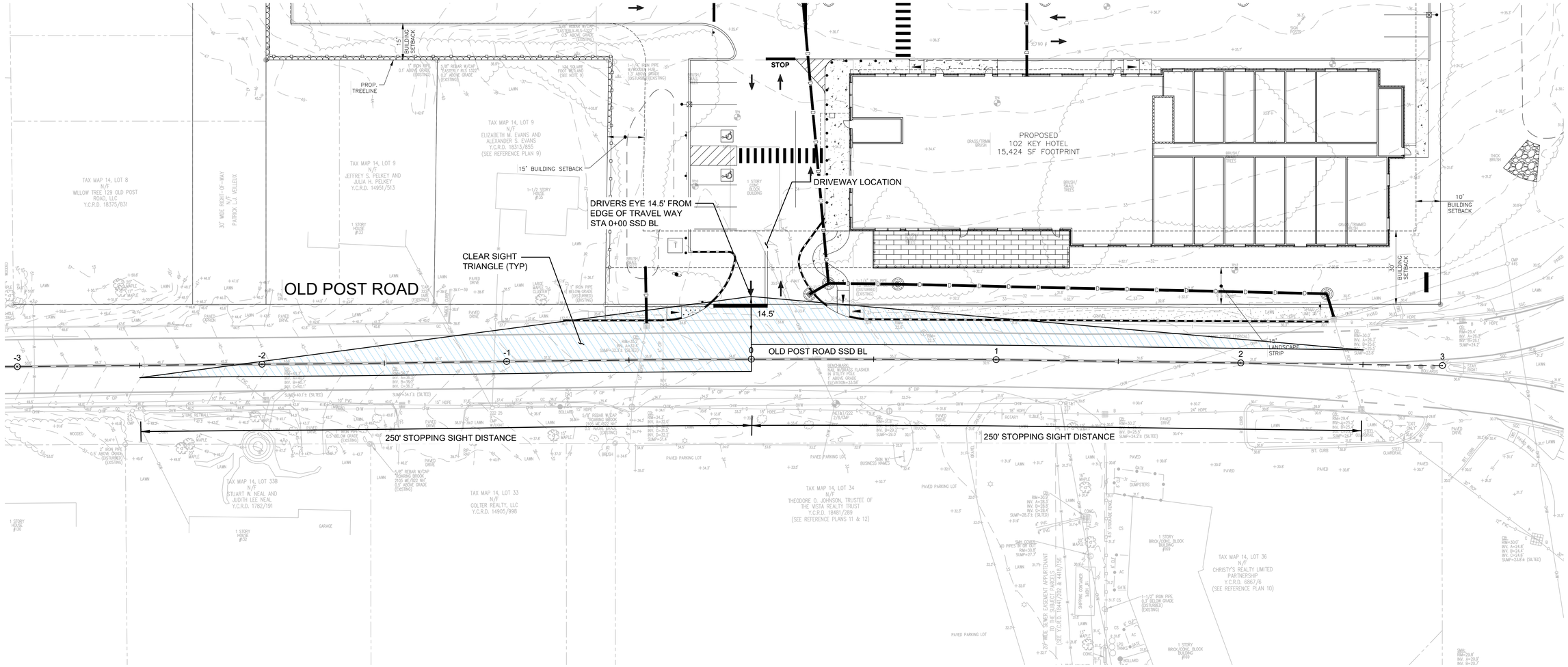
Professional Engineer in CT, MA, ME, NH, RI, and VA

JSD/jsd

Attachment

OLD POST ROAD
POSTED SPEED = 25 MPH
DESIGN SPEED = 35 MPH

STOPPING SIGHT DISTANCE PROVIDED = 250'



0 20 50 80

SCALE: 1" = 20'

NOTE: 1. THIS PLAN IS FOR REVIEW PURPOSES ONLY AND IS NOT INTENDED FOR CONSTRUCTION.

SIGHT DISTANCE STUDY PLAN

PROJECT:
PROPOSED HOTEL
OLD POST ROAD
KITTERY, MAINE

PROPONENT:
TROPIC STAR DEVELOPMENT
HAMPTON, NEW HAMPSHIRE

NO.	REVISIONS	DATE

Vanasse & Associates inc
Transportation Engineers & Planners
35 New England Business Center Drive - Suite 140 - Andover, MA 01810
www.vai.com 978-474-8800

DESIGNED BY:	IJS	DATE:	09/13/2023
DRAWN BY:	IJS	SCALE:	1" = 20'
CHECKED BY:	JSD	SHEET	1 OF 1

R:\9555\HWY\9555 SSD - Site Plan 9-12-23.dwg 9/13/2023 12:57 PM EDT

SITE DEVELOPMENT PLANS
PROPOSED HOTEL
for
ASSESSORS MAP 14 LOTS 10,12 & 12A
139 OLD POST ROAD, 112 & 120 US ROUTE 1 BYPASS
KITTERY, MAINE
Prepared for:
KITTERY CIRCLE, LLC
321D LAFAYETTE ROAD
HAMPTON, NH 03842

VICINITY MAP
SCALE: 1"=200'

INDEX TO DRAWINGS

ABUTTERS

PARCEL ID #	NAME & ADDRESS
MAP 13 LOT 9	COBALT PROPERTIES LLC PO BOX 868 CALAIS, ME 04619
MAP 14 LOT 36	CHRISTYS REALTY LIMITED PART. ATTN. CORP TAX DEPT LOC 125 PO BOX 711 DALLAS, TX 75221-0711
MAP 14 LOT 34	VISTA REALTY TRUST PO BOX 390419 CAMBRIDGE, MA 02139
MAP 14 LOT 11	ELIZABETH M. EVANS 135 OLD POST ROAD KITTERY, ME 03904
MAP 14 LOT 9	JEFFREY S. PELKEY PO BOX 1 ELIOT, ME 03903
MAP 14 LOT 1	FONTAINE MEMORIAL LLC 84 BROAD ST. PORTSMOUTH, NH 03801

GPI Engineering Design Planning Construction Management
603.893.0720 GPINET.COM
Greenman-Pedersen, Inc.
44 Stiles Road, Suite One
Salem, NH 03079

PREPARED FOR
KITTERY CIRCLE, LLC
321D LAFAYETTE ROAD
HAMPTON, NH 03842

ASSESSORS MAP 14 LOTS 10, 12 & 12A
139 OLD POST ROAD,
112 & 120 US ROUTE 1 BYPASS
KITTERY, MAINE

STATE OF MAINE
DAVID R. JORDAN
No. 17400
PROFESSIONAL ENGINEER
1/24/24

REVISIONS		
3	REV. SHEETS 2, 6-12, 14-16, 18, OFFSITE	1/24/24
2	REV. SHEETS 7-12, 15, TT, ADD OFF-SITE	10/11/23
1	REV. SHEETS 7-9,11-12,15,17-18	8/17/23
NO.	REVISION	DATE

AUGUST 2, 2023

DRAWN/DESIGN BY	CHECKED BY
CCC/NID	DRJ

TITLE SHEET

SCALE: NOT TO SCALE

PROJECT NO. NEX-2200380

LEGEND

Symbol	Description
12458/198	DEED BOOK/PAGE NUMBER
CMP	CORRUGATED METAL PIPE
CONC.	CONCRETE
HDPE	HIGH DENSITY POLYETHYLENE
N/F	NOW OR FORMERLY
RETWALL	RETAINING WALL
SGC	SLOPED GRANITE CURB
TWS	TACTILE WARNING SURFACE
Y.C.R.D.	YORK COUNTY REGISTRY OF DEEDS
+40.6'	SPOT ELEVATION
	TREE/BRUSH LINE
	DECIDUOUS TREE (AS NOTED)
	BUSH OR SHRUB
	BOULDER
	UTILITY POLE
	GUY WIRE
—OHW—	OVERHEAD WIRES
	GROUND LIGHT
CB	CATCH BASIN
—D—	APPROX. UNDERGROUND DRAINAGE LINE
	SIGN
TP10	TEST PIT
	EXISTING IRON PIPE (AS NOTED)
	EXISTING DRILL HOLE
	5/8" REBAR W/PLASTIC CAP "CIVIL CONSULT PLS 2362" (SET)
	LOCUS PARCEL BOUNDARY LINE
	LOCUS PARCEL APPROX. INTERIOR BOUNDARY LINE
	COMPILED ROAD RIGHT-OF-WAY LINE
	APPROX. ABUTTING PARCEL BOUNDARY LINE
	APPROX. HISTORICAL BOUNDARY LINE
	SURVEY BENCHMARK (AS NOTED)
	DELINEATED WETLAND
TBR	TO BE REMOVED
- X X X X X X	TO BE REMOVED
(1)	NUMBER OF PARKING SPACES
T.D.	TIP DOWN CURB
	PROP. BIT. CONCRETE CURB (BCC)
	PROP. VERTICAL GRANITE CURB (VGC)
C.O.	PROP. CLEANOUT
CB-1	PROP. CATCH BASIN
DMH-1	PROP. DRAIN MANHOLE
MEG	MEET EXISTING GRADE
331.25	PROP. SPOT ELEVATION
300	PROP. CONTOUR ELEVATION
TW=	TOP OF WALL ELEV.
BW=	BOTTOM OF WALL ELEV.
G.B.	GRADE BREAK
TP	TEST PIT
	PROP. GATE VALVE
	PROP. SEDIMENT CONTROL FENCE

DEMOLITION PLAN NOTES:

1) A DEMOLITION PERMIT MUST BE OBTAINED FROM THE TOWN OF KITTERY PRIOR TO COMMENCEMENT OF WORK. ALL EXISTING UTILITY DISCONNECTIONS MUST BE COORDINATED WITH RESPECTIVE UTILITY COMPANIES.

2) ALL DEMOLITION ACTIVITIES ARE TO BE PERFORMED IN STRICT ADHERENCE TO ALL FEDERAL, STATE AND LOCAL REGULATIONS. CONTRACTOR TO INSTALL EROSION CONTROL DEVICES IN ACCORDANCE WITH EROSION AND SEDIMENT CONTROL PLAN PRIOR TO BEGINNING DEMOLITION ACTIVITIES.

3) PROCEED WITH DEMOLITION IN A SYSTEMATIC MANNER, FROM THE TOP OF THE STRUCTURE(S) TO THE GROUND.

4) DEMOLISH CONCRETE IN ALL SECTIONS.

5) BREAK UP CONCRETE SLABS-ON-GRADE, UNLESS OTHERWISE DIRECTED BY THE CONSTRUCTION MANAGER.

6) CONDUCT ALL DEMOLITION OPERATIONS IN A MANNER THAT WILL PREVENT INJURY, DAMAGE TO STRUCTURES, ADJACENT BUILDINGS AND ALL PERSONS.

7) REFRAIN FROM USING EXPLOSIVES WITHOUT PRIOR WRITTEN CONSENT OF THE DEVELOPER AND APPLICABLE GOVERNMENTAL AUTHORITIES.

8) CONDUCT DEMOLITION SERVICES IN SUCH A MANNER TO ENSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, WALKS AND OTHER ADJACENT FACILITIES. DO NOT CLOSE OR OBSTRUCT STREETS, WALKS OR OTHER OCCUPIED FACILITIES WITHOUT PRIOR WRITTEN PERMISSION OF THE DEVELOPER AND APPLICABLE GOVERNMENTAL AUTHORITIES. PROVIDE ALTERNATIVE ROUTES AROUND CLOSED OR OBSTRUCTED TRAFFIC WAYS IF REQUIRED BY APPLICABLE GOVERNMENTAL REGULATIONS.

9) USE WATERING, TEMPORARY ENCLOSURES AND OTHER SUITABLE METHODS, AS NECESSARY TO LIMIT THE AMOUNT OF DUST AND DIRT RISING AND SCATTERING IN THE AIR. CLEAN ADJACENT STRUCTURE AND IMPROVEMENTS OF ALL DUST AND DEBRIS CAUSED BY THE DEMOLITION OPERATIONS. RETURN ALL ADJACENT AREAS TO THE CONDITIONS EXISTING PRIOR TO THE START OF WORK.

10) ACCOMPLISH AND PERFORM THE DEMOLITION IN SUCH A MANNER AS TO PREVENT THE UNAUTHORIZED ENTRY OF PERSONS AT ANY TIME.

11) COMPLETELY FILL BELOW GRADE AREAS AND VOIDS RESULTING FROM THE DEMOLITION OF STRUCTURES AND FOUNDATIONS WITH SOIL MATERIALS CONSISTING OF STONE, GRAVEL AND SAND, FREE FROM DEBRIS, TRASH, FROZEN MATERIALS, ROOTS AND OTHER ORGANIC MATTER. STONES USED WILL NOT BE LARGER THAN 6 INCHES IN DIMENSION. MATERIAL FROM DEMOLITION MAY NOT BE USED AS FILL. PRIOR TO PLACEMENT OF FILL MATERIALS, UNDERTAKE ALL NECESSARY ACTION IN ORDER TO INSURE THAT AREAS TO BE FILLED ARE FREE OF STANDING WATER, FROZEN MATERIAL, TRASH, DEBRIS. PLACE FILL MATERIALS LAYERS NOT EXCEEDING 6 INCHES IN LOOSE DEPTH AND COMPACT EACH LAYER AT PLACEMENT TO 95% OPTIMUM DENSITY, GRADE SURFACE TO MEET ADJACENT CONTOURS AND TO PROVIDE SURFACE DRAINAGE.

12) REMOVE FROM THE DESIGNATED SITE, AT THE EARLIEST POSSIBLE TIME, ALL DEBRIS RUBBISH, SALVAGEABLE ITEMS, HAZARDOUS AND COMBUSTIBLE SERVICES. REMOVED MATERIALS MAY NOT BE STORED, SOLD OR BURNED ON SITE. REMOVAL OF HAZARDOUS AND COMBUSTIBLE MATERIALS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE PROCEDURES AS AUTHORIZED BY THE FIRE DEPARTMENT OR OTHER APPROPRIATE REGULATORY AGENCIES AND DEPARTMENTS.

13) DISCONNECT, SHUT OFF AND SEAL ALL UTILITIES SERVING THE STRUCTURE(S) TO BE DEMOLISHED BEFORE THE COMMENCEMENT OF THE DESIGNATED DEMOLITION. MARK FOR POSITION ALL UTILITY DRAINAGE AND SANITARY LINES AND PROTECT ALL ACTIVE LINES. CLEARLY IDENTIFY BEFORE THE COMMENCEMENT OF DEMOLITION SERVICES THE REQUIRED INTERRUPTION OF ACTIVE SYSTEMS THAT MAY AFFECT OTHER PARTIES, AND NOTIFY ALL APPLICABLE UTILITY COMPANIES TO INSURE THE CONTINUATION OF SERVICE.

14) PROTECT EXISTING DRAINAGE SYSTEM(S) AS NECESSARY TO PREVENT SEDIMENT FROM ENTERING DURING CONSTRUCTION. SEE DETAIL SHEETS FOR EROSION CONTROL DEVICES.

15) ALL WORK WITHIN ROADWAY RIGHT-OF-WAYS TO CONFORM TO TOWN STANDARDS.

16) THE LIMITS OF WORK SHALL BE CLEARLY MARKED IN THE FIELD PRIOR TO THE START OF CONSTRUCTION OR SITE CLEARING.

17) IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO NOTIFY DIG SAFE (DIAL 811) 72 HOURS PRIOR TO ANY EXCAVATION ON THIS SITE. CONTRACTOR SHALL ALSO NOTIFY LOCAL WATER DEPARTMENT TO MARK OUT THEIR UTILITIES.

18) NOTES ON THIS PLAN THAT READ "TBR" REPRESENT FEATURES TO BE REMOVED. ANY FEATURES NOT LABELED "TBR" OR "TO BE REMOVED" SHALL BE CONSIDERED EXISTING TO REMAIN.

19) SEE LANDSCAPE PLAN FOR LIMITS OF CLEARING AND GRUBBING. AFTER CLEARING, STRIP AND STOCKPILE TOP SOIL PER LANDSCAPE PLAN, IF APPLICABLE.

SITE PLAN NOTES:

1) THE PURPOSE OF THIS PLAN IS TO PROPOSE THE CONSTRUCTION OF A NEW 4-STORY, 102 ROOM HOTEL.

2) EXISTING BOUNDARY AND PLANIMETRIC INFORMATION AS SHOWN IS THE RESULT OF A FIELD SURVEY BY CIVIL CONSULTANTS OF SOUTH BERWICK, MAINE.

3) TAX MAP 14 LOTS 10, 12, 12A

4) ZONING DISTRICT: (C-3) COMMERCIAL 3

5) LOT AREA = 85,563 Sq.Ft.
= 1.9643Ac.±

6) EXISTING USE: FORMER GAS STATION
PROPOSED USE: 102 KEY HOTEL

7) ALL BUILDINGS AND SITE CONSTRUCTION SHALL COMPLY WITH THE RULES AND REGULATIONS OF THE AMERICANS WITH DISABILITIES ACT (ADA) OF 1990, AS AMENDED.

8) THE LOCATIONS OF EXISTING SUBSURFACE UTILITIES SHOWN ON THIS PLAN WERE COMPILED FROM AVAILABLE RECORD DRAWINGS AND ARE NOT WARRANTED TO BE CORRECT. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING SUBSURFACE UTILITIES PRIOR TO PERFORMING ANY WORK.

9) WRITTEN DIMENSIONS ON THIS PLAN TAKE PRECEDENCE OVER SCALED DIMENSIONS. THE CONTRACTOR SHALL USE CAUTION WHEN SCALING REPRODUCED PLANS. IN THE EVENT OF A CONFLICT BETWEEN THIS PLAN SET AND ANY OTHER DRAWINGS AND/OR SPECIFICATIONS, THE ENGINEER SHALL BE NOTIFIED BY THE CONTRACTOR.

10) THE CONTRACTOR SHALL CALL AND COORDINATE WITH DIGSAFE 811 PRIOR TO ANY EXCAVATION.

11) ALL CONSTRUCTION SHALL CONFORM TO THE APPLICABLE REGULATIONS AND STANDARDS OF THE TOWN OF KITTERY AND THE STATE OF MAINE.

12) THE SURVEY TRACT IS NOT LOCATED IN A SPECIAL FLOOD HAZARD AREA (100 YEAR FLOOD) PER FLOOD INSURANCE RATE MAP NUMBER 2301710004C, WITH AN EFFECTIVE DATE OF JULY 5, 1984.

13) ALL CONSTRUCTION SHALL CONFORM TO THESE PLANS AND THE STANDARD CONSTRUCTION DRAWINGS AS SUPPLIED BY THE DEVELOPER.

14) A SIGN PERMIT SHALL BE OBTAINED PRIOR TO INSTALLATION.

15) PROPOSED SNOW STORAGE AREAS AS SHOWN. ANY EXCESS SNOW TO BE TRUCKED OFF-SITE.

16) THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION AND FOR CONDITIONS AT THE SITE. THESE PLANS, PREPARED BY GREENMAN-PEDERSEN, INC., DO NOT EXTEND TO OR INCLUDE SYSTEMS PERTAINING TO THE SAFETY OF THE CONSTRUCTION CONTRACTOR OR THEIR EMPLOYEES, AGENTS OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE SEAL OF THE SURVEYOR AND/OR ENGINEER AS INCLUDED IN THE PLAN SET DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEMS THAT MAY NOW OR HEREAFTER BE INCORPORATED INTO THESE PLANS. THE CONSTRUCTION CONTRACTOR SHALL PREPARE AND/OR OBTAIN THE APPROPRIATE SAFETY SYSTEMS WHICH MAY BE REQUIRED BY THE U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND/OR LOCAL REGULATIONS.

17) THE FOLLOWING MODIFICATIONS WERE GRANTED BY THE KITTERY PLANNING BOARD ON NOVEMBER 16, 2023 PER SECTION 16.7.11.F.(4)(K):

- A MODIFICATION TO ALLOW AN OVERHEAD ELECTRIC UTILITY WIRE TO CONNECT A CMP UTILITY POLE TO THE SITE.
- A MODIFICATION TO ALLOW DRAINAGE PIPES SMALLER THAN 12".
- A MODIFICATION TO ALLOW A REDUCTION IN THE REQUIRED PARKING SPACES FROM 102 TO 97 SPACES.
- A MODIFICATION TO THE PARKING SPACE DIMENSIONS TO ALLOW A STANDARD PARKING SPACE LENGTH OF 18' WHERE 19' IS REQUIRED.
- A MODIFICATION TO ALLOW A REDUCTION IN THE LANDSCAPE STRIP ALONG US ROUTE 1 BYPASS FROM 15 FEET TO 7 FEET.

GRADING & DRAINAGE PLAN NOTES:

1) ALL SITE DRAINAGE PIPE SHALL BE CORRUGATED HIGH-DENSITY POLYETHYLENE PIPE WITH STANDARD JOINTS, DUAL-WALL, SMOOTH INTERIOR, AS MANUFACTURED BY ADS, INC., OR APPROVED EQUAL, UNLESS OTHERWISE NOTED ON PLAN.

2) ALL ROOF AND CANOPY DRAIN PIPE SHALL BE 6" PVC (SDR-35).

3) ELEVATIONS ARE BASED ON NAVD88 DATUM+0.34' (REFERENCE PLAN DATUM).

4) ALL PROPOSED ELEVATIONS AS SHOWN ARE BOTTOM OF CURB ELEVATIONS, UNLESS OTHERWISE NOTED.

5) THE LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE ONLY. THE CONTRACTOR IS TO VERIFY EXACT LOCATION PRIOR TO CONSTRUCTION. THE CONTRACTOR IS TO NOTIFY THE DESIGN ENGINEER OF ANY DISCREPANCIES. CONSTRUCTION SHALL COMMENCE BEGINNING AT THE LOWEST INVERT (POINT OF CONNECTION) AND PROGRESS UP GRADIENT. PROPOSED INTERFACE POINTS (CROSSINGS) WITH EXISTING UNDERGROUND INSTALLATIONS SHALL BE FIELD VERIFIED BY TEST PIT PRIOR TO COMMENCEMENT OF CONSTRUCTION.

6) ALL CONSTRUCTION SHALL CONFORM TO MUNICIPAL DPW AND ALL APPLICABLE STATE AND FEDERAL STANDARDS.

7) THE CONTRACTOR SHALL CALL AND COORDINATE WITH DIG-SAFE (DIAL 811) PRIOR TO COMMENCING ANY EXCAVATION.

8) THIS SITE WILL REQUIRE A MAINE DEP CONSTRUCTION ACTIVITY GENERAL PERMIT UNDER THE MAINE POLLUTANT DISCHARGE ELIMINATION SYSTEM (MEPDES) FOR THE SITE CONSTRUCTION SINCE THE DISTURBANCE EXCEEDS ONE ACRE (ACTUAL DISTURBANCE = 105,000 SF±). THE CONSTRUCTION SITE OPERATOR SHALL DEVELOP AND IMPLEMENT A CONSTRUCTION STORM WATER POLLUTION PREVENTION PLAN (SWPPP), WHICH SHALL REMAIN ON SITE AND MADE ACCESSIBLE TO THE PUBLIC. A COMPLETED NOTICE OF TERMINATION (NOT) SHALL BE SUBMITTED TO MPDES PERMITTING AUTHORITY WITHIN 30 DAYS AFTER EITHER OF THE FOLLOWING CONDITIONS HAVE BEEN MET: FINAL STABILIZATION HAS BEEN ACHIEVED ON ALL PORTIONS OF THE SITE FOR WHICH THE PERMITTEE IS RESPONSIBLE; OR ANOTHER OPERATOR/PERMITTEE HAS ASSUMED CONTROL OVER ALL AREAS OF THE SITE THAT HAVE NOT BEEN FINALLY STABILIZED.

9) ALL TRAFFIC CONTROL AND TEMPORARY CONSTRUCTION SIGNAGE ARRANGEMENTS, ACCEPTABLE TO MAINEDOT AND THE TOWN DEPARTMENT OF PUBLIC WORKS, SHALL BE EMPLOYED DURING OPERATIONS WITHIN THE PUBLIC RIGHT-OF-WAY.

10) ALL ADA ACCESSIBLE WALKWAYS CANNOT EXCEED 5% RUNNING SLOPE AND 2% CROSS SLOPE, RAMPS CANNOT EXCEED 8.33% RUNNING SLOPE AND 2% CROSS SLOPE, AND ACCESSIBLE PARKING STALLS AND ACCESS AISLES CANNOT EXCEED 2% SLOPE IN ANY DIRECTION. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES.

11) SEE UTILITY PLAN FOR DETAILED UTILITY LAYOUT.

12) ALL PROPOSED CATCH BASINS SHALL HAVE 4' SUMPS AND OUTLETS EQUIPPED WITH "ELIMINATOR" OIL HOODS OR APPROVED EQUAL.

13) ALL PIPE DATA IS CALCULATED TO CENTER OF STRUCTURE, TYP.

14) CONTRACTOR TO REFER TO THE STORMWATER INSPECTION & MAINTENANCE PLAN FOR STORMWATER MANAGEMENT SYSTEMS & SITE MAINTENANCE DURING AND AFTER CONSTRUCTION.

UTILITY PLAN NOTES:

1) ALL SANITARY SEWER PIPE SHALL BE PVC (SDR-35), UNLESS OTHERWISE NOTED.

2) ALL WATER PIPE SHALL BE COPPER (TYPE K), UNLESS OTHERWISE NOTED.

3) ANY UTILITY FIELD ADJUSTMENTS SHALL BE APPROVED BY THE ENGINEER OF RECORD AND COORDINATED WITH THE APPROPRIATE LOCAL UTILITY COMPANY.

4) THE LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE ONLY. THE CONTRACTOR IS TO VERIFY EXACT LOCATION PRIOR TO CONSTRUCTION. THE CONTRACTOR IS TO NOTIFY THE DESIGN ENGINEER OF ANY DISCREPANCIES.

5) ALL CONSTRUCTION SHALL CONFORM TO KITTERY WATER DISTRICT, KITTERY SEWER SERVICES, AND ALL APPLICABLE STATE AND FEDERAL STANDARDS.

6) THE CONTRACTOR SHALL CALL AND COORDINATE WITH DIGSAFE 811 PRIOR TO ANY EXCAVATION.

7) ALL WATER AND SEWER CONSTRUCTION SHALL CONFORM TO KITTERY WATER DISTRICT AND KITTERY SEWER SERVICES SPECIFICATIONS.

8) THIS SITE IS SERVED BY KITTERY WATER DISTRICT AND KITTERY SEWER SERVICES.

9) ALL ELECTRIC, TELEPHONE AND CABLE TV LINES ARE TO BE UNDERGROUND AND INSTALLED IN CONFORMANCE WITH APPLICABLE UTILITY CO. SPECIFICATIONS.

10) ANY UTILITIES TO BE TAKEN OUT OF SERVICE SHALL BE DISCONNECTED AS DIRECTED BY UTILITY COMPANY AND LOCAL DPW.

11) ALL TRAFFIC CONTROL AND TEMPORARY CONSTRUCTION SIGNAGE ARRANGEMENTS, ACCEPTABLE TO MAINEDOT AND TOWN DEPARTMENT OF PUBLIC WORKS, SHALL BE EMPLOYED DURING OPERATIONS WITHIN THE PUBLIC RIGHT-OF-WAY.

12) SEE GRADING & DRAINAGE PLAN FOR DETAILED DRAINAGE INFORMATION.

13) REFER TO DETAIL SHEETS FOR ALL UTILITY DETAILS AND ADDITIONAL INFORMATION.

EROSION & SEDIMENT CONTROL PLAN NOTES:

1) THE EROSION CONTROL PROCEDURES SHALL CONFORM TO THE MAINE EROSION SEDIMENT CONTROL BEST MANAGEMENT PRACTICES (BMPs) MANUAL FOR DESIGNERS AND ENGINEERS DATED OCTOBER 2016, OR LATEST EDITION.

2) DURING CONSTRUCTION AND THEREAFTER, EROSION CONTROL MEASURES ARE TO BE IMPLEMENTED AS NOTED: THE SMALLEST PRACTICAL AREA OF LAND SHOULD BE EXPOSED AT ANY ONE TIME DURING DEVELOPMENT. WHEN LAND IS EXPOSED DURING DEVELOPMENT, THE EXPOSURE SHOULD BE KEPT TO THE SHORTEST PRACTICAL PERIOD OF TIME AS APPROVED BY THE ENGINEER. LAND SHOULD NOT BE LEFT EXPOSED DURING THE WINTER MONTHS.

3) ALL PERMANENT STORMWATER STRUCTURES SHALL BE STABILIZED PRIOR TO DIRECTING FLOW INTO THEM. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURED:
A) BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED.
B) A MINIMUM OF 85 PERCENT VEGETATED GROWTH HAS BEEN ESTABLISHED.
C) A MINIMUM OF 3 INCHES OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP-RAP HAS BEEN INSTALLED.
D) OR, EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.

4) SEDIMENT CONTROL FENCE SHALL BE INSTALLED AND MAINTAINED DURING AND AFTER DEVELOPMENT TO REMOVE SEDIMENT FROM RUNOFF WATER AND FROM LAND UNDERGOING DEVELOPMENT. WHERE POSSIBLE, NATURAL DRAINAGE WAYS SHOULD BE UTILIZED AND LEFT OPEN TO REMOVE EXCESS SURFACE WATER. SEDIMENT CONTROL FENCE TO BE MAINTAINED AND CLEANED UNTIL ALL SLOPES HAVE A HEALTHY STAND OF GRASS.

5) ALL DISTURBED AREAS AND SIDE SLOPES WHICH ARE FINISHED GRADED, WITH NO FURTHER CONSTRUCTION TO TAKE PLACE, SHALL BE LOAMED AND SEEDED WITHIN 72 HOURS AFTER FINAL GRADING. A MINIMUM OF 4" OF LOAM SHALL BE INSTALLED WITH NOT LESS THAN ONE POUND OF SEED PER 50 SQUARE YARDS OF AREA. THE SEED MIX SHALL BE AS DESIGNATED BELOW.

6) ANY DISTURBED AREAS WHICH ARE TO BE LEFT TEMPORARILY, AND WHICH WILL BE REGRADED LATER DURING CONSTRUCTION SHALL BE MACHINE HAY MULCHED AND SEEDED WITH RYE GRASS TO PREVENT EROSION. THE MAXIMUM LENGTH OF TIME FOR THE EXPOSURE OF DISTURBED SOILS SHALL BE 45 DAYS. HAY OR STRAW MULCH SHALL BE APPLIED TO ALL FRESHLY SEEDED AREAS AT THE RATE OF 2 TONS PER ACRE. BALES SHALL BE UNSPOILED, AIR DRIED, AND FREE FROM WEED, SEEDS AND ANY COARSE MATERIAL.

7) DURING GRADING OPERATIONS INSTALL SEDIMENT CONTROL FENCE ALONG TOE OF SLOPE OF FILL AREAS WHERE SHOWN. BARRIERS ARE TO BE MAINTAINED UNTIL DISTURBED AREAS ARE PAVED OR GRASSED.

8) THE FILL MATERIAL SHALL BE OF APPROVED SOIL TYPE FREE FROM STUMPS, ROOTS, WOOD, ETC. TO BE PLACED IN 12" LIFTS OR AS SPECIFIED. BULLDOZERS, TRUCKS, TRACTORS, OR ROLLERS MAY BE USED FOR COMPACTION.

9) AVOID THE USE OF FUTURE OPEN SPACES (LOAM & SEED) WHEREVER POSSIBLE DURING CONSTRUCTION. CONSTRUCTION TRAFFIC SHALL USE THE ROADBEDS OF FUTURE ROADS.

TEMPORARY EROSION CONTROL MEASURES:

1) THE SMALLEST PRACTICAL AREA OF LAND SHALL BE EXPOSED AT ANY ONE TIME.

2) SEDIMENT CONTROL FENCE SHALL BE INSTALLED AS REQUIRED. FENCE IS TO BE MAINTAINED AND CLEANED UNTIL ALL SLOPES HAVE A HEALTHY STAND OF GRASS.

3) BALED HAY AND MULCH SHALL BE MOWINGS OF ACCEPTABLE HERBACEOUS GROWTH, FREE FROM NOXIOUS WEEDS OR WOODY STEMS, AND SHALL BE DRY. NO SALT HAY SHALL BE USED.

4) FILL MATERIAL SHALL BE FREE FROM STUMPS, WOOD, ROOTS, ETC.

5) STOCKPILED MATERIALS SHALL BE PLACED ONLY IN AREAS SHOWN ON THE PLANS. STOCKPILES SHALL BE PROTECTED BY SEDIMENT CONTROL FENCING AND SEEDED TO PREVENT EROSION. THESE MEASURES SHALL REMAIN UNTIL ALL MATERIAL HAS BEEN PLACED OR DISPOSED OFF SITE.

6) ALL DISTURBED AREAS SHALL BE LOAMED AND SEEDED. A MINIMUM OF 4 INCHES OF LOAM SHALL BE INSTALLED WITH NOT LESS THAN ONE POUND OF SEED PER 50 SQUARE YARDS OF AREA.

7) SEED MIX SHALL BE EQUAL PARTS OF RED FESCUE (CREEPING), KENTUCKY BLUE GRASS, REDTOP, PERENNIAL RYEGRASS.

8) AFTER ALL DISTURBED AREAS HAVE BEEN STABILIZED, THE TEMPORARY EROSION CONTROL MEASURES ARE TO BE REMOVED.

9) PAVED ROADWAYS MUST BE KEPT CLEAN AT ALL TIMES.

10) ALL CATCH BASIN INLETS WILL BE PROTECTED WITH INLET PROTECTION AND/OR SILT SACKS.

11) ALL STORM DRAINAGE OUTLETS WILL BE STABILIZED AND CLEANED AS REQUIRED, BEFORE THE DISCHARGE POINTS BECOME OPERATIONAL.

12) ALL DEWATERING OPERATIONS MUST DISCHARGE DIRECTLY INTO A SEDIMENT FILTER AREA OR DEWATERING FILTER BAG.

13) TO PREVENT TRACKING OF SEDIMENT ONTO THE EXISTING ROADS, ALL CONSTRUCTION TRAFFIC CAN ONLY EXIT THE SITE OVER THE CONSTRUCTION EXIT SHOWN ON SHEET 11, EROSION & SEDIMENT CONTROL PLAN.

CONSTRUCTION SEQUENCE:

1) SEDIMENT AND EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY ON-SITE CONSTRUCTION AS SHOWN. ADDITIONAL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES SHALL BE INSTALLED AS SOON AS PRACTICAL.

2) REMOVE AND STOCKPILE SOIL AS REQUIRED. STOCKPILE SHALL BE SURROUNDED WITH SEDIMENT CONTROL FENCING TO PREVENT EROSION.

3) CONSTRUCT DRIVEWAYS AND PERFORM SITE GRADING.

4) INSTALL UNDERGROUND UTILITIES & DRAINAGE.

5) BEGIN TEMPORARY AND PERMANENT SEEDING AND MULCHING. ALL CUT AND FILL SLOPES SHALL BE SEEDED OR MULCHED IMMEDIATELY AFTER THEIR CONSTRUCTION.

6) DAILY, OR AS REQUIRED, CONSTRUCT, INSPECT, AND IF NECESSARY, RECONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, SEDIMENT CONTROL FENCES, HAYBALES AND SEDIMENT TRAPS INCLUDING MULCHING AND SEEDING.

7) BEGIN EXCAVATION FOR AND CONSTRUCTION OF BUILDING.

8) FINISH PAVING ALL DRIVES AND PARKING AREAS. CLEAN ALL DRAINAGE STRUCTURES.

9) COMPLETE PERMANENT SEEDING AND LANDSCAPING.

10) AFTER GRASS HAS BEEN FULLY GERMINATED IN ALL SEEDED AREAS, REMOVE ALL TEMPORARY EROSION CONTROL MEASURES.

WINTER STABILIZATION NOTES:

MAINTENANCE REQUIREMENTS:
MAINTENANCE MEASURES SHOULD CONTINUE AS NEEDED THROUGHOUT CONSTRUCTION, INCLUDING THE OVER-WINTER PERIOD. AFTER EACH RAINFALL, SNOWSTORM, OR PERIOD OF THAWING AND RUNOFF, THE SITE CONTRACTOR SHOULD CONDUCT AN INSPECTION OF ALL INSTALLED EROSION CONTROL MEASURES AND PERFORM REPAIRS AS NEEDED TO INSURE THEIR CONTINUING FUNCTION. FOR ANY AREA STABILIZED BY TEMPORARY OR PERMANENT SEEDING PRIOR TO THE ONSET OF THE WINTER SEASON, THE CONTRACTOR SHOULD CONDUCT AN INSPECTION IN THE SPRING TO ASCERTAIN THE CONDITION OF VEGETATION COVER, AND REPAIR ANY DAMAGE AREAS OR BARE SPOTS AND RESEED AS REQUIRED TO ACHIEVE AN ESTABLISHED VEGETATIVE COVER (AT LEAST 85% OF AREA VEGETATED WITH HEALTHY, VIGOROUS GROWTH).
SPECIFICATIONS:
TO ADEQUATELY PROTECT WATER QUALITY DURING COLD WEATHER AND DURING SPRING RUNOFF, THE FOLLOWING STABILIZATION TECHNIQUES SHOULD BE EMPLOYED DURING THE PERIOD FROM OCTOBER 15TH THROUGH MAY 15TH.

1) THE AREA OF EXPOSED, UNSTABILIZED SOIL SHOULD BE LIMITED TO ONE ACRE AND SHOULD BE PROTECTED AGAINST EROSION BY THE METHODS DESCRIBED IN THIS SECTION PRIOR TO ANY THAW OR SPRING MELT EVENT. SUBJECT TO APPLICABLE REGULATIONS, THE ALLOWABLE AREA OF EXPOSED SOIL MAY BE INCREASED IF ACTIVITIES ARE CONDUCTED ACCORDING TO A WINTER CONSTRUCTION PLAN, DEVELOPED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF MAINE OR A CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL AS CERTIFIED BY THE CSPESC COUNCIL OF ENVIROCERT INTERNATIONAL, INC.
2) STABILIZATION AS FOLLOWS SHOULD BE COMPLETED WITHIN A DAY OF ESTABLISHING THE GRADE THAT IS FINAL OR THAT OTHERWISE WILL EXIST FOR MORE THAN 5 DAYS:
A. ALL PROPOSED VEGETATED AREAS HAVING A SLOPE OF LESS THAN 15% WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHOULD BE SEEDED AND COVERED WITH 3 TO 4 TONS OF HAY OR STRAW MULCH PER ACRE SECURED WITH ANCHORED NETTING, OR 2 INCHES OF EROSION CONTROL MIX (SEE DESCRIPTION OF EROSION CONTROL MIX BERMS FOR MATERIAL SPECIFICATION).
B. ALL PROPOSED VEGETATED AREAS HAVING A SLOPE OF GREATER OOTHAN 15% WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHOULD BE SEEDED AND COVERED WITH A PROPERLY INSTALLED AND ANCHORED EROSION CONTROL BLANKET OR WITH A MINIMUM 4 INCH THICKNESS OF EROSION CONTROL MIX, UNLESS OTHERWISE SPECIFIED BY THE MANUFACTURER. NOTE THAT COMPOST BLANKETS SHOULD NOT EXCEED 2 INCHES IN THICKNESS OR THEY MAY OVERHEAT.
3) ALL STONE-COVERED SLOPES MUST BE CONSTRUCTED AND STABILIZED BY OCTOBER 15.
4) INSTALLATION OF ANCHORED HAY MULCH OR EROSION CONTROL MIX SHOULD NOT OCCUR OVER SNOW OF GREATER THAN ONE INCH IN DEPTH.
5) ALL MULCH APPLIED DURING WINTER SHOULD BE ANCHORED (E.G., BY NETTING, TRACKING, WOOD CELLULOSE FIBER).
6) STOCKPILES OF SOIL MATERIALS SHOULD BE MULCHED FOR OVER WINTER PROTECTION WITH HAY OR STRAW AT TWICE THE NORMAL RATE OR WITH A FOUR-INCH LAYER OF EROSION CONTROL MIX. MULCHING SHOULD BE DONE WITHIN 24 HOURS OF STOCKING, AND RE-ESTABLISHED PRIOR TO ANY RAINFALL OR SNOWFALL. NO SOIL STOCKPILE SHOULD BE PLACED (EVEN COVERED WITH MULCH) WITHIN 100 FEET FROM ANY WETLAND OR OTHER WATER RESOURCE AREA.
7) FROZEN MATERIALS, (E.G., FROST LAYER THAT IS REMOVED DURING WINTER CONSTRUCTION), SHOULD BE STOCKPILED SEPARATELY AND IN A LOCATION THAT IS AWAY FROM ANY AREA NEEDING TO BE PROTECTED. STOCKPILES OF FROZEN MATERIAL CAN MELT IN THE SPRING AND BECOME UNWORKABLE AND DIFFICULT TO TRANSPORT DUE TO THE HIGH MOISTURE CONTENT IN THE SOIL.
8) INSTALLATION OF EROSION CONTROL BLANKETS SHOULD NOT OCCUR OVER SNOW OF GREATER THAN ONE INCH IN DEPTH OR ON FROZEN GROUND.
9) ALL GRASS-LINED DITCHES AND CHANNELS SHOULD BE CONSTRUCTED AND STABILIZED BY SEPTEMBER 1. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHOULD BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS, AS DETERMINED BY A QUALIFIED PROFESSIONAL ENGINEER OR A CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL AS CERTIFIED BY THE CSPESC COUNCIL OF ENVIROCERT INTERNATIONAL, INC. IF A STONE LINING IS NECESSARY, THE CONTRACTOR MAY NEED TO RE-GRADE THE DITCH AS REQUIRED TO PROVIDE ADEQUATE CROSS-SECTION AFTER ALLOWING FOR PLACEMENT OF THE STONE.
10) ALL STONE-LINED DITCHES AND CHANNELS MUST BE CONSTRUCTED AND STABILIZED BY OCTOBER 15.
11) AFTER OCTOBER 15, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL.
12) SEDIMENT BARRIERS THAT ARE INSTALLED DURING FROZEN CONDITIONS SHOULD CONSIST OF EROSION CONTROL MIX BERMS, OR CONTINUOUS CONTAINED BERMS. SEDIMENT CONTROL FENCES AND HAY BALES SHOULD NOT BE INSTALLED WHEN FROZEN CONDITIONS PREVENT PROPER EMBEDMENT OF THESE BARRIERS.

LANDSCAPE PLAN NOTES:

1) ALL PLANT STOCK SHALL CONFORM TO ANSI Z260.1 – NURSERY STOCK, LATEST EDITION (AMERICAN ASSOCIATION OF NURSERYMEN, INC.).

2) A 4' DIA. TREE RING WITH 3" AGED PINE BARK MULCH TO BE INSTALLED AT BASE OF ALL TREES IN LAWN AREAS.

3) 3" AGED PINE BARK MULCH SHALL BE APPLIED TO ALL SHRUB AND GROUNDCOVER BEDS.

4) A WEED BARRIER (TY-PAR FABRIC OR APPROVED EQUAL) SHALL BE APPLIED TO ALL SHRUB AND GROUNDCOVER BEDS. INSTALL WEED BARRIER AS PER MANUFACTURERS RECOMMENDATIONS.

5) THE CONTRACTOR SHALL PROVIDE TESTING OF SOILS IN PLANTING LOCATIONS. THE CONTRACTOR SHALL PROVIDE TEST RESULTS AND RECOMMENDATIONS AS NECESSARY FOR SOIL AMENDMENT TO THE ENGINEER FOR THEIR APPROVAL. BACKFILL SHALL BE A BLEND OF ONE-PART LOAM BORROW, ONE PART ORGANIC MATERIAL AND TWO-PARTS EXISTING SUBSOIL.

6) ALL LANDSCAPED AREAS NOT PLANTED WITH TREES, SHRUBS OR GROUNDCOVER SHALL BE RESTORED WITH SEED AS INDICATED ON PLANS.

7) ALL SEED, SOD, SHRUB AND TREE AREAS SHALL RECEIVE 6" PH CORRECTED TOPSOIL. AFTER TOPSOIL IS SPREAD EVENLY OVER ENTIRE AREA, ALL CLODS, LUMPS, STONES AND OTHER DELETERIOUS MATERIAL SHALL BE RAKED UP AND REMOVED.

8) NEW ENGLAND NATIVE WARM SEASON GRASS MIX SHALL CONTAIN THE FOLLOWING: LITTLE BLUESTEM (SCHIZACHYRIUM SCOPARIUM), BIG BLUESTEM (ANDROPOGON GERARDII), VIRGINIA WILD RYE (ELYMUS VIRGINICUS), INDIAN GRASS (SORGHASTRUM NUTANS), RED FESCUE (FESTUCA RUBRA), SWITCH GRASS (PANICUM VIRGATUM).

9) APPLICATION OF GRASS SEED, FERTILIZERS AND STRAW MULCH SHALL BE ACCOMPLISHED BY BROADCAST SEEDING OR HYDROSEEDING AT THE RATES OUTLINED BELOW:

LIMESTONE: 100 LBS./1,000 SQUARE FEET.
FERTILIZER: 500 LBS/ACRE OF 10-20-20 OR 1000 LBS/ACRE OF 5-10-10.
STRAW MULCH: APPROXIMATELY 3 TONS/ACRE
NEW ENGLAND NATIVE WARM SEASON GRASS MIX: 23 LBS/ACRE

SEED MIX (SLOPES LESS THAN 4:1)	LBS/ACRE
CREEPING RED FESCUE	20
TALL FESCUE	15
PERENNIAL RYEGRASS	5
REDTOP	2
	42

SLOPE MIX (SLOPES GREATER THAN 4:1)	LBS/ACRE
CREEPING RED FESCUE	20
TALL FESCUE	20
BIRDSFOOT TREEFOIL	8
	48

10) SEE THIS SHEET FOR TEMPORARY EROSION CONTROL NOTES.

11) NEWLY GRADED AREAS REQUIRING SLOPE PROTECTION OUTSIDE OF NORMAL SEEDING SEASON SHALL RECEIVE STRAW MULCH AT THE APPROXIMATE RATE OF NO MORE THAN 3 TONS PER ACRE.

12) ANY CHANGES IN PLANT LOCATIONS OR TYPES SHALL BE APPROVED BY THE DEVELOPER, LANDOWNER AND TOWN PRIOR TO INSTALLATION.

13) CLEAR AND GRUB (TO LIMITS REQUIRED ON GRADING PLAN) TO REMOVE VEGETATION, TREES, ROCKS, DEBRIS, ROOTS, ETC. STUMPS SHALL BE REMOVED AND DISPOSED OF OFF SITE IN ACCORDANCE WITH STATE REGULATIONS. AFTER CLEARING, STRIP AND STOCKPILE ALL ON-SITE TOPSOIL FOR REUSE TO THE MAXIMUM EXTENT POSSIBLE.

14) FOR SEED AREAS USE EXISTING TOPSOIL, IF AVAILABLE, FOR A 4" DEPTH AND TOP DRESS WITH 2" OF SCREENED TOPSOIL, UNLESS OTHERWISE NOTED ON PLAN. ALL LOAM OR TOPSOIL IMPORTED OR RE-UTILIZED FROM ON SITE SHALL BE TESTED AND AMENDED AS DIRECTED BY DEVELOPER TO MEET MINIMUM REQUIREMENTS.

15) PLANTINGS TO BE GUARANTEED BY THE CONTRACTOR FOR ONE YEAR AFTER WRITTEN ACCEPTANCE BY THE DEVELOPER.

16) EXPOSED SOILS SHALL BE SEEDED OR STRAW MULCHED WITHIN 72 HOURS OF FINAL GRADING.

17) ALL WORK SHALL BE COORDINATED WITH APPLICABLE MEPDES PERMIT WORK AS REQUIRED.

18) THE CONTRACTOR SHALL INSTALL AN IRRIGATION SYSTEM TO PROVIDE COMPLETE COVERAGE OF ALL SEED AREAS AND SHRUB BEDS. THE SYSTEM SHALL INCLUDE A TIMER AND SHALL BE INSTALLED IN ACCORDANCE WITH LOCAL CODES.

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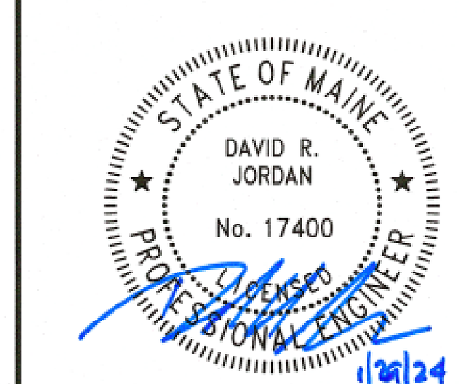
PREPARED FOR
KITTERY CIRCLE, LLC
321D LAFAYETTE ROAD
HAMPTON, NH 03842

ASSESSORS MAP 14 LOTS 10, 12 & 12A
139 OLD POST ROAD,
112 & 120 US ROUTE 1 BYPASS
KITTERY, MAINE



REVISIONS		
NO.	REVISION	DATE
1	REV. PER TOWN COMMENTS	1/24/24

AUGUST 2, 2023

DRAWN/DESIGN BY	CHECKED BY
CCC/NID	DRJ

GENERAL NOTES

SCALE: NOT TO SCALE

PROJECT NO. NEX-2200380

2 OF 18

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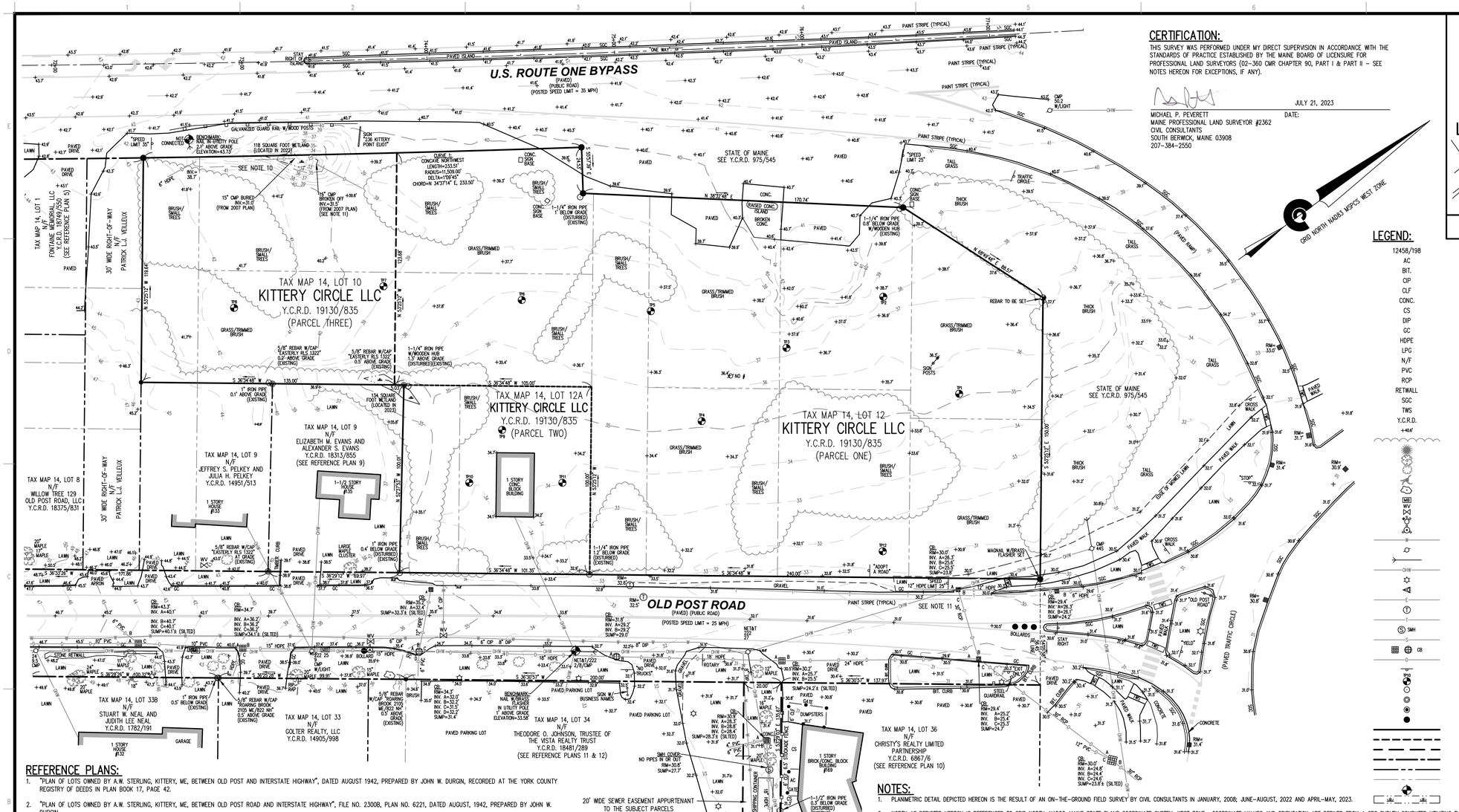


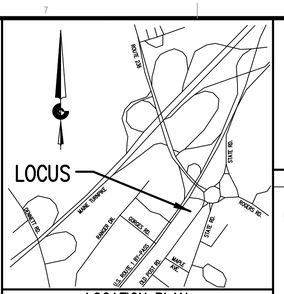
CERTIFICATION:

THIS SURVEY WAS PERFORMED UNDER MY DIRECT SUPERVISION IN ACCORDANCE WITH THE STANDARDS OF PRACTICE ESTABLISHED BY THE MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS (02-360 CMR CHAPTER 90, PART I & PART II – SEE NOTES HEREON FOR EXCEPTIONS, IF ANY).

JULY 21, 2023

MICHAEL P. PEVERETT
MAINE PROFESSIONAL LAND SURVEYOR #2362
CIVIL CONSULTANTS
SOUTH BERWICK, MAINE 03908
207-384-2550

DATE:



LOCATION PLAN

(NOT TO SCALE)

LEGEND:

12458/198	DEED BOOK/PAGE NUMBER
AC	AIR CONDITIONER
BIT.	BITUMINOUS
CIP	CAST IRON PIPE
CLF	CHAIN LINK FENCE
CONC.	CONCRETE
CS	CRUSHED STONE
DIP	DUCTILE IRON PIPE
GC	GRANITE CURB
HDPE	HIGH DENSITY POLYETHYLENE
LPG	LIQUEFIED PETROLEUM GAS
N/F	NOW OR FORMERLY
PVC	POLYVINYL CHLORIDE
RCP	REINFORCED CONCRETE PIPE
RETWALL	RETAINING WALL
SGC	SLOPED GRANITE CURB
TWS	TACTILE WARNING SURFACE
Y.C.R.D.	YORK COUNTY REGISTRY OF DEEDS
+40.6'	SPOT ELEVATION
	TREE/BRUSH LINE
	CONIFEROUS TREE (AS NOTED)
	DECIDUOUS TREE (AS NOTED)
	BUSH OR SHRUB
	STUMP
	BOULDER
MB	MAILBOX
WV	WATER VALVE
	WATER SHUT OFF
	FIRE HYDRANT
	PAINTED UNDERGROUND WATER LINE
	UTILITY POLE
	GUY WIRE
OHW	OVERHEAD WIRES
	LIGHT POLE
	GROUND LIGHT
	PAINTED UNDERGROUND ELECTRIC LINE
T	TELEPHONE MANHOLE
	PAINTED UNDERGROUND TELEPHONE LINE
SMH	SANITARY SEWER MANHOLE
	APPROXIMATE UNDERGROUND SANITARY SEWER LINE
CB	CATCH BASIN
	APPROXIMATE UNDERGROUND DRAINAGE LINE
	SIGN
	TEST PIT
	EXISTING IRON PIPE (AS NOTED)
	EXISTING REBAR
	EXISTING DRILL HOLE
	5/8" REBAR W/PLASTIC CAP "CIVIL CONSULT PLS 2362" (SET)
	LOCUS PARCEL BOUNDARY LINE
	LOCUS PARCEL APPROXIMATE INTERIOR BOUNDARY LINE
	EASEMENT BOUNDARY LINE
	COMPILED ROAD RIGHT-OF-WAY LINE
	APPROXIMATE ABUTTING PARCEL BOUNDARY LINE
	APPROXIMATE HISTORICAL BOUNDARY LINE
	SURVEY BENCHMARK (AS NOTED)
	DELINEATED WETLAND (SEE NOTE 9)

REFERENCE PLANS:

1. "PLAN OF LOTS OWNED BY A.W. STERLING, KITTERY, ME, BETWEEN OLD POST AND INTERSTATE HIGHWAY", DATED AUGUST 1942, PREPARED BY JOHN W. DURGIN, RECORDED AT THE YORK COUNTY REGISTRY OF DEEDS IN PLAN BOOK 17, PAGE 42.
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4. "PLAN OF LAND OF JAMES H. & RUTH E. DINEEN, OLD POST ROAD, KITTERY ~ MAINE", DATED OCTOBER, 1978, PREPARED BY MOULTON ENGINEERING CO., RECORDED AT THE YORK COUNTY REGISTRY OF DEEDS IN PLAN BOOK 97, PAGE 28.
5. "BOUNDARY PLAN OF LAND PREPARED FOR J.G. REALTY TRUST, KITTERY, MAINE", DATED JULY 7, 1981, LAST REVISED MARCH 22, 1982, PREPARED BY THOMAS F. MORAN, INC., RECORDED AT THE YORK COUNTY REGISTRY OF DEEDS IN PLAN BOOK 118, PAGE 34.
6. "STATE OF MAINE DEPARTMENT OF TRANSPORTATION RIGHT OF WAY MAP, STATE HIGHWAY "1", KITTERY, YORK COUNTY, FEDERAL PROJECT NO. STP-01-5727(00)X, D.O.T. FILE NO. 16-357", SHEET 6 OF 6, DATED APRIL 1996, PREPARED BY THE STATE OF MAINE DEPARTMENT OF TRANSPORTATION, RECORDED AT THE YORK COUNTY REGISTRY OF DEEDS IN PLAN BOOK 269, PAGE 21.
7. "MAINE STATE HIGHWAY COMMISSION, RIGHT OF WAY PLAN, STATE HIGHWAY A-10, KITTERY, YORK COUNTY", DATED JULY, 1941", SHEETS 3 AND 4 OF 4, PREPARED BY THE MAINE STATE HIGHWAY COMMISSION, RECORDED AT THE YORK COUNTY REGISTRY OF DEEDS IN PLAN BOOK 16, PAGES 56 AND 57.
8. "MAINE STATE HIGHWAY COMMISSION, RIGHT OF WAY MAP, STATE HIGHWAY "A", KITTERY, YORK COUNTY, FEDERAL AID PROJECT NO. 83 A, S.H.C. FILE NO. 16-83", SHEETS 3 AND 4 OF 4, DATED AUGUST, 1925, PREPARED BY THE MAINE STATE HIGHWAY COMMISSION.
9. "STANDARD BOUNDARY SURVEY FOR PROPERTY AT 135 OLD POST ROAD, KITTERY, MAINE, OWNED BY THOMAS L. PLUMMER, PO BOX 480, KITTERY, MAINE 03904", DATED MAY 13, 2005, PREPARED BY NORTH EASTERLY SURVEYING, INC.
10. "PLAN OF LAND OF ALAN P. AND FRANCES NEWSON, OLD POST ROAD AND U.S. RTE. 1, KITTERY, MAINE", DATED NOVEMBER 4, 1980, LAST REVISED DECEMBER 12, 1986, PREPARED BY CIVIL CONSULTANTS. (PROJECT #:80-166)
11. "PLAN OF LAND, MAP 14, LOT 34, ROUTE 1, KITTERY, MAINE, FOR LEON BENTON, C/O MARCEL BARTLEY, P.O. BOX 120, KITTERY, MAINE 03904", DATED JANUARY 7, 1994, PREPARED BY ROARING BROOK CONSULTANTS, RECORDED AT THE YORK COUNTY REGISTRY OF DEEDS IN PLAN BOOK 216. PAGE 30.
12. "MODIFIED REDEVELOPMENT PLAN, CIRCLE PLAZA ON ROUTE 1, KITTERY, MAINE, FOR LEON BENTON, C/O MARCEL BARTLEY, P.O. BOX 120, KITTERY, MAINE 03904", DATED JUNE 14, 1993, LAST REVISED SEPTEMBER 12, 1996, PREPARED BY ROARING BROOK CONSULTANTS, RECORDED AT THE YORK COUNTY REGISTRY OF DEEDS IN PLAN BOOK 258, PAGE 21.
13. "STATE HIGHWAY "1", (U.S. ROUTE 1), KITTERY, YORK COUNTY, FEDERAL AID PROJECT NO. STP-1158(400)X, RIGHT-OF-WAY MAP, D.O.T. FILE NO. 16-445", SHEET 7 OF 9, DATED OCTOBER, 2007, PREPARED BY STATE OF MAINE DEPARTMENT OF TRANSPORTATION, RECORDED AT THE YORK COUNTY REGISTRY OF DEEDS IN PLAN BOOK 341, PAGE 32.
14. "MAINE–NEW HAMPSHIRE INTERSTATE BRIDGE AUTHORITY, PISCATAQUA RIVER BRIDGE, KITTERY, MAINE – PORTSMOUTH, NEW HAMPSHIRE, RIGHT OF WAY MAP – MAINE APPROACH", DATED NOVEMBER, 1938, PREPARED BY HARRINGTON AND CORTELYOU CONSULTING ENGINEERS", SHEETS 2 AND 3 OF 3, RECORDED AT THE YORK COUNTY REGISTRY OF DEEDS IN PLAN BOOK 12, PAGES 71 AND 73.
15. PRELIMINARY PLAN, "BOUNDARY SURVEY AND EXISTING CONDITIONS PLAN OF LAND OWNED BY PATRICK L. J. VEILLEUX (MAILING ADDRESS: P.O. BOX 5, KITTERY, MAINE 03904), FOR LAND LOCATED ON OLD POST ROAD & ROUTE 1 BY-PASS, TOWN OF KITTERY – YORK COUNTY – MAINE", DATED FEBRUARY 8, 2008, REVISED APRIL 4, 2008, PREPARED BY CIVIL CONSULTANTS. (PROJECT #:0773300)

STATE OF MAINE
YORK COUNTY ss. REGISTRY OF DEEDS
RECEIVED _____, 20__
AT __h__m, __M, AND RECORDED IN
PLAN BOOK _____, PAGE _____

ATTEST _____
REGISTER

NOTES:

1. PLANIMETRIC DETAIL DEPICTED HEREON IS THE RESULT OF AN ON-THE-GROUND FIELD SURVEY BY CIVIL CONSULTANTS IN JANUARY, 2008; JUNE–AUGUST, 2022 AND APRIL–MAY, 2023.
2. NORTH AS DEPICTED HEREON IS REFERENCED TO GRID NORTH, NAD83, MAINE STATE PLANE COORDINATE SYSTEM, WEST ZONE. COORDINATE VALUES AND ORIENTATION ARE DERIVED FROM A GPS SURVEY COMPUTED UTILIZING THE NGS OPUS ON-LINE PROCESSING SERVICE. REFERENCE FRAME IS NAD83 (2011) EPOCH 2010.0000. THE SURVEY IS TIED TO CORS STATIONS GUNSTOCKMRNH2008 CORS ARP (P776), GORHAM CORS ARP (MEGO) AND NHDOT CONCORD CORS ARP (NHCO). DISTANCES DEPICTED HEREON ARE GRID. TO CONVERT GRID DISTANCES TO GROUND DISTANCES, MULTIPLY THE GRID DISTANCE BY 1.000003180 (AVERAGE COMBINED SCALE FACTOR FOR THE SITE).
3. ELEVATIONS DEPICTED HEREON ARE BASED ON THE BENCHMARK IN A UTILITY POLE ON THE SOUTHERLY SIDE OF OLD POST ROAD SHOWN ON REFERENCE PLAN 10. CONTEMPORARY GPS OBSERVATIONS INDICATE THE PLAN DATUM IS NAVD88 + 0.34'. TO CONVERT ELEVATIONS HEREON TO NAVD88 SUBTRACT 0.34'.
4. ASSESSOR'S INFORMATION: TOWN OF KITTERY ASSESSOR'S MAP 14, LOTS 10, 12 & 12A
5. RECORD OWNER: KITTERY CIRCLE LLC – Y.C.R.D. 19130/485
6. UTILITY INFORMATION DEPICTED HEREON IS COMPILED USING PHYSICAL EVIDENCE LOCATED IN THE FIELD. UTILITIES DEPICTED HEREON MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. PAINTED TELEPHONE AND ELECTRIC UTILITY MARKINGS DEPICTED HEREON ARE BY OTHERS UNKNOWN. PAINTED WATER LINES DEPICTED HEREON WERE MARKED BY THE KITTERY WATER DISTRICT. CONTRACTORS NEED TO CONTACT DIGSAFE AND FIELD VERIFY ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.
7. THE LOCUS PARCEL IS LOCATED IN "ZONE C" ON THE NATIONAL FLOOD INSURANCE RATE MAP (FIRM) FOR THE TOWN OF KITTERY, MAINE, YORK COUNTY, COMMUNITY PANEL NUMBER 230171 0004 C, EFFECTIVE DATE JULY 5, 1982. ZONE C IS DEFINED AS "AREAS OF MINIMAL FLOODING".
8. THE LOCUS PROPERTY IS IN THE C-3 (COMMERCIAL 3, BYPASS/OLD POST ROAD COMMERCIAL ZONE) ZONING DISTRICT. DIMENSIONAL REQUIREMENTS ARE AS FOLLOWS: MINIMUM LOT SIZE=40,000 SQUARE FEET, MINIMUM STREET FRONTAGE=NO MINIMUM, MINIMUM FRONT SETBACK=15', MINIMUM REAR AND SIDE SETBACKS=10' (EXCEPT WHERE SIDE AND/OR REAR SETBACKS OF PROPOSED NEW USES ABUT A SINGE-FAMILY USE IN WHICH CASE A MINIMUM OF 15' IS REQUIRED), MAXIMUM BUILDING HEIGHT=40' (BUILDINGS HEIGHTS MUST NOT EXCEED 25' FOR THE FIRST 15' BEYOND THE MINIMUM 15' FROM SETBACK ON OLD POST ROAD). FOR COMPLETE ZONING INFORMATION REFER TO THE TOWN OF KITTERY ZONING ORDINANCE.
9. THE WETLANDS DEPICTED HEREON ARE BASED ON FIELD LOCATION BY INSTRUMENT SURVEY OF WETLAND DELINEATION FLAGS SET BY SEEKAMP ENVIRONMENTAL CONSULTING, INC.
10. REFERENCE PLAN 6 DEPICTS "GRADING RIGHTS AND GRADING LIMITS" IN THIS AREA. NO EASEMENTS GRANTING THESE RIGHTS WERE FOUND ON RECORD.
11. THE REMAINS OF A 15" CORRUGATED METAL DRAINAGE PIPE APPEARS TO EXTEND INTO THE SUBJECT PROPERTY. THE LOCATION OF THE OTHER END OF THE PIPE IS UNKNOWN. REFERENCE PLAN 7 SHOWS A BROOK CROSSING THE SUBJECT PARCEL EXTENDING FROM THE LOCATION OF THIS PIPE NORTHEASTERLY TO A CULVERT UNDER OLD POST ROAD. NO EVIDENCE OF THE BROOK OR THE CULVERT UNDER OLD POST ROAD WAS OBSERVED IN 2008, 2022 OR 2023. NO DRAINAGE EASEMENTS WERE FOUND ON RECORD. CIVIL CONSULTANTS RECOMMENDS CONSULTING WITH THE MAINE DEPARTMENT OF TRANSPORTATION TO DETERMINE IF THERE IS AN ACTIVE DRAINAGE PIPE CROSSING THE SUBJECT PROPERTY.
12. REFERENCE IS MADE TO DEEDS FROM THE HEIRS OF ALFRED W. STERLING AND CARROLL H. STERLING TO PATRICK L.J. VEILLEUX RECORDED AT THE Y.C.R.D. IN 2826/313-317, 2830/162, 2828/314, AND 3080/6. THESE ARE QUIT CLAIM DEEDS FOR ALL OF THE LAND OWNED BY ALFRED W. STERLING IN THE TOWN OF KITTERY, MAINE LOCATED NORTHWESTERLY OF OLD POST ROAD AND BEING LAND LOCATED BETWEEN OLD POST ROAD AND THE ROAD PRESENTLY KNOWN AS U.S. ROUTE 1 BY-PASS. THESE DEEDS CONVEY ALL REMAINING LANDS FORMERLY OF ALFRED W. STERLING AND INCLUDE THE 30' WIDE RIGHT-OF-WAY DEPICTED HEREON. REFERENCE IS ALSO MADE TO A QUIT CLAIM DEED FROM EUGENE CLOUGH AND MAUDE CLOUGH TO PATRICK L.J. VEILLEUX RECORDED AT THEY Y.C.R.D. 4855/204.
13. TAX MAP 14, LOT 10 IS BENEFITED BY "THE RIGHT TO PASS, REPASS AND USE A RIGHT OF WAY SITUATED ON THE SOUTHWESTERLY SIDELINE OF THE ABOVE DESCRIBED LOT, SAID RIGHT OF WAY BEING (30) FEET IN WIDTH AND EXTENDING FROM SAID ROUTE 1 BY-PASS TO OLD POST ROAD".
14. THE COMPOSITE AREA OF THE SUBJECT PARCELS IS 85,563 SQUARE FEET (1.9643 ACRES ±).
15. THE 20' SEWER EASEMENT DEPICTED HEREON IS BASED ON REFERENCE PLANS 11 & 12 AND FIELD LOCATION OF EXISTING MONUMENTATION AS SHOWN ON REFERENCE PLANS 11 & 12. DEED RESEARCH RELATED TO THE BURDENED PARCEL HAS BEEN UPDATED FROM THE DATE OF REFERENCE PLAN 12 TO APRIL 28, 2023.
16. THE SIDELINES OF OLD POST ROAD DEPICTED HEREON ARE BASED ON FIELD LOCATION OF EXISTING MONUMENTATION. DEED RESEARCH ON ABUTTING PARCELS HAS BEEN LIMITED TO A REVIEW OF CURRENT DEEDS AS REFERENCED HEREON. THE SIDELINE OF U.S. ROUTE ONE BY-PASS IS BASED ON PLANS REFERENCED HEREON AND FIELD LOCATION OF EXISTING MONUMENTATION. DEED RESEARCH ON ABUTTING PARCELS HAS BEEN LIMITED TO A REVIEW OF CURRENT DEEDS AS REFERENCED HEREON. THE APPROXIMATE BASELINE STATIONING IS BASED ON REFERENCE PLAN 14.

TAX MAP 14, LOTS 10, 12 & 12A

STATE OF MAINE
MICHAEL P. PEVERETT
2362
PROFESSIONAL LAND SURVEYOR

CIVIL CONSULTANTS
Engineers
Planners
Surveyors
P.O. Box 100
South Berwick
Maine
03908
207-384-2550
www.civcon.com

NO.	REVISIONS	INT.	DATE

RECORD OWNER:
KITTERY CIRCLE LLC

ADDRESS:
321D LAFAYETTE ROAD
HAMPTON, NH 03842

BOUNDARY / EXISTING CONDITIONS SURVEY
LAND OF KITTERY CIRCLE LLC
OLD POST ROAD / U.S. ROUTE 1 BY-PASS
TAX MAP 14, LOTS 10, 12 & 12A
KITTERY, YORK COUNTY, MAINE

PREPARED FOR: TROPIC STAR DEVELOPMENT
CLIENT ADDRESS: 321D LAFAYETTE ROAD, HAMPTON, NH 03842

1" = 30'
0' 30'

DATE: JULY 21, 2023
DRAWN BY: MPP
CHECKED BY: CHM
APPROVED BY: MPP

BOUNDARY/EXISTING CONDITIONS PLAN

PROJECT NO: 2220701

EC1

SHEET: 1 OF 1

COORDINATE FILE: J:\AAA\2022\2220700\CARLSON\SURVEY\POINTS\2220700-NAD83-0773300VERT.CRD

CADD FILE: J:\AAA\2022\2220701\CARLSON\SURVEY\DWG\2220701S-EX-1D-30SCALE-UPDATE.DWG

NOTES:

1. PLANIMETRIC DETAIL DEPICTED HEREON IS THE RESULT OF AN ON-THE-GROUND FIELD SURVEY BY CIVIL CONSULTANTS IN JANUARY, 2008; JUNE-AUGUST, 2022 AND APRIL-MAY, 2023.
2. NORTH AS DEPICTED HEREON IS REFERENCED TO GRID NORTH, NAD83, MAINE STATE PLANE COORDINATE SYSTEM, WEST ZONE. COORDINATE VALUES AND ORIENTATION ARE DERIVED FROM A GPS SURVEY COMPUTED UTILIZING THE NGS OPUS ON-LINE PROCESSING SERVICE. REFERENCE FRAME IS NAD83 (2011) EPOCH 2010.0000. THE SURVEY IS TIED TO CORS STATIONS GUNSTOCKMRNH2008 CORS ARP (P776), CORHAM CORS ARP (MEGO) AND NHDOT CONCORD CORS ARP (NHCO). DISTANCES DEPICTED HEREON ARE GRID. TO CONVERT GRID DISTANCES TO GROUND DISTANCES, MULTIPLY THE GRID DISTANCE BY 1.000003180 (AVERAGE COMBINED SCALE FACTOR FOR THE SITE).
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4. ASSESSOR'S INFORMATION: TOWN OF KITTERY ASSESSOR'S MAP 14, LOTS 10, 12 & 12A
5. RECORD OWNER: KITTERY CIRCLE LLC – Y.C.R.D. 19130/835
6. UTILITY INFORMATION DEPICTED HEREON IS COMPILED USING PHYSICAL EVIDENCE LOCATED IN THE FIELD. UTILITIES DEPICTED HEREON MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. PAINTED TELEPHONE AND ELECTRIC UTILITY MARKINGS DEPICTED HEREON ARE BY OTHERS UNKNOWN. PAINTED WATER LINES DEPICTED HEREON WERE MARKED BY THE KITTERY WATER DISTRICT. CONTRACTORS NEED TO CONTACT DIGSAFE AND FIELD VERIFY ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.
7. THE 20' SEWER EASEMENT DEPICTED HEREON IS BASED ON REFERENCE PLANS 11 & 12 AND FIELD LOCATION OF EXISTING MONUMENTATION AS SHOWN ON REFERENCE PLANS 11 & 12. DEED RESEARCH RELATED TO THE BURDENED PARCEL HAS BEEN UPDATED FROM THE DATE OF REFERENCE PLAN 12 TO APRIL 28, 2023.
8. THE SIDELINES OF OLD POST ROAD DEPICTED HEREON ARE BASED ON FIELD LOCATION OF EXISTING MONUMENTATION. DEED RESEARCH ON ABUTTING PARCELS HAS BEEN LIMITED TO A REVIEW OF CURRENT DEEDS AS REFERENCED HEREON.
9. THE WETLAND DEPICTED HEREON IS BASED ON FIELD LOCATION BY INSTRUMENT SURVEY ON JUNE 13, 2023 OF WETLAND DELINEATION FLAGS SET BY SEEKAMP ENVIRONMENTAL CONSULTING, INC. ON JUNE 12, 2023

LEGEND:

SEE PAGE 2

LOCATION PLAN:

SEE PAGE 2

CERTIFICATION:

THIS SURVEY WAS PERFORMED UNDER MY DIRECT SUPERVISION IN ACCORDANCE WITH THE STANDARDS OF PRACTICE ESTABLISHED BY THE MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS (02-350 CMR CHAPTER 90, PART I & PART II – SEE NOTES HEREON FOR EXCEPTIONS, IF ANY).

JUNE 13, 2023

DATE:

MICHAEL P. PEVERETT
MAINE PROFESSIONAL LAND SURVEYOR #2362
CIVIL CONSULTANTS
SOUTH BERWICK, MAINE 03908
207-384-2550

REFERENCE PLANS:

1. "PLAN OF LOTS OWNED BY A.W. STERLING, KITTERY, ME, BETWEEN OLD POST AND INTERSTATE HIGHWAY", DATED AUGUST 1942, PREPARED BY JOHN W. DURGIN, RECORDED AT THE YORK COUNTY REGISTRY OF DEEDS IN PLAN BOOK 17, PAGE 42.
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9. "STANDARD BOUNDARY SURVEY FOR PROPERTY AT 135 OLD POST ROAD, KITTERY, MAINE, OWNED BY THOMAS L. PLUMMER, PO BOX 480, KITTERY, MAINE 03904", DATED MAY 13, 2005, PREPARED BY NORTH EASTERLY SURVEYING, INC.
10. "PLAN OF LAND OF ALAN P. AND FRANCES NEWSON, OLD POST ROAD AND U.S. RTE. 1, KITTERY, MAINE", DATED NOVEMBER 4, 1980, LAST REVISED DECEMBER 12, 1986, PREPARED BY CIVIL CONSULTANTS. (PROJECT #:80-166)
11. "PLAN OF LAND, MAP 14, LOT 34, ROUTE 1, KITTERY, MAINE, FOR LEON BENTON, C/O MARCEL BARTLEY, P.O. BOX 120, KITTERY, MAINE 03904", DATED JANUARY 7, 1994, PREPARED BY ROARING BROOK CONSULTANTS, RECORDED AT THE YORK COUNTY REGISTRY OF DEEDS IN PLAN BOOK 216, PAGE 30.
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15. PRELIMINARY PLAN, "BOUNDARY SURVEY AND EXISTING CONDITIONS PLAN OF LAND OWNED BY PATRICK L. J. VEILLEUX (MAILING ADDRESS: P.O. BOX 5, KITTERY, MAINE 03904), FOR LAND LOCATED ON OLD POST ROAD & ROUTE 1 BY-PASS, TOWN OF KITTERY ~ YORK COUNTY ~ MAINE", DATED FEBRUARY 8, 2008, REVISED APRIL 4, 2008, PREPARED BY CIVIL CONSULTANTS. (PROJECT #:0773300)
16. "BOUNDARY / EXISTING CONDITIONS SURVEY, LAND OF FIRST KITTERY PLACE, LLC ET AL, OLD POST ROAD / U.S. ROUTE 1 BY-PASS, TAX MAP 14, LOTS 10, 12 & 12A, KITTERY, YORK COUNTY, MAINE, PREPARED FOR: TROPIC STAR DEVELOPMENT, CLIENT ADDRESS: 321D LAFAYETTE ROAD, HAMPTON, NH 03842", DATED SEPTEMBER 16, 2022, PREPARED BY CIVIL CONSULTANTS. (PROJECT #:2220700)

STATE OF MAINE
MICHAEL P. PEVERETT
2362
PROFESSIONAL
LAND SURVEYOR

CIVIL CONSULTANTS
Engineers
Planners
Surveyors
P.O. Box 100
South Berwick
Maine
03908
207-384-2550
www.civcon.com

NO.	REVISIONS	INT.	DATE

RECORD OWNER OF SUBJECT PARCELS:
KITTERY CIRCLE, LLC

ADDRESS:
321D LAFAYETTE ROAD
HAMPTON, NH 03842

COMPILED RIGHT-OF-WAY AND EXISTING CONDITIONS SURVEY
OLD POST ROAD
KITTERY, YORK COUNTY, MAINE

PREPARED FOR: TROPIC STAR DEVELOPMENT
CLIENT ADDRESS: 321D LAFAYETTE ROAD, HAMPTON, NH 03842

1" = 20'
0' 20'

DATE: JUNE 13, 2023
DRAWN BY: MPP
CHECKED BY: CHM
APPROVED BY: MPP

RIGHT-OF-WAY & EXISTING CONDITIONS PLAN

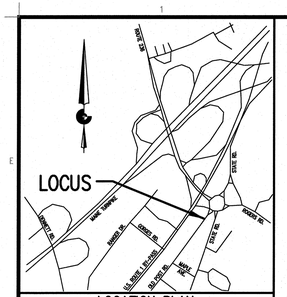
PROJECT NO: 2220701

R1

SHEET: 1 OF 2

COORDINATE FILE: J:\AAA\2022\2220700\CARLSON\SURVEY\POINTS\2220700-NAD83-0773300VERT.CRD

CADD FILE: J:\AAA\2022\2220701\CARLSON\SURVEY\DWG\2220701S-EX-1D.DWG



LOCATION PLAN
(NOT TO SCALE)

GRID NORTH MAGNETIC MERIDIAN WEST ZONE

TAX MAP 14, LOT 1
N/F
FONTAINE MEMORIAL, LLC
Y.C.R.D. 18749/550
(SEE REFERENCE PLAN 5)

TAX MAP 14, LOT 7
N/F
PATRICK L.J. VELLEUX AND
DORIS H. VELLEUX
Y.C.R.D. 5172/37

TAX MAP 14, LOT 8
N/F
WILLOW TREE 129 OLD POST
ROAD, LLC
Y.C.R.D. 18375/831

30' WIDE RIGHT-OF-WAY
N/F
PATRICK L.J. VELLEUX

TAX MAP 14, LOT 9
N/F
JEFFREY S. PELKEY AND
JULIA H. PELKEY
Y.C.R.D. 14951/513

TAX MAP 14, LOT 9
N/F
ELIZABETH M. EVANS AND
ALEXANDER S. EVANS
Y.C.R.D. 18313/855
(SEE REFERENCE PLAN 9)

OLD POST ROAD
(PAVED) (PUBLIC ROAD)
(POSTED SPEED LIMIT = 25 MPH)

TAX MAP 14, LOT 13
N/F
SANDRA WINTER AND
JOSEPH A. WINTER
Y.C.R.D. 9141/146

TAX MAP 14, LOT 33B
N/F
STUART W. NEAL AND
JUDITH LEE NEAL
Y.C.R.D. 1782/191

TAX MAP 14, LOT 33
N/F
GOLTER REALTY, LLC
Y.C.R.D. 14905/998

LEGEND:

12458/198	DEED BOOK/PAGE NUMBER
AC	AIR CONDITIONER
BIT.	BITUMINOUS
CIP	CAST IRON PIPE
CLF	CHAIN LINK FENCE
CONC.	CONCRETE
CS	CRUSHED STONE
DIP	DUCTILE IRON PIPE
GC	GRANITE CURB
HDPE	HIGH DENSITY POLYETHYLENE
LPG	LIQUEFIED PETROLEUM GAS
N/F	NOW OR FORMERLY
PVC	POLYVINYL CHLORIDE
RCP	REINFORCED CONCRETE PIPE
RETWALL	RETAINING WALL
SGC	SLOPED GRANITE CURB
TWS	TACTILE WARNING SURFACE
Y.C.R.D.	YORK COUNTY REGISTRY OF DEEDS
+44.67	SPOT ELEVATION
	TREE/BRUSH LINE
	CONIFEROUS TREE (AS NOTED)
	DECIDUOUS TREE (AS NOTED)
	BUSH OR SHRUB
	STUMP
	BOULDER
MBX	MAILBOX
WV	WATER VALVE
WSO	WATER SHUT OFF
	FIRE HYDRANT
	PAINTED UNDERGROUND WATER LINE
	UTILITY POLE
	GUY WIRE
OHW	OVERHEAD WIRES
	LIGHT POLE
	GROUND LIGHT
E	PAINTED UNDERGROUND ELECTRIC LINE
	TELEPHONE MANHOLE
T	PAINTED UNDERGROUND TELEPHONE LINE
SMH	SANITARY SEWER MANHOLE
S	APPROXIMATE UNDERGROUND SANITARY SEWER LINE
CB	CATCH BASIN
D	APPROXIMATE UNDERGROUND DRAINAGE LINE
	SIGN
TP#3	TEST PIT
	EXISTING IRON PIPE (AS NOTED)
	EXISTING REBAR
	EXISTING DRILL HOLE
	5/8" REBAR W/PLASTIC CAP "CIVIL CONSULT PLS 2362" (SET)
	LOCUS PARCEL BOUNDARY LINE (SEE REFERENCE PLAN 16)
	LOCUS PARCEL APPROXIMATE INTERIOR BOUNDARY LINE (SEE REFERENCE PLAN 16)
	EASEMENT BOUNDARY LINE
	COMPILED ROAD RIGHT-OF-WAY LINE
	APPROXIMATE ABUTTING PARCEL BOUNDARY LINE
	APPROXIMATE HISTORICAL BOUNDARY LINE
WL	SURVEY BENCHMARK (AS NOTED)
WL	DELINEATED WETLAND (SEE NOTE 9)

STATE OF MAINE
MICHAEL P. PEVERETT
2362
PROFESSIONAL LAND SURVEYOR

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Engineers
Planners
Surveyors
P.O. Box 100
South Berwick
Maine
03908
207-384-2550
www.civcon.com

NO.	REMSIONS	INT.	DATE

RECORD OWNER OF SUBJECT PARCEL:
KITTERY CIRCLE, LLC

ADDRESS:
321D LAFAYETTE ROAD
HAMPTON, NH 03842

COMPILED RIGHT-OF-WAY AND EXISTING CONDITIONS SURVEY
OLD POST ROAD
KITTERY, YORK COUNTY, MAINE

PREPARED FOR:
CLIENT ADDRESS:
TROPIC STAR DEVELOPMENT
321D LAFAYETTE ROAD, HAMPTON, NH 03842

1" = 20'
0' 20'

DATE: JUNE 13, 2023
DRAWN BY: MPP
CHECKED BY: CHM
APPROVED BY: MPP

RIGHT-OF-WAY & EXISTING CONDITIONS PLAN

PROJECT NO: 2220701

R2

SHEET: 2 OF 2

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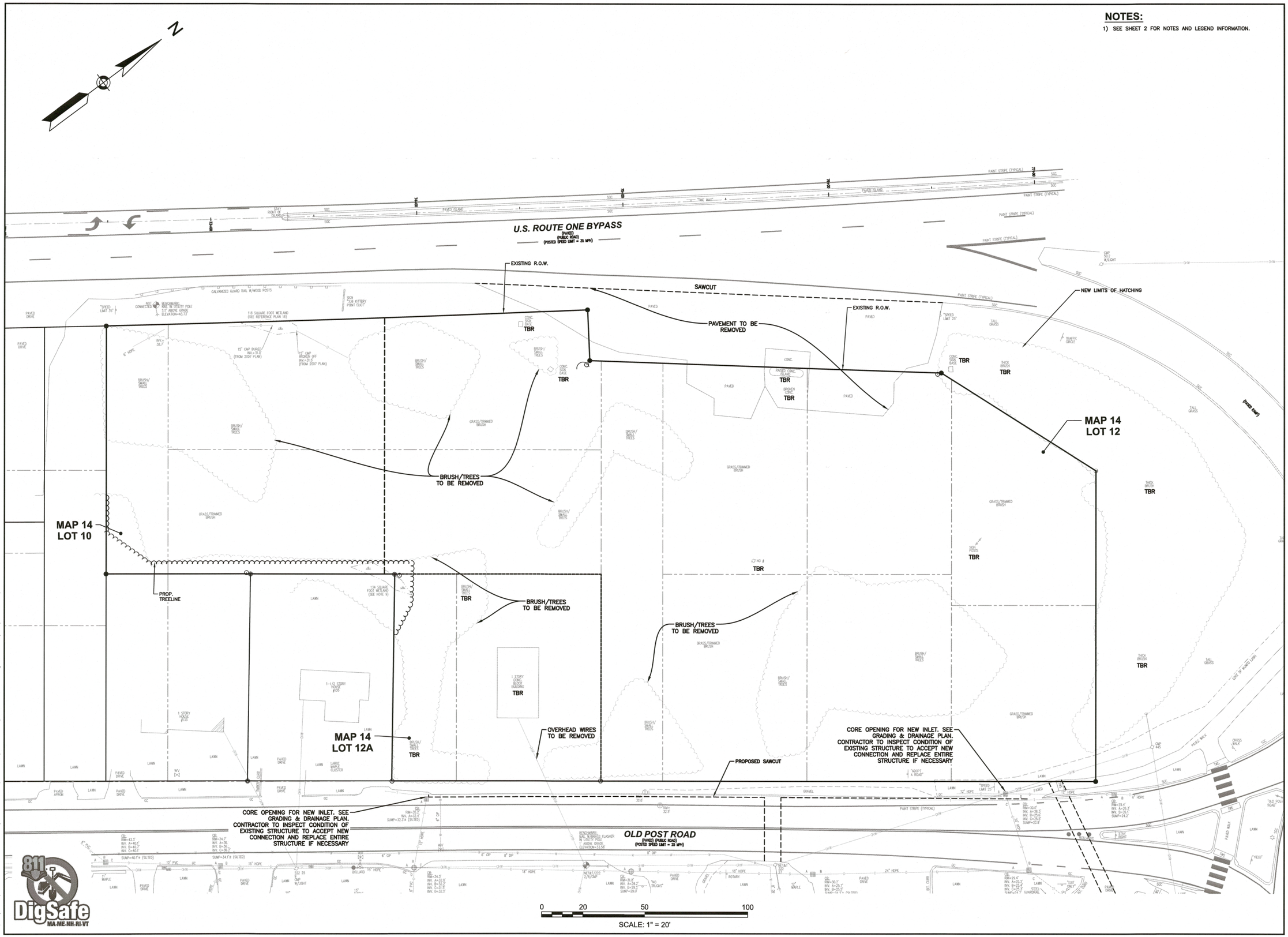
NOTES:

1) SEE SHEET 2 FOR NOTES AND LEGEND INFORMATION.



GPI Engineering Design Planning Construction Management
603.893.0720 GPINET.COM
Greenman-Pedersen, Inc.
44 Stiles Road, Suite One
Salem, NH 03079

PREPARED FOR
KITTERY CIRCLE, LLC
321D LAFAYETTE ROAD
HAMPTON, NH 03842

ASSESSORS MAP 14 LOTS 10, 12 & 12A
139 OLD POST ROAD, 112 & 120 US ROUTE 1 BYPASS
KITTERY, MAINE

STATE OF MAINE
DAVID R. JORDAN
No. 17400
REGISTERED PROFESSIONAL ENGINEER
1/24/24

REVISIONS		
1	REV. PER TOWN COMMENTS	1/24/24
NO.	REVISION	DATE

AUGUST 2, 2023

DRAWN/DESIGN BY	CHECKED BY
CCC/NID	DRJ

DEMOLITION PLAN

SCALE: 1"=20'

PROJECT NO.
NEX-2200380

6 OF 18

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SIGN KEY

SIGN I.D. NUMBER	TEXT/COLOR		SIZE/REMARKS
R1-1	STOP	R/W	30" x 30" NEW SIGN WITH POST
R7-8	RESERVED PARKING	G/B/W	12" x 18" NEW SIGN WITH POST
R7-8A	VAN ACCESSIBLE	G/W	6" X 12"
	COMPACT CARS ONLY	G/W	12" x 18" NEW SIGN WITH POST

NOTES:

1) SEE SHEET 2 FOR NOTES AND LEGEND INFORMATION.

PLAN REFERENCES:

1) RIGHT-OF-WAY & EXISTING CONDITIONS PLAN, COMPILED RIGHT-OF-WAY AND EXISTING CONDITIONS SURVEY, U.S. ROUTE ONE BY-PASS, PREPARED FOR TROPIC STAR DEVELOPMENT, PREPARED BY CIVIL CONSULTANTS, DATE: JUNE 13, 2023, SCALE: 1"=20', SHEET R1 & R2.

2) RIGHT-OF-WAY & EXISTING CONDITIONS PLAN, COMPILED RIGHT-OF-WAY AND EXISTING CONDITIONS SURVEY, OLD POST ROAD, PREPARED FOR TROPIC STAR DEVELOPMENT, PREPARED BY CIVIL CONSULTANTS, DATE: JUNE 13, 2023, SCALE: 1"=20', SHEET R1.

TABLE OF ZONING REGULATIONS - KITTERY, MAINE

ZONE: COMMERCIAL 3, BYPASS/OLD POST ROAD COMMERCIAL (C-3)

DESCRIPTION	REQUIRED	PROVIDED
MINIMUM LOT AREA Sq. Ft.	40,000 SF	85,563 SF
MINIMUM LOT FRONTAGE	N/A	341'± (OLD POST RD.), 640'± (DOT)
MINIMUM FRONT YARD BUILDING SETBACK	30' (OLD POST ROAD), 15' (DOT R.O.W.)	30' (OLD POST RD.)
MINIMUM SIDE YARD BUILDING SETBACK	10' (15' ADJACENT TO RESIDENTIAL)	14.6'
MINIMUM REAR YARD BUILDING SETBACK	10'	N/A
MINIMUM FRONT LANDSCAPE STRIP	15'	16'
PARKING SPACE DIMENSIONS	9'x19', 8'x16' (COMPACT)	9'x19', 9'x18'*, 8'X16' (COMPACT)
MINIMUM NUMBER PARKING SPACES	HOTEL: 1 SPACE PER RENTAL UNIT = 102 SPACES	97 SPACES*
MAXIMUM BUILDING HEIGHT	40'	< 40'
MINIMUM OPEN SPACE	20%	26,871 SF/85,563 SF = 31.4%
MAXIMUM IMPERVIOUS COVERAGE	70%	59,138 SF/85,563 SF = 69.1%
MINIMUM INTERNAL LANDSCAPING	10%	13,164 SF/52,510 SF = 26%
FREESTANDING SIGN HEIGHT+SETBACK	20' HIGH, 20' FROM TRAVEL WAY (DOT)	TBD
TOTAL AGGREGATE SIGN AREA	300 SF	TBD

* MODIFICATION TO THE REGULATIONS REQUESTED

U.S. ROUTE ONE BYPASS (PAVED) (PUBLIC ROAD) (POSTED SPEED LIMIT = 35 MPH)

OLD POST ROAD (PAVED) (PUBLIC ROAD) (POSTED SPEED LIMIT = 25 MPH)

PROPOSED 102 KEY HOTEL 15,424 SF FOOTPRINT

MAP 14 LOT 10

MAP 14 LOT 12

MAP 14 LOT 12A

TAX MAP 14, LOT 9 N/F JEFFREY S. PELKEY AND JULIA R. PELKEY Y.C.R.D. 14951/513

TAX MAP 14, LOT 9 N/F ELIZABETH M. EVANS AND ALEXANDER S. EVANS Y.C.R.D. 18313/855 (SEE REFERENCE PLAN 9)

30' WIDE RIGHT-OF-WAY N/F PATRICK J.& KELLEY

0 20 50 100

SCALE: 1" = 20'

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44 Stiles Road, Suite One
Salem, NH 03079

PREPARED FOR
KITTERY CIRCLE, LLC
321D LAFAYETTE ROAD
HAMPTON, NH 03842

ASSESSORS MAP 14 LOTS 10, 12 & 12A
139 OLD POST ROAD, 112 & 120 US ROUTE 1 BYPASS
KITTERY, MAINE

STATE OF MAINE
DAVID R. JORDAN
No. 17400
PROFESSIONAL ENGINEER
1/24/24

REVISIONS		
3	REV. PER TOWN COMMENTS	1/24/24
2	MISC. REVISIONS	10/11/23
1	MISC. REVISIONS	8/17/23
NO.	REVISION	DATE

AUGUST 2, 2023

DRAWN/DESIGN BY	CHECKED BY
CCC/NID	DRJ

SITE PLAN

SCALE: 1"=20'

PROJECT NO. NEX-2200380

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NOTES:

1) SEE SHEET 2 FOR NOTES AND LEGEND INFORMATION.

DRAINAGE PIPE SCHEDULE

FROM: STRUCTURE NUMBER	PIPE SIZE (INCHES)	TYPE OF PIPE	APPROX. PIPE LENGTH (FEET)	SLOPE OF PIPE (FT./FT.)	TO: STRUCTURE NUMBER
CB-1	12	HDPE	90	0.033	DMH-1(PS)
CB-2	12	HDPE	7	0.014	DMH-1(PS)
CB-3(PS)	10	HDPE	6	0.022	DET IN
CB-4	12	HDPE	12	0.016	DMH-2(PS)
CB-5	12	HDPE	82	0.012	DMH-2(PS)
CB-6(PS)	12	HDPE	9	0.011	DMH-3
DET OUT	18	HDPE	6	0.000	OCS
DMH-1(PS)	15	HDPE	11	0.014	DMH-5
DMH-2(PS)	15	HDPE	8	0.009	DMH-6
DMH-3	12	HDPE	28	0.005	TF
DMH-4	12	HDPE	10	0.010	EX.CB-2
DMH-5	18	HDPE	4	0.000	ISOLATOR ROW-1
DMH-5	12	HDPE	8	0.000	MANIFOLD-1
DMH-6	18	HDPE	4	0.000	ISOLATOR ROW-2
DMH-6	12	HDPE	7	0.000	MANIFOLD-2
OCS	12	HDPE	116	0.005	DMH-3
ROOF DRAIN	12	HDPE	43	0.012	DMH-6
SOIL FILTER	6	HDPE	23	0.004	EX.CB-1
TF	12	HDPE	175	0.005	DMH-4

DRAINAGE STRUCTURES

CB-1
RIM=38.05
INV.OUT=34.05

CB-2
RIM=35.20
INV.OUT=31.20

CB-3(PS)
RIM=33.80
INV.OUT=29.80

CB-4
RIM=33.80
INV.OUT=30.80

CB-5
RIM=33.80
INV.OUT=30.80

CB-6(PS)
RIM=33.65
INV.OUT=30.15

DMH-1(PS)
RIM=35.30
INV.IN=31.10(CB-1)
INV.IN=31.10(CB-2)
INV.OUT=30.85

DMH-2(PS)
RIM=34.25
INV.IN=30.60(CB-4)
INV.IN=29.80(CB-5)
INV.OUT=29.55

DMH-3
RIM=33.80
INV.IN=30.05(CB-6(PS))
INV.IN=28.30(OCS)
INV.OUT=28.20

DMH-4
RIM=31.50
INV.IN=26.70(TF)
INV.OUT=26.60

DMH-5 (W/2' SUMP)
RIM=34.95
INV.IN=30.70(DMH-1(PS))
INV.OUT=30.39
INV.OUT=29.48

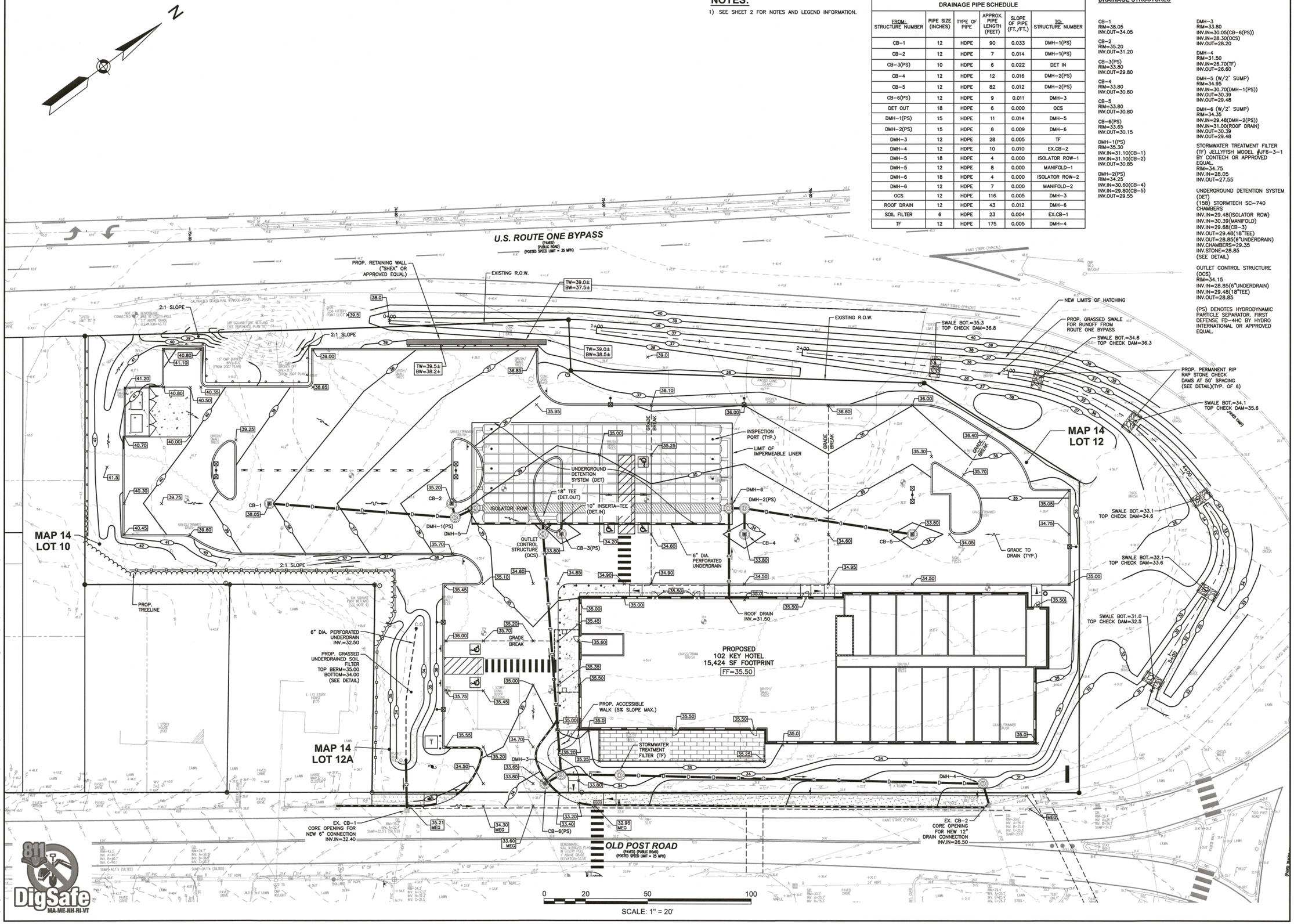
DMH-6 (W/2' SUMP)
RIM=34.35
INV.IN=29.48(DMH-2(PS))
INV.IN=31.00(ROOF DRAIN)
INV.OUT=30.39
INV.OUT=29.48

STORMWATER TREATMENT FILTER (TF) JELLYFISH MODEL #JF6-3-1 BY CONTECH OR APPROVED EQUAL.
RIM=34.75
INV.IN=28.05
INV.OUT=27.55

UNDERGROUND DETENTION SYSTEM (DET)
(158) STORMTECH SC-740 CHAMBERS
INV.IN=29.48(ISOLATOR ROW)
INV.IN=30.39(MANIFOLD)
INV.IN=29.68(CB-3)
INV.OUT=29.48(18"TEE)
INV.OUT=28.85(6"UNDERDRAIN)
INV.CHAMBERS=29.35
INV.STONE=28.85
(SEE DETAIL)

OUTLET CONTROL STRUCTURE (OCS)
RIM=34.15
INV.IN=28.85(6"UNDERDRAIN)
INV.IN=29.48(18"TEE)
INV.OUT=28.85

(PS) DENOTES HYDRODYNAMIC PARTICLE SEPARATOR, FIRST DEFENSE FD-4HC BY HYDRO INTERNATIONAL OR APPROVED EQUAL.



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PREPARED FOR
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321D LAFAYETTE ROAD
HAMPTON, NH 03842

ASSESSORS MAP 14 LOTS 10, 12 & 12A
139 OLD POST ROAD, 112 & 120 US ROUTE 1 BYPASS
KITTERY, MAINE

STATE OF MAINE
DAVID R. JORDAN
No. 17400
PROFESSIONAL ENGINEER
1/24/24

REVISIONS		
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1	MISC. REVISIONS	8/17/23
NO.	REVISION	DATE

AUGUST 2, 2023

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GRADING & DRAINAGE PLAN

SCALE: 1"=20'

PROJECT NO. NEX-2200380

8 OF 18

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NOTES:

1) SEE SHEET 2 FOR NOTES AND LEGEND INFORMATION.
2) SEE SHEET 10 FOR SEWER INFORMATION.

N

U.S. ROUTE ONE BYPASS
(PAVED)
(PUBLIC ROAD)
(POSTED SPEED LIMIT = 35 MPH)

PROP. RETAINING WALL ("SHEA" OR APPROVED EQUAL)
EXISTING R.O.W.
CALVANIZED GUARD RAIL W/WOOD POSTS
SIGN "JOIN KITTERY POINT ELIOT"
118 SQUARE FOOT WETLAND (SEE REFERENCE PLAN #5)
15" CMP BURIED INV.=31.0 (FROM 2007 PLAN)
15" CMP BROKEN OFF INV.=31.5 (FROM 2007 PLAN)
0+00
1+00
2+00
3+00
4+00
5+00
NEW LIMITS OF HATCHING
PROP. GRASSED SWALE FOR RUNOFF FROM ROUTE ONE BYPASS
SWALE BOT.=35.3
TOP CHECK DAM=36.8
SWALE BOT.=34.8
TOP CHECK DAM=36.3
PROP. PERMANENT RIP RAP STONE CHECK DAMS AT 50' SPACING (SEE DETAIL)(TYP. OF 6)
SWALE BOT.=34.1
TOP CHECK DAM=35.6
SWALE BOT.=33.1
TOP CHECK DAM=34.6
SWALE BOT.=32.1
TOP CHECK DAM=33.6
SWALE BOT.=31.0
TOP CHECK DAM=32.5
MAP 14
LOT 12
MAP 14
LOT 10
MAP 14
LOT 12A
INSPECTION PORT (TYP.)
LIMIT OF IMPERMEABLE LINER
UNDERGROUND DETENTION SYSTEM (DET)
18" TEE (DET.OUT)
10" INSERTA-TEE (DET.IN)
ISOLATOR ROW
CB-1
CB-2
DMH-1(PS)
DMH-5
DMH-6
DMH-2(PS)
CB-4
CB-5
CB-3(PS)
OUTLET CONTROL STRUCTURE (OCS)
6" DIA. PERFORATED UNDERDRAIN
PROP. SITE LIGHT (TYP.)
PROP. UNDERGROUND PROPANE TANKS
PROP. TREELINE
PROP. GAS SERVICE
6" DIA. PERFORATED UNDERDRAIN INV.=32.50
PROP. GRASSED UNDERDRAINED SOIL FILTER
TOP BERM=35.00
BOTTOM=34.00
(SEE DETAIL)
PROPOSED
102 KEY HOTEL
15,424 SF FOOTPRINT
FF=35.50
PROP. UNDERGROUND ELECTRIC SERVICE
PROP. 1,500 GAL. GREASE TRAP
PROP. 6" FIRE SERVICE
PROP. 2" DOMESTIC WATER SERVICE
PROP. KITCHEN (K) SEWER SERVICE INV.=28.3
PROP. DOMESTIC (S) SEWER SERVICE INV.=28.3
PROP. TRANSFORMER & CONC. PAD
PROP. BOLLARD (TYP.)
STORMWATER TREATMENT FILTER (TF)
DMH-3
DMH-4
SMH-1
SMH-2
PROP. WATER SHUTOFF
PROP. HYDRANT & GATE VALVE
PROP. GATE VALVE
PROP. SECONDARY UTILITY POLE
EX. CB-1
CORE OPENING FOR NEW 6" CONNECTION
INV.IN=32.40
EXISTING WATER SERVICE
PROP. OVERHEAD SERVICE
CB-6(PS)
EX. CB-2
CORE OPENING FOR NEW 12" DRAIN CONNECTION
INV.IN=26.50
PROP. UTILITY CROSSING
INV.(D)=26.0±
INV.(S)=23.6±
DELINEATORS TO BE RESET
8"X6" T.S.
OLD POST ROAD
(PAVED) (PUBLIC ROAD)
(POSTED SPEED LIMIT = 25 MPH)
SEE SEWER PLAN & PROFILE

0 20 50 100
SCALE: 1" = 20'

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321D LAFAYETTE ROAD
HAMPTON, NH 03842

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KITTERY, MAINE

STATE OF MAINE
DAVID R. JORDAN
No. 17400
PROFESSIONAL ENGINEER
1/24/24

REVISIONS		
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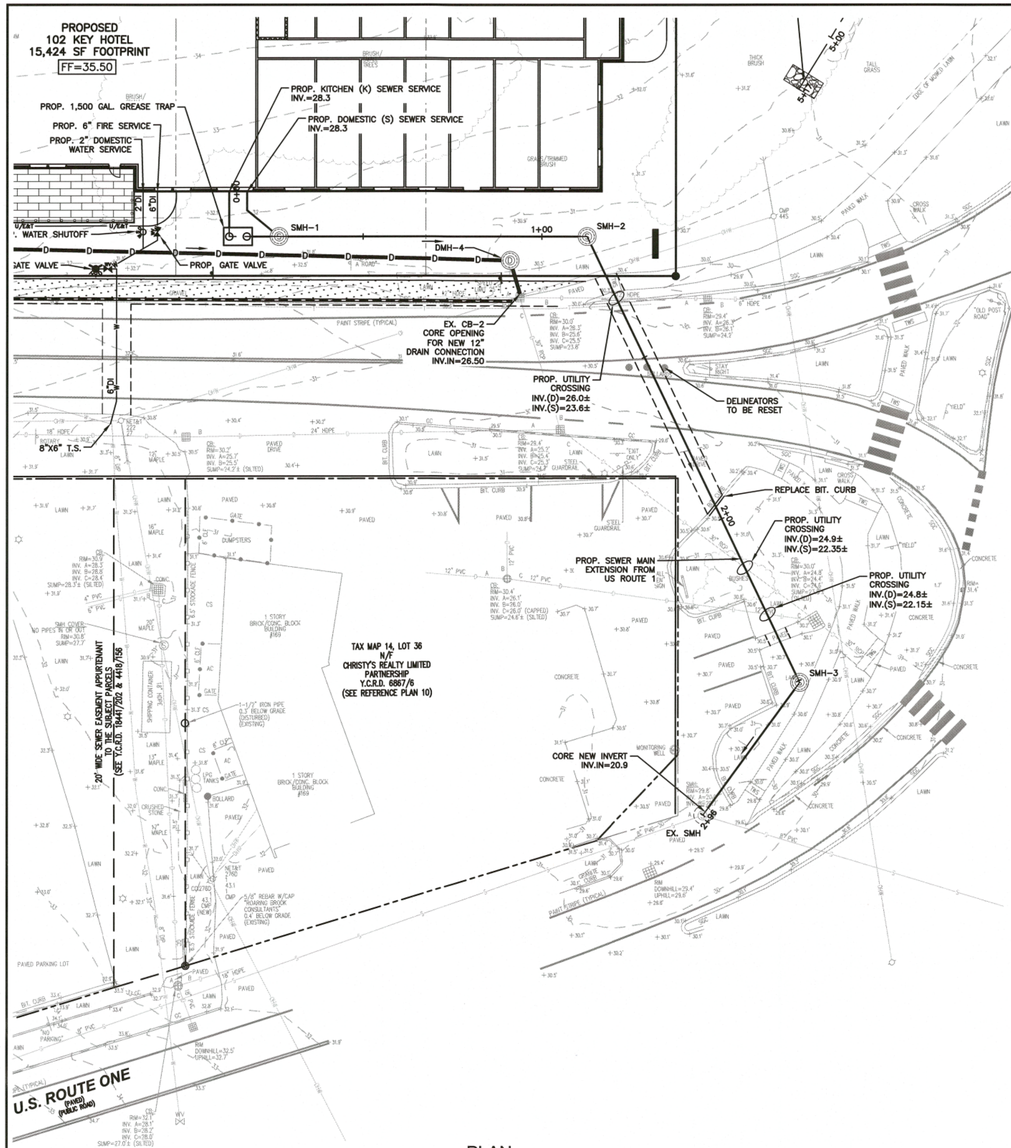
1	MISC. REVISIONS	8/17/23
NO.	REVISION	DATE

AUGUST 2, 2023

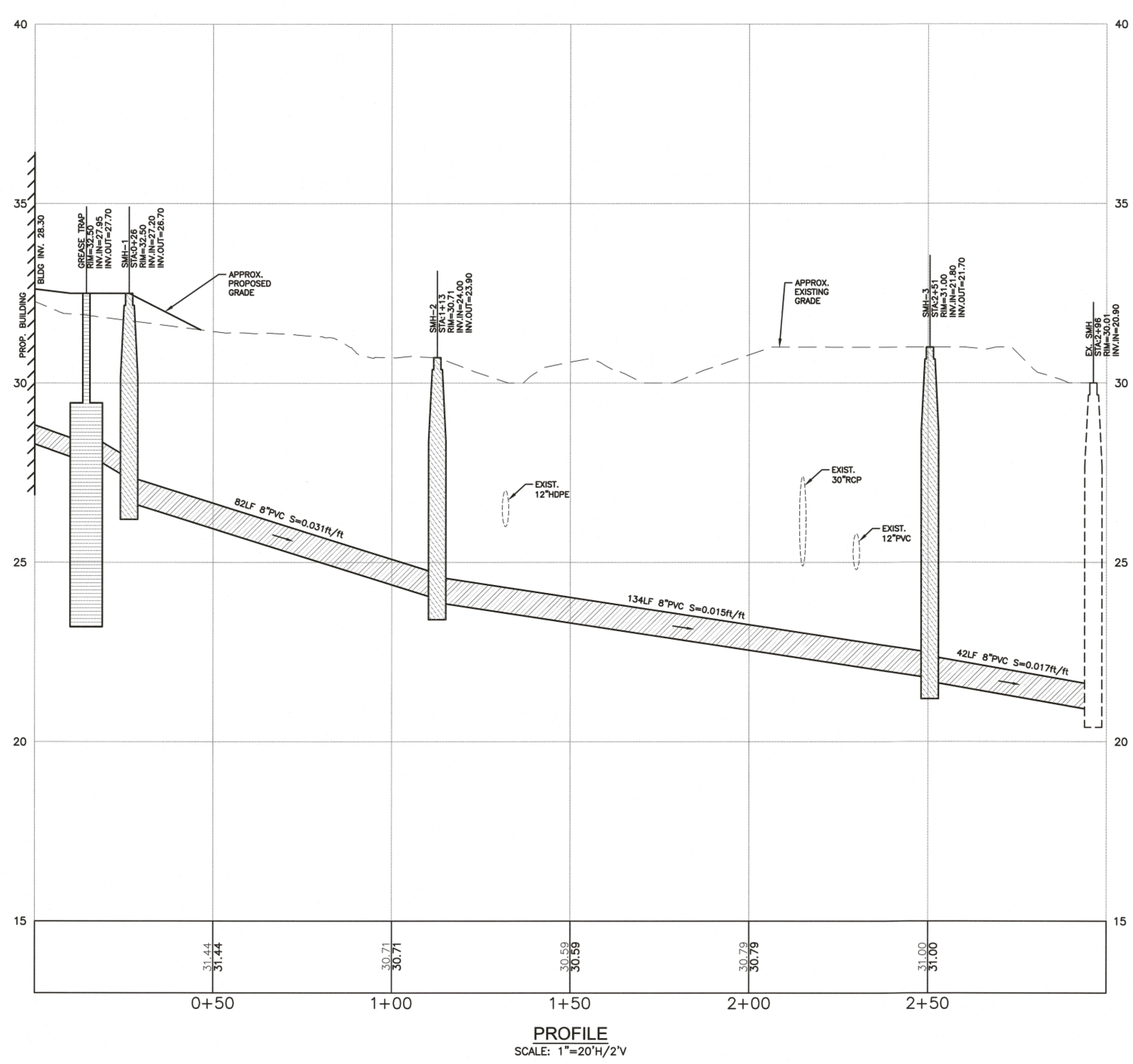
DRAWN/DESIGN BY	CHECKED BY
CCC/NID	DRJ

UTILITY PLAN

SCALE: 1"=20'
PROJECT NO. NEX-2200380



PLAN
SCALE: 1"=20'



PROFILE
SCALE: 1"=20'H/2'V

NOTES:

1) SEE SHEET 2 FOR NOTES AND LEGEND INFORMATION.

SEWER PIPE SCHEDULE

FROM: STRUCTURE NUMBER	PIPE SIZE (inches)	TYPE OF PIPE	APPROX. PIPE LENGTH (feet)	SLOPE OF PIPE (ft./ft.)	TO: STRUCTURE NUMBER
BLDG.(K)	6	PVC	10	0.0350	GR. TRAP
GR. TRAP	6	PVC	6	0.0800	SMH-1
BLDG.(S)	8	PVC	18	0.0500	SMH-2
SMH-1	8	PVC	82	0.0380	SMH-3
SMH-2	8	PVC	134	0.0150	SMH-3
SMH-3	8	PVC	42	0.0170	EX. SMH

SEWER STRUCTURES

1,500 GAL. GREASE TRAP
RIM=32.5±
INV.IN=27.95
INV.OUT=27.7

SMH-1
RIM=32.5±
INV.IN=27.20
INV.OUT=26.70

SMH-2
RIM=30.7±
INV.IN=24.00
INV.OUT=23.90

SMH-3
RIM=31.0±
INV.IN=21.80
INV.IN=21.70

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112 & 120 US ROUTE 1 BYPASS
KITTERY, MAINE

STATE OF MAINE
DAVID R. JORDAN
No. 17400
PROFESSIONAL ENGINEER
4/24/24

REVISIONS		
2	REV. PER TOWN COMMENTS	1/24/24
1	MISC. REVISIONS	10/11/23
NO.	REVISION	DATE

AUGUST 2, 2023

DRAWN/DESIGN BY	CHECKED BY
CCC/NID	DRJ

SEWER PLAN & PROFILE

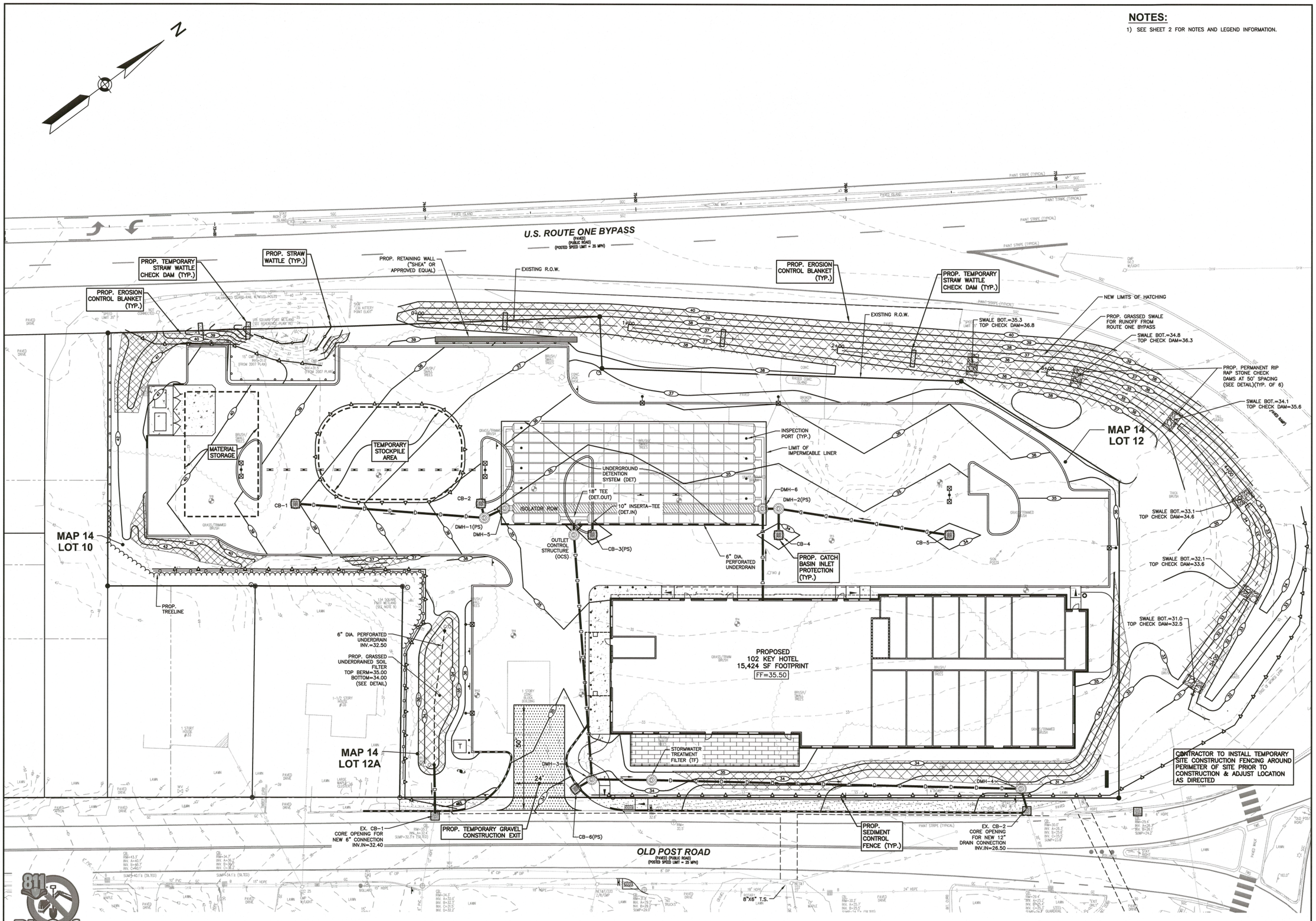
SCALE: 1"=20'

PROJECT NO. NEX-2200380

10 OF 18

NOTES:

1) SEE SHEET 2 FOR NOTES AND LEGEND INFORMATION.



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Greenman-Pedersen, Inc.
44 Stiles Road, Suite One
Salem, NH 03079

PREPARED FOR
KITTERY CIRCLE, LLC
321D LAFAYETTE ROAD
HAMPTON, NH 03842

ASSESSORS MAP 14 LOTS 10, 12 & 12A
139 OLD POST ROAD, 112 & 120 US ROUTE 1 BYPASS
KITTERY, MAINE

STATE OF MAINE
DAVID R. JORDAN
No. 17400
PROFESSIONAL ENGINEER
1/29/24

REVISIONS		
3	REV. PER TOWN COMMENTS	1/24/24
2	MISC. REVISIONS	10/11/23
1	MISC. REVISIONS	8/17/23
NO.	REVISION	DATE

AUGUST 2, 2023

DRAWN/DESIGN BY	CHECKED BY
CCC/NID	DRJ

EROSION & SEDIMENT CONTROL PLAN

SCALE: 1"=20'

PROJECT NO.
NEX-2200380

PLANTING SCHEDULE

PLANT	QNTY	BOTANICAL NAME	COMMON NAME	MIN. INSTALL SIZE	REMARKS
TREES					
AB	6	ABIES BALSAMEA	BALSAM FIR	6'–7" HT., B&B	
AR	7	ACER RUBRUM 'OCTOBER GLORY'	OCTOBER GLORY RED MAPLE	2 1/2"–3" CAL., B&B	
BN	10	BETULA NIGRA 'HERITAGE'	HERITAGE RIVER BIRCH	12'–14' HT., B&B	MULTI–STEM
GT	4	GLEDITSIA TRIACANTHOS "SKYLINE"	SKYLINE HONEY LOCUST	2 1/2"–3" CAL., B&B	
MG	5	MALUS 'SPRING SNOW'	SPRING SNOW CRABAPPLE	2 1/2"–3" CAL., B&B	
PG	5	PICEA GLAUCA	WHITE SPRUCE	6'–7' HT., B&B	
SHRUBS					
AW	22	AZALEA 'PLEASANT WHITE'	PLEASANT WHITE AZALEA	18"–24" HT., 3 GAL.	
CA	6	CLETHRA ALNIFOLIA 'HUMMINGBIRD'	HUMMINGBIRD SUMMERSWEET	18"–24"HT., 3 GAL.	
HP	7	HYDRANGEA PANICULATA GRANDIFLORA	PEE GEE HYDRANGEA	5–6' HT., B&B	
IG	41	ILEX GLABRA 'SHAMROCK'	SHAMROCK INKBERRY	2'–3' HT., 3 GAL.	
JC	36	JUNIPERUS CHINENSIS 'SEA GREEN'	SEA GREEN JUNIPER	2'–2 1/2' HT., 3 GAL.	
PF	20	POTENTILLA FRUTICOSA 'GOLDSTAR'	GOLDSTAR BUSH CINQUEFOIL	2'–3' HT., 3 GAL.	
SJ	28	SPIREA JAPONICA 'GOLDMOUND'	GOLDMOUND SPIREA	18"–24" HT., 3 GAL.	
TO	10	THUJA OCCIDENTALIS 'SMARAGD'	EMERALD GREEN ARBORVITAE	5'–6' HT., B&B	
PERENNIALS & GRASSES					
AV	12	ASTILBE 'VISIONS IN WHITE'	VISIONS IN WHITE ASTILBE	1 GAL.	
HD	74	HEMEROCALLIS 'STELLA DE ORO'	DWARF YELLOW DAYLILY	1 GAL.	
PV	49	PANICUM VIRGATUM 'SHENANDOAH'	SHENANDOAH SWITCH GRASS	1 GAL.	
ES	54	ERAGROSTIS SPECTABILIS	PURPLE LOVE GRASS	1 GAL.	

PLANTING SCHEDULE - DETENTION BASIN

PLANT	QNTY	BOTANICAL NAME	COMMON NAME	MIN. INSTALL SIZE	REMARKS
SHRUBS					
CA	10	CLETHRA ALNIFOLIA	SUMMERSWEET	2'–3' HT., 3 GAL.	
CR	12	CORNUS AMOMUM	SILKY DOGWOOD	2'–3' HT., 3 GAL.	
IV	10	ILEX VERTICILLATA 'SPARKLEBERRY'	SPARKLEBERRY WINTERBERRY	2'–3' HT., 3 GAL.	
NM	2	ILEX VERTICILLATA 'SOUTHERN GENTLEMAN'	SOUTHERN GENT. WINTERBERRY	2'–3' HT., 3 GAL.	
PERENNIALS & GRASSES					
PV	14	PANICUM VIRGATUM 'SHENANDOAH'	SHENANDOAH SWITCH GRASS	1 GAL.	
RF	12	RUDBECKIA FULGIDA 'GOLDSTRUM'	'GOLDSTRUM' BLACK–EYED SUSAN	1 GAL.	
PLUGS					
EP	80	EUPATORIUM PURPUREUM	JOE PYE WEED	5" PLUG	18" O.C.
RG	80	RUDBECKIA FULGIDA 'GOLDSTRUM'	'GOLDSTRUM' BLACK–EYED SUSAN	5" PLUG	18" O.C.
SS	80	SCHIZACHYRIUM SCOPARIUM 'THE BLUES'	'THE BLUES' LITTLE BLUESTEM	5" PLUG	18" O.C.

X PLANT QUANTITY
XX PLANT DESIGNATION

PROPOSED LOAM AND HYDROSEED

PROP. NEW ENGLAND NATIVE WARM SEASON GRASS MIX (SEE NOTES)

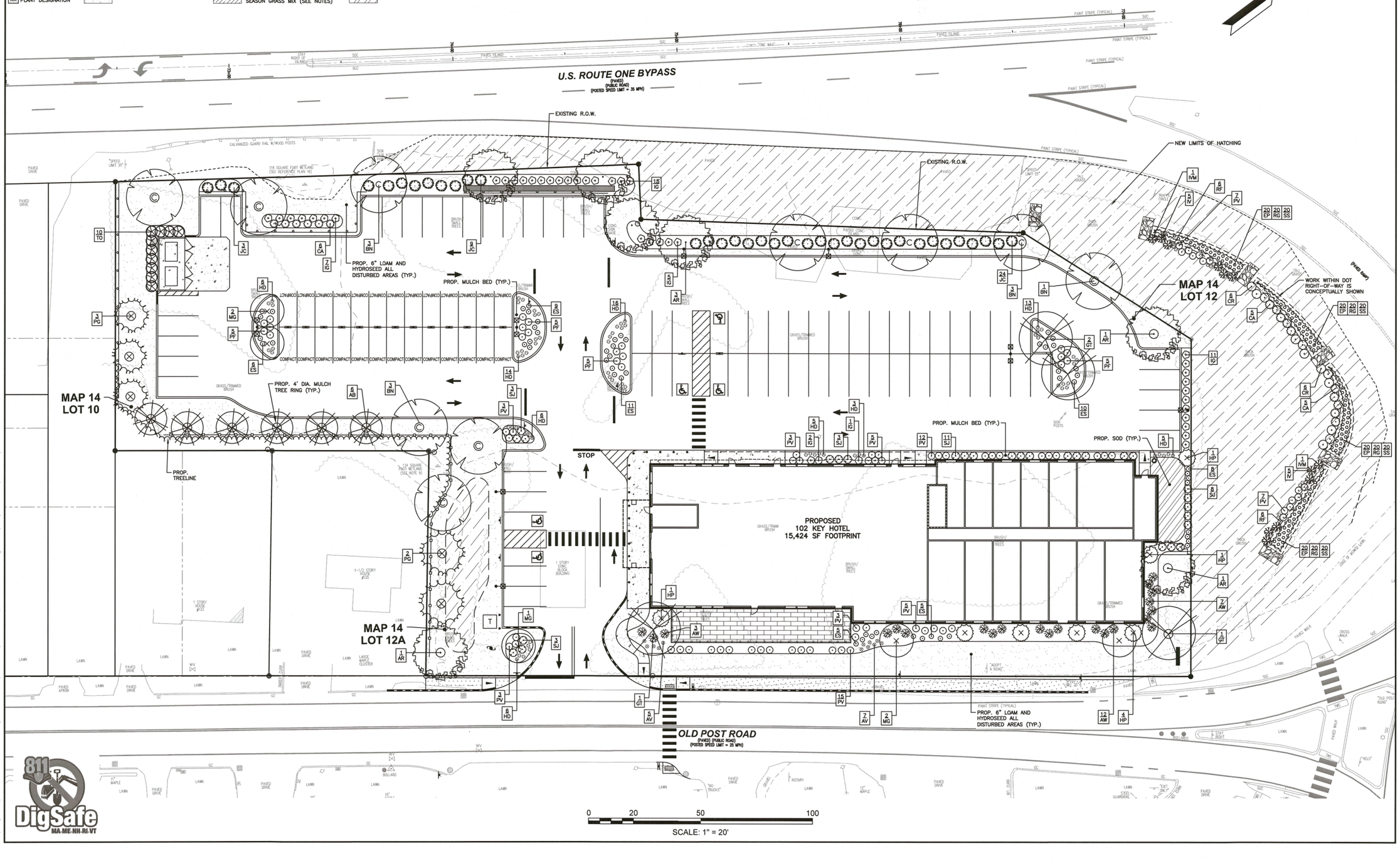
PROP. SOD

LANDSCAPE REQUIREMENTS

TOWN OF KITTERY – LAND USE ZONE REGULATIONS (C3)	REQUIRED	PROVIDED
16.4.21.E.3.c.2.b STANDARDS – LANDSCAPING SITE IMPROVEMENTS	A MINIMUM OF ONE TREE MUST BE PLANTED FOR EACH 50 FEET OF STREET FRONTAGE...THE TREES MUST BE A MINIMUM OF TWO–AND–ONE–HALF–INCH CALIPER AND BE AT LEAST 12 FEET HIGH AT THE TIME OF PLANTING. OLD POST ROAD: 293 LF / 50 LF = 5.9 TREES REQUIRED RT. 1 BYPASS: 404 LF / 50 LF = 8.1 TREES REQUIRED	OLD POST ROAD: 6 TREES AT 2 ½" CAL. OR GREATER RT. 1 BYPASS: 9 TREES AT 2 ½" CAL. OR GREATER
TOWN OF KITTERY – GENERAL DEVELOPMENT REQUIREMENTS	REQUIRED	PROVIDED
16.7.11.F.4.g PARKING AND LOADING – OFF–STREET PARKING STANDARDS	PARKING LANDSCAPING IS REQUIRED FOR PARKING AREAS CONTAINING 10 OR MORE PARKING SPACES AND MUST HAVE AT LEAST ONE TREE PER EIGHT SPACES...SUCH TREES ARE TO BE AT LEAST 1 ½ INCHES IN DIAMETER... 104 PARKING SPACES / 8 = 13 TREES REQUIRED	14 TREES AT 1 ½" CAL. OR GREATER

NOTES:

1) SEE SHEET 2 FOR NOTES AND LEGEND INFORMATION.
2) ANY LOSS OF PLANTS WILL BE REPLACED IN PERPETUITY.



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LANDSCAPE PLAN

SCALE: 1"=20'

PROJECT NO. NEX-2200380

12 OF 18

811 DigSafe MA-ME-NH-RI-VT

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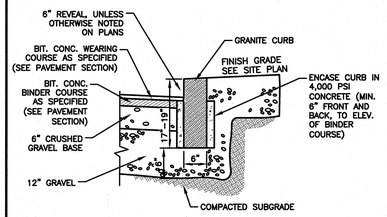
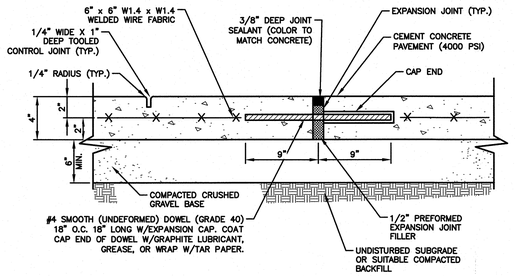


VERTICAL GRANITE CURB

NOT TO SCALE

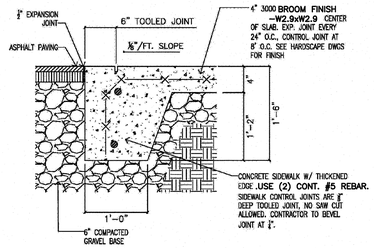
NOTE: SAWCUT 1' OFF FACE OF CURB WHERE INSTALLED IN EXISTING PAVEMENT. PATCH PAVEMENT TO MATCH EXISTING THICKNESS.



NOTES:
1. MAINTAIN 2" CLEARANCE (TYP) BETWEEN ALL CONCRETE EDGES AND WIRE FABRIC OR DOWEL.
2. CONTROL JOINTS TO BE LOCATED 5 FT. ON CENTER.
3. EXPANSION JOINTS TO BE LOCATED 25 FT. ON CENTER.

CEMENT CONCRETE SIDEWALK SECTION AND JOINT

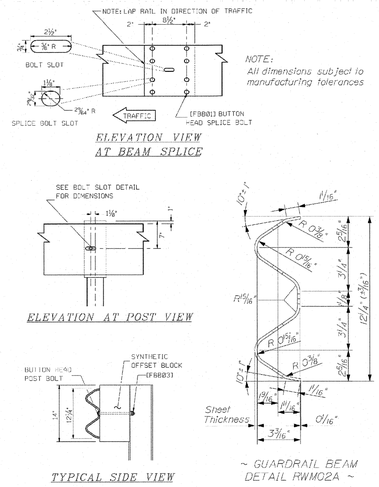
NOT TO SCALE



NOTE:
- BROOM FINISH WITH TWO COATS SEALING/CURING COMPOUND.

FLUSH CONC. SIDEWALK/PARKING

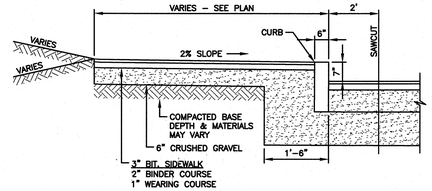
NOT TO SCALE



MDOT GUARD RAIL

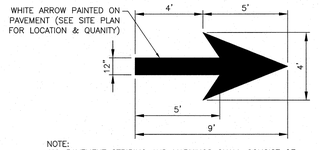
606(04)

NOT TO SCALE



BITUMINOUS CONCRETE SIDEWALK

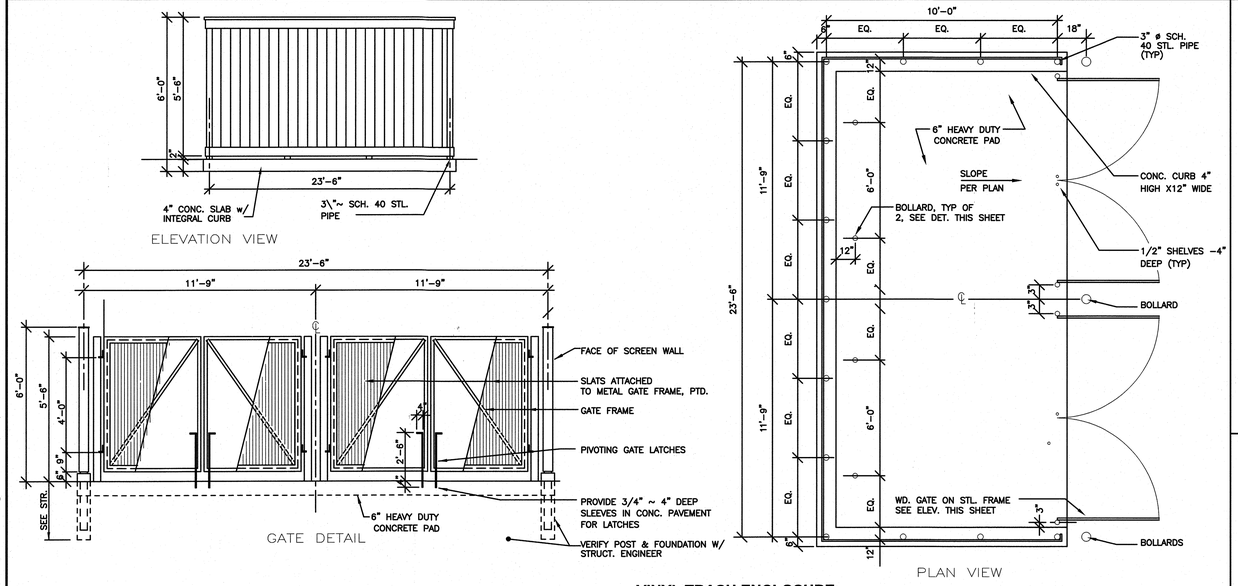
NOT TO SCALE



NOTE:
ALL PAVEMENT STRIPING AND MARKINGS SHALL CONSIST OF CHLORINATED RUBBER PAINT APPLIED TO A DRY SURFACE WHEN THE TEMPERATURE IS GREATER THAN 40°F. PAINT SHALL BE APPLIED AT A MINIMUM OF 0.015" (15 MIL) FILM THICKNESS

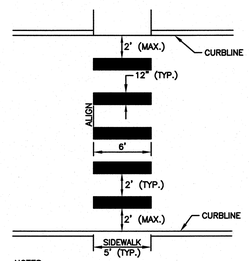
TYPICAL PAINTED ARROW

NOT TO SCALE



VINYL TRASH ENCLOSURE

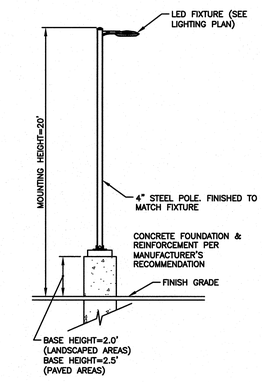
NOT TO SCALE



NOTES:
1. TWELVE INCH (12") LINES SHALL BE APPLIED IN ONE APPLICATION. NO COMBINATION OF LINES (TWO – 6 INCH LINES) WILL BE ACCEPTED.
2. LONGITUDINAL CROSSWALK LINES TO BE PARALLEL TO CURBLINE.
3. ALL LONGITUDINAL CROSSWALK LINES TO BE THE SAME LENGTH AND PROPERLY ALIGNED.

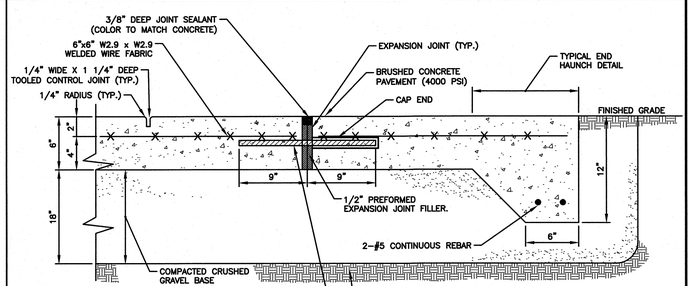
CROSSWALK

NOT TO SCALE



LIGHT FIXTURE

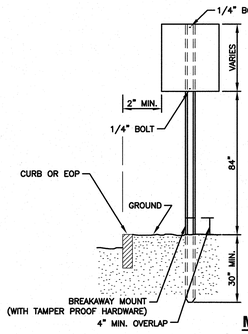
NOT TO SCALE



NOTES:
1. MAINTAIN 2" CLEARANCE (TYP) BETWEEN ALL CONCRETE EDGES AND WIRE FABRIC, DOWEL, OR REBAR.
2. CONTROL JOINTS TO BE LOCATED 5 FT. ON CENTER OR AS SHOWN ON ARCHITECTURAL PLANS.
3. EXPANSION JOINTS TO BE LOCATED 25 FT. ON CENTER.
4. WELDED WIRE FABRIC SHALL BE LAPSED A MINIMUM OF 2 WIRE SPACES.

6" HEAVY DUTY CONCRETE PAD

NOT TO SCALE



NOTES:
1. POSTS SHALL BE PLUMB; ANY POST BENT OR OTHERWISE DAMAGED SHALL BE REMOVED AND PROPERLY REPLACED. POSTS MAY BE SET OR DRIVEN.
2. WHEN POSTS ARE SET, HOLES SHALL BE DUG TO THE PROPER DEPTH; AFTER INSERTING POSTS, THE HOLES SHALL BE BACKFILLED WITH SUITABLE MATERIAL IN CARE BEING TAKEN TO PRESERVE THE ALIGNMENT OF THE POST.
3. WHEN POSTS ARE DRIVEN, A SUITABLE DRIVING CAP SHALL BE USED AND AFTER DRIVING THE TOP OF THE POST SHALL HAVE SUBSTANTIALLY THE SAME CROSS–SECTIONAL DIMENSION AS THE BODY OF THE POST; BATTERED HEADS WILL NOT BE ACCEPTED.
4. POSTS SHALL NOT BE DRIVEN WITH THE SIGN ATTACHED TO THE POST.
5. SIGNS SHALL BE ERECTED IN CONFORMANCE WITH THE REQUIREMENTS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".
6. WHEN SIGN IS IN PLACE NO PART OF POST SHALL EXTEND ABOVE THE SIGN.

MUTCD SIGN

NOT TO SCALE

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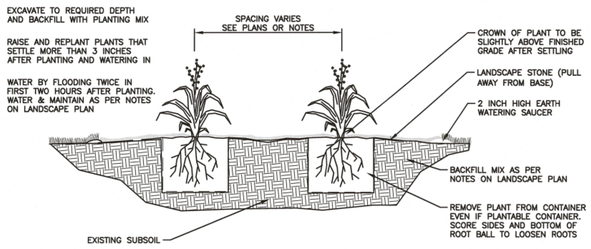
CCC/NID	DRJ

DETAIL SHEET

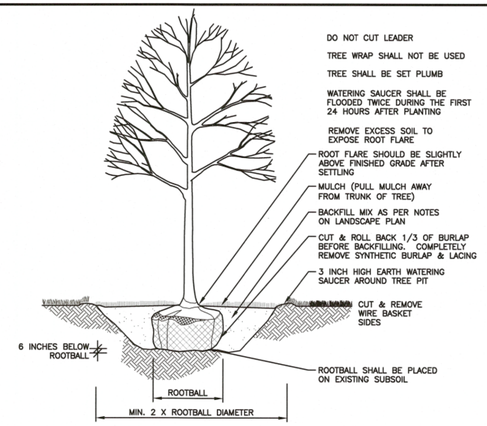
SCALE: AS SHOWN

PROJECT NO. NEX-2200380

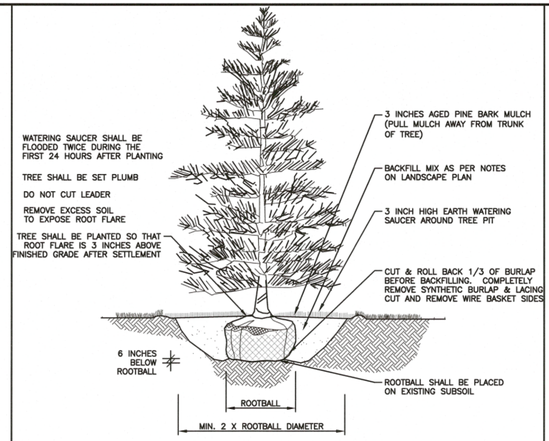
13 OF 18



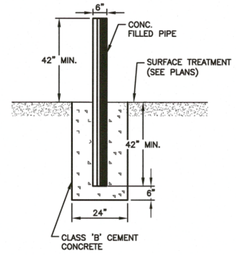
TYPICAL PERENNIAL PLANTING
NOT TO SCALE



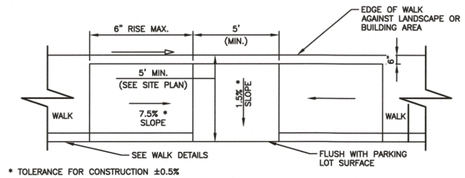
TYPICAL TREE PLANTING
NOT TO SCALE



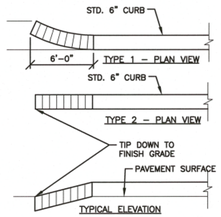
TYPICAL EVERGREEN TREE PLANTING
NOT TO SCALE



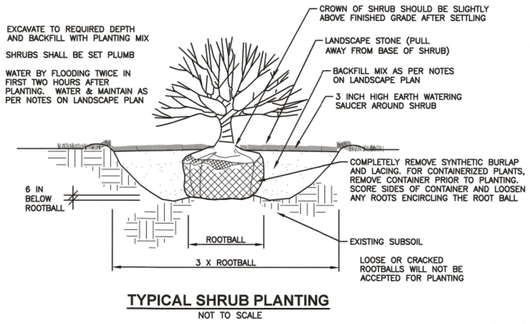
PIPE BOLLARD
NOT TO SCALE



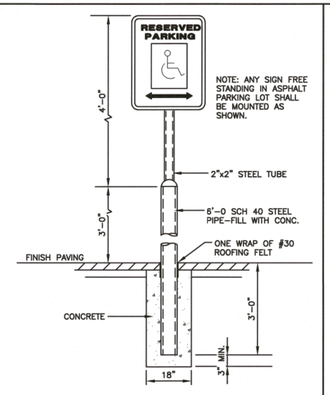
ACCESSIBLE PARKING RAMP
NOT TO SCALE



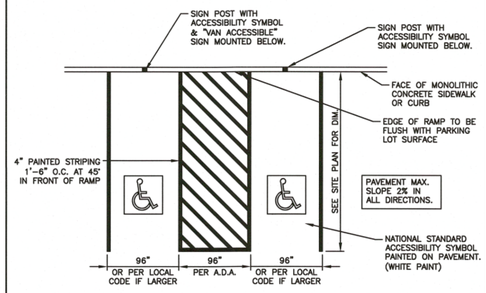
TYPICAL TIP DOWN CURB
NOT TO SCALE



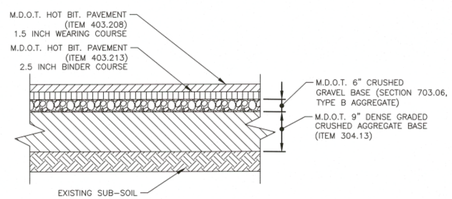
TYPICAL SHRUB PLANTING
NOT TO SCALE



ACCESSIBILITY SIGN ON BOLLARD
NOT TO SCALE



ACCESSIBLE PARKING STALLS
NOT TO SCALE

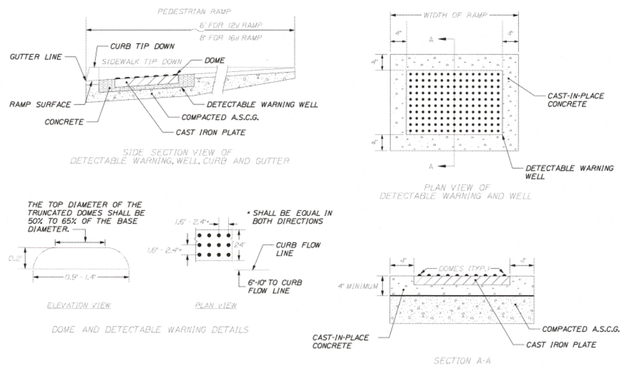


NOTES:
1. THE SOIL MUST HAVE A MOISTURE CONTENT DRY OF OPTIMUM AS DETERMINED BY THE MOISTURE–DENSITY RELATIONSHIP TEST METHOD ASTM D1557.
2. THE SOIL CAN BE COMPACTED TO 98% OF THE MAXIMUM STANDARD PROCTOR DENSITY AS DETERMINED BY THE MOISTURE–DENSITY RELATIONSHIP TEST METHOD ASTM D698.
3. THE SOIL SHALL NOT BE USED IF THE MATERIAL CONTAINS ORGANIC MATTER, RUBBLE, DEBRIS OR ANY OTHER DELETERIOUS MATERIAL.

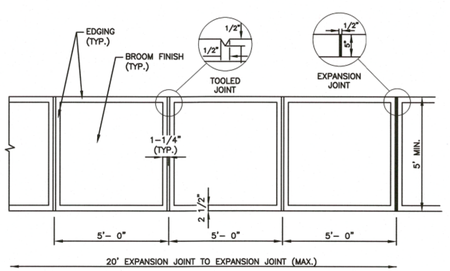
PAVEMENT SECTION
NOT TO SCALE

DETECTABLE WARNINGS
608(02)

VIEWS AND DETAILS OF THE DETECTABLE WARNING
(NOT TO SCALE)



NOTE: ALL DETECTABLE WARNING AREAS SHALL START 6'-10" FROM THE FLOW LINE OF THE CURB, BE 24" IN DEPTH, AND COVER THE COMPLETE WIDTH OF THE RAMP AREA ONLY.



CONCRETE SIDEWALK JOINTING AND EDGING
NOT TO SCALE

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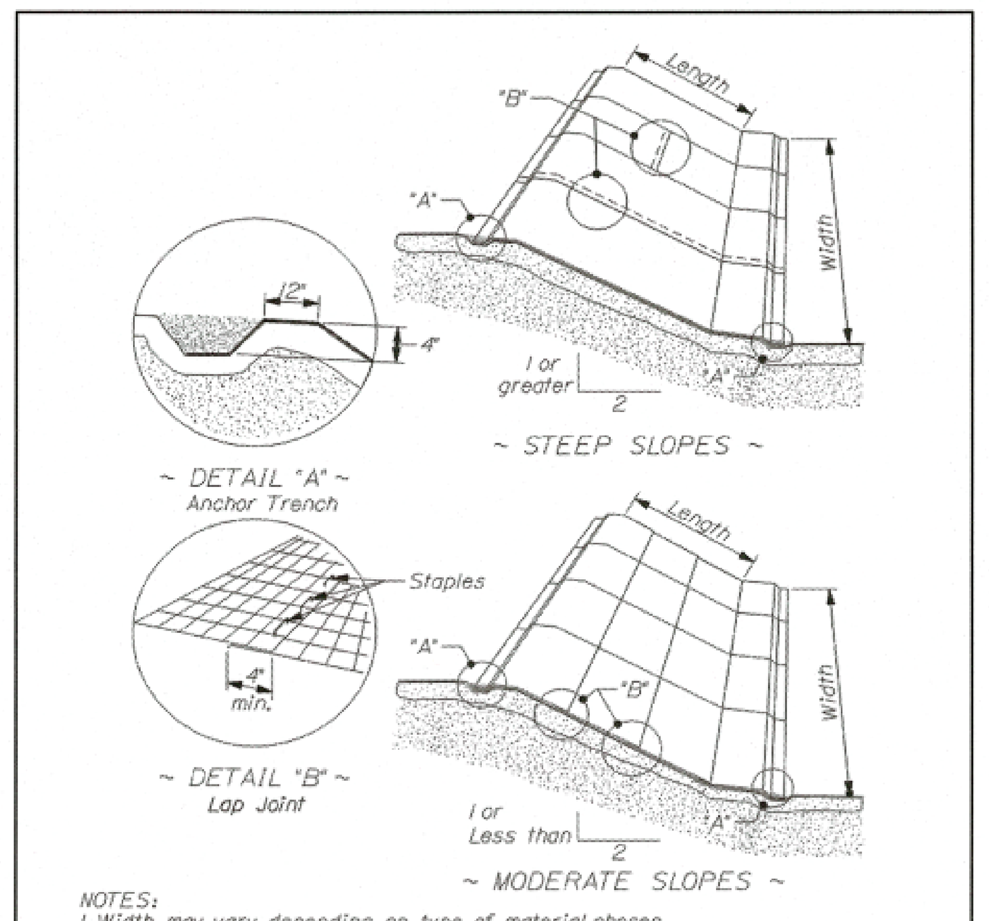
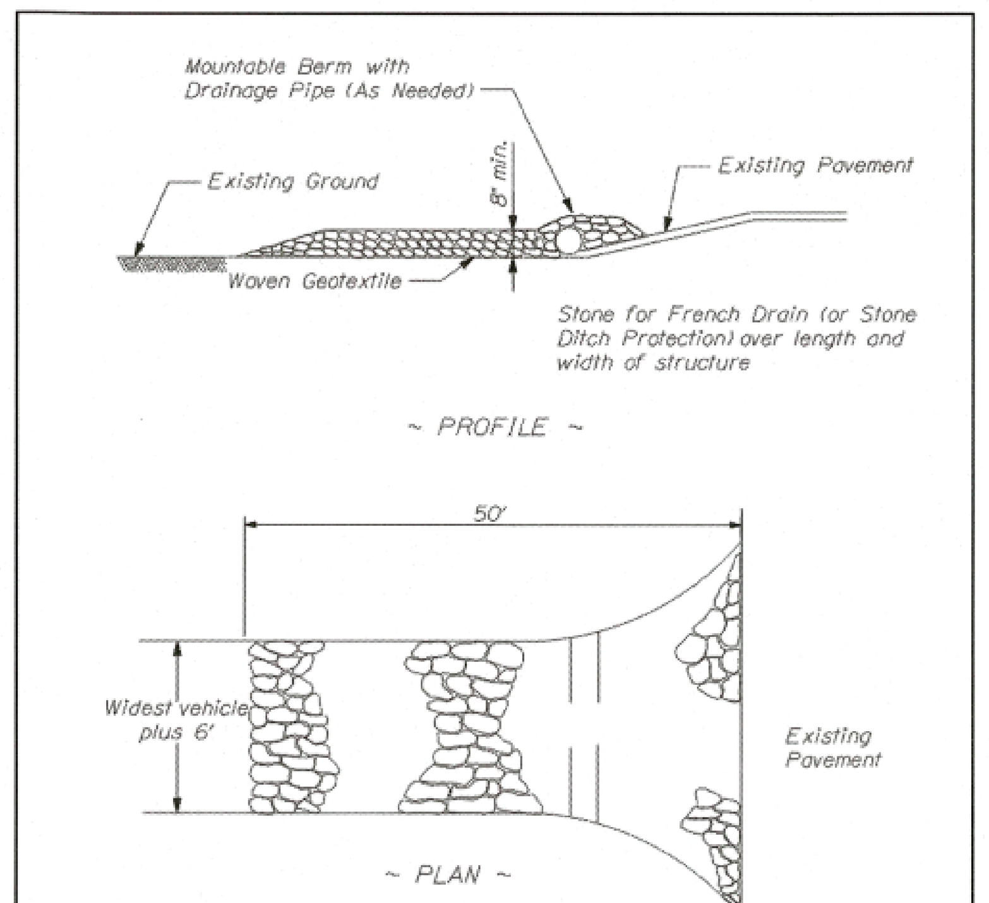


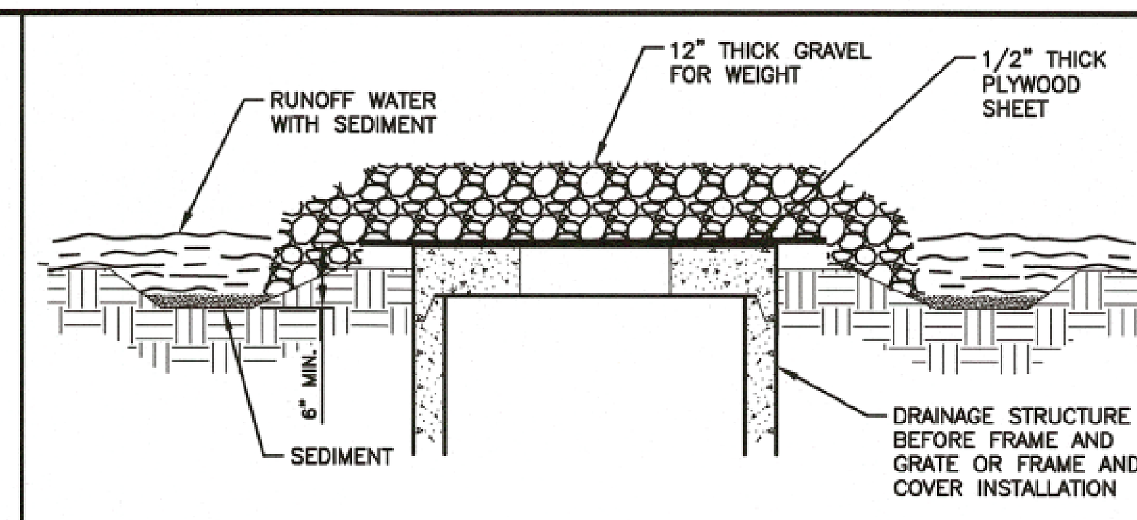
NOTES:
1. Width may vary depending on type of material chosen.
2. Follow Manufacturer's recommendations for anchoring blanket ends, overlaps, and staple spacing. Dimensions for these activities are to be used as a minimum.
3. Staples may be as provided or biodegradable staples according to the Qualified Products List*.
4. See section 717.06l of the MaineDOT Standard Specification or MaineDOT Qualified Products List*.
*http://www.maine.gov/mdot/transportation-research/qpl.php
5. Reference the most recent version of the MaineDOT Best Management Practices for Erosion and Sedimentation Control Manual.

EROSION CONTROL BLANKET
SLOPE APPLICATION
802(01)



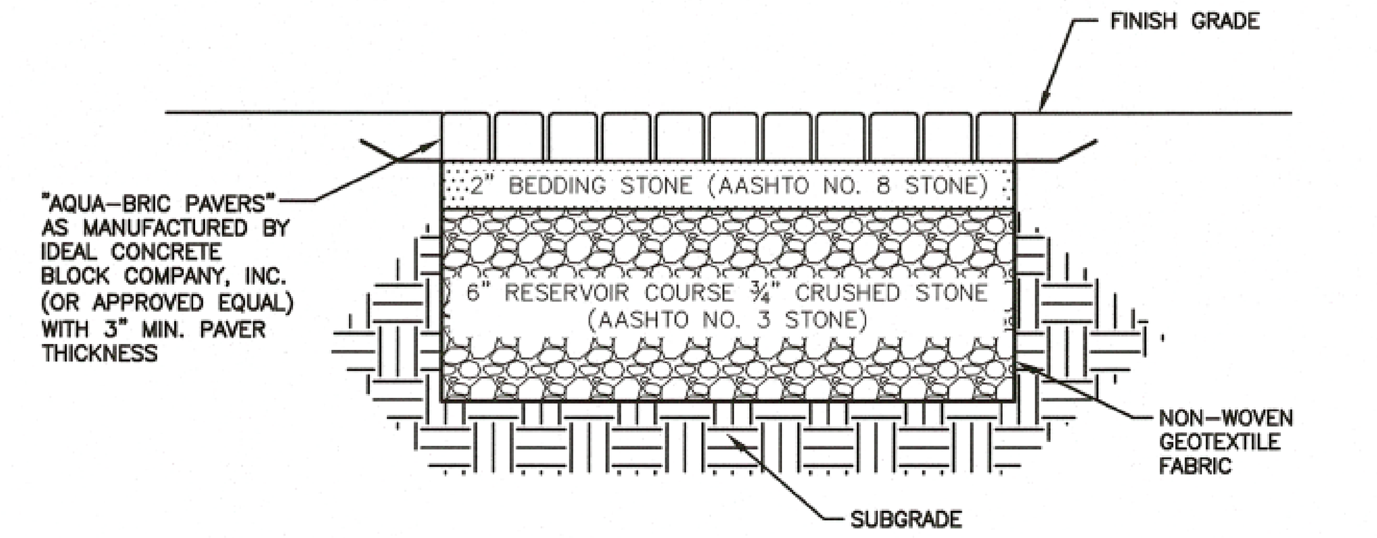
REF: Best Management Practices for Erosion and Sedimentation Control - Stabilized Construction Entrance/Exit

CONSTRUCTION ENTRANCE/EXIT
802(17)



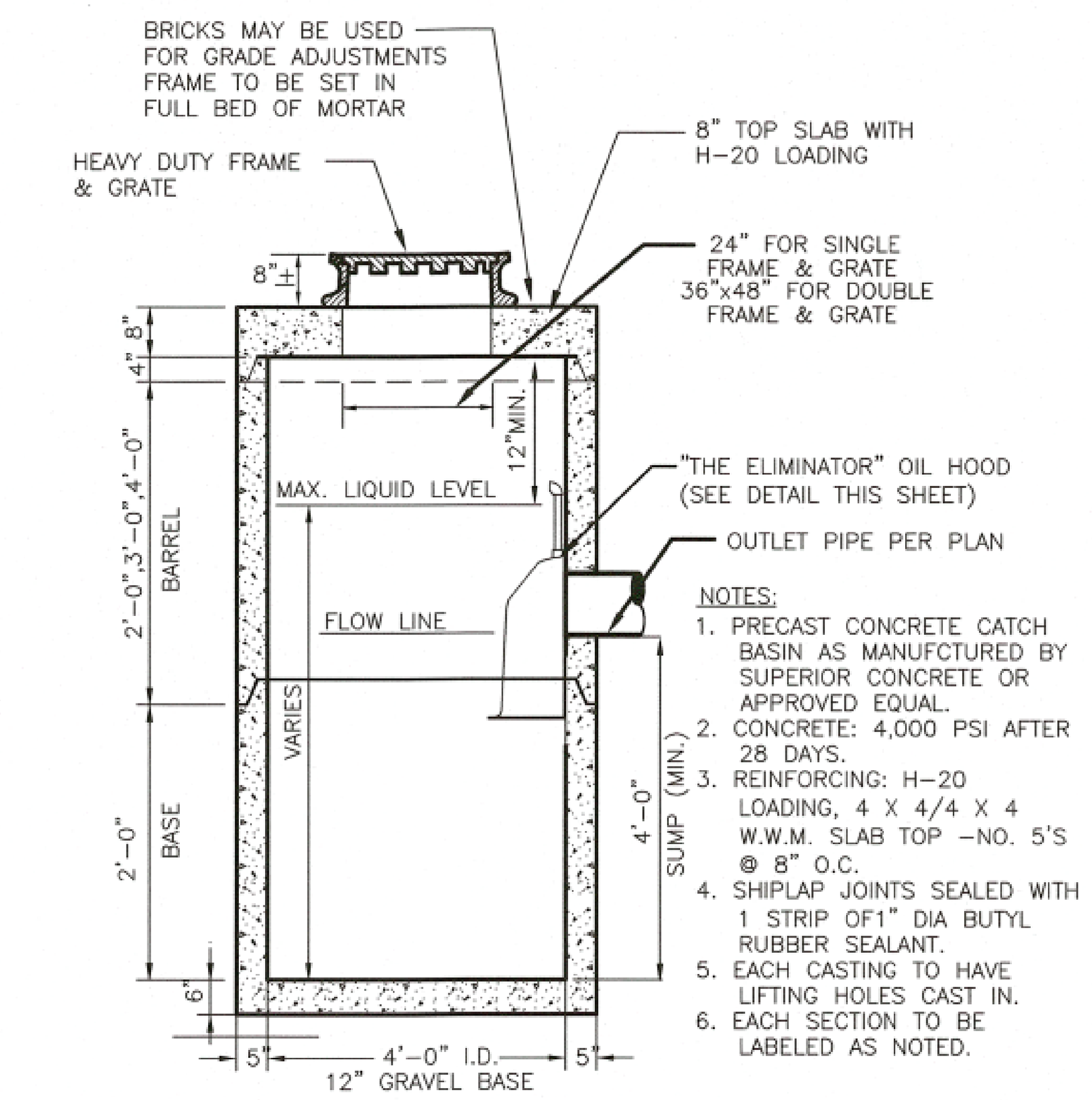
MAINTENANCE
1. ALL STRUCTURES SHOULD BE INSPECTED AFTER EVERY RAIN STORM AND REPAIRS MADE AS NECESSARY.
2. SEDIMENT SHOULD BE REMOVED FROM THE TRAPPING DEVICES AFTER THE SEDIMENT HAS REACHED A MAXIMUM OF ONE HALF OF THE DEPTH OF THE TRAP. THE SEDIMENT SHOULD BE DISPOSED OF IN A SUITABLE AREA AND PROTECTED FROM EROSION BY EITHER STRUCTURAL OR VEGETATIVE MEANS.
3. THE TEMPORARY TRAPS SHOULD BE REMOVED AND THE AREA REPAIRED AS SOON AS THE CONTRIBUTING DRAINAGE AREA TO THE INLET HAS BEEN COMPLETELY STABILIZED.
4. ALL STRUCTURES WITH INLET PROTECTION MUST BE CLEANED AT THE END OF CONSTRUCTION AND WHEN THE SITE IS FULLY STABILIZED.

INLET PROTECTION
NOT TO SCALE



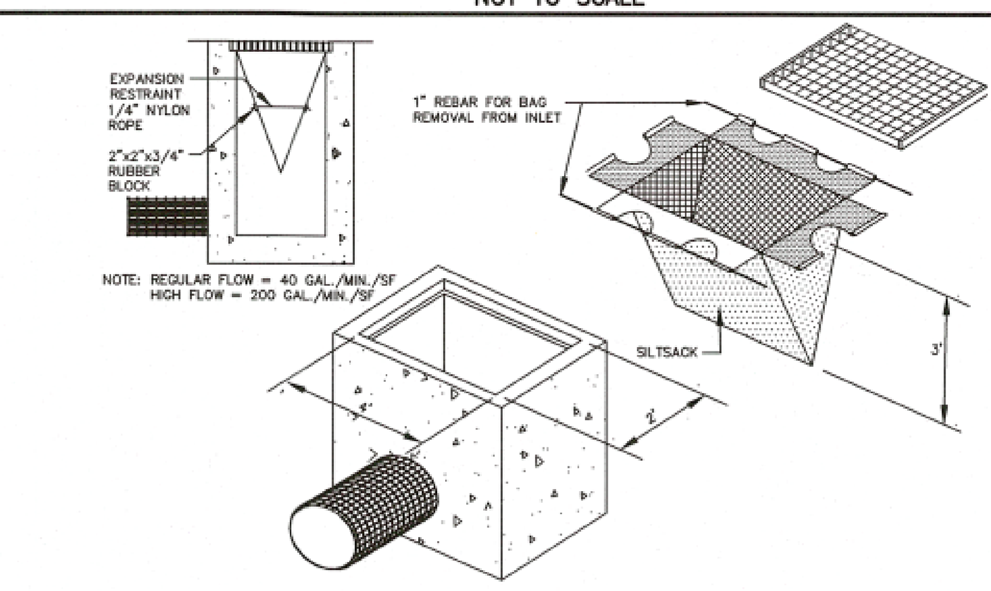
TYPICAL PERMEABLE PAVER PATIO
NOT TO SCALE

NOTES:
1. PAVERS & JOINTS SHALL BE ADA COMPLIANT.
2. CONTRACTOR TO SUBMIT SHOP DRAWING PRIOR TO CONSTRUCTION.

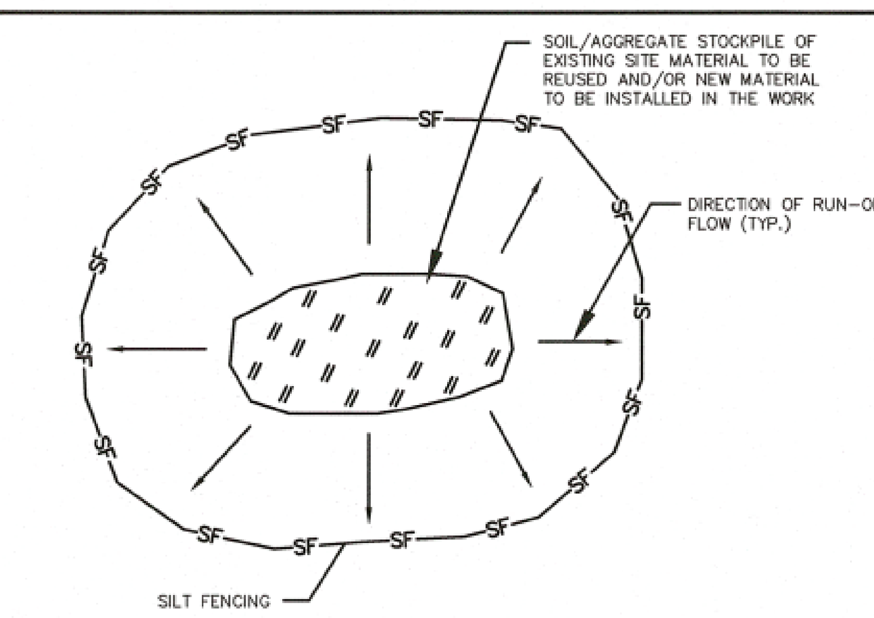


NOTES:
1. PRECAST CONCRETE CATCH BASIN AS MANUFCTURED BY SUPERIOR CONCRETE OR APPROVED EQUAL.
2. CONCRETE: 4,000 PSI AFTER 28 DAYS.
3. REINFORCING: H-20 LOADING, 4 X 4/4 X 4 W.W.M. SLAB TOP -NO. 5'S @ 8" O.C.
4. SHIPLAP JOINTS SEALED WITH 1 STRIP OF1" DIA BUTYL RUBBER SEALANT.
5. EACH CASTING TO HAVE LIFTING HOLES CAST IN.
6. EACH SECTION TO BE LABELED AS NOTED.

PRECAST CONCRETE CATCH BASIN WITH HOOD
NOT TO SCALE

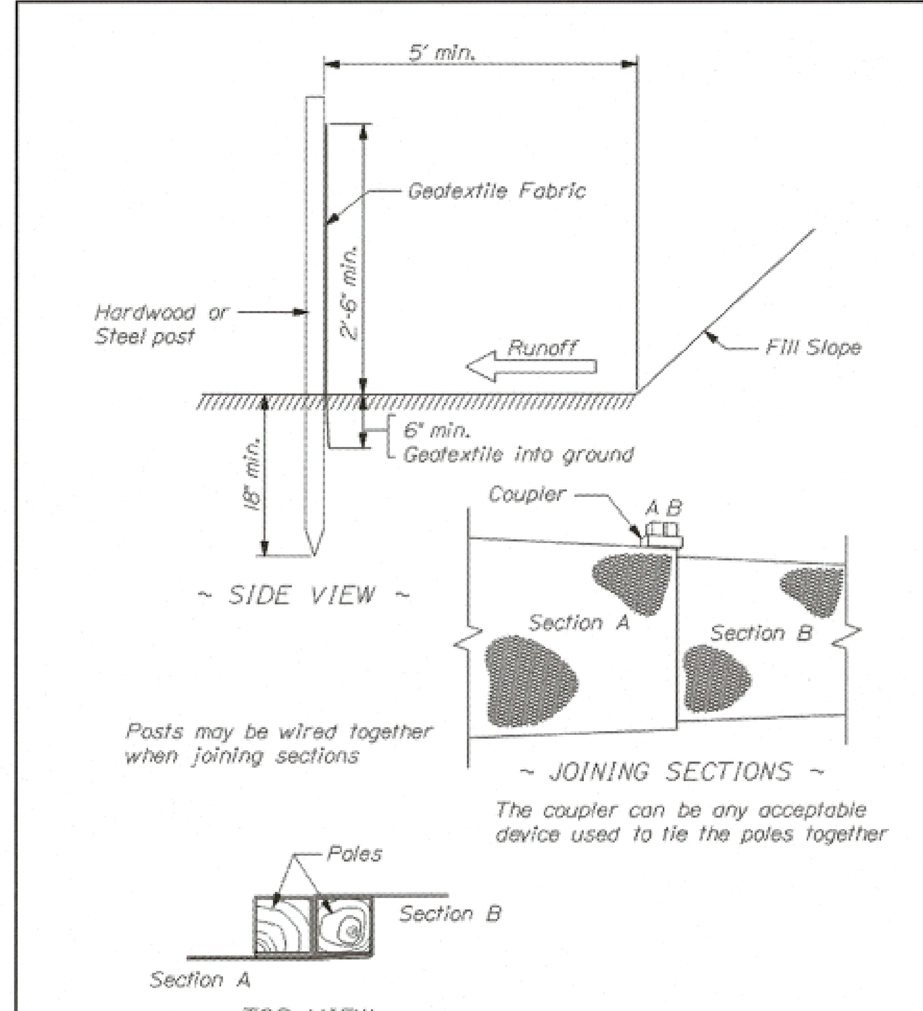


SILT SACK DETAIL-ON OR OFF SITE
NOT TO SCALE



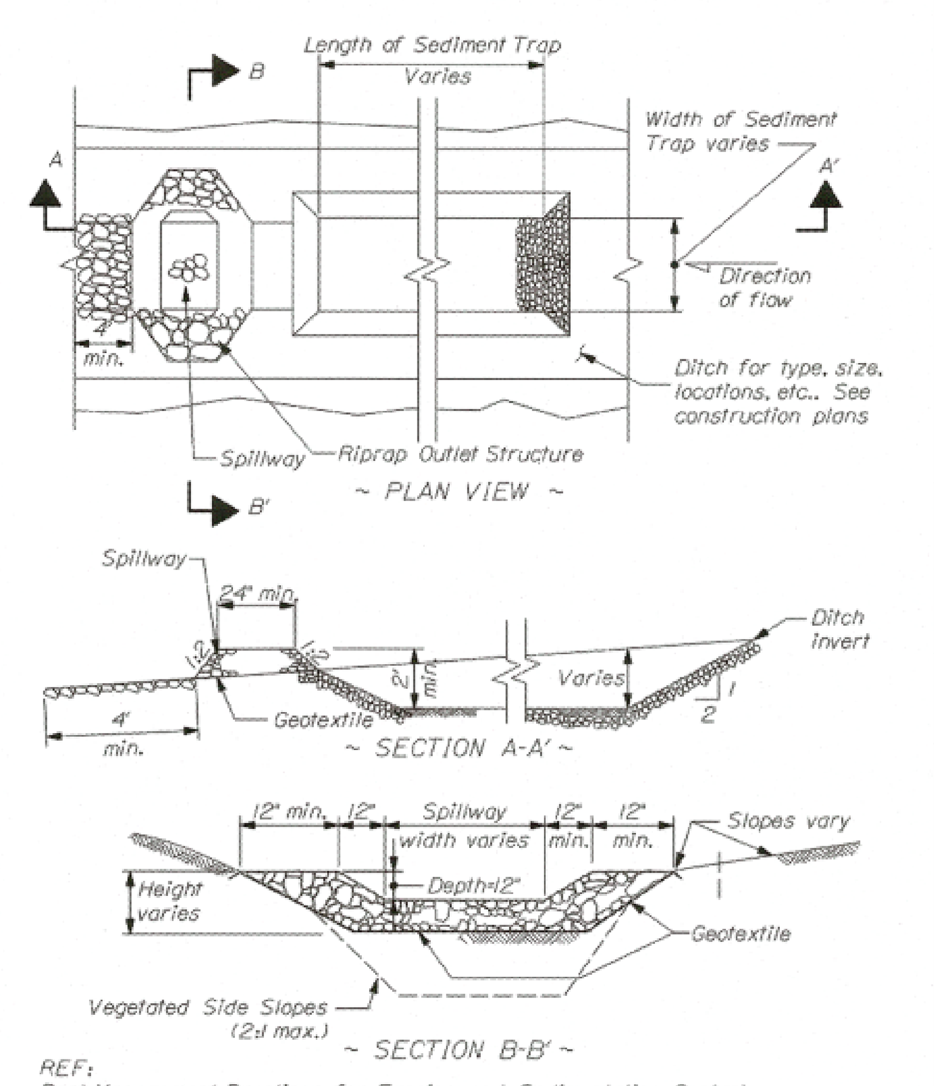
NOTES:
1. ALL EXISTING EXCAVATED MATERIAL THAT IS NOT TO BE REUSED IN THE WORK IS TO BE IMMEDIATELY REMOVED FROM THE SITE AND PROPERLY DISPOSED OF.
2. SOIL/AGGREGATE STOCKPILE SITES TO BE WHERE SHOWN ON THE DRAWINGS.
3. RESTORE STOCKPILE SITES TO PRE-EXISTING PROJECT CONDITION AND RESEED AS REQUIRED.
4. STOCKPILE HEIGHTS MUST NOT EXCEED 35'. STOCKPILE SLOPES MUST BE 2:1 OR FLATTER.

MATERIALS STOCKPILE
NOT TO SCALE



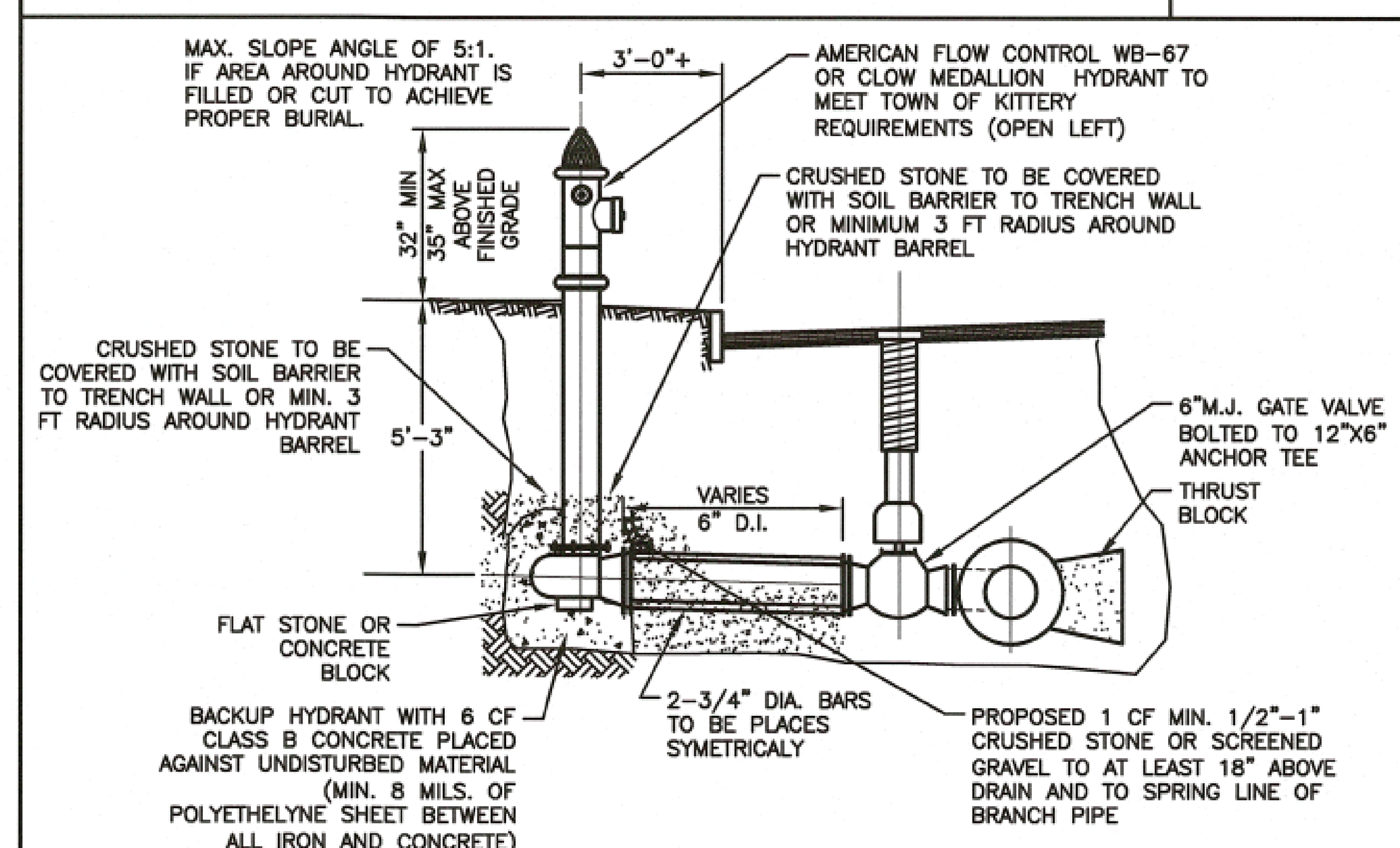
REF: Best Management Practices for Erosion and Sedimentation Control - Level Spreader

SILT FENCE
SEDIMENT BARRIER
802(04)



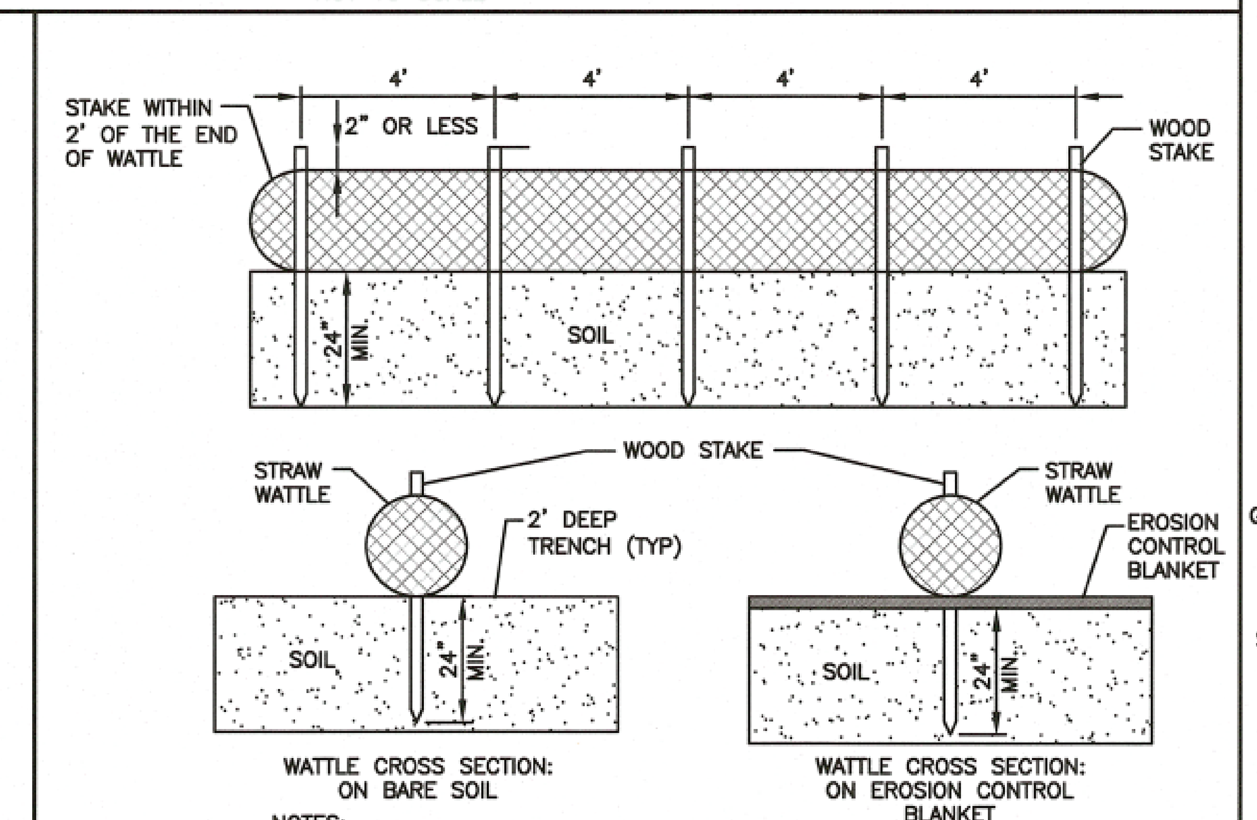
REF: Best Management Practices for Erosion and Sedimentation Control - Sediment Traps

SEDIMENT TRAP
802(14)



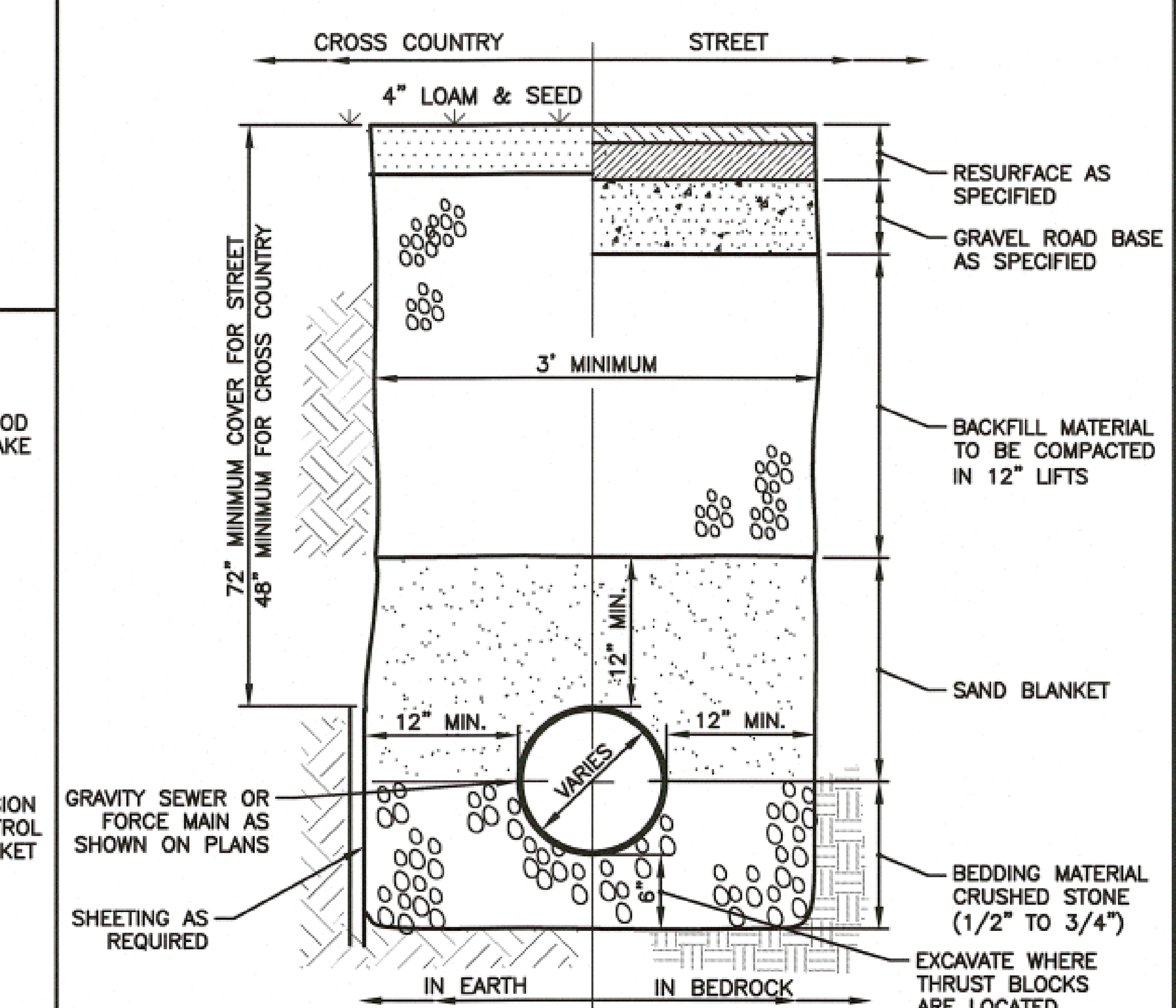
HYDRANT CONNECTION (TYP.)
NOT TO SCALE

NOTE: ALL FIRE HYDRANTS MUST BE TESTED AND PAINTED/LABELED IN ACCORDANCE WITH TOWN OF KITTERY REQUIREMENTS.

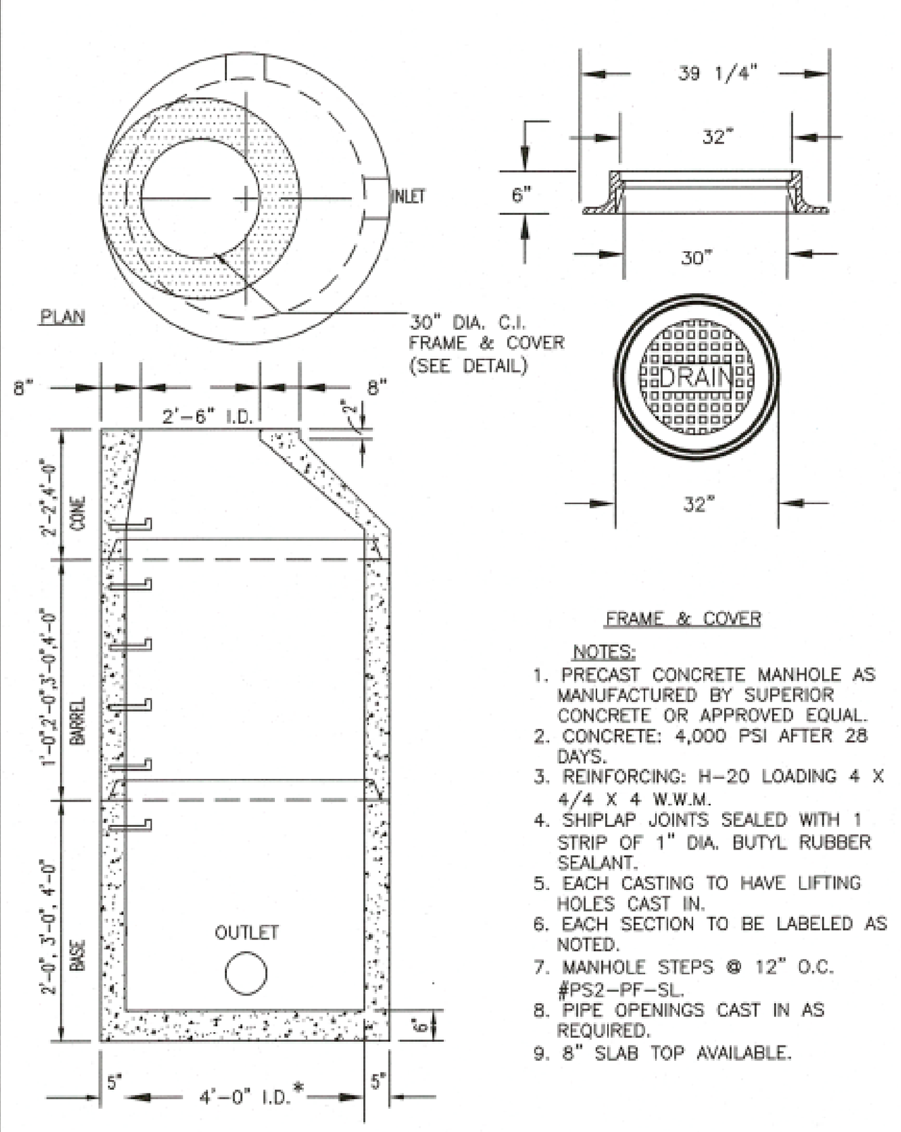


NOTES:
1. ENDS OF WATTLES SHALL BE TURNED SLIGHTLY UP.
2. RECCOMMENDED STAKES ARE 1 1/8" WIDE x 1 1/8" THICK x 30" LONG. STAKES SHALL NOT EXCEED ABOVE THE STRAW WATTLE MORE THAN 2".

STRAW WATTLE
NOT TO SCALE

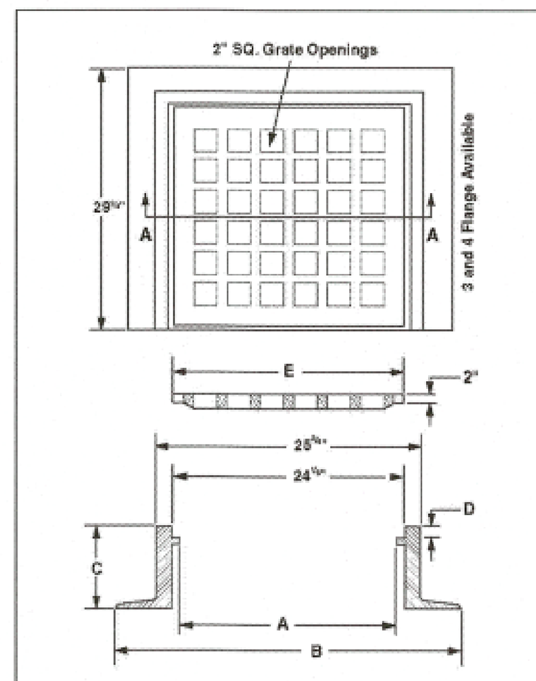


TYPICAL TRENCH SECTION FOR SANITARY SEWER SERVICE
NOT TO SCALE



NOTES:
1. PRECAST CONCRETE MANHOLE AS MANUFACTURED BY SUPERIOR CONCRETE OR APPROVED EQUAL.
2. CONCRETE: 4,000 PSI AFTER 28 DAYS.
3. REINFORCING: H-20 LOADING 4 X 4/4 X 4 W.W.M.
4. SHIPLAP JOINTS SEALED WITH 1 STRIP OF 1" DIA. BUTYL RUBBER SEALANT.
5. EACH CASTING TO HAVE LIFTING HOLES CAST IN.
6. EACH SECTION TO BE LABELED AS NOTED.
7. MANHOLE STEPS @ 12" O.C. (PS2-PF-SL.
8. PIPE OPENINGS CAST IN AS REQUIRED.
9. 8" SLAB TOP AVAILABLE.

PRECAST CONCRETE DRAIN MANHOLE
MAXIMUM PIPE DIAMETER 30"
NOT TO SCALE



Heavy Duty Catch Basin with 2" Square Openings

The QWP 45-600 2" Square Opening Catch Basin offers the same high-grade material as the "State DOT Standard" casting but is an economical alternative. Weight is reduced by removing material in noncritical areas of the casting.

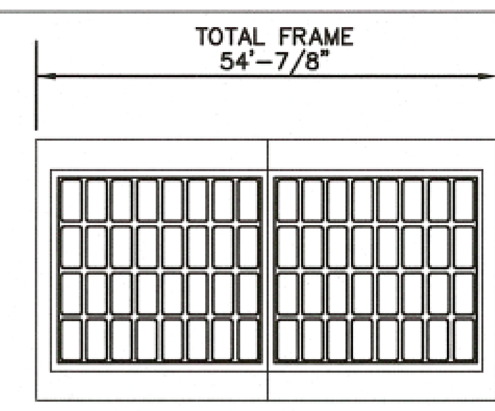
Features:
- Reduced excess weight
- Economical alternative to DOT standard
- High strength casting
- Nonrocking grate
- Solid covers are available

Specifications:
- Quality cast frame and grate
- Bituminous coated
- Nonrocking grate
- 2" square opening pattern on grate
- Gray cast iron meets ASTM A48 Class 30
- H-20 load rated
- Frame available in 4", 6" and 8" heights, with 3 or 4 flanges

FRAME	DIMENSIONS (inches) A	B	C	D	E
4"	22	33¼	4	2	24
6"	22	33¼	6	2	24
8"	22	33¼	8	2	24

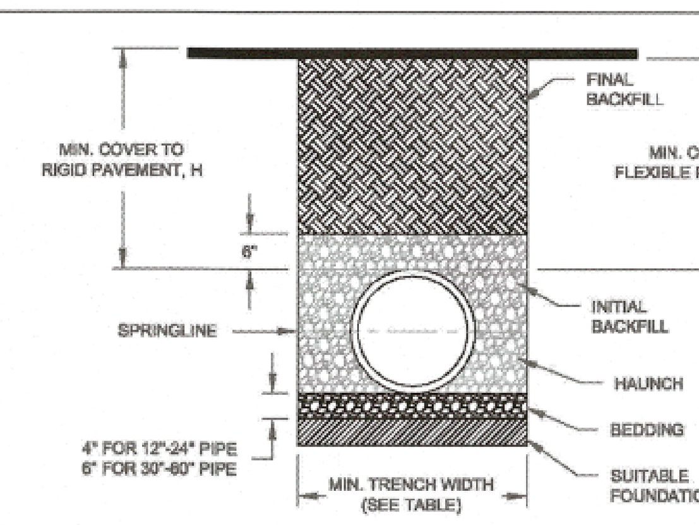
DESCRIPTION	WT. (lbs.)	PRODUCT NUMBER QWP 45-600
24" x 4" CB Frame 3 Flg. #45	115	62056 600
24" x 4" CB Frame 4 Flg. #45	140	62057 600
24" x 6" CB Frame 3 Flg. #45	180	62067 600
24" x 6" CB Frame 4 Flg. #45	205	62065 600
24" x 8" CB Frame 3 Flg. #45	205	62064 600
24" x 8" CB Frame 4 Flg. #45	230	62063 600
24" x 2" CB Sq. Grate #45	190	62104 600

TOTAL FRAME
54'-7/8"



PLAN VIEW
DOUBLE GRATE
(IF APPLICABLE)

CATCH BASIN FRAME & GRATE
NOT TO SCALE



NOTES:
1. ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST ADDITION
2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.
3. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.
4. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II OR III. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) FOR 4"-24" (100mm-600mm); 6" (150mm) FOR 30"-60" (750mm-900mm).
5. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II OR III IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.
6. MINIMUM COVER: MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOATION. FOR TRAFFIC APPLICATIONS, MINIMUM COVER, H, IS 12" UP TO 48" DIAMETER PIPE AND 24" OF COVER FOR 54"-60" DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT.

RECOMMENDED MINIMUM TRENCH WIDTHS

PIPE DIAM.	MIN. TRENCH WIDTH
4"	21"
6"	23"
8"	26"
10"	28"
12"	30"
15"	34"
18"	39"
24"	48"
30"	56"
36"	64"
42"	72"
48"	80"
54"	88"
60"	96"

MINIMUM RECOMMENDED COVER BASED ON VECHICLE LOADING CONDITIONS

PIPE DIAM.	SURFACE LIVE LOADING CONDITION H-25	HEAVY CONSTRUCTION (75T AXLE LOAD)*
12" - 48"	12"	48"
54" - 60"	24"	60"

* VEHICLES IN EXCESS OF 75T MAY REQUIRE ADDITIONAL COVER

MINIMUM RECOMMENDED COVER BASED ON RAILWAY LOADING CONDITIONS

PIPE DIAM.	COOPER E-80**
UP TO 24"	24"
30"-36"	36"
42"-60"	48"

** COVER IS MEASURED FROM TOP OF PIPE TO BOTTOM OF RAILWAY TIE.
*** E-80 COVER REQUIREMENTS, ARE ONLY APPLICABLE TO ASTM F 2306 PIPE.

2	ADDED E-80 INFORMATION	TJR	06/20/07	
REV.	DESCRIPTION	BY	MM/DD/YY	CHKD

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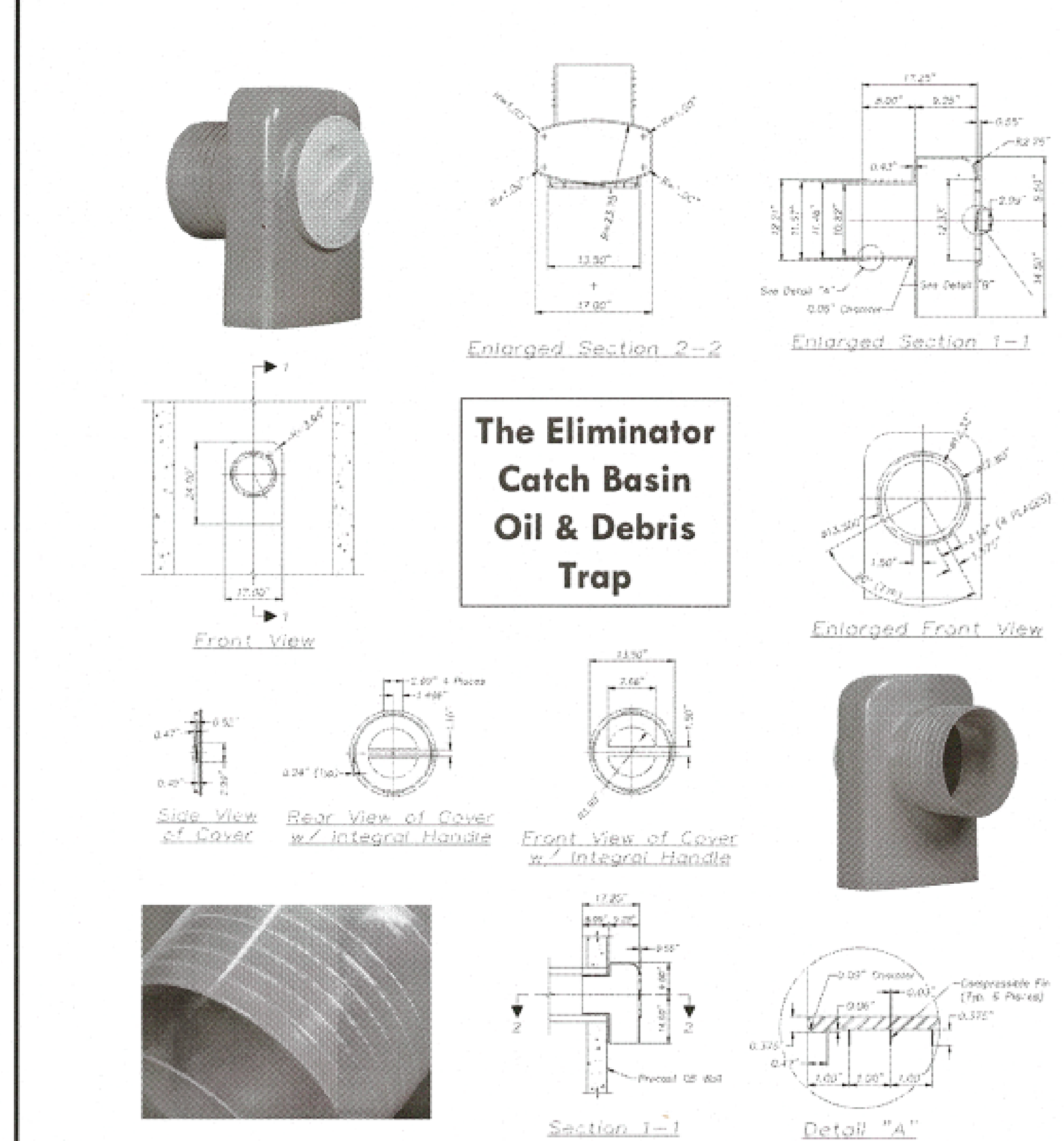
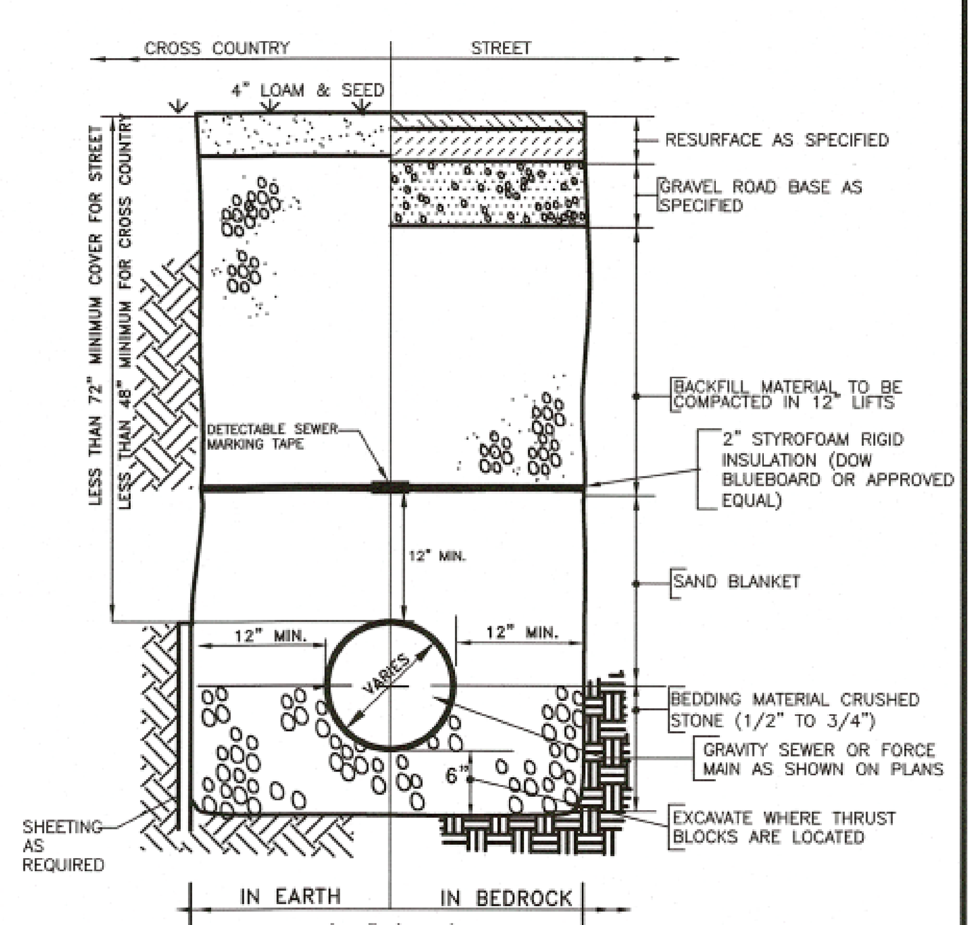
ADVANCED DRAINAGE SYSTEMS, INC. ("ADS") HAS PREPARED THIS DETAIL BASED ON INFORMATION PROVIDED TO ADS. THIS DRAWING IS INTENDED TO DEPICT THE COMPONENTS AS REQUESTED. ADS HAS NOT PERFORMED ANY ENGINEERING OR DESIGN SERVICES FOR THIS PROJECT, NOR HAS ADS INDEPENDENTLY VERIFIED THE INFORMATION SUPPLIED. THE INSTALLATION DETAILS PROVIDED HEREIN ARE GENERAL RECOMMENDATIONS AND ARE NOT SPECIFIC FOR THIS PROJECT. THE DESIGN ENGINEER SHALL REVIEW THESE DETAILS PRIOR TO CONSTRUCTION. IT IS THE DESIGN ENGINEERS RESPONSIBILITY TO ENSURE THE DETAILS PROVIDED HEREIN MEETS OR EXCEEDS THE APPLICABLE NATIONAL, STATE, OR LOCAL REQUIREMENTS AND TO ENSURE THAT THE DETAILS PROVIDED HEREIN ARE ACCEPTABLE FOR THIS PROJECT.

TYPICAL TRENCH DETAIL
DRAWING NUMBER: STD-101
ADS ADVANCED DRAINAGE SYSTEMS, INC.
4640 TRUEMAN BLVD HILLIARD, OHIO 43026
CKS 10/16/06 NTS 1 OF 1

HDPE PIPE TRENCH
NOT TO SCALE



GWR Ground Water Rescue
Ground Water Rescue, Inc.
24 Ryden St., Quincy, MA 02169
Tel: 617-773-1128 Fax: 617-773-0510
www.kleanstream.com
MADE IN USA

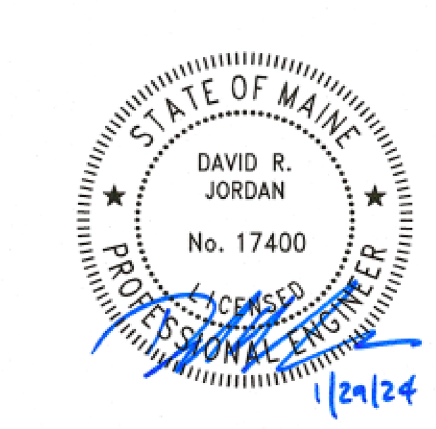


TYPICAL TRENCH SECTION
FOR SANITARY SEWER SERVICE
WITH LESS THAN 6' OF COVER
NOT TO SCALE

GPI Engineering Design Planning Construction Management
603.893.0720 GPINET.COM
Greenman-Pedersen, Inc.
44 Stiles Road, Suite One
Salem, NH 03079

PREPARED FOR
KITTERY CIRCLE, LLC
321D LAFAYETTE ROAD
HAMPTON, NH 03842

ASSESSORS MAP 14 LOTS 10, 12 & 12A
139 OLD POST ROAD,
112 & 120 US ROUTE 1 BYPASS
KITTERY, MAINE



REVISIONS

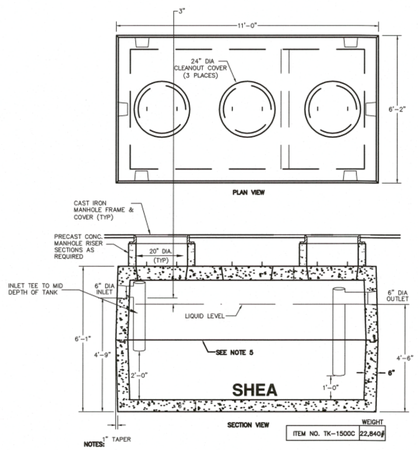
NO.	REVISION	DATE
3	REV. PER TOWN COMMENTS	1/24/24
2	ADD PATIO DETAIL	10/11/23
1	REVISE HYDRANT	8/17/23

AUGUST 2, 2023

DRAWN/DESIGN BY	CHECKED BY
CCC/NID	DRJ

DETAIL SHEET

SCALE: AS SHOWN
PROJECT NO. NEX-2200380

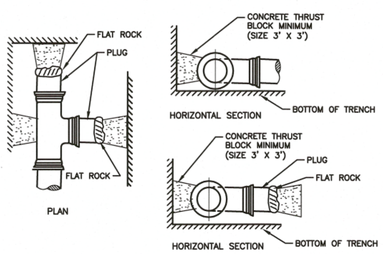


NOTES:

1. CONCRETE: 5,000 PSI MINIMUM AFTER 28 DAYS.
2. DESIGN CONFORMS WITH MEDEP 10-144 CMR 241 FOR GREASE TRAPS
3. ALL REINFORCEMENT PER ASTM C1227-93.
4. DESIGNED FOR H-20 LOADING.
5. TONGUE & GROOVE JOINT SEALED WITH BUTYLE RESIN.
6. TEES AND BAFFLES SOLD SEPARATELY.

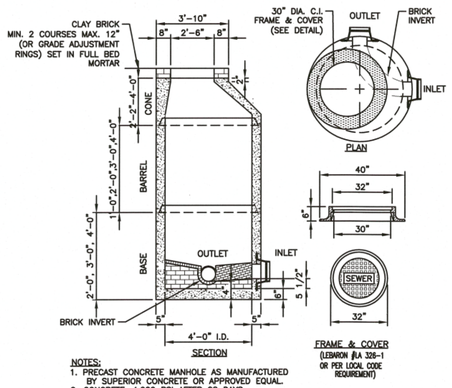
1,500 GALLON GREASE TRAP DETAIL

(H-20 LOADING)



THRUST BLOCK

NOT TO SCALE

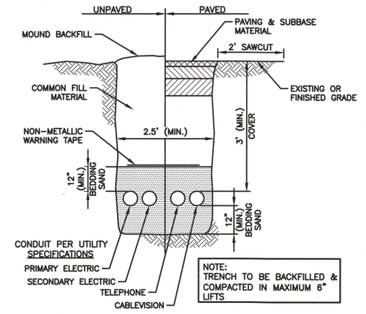


NOTES:

1. PRECAST CONCRETE MANHOLE AS MANUFACTURED BY SUPERIOR CONCRETE OR APPROVED EQUAL.
2. CONCRETE: 4,000 PSI AFTER 28 DAYS.
3. REINFORCING: H-20 LOADING 4 X 4/4 X 4 W.W.M.
4. SHIPLAP JOINTS SEALED WITH 1 STRIP OF 1" DIA. BUTYL RUBBER SEALANT.
5. EXTERIOR ASPHALT COATED.
6. LOCK JOINT FLEXIBLE PIPE SLEEVES, CAST IN.
7. EACH CASTING TO HAVE LIFTING HOLES CAST IN.
8. EACH SECTION TO BE LABELED AS NOTED.
9. MANHOLE STEPS @ 12" O.C. #PS2-PF-SL.
10. 2" LIP AT TOP OF CONE PROVIDED TO ACCOMMODATE VACUUM TESTING.

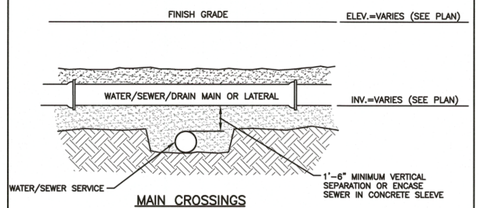
PRECAST CONCRETE SANITARY MANHOLE

NOT TO SCALE



UTILITY TRENCH

NOT TO SCALE



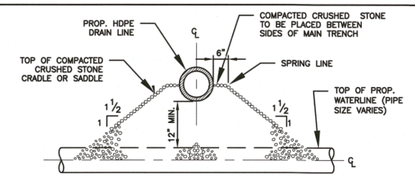
MAIN CROSSINGS

NOTES:

1. UNLESS OTHERWISE DEPICTED AND APPROVED, WATER SHALL BE ABOVE SEWER AT CROSSING.
2. SEWER PIPE JOINTS SHALL BE LOCATED AT LEAST 6 FEET HORIZONTALLY FROM THE WATER CROSSING.

WATER SERVICE/SEWER SERVICE SEPARATION

NOT TO SCALE



PIPE CROSSING

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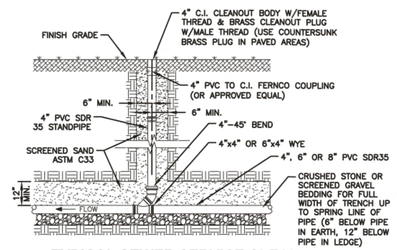
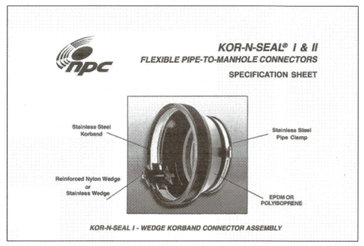


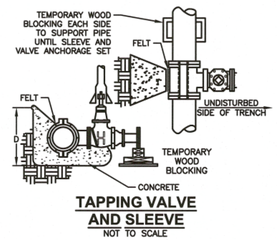
TYPICAL SEWER SERVICE CLEANOUT

NOT TO SCALE



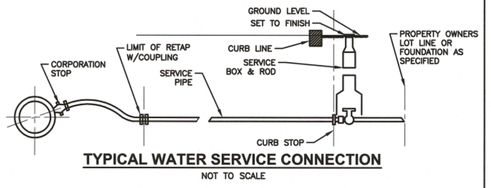
KOR-N-SEAL

NOT TO SCALE



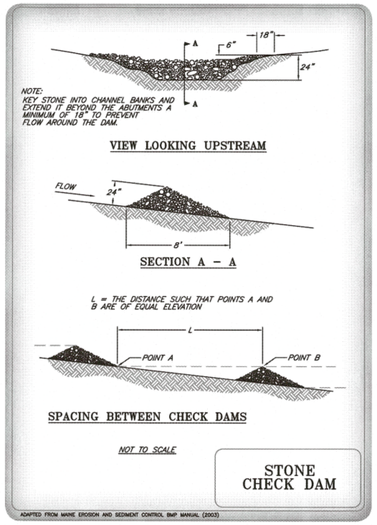
TAPPING VALVE AND SLEEVE

NOT TO SCALE



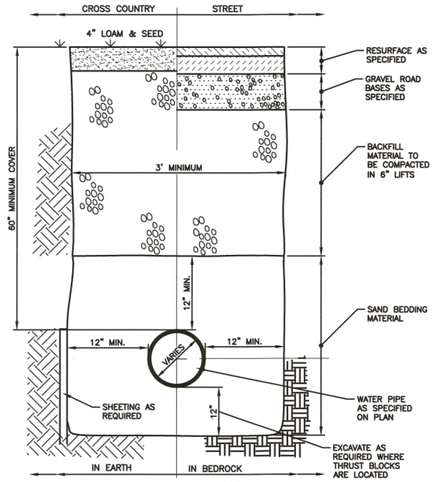
TYPICAL WATER SERVICE CONNECTION

NOT TO SCALE



STONE CHECK DAM

NOT TO SCALE



TYPICAL TRENCH SECTION FOR WATER SERVICE

NOT TO SCALE

GPI
Engineering
Design
Planning
Construction Management
603.893.0720
GPINET.COM
Greenman-Pedersen, Inc.
44 Stiles Road, Suite One
Salem, NH 03079

PREPARED FOR

KITTERY CIRCLE, LLC
321D LAFAYETTE ROAD
HAMPTON, NH 03842

ASSESSORS MAP 14 LOTS 10, 12 & 12A
139 OLD POST ROAD,
112 & 120 US ROUTE 1 BYPASS
KITTERY, MAINE

STATE OF MAINE
DAVID R. JORDAN
No. 17400
REGISTERED PROFESSIONAL ENGINEER
1/29/24

REVISIONS		
1	REV. PER TOWN COMMENTS	1/24/24
NO.	REVISION	DATE

AUGUST 2, 2023

DRAWN/DESIGN BY	CHECKED BY
CCC/NID	DRJ

DETAIL SHEET

SCALE: AS SHOWN

PROJECT NO. NEX-2200380

16 OF 18

DETENTION SYSTEM NOTES:

1) CONTRACTOR SHOULD CONFIRM SYSTEM PARTS AND OBTAIN SHOP DRAWINGS FROM MANUFACTURER. SUBSTITUTIONS AND SHOP DRAWINGS SHOULD BE APPROVED BY THE ENGINEER.

2) PARTS SPECIFICATIONS SHOWN ARE AS PROVIDED BY ADS, INC., OR APPROVED EQUAL. ANY CHANGES TO THESE SPECIFICATIONS SHOULD BE APPROVED BY DESIGN ENGINEER FOR PERFORMANCE.

3) MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.

4) EXISTING TOPSOIL, BRUSH, TREES, BOULDERS, FILL AND DEBRIS TO BE REMOVED FOR 5' ALL AROUND UNDERGROUND DETENTION SYSTEM DOWN TO NATIVE MATERIAL. BACKFILL WITH STONE BEDDING MATERIAL.

SC-740 STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH SC-740.
2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
6. CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
7. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 550 LBS/FT/% . THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
8. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
   - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
   - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
   - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF THE SC-740 SYSTEM

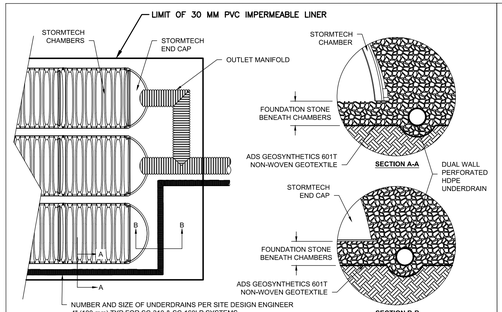
1. STORMTECH SC-740 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONE/SHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM - 6" (150 mm) SPACING BETWEEN THE CHAMBER ROWS.
7. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE 3/4-2" (20-50 mm).
8. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
9. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

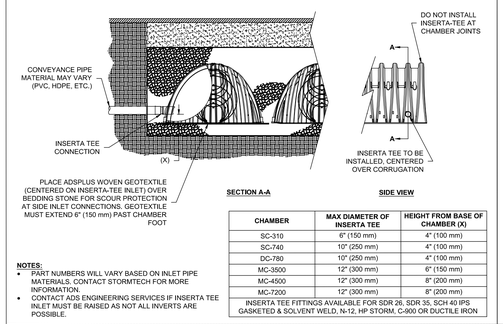
1. STORMTECH SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
2. THE USE OF CONSTRUCTION EQUIPMENT OVER SC-740 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO THE CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.



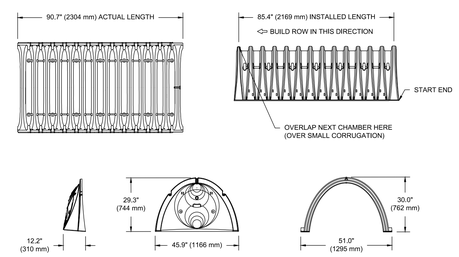
5 UNDERDRAIN DETAIL



NOTES:
- PART NUMBERS WILL VARY BASED ON INLET PIPE MATERIALS. CONTACT STORMTECH FOR MORE INFORMATION.
- CONTACT ADS ENGINEERING SERVICES IF INSERTA TEE INLET MUST BE RAISED AS NOT ALL INVERTS ARE POSSIBLE.

CHAMBER	MAX DIAMETER OF INSERTA TEE	HEIGHT FROM BASE OF CHAMBER (X)
SC-310	6" (150 mm)	4" (100 mm)
SC-740	10" (250 mm)	4" (100 mm)
DC-780	10" (250 mm)	4" (100 mm)
MC-3500	12" (300 mm)	6" (150 mm)
MC-4500	12" (300 mm)	8" (200 mm)
MC-7200	12" (300 mm)	8" (200 mm)
INSERTA TEE FITTINGS AVAILABLE FOR SDR 26, SDR 35, SCH 40 IPS GASKETED & SOLVENT WELD, N-12, HP STORM, C-900 OR DUCTILE IRON		

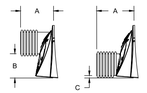
6 INSERTA-TEE SIDE INLET DETAIL



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	51.0" X 30.0" X 85.4"	(1295 mm X 762 mm X 2169 mm)
CHAMBER STORAGE	45.9 CUBIC FEET	(1.30 m³)
MINIMUM INSTALLED STORAGE*	74.9 CUBIC FEET	(2.12 m³)
WEIGHT	75.0 lbs.	(33.6 kg)

*ASSUMES 6" (152 mm) STONE ABOVE, BELOW, AND BETWEEN CHAMBERS



PRE-FAB STUB AT BOTTOM OF END CAP WITH FLAMP END WITH "BR"
PRE-FAB STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
PRE-FAB STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
PRE-CORED END CAPS END WITH "PC"

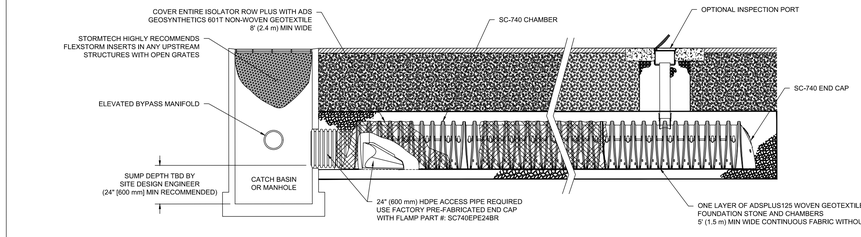
PART #	STUB	A	B	C
SC740EPE06T / SC740EPE06TPC	6" (150 mm)	10.9" (277 mm)	18.5" (470 mm)	---
SC740EPE06B / SC740EPE06BPC			---	0.5" (13 mm)
SC740EPE08T /SC740EPE08TPC	8" (200 mm)	12.2" (310 mm)	16.5" (419 mm)	---
SC740EPE08B / SC740EPE08BPC			---	0.6" (15 mm)
SC740EPE10T / SC740EPE10TPC	10" (250 mm)	13.4" (340 mm)	14.5" (368 mm)	---
SC740EPE10B / SC740EPE10BPC			---	0.7" (18 mm)
SC740EPE12T / SC740EPE12TPC	12" (300 mm)	14.7" (373 mm)	12.5" (318 mm)	---
SC740EPE12B / SC740EPE12BPC			---	1.2" (30 mm)
SC740EPE15T / SC740EPE15TPC	15" (375 mm)	18.4" (467 mm)	9.0" (229 mm)	---
SC740EPE15B / SC740EPE15BPC			---	1.3" (33 mm)
SC740EPE18T / SC740EPE18TPC	18" (450 mm)	19.7" (500 mm)	5.0" (127 mm)	---
SC740EPE18B / SC740EPE18BPC			---	1.6" (41 mm)
SC740EPE24B*	24" (600 mm)	18.5" (470 mm)	---	0.1" (3 mm)
SC740EPE24BR*	24" (600 mm)	18.5" (470 mm)	---	0.1" (3 mm)

ALL STUBS, EXCEPT FOR THE SC740EPE24B/SC740EPE24BR ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

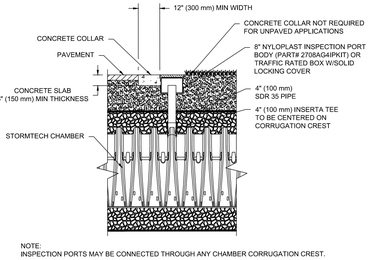
* FOR THE SC740EPE24B/SC740EPE24BR THE 24" (600 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 1.75" (44 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

NOTE: ALL DIMENSIONS ARE NOMINAL

2 SC-740 TECHNICAL SPECIFICATIONS



3 SC-740 ISOLATOR ROW PLUS DETAIL



NOTE:
INSPECTION PORTS MAY BE CONNECTED THROUGH ANY CHAMBER CORRUGATION CREST.

4 4" PVC INSPECTION PORT DETAIL (SC SERIES CHAMBER)

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

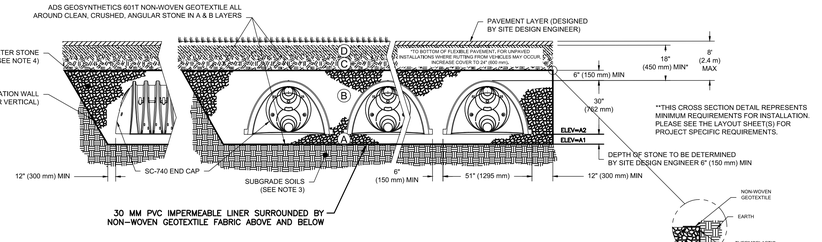
NOTES

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

ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE (B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



NOTES:
1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 550 LBS/FT/% AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

ELEVATION TABLE		
SYSTEM #	ELEV. A1	ELEV. A2
UG DET	28.85	29.35

1 SC-740 CROSS SECTION DETAIL

GPI Engineering Design Planning Construction Management
603.893.0720 GPINET.COM
Greenman-Pedersen, Inc.
44 Stiles Road, Suite One
Salem, NH 03079

PREPARED FOR
KITTERY CIRCLE, LLC
321D LAFAYETTE ROAD
HAMPTON, NH 03842

ASSESSORS MAP 14 LOTS 10, 12 & 12A
139 OLD POST ROAD,
112 & 120 US ROUTE 1 BYPASS
KITTERY, MAINE

STATE OF MAINE
DAVID R. JORDAN
No. 17400
LICENSED PROFESSIONAL ENGINEER
8/17/23

REVISIONS		
1	MISC. REVISIONS	8/17/23
NO.	REVISION	DATE

AUGUST 2, 2023

DRAWN/DESIGN BY	CHECKED BY
CCC/NID	DRJ

DETAIL SHEET

SCALE: AS SHOWN

PROJECT NO. NEX-2200380

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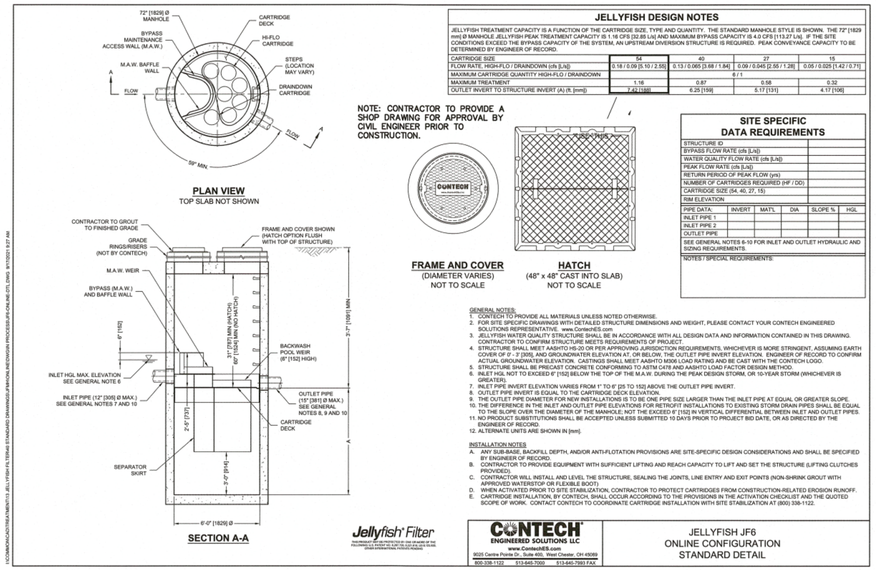


JELLYFISH TREATMENT UNIT
NOT TO SCALE

JELLYFISH DESIGN NOTES

JELLYFISH TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SIZE, TYPE AND QUANTITY. THE STANDARD MANHOLE STYLE IS SHOWN. THE 72" [1829 mm] Ø MANHOLE JELLYFISH PEAK TREATMENT CAPACITY IS 1.16 CFS [32.85 L/s] AND MAXIMUM BYPASS CAPACITY IS 4.0 CFS [113.27 L/s]. IF THE SITE CONDITIONS EXCEED THE BYPASS CAPACITY OF THE SYSTEM, AN UPSTREAM DIVERSION STRUCTURE IS REQUIRED. PEAK CONVEYANCE CAPACITY TO BE DETERMINED BY ENGINEER OF RECORD.

CARTRIDGE SIZE	54	40	27	15
FLOW RATE, HIGH-FLO / DRAINDOWN (cfs [L/s])	0.18 / 0.09 [5.10 / 2.55]	0.13 / 0.065 [3.68 / 1.84]	0.09 / 0.045 [2.55 / 1.28]	0.05 / 0.025 [1.42 / 0.71]
MAXIMUM CARTRIDGE QUANTITY HIGH-FLO / DRAINDOWN	6 / 1			
MAXIMUM TREATMENT	1.16	0.87	0.58	0.32
OUTLET INVERT TO STRUCTURE INVERT (A) (ft [mm])	7.42 [1588]	6.25 [159]	5.17 [131]	4.17 [106]

NOTE: CONTRACTOR TO PROVIDE A SHOP DRAWING FOR APPROVAL BY CIVIL ENGINEER PRIOR TO CONSTRUCTION.

FRAME AND COVER
(DIAMETER VARIES)
NOT TO SCALE

HATCH
(48" x 48" CAST INTO SLAB)
NOT TO SCALE

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	
BYPASS FLOW RATE (cfs [L/s])	
WATER QUALITY FLOW RATE (cfs [L/s])	
PEAK FLOW RATE (cfs [L/s])	
RETURN PERIOD OF PEAK FLOW (yrs)	
NUMBER OF CARTRIDGES REQUIRED (PF / DD)	
CARTRIDGE SIZE (54, 40, 27, 15)	
RIM ELEVATION	

PIPE DATA:	INVERT:	MATL:	DIA:	SLOPE %:	HGL:
INLET PIPE 1					
INLET PIPE 2					
OUTLET PIPE					

SEE GENERAL NOTES 6-10 FOR INLET AND OUTLET HYDRAULIC AND SIZING REQUIREMENTS.

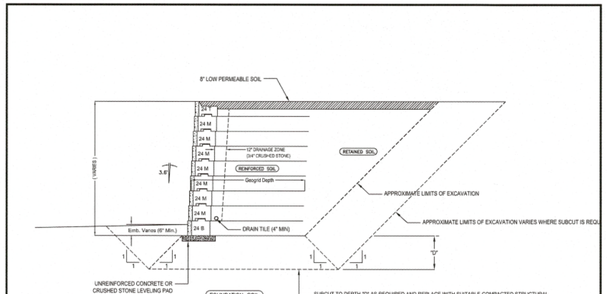
NOTES / SPECIAL REQUIREMENTS:

GENERAL NOTES:
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS REPRESENTATIVE, www.ContechES.com
3. THE JELLYFISH SYSTEM IS DESIGNED AND MANUFACTURED IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS-20 OR PER APPROVING JURISDICTION REQUIREMENTS, WHICHEVER IS MORE STRINGENT, ASSUMING EARTH COVER OF 0' - 3' [305], AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 LOAD RATING AND BE CAST WITH THE CONTECH LOGO.
5. STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C478 AND AASHTO LOAD FACTOR DESIGN METHOD.
6. INLET HGL NOT TO EXCEED 6" [152] BELOW THE TOP OF THE M.A.W. DURING THE PEAK DESIGN STORM, OR 10-YEAR STORM (WHICHEVER IS GREATER).
7. INLET PIPE INVERT ELEVATION VARIES FROM 1' TO 6' [25 TO 152] ABOVE THE OUTLET PIPE INVERT.
8. OUTLET PIPE INVERT IS EQUAL TO THE CARTRIDGE DECK ELEVATION.
9. THE OUTLET PIPE DIAMETER FOR NEW INSTALLATIONS IS TO BE ONE PIPE SIZE LARGER THAN THE INLET PIPE AT EQUAL OR GREATER SLOPE.
10. TOP OF INLET PIPE IS THE INLET AND OUTLET PIPE ELEVATIONS FOR RETROFIT INSTALLATIONS TO EXISTING STORM DRAIN PIPES SHALL BE EQUAL TO THE SLOPE OF AND THE DIAMETER OF THE MANHOLE, NOT THE EXCEED 6" [152] IN VERTICAL DIFFERENTIAL BETWEEN INLET AND OUTLET PIPES.
11. NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID DATE, OR AS DIRECTED BY THE ENGINEER OF RECORD.
12. ALTERNATE UNITS ARE SHOWN IN [mm].

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STRUCTURE (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR WILL INSTALL AND LEVEL THE STRUCTURE, SEALING THE JOINTS, LINE ENTRY AND EXIT POINTS (NON-SHRINK GROUT WITH APPROVED WATERSTOP OR FLEXIBLE BOOT).
D. WHEN ACTIVATED PRIOR TO SITE STABILIZATION, CONTRACTOR TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.
E. CARTRIDGE INSTALLATION, BY CONTECH, SHALL OCCUR ACCORDING TO THE PROVISIONS IN THE ACTIVATION CHECKLIST AND THE QUOTED SCOPE OF WORK. CONTACT CONTECH TO COORDINATE CARTRIDGE INSTALLATION WITH SITE STABILIZATION AT (800) 338-1122.

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800.338.1122 513.645.7000 513.645.7993 FAX

JELLYFISH JF6
ONLINE CONFIGURATION
STANDARD DETAIL

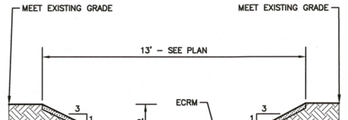


SHEA CONCRETE PRODUCTS
Retaining Wall Systems

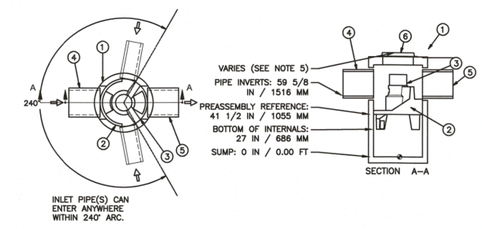
DRAWING # 103

TYPICAL GEO-GRED WALL CROSS SECTION

SHEA WALL SYSTEMS, INC
87 Haverhill Street
Amesbury,MA 01913
Phone: 800-696-7432
Phone: 978-388-1509
www.sheaconcrete.com



GRASSED SWALE TYPICAL CROSS SECTION
NOT TO SCALE



GENERAL NOTES:
1. GENERAL ARRANGEMENT DRAWINGS ONLY. CONTACT HYDRO INTERNATIONAL FOR SITE SPECIFIC FABRICATION DRAWINGS.
2. THE DIAMETER OF THE INLET & OUTLET PIPES MAY BE NO MORE THAN 24".
3. MULTIPLE INLET PIPES POSSIBLE (REFER TO PROJECT PLANS).
4. INLET/OUTLET PIPE ANGLE CAN VARY TO ALIGN WITH DRAINAGE NETWORK (REFER TO PROJECT PLANS).
5. PEAK FLOW RATE AND MINIMUM HEIGHT LIMITED BY AVAILABLE COVER AND PIPE DIAMETER.
6. LARGER SEDIMENT STORAGE CAPACITY MAY BE PROVIDED WITH A DEEPER SUMP DEPTH.

PRODUCT SPECIFICATIONS:
A. THE TREATMENT SYSTEM SHALL USE AN INDUCED VORTEX TO SEPARATE POLLUTANTS FROM STORM WATER RUNOFF.
B. THE TREATMENT SYSTEM SHALL FIT WITHIN THE LIMITS OF EXCAVATION (AREA AND DEPTH) AS SHOWN IN THE PROJECT PLANS AND WILL NOT EXCEED THE DIMENSIONS FOR THE DESIGN FLOW RATES SPECIFIED HEREIN.
C. THE TREATMENT SYSTEM SHALL REMOVE GREATER THAN OR EQUAL TO 90% OF TSS BASED ON THE TARGET PARTICLE SIZE (TPS) OF 106 MICRONS AND/OR 80% OF TSS BASED ON THE TPS OF 230 MICRONS AT 0.7 CFS AND 1.2 CFS, RESPECTIVELY.
D. THE TREATMENT SYSTEM SHALL CONVEY THE PEAK ON-LINE FLOW RATES OF UP TO 18 CFS WITHOUT CAUSING UPSTREAM SURCHARGE CONDITIONS. FULL-SCALE INDEPENDENT LABORATORY SCOUR TESTING SHALL DEMONSTRATE EFFLUENT CONTROL OF LESS THAN OR EQUAL TO 5 MG/L FOR ALL FLOWS UP TO 200% OF MTFR-106.
E. THE TREATMENT SYSTEM SHALL BE CAPABLE OF CAPTURING AND RETAINING FINE SILT AND SAND SIZE PARTICLES. ANALYSIS OF CAPTURED SEDIMENT FROM FULL-SCALE FIELD INSTALLATIONS SHALL DEMONSTRATE PARTICLE SIZES PREDOMINATELY IN THE 20-MICRON RANGE

"FIRST DEFENSE" - FD-4HC
(OR APPROVED EQUAL)
NOT TO SCALE

NOTE: CONTRACTOR SHOULD CONFIRM SYSTEM PARTS AND OBTAIN SHOP DRAWINGS FROM MANUFACTURER PRIOR TO CONSTRUCTION.

NOTES:
FOR ADDITIONAL INFORMATION REFER TO THE MAINE DEP STORMWATER BEST MANAGEMENT PRACTICES MANUAL, VOLUME 1

RAIN GARDEN	TOP BERM ELEVATION	BASIN BOTTOM ELEVATION	SOIL MEDIA THICKNESS	BOTTOM FILTER MEDIA ELEV.	UNDERDRAIN ELEV.
#1	35.00	34.00	12"	33.00	32.50

SOIL FILTER MEDIA SPECIFICATIONS

SOIL MEDIA CONSISTS OF A SILTY SAND SOIL OR SOIL MIXTURE COMBINED WITH 20% TO 25% BY VOLUME (NO LESS THAN 10% BY DRY WEIGHT) OF A MODERATELY FINE SHREDDED BARK OR WOOD FIBER MULCH. THE RESULTING MIXTURE SHOULD HAVE MORE THAN 8% PASSING THE 200 SIEVE AND A CLAY CONTENT OF LESS THAN 2%. AS AN EXAMPLE, THE MIXTURE MAY CONTAIN THE FOLLOWING (BY VOLUME):
- 50% OF SAND (MEDOT #703.01 IS CLOSE BUT CONTAINS INSUFFICIENT FINE FOR THE MEDIA)
- 20% OF SANDY LOAM TO FINE SANDY LOAM (TABLE 7.1.2.)
- 30% OF COMPOSTED WOODY FIBERS AND FINE SHREDDED BARK, SUPERHUMUS OR EQUIVALENT (ADJUSTED FOR MINERAL SOIL CONTENT)

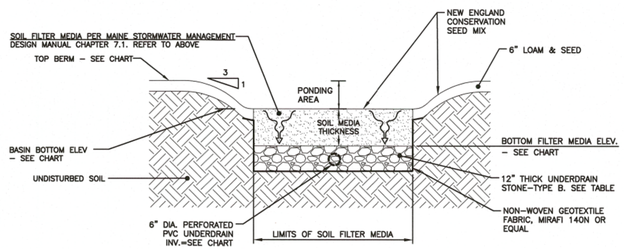
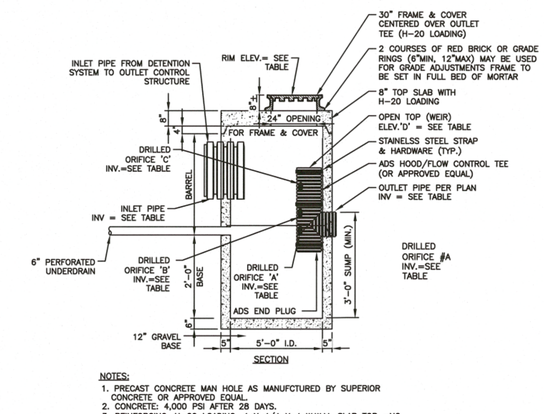


Table 7.1.1 - Maine DOT Specifications for Underdrain Backfill (MEDOT #703.22)	
Sieve #	% Passing by Weight
UNDERDRAIN - TYPE B	
1"	95-100
½"	75-100
No. 4	50-100
No. 20	15-80
No. 50	0-15
No. 200	0-5.0

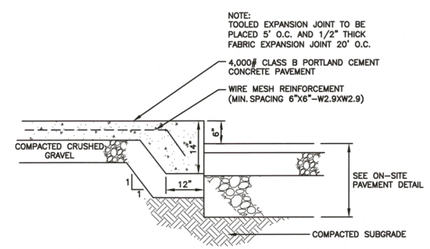
GRASSED UNDERDRAINED SOIL FILTER
NOT TO SCALE



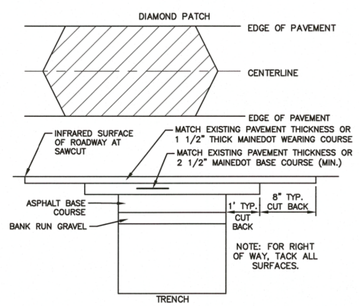
NOTES:
1. PRECAST CONCRETE MAN HOLE AS MANUFCTURED BY SUPERIOR CONCRETE OR APPROVED EQUAL.
2. CONCRETE: 4,000 PSI AFTER 28 DAYS.
3. REINFORCING: H–20 LOADING, 4 X 4/4 X 4 W.W.M. SLAB TOP –NO. 5'S @ 8" O.C.
4. SHIPLAP JOINTS SEALED WITH 1 STRIP OF 1" DIA BUTYL RUBBER SEALANT.
5. EACH CASTING TO HAVE LIFTING HOLES CAST IN.
6. LENGTH AND DIAMETER OF TEE VARIES WITH PIPE.

OUTLET CONTROL STRUCTURE TABLE								
OCS	RIM	ORIFICE	SIZE (IN.)	ELEV.	INV.IN (SIZE)	INV.IN (ELEV)	INV.OUT (SIZE)	INV.OUT (ELEV)
#1	34.10	A	3.5" DIA. X 2	28.85	18"	29.48	12"	28.85
		B	5" DIA. X 2	29.80				
		C	5" DIA. X 2	30.50	6"	28.85		
		D	12" DIA.	32.00				

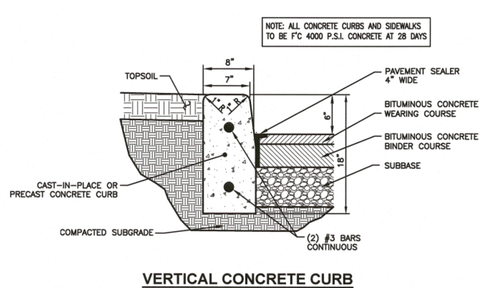
PRECAST CONCRETE OUTLET CONTROL STRUCTURE (OCS) FOR UNDERGROUND DETENTION SYSTEM
NOT TO SCALE



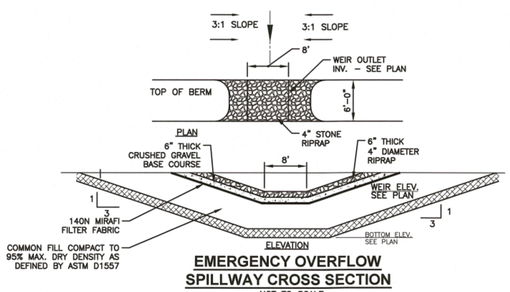
MONOLITHIC CURB/SIDEWALK
NOT TO SCALE



TYPICAL PAVEMENT REPAIR
NOT TO SCALE



VERTICAL CONCRETE CURB
NOT TO SCALE



EMERGENCY OVERFLOW SPILLWAY CROSS SECTION
NOT TO SCALE

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44 Stiles Road, Suite One
Salem, NH 03079

PREPARED FOR
KITTERY CIRCLE, LLC
321D LAFAYETTE ROAD
HAMPTON, NH 03842

ASSESSORS MAP 14 LOTS 10, 12 & 12A
139 OLD POST ROAD, 112 & 120 US ROUTE 1 BYPASS
KITTERY, MAINE

STATE OF MAINE
DAVID R. JORDAN
No. 17400
REGISTERED PROFESSIONAL ENGINEER
1/24/24

REVISIONS		
2	REV. PER TOWN COMMENTS	1/24/24
1	MISC. REVISIONS	8/17/23
NO.	REVISION	DATE

AUGUST 2, 2023

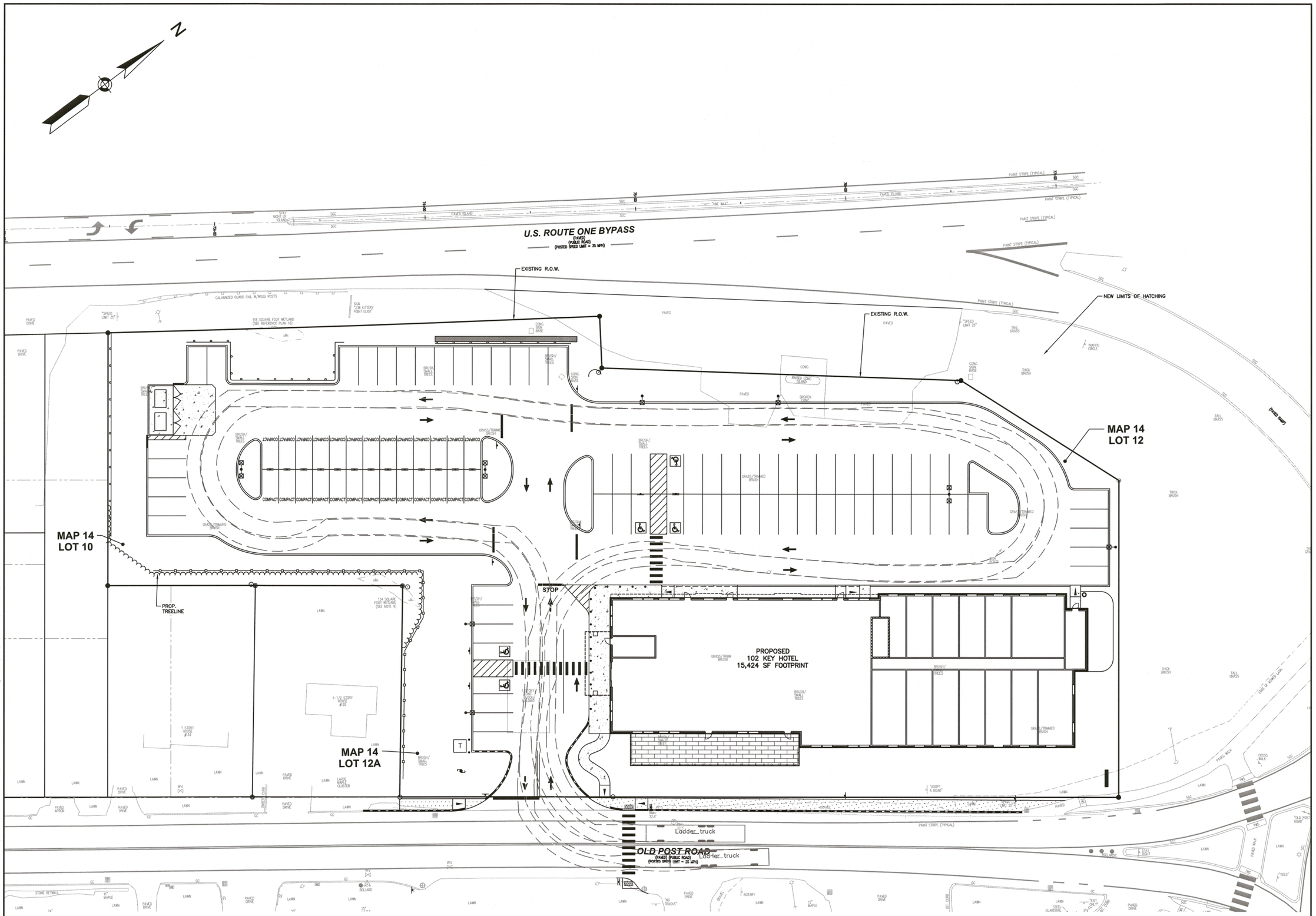
DRAWN/DESIGN BY	CHECKED BY
CCC/NID	DRJ

DETAIL SHEET

SCALE: AS SHOWN

PROJECT NO. NEX-2200380

18 OF 18



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Greenman-Pedersen, Inc.
44 Stiles Road, Suite One
Salem, NH 03079

PREPARED FOR
KITTERY CIRCLE, LLC
321D LAFAYETTE ROAD
HAMPTON, NH 03842

ASSESSORS MAP 14 LOTS 10, 12 & 12A
139 OLD POST ROAD,
112 & 120 US ROUTE 1 BYPASS
KITTERY, MAINE

STATE OF MAINE
DAVID R. JORDAN
No. 17400
PROFESSIONAL ENGINEER
12/24

REVISIONS		
1	MISC. REVISIONS	10/11/23
NO.	REVISION	DATE

AUGUST 2, 2023

DRAWN/DESIGN BY	CHECKED BY
CCC/NID	DRJ

TRUCK TURN PLAN

SCALE: 1"=20'

PROJECT NO. NEX-2200380

1 OF 1

NOTES:

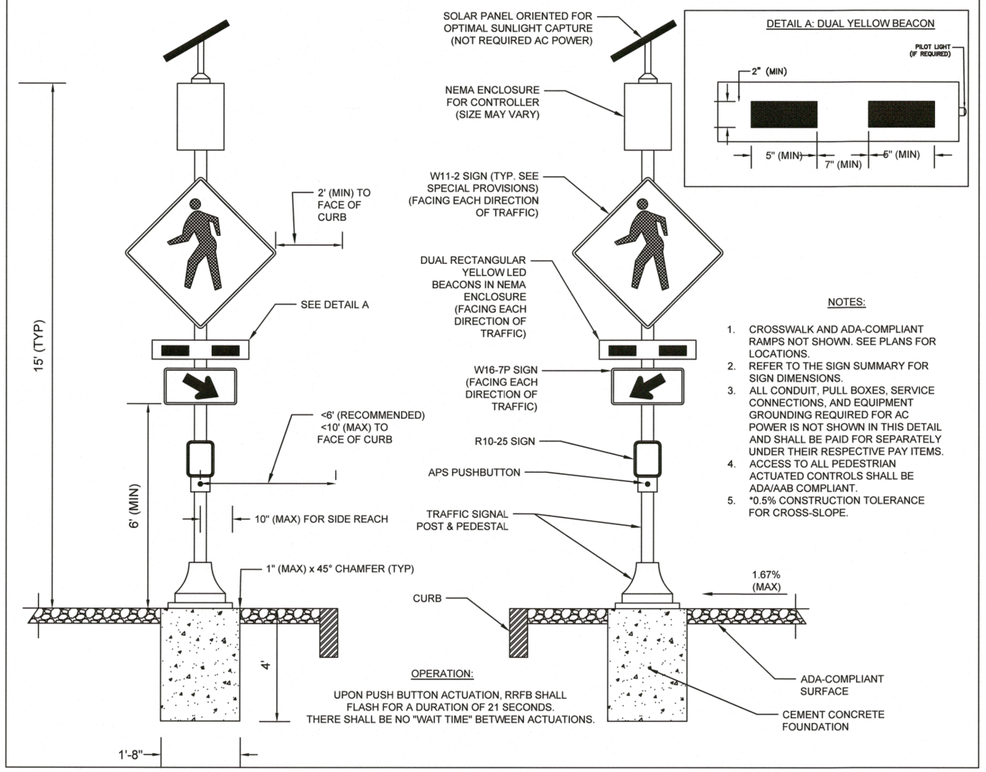
1. ALL SYMBOLS, WORDS, TRANSVERSE MARKINGS (STOP BARS), LANE LINES AND ALL OTHER MARKINGS NOTED WITH (T) SHALL BE THERMOPLASTIC.
2. THE CONTRACTOR SHALL CONTACT KITTERY DEPARTMENT OF PUBLIC WORKS AT (603) -427-1530 ONE WEEK PRIOR TO INSTALLATION OF PAVEMENT MARKINGS.
3. REPLACE ANY WORDS/SYMBOLS PER LATEST MAINE DOT STANDARD PLAN SHEETS.
4. REMOVE CONFLICTING PAVEMENT MARKINGS BY ACCEPTABLE METHODS
5. SPACING OF CROSS WALK LINES SHOULD AVOID THE WHEEL PATHS IF POSSIBLE.
6. CROSSWALK LINES SHALL BE 12" WIDTH AND SPACED 2' ON-CENTER.

SIGNING NOTES:

1. REFER TO THE 2016 STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION PUBLISHED BY THE MAINE DOT.
2. REFER TO THE LATEST EDITION OF THE STANDARD HIGHWAY SIGNS MANUAL AS PUBLISHED BY THE USDOT-FHWA FOR EXACT DETAILS OF BORDERS, ETC.
3. THE ALUMINUM OR U-CHANNEL POST SHALL BE FLUSH WITH THE TOP OF THE SIGN ON ALL SINGLE POST ASSEMBLIES.
4. DIGITALLY PRINTED SIGNS ARE NOT PERMITTED.

IDENTIFICATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)		NUMBER OF SIGNS REQUIRED	COLOR			POST SIZE AND NUMBER REQUIRED	UNIT AREA IN SQUARE FEET	AREA IN SQUARE FEET
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING		BACKGROUND	LEGEND	BORDER			
W11-2	30"	30"		MUTCD STANDARD		4/2	MUTCD STANDARD FLUORESCENT YELLOW-GREEN BACKGROUND			RRFB ASSEMBLY / U-CHANNEL	6.25	25/12.5
W16-7pL / W16-7pR	24"	12"		MUTCD STANDARD		2/2	MUTCD STANDARD FLUORESCENT YELLOW-GREEN BACKGROUND			RRFB ASSEMBLY	2	4/4
W16-9p	24"	12"	AHEAD	MUTCD STANDARD		2	MUTCD STANDARD FLUORESCENT YELLOW-GREEN BACKGROUND			MOUNT W/ W11-2	2	4
R10-25	9"	12"	PUSH BUTTON TO TURN ON WARNING LIGHTS	MUTCD STANDARD		2	MUTCD STANDARD			RRFB ASSEMBLY	0.75	1.5

RECTANGULAR RAPID FLASHING BEACON (SOLAR)
RRFB ASSEMBLY DETAIL
ITEM 616.21 - PEDESTRIAN ACTUATED CROSSING ASSEMBLY

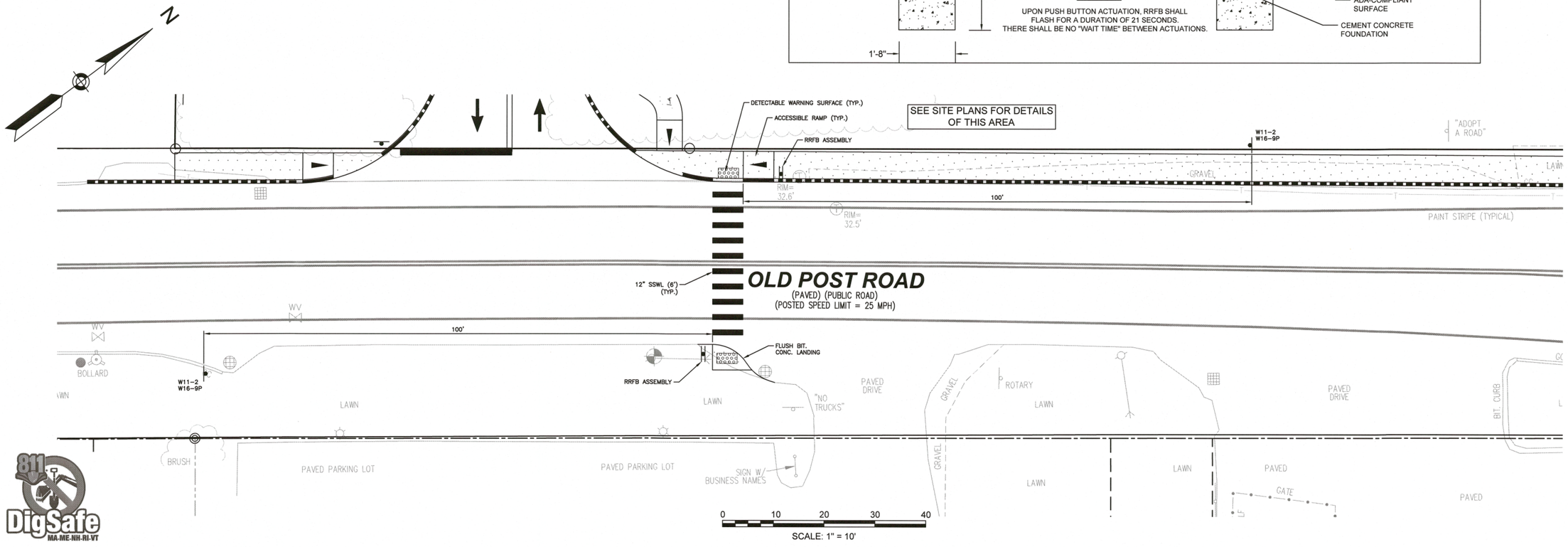


OPERATION:

UPON PUSH BUTTON ACTUATION, RRFB SHALL FLASH FOR A DURATION OF 21 SECONDS. THERE SHALL BE NO "WAIT TIME" BETWEEN ACTUATIONS.

NOTES:

1. CROSSWALK AND ADA-COMPLIANT RAMPS NOT SHOWN. SEE PLANS FOR LOCATIONS.
2. REFER TO THE SIGN SUMMARY FOR SIGN DIMENSIONS.
3. ALL CONDUIT, PULL BOXES, SERVICE CONNECTIONS, AND EQUIPMENT GROUNDING REQUIRED FOR AC POWER IS NOT SHOWN IN THIS DETAIL AND SHALL BE PAID FOR SEPARATELY UNDER THEIR RESPECTIVE PAY ITEMS.
4. ACCESS TO ALL PEDESTRIAN ACTUATED CONTROLS SHALL BE ADA/AAB COMPLIANT.
5. *0.5% CONSTRUCTION TOLERANCE FOR CROSS-SLOPE.



811 DigSafe MA-ME-NH-RI-VT

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GPI Engineering Design Planning Construction Management
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Greenman-Pedersen, Inc.
44 Stiles Road, Suite One
Salem, NH 03079

PREPARED FOR
KITTERY CIRCLE, LLC
321D LAFAYETTE ROAD
HAMPTON, NH 03842

ASSESSORS MAP 14 LOTS 10, 12 & 12A
139 OLD POST ROAD, 112 & 120 US ROUTE 1 BYPASS
KITTERY, MAINE

STATE OF MAINE
DAVID R. JORDAN
No. 17400
PROFESSIONAL ENGINEER
1/29/24

REVISIONS		
1	REV. PER TOWN COMMENTS	1/24/24
NO.	REVISION	DATE

OCTOBER 11, 2023

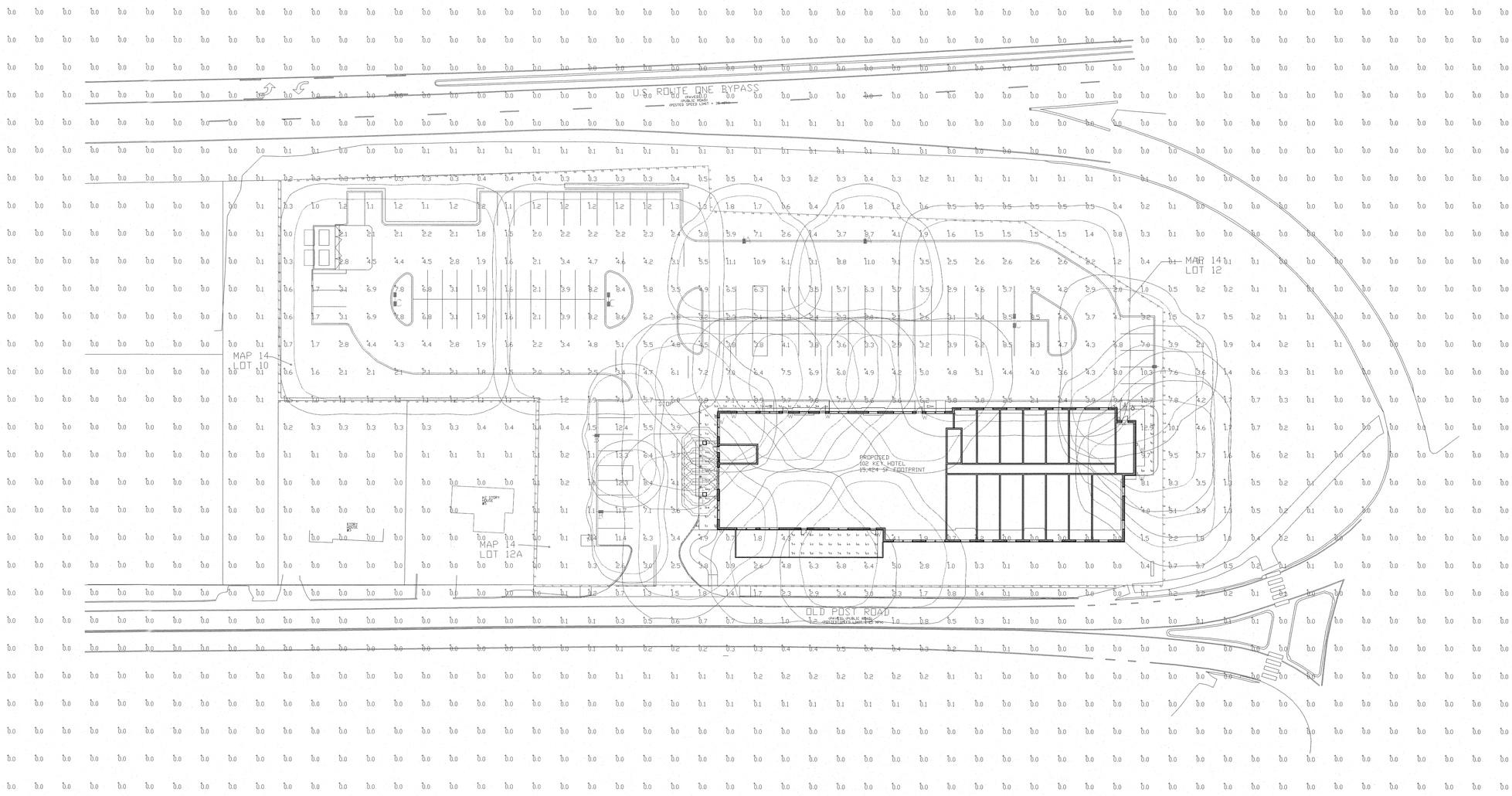
DRAWN/DESIGN BY	CHECKED BY
CCC/NID	DRJ

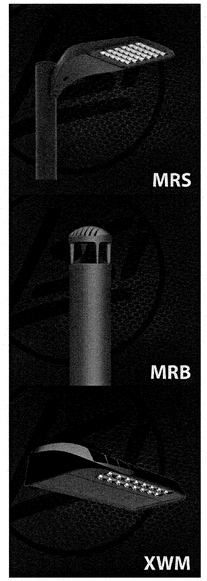
OFF-SITE IMPROVEMENTS

SCALE: 1"=10'

PROJECT NO. NEX-2200380

1 OF 1





Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
ALL CALCS AT GRADE	Illuminance	Fc	0.86	13.3	0.0	N.A.	N.A.
DROP OFF-SIDEWALK	Illuminance	Fc	14.05	53.3	4.8	2.93	11.10
PROPERTY LINE	Illuminance	Fc	1.54	11.9	0.0	N.A.	N.A.
PROPOSED CONCRETE PATIO AREA	Illuminance	Fc	6.22	7.6	5.0	1.24	1.52
REAR SIDE WALK	Illuminance	Fc	10.19	13.5	5.3	1.92	2.55
PARKING LOT	Illuminance	Fc	4.67	13.3	1.1	4.25	12.09

Luminaire Schedule								
Symbol	Qty	Label	Arrangement	Description	Mounting Height	LLD	LLF	Arr. Lum. Lumens	Arr. Watts
	3	A	Single	MRS-LED-21L-SIL-FT-50-70CRI-SINGLE	20'	1.000	0.950	20025	165
	2	B	Single	MRS-LED-21L-SIL-FT-50-70CRI-IL-SINGLE	15'	1.000	0.950	12960	165
	3	C	D180°	MRS-LED-21L-SIL-5W-50-70CRI-D180	20'	1.000	0.950	39946	330
+	6	F	Single	MRB-LED-25L-ACR-S-50	3'	1.000	0.980	2485	30.5
	11	W	Single	XWM-FT-LED-15L-50	20'	1.000	0.950	15750	105

PHOTOMETRIC EVALUATION
NOT FOR CONSTRUCTION

Based on the information provided, all dimensions and luminaire locations shown represent recommended positions. The engineer and/or architect must determine the applicability of the layout to existing or future field conditions.

This lighting plan represents illumination levels calculated from laboratory data taken under controlled conditions in accordance with The Illuminating Engineering Society (IES) approved methods. Actual performance of any manufacturer's luminaires may vary due to changes in electrical voltage, tolerance in lamps/LED's and other variable field conditions. Calculations do not include obstructions such as buildings, curbs, landscaping, or any other architectural elements unless noted. Fixture nomenclature noted does not include mounting hardware or poles. This drawing is for photometric evaluation purposes only and should not be used as a construction document or as a final document for ordering product.

Total Project Watts
Total Watts = 3153

3000 ALLIANCE RD. CINCINNATI, OHIO 45241 USA
(513) 793-3200 • FAX (513) 793-4433

LIGHTING PROPOSAL LD-158514-1

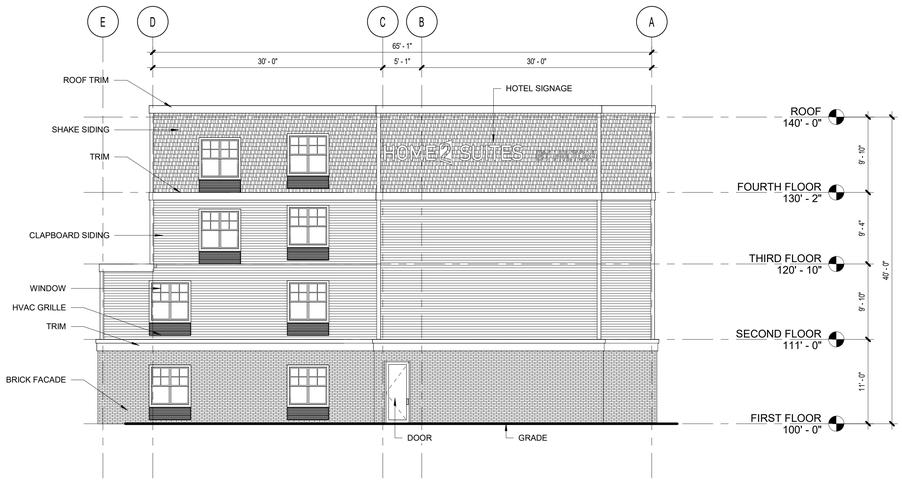
TROPIC STAR KITTERY HOTEL
OLD POST ROAD
KITTERY, ME

BY:RNK	DATE:07/25/23	REV:10/16/23	SHEET 1 OF 1

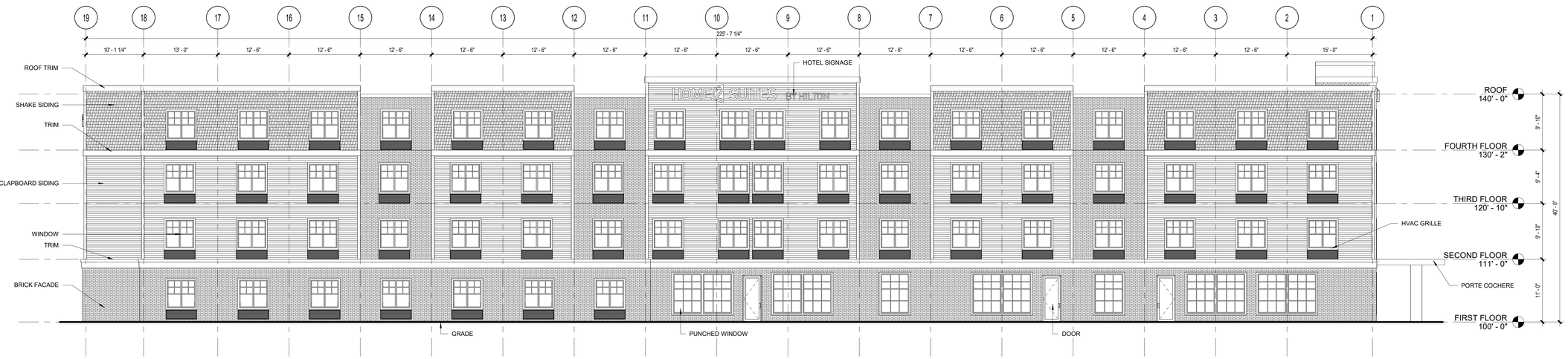
SCALE: 1"=30' 0 30

GPI PROJECT NO. 2200380 SHEET 1 OF 1

4 SOUTH ELEVATION
1/8" = 1'-0"



3 NORTH ELEVATION
1/8" = 1'-0"



2 WEST ELEVATION
1/8" = 1'-0"

1 EAST ELEVATION
1/8" = 1'-0"

PROCON
CONNECT • CREATE • CONSTRUCT

PO BOX 4430
MANCHESTER NH 03108
603.623.8811
PROCONINC.COM

PROJECT:

PROPOSED 102 KEY HOME 2 BY HILTON

112 & 120 US ROUTE 1 BY-PASS, 139 OLD POST ROAD
KITTERY, MAINE

Date	Issue Description

NOT FOR CONSTRUCTION

PROFESSIONAL SEAL

Architect:	JAL
Drawn By:	JTD
Project No.:	30-2261
Copyright:	2022 PROCON LLC.

Drawing Sheet Title:
EXTERIOR ELEVATIONS

Drawing Sheet Number:
A3.00

STORMWATER MANAGEMENT REPORT

PROPOSED HOTEL DEVELOPMENT
ASSESSOR'S MAP 14 LOTS 10, 12 & 12A
139 OLD POST ROAD, 112 & 120 US ROUTE 1 BYPASS
KITTERY, MAINE

GPI

44 Stiles Road, Suite One
Salem, NH 03079
(603) 893-0720

Prepared For:
Kittery Circle, LLC
321D Lafayette Road
Hampton, NH 03842

Revised: January 25, 2024
August 17, 2023

(GPI Project No.: NEX-2200380)

Kittery Circle, LLC
Proposed Hotel Development
Stormwater Management Report

TABLE OF CONTENTS

SECTION 1 EXECUTIVE SUMMARY

This report contains a stormwater management analysis for the proposed 102 key hotel development located at 139 Old Post Road and 112 & 120 US Route 1 Bypass in Kittery, Maine. The analysis includes both pre- and post-development calculations of stormwater runoff rates at specific locations on the project site.

This analysis has been prepared in accordance with both Town of Kittery requirements and the stormwater standards of the Stormwater Management Law as described in Maine Department of Environmental Protection (Maine DEP) Chapter 500.

The project site consists of three parcels identified as Map 14 Lots 10, 12, and 12A with a combined area of approximately 1.96 acres. The site is bordered by Old Post Road to the southeast, private residences to the south, a commercial business to the southwest, U.S. Route 1 Bypass to the northwest, and the Kittery traffic circle to the northeast.

The applicant, Kittery Circle, LLC, is proposing to develop the site by demolishing the existing concrete block building and constructing a new 102 key hotel with a 15,424 square foot footprint and associated paved parking lot with a full access driveway to Old Post Road.

In order to mitigate increases in peak discharge rates of stormwater runoff as a result of the new impervious surfaces, a comprehensive stormwater management system has been designed that includes deep-sump catch basins with hooded outlets, four hydrodynamic particle separators, an underground detention system with isolator row pretreatment and outlet control structure, a stormwater treatment filter, and a crushed stone drip edge.

Based on site topography and discharge points, three analysis points are identified for the purposes of this analysis. Design Point #1 represents the flagged isolated wetland between the site and Route 1 Bypass. Design Point #2 represents the flagged isolated wetland at the southern corner of the property abutting the adjacent residence. Design Point #3 represents the drainage system with Old Post Road which eventually flows to the east through a 30” reinforced concrete pipe (RCP).

The tables below summarize the comparative pre- and post-development peak rates of stormwater runoff at the design points.

TABLE 1: PEAK RATE ANALYSIS SUMMARY

Design Storm	Pre-Development (cfs)	Post-Development (cfs)	Change (cfs)
Design Point #1 – Wetland			
2-year	4.6	4.6	0.0
10-year	7.7	7.7	0.0
25-year	10.3	10.3	0.0
50-year	12.6	12.6	0.0
Design Point #2 – Wetland			
2-year	0.3	0.3	0.0
10-year	0.8	0.7	-0.1
25-year	1.2	1.0	-0.2
50-year	1.5	1.2	-0.3
Design Point #3 – Roadway Drainage System			
2-year	3.1	2.9	-0.2
10-year	6.1	5.8	-0.3
25-year	8.9	7.9	-1.0
50-year	11.4	10.0	-1.4

(All values shown are peak rates in CFS, cubic feet per second)

In conclusion, by incorporating a new on-site stormwater management system that includes provisions for stormwater treatment and detention, there will be a decrease or no change in the peak rates of stormwater runoff leaving the property at the design points during all storms analyzed.

Implementing the maintenance procedures outlined in the attached Inspection and Maintenance Plan (I&M) will ensure the long-term performance of the system.

SECTION 2 EXISTING CONDITIONS

The project site consists of three parcels identified as Map 14 Lots 10, 12, and 12A with a combined area of approximately 1.96 acres. The site is bordered by Old Post Road to the southeast, private residences to the south, a commercial business to the southwest, U.S. Route 1 Bypass to the northwest, and the Kittery traffic circle to the northeast. The traffic circle is the intersection of Old Post Road, State Road (US Route 1), State Route 236, and the northerly offramp of Route 1 Bypass.

The majority of the site is currently undeveloped and contains a mix of woods and overgrown grass and brush. Lot 12 contains broken pavement along the shoulder of Route 1 Bypass and what remains of a former raised concrete fueling island. Lot 12A contains a vacant 680 square foot concrete block building along Old Post Road but is otherwise undeveloped.

There are two isolated wetlands which straddle the property boundary along Route 1 Bypass and the southern property corner abutting the adjacent residential property. The wetlands were delineated by Seekamp Environmental Consulting, Inc. on July 13, 2022 and located by the surveyor, Civil Consultants.

The are no drainage structures currently on the property. There are three drain pipes associated with the isolated wetland along Route 1 Bypass though only one was found during field survey. There is a piped drainage system within Old Post Road consisting of several catch basins and pipe which collects runoff from the roadway and directs it to the east. Both Old Post Road and Route 1 Bypass rise in elevation to the southwest of the project site, therefore, stormwater runoff from areas to the southwest flows through the site and is accounted for in the drainage analysis.

Route 1 Bypass along the site boundary is not curbed and does not have a closed drainage system. Stormwater runoff from a portion of Route 1 Bypass and abutting properties to the southwest flows into the road shoulder and eventually to the isolated wetland. Runoff from Route 1 Bypass northeast of the wetland flows to the southeast and through the project site where it is eventually captured by one of the catch basins in Old Post Road.

Site topography generally consists of moderate slopes (5%+/-) throughout much of site with steep slopes immediately adjacent to both isolated wetlands. Elevations range from 45 at the southern property corner to 30 at the eastern property corner towards the traffic circle.

The NRCS Web Soil Survey identifies on-site and surrounding soils as Urban land with no Hydrologic Soil Group (HSG) classification and Lyman loam with HSG-D classification. Refer to Appendix B for more information.

A Phase I and II Environmental Site Assessment (ESA) was performed by Tomforde Environmental Services, LLC and results summarized in a report dated August 16, 2022. The ESA determined that the site "has not been impacted by a release of petroleum or hazardous substances." As part of the assessment, many test pits were dug throughout the site to determine soil conditions. The pits generally encountered sand with silt and some gravel with clay encountered in one test pit near the building on Lot 12A. Test pit logs by Tomforde Environmental Services are included in Appendix C.

A former stream is identified on historic maps of the property dating to 1920, however, no signs of such stream are present today.

The site is not located in a special flood hazard area (100-year flood) per Flood Insurance Rate Map Number 2301710004C, with an effective date of July 5, 1984.

SECTION 3 PROPOSED CONDITIONS

The applicant, Kittery Circle, LLC, is proposing to develop the site by demolishing the existing concrete block building and constructing a new 102 key hotel with a 15,424 square foot footprint and associated paved parking lot with a full access driveway to Old Post Road. A permeable paver patio will be located along the side of the building facing Old Post Road.

Water service will be provided by municipal water in Old Post Road. The proposed sewer service will extend across Old Post Road to the southeast to an existing manhole within US Route 1. Electric will be provided via a new on-site utility pole conveying overhead service across Old Post Road to a new on-site pad mounted transformer. Two underground propane tanks will be located in a landscaped area west of the building.

In order to mitigate increases in peak discharge rates of stormwater runoff as a result of the new impervious surfaces, a comprehensive stormwater management system has been designed that includes deep-sump catch basins with hooded outlets, four hydrodynamic particle separators, an underground detention system with isolator row pretreatment and outlet control structure, a stormwater treatment filter, and a crushed stone drip edge.

Contributing offsite runoff from the abutting properties to the southwest will flow into a grassed underdrained soil filter to detain and treat this runoff separate from the on-site runoff before discharging into an existing catch basin in Old Post Road.

Contributing runoff from Route 1 Bypass will be routed in a new grassed swale straddling the property boundary flowing to the northeast and east where it will enter a new infiltration basin within the State's right-of-way. This basin will provide detention and treatment of stormwater runoff from Route 1 Bypass and separate it from the on-site stormwater management system. Final design of the grassed swale and infiltration basin will be coordinated with MaineDOT; the design shown is conceptual and pending approval of DOT.

The proposed treatment filter is designed in accordance with the provisions outlined in the MaineDEP approval letter for a Jellyfish Filter. Detailed design information from the manufacturer is included in Appendix F.

Runoff from the new parking lot and driveway will be captured in deep sump catch basins with hooded outlets and directed through pipes to a hydrodynamic particle separator and eventually the underground detention system which incorporated an isolator row as an additional pretreatment measure. Peak flow rates, including the 24-hour water quality volume (WQV) drawdown are controlled by the outlet control structure (OCS) with orifices drilled into a flow control tee. Runoff from the detention system will be directed to the treatment filter for final

removal of fine particles and nutrients prior to discharging to an existing catch basin along Old Post Road.

Runoff from the permeable paver patio will recharge directly through the pavers into the underlying crushed stone reservoir course and eventually into the underlying soil.

To prevent erosion and sedimentation during construction, Best Management Practices including a stabilized construction exit, straw wattle, sediment control fence, check dam, catch basin inserts, erosion control blanket, and temporary and permanent seeding have been incorporated into the construction sequence.

The total area of disturbance related to the proposed development and stormwater management system construction is approximately 105,000 square feet therefore the project will require a Maine Construction General Permit (MCGP) from Maine DEP.

Compliance with the Maine DEP Chapter 500 stormwater standards is shown below.

Basic Standards:

The project implements an erosion and sediment control plan which includes catch basin inlet protection, silt fence and straw wattle erosion control barrier, erosion control blanket slope stabilization, stone stabilized construction entrances/exits, and permanent soil stabilization through landscaping and seeding of all disturbed areas. In addition, the development plans provide for both pre-development and post-development construction scheduling and maintenance, and an ongoing operation and maintenance manual for the stormwater management system once construction is completed.

General Standards:

On-site stormwater controls consist of pretreatment, treatment, and peak flow mitigation measures consistent with Maine DEP Chapter 500 Stormwater Standards. Pretreatment and treatment BMPs include deep sump catch basins with hooded outlets, hydrodynamic particle separators, and an isolator row. Though compliance with the flooding standard is not required for this project, stormwater peak flow mitigation is achieved through the underground detention system which utilizes an outlet control structure to mitigate post-development peak rates of runoff leaving the site during each design storm.

In accordance with Chapter 500, sizing of treatment devices is as follows:

Water Quality Volume

Jellyfish Filter/Underground Detention System

$$V_{required} = \left(A_{impervious} * 1\ inch\right) + \left(A_{pervious} * 0.4\ inch\right)$$

$$V_{required} = \left(1.353\ ac * \frac{43{,}560\ sf}{ac} * 1\ in * \frac{1\ ft}{12\ in}\right) + \left(0.544\ ac * \frac{43{,}560\ sf}{ac} * 0.4\ inch * \frac{1\ ft}{12\ in}\right) = \mathbf{5{,}702\ cf}$$

Refer to Appendix F for detailed design of Jellyfish filter performed by Contech.

The underground detention system is designed to store the water quality volume for greater than 24 hours. Refer to Appendix F for a hydrograph table.

Permeable Paver Patio

$$V_{required} = \left(A_{impervious} * 1\ inch\right) + \left(A_{pervious} * 0.4\ inch\right)$$

$$V_{required} = \left(0.028\ ac * \frac{43{,}560\ sf}{ac} * 1\ in * \frac{1\ ft}{12\ in}\right) + \left(0.000\ ac * \frac{43{,}560\ sf}{ac} * 0.4\ inch * \frac{1\ ft}{12\ in}\right) = \mathbf{102\ cf}$$

$$V_{provided} = \mathbf{240\ cf}$$

SECTION 4 STORMWATER MODELING METHODOLOGY

The drainage system for this project was modeled using HydroCAD, a stormwater modeling computer program that analyzes the hydrology, and hydraulics of stormwater runoff. HydroCAD is based largely on the hydrology techniques developed by the Soil Conservation Service (SCS/NRCS), combined with other hydrology and hydraulics calculations. For a given rainfall event, these techniques are used to generate hydrographs throughout a watershed. This provides verification that a given drainage system is adequate for the area under consideration, or to predict where flooding or erosion is likely to occur.

In HydroCAD, each watershed is modeled as a subcatchment, streams and culverts as a Reach (or Pond, depending on available storage capacity), and large wetlands and other natural or artificial storage areas as a Pond. SCS hydrograph generation and routing procedures were used to model both Pre-development and Post-development runoff conditions.

The Pre-development and Post-development watershed limits and the subcatchment characteristics were determined using both USGS and on-the-ground topographic survey information and through visual, on-site inspection. Conservative estimates were used at all times in estimating the hydrologic characteristics of each watershed or subcatchment.

APPENDIX A

USGS Map

USGS MAP

139 OLD POST ROAD
KITTERY, ME

GPI Engineering Design Planning Construction Management
603.893.0720 GPINET.COM
Greenman-Pedersen, Inc.
44 Stiles Road, Suite One
Salem, NH 03079

DRAWN BY: CNM
PROJECT #: NEX-2200380
DATE: 8/17/2023
FIGURE 1

F:\Projects\NEX-2200380- Kittery, ME - Tropic Star\Drainage\Stormwater Report\Appendix A - USGS Map\2200380 - USGS Map.dwg USGS 8/15/23 1:29pm cmason

APPENDIX B

NRCS Soils Information

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for York County, Maine

July 25, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

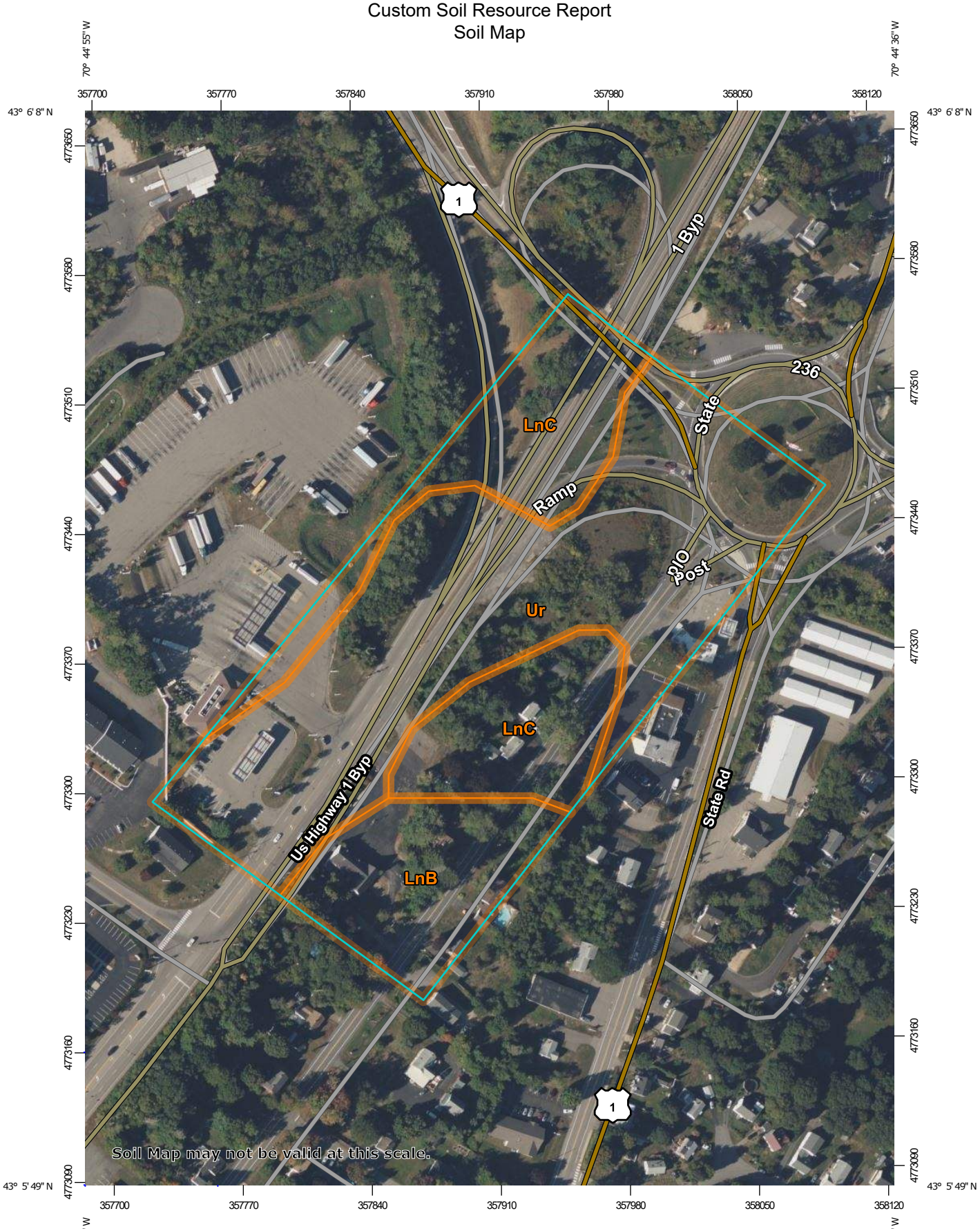
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:2,830 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 40 80 160 240

Feet
0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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

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

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

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

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

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

Soil Survey Area: York County, Maine
Survey Area Data: Version 21, Aug 30, 2022

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

Date(s) aerial images were photographed: Jun 19, 2020—Sep 20, 2020

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
LnB	Lyman loam, 3 to 8 percent slopes, rocky	2.4	15.2%
LnC	Lyman loam, 8 to 15 percent slopes, rocky	4.4	28.3%
Ur	Urban land	8.8	56.5%
Totals for Area of Interest		**15.6**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The

delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

York County, Maine

LnB—Lyman loam, 3 to 8 percent slopes, rocky

Map Unit Setting

National map unit symbol: 2trq7
Elevation: 0 to 520 feet
Mean annual precipitation: 36 to 65 inches
Mean annual air temperature: 36 to 52 degrees F
Frost-free period: 60 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Lyman, rocky, and similar soils: 86 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lyman, Rocky

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountaintop, mountainbase, side slope, crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy supraglacial till derived from granite and gneiss and/or loamy supraglacial till derived from phyllite and/or loamy supraglacial till derived from mica schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: loam
E - 3 to 5 inches: fine sandy loam
Bhs - 5 to 7 inches: loam
Bs1 - 7 to 11 inches: loam
Bs2 - 11 to 18 inches: channery loam
R - 18 to 28 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 11 to 24 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 14.03 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: D
Hydric soil rating: No

LnC—Lyman loam, 8 to 15 percent slopes, rocky

Map Unit Setting

National map unit symbol: 2trq9
Elevation: 0 to 690 feet
Mean annual precipitation: 36 to 65 inches
Mean annual air temperature: 36 to 52 degrees F
Frost-free period: 60 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Lyman, rocky, and similar soils: 86 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lyman, Rocky

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountaintop, mountainflank, mountainbase, side slope, crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy supraglacial till derived from granite and gneiss and/or loamy supraglacial till derived from phyllite and/or loamy supraglacial till derived from mica schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: loam
E - 3 to 5 inches: fine sandy loam
Bhs - 5 to 7 inches: loam
Bs1 - 7 to 11 inches: loam
Bs2 - 11 to 18 inches: channery loam
R - 18 to 28 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 11 to 24 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 14.03 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D

Hydric soil rating: No

Ur—Urban land

Map Unit Composition

Urban land: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

H1 - 0 to 6 inches: variable

Properties and qualities

Slope: 0 to 8 percent
Drainage class: Moderately well drained
Depth to water table: About 24 to 72 inches
Available water supply, 0 to 60 inches: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Custom Soil Resource Report
Map—Hydrologic Soil Group

Map Scale: 1:2,830 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 40 80 160 240

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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

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

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

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

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

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

Soil Survey Area: York County, Maine
Survey Area Data: Version 21, Aug 30, 2022

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

Date(s) aerial images were photographed: Jun 19, 2020—Sep 20, 2020

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

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
LnB	Lyman loam, 3 to 8 percent slopes, rocky	D	2.4	15.2%
LnC	Lyman loam, 8 to 15 percent slopes, rocky	D	4.4	28.3%
Ur	Urban land		8.8	56.5%
Totals for Area of Interest			**15.6**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

APPENDIX C

Test Pit Logs

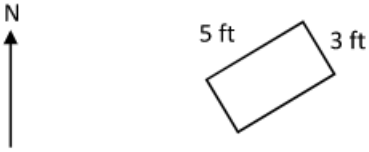
TEST PIT FIELD LOG

	SITE NAME: Tax Map 14, Lots 10, 12, 12A SITE ADDRESS: Old Post Road & Route 1 Bypass Kittery, ME	**TEST PIT NO.: TP-1** PROJECT NO.: 22053 PREPARED BY: MC CHECKED BY: CT
CONTRACTOR: Green Site Services Grp. OPERATOR: Brandon Hallosey GEOLOGIST: Chad Tomforde, PG	EQUIPMENT: Mini Excavator CAPACITY AND REACH: 8 foot reach DATE: 7/27/22 TIME: 8:00	WEATHER: Sunny 80-85°F TEST PIT LOCATION: Lot 12

DEPTH (FEET)	EXCAVATION EFFORT	SAMPLE DESCRIPTION	FIELD SCREENING (PPMV)
1	Easy	Brown fine to coarse SAND and Gravel, some cobbles. Dry.	
2			
3			0.0
4			
5		Refusal @ 4 feet on potential weathered bedrock.	
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

NOTES:

TEST PIT DIMENSIONS AND ORIENTATION



EXCAVATION EFFORT

E = EASY
M = MODERATE
D = DIFFICULT

DEFINITIONS

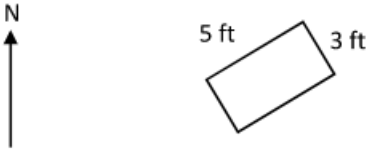
PPMV = PARTS-PER-MILLION BY VOLUME
▼ = DEPTH OF WATER TABLE
TRACE = 1 - 10%
LITTLE = 10 - 20%
SOME = 20 - 35 %
AND = 35 - 50%

Tomforde Environmental Services TES	**TEST PIT FIELD LOG** SITE NAME: Tax Map 14, Lots 10, 12, 12A SITE ADDRESS: Old Post Road & Route 1 Bypass Kittery, ME	**TEST PIT NO.: TP-2** PROJECT NO.: 22053 PREPARED BY: MC CHECKED BY: CT
CONTRACTOR: Green Site Services Grp. OPERATOR: Brandon Hallosey GEOLOGIST: Chad Tomforde, PG	EQUIPMENT: Mini Excavator CAPACITY AND REACH: 8 foot reach DATE: 7/27/22 TIME: 8:20	WEATHER: Sunny 85°F TEST PIT LOCATION: Lot 12

DEPTH (FEET)	EXCAVATION EFFORT	SAMPLE DESCRIPTION	FIELD SCREENING (PPMV)
1	Easy	Dark brown, loamy SILT and fine Sand, some gravel, little trash. Dry.	
2			0.0
3		Brown fine SAND. Dry.	
4			0.0
5			
6		Refusal @ 5 feet on restrictive layer - potential weathered bedrock.	
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

NOTES:

TEST PIT DIMENSIONS AND ORIENTATION



EXCAVATION EFFORT

E = EASY
M = MODERATE
D = DIFFICULT

DEFINITIONS

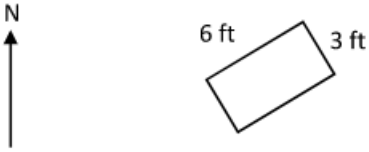
PPMV = PARTS-PER-MILLION BY VOLUME
▼ = DEPTH OF WATER TABLE
TRACE = 1 - 10%
LITTLE = 10 - 20%
SOME = 20 - 35 %
AND = 35 - 50%

Tomforde Environmental Services TES	**TEST PIT FIELD LOG** SITE NAME: Tax Map 14, Lots 10, 12, 12A SITE ADDRESS: Old Post Road & Route 1 Bypass Kittery, ME	**TEST PIT NO.: TP-3** PROJECT NO.: 22053 PREPARED BY: MC CHECKED BY: CT
CONTRACTOR: Green Site Services Grp. OPERATOR: Brandon Hallosey GEOLOGIST: Chad Tomforde, PG	EQUIPMENT: Mini Excavator CAPACITY AND REACH: 8 foot reach DATE: 7/27/22 TIME: 8:45	WEATHER: Sunny 85°F TEST PIT LOCATION: Lot 12

DEPTH (FEET)	EXCAVATION EFFORT	SAMPLE DESCRIPTION	FIELD SCREENING (PPMV)
1	Easy	Brown fine to coarse SAND and Gravel. Dry. Fill.	
2			0.0
3			
4		Grey to brown clayey SILT and fine Sand, trace red bricks at top. Dry.	
5			
6			
7			0
8			
9		End of test pit at 8 feet due to equipment reach. No refusal.	
10			
11			
12			
13			
14			
15			
16			

NOTES:

TEST PIT DIMENSIONS AND ORIENTATION



EXCAVATION EFFORT

E = EASY
M = MODERATE
D = DIFFICULT

DEFINITIONS

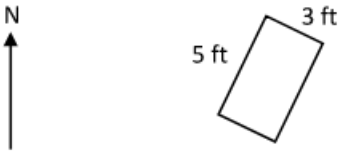
PPMV = PARTS-PER-MILLION BY VOLUME
▼ = DEPTH OF WATER TABLE
TRACE = 1 - 10%
LITTLE = 10 - 20%
SOME = 20 - 35 %
AND = 35 - 50%

	TEST PIT FIELD LOG SITE NAME: Tax Map 14, Lots 10, 12, 12A SITE ADDRESS: Old Post Road & Route 1 Bypass Kittery, ME	**TEST PIT NO.: TP-4** PROJECT NO.: 22053 PREPARED BY: MC CHECKED BY: CT
CONTRACTOR: Green Site Services Grp. OPERATOR: Brandon Hallosey GEOLOGIST: Chad Tomforde, PG	EQUIPMENT: Mini Excavator CAPACITY AND REACH: 8 foot reach DATE: 7/27/22 TIME: 9:00	WEATHER: Sunny 85°F TEST PIT LOCATION: Lot 12

DEPTH (FEET)	EXCAVATION EFFORT	SAMPLE DESCRIPTION	FIELD SCREENING (PPMV)
1	Moderate	Brown fine to coarse SAND and Gravel. Dry.	
2	Moderate	Grey SILT and fine Sand, some gravel. Dry.	0.0
3		Brown fine to coarse SAND and Gravel, some cobbles. Dry.	
4	Difficult		0.0
5			
6		Refusal at 5 feet on potential weathered bedrock or boulder.	
7			0
8			
9			
10			
11			
12			
13			
14			
15			
16			

NOTES:

TEST PIT DIMENSIONS AND ORIENTATION



EXCAVATION EFFORT

E = EASY
M = MODERATE
D = DIFFICULT

DEFINITIONS

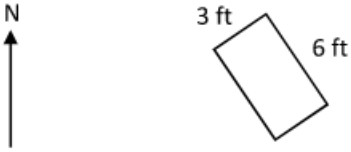
PPMV = PARTS-PER-MILLION BY VOLUME
▼ = DEPTH OF WATER TABLE
TRACE = 1 - 10%
LITTLE = 10 - 20%
SOME = 20 - 35 %
AND = 35 - 50%

Tomforde Environmental Services TES	**TEST PIT FIELD LOG** SITE NAME: Tax Map 14, Lots 10, 12, 12A SITE ADDRESS: Old Post Road & Route 1 Bypass Kittery, ME	**TEST PIT NO.: TP-5** PROJECT NO.: 22053 PREPARED BY: MC CHECKED BY: CT
CONTRACTOR: Green Site Services Grp. OPERATOR: Brandon Hallosey GEOLOGIST: Chad Tomforde, PG	EQUIPMENT: Mini Excavator CAPACITY AND REACH: 8 foot reach DATE: 7/27/22 TIME: 9:35	WEATHER: Sunny 85°F TEST PIT LOCATION: Lot 12

DEPTH (FEET)	EXCAVATION EFFORT	SAMPLE DESCRIPTION	FIELD SCREENING (PPMV)
1	Easy	Brown fine to coarse SAND and Gravel. Dry.	
2			0.0
3			
4		Dark brown fine to coarse SAND and Gravel. Wet.	
5			0.0
6		End of test pit at 5 feet.	
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

NOTES: Test pit could not be advaned deerp than 5 feet because sidewalls were collapsing.
Collect water sample for VPH analysis.

TEST PIT DIMENSIONS AND ORIENTATION



EXCAVATION EFFORT

E = EASY
M = MODERATE
D = DIFFICULT

DEFINITIONS

PPMV = PARTS-PER-MILLION BY VOLUME
▼ = DEPTH OF WATER TABLE
TRACE = 1 - 10%
LITTLE = 10 - 20%
SOME = 20 - 35 %
AND = 35 - 50%

	TEST PIT FIELD LOG SITE NAME: Tax Map 14, Lots 10, 12, 12A SITE ADDRESS: Old Post Road & Route 1 Bypass Kittery, ME	**TEST PIT NO.: TP-6a** PROJECT NO.: 22053 PREPARED BY: MC CHECKED BY: CT
CONTRACTOR: Green Site Services Grp. OPERATOR: Brandon Hallosey GEOLOGIST: Chad Tomforde, PG	EQUIPMENT: Mini Excavator CAPACITY AND REACH: 8 foot reach DATE: 7/27/22 TIME: 9:50	WEATHER: Sunny 85°F TEST PIT LOCATION: Lot 12

DEPTH (FEET)	EXCAVATION EFFORT	SAMPLE DESCRIPTION	FIELD SCREENING (PPMV)
1	Easy	Green SILT with brick, asphalt and concrete pieces.	
2		Brown SAND and Gravel with buried piece of concrete slab.	0.0
3			
4		Refusal @ 3 feet on concrete piece.	
5			
6			
7			
8			
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12			
13			
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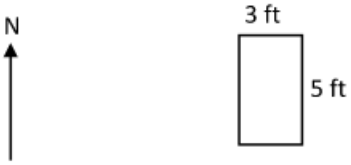
15			
16			

NOTES:

TEST PIT DIMENSIONS AND ORIENTATION



EXCAVATION EFFORT

E = EASY
M = MODERATE
D = DIFFICULT

DEFINITIONS

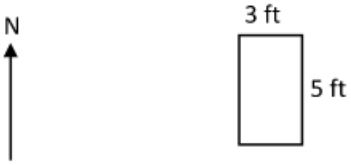
PPMV = PARTS-PER-MILLION BY VOLUME
▼ = DEPTH OF WATER TABLE
TRACE = 1 - 10%
LITTLE = 10 - 20%
SOME = 20 - 35 %
AND = 35 - 50%

Tomforde Environmental Services TES	**TEST PIT FIELD LOG** SITE NAME: Tax Map 14, Lots 10, 12, 12A SITE ADDRESS: Old Post Road & Route 1 Bypass Kittery, ME	**TEST PIT NO.: TP-6b** PROJECT NO.: 22053 PREPARED BY: MC CHECKED BY: CT
CONTRACTOR: Green Site Services Grp. OPERATOR: Brandon Hallosey GEOLOGIST: Chad Tomforde, PG	EQUIPMENT: Mini Excavator CAPACITY AND REACH: 8 foot reach DATE: 7/27/22 TIME: 10:00	WEATHER: Sunny 85°F TEST PIT LOCATION: 12 ft S of TP-6a

DEPTH (FEET)	EXCAVATION EFFORT	SAMPLE DESCRIPTION	FIELD SCREENING (PPMV)
1	Easy	Bricks and mortar FILL. Wet at 4.5 feet.	
2			0.0
3			
4			
5			▼
6			
7		End of test pit @ 6 feet.	
8			
9			
10			
11			
12			
13			
14			
15			
16			

NOTES: Collected one soil sample for laboratory analysis of metals. Collected one water sample for laboratory analysis of PAHs, VOCs, and metals. Groundwater collected from 1-inch diameter PVC screen used with peristaltic pump. One gallon was purged then the sample was collected. The water was field filtered for PAH and metals.

TEST PIT DIMENSIONS AND ORIENTATION



EXCAVATION EFFORT

E = EASY
M = MODERATE
D = DIFFICULT

DEFINITIONS

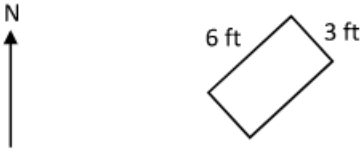
PPMV = PARTS-PER-MILLION BY VOLUME
▼ = DEPTH OF WATER TABLE
TRACE = 1 - 10%
LITTLE = 10 - 20%
SOME = 20 - 35 %
AND = 35 - 50%

Tomforde Environmental Services TES	**TEST PIT FIELD LOG** SITE NAME: Tax Map 14, Lots 10, 12, 12A SITE ADDRESS: Old Post Road & Route 1 Bypass Kittery, ME	**TEST PIT NO.: TP-7** PROJECT NO.: 22053 PREPARED BY: MC CHECKED BY: CT
CONTRACTOR: Green Site Services Grp. OPERATOR: Brandon Hallosey GEOLOGIST: Chad Tomforde, PG	EQUIPMENT: Mini Excavator CAPACITY AND REACH: 8 foot reach DATE: 7/27/22 TIME: 10:30	WEATHER: Sunny 85°F TEST PIT LOCATION: Lot 12

DEPTH (FEET)	EXCAVATION EFFORT	SAMPLE DESCRIPTION	FIELD SCREENING (PPMV)
1	Easy	Brown fine SAND and Silt, some gravel. Dry.	
2			
3			0.0
4			
5			
6			
7			
8			▼ 0.0
9		Grey SILT and CLAY with roots at bottom. Wet. End of test pit @ 8 feet.	
10			
11			
12			
13			
14			
15			
16			

NOTES: The top 8 feet is sand fill.

TEST PIT DIMENSIONS AND ORIENTATION



EXCAVATION EFFORT

E = EASY
M = MODERATE
D = DIFFICULT

DEFINITIONS

PPMV = PARTS-PER-MILLION BY VOLUME
▼ = DEPTH OF WATER TABLE
TRACE = 1 - 10%
LITTLE = 10 - 20%
SOME = 20 - 35 %
AND = 35 - 50%

TEST PIT FIELD LOG

	SITE NAME: Tax Map 14, Lots 10, 12, 12A SITE ADDRESS: Old Post Road & Route 1 Bypass Kittery, ME	**TEST PIT NO.: TP-8a** PROJECT NO.: 22053 PREPARED BY: MC CHECKED BY: CT
CONTRACTOR: Green Site Services Grp. OPERATOR: Brandon Hallosey GEOLOGIST: Chad Tomforde, PG	EQUIPMENT: Mini Excavator CAPACITY AND REACH: 8 foot reach DATE: 7/27/22 TIME: 11:30	WEATHER: Sunny 85°F TEST PIT LOCATION: Lot 10

DEPTH (FEET)	EXCAVATION EFFORT	SAMPLE DESCRIPTION	FIELD SCREENING (PPMV)
1	Difficult	Brown SILT and SAND mixed with concrete cinder blocks. Apparent block wall at west end of pit. Dry.	
2			0.0
3			
4			
5		Refusal at 4 feet.	
6			
7			
8			
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10			
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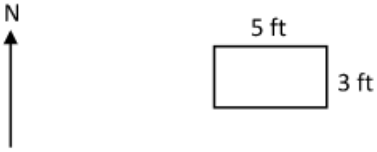
12			
13			
14			
15			
16			

NOTES:

TEST PIT DIMENSIONS AND ORIENTATION



EXCAVATION EFFORT

E = EASY
M = MODERATE
D = DIFFICULT

DEFINITIONS

PPMV = PARTS-PER-MILLION BY VOLUME
▼ = DEPTH OF WATER TABLE
TRACE = 1 - 10%
LITTLE = 10 - 20%
SOME = 20 - 35 %
AND = 35 - 50%

	TEST PIT FIELD LOG SITE NAME: Tax Map 14, Lots 10, 12, 12A SITE ADDRESS: Old Post Road & Route 1 Bypass Kittery, ME	**TEST PIT NO.: TP-8b** PROJECT NO.: 22053 PREPARED BY: MC CHECKED BY: CT
CONTRACTOR: Green Site Services Grp. OPERATOR: Brandon Hallosey GEOLOGIST: Chad Tomforde, PG	EQUIPMENT: Mini Excavator CAPACITY AND REACH: 8 foot reach DATE: 7/27/22 TIME: 11:40	WEATHER: Sunny 85°F TEST PIT LOCATION: Lot 10

DEPTH (FEET)	EXCAVATION EFFORT	SAMPLE DESCRIPTION	FIELD SCREENING (PPMV)
1	Easy	Brown SILT and fine Sand, little gravel. Dry.	
2			
3			0.0
4			
5			
6			
7		End of test pit at 6 feet. No refusal.	
8			
9			
10			
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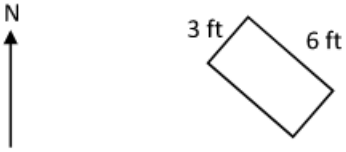
15			
16			

NOTES: Test pit is approximately 40 feet west of TP-8a toward Irving Station.

TEST PIT DIMENSIONS AND ORIENTATION



EXCAVATION EFFORT

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M = MODERATE
D = DIFFICULT

DEFINITIONS

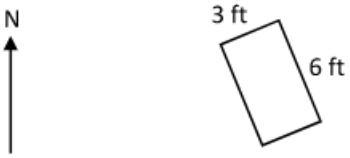
PPMV = PARTS-PER-MILLION BY VOLUME
▼ = DEPTH OF WATER TABLE
TRACE = 1 - 10%
LITTLE = 10 - 20%
SOME = 20 - 35 %
AND = 35 - 50%

Tomforde Environmental Services TES	**TEST PIT FIELD LOG** SITE NAME: Tax Map 14, Lots 10, 12, 12A SITE ADDRESS: Old Post Road & Route 1 Bypass Kittery, ME	**TEST PIT NO.: TP-8c** PROJECT NO.: 22053 PREPARED BY: MC CHECKED BY: CT
CONTRACTOR: Green Site Services Grp. OPERATOR: Brandon Hallosey GEOLOGIST: Chad Tomforde, PG	EQUIPMENT: Mini Excavator CAPACITY AND REACH: 8 foot reach DATE: 7/27/22 TIME: 11:50	WEATHER: Sunny 85°F TEST PIT LOCATION: Lot 10

DEPTH (FEET)	EXCAVATION EFFORT	SAMPLE DESCRIPTION	FIELD SCREENING (PPMV)
1	Moderate	Brown SILT and fine Sand, some gravel. Concrete pieces and cinder blocks from 2 to 6 feet in north end of test pit. Dry.	
2			
3			0.0
4			
5			
6			
7		End of test pit at 6 feet. No refusal.	
8			
9			
10			
11			
12			
13			
14			
15			
16			

NOTES: Test pit is approximately 30 feet south of TP-8a toward property southern property corner.

TEST PIT DIMENSIONS AND ORIENTATION



EXCAVATION EFFORT

E = EASY
M = MODERATE
D = DIFFICULT

DEFINITIONS

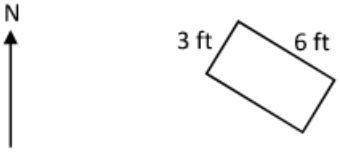
PPMV = PARTS-PER-MILLION BY VOLUME
▼ = DEPTH OF WATER TABLE
TRACE = 1 - 10%
LITTLE = 10 - 20%
SOME = 20 - 35 %
AND = 35 - 50%

Tomforde Environmental Services TES	**TEST PIT FIELD LOG** SITE NAME: Tax Map 14, Lots 10, 12, 12A SITE ADDRESS: Old Post Road & Route 1 Bypass Kittery, ME	**TEST PIT NO.: TP-9** PROJECT NO.: 22053 PREPARED BY: MC CHECKED BY: CT
CONTRACTOR: Green Site Services Grp. OPERATOR: Brandon Hallosey GEOLOGIST: Chad Tomforde, PG	EQUIPMENT: Mini Excavator CAPACITY AND REACH: 8 foot reach DATE: 7/27/22 TIME: 12:15	WEATHER: Sunny 85°F TEST PIT LOCATION: Lot 12A behind building

DEPTH (FEET)	EXCAVATION EFFORT	SAMPLE DESCRIPTION	FIELD SCREENING (PPMV)
1	Easy	Brown fine SAND and Silt, little Gravel. Dry.	
2			0.0
3			
4		Grey SILT and CLAY. Wet at 5 feet.	
5			▼
6			0.0
7			
8		End of test pit at 7 feet.	
9			
10			
11			
12			
13			
14			
15			
16			

NOTES:

TEST PIT DIMENSIONS AND ORIENTATION



EXCAVATION EFFORT

E = EASY
M = MODERATE
D = DIFFICULT

DEFINITIONS

PPMV = PARTS-PER-MILLION BY VOLUME
▼ = DEPTH OF WATER TABLE
TRACE = 1 - 10%
LITTLE = 10 - 20%
SOME = 20 - 35 %
AND = 35 - 50%

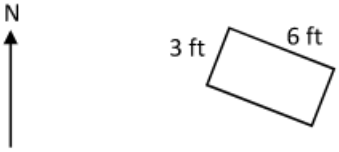
TEST PIT FIELD LOG

	SITE NAME: Tax Map 14, Lots 10, 12, 12A SITE ADDRESS: Old Post Road & Route 1 Bypass Kittery, ME	**TEST PIT NO.: TP-10** PROJECT NO.: 22053 PREPARED BY: MC CHECKED BY: CT
CONTRACTOR: Green Site Services Grp. OPERATOR: Brandon Hallosey GEOLOGIST: Chad Tomforde, PG	EQUIPMENT: Mini Excavator CAPACITY AND REACH: 8 foot reach DATE: 7/27/22 TIME: 12:30	WEATHER: Sunny 85°F TEST PIT LOCATION: Lot 12A

DEPTH (FEET)	EXCAVATION EFFORT	SAMPLE DESCRIPTION	FIELD SCREENING (PPMV)
1	Easy	Brown fine to coarse SAND, some Gravel. Dry.	
2			0.0
3			
4		Brown-grey SILT and CLAY. Wet at 5 feet.	
5			▼
6			0.0
7			
8		End of test pit at 7 feet.	
9			
10			
11			
12			
13			
14			
15			
16			

NOTES:

TEST PIT DIMENSIONS AND ORIENTATION



EXCAVATION EFFORT

E = EASY
M = MODERATE
D = DIFFICULT

DEFINITIONS

PPMV = PARTS-PER-MILLION BY VOLUME
▼ = DEPTH OF WATER TABLE
TRACE = 1 - 10%
LITTLE = 10 - 20%
SOME = 20 - 35 %
AND = 35 - 50%

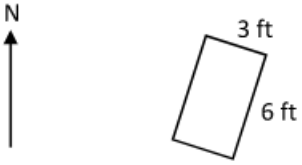
TEST PIT FIELD LOG

	SITE NAME: Tax Map 14, Lots 10, 12, 12A SITE ADDRESS: Old Post Road & Route 1 Bypass Kittery, ME	**TEST PIT NO.: TP-11** PROJECT NO.: 22053 PREPARED BY: MC CHECKED BY: CT
CONTRACTOR: Green Site Services Grp. OPERATOR: Brandon Hallosey GEOLOGIST: Chad Tomforde, PG	EQUIPMENT: Mini Excavator CAPACITY AND REACH: 8 foot reach DATE: 7/27/22 TIME: 12:45	WEATHER: Sunny 85°F TEST PIT LOCATION: Lot 12A

DEPTH (FEET)	EXCAVATION EFFORT	SAMPLE DESCRIPTION	FIELD SCREENING (PPMV)
1	Easy	Brown fine to coarse SAND, some Gravel. Dry.	
2			0.0
3			
4		Brown-grey SILT and CLAY. Wet at 4 feet.	
5			
6			0.0
7			
8		End of test pit at 7 feet.	
9			
10			
11			
12			
13			
14			
15			
16			

NOTES:

TEST PIT DIMENSIONS AND ORIENTATION



EXCAVATION EFFORT

E = EASY
M = MODERATE
D = DIFFICULT

DEFINITIONS

PPMV = PARTS-PER-MILLION BY VOLUME
▼ = DEPTH OF WATER TABLE
TRACE = 1 - 10%
LITTLE = 10 - 20%
SOME = 20 - 35 %
AND = 35 - 50%

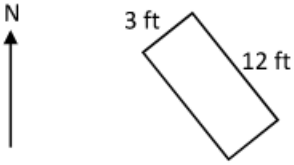
TEST PIT FIELD LOG

	SITE NAME: Tax Map 14, Lots 10, 12, 12A SITE ADDRESS: Old Post Road & Route 1 Bypass Kittery, ME	**TEST PIT NO.: TP-12** PROJECT NO.: 22053 PREPARED BY: MC CHECKED BY: CT
CONTRACTOR: Green Site Services Grp. OPERATOR: Brandon Hallosey GEOLOGIST: Chad Tomforde, PG	EQUIPMENT: Mini Excavator CAPACITY AND REACH: 8 foot reach DATE: 7/27/22 TIME: 13:30	WEATHER: Sunny 85°F TEST PIT LOCATION: Lot 12, NE area of property

DEPTH (FEET)	EXCAVATION EFFORT	SAMPLE DESCRIPTION	FIELD SCREENING (PPMV)
1	Easy	Brown SAND and Gravel. Dry.	
2			
3			
4		Brown-grey silty CLAY.	
5			
6		End of test pit at 5 feet.	
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

NOTES: Test pit completed to investigate potential underground drainage from west to east. No culvert found in 12-foot long test pit perpendicular to where "stream" is depicted on 2007 Site Plan for H. Patten.

TEST PIT DIMENSIONS AND ORIENTATION



EXCAVATION EFFORT

E = EASY
M = MODERATE
D = DIFFICULT

DEFINITIONS

PPMV = PARTS-PER-MILLION BY VOLUME
▼ = DEPTH OF WATER TABLE
TRACE = 1 - 10%
LITTLE = 10 - 20%
SOME = 20 - 35 %
AND = 35 - 50%

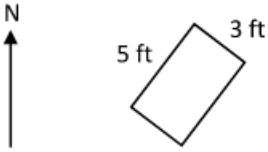
TEST PIT FIELD LOG

	SITE NAME: Tax Map 14, Lots 10, 12, 12A SITE ADDRESS: Old Post Road & Route 1 Bypass Kittery, ME	**TEST PIT NO.: TP-13** PROJECT NO.: 22053 PREPARED BY: MC CHECKED BY: CT
CONTRACTOR: Green Site Services Grp. OPERATOR: Brandon Hallosey GEOLOGIST: Chad Tomforde, PG	EQUIPMENT: Mini Excavator CAPACITY AND REACH: 8 foot reach DATE: 7/27/22 TIME: 14:00	WEATHER: Sunny 85°F TEST PIT LOCATION: Lot 12, 20 feet N of TP-6a

DEPTH (FEET)	EXCAVATION EFFORT	SAMPLE DESCRIPTION	FIELD SCREENING (PPMV)
1	Easy	Dark brown fine to coarse SAND and Gravel. Wet at 4 feet. Asphalt chunks from 3 to 5 feet.	
2			
3			
4			▼ 0.0
5			
6		End of test pit at 5 feet.	
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

NOTES:

TEST PIT DIMENSIONS AND ORIENTATION



EXCAVATION EFFORT

E = EASY
M = MODERATE
D = DIFFICULT

DEFINITIONS

PPMV = PARTS-PER-MILLION BY VOLUME
▼ = DEPTH OF WATER TABLE
TRACE = 1 - 10%
LITTLE = 10 - 20%
SOME = 20 - 35 %
AND = 35 - 50%

TEST PIT FIELD LOG

SITE NAME: Tax Map 14, Lots 10, 12, 12A
SITE ADDRESS: Old Post Road & Route 1 Bypass
Kittery, ME

TEST PIT NO.: TP-14

PROJECT NO.: 22053
PREPARED BY: MC
CHECKED BY: CT

CONTRACTOR: Green Site Services Grp.
OPERATOR: Brandon Hallosey
GEOLOGIST: Chad Tomforde, PG

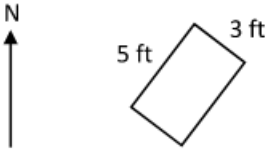
EQUIPMENT: Mini Excavator
CAPACITY AND REACH: 8 foot reach
DATE: 7/27/22 TIME: 14:15

WEATHER: Sunny 85°F
TEST PIT LOCATION: Lot 12, 20 feet NW of TP-6b

DEPTH (FEET)	EXCAVATION EFFORT	SAMPLE DESCRIPTION	FIELD SCREENING (PPMV)
1	Easy	Brown fine to coarse SAND and Gravel. Dry.	
2			
3			0.0
4			
5			
6		End of test pit at 5 feet.	
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

NOTES:

TEST PIT DIMENSIONS AND ORIENTATION



EXCAVATION EFFORT

E = EASY
M = MODERATE
D = DIFFICULT

DEFINITIONS

PPMV = PARTS-PER-MILLION BY VOLUME
▼ = DEPTH OF WATER TABLE
TRACE = 1 - 10%
LITTLE = 10 - 20%
SOME = 20 - 35 %
AND = 35 - 50%

TEST PIT FIELD LOG

TEST PIT NO.: TP-15

SITE NAME: Tax Map 14, Lots 10, 12, 12A
SITE ADDRESS: Old Post Road & Route 1 Bypass
Kittery, ME

PROJECT NO.: 22053
PREPARED BY: MC
CHECKED BY: CT

CONTRACTOR: Green Site Services Grp.
OPERATOR: Brandon Hallosey
GEOLOGIST: Chad Tomforde, PG

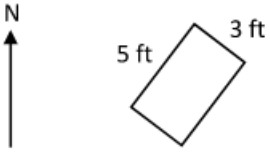
EQUIPMENT: Mini Excavator
CAPACITY AND REACH: 8 foot reach
DATE: 7/27/22 TIME: 14:30

WEATHER: Sunny 85°F
TEST PIT LOCATION: Lot 12, 20 feet SW of TP-6b

DEPTH (FEET)	EXCAVATION EFFORT	SAMPLE DESCRIPTION	FIELD SCREENING (PPMV)
1	Easy	Brown SAND and Silt and bricks and concrete chunks. Dry.	
2			
3			0.0
4			
5			
6		End of test pit at 5 feet.	
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

NOTES:

TEST PIT DIMENSIONS AND ORIENTATION



EXCAVATION EFFORT

E = EASY
M = MODERATE
D = DIFFICULT

DEFINITIONS

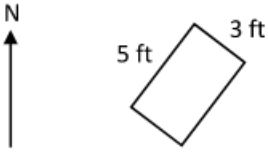
PPMV = PARTS-PER-MILLION BY VOLUME
▼ = DEPTH OF WATER TABLE
TRACE = 1 - 10%
LITTLE = 10 - 20%
SOME = 20 - 35 %
AND = 35 - 50%

	TEST PIT FIELD LOG SITE NAME: Tax Map 14, Lots 10, 12, 12A SITE ADDRESS: Old Post Road & Route 1 Bypass Kittery, ME	**TEST PIT NO.: TP-16** PROJECT NO.: 22053 PREPARED BY: MC CHECKED BY: CT
CONTRACTOR: Green Site Services Grp. OPERATOR: Brandon Hallosey GEOLOGIST: Chad Tomforde, PG	EQUIPMENT: Mini Excavator CAPACITY AND REACH: 8 foot reach DATE: 7/27/22 TIME: 14:45	WEATHER: Sunny 85°F TEST PIT LOCATION: Lot 12, W-SW TP-6b

DEPTH (FEET)	EXCAVATION EFFORT	SAMPLE DESCRIPTION	FIELD SCREENING (PPMV)
1	Easy	Brown SAND. Dry.	
2		Brown SAND mixed with bricks and concrete. Dry.	
3			0.0
4			
5			
6		End of test pit at 5 feet.	
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

NOTES:

TEST PIT DIMENSIONS AND ORIENTATION



EXCAVATION EFFORT

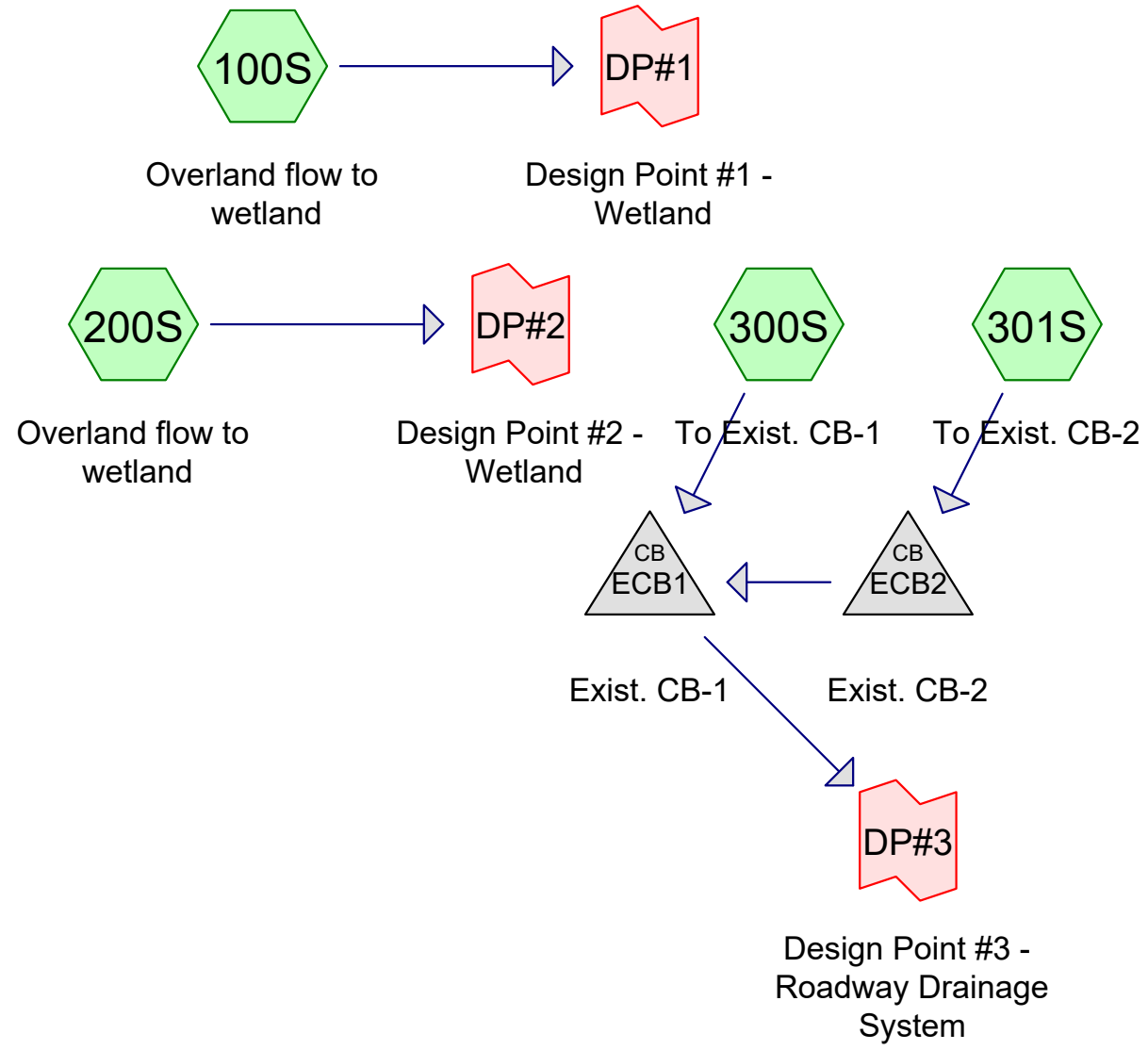
E = EASY
M = MODERATE
D = DIFFICULT

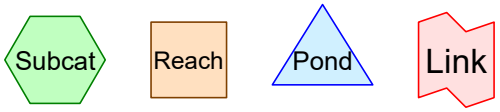
DEFINITIONS

PPMV = PARTS-PER-MILLION BY VOLUME
▼ = DEPTH OF WATER TABLE
TRACE = 1 - 10%
LITTLE = 10 - 20%
SOME = 20 - 35 %
AND = 35 - 50%

APPENDIX D

Pre-Development HydroCAD Computations





Routing Diagram for 2200380 Pre-Development REV1
Prepared by Greenman-Pedersen, Inc, Printed 1/25/2024

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.055	74	>75% Grass cover, Good, HSG C (100S, 200S, 300S, 301S)
1.661	65	Brush, Good, HSG C (100S, 200S, 300S, 301S)
1.781	98	Paved parking, HSG C (100S, 300S, 301S)
0.163	98	Roofs, HSG C (100S, 200S, 300S)
0.577	70	Woods, Good, HSG C (100S, 200S, 300S)
0.836	72	Woods/grass comb., Good, HSG C (100S, 200S, 300S, 301S)
6.073	**79**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
6.073	HSG C	100S, 200S, 300S, 301S
0.000	HSG D	
0.000	Other	
6.073		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	1.055	0.000	0.000	1.055	>75% Grass cover, Good	100S, 200S, 300S, 301S
0.000	0.000	1.661	0.000	0.000	1.661	Brush, Good	100S, 200S, 300S, 301S
0.000	0.000	1.781	0.000	0.000	1.781	Paved parking	100S, 300S, 301S
0.000	0.000	0.163	0.000	0.000	0.163	Roofs	100S, 200S, 300S
0.000	0.000	0.577	0.000	0.000	0.577	Woods, Good	100S, 200S, 300S
0.000	0.000	0.836	0.000	0.000	0.836	Woods/grass comb., Good	100S, 200S, 300S, 301S
0.000	**0.000**	**6.073**	**0.000**	**0.000**	**6.073**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	ECB1	25.50	25.40	39.0	0.0026	0.012	0.0	30.0	0.0	
2	ECB2	26.30	25.60	53.0	0.0132	0.012	0.0	12.0	0.0	

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment100S: Overland flow to Runoff Area=2.193 ac 53.48% Impervious Runoff Depth=2.09"
Flow Length=505' Tc=7.4 min CN=WQ Runoff=4.58 cfs 0.381 af

Subcatchment200S: Overland flow to Runoff Area=0.352 ac 5.83% Impervious Runoff Depth=1.01"
Flow Length=298' Tc=8.5 min CN=WQ Runoff=0.34 cfs 0.030 af

Subcatchment300S: To Exist. CB-1 Runoff Area=2.483 ac 21.22% Impervious Runoff Depth=1.28"
Flow Length=907' Tc=20.0 min CN=WQ Runoff=2.19 cfs 0.264 af

Subcatchment301S: To Exist. CB-2 Runoff Area=1.044 ac 21.37% Impervious Runoff Depth=1.38"
Flow Length=255' Tc=8.7 min CN=WQ Runoff=1.39 cfs 0.120 af

Pond ECB1: Exist. CB-1 Peak Elev=26.35' Inflow=3.08 cfs 0.385 af
30.0" Round Culvert n=0.012 L=39.0' S=0.0026 '/' Outflow=3.08 cfs 0.385 af

Pond ECB2: Exist. CB-2 Peak Elev=26.94' Inflow=1.39 cfs 0.120 af
12.0" Round Culvert n=0.012 L=53.0' S=0.0132 '/' Outflow=1.39 cfs 0.120 af

Link DP#1: Design Point #1 - Wetland Inflow=4.58 cfs 0.381 af
Primary=4.58 cfs 0.381 af

Link DP#2: Design Point #2 - Wetland Inflow=0.34 cfs 0.030 af
Primary=0.34 cfs 0.030 af

Link DP#3: Design Point #3 - Roadway Drainage System Inflow=3.08 cfs 0.385 af
Primary=3.08 cfs 0.385 af

Total Runoff Area = 6.073 ac Runoff Volume = 0.795 af Average Runoff Depth = 1.57"
68.00% Pervious = 4.129 ac 32.00% Impervious = 1.943 ac

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment100S: Overland flow to Runoff Area=2.193 ac 53.48% Impervious Runoff Depth=3.45"
Flow Length=505' Tc=7.4 min CN=WQ Runoff=7.66 cfs 0.631 af

Subcatchment200S: Overland flow to Runoff Area=0.352 ac 5.83% Impervious Runoff Depth=2.11"
Flow Length=298' Tc=8.5 min CN=WQ Runoff=0.77 cfs 0.062 af

Subcatchment300S: To Exist. CB-1 Runoff Area=2.483 ac 21.22% Impervious Runoff Depth=2.42"
Flow Length=907' Tc=20.0 min CN=WQ Runoff=4.40 cfs 0.500 af

Subcatchment301S: To Exist. CB-2 Runoff Area=1.044 ac 21.37% Impervious Runoff Depth=2.58"
Flow Length=255' Tc=8.7 min CN=WQ Runoff=2.70 cfs 0.225 af

Pond ECB1: Exist. CB-1 Peak Elev=26.73' Inflow=6.14 cfs 0.725 af
30.0" Round Culvert n=0.012 L=39.0' S=0.0026 '/' Outflow=6.14 cfs 0.725 af

Pond ECB2: Exist. CB-2 Peak Elev=27.34' Inflow=2.70 cfs 0.225 af
12.0" Round Culvert n=0.012 L=53.0' S=0.0132 '/' Outflow=2.70 cfs 0.225 af

Link DP#1: Design Point #1 - Wetland Inflow=7.66 cfs 0.631 af
Primary=7.66 cfs 0.631 af

Link DP#2: Design Point #2 - Wetland Inflow=0.77 cfs 0.062 af
Primary=0.77 cfs 0.062 af

Link DP#3: Design Point #3 - Roadway Drainage System Inflow=6.14 cfs 0.725 af
Primary=6.14 cfs 0.725 af

Total Runoff Area = 6.073 ac Runoff Volume = 1.418 af Average Runoff Depth = 2.80"
68.00% Pervious = 4.129 ac 32.00% Impervious = 1.943 ac

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment100S: Overland flow to Runoff Area=2.193 ac 53.48% Impervious Runoff Depth=4.62"
Flow Length=505' Tc=7.4 min CN=WQ Runoff=10.29 cfs 0.845 af

Subcatchment200S: Overland flow to Runoff Area=0.352 ac 5.83% Impervious Runoff Depth=3.12"
Flow Length=298' Tc=8.5 min CN=WQ Runoff=1.16 cfs 0.092 af

Subcatchment300S: To Exist. CB-1 Runoff Area=2.483 ac 21.22% Impervious Runoff Depth=3.45"
Flow Length=907' Tc=20.0 min CN=WQ Runoff=6.40 cfs 0.714 af

Subcatchment301S: To Exist. CB-2 Runoff Area=1.044 ac 21.37% Impervious Runoff Depth=3.65"
Flow Length=255' Tc=8.7 min CN=WQ Runoff=3.87 cfs 0.318 af

Pond ECB1: Exist. CB-1 Peak Elev=27.02' Inflow=8.90 cfs 1.032 af
30.0" Round Culvert n=0.012 L=39.0' S=0.0026 '/' Outflow=8.90 cfs 1.032 af

Pond ECB2: Exist. CB-2 Peak Elev=28.04' Inflow=3.87 cfs 0.318 af
12.0" Round Culvert n=0.012 L=53.0' S=0.0132 '/' Outflow=3.87 cfs 0.318 af

Link DP#1: Design Point #1 - Wetland Inflow=10.29 cfs 0.845 af
Primary=10.29 cfs 0.845 af

Link DP#2: Design Point #2 - Wetland Inflow=1.16 cfs 0.092 af
Primary=1.16 cfs 0.092 af

Link DP#3: Design Point #3 - Roadway Drainage System Inflow=8.90 cfs 1.032 af
Primary=8.90 cfs 1.032 af

Total Runoff Area = 6.073 ac Runoff Volume = 1.969 af Average Runoff Depth = 3.89"
68.00% Pervious = 4.129 ac 32.00% Impervious = 1.943 ac

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment100S: Overland flow to Runoff Area=2.193 ac 53.48% Impervious Runoff Depth=5.64"
Flow Length=505' Tc=7.4 min CN=WQ Runoff=12.56 cfs 1.030 af

Subcatchment200S: Overland flow to Runoff Area=0.352 ac 5.83% Impervious Runoff Depth=4.03"
Flow Length=298' Tc=8.5 min CN=WQ Runoff=1.50 cfs 0.118 af

Subcatchment300S: To Exist. CB-1 Runoff Area=2.483 ac 21.22% Impervious Runoff Depth=4.38"
Flow Length=907' Tc=20.0 min CN=WQ Runoff=8.18 cfs 0.905 af

Subcatchment301S: To Exist. CB-2 Runoff Area=1.044 ac 21.37% Impervious Runoff Depth=4.60"
Flow Length=255' Tc=8.7 min CN=WQ Runoff=4.90 cfs 0.400 af

Pond ECB1: Exist. CB-1 Peak Elev=27.24' Inflow=11.35 cfs 1.306 af
30.0" Round Culvert n=0.012 L=39.0' S=0.0026 '/' Outflow=11.35 cfs 1.306 af

Pond ECB2: Exist. CB-2 Peak Elev=28.91' Inflow=4.90 cfs 0.400 af
12.0" Round Culvert n=0.012 L=53.0' S=0.0132 '/' Outflow=4.90 cfs 0.400 af

Link DP#1: Design Point #1 - Wetland Inflow=12.56 cfs 1.030 af
Primary=12.56 cfs 1.030 af

Link DP#2: Design Point #2 - Wetland Inflow=1.50 cfs 0.118 af
Primary=1.50 cfs 0.118 af

Link DP#3: Design Point #3 - Roadway Drainage System Inflow=11.35 cfs 1.306 af
Primary=11.35 cfs 1.306 af

Total Runoff Area = 6.073 ac Runoff Volume = 2.454 af Average Runoff Depth = 4.85"
68.00% Pervious = 4.129 ac 32.00% Impervious = 1.943 ac

Summary for Subcatchment 100S: Overland flow to wetland

Runoff = 10.29 cfs @ 12.10 hrs, Volume= 0.845 af, Depth= 4.62"
Routed to Link DP#1 : Design Point #1 - Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
0.455	74	>75% Grass cover, Good, HSG C
0.143	65	Brush, Good, HSG C
1.097	98	Paved parking, HSG C
0.076	98	Roofs, HSG C
0.361	70	Woods, Good, HSG C
0.061	72	Woods/grass comb., Good, HSG C
2.193		Weighted Average
1.020		46.52% Pervious Area
1.173		53.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	25	0.0300	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
1.3	94	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	266	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.1	111	0.0300	0.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.0	9	0.6670	5.72		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.4	505	Total			

Summary for Subcatchment 200S: Overland flow to wetland

Runoff = 1.16 cfs @ 12.12 hrs, Volume= 0.092 af, Depth= 3.12"
Routed to Link DP#2 : Design Point #2 - Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
0.075	74	>75% Grass cover, Good, HSG C
0.123	65	Brush, Good, HSG C
0.021	98	Roofs, HSG C
0.018	70	Woods, Good, HSG C
0.115	72	Woods/grass comb., Good, HSG C
0.352		Weighted Average
0.331		94.17% Pervious Area
0.021		5.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	25	0.0800	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
3.2	164	0.0300	0.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.3	109	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.5	298	Total			

Summary for Subcatchment 300S: To Exist. CB-1

Runoff = 6.40 cfs @ 12.28 hrs, Volume= 0.714 af, Depth= 3.45"
Routed to Pond ECB1 : Exist. CB-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
0.217	74	>75% Grass cover, Good, HSG C
1.138	65	Brush, Good, HSG C
0.460	98	Paved parking, HSG C
0.067	98	Roofs, HSG C
0.197	70	Woods, Good, HSG C
0.404	72	Woods/grass comb., Good, HSG C
2.483		Weighted Average
1.956		78.78% Pervious Area
0.527		21.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	25	0.0300	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
12.7	658	0.0300	0.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.4	224	0.0170	2.65		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
20.0	907	Total			

Summary for Subcatchment 301S: To Exist. CB-2

Runoff = 3.87 cfs @ 12.12 hrs, Volume= 0.318 af, Depth= 3.65"
Routed to Pond ECB2 : Exist. CB-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
0.308	74	>75% Grass cover, Good, HSG C
0.258	65	Brush, Good, HSG C
0.223	98	Paved parking, HSG C
0.255	72	Woods/grass comb., Good, HSG C
1.044		Weighted Average
0.821		78.63% Pervious Area
0.223		21.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	25	0.0430	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
3.6	225	0.0430	1.04		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.0	5	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
8.7	255	Total			

Summary for Pond ECB1: Exist. CB-1

Inflow Area = 3.527 ac, 21.26% Impervious, Inflow Depth = 3.51" for 25-year event
Inflow = 8.90 cfs @ 12.20 hrs, Volume= 1.032 af
Outflow = 8.90 cfs @ 12.20 hrs, Volume= 1.032 af, Atten= 0%, Lag= 0.0 min
Primary = 8.90 cfs @ 12.20 hrs, Volume= 1.032 af
Routed to Link DP#3 : Design Point #3 - Roadway Drainage System

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 27.02' @ 12.20 hrs
Flood Elev= 30.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	25.50'	**30.0" Round Culvert** L= 39.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 25.50' / 25.40' S= 0.0026 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 4.91 sf

Primary OutFlow Max=8.90 cfs @ 12.20 hrs HW=27.02' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 8.90 cfs @ 4.10 fps)

Summary for Pond ECB2: Exist. CB-2

Inflow Area = 1.044 ac, 21.37% Impervious, Inflow Depth = 3.65" for 25-year event
Inflow = 3.87 cfs @ 12.12 hrs, Volume= 0.318 af
Outflow = 3.87 cfs @ 12.12 hrs, Volume= 0.318 af, Atten= 0%, Lag= 0.0 min
Primary = 3.87 cfs @ 12.12 hrs, Volume= 0.318 af
Routed to Pond ECB1 : Exist. CB-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Peak Elev= 28.04' @ 12.13 hrs
Flood Elev= 29.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	26.30'	**12.0" Round Culvert** L= 53.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 26.30' / 25.60' S= 0.0132 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.83 cfs @ 12.12 hrs HW=28.02' TW=26.95' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 3.83 cfs @ 4.87 fps)

Summary for Link DP#1: Design Point #1 - Wetland

Inflow Area = 2.193 ac, 53.48% Impervious, Inflow Depth = 4.62" for 25-year event
Inflow = 10.29 cfs @ 12.10 hrs, Volume= 0.845 af
Primary = 10.29 cfs @ 12.10 hrs, Volume= 0.845 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link DP#2: Design Point #2 - Wetland

Inflow Area = 0.352 ac, 5.83% Impervious, Inflow Depth = 3.12" for 25-year event
Inflow = 1.16 cfs @ 12.12 hrs, Volume= 0.092 af
Primary = 1.16 cfs @ 12.12 hrs, Volume= 0.092 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

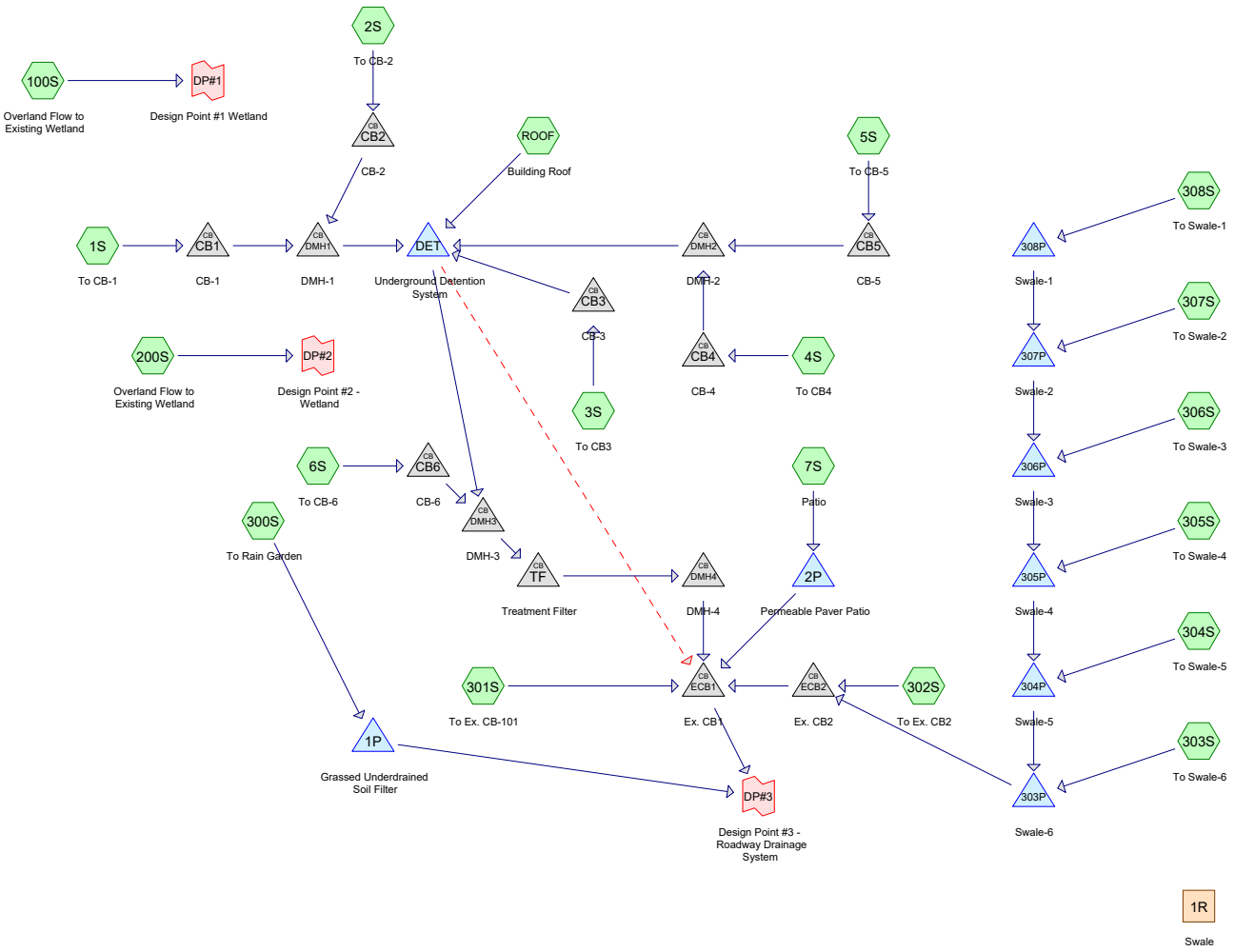
Summary for Link DP#3: Design Point #3 - Roadway Drainage System

Inflow Area = 3.527 ac, 21.26% Impervious, Inflow Depth = 3.51" for 25-year event
Inflow = 8.90 cfs @ 12.20 hrs, Volume= 1.032 af
Primary = 8.90 cfs @ 12.20 hrs, Volume= 1.032 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

APPENDIX E

Post-Development HydroCAD Computations



Routing Diagram for 2200380 Post-Development REV2
Prepared by Greenman-Pedersen, Inc, Printed 1/25/2024
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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.856	74	>75% Grass cover, Good, HSG C (1S, 2S, 3S, 4S, 5S, 7S, 100S, 200S, 300S, 301S, 302S, 303S, 304S, 305S, 306S, 307S, 308S)
0.262	65	Brush, Good, HSG C (1S, 100S, 200S, 300S, 308S)
2.674	98	Paved parking, HSG C (1S, 2S, 3S, 4S, 5S, 6S, 7S, 100S, 200S, 300S, 301S, 302S, 308S, ROOF)
0.501	98	Roofs, HSG C (1S, 100S, 200S, 300S, ROOF)
0.577	70	Woods, Good, HSG C (1S, 100S, 200S, 300S)
0.204	72	Woods/grass comb., Good, HSG C (1S, 100S, 200S, 300S, 302S)
6.073	**86**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
6.073	HSG C	1S, 2S, 3S, 4S, 5S, 6S, 7S, 100S, 200S, 300S, 301S, 302S, 303S, 304S, 305S, 306S, 307S, 308S, ROOF
0.000	HSG D	
0.000	Other	
6.073		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	1.856	0.000	0.000	1.856	>75% Grass cover, Good	1S, 2S, 3S, 4S, 5S, 7S, 100S, 200S, 300S, 301S, 302S, 303S, 304S, 305S, 306S, 307S, 308S
0.000	0.000	0.262	0.000	0.000	0.262	Brush, Good	1S, 100S, 200S, 300S, 308S
0.000	0.000	2.674	0.000	0.000	2.674	Paved parking	1S, 2S, 3S, 4S, 5S, 6S, 7S, 100S, 200S, 300S, 301S, 302S, 308S, ROOF
0.000	0.000	0.501	0.000	0.000	0.501	Roofs	1S, 100S, 200S, 300S, ROOF

Ground Covers (all nodes) (continued)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.577	0.000	0.000	0.577	Woods, Good	1S, 100S, 200S, 300S
0.000	0.000	0.204	0.000	0.000	0.204	Woods/grass comb., Good	1S, 100S, 200S, 300S, 302S
0.000	**0.000**	**6.073**	**0.000**	**0.000**	**6.073**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	CB1	34.05	31.10	90.0	0.0328	0.012	0.0	12.0	0.0	
2	CB2	31.20	31.10	7.0	0.0143	0.012	0.0	12.0	0.0	
3	CB3	29.80	29.68	6.0	0.0200	0.012	0.0	10.0	0.0	
4	CB4	30.80	30.60	12.0	0.0167	0.012	0.0	12.0	0.0	
5	CB5	30.80	29.80	82.0	0.0122	0.012	0.0	12.0	0.0	
6	CB6	30.15	30.05	9.0	0.0111	0.012	0.0	12.0	0.0	
7	DET	28.85	28.30	116.0	0.0047	0.012	0.0	12.0	0.0	
8	DMH1	30.85	30.70	11.0	0.0136	0.012	0.0	15.0	0.0	
9	DMH2	29.55	29.48	8.0	0.0088	0.012	0.0	15.0	0.0	
10	DMH3	28.20	28.05	28.0	0.0054	0.012	0.0	12.0	0.0	
11	DMH4	26.60	26.50	10.0	0.0100	0.012	0.0	12.0	0.0	
12	ECB1	25.50	25.40	39.0	0.0026	0.012	0.0	30.0	0.0	
13	ECB2	26.30	25.60	53.0	0.0132	0.012	0.0	12.0	0.0	
14	TF	27.55	26.70	175.0	0.0049	0.012	0.0	12.0	0.0	

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: To CB-1 Runoff Area=0.397 ac 18.25% Impervious Runoff Depth=1.32"
Flow Length=381' Tc=11.5 min CN=WQ Runoff=0.46 cfs 0.044 af

Subcatchment2S: To CB-2 Runoff Area=0.228 ac 98.80% Impervious Runoff Depth=3.04"
Flow Length=164' Slope=0.0400 '/' Tc=0.9 min CN=WQ Runoff=0.87 cfs 0.058 af

Subcatchment3S: To CB3 Runoff Area=0.314 ac 84.27% Impervious Runoff Depth=2.76"
Flow Length=89' Slope=0.0400 '/' Tc=2.7 min CN=WQ Runoff=1.02 cfs 0.072 af

Subcatchment4S: To CB4 Runoff Area=0.218 ac 79.40% Impervious Runoff Depth=2.66"
Flow Length=100' Slope=0.0400 '/' Tc=2.7 min CN=WQ Runoff=0.69 cfs 0.048 af

Subcatchment5S: To CB-5 Runoff Area=0.241 ac 76.03% Impervious Runoff Depth=2.60"
Flow Length=88' Slope=0.0400 '/' Tc=2.1 min CN=WQ Runoff=0.76 cfs 0.052 af

Subcatchment6S: To CB-6 Runoff Area=0.056 ac 100.00% Impervious Runoff Depth=3.07"
Flow Length=70' Slope=0.0400 '/' Tc=0.5 min CN=98 Runoff=0.22 cfs 0.014 af

Subcatchment7S: Patio Runoff Area=0.028 ac 100.00% Impervious Runoff Depth=3.07"
Tc=1.0 min CN=WQ Runoff=0.11 cfs 0.007 af

Subcatchment100S: Overland Flow to Runoff Area=2.189 ac 53.66% Impervious Runoff Depth=2.09"
Flow Length=506' Tc=7.4 min CN=WQ Runoff=4.59 cfs 0.382 af

Subcatchment200S: Overland Flow to Runoff Area=0.272 ac 7.37% Impervious Runoff Depth=1.13"
Flow Length=298' Tc=8.5 min CN=WQ Runoff=0.30 cfs 0.026 af

Subcatchment300S: To Rain Garden Runoff Area=0.297 ac 14.29% Impervious Runoff Depth=1.29"
Tc=0.0 min CN=WQ Runoff=0.50 cfs 0.032 af

Subcatchment301S: To Ex. CB-101 Runoff Area=0.288 ac 58.33% Impervious Runoff Depth=2.25"
Flow Length=211' Tc=4.0 min CN=WQ Runoff=0.74 cfs 0.054 af

Subcatchment302S: To Ex. CB2 Runoff Area=0.444 ac 26.00% Impervious Runoff Depth=1.60"
Flow Length=191' Slope=0.0500 '/' Tc=4.0 min CN=WQ Runoff=0.82 cfs 0.059 af

Subcatchment303S: To Swale-6 Runoff Area=0.072 ac 0.00% Impervious Runoff Depth=1.10"
Flow Length=174' Tc=5.6 min CN=74 Runoff=0.09 cfs 0.007 af

Subcatchment304S: To Swale-5 Runoff Area=0.037 ac 0.00% Impervious Runoff Depth=1.10"
Flow Length=82' Tc=3.7 min CN=74 Runoff=0.05 cfs 0.003 af

Subcatchment305S: To Swale-4 Runoff Area=0.058 ac 0.00% Impervious Runoff Depth=1.10"
Flow Length=105' Tc=5.6 min CN=74 Runoff=0.07 cfs 0.005 af

Subcatchment306S: To Swale-3 Runoff Area=0.042 ac 0.00% Impervious Runoff Depth=1.10"
Flow Length=68' Tc=3.4 min CN=74 Runoff=0.06 cfs 0.004 af

Subcatchment307S: To Swale-2 Runoff Area=0.048 ac 0.00% Impervious Runoff Depth=1.10"
Flow Length=65' Tc=3.1 min CN=74 Runoff=0.07 cfs 0.004 af

Subcatchment308S: To Swale-1 Runoff Area=0.483 ac 60.24% Impervious Runoff Depth=2.28"
Flow Length=287' Tc=17.2 min CN=WQ Runoff=0.84 cfs 0.092 af

SubcatchmentROOF: Building Roof Runoff Area=0.362 ac 100.00% Impervious Runoff Depth=3.07"
Tc=0.0 min CN=WQ Runoff=1.41 cfs 0.092 af

Reach 1R: Swale Avg. Flow Depth=0.00' Max Vel=0.00 fps
n=0.150 L=517.0' S=0.0135 '/' Capacity=22.78 cfs Outflow=0.00 cfs 0.000 af

Pond 1P: Grassed UnderdrainedSoil Filter Peak Elev=33.01' Storage=2 cf Inflow=0.50 cfs 0.032 af
Outflow=0.48 cfs 0.032 af

Pond 2P: Permeable Paver Patio Peak Elev=34.60' Storage=85 cf Inflow=0.11 cfs 0.007 af
Discarded=0.01 cfs 0.007 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.007 af

Pond 303P: Swale-6 Peak Elev=31.52' Storage=91 cf Inflow=0.09 cfs 0.007 af
Discarded=0.02 cfs 0.007 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.007 af

Pond 304P: Swale-5 Peak Elev=32.44' Storage=44 cf Inflow=0.05 cfs 0.003 af
Discarded=0.01 cfs 0.003 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.003 af

Pond 305P: Swale-4 Peak Elev=33.56' Storage=72 cf Inflow=0.07 cfs 0.005 af
Discarded=0.02 cfs 0.005 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.005 af

Pond 306P: Swale-3 Peak Elev=35.10' Storage=346 cf Inflow=0.40 cfs 0.012 af
Discarded=0.06 cfs 0.012 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.012 af

Pond 307P: Swale-2 Peak Elev=36.35' Storage=685 cf Inflow=0.76 cfs 0.032 af
Discarded=0.10 cfs 0.024 af Primary=0.38 cfs 0.008 af Outflow=0.48 cfs 0.032 af

Pond 308P: Swale-1 Peak Elev=36.88' Storage=771 cf Inflow=0.84 cfs 0.092 af
Discarded=0.10 cfs 0.064 af Primary=0.73 cfs 0.028 af Outflow=0.83 cfs 0.092 af

Pond CB1: CB-1 Peak Elev=34.39' Inflow=0.46 cfs 0.044 af
12.0" Round Culvert n=0.012 L=90.0' S=0.0328 '/' Outflow=0.46 cfs 0.044 af

Pond CB2: CB-2 Peak Elev=31.73' Inflow=0.87 cfs 0.058 af
12.0" Round Culvert n=0.012 L=7.0' S=0.0143 '/' Outflow=0.87 cfs 0.058 af

Pond CB3: CB-3 Peak Elev=30.55' Inflow=1.02 cfs 0.072 af
10.0" Round Culvert n=0.012 L=6.0' S=0.0200 '/' Outflow=1.02 cfs 0.072 af

Pond CB4: CB-4 Peak Elev=31.23' Inflow=0.69 cfs 0.048 af
12.0" Round Culvert n=0.012 L=12.0' S=0.0167 '/' Outflow=0.69 cfs 0.048 af

Pond CB5: CB-5 Peak Elev=31.24' Inflow=0.76 cfs 0.052 af
12.0" Round Culvert n=0.012 L=82.0' S=0.0122 '/' Outflow=0.76 cfs 0.052 af

Pond CB6: CB-6 Peak Elev=30.40' Inflow=0.22 cfs 0.014 af
12.0" Round Culvert n=0.012 L=9.0' S=0.0111 '/' Outflow=0.22 cfs 0.014 af

Pond DET: Underground Detention System Peak Elev=30.55' Storage=0.162 af Inflow=4.69 cfs 0.367 af
Primary=1.13 cfs 0.363 af Secondary=0.00 cfs 0.000 af Outflow=1.13 cfs 0.363 af

Pond DMH1: DMH-1 Peak Elev=31.39' Inflow=1.07 cfs 0.101 af
15.0" Round Culvert n=0.012 L=11.0' S=0.0136 '/' Outflow=1.07 cfs 0.101 af

Pond DMH2: DMH-2 Peak Elev=30.55' Inflow=1.44 cfs 0.101 af
15.0" Round Culvert n=0.012 L=8.0' S=0.0088 '/' Outflow=1.44 cfs 0.101 af

Pond DMH3: DMH-3 Peak Elev=28.86' Inflow=1.16 cfs 0.377 af
12.0" Round Culvert n=0.012 L=28.0' S=0.0054 '/' Outflow=1.16 cfs 0.377 af

Pond DMH4: DMH-4 Peak Elev=27.25' Inflow=1.16 cfs 0.377 af
12.0" Round Culvert n=0.012 L=10.0' S=0.0100 '/' Outflow=1.16 cfs 0.377 af

Pond ECB1: Ex. CB1 Peak Elev=26.27' Inflow=2.50 cfs 0.491 af
30.0" Round Culvert n=0.012 L=39.0' S=0.0026 '/' Outflow=2.50 cfs 0.491 af

Pond ECB2: Ex. CB2 Peak Elev=26.79' Inflow=0.82 cfs 0.059 af
12.0" Round Culvert n=0.012 L=53.0' S=0.0132 '/' Outflow=0.82 cfs 0.059 af

Pond TF: Treatment Filter Peak Elev=28.19' Inflow=1.16 cfs 0.377 af
12.0" Round Culvert n=0.012 L=175.0' S=0.0049 '/' Outflow=1.16 cfs 0.377 af

Link DP#1: Design Point #1 Wetland Inflow=4.59 cfs 0.382 af
Primary=4.59 cfs 0.382 af

Link DP#2: Design Point #2 - Wetland Inflow=0.30 cfs 0.026 af
Primary=0.30 cfs 0.026 af

Link DP#3: Design Point #3 - Roadway Drainage System Inflow=2.85 cfs 0.522 af
Primary=2.85 cfs 0.522 af

Total Runoff Area = 6.073 ac Runoff Volume = 1.056 af Average Runoff Depth = 2.09"
47.72% Pervious = 2.898 ac 52.28% Impervious = 3.175 ac

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: To CB-1 Runoff Area=0.397 ac 18.25% Impervious Runoff Depth=2.51"
Flow Length=381' Tc=11.5 min CN=WQ Runoff=0.92 cfs 0.083 af

Subcatchment2S: To CB-2 Runoff Area=0.228 ac 98.80% Impervious Runoff Depth=4.63"
Flow Length=164' Slope=0.0400 '/' Tc=0.9 min CN=WQ Runoff=1.30 cfs 0.088 af

Subcatchment3S: To CB3 Runoff Area=0.314 ac 84.27% Impervious Runoff Depth=4.29"
Flow Length=89' Slope=0.0400 '/' Tc=2.7 min CN=WQ Runoff=1.57 cfs 0.112 af

Subcatchment4S: To CB4 Runoff Area=0.218 ac 79.40% Impervious Runoff Depth=4.17"
Flow Length=100' Slope=0.0400 '/' Tc=2.7 min CN=WQ Runoff=1.07 cfs 0.076 af

Subcatchment5S: To CB-5 Runoff Area=0.241 ac 76.03% Impervious Runoff Depth=4.09"
Flow Length=88' Slope=0.0400 '/' Tc=2.1 min CN=WQ Runoff=1.19 cfs 0.082 af

Subcatchment6S: To CB-6 Runoff Area=0.056 ac 100.00% Impervious Runoff Depth=4.66"
Flow Length=70' Slope=0.0400 '/' Tc=0.5 min CN=98 Runoff=0.33 cfs 0.022 af

Subcatchment7S: Patio Runoff Area=0.028 ac 100.00% Impervious Runoff Depth=4.66"
Tc=1.0 min CN=WQ Runoff=0.16 cfs 0.011 af

Subcatchment100S: Overland Flow to Runoff Area=2.189 ac 53.66% Impervious Runoff Depth=3.46"
Flow Length=506' Tc=7.4 min CN=WQ Runoff=7.67 cfs 0.632 af

Subcatchment200S: Overland Flow to Runoff Area=0.272 ac 7.37% Impervious Runoff Depth=2.28"
Flow Length=298' Tc=8.5 min CN=WQ Runoff=0.65 cfs 0.052 af

Subcatchment300S: To Rain Garden Runoff Area=0.297 ac 14.29% Impervious Runoff Depth=2.48"
Tc=0.0 min CN=WQ Runoff=1.01 cfs 0.061 af

Subcatchment301S: To Ex. CB-101 Runoff Area=0.288 ac 58.33% Impervious Runoff Depth=3.67"
Flow Length=211' Tc=4.0 min CN=WQ Runoff=1.21 cfs 0.088 af

Subcatchment302S: To Ex. CB2 Runoff Area=0.444 ac 26.00% Impervious Runoff Depth=2.88"
Flow Length=191' Slope=0.0500 '/' Tc=4.0 min CN=WQ Runoff=1.52 cfs 0.107 af

Subcatchment303S: To Swale-6 Runoff Area=0.072 ac 0.00% Impervious Runoff Depth=2.28"
Flow Length=174' Tc=5.6 min CN=74 Runoff=0.20 cfs 0.014 af

Subcatchment304S: To Swale-5 Runoff Area=0.037 ac 0.00% Impervious Runoff Depth=2.28"
Flow Length=82' Tc=3.7 min CN=74 Runoff=0.11 cfs 0.007 af

Subcatchment305S: To Swale-4 Runoff Area=0.058 ac 0.00% Impervious Runoff Depth=2.28"
Flow Length=105' Tc=5.6 min CN=74 Runoff=0.16 cfs 0.011 af

Subcatchment306S: To Swale-3 Runoff Area=0.042 ac 0.00% Impervious Runoff Depth=2.28"
Flow Length=68' Tc=3.4 min CN=74 Runoff=0.12 cfs 0.008 af

Subcatchment307S: To Swale-2 Runoff Area=0.048 ac 0.00% Impervious Runoff Depth=2.28"
Flow Length=65' Tc=3.1 min CN=74 Runoff=0.14 cfs 0.009 af

Subcatchment308S: To Swale-1 Runoff Area=0.483 ac 60.24% Impervious Runoff Depth=3.71"
Flow Length=287' Tc=17.2 min CN=WQ Runoff=1.37 cfs 0.149 af

SubcatchmentROOF: Building Roof Runoff Area=0.362 ac 100.00% Impervious Runoff Depth=4.66"
Tc=0.0 min CN=WQ Runoff=2.11 cfs 0.141 af

Reach 1R: Swale Avg. Flow Depth=0.00' Max Vel=0.00 fps
n=0.150 L=517.0' S=0.0135 '/' Capacity=22.78 cfs Outflow=0.00 cfs 0.000 af

Pond 1P: Grassed UnderdrainedSoil Filter Peak Elev=33.32' Storage=97 cf Inflow=1.01 cfs 0.061 af
Outflow=0.71 cfs 0.061 af

Pond 2P: Permeable Paver Patio Peak Elev=34.73' Storage=150 cf Inflow=0.16 cfs 0.011 af
Discarded=0.02 cfs 0.011 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.011 af

Pond 303P: Swale-6 Peak Elev=31.80' Storage=212 cf Inflow=0.20 cfs 0.014 af
Discarded=0.04 cfs 0.014 af Primary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.014 af

Pond 304P: Swale-5 Peak Elev=32.65' Storage=103 cf Inflow=0.11 cfs 0.007 af
Discarded=0.02 cfs 0.007 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.007 af

Pond 305P: Swale-4 Peak Elev=34.50' Storage=744 cf Inflow=0.74 cfs 0.027 af
Discarded=0.10 cfs 0.027 af Primary=0.00 cfs 0.000 af Outflow=0.10 cfs 0.027 af

Pond 306P: Swale-3 Peak Elev=35.68' Storage=979 cf Inflow=1.25 cfs 0.049 af
Discarded=0.13 cfs 0.033 af Primary=0.70 cfs 0.016 af Outflow=0.83 cfs 0.049 af

Pond 307P: Swale-2 Peak Elev=36.41' Storage=755 cf Inflow=1.32 cfs 0.074 af
Discarded=0.11 cfs 0.033 af Primary=1.20 cfs 0.041 af Outflow=1.30 cfs 0.074 af

Pond 308P: Swale-1 Peak Elev=36.91' Storage=813 cf Inflow=1.37 cfs 0.149 af
Discarded=0.10 cfs 0.085 af Primary=1.26 cfs 0.065 af Outflow=1.36 cfs 0.149 af

Pond CB1: CB-1 Peak Elev=34.54' Inflow=0.92 cfs 0.083 af
12.0" Round Culvert n=0.012 L=90.0' S=0.0328 '/' Outflow=0.92 cfs 0.083 af

Pond CB2: CB-2 Peak Elev=31.88' Inflow=1.30 cfs 0.088 af
12.0" Round Culvert n=0.012 L=7.0' S=0.0143 '/' Outflow=1.30 cfs 0.088 af

Pond CB3: CB-3 Peak Elev=31.19' Inflow=1.57 cfs 0.112 af
10.0" Round Culvert n=0.012 L=6.0' S=0.0200 '/' Outflow=1.57 cfs 0.112 af

Pond CB4: CB-4 Peak Elev=31.36' Inflow=1.07 cfs 0.076 af
12.0" Round Culvert n=0.012 L=12.0' S=0.0167 '/' Outflow=1.07 cfs 0.076 af

Pond CB5: CB-5 Peak Elev=31.44' Inflow=1.19 cfs 0.082 af
12.0" Round Culvert n=0.012 L=82.0' S=0.0122 '/' Outflow=1.19 cfs 0.082 af

Pond CB6: CB-6 Peak Elev=30.46' Inflow=0.33 cfs 0.022 af
12.0" Round Culvert n=0.012 L=9.0' S=0.0111 '/' Outflow=0.33 cfs 0.022 af

Pond DET: Underground Detention System Peak Elev=31.15' Storage=0.221 af Inflow=7.29 cfs 0.582 af
Primary=2.75 cfs 0.576 af Secondary=0.00 cfs 0.000 af Outflow=2.75 cfs 0.576 af

Pond DMH1: DMH-1 Peak Elev=31.56' Inflow=1.74 cfs 0.171 af
15.0" Round Culvert n=0.012 L=11.0' S=0.0136 '/' Outflow=1.74 cfs 0.171 af

Pond DMH2: DMH-2 Peak Elev=31.17' Inflow=2.25 cfs 0.158 af
15.0" Round Culvert n=0.012 L=8.0' S=0.0088 '/' Outflow=2.25 cfs 0.158 af

Pond DMH3: DMH-3 Peak Elev=29.60' Inflow=2.84 cfs 0.598 af
12.0" Round Culvert n=0.012 L=28.0' S=0.0054 '/' Outflow=2.84 cfs 0.598 af

Pond DMH4: DMH-4 Peak Elev=27.78' Inflow=2.84 cfs 0.598 af
12.0" Round Culvert n=0.012 L=10.0' S=0.0100 '/' Outflow=2.84 cfs 0.598 af

Pond ECB1: Ex. CB1 Peak Elev=26.61' Inflow=5.07 cfs 0.793 af
30.0" Round Culvert n=0.012 L=39.0' S=0.0026 '/' Outflow=5.07 cfs 0.793 af

Pond ECB2: Ex. CB2 Peak Elev=27.06' Inflow=1.52 cfs 0.107 af
12.0" Round Culvert n=0.012 L=53.0' S=0.0132 '/' Outflow=1.52 cfs 0.107 af

Pond TF: Treatment Filter Peak Elev=29.03' Inflow=2.84 cfs 0.598 af
12.0" Round Culvert n=0.012 L=175.0' S=0.0049 '/' Outflow=2.84 cfs 0.598 af

Link DP#1: Design Point #1 Wetland Inflow=7.67 cfs 0.632 af
Primary=7.67 cfs 0.632 af

Link DP#2: Design Point #2 - Wetland Inflow=0.65 cfs 0.052 af
Primary=0.65 cfs 0.052 af

Link DP#3: Design Point #3 - Roadway Drainage System Inflow=5.78 cfs 0.854 af
Primary=5.78 cfs 0.854 af

Total Runoff Area = 6.073 ac Runoff Volume = 1.752 af Average Runoff Depth = 3.46"
47.72% Pervious = 2.898 ac 52.28% Impervious = 3.175 ac

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: To CB-1 Runoff Area=0.397 ac 18.25% Impervious Runoff Depth=3.57"
Flow Length=381' Tc=11.5 min CN=WQ Runoff=1.33 cfs 0.118 af

Subcatchment2S: To CB-2 Runoff Area=0.228 ac 98.80% Impervious Runoff Depth=5.93"
Flow Length=164' Slope=0.0400 '/' Tc=0.9 min CN=WQ Runoff=1.65 cfs 0.112 af

Subcatchment3S: To CB3 Runoff Area=0.314 ac 84.27% Impervious Runoff Depth=5.55"
Flow Length=89' Slope=0.0400 '/' Tc=2.7 min CN=WQ Runoff=2.03 cfs 0.145 af

Subcatchment4S: To CB4 Runoff Area=0.218 ac 79.40% Impervious Runoff Depth=5.42"
Flow Length=100' Slope=0.0400 '/' Tc=2.7 min CN=WQ Runoff=1.38 cfs 0.099 af

Subcatchment5S: To CB-5 Runoff Area=0.241 ac 76.03% Impervious Runoff Depth=5.34"
Flow Length=88' Slope=0.0400 '/' Tc=2.1 min CN=WQ Runoff=1.54 cfs 0.107 af

Subcatchment6S: To CB-6 Runoff Area=0.056 ac 100.00% Impervious Runoff Depth=5.96"
Flow Length=70' Slope=0.0400 '/' Tc=0.5 min CN=98 Runoff=0.41 cfs 0.028 af

Subcatchment7S: Patio Runoff Area=0.028 ac 100.00% Impervious Runoff Depth=5.96"
Tc=1.0 min CN=WQ Runoff=0.20 cfs 0.014 af

Subcatchment100S: Overland Flow to Runoff Area=2.189 ac 53.66% Impervious Runoff Depth=4.63"
Flow Length=506' Tc=7.4 min CN=WQ Runoff=10.30 cfs 0.845 af

Subcatchment200S: Overland Flow to Runoff Area=0.272 ac 7.37% Impervious Runoff Depth=3.33"
Flow Length=298' Tc=8.5 min CN=WQ Runoff=0.95 cfs 0.075 af

Subcatchment300S: To Rain Garden Runoff Area=0.297 ac 14.29% Impervious Runoff Depth=3.55"
Tc=0.0 min CN=WQ Runoff=1.46 cfs 0.088 af

Subcatchment301S: To Ex. CB-101 Runoff Area=0.288 ac 58.33% Impervious Runoff Depth=4.87"
Flow Length=211' Tc=4.0 min CN=WQ Runoff=1.60 cfs 0.117 af

Subcatchment302S: To Ex. CB2 Runoff Area=0.444 ac 26.00% Impervious Runoff Depth=4.01"
Flow Length=191' Slope=0.0500 '/' Tc=4.0 min CN=WQ Runoff=2.13 cfs 0.148 af

Subcatchment303S: To Swale-6 Runoff Area=0.072 ac 0.00% Impervious Runoff Depth=3.35"
Flow Length=174' Tc=5.6 min CN=74 Runoff=0.29 cfs 0.020 af

Subcatchment304S: To Swale-5 Runoff Area=0.037 ac 0.00% Impervious Runoff Depth=3.35"
Flow Length=82' Tc=3.7 min CN=74 Runoff=0.16 cfs 0.010 af

Subcatchment305S: To Swale-4 Runoff Area=0.058 ac 0.00% Impervious Runoff Depth=3.35"
Flow Length=105' Tc=5.6 min CN=74 Runoff=0.23 cfs 0.016 af

Subcatchment306S: To Swale-3 Runoff Area=0.042 ac 0.00% Impervious Runoff Depth=3.35"
Flow Length=68' Tc=3.4 min CN=74 Runoff=0.18 cfs 0.012 af

Subcatchment307S: To Swale-2 Runoff Area=0.048 ac 0.00% Impervious Runoff Depth=3.35"
Flow Length=65' Tc=3.1 min CN=74 Runoff=0.21 cfs 0.013 af

Subcatchment308S: To Swale-1 Runoff Area=0.483 ac 60.24% Impervious Runoff Depth=4.92"
Flow Length=287' Tc=17.2 min CN=WQ Runoff=1.82 cfs 0.198 af

SubcatchmentROOF: Building Roof Runoff Area=0.362 ac 100.00% Impervious Runoff Depth=5.96"
Tc=0.0 min CN=WQ Runoff=2.68 cfs 0.180 af

Reach 1R: Swale Avg. Flow Depth=0.00' Max Vel=0.00 fps
n=0.150 L=517.0' S=0.0135 '/' Capacity=22.78 cfs Outflow=0.00 cfs 0.000 af

Pond 1P: Grassed UnderdrainedSoil Filter Peak Elev=33.71' Storage=217 cf Inflow=1.46 cfs 0.088 af
Outflow=0.93 cfs 0.088 af

Pond 2P: Permeable Paver Patio Peak Elev=34.86' Storage=209 cf Inflow=0.20 cfs 0.014 af
Discarded=0.02 cfs 0.014 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.014 af

Pond 303P: Swale-6 Peak Elev=32.13' Storage=458 cf Inflow=0.30 cfs 0.024 af
Discarded=0.07 cfs 0.024 af Primary=0.00 cfs 0.000 af Outflow=0.07 cfs 0.024 af

Pond 304P: Swale-5 Peak Elev=33.64' Storage=927 cf Inflow=1.10 cfs 0.035 af
Discarded=0.12 cfs 0.031 af Primary=0.27 cfs 0.004 af Outflow=0.39 cfs 0.035 af

Pond 305P: Swale-4 Peak Elev=34.70' Storage=1,016 cf Inflow=1.61 cfs 0.061 af
Discarded=0.13 cfs 0.036 af Primary=1.06 cfs 0.025 af Outflow=1.19 cfs 0.061 af

Pond 306P: Swale-3 Peak Elev=35.73' Storage=1,056 cf Inflow=1.73 cfs 0.083 af
Discarded=0.14 cfs 0.038 af Primary=1.51 cfs 0.045 af Outflow=1.65 cfs 0.083 af

Pond 307P: Swale-2 Peak Elev=36.44' Storage=788 cf Inflow=1.78 cfs 0.113 af
Discarded=0.11 cfs 0.042 af Primary=1.66 cfs 0.071 af Outflow=1.77 cfs 0.113 af

Pond 308P: Swale-1 Peak Elev=36.94' Storage=845 cf Inflow=1.82 cfs 0.198 af
Discarded=0.10 cfs 0.098 af Primary=1.70 cfs 0.099 af Outflow=1.80 cfs 0.198 af

Pond CB1: CB-1 Peak Elev=34.66' Inflow=1.33 cfs 0.118 af
12.0" Round Culvert n=0.012 L=90.0' S=0.0328 '/' Outflow=1.33 cfs 0.118 af

Pond CB2: CB-2 Peak Elev=31.99' Inflow=1.65 cfs 0.112 af
12.0" Round Culvert n=0.012 L=7.0' S=0.0143 '/' Outflow=1.65 cfs 0.112 af

Pond CB3: CB-3 Peak Elev=31.93' Inflow=2.03 cfs 0.145 af
10.0" Round Culvert n=0.012 L=6.0' S=0.0200 '/' Outflow=2.03 cfs 0.145 af

Pond CB4: CB-4 Peak Elev=31.92' Inflow=1.38 cfs 0.099 af
12.0" Round Culvert n=0.012 L=12.0' S=0.0167 '/' Outflow=1.38 cfs 0.099 af

Pond CB5: CB-5 Peak Elev=31.92' Inflow=1.54 cfs 0.107 af
12.0" Round Culvert n=0.012 L=82.0' S=0.0122 '/' Outflow=1.54 cfs 0.107 af

Pond CB6: CB-6 Peak Elev=31.48' Inflow=0.41 cfs 0.028 af
12.0" Round Culvert n=0.012 L=9.0' S=0.0111 '/' Outflow=0.41 cfs 0.028 af

Pond DET: Underground Detention System Peak Elev=31.89' Storage=0.276 af Inflow=9.44 cfs 0.761 af
Primary=4.06 cfs 0.755 af Secondary=0.00 cfs 0.000 af Outflow=4.06 cfs 0.755 af

Pond DMH1: DMH-1 Peak Elev=31.94' Inflow=2.31 cfs 0.231 af
15.0" Round Culvert n=0.012 L=11.0' S=0.0136 '/' Outflow=2.31 cfs 0.231 af

Pond DMH2: DMH-2 Peak Elev=31.91' Inflow=2.92 cfs 0.206 af
15.0" Round Culvert n=0.012 L=8.0' S=0.0088 '/' Outflow=2.92 cfs 0.206 af

Pond DMH3: DMH-3 Peak Elev=31.48' Inflow=4.15 cfs 0.782 af
12.0" Round Culvert n=0.012 L=28.0' S=0.0054 '/' Outflow=4.15 cfs 0.782 af

Pond DMH4: DMH-4 Peak Elev=28.29' Inflow=4.15 cfs 0.782 af
12.0" Round Culvert n=0.012 L=10.0' S=0.0100 '/' Outflow=4.15 cfs 0.782 af

Pond ECB1: Ex. CB1 Peak Elev=26.82' Inflow=6.94 cfs 1.048 af
30.0" Round Culvert n=0.012 L=39.0' S=0.0026 '/' Outflow=6.94 cfs 1.048 af

Pond ECB2: Ex. CB2 Peak Elev=27.29' Inflow=2.13 cfs 0.148 af
12.0" Round Culvert n=0.012 L=53.0' S=0.0132 '/' Outflow=2.13 cfs 0.148 af

Pond TF: Treatment Filter Peak Elev=30.74' Inflow=4.15 cfs 0.782 af
12.0" Round Culvert n=0.012 L=175.0' S=0.0049 '/' Outflow=4.15 cfs 0.782 af

Link DP#1: Design Point #1 Wetland Inflow=10.30 cfs 0.845 af
Primary=10.30 cfs 0.845 af

Link DP#2: Design Point #2 - Wetland Inflow=0.95 cfs 0.075 af
Primary=0.95 cfs 0.075 af

Link DP#3: Design Point #3 - Roadway Drainage System Inflow=7.87 cfs 1.136 af
Primary=7.87 cfs 1.136 af

Total Runoff Area = 6.073 ac Runoff Volume = 2.347 af Average Runoff Depth = 4.64"
47.72% Pervious = 2.898 ac 52.28% Impervious = 3.175 ac

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: To CB-1 Runoff Area=0.397 ac 18.25% Impervious Runoff Depth=4.52"
Flow Length=381' Tc=11.5 min CN=WQ Runoff=1.69 cfs 0.150 af

Subcatchment2S: To CB-2 Runoff Area=0.228 ac 98.80% Impervious Runoff Depth=7.03"
Flow Length=164' Slope=0.0400 '/' Tc=0.9 min CN=WQ Runoff=1.94 cfs 0.133 af

Subcatchment3S: To CB3 Runoff Area=0.314 ac 84.27% Impervious Runoff Depth=6.63"
Flow Length=89' Slope=0.0400 '/' Tc=2.7 min CN=WQ Runoff=2.41 cfs 0.173 af

Subcatchment4S: To CB4 Runoff Area=0.218 ac 79.40% Impervious Runoff Depth=6.49"
Flow Length=100' Slope=0.0400 '/' Tc=2.7 min CN=WQ Runoff=1.65 cfs 0.118 af

Subcatchment5S: To CB-5 Runoff Area=0.241 ac 76.03% Impervious Runoff Depth=6.40"
Flow Length=88' Slope=0.0400 '/' Tc=2.1 min CN=WQ Runoff=1.85 cfs 0.129 af

Subcatchment6S: To CB-6 Runoff Area=0.056 ac 100.00% Impervious Runoff Depth=7.06"
Flow Length=70' Slope=0.0400 '/' Tc=0.5 min CN=98 Runoff=0.49 cfs 0.033 af

Subcatchment7S: Patio Runoff Area=0.028 ac 100.00% Impervious Runoff Depth=7.06"
Tc=1.0 min CN=WQ Runoff=0.24 cfs 0.016 af

Subcatchment100S: Overland Flow to Runoff Area=2.189 ac 53.66% Impervious Runoff Depth=5.65"
Flow Length=506' Tc=7.4 min CN=WQ Runoff=12.56 cfs 1.031 af

Subcatchment200S: Overland Flow to Runoff Area=0.272 ac 7.37% Impervious Runoff Depth=4.26"
Flow Length=298' Tc=8.5 min CN=WQ Runoff=1.23 cfs 0.097 af

Subcatchment300S: To Rain Garden Runoff Area=0.297 ac 14.29% Impervious Runoff Depth=4.50"
Tc=0.0 min CN=WQ Runoff=1.85 cfs 0.111 af

Subcatchment301S: To Ex. CB-101 Runoff Area=0.288 ac 58.33% Impervious Runoff Depth=5.91"
Flow Length=211' Tc=4.0 min CN=WQ Runoff=1.94 cfs 0.142 af

Subcatchment302S: To Ex. CB2 Runoff Area=0.444 ac 26.00% Impervious Runoff Depth=5.00"
Flow Length=191' Slope=0.0500 '/' Tc=4.0 min CN=WQ Runoff=2.66 cfs 0.185 af

Subcatchment303S: To Swale-6 Runoff Area=0.072 ac 0.00% Impervious Runoff Depth=4.30"
Flow Length=174' Tc=5.6 min CN=74 Runoff=0.37 cfs 0.026 af

Subcatchment304S: To Swale-5 Runoff Area=0.037 ac 0.00% Impervious Runoff Depth=4.30"
Flow Length=82' Tc=3.7 min CN=74 Runoff=0.20 cfs 0.013 af

Subcatchment305S: To Swale-4 Runoff Area=0.058 ac 0.00% Impervious Runoff Depth=4.30"
Flow Length=105' Tc=5.6 min CN=74 Runoff=0.30 cfs 0.021 af

Subcatchment306S: To Swale-3 Runoff Area=0.042 ac 0.00% Impervious Runoff Depth=4.30"
Flow Length=68' Tc=3.4 min CN=74 Runoff=0.24 cfs 0.015 af

Subcatchment307S: To Swale-2 Runoff Area=0.048 ac 0.00% Impervious Runoff Depth=4.30"
Flow Length=65' Tc=3.1 min CN=74 Runoff=0.27 cfs 0.017 af

Subcatchment308S: To Swale-1 Runoff Area=0.483 ac 60.24% Impervious Runoff Depth=5.96"
Flow Length=287' Tc=17.2 min CN=WQ Runoff=2.20 cfs 0.240 af

SubcatchmentROOF: Building Roof Runoff Area=0.362 ac 100.00% Impervious Runoff Depth=7.06"
Tc=0.0 min CN=WQ Runoff=3.16 cfs 0.213 af

Reach 1R: Swale Avg. Flow Depth=0.00' Max Vel=0.00 fps
n=0.150 L=517.0' S=0.0135 '/' Capacity=22.78 cfs Outflow=0.00 cfs 0.000 af

Pond 1P: Grassed UnderdrainedSoil Filter Peak Elev=34.04' Storage=345 cf Inflow=1.85 cfs 0.111 af
Outflow=1.07 cfs 0.111 af

Pond 2P: Permeable Paver Patio Peak Elev=35.25' Storage=240 cf Inflow=0.24 cfs 0.016 af
Discarded=0.02 cfs 0.016 af Primary=0.05 cfs 0.001 af Outflow=0.07 cfs 0.016 af

Pond 303P: Swale-6 Peak Elev=32.59' Storage=992 cf Inflow=1.40 cfs 0.056 af
Discarded=0.13 cfs 0.040 af Primary=0.82 cfs 0.016 af Outflow=0.95 cfs 0.056 af

Pond 304P: Swale-5 Peak Elev=33.72' Storage=1,038 cf Inflow=1.90 cfs 0.064 af
Discarded=0.14 cfs 0.035 af Primary=1.31 cfs 0.030 af Outflow=1.44 cfs 0.064 af

Pond 305P: Swale-4 Peak Elev=34.75' Storage=1,083 cf Inflow=2.11 cfs 0.092 af
Discarded=0.14 cfs 0.040 af Primary=1.84 cfs 0.051 af Outflow=1.97 cfs 0.092 af

Pond 306P: Swale-3 Peak Elev=35.75' Storage=1,095 cf Inflow=2.15 cfs 0.115 af
Discarded=0.14 cfs 0.044 af Primary=1.98 cfs 0.071 af Outflow=2.13 cfs 0.115 af

Pond 307P: Swale-2 Peak Elev=36.46' Storage=815 cf Inflow=2.18 cfs 0.148 af
Discarded=0.11 cfs 0.049 af Primary=2.06 cfs 0.099 af Outflow=2.17 cfs 0.148 af

Pond 308P: Swale-1 Peak Elev=36.96' Storage=870 cf Inflow=2.20 cfs 0.240 af
Discarded=0.11 cfs 0.109 af Primary=2.08 cfs 0.131 af Outflow=2.19 cfs 0.240 af

Pond CB1: CB-1 Peak Elev=34.93' Inflow=1.69 cfs 0.150 af
12.0" Round Culvert n=0.012 L=90.0' S=0.0328 '/' Outflow=1.69 cfs 0.150 af

Pond CB2: CB-2 Peak Elev=34.52' Inflow=1.94 cfs 0.133 af
12.0" Round Culvert n=0.012 L=7.0' S=0.0143 '/' Outflow=1.94 cfs 0.133 af

Pond CB3: CB-3 Peak Elev=34.47' Inflow=2.41 cfs 0.173 af
10.0" Round Culvert n=0.012 L=6.0' S=0.0200 '/' Outflow=2.41 cfs 0.173 af

Pond CB4: CB-4 Peak Elev=34.42' Inflow=1.65 cfs 0.118 af
12.0" Round Culvert n=0.012 L=12.0' S=0.0167 '/' Outflow=1.65 cfs 0.118 af

Pond CB5: CB-5 Peak Elev=34.43' Inflow=1.85 cfs 0.129 af
12.0" Round Culvert n=0.012 L=82.0' S=0.0122 '/' Outflow=1.85 cfs 0.129 af

Pond CB6: CB-6 Peak Elev=33.80' Inflow=0.49 cfs 0.033 af
12.0" Round Culvert n=0.012 L=9.0' S=0.0111 '/' Outflow=0.49 cfs 0.033 af

Pond DET: Underground Detention System Peak Elev=34.31' Storage=0.303 af Inflow=11.28 cfs 0.915 af
Primary=5.19 cfs 0.890 af Secondary=2.76 cfs 0.018 af Outflow=6.32 cfs 0.908 af

Pond DMH1: DMH-1 Peak Elev=34.49' Inflow=2.80 cfs 0.283 af
15.0" Round Culvert n=0.012 L=11.0' S=0.0136 '/' Outflow=2.80 cfs 0.283 af

Pond DMH2: DMH-2 Peak Elev=34.39' Inflow=3.49 cfs 0.247 af
15.0" Round Culvert n=0.012 L=8.0' S=0.0088 '/' Outflow=3.49 cfs 0.247 af

Pond DMH3: DMH-3 Peak Elev=33.80' Inflow=5.33 cfs 0.923 af
12.0" Round Culvert n=0.012 L=28.0' S=0.0054 '/' Outflow=5.33 cfs 0.923 af

Pond DMH4: DMH-4 Peak Elev=29.08' Inflow=5.33 cfs 0.923 af
12.0" Round Culvert n=0.012 L=10.0' S=0.0100 '/' Outflow=5.33 cfs 0.923 af

Pond ECB1: Ex. CB1 Peak Elev=27.02' Inflow=8.95 cfs 1.284 af
30.0" Round Culvert n=0.012 L=39.0' S=0.0026 '/' Outflow=8.95 cfs 1.284 af

Pond ECB2: Ex. CB2 Peak Elev=27.46' Inflow=2.66 cfs 0.201 af
12.0" Round Culvert n=0.012 L=53.0' S=0.0132 '/' Outflow=2.66 cfs 0.201 af

Pond TF: Treatment Filter Peak Elev=32.63' Inflow=5.33 cfs 0.923 af
12.0" Round Culvert n=0.012 L=175.0' S=0.0049 '/' Outflow=5.33 cfs 0.923 af

Link DP#1: Design Point #1 Wetland Inflow=12.56 cfs 1.031 af
Primary=12.56 cfs 1.031 af

Link DP#2: Design Point #2 - Wetland Inflow=1.23 cfs 0.097 af
Primary=1.23 cfs 0.097 af

Link DP#3: Design Point #3 - Roadway Drainage System Inflow=9.95 cfs 1.395 af
Primary=9.95 cfs 1.395 af

Total Runoff Area = 6.073 ac Runoff Volume = 2.862 af Average Runoff Depth = 5.66"
47.72% Pervious = 2.898 ac 52.28% Impervious = 3.175 ac

Summary for Subcatchment 1S: To CB-1

Runoff = 1.33 cfs @ 12.16 hrs, Volume= 0.118 af, Depth= 3.57"
Routed to Pond CB1 : CB-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
0.076	74	>75% Grass cover, Good, HSG C
0.024	65	Brush, Good, HSG C
0.061	98	Paved parking, HSG C
0.012	98	Roofs, HSG C
0.190	70	Woods, Good, HSG C
0.035	72	Woods/grass comb., Good, HSG C
0.397		Weighted Average
0.324		81.75% Pervious Area
0.072		18.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	25	0.0300	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
5.3	277	0.0300	0.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	79	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
11.5	381	Total			

Summary for Subcatchment 2S: To CB-2

Runoff = 1.65 cfs @ 12.01 hrs, Volume= 0.112 af, Depth= 5.93"
Routed to Pond CB2 : CB-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
0.003	74	>75% Grass cover, Good, HSG C
0.225	98	Paved parking, HSG C
0.228		Weighted Average
0.003		1.20% Pervious Area
0.225		98.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	25	0.0400	1.40		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
0.6	139	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	164	Total			

Summary for Subcatchment 3S: To CB3

Runoff = 2.03 cfs @ 12.04 hrs, Volume= 0.145 af, Depth= 5.55"
Routed to Pond CB3 : CB-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
0.049	74	>75% Grass cover, Good, HSG C
0.264	98	Paved parking, HSG C
0.314		Weighted Average
0.049		15.73% Pervious Area
0.264		84.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	25	0.0400	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
0.3	64	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.7	89	Total			

Summary for Subcatchment 4S: To CB4

Runoff = 1.38 cfs @ 12.04 hrs, Volume= 0.099 af, Depth= 5.42"
Routed to Pond CB4 : CB-4

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
0.045	74	>75% Grass cover, Good, HSG C
0.173	98	Paved parking, HSG C
0.218		Weighted Average
0.045		20.60% Pervious Area
0.173		79.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	25	0.0400	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
0.3	75	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.7	100	Total			

Summary for Subcatchment 5S: To CB-5

Runoff = 1.54 cfs @ 12.03 hrs, Volume= 0.107 af, Depth= 5.34"
Routed to Pond CB5 : CB-5

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
0.058	74	>75% Grass cover, Good, HSG C
0.183	98	Paved parking, HSG C
0.241		Weighted Average
0.058		23.97% Pervious Area
0.183		76.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	17	0.0400	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
0.3	71	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.1	88	Total			

Summary for Subcatchment 6S: To CB-6

Runoff = 0.41 cfs @ 12.01 hrs, Volume= 0.028 af, Depth= 5.96"
Routed to Pond CB6 : CB-6

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
0.056	98	Paved parking, HSG C
0.056		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	25	0.0400	1.40		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
0.2	45	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	70	Total			

Summary for Subcatchment 7S: Patio

Runoff = 0.20 cfs @ 12.01 hrs, Volume= 0.014 af, Depth= 5.96"
Routed to Pond 2P : Permeable Paver Patio

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
0.000	74	>75% Grass cover, Good, HSG C
0.028	98	Paved parking, HSG C
0.028		Weighted Average
0.000		0.00% Pervious Area
0.028		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0					**Direct Entry,**

Summary for Subcatchment 100S: Overland Flow to Existing Wetland

Runoff = 10.30 cfs @ 12.10 hrs, Volume= 0.845 af, Depth= 4.63"
Routed to Link DP#1 : Design Point #1 Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
0.511	74	>75% Grass cover, Good, HSG C
0.141	65	Brush, Good, HSG C
1.099	98	Paved parking, HSG C
0.076	98	Roofs, HSG C
0.361	70	Woods, Good, HSG C
0.002	72	Woods/grass comb., Good, HSG C
2.189		Weighted Average
1.014		46.34% Pervious Area
1.175		53.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	25	0.0300	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
1.3	95	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	266	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.1	111	0.0300	0.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.0	9	0.6670	5.72		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.4	506	Total			

Summary for Subcatchment 200S: Overland Flow to Existing Wetland

Runoff = 0.95 cfs @ 12.12 hrs, Volume= 0.075 af, Depth= 3.33"
Routed to Link DP#2 : Design Point #2 - Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
0.086	74	>75% Grass cover, Good, HSG C
0.035	65	Brush, Good, HSG C
0.000	98	Paved parking, HSG C
0.020	98	Roofs, HSG C
0.018	70	Woods, Good, HSG C
0.113	72	Woods/grass comb., Good, HSG C
0.272		Weighted Average
0.252		92.63% Pervious Area
0.020		7.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	25	0.0800	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
3.2	164	0.0300	0.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.3	109	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.5	298	Total			

Summary for Subcatchment 300S: To Rain Garden

Runoff = 1.46 cfs @ 12.00 hrs, Volume= 0.088 af, Depth= 3.55"
Routed to Pond 1P : Grassed Underdrained Soil Filter

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
0.187	74	>75% Grass cover, Good, HSG C
0.058	65	Brush, Good, HSG C
0.003	98	Paved parking, HSG C
0.040	98	Roofs, HSG C
0.008	70	Woods, Good, HSG C
0.001	72	Woods/grass comb., Good, HSG C
0.297		Weighted Average
0.254		85.71% Pervious Area
0.042		14.29% Impervious Area

Summary for Subcatchment 301S: To Ex. CB-101

Runoff = 1.60 cfs @ 12.06 hrs, Volume= 0.117 af, Depth= 4.87"
Routed to Pond ECB1 : Ex. CB1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
0.120	74	>75% Grass cover, Good, HSG C
0.168	98	Paved parking, HSG C
0.288		Weighted Average
0.120		41.67% Pervious Area
0.168		58.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	25	0.0700	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
1.5	91	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	95	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.0	211	Total			

Summary for Subcatchment 302S: To Ex. CB2

Runoff = 2.13 cfs @ 12.06 hrs, Volume= 0.148 af, Depth= 4.01"
Routed to Pond ECB2 : Ex. CB2

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
0.276	74	>75% Grass cover, Good, HSG C
0.116	98	Paved parking, HSG C
0.053	72	Woods/grass comb., Good, HSG C
0.444		Weighted Average
0.329		74.00% Pervious Area
0.116		26.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	25	0.0500	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
1.7	156	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0500	4.54		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	5	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.0	191	Total			

Summary for Subcatchment 303S: To Swale-6

Runoff = 0.29 cfs @ 12.08 hrs, Volume= 0.020 af, Depth= 3.35"
Routed to Pond 303P : Swale-6

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
0.072	74	>75% Grass cover, Good, HSG C
0.072		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	25	0.0250	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
1.0	104	0.0560	1.66		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.7	45	0.0200	0.45	1.01	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=0.50' Z= 3.0 '/' Top.W=6.00' n= 0.240 Sheet flow over Dense Grass
5.6	174	Total			

Summary for Subcatchment 304S: To Swale-5

Runoff = 0.16 cfs @ 12.06 hrs, Volume= 0.010 af, Depth= 3.35"
Routed to Pond 304P : Swale-5

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
0.037	74	>75% Grass cover, Good, HSG C
0.037		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	25	0.0710	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
0.1	12	0.1000	2.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.7	45	0.0200	0.45	1.01	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=0.50' Z= 3.0 '/' Top.W=6.00' n= 0.240 Sheet flow over Dense Grass
3.7	82	Total			

Summary for Subcatchment 305S: To Swale-4

Runoff = 0.23 cfs @ 12.08 hrs, Volume= 0.016 af, Depth= 3.35"
Routed to Pond 305P : Swale-4

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
0.058	74	>75% Grass cover, Good, HSG C
0.058		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	25	0.0250	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
0.3	35	0.1000	2.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.4	45	0.0100	0.32	0.71	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=0.50' Z= 3.0 '/' Top.W=6.00' n= 0.240 Sheet flow over Dense Grass
5.6	105	Total			

Summary for Subcatchment 306S: To Swale-3

Runoff = 0.18 cfs @ 12.05 hrs, Volume= 0.012 af, Depth= 3.35"
Routed to Pond 306P : Swale-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
0.042	74	>75% Grass cover, Good, HSG C
0.042		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	23	0.3300	0.40		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
2.4	45	0.0100	0.32	0.71	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=0.50' Z= 3.0 '/' Top.W=6.00' n= 0.240 Sheet flow over Dense Grass
3.4	68	Total			

Summary for Subcatchment 307S: To Swale-2

Runoff = 0.21 cfs @ 12.05 hrs, Volume= 0.013 af, Depth= 3.35"
Routed to Pond 307P : Swale-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
0.048	74	>75% Grass cover, Good, HSG C
0.048		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	25	0.3300	0.40		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
2.1	40	0.0100	0.32	0.71	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=0.50' Z= 3.0 '/' Top.W=6.00' n= 0.240 Sheet flow over Dense Grass
3.1	65	Total			

Summary for Subcatchment 308S: To Swale-1

Runoff = 1.82 cfs @ 12.23 hrs, Volume= 0.198 af, Depth= 4.92"
Routed to Pond 308P : Swale-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
0.188	74	>75% Grass cover, Good, HSG C
0.004	65	Brush, Good, HSG C
0.291	98	Paved parking, HSG C
0.483		Weighted Average
0.192		39.76% Pervious Area
0.291		60.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	25	0.0170	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
13.8	262	0.0100	0.32	0.71	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=0.50' Z= 3.0 '/' Top.W=6.00' n= 0.240 Sheet flow over Dense Grass
17.2	287	Total			

Summary for Subcatchment ROOF: Building Roof

Runoff = 2.68 cfs @ 12.00 hrs, Volume= 0.180 af, Depth= 5.96"
Routed to Pond DET : Underground Detention System

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
0.008	98	Paved parking, HSG C
0.354	98	Roofs, HSG C
0.362		Weighted Average
0.362		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0					**Direct Entry,**

Summary for Reach 1R: Swale

Bank-Full Depth= 2.00' Flow Area= 18.0 sf, Capacity= 22.78 cfs

3.00' x 2.00' deep channel, n= 0.150 Sheet flow over Short Grass
Side Slope Z-value= 3.0 '/' Top Width= 15.00'
Length= 517.0' Slope= 0.0135 '/'
Inlet Invert= 38.00', Outlet Invert= 31.00'

‡

Summary for Pond 1P: Grassed Underdrained Soil Filter

Inflow Area = 0.297 ac, 14.29% Impervious, Inflow Depth = 3.55" for 25-year event
Inflow = 1.46 cfs @ 12.00 hrs, Volume= 0.088 af
Outflow = 0.93 cfs @ 12.07 hrs, Volume= 0.088 af, Atten= 36%, Lag= 3.9 min
Primary = 0.93 cfs @ 12.07 hrs, Volume= 0.088 af
Routed to Link DP#3 : Design Point #3 - Roadway Drainage System

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 33.71' @ 12.07 hrs Surf.Area= 867 sf Storage= 217 cf
Flood Elev= 35.00' Surf.Area= 1,371 sf Storage= 1,419 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.9 min (805.9 - 805.0)

Volume	Invert	Avail.Storage	Storage Description
#1	33.00'	1,419 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
33.00	867	159.0	0.0	0	0	867
33.99	867	159.0	35.0	300	300	1,024
34.00	867	159.0	100.0	9	309	1,026
35.00	1,371	177.0	100.0	1,109	1,419	1,536

Device	Routing	Invert	Outlet Devices
#1	Primary	32.50'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.93 cfs @ 12.07 hrs HW=33.71' TW=0.00' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 0.93 cfs @ 4.73 fps)

Summary for Pond 2P: Permeable Paver Patio

Inflow Area = 0.028 ac,100.00% Impervious, Inflow Depth = 5.96" for 25-year event
Inflow = 0.20 cfs @ 12.01 hrs, Volume= 0.014 af
Outflow = 0.02 cfs @ 12.84 hrs, Volume= 0.014 af, Atten= 92%, Lag= 49.6 min
Discarded = 0.02 cfs @ 12.84 hrs, Volume= 0.014 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond ECB1 : Ex. CB1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 34.86' @ 12.84 hrs Surf.Area= 1,200 sf Storage= 209 cf
Flood Elev= 35.25' Surf.Area= 1,200 sf Storage= 240 cf

Plug-Flow detention time= 95.7 min calculated for 0.014 af (100% of inflow)
Center-of-Mass det. time= 95.7 min (835.8 - 740.0)

Volume	Invert	Avail.Storage	Storage Description
#1	34.42'	240 cf	**15.00'W x 80.00'L x 0.50'H Prismatoid** 600 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	34.42'	**0.520 in/hr Exfiltration over Wetted area** Phase-In= 0.01'
#2	Primary	35.25'	**80.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Discarded OutFlow Max=0.02 cfs @ 12.84 hrs HW=34.86' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=34.42' TW=25.50' (Dynamic Tailwater)
2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 303P: Swale-6

Inflow Area = 0.740 ac, 39.30% Impervious, Inflow Depth = 0.39" for 25-year event
Inflow = 0.30 cfs @ 12.72 hrs, Volume= 0.024 af
Outflow = 0.07 cfs @ 12.92 hrs, Volume= 0.024 af, Atten= 76%, Lag= 12.0 min
Discarded = 0.07 cfs @ 12.92 hrs, Volume= 0.024 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond ECB2 : Ex. CB2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 32.13' @ 12.92 hrs Surf.Area= 907 sf Storage= 458 cf

Plug-Flow detention time= 84.9 min calculated for 0.024 af (100% of inflow)
Center-of-Mass det. time= 84.9 min (902.0 - 817.1)

Volume	Invert	Avail.Storage	Storage Description
#1	31.00'	1,727 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
31.00	59	41.0	0	0	59
32.00	771	249.0	348	348	4,861
33.00	2,095	457.0	1,379	1,727	16,552

Device	Routing	Invert	Outlet Devices
#1	Discarded	31.00'	**0.520 in/hr Exfiltration over Wetted area** Phase-In= 0.01'
#2	Primary	32.50'	**10.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 1.5' Crest Height

Discarded OutFlow Max=0.07 cfs @ 12.92 hrs HW=32.13' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=31.00' TW=26.30' (Dynamic Tailwater)
2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 304P: Swale-5

Inflow Area = 0.667 ac, 43.56% Impervious, Inflow Depth = 0.62" for 25-year event
Inflow = 1.10 cfs @ 12.45 hrs, Volume= 0.035 af
Outflow = 0.39 cfs @ 12.72 hrs, Volume= 0.035 af, Atten= 65%, Lag= 16.2 min
Discarded = 0.12 cfs @ 12.72 hrs, Volume= 0.031 af
Primary = 0.27 cfs @ 12.72 hrs, Volume= 0.004 af
Routed to Pond 303P : Swale-6

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 33.64' @ 12.72 hrs Surf.Area= 1,406 sf Storage= 927 cf

Plug-Flow detention time= 88.7 min calculated for 0.035 af (100% of inflow)
Center-of-Mass det. time= 88.7 min (863.8 - 775.1)

Volume	Invert	Avail.Storage	Storage Description
#1	32.10'	1,727 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
32.10	59	41.0	0	0	59
33.10	771	249.0	348	348	4,861
34.10	2,095	457.0	1,379	1,727	16,552

Device	Routing	Invert	Outlet Devices
#1	Discarded	32.10'	**0.520 in/hr Exfiltration over Wetted area** Phase-In= 0.01'
#2	Primary	33.60'	**10.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 1.5' Crest Height

Discarded OutFlow Max=0.12 cfs @ 12.72 hrs HW=33.64' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.12 cfs)

Primary OutFlow Max=0.26 cfs @ 12.72 hrs HW=33.64' TW=32.03' (Dynamic Tailwater)
↑—**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.26 cfs @ 0.66 fps)

Summary for Pond 305P: Swale-4

Inflow Area = 0.631 ac, 46.09% Impervious, Inflow Depth = 1.16" for 25-year event
Inflow = 1.61 cfs @ 12.31 hrs, Volume= 0.061 af
Outflow = 1.19 cfs @ 12.45 hrs, Volume= 0.061 af, Atten= 26%, Lag= 8.0 min
Discarded = 0.13 cfs @ 12.45 hrs, Volume= 0.036 af
Primary = 1.06 cfs @ 12.45 hrs, Volume= 0.025 af
Routed to Pond 304P : Swale-5

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 34.70' @ 12.45 hrs Surf.Area= 1,489 sf Storage= 1,016 cf

Plug-Flow detention time= 60.7 min calculated for 0.061 af (100% of inflow)
Center-of-Mass det. time= 60.7 min (830.3 - 769.6)

Volume	Invert	Avail.Storage	Storage Description
#1	33.10'	1,727 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
33.10	59	41.0	0	0	59
34.10	771	249.0	348	348	4,861
35.10	2,095	457.0	1,379	1,727	16,552

Device	Routing	Invert	Outlet Devices
#1	Discarded	33.10'	**0.520 in/hr Exfiltration over Wetted area** Phase-In= 0.01'
#2	Primary	34.60'	**10.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 1.5' Crest Height

Discarded OutFlow Max=0.13 cfs @ 12.45 hrs HW=34.70' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.13 cfs)

Primary OutFlow Max=1.06 cfs @ 12.45 hrs HW=34.70' TW=33.12' (Dynamic Tailwater)
2=Sharp-Crested Rectangular Weir (Weir Controls 1.06 cfs @ 1.05 fps)

Summary for Pond 306P: Swale-3

Inflow Area = 0.573 ac, 50.76% Impervious, Inflow Depth = 1.74" for 25-year event
Inflow = 1.73 cfs @ 12.26 hrs, Volume= 0.083 af
Outflow = 1.65 cfs @ 12.32 hrs, Volume= 0.083 af, Atten= 5%, Lag= 3.2 min
Discarded = 0.14 cfs @ 12.32 hrs, Volume= 0.038 af
Primary = 1.51 cfs @ 12.32 hrs, Volume= 0.045 af
Routed to Pond 305P : Swale-4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 35.73' @ 12.32 hrs Surf.Area= 1,527 sf Storage= 1,056 cf

Plug-Flow detention time= 48.7 min calculated for 0.083 af (100% of inflow)
Center-of-Mass det. time= 48.8 min (805.6 - 756.8)

Volume	Invert	Avail.Storage	Storage Description
#1	34.10'	1,727 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
34.10	59	41.0	0	0	59
35.10	771	249.0	348	348	4,861
36.10	2,095	457.0	1,379	1,727	16,552

Device	Routing	Invert	Outlet Devices
#1	Discarded	34.10'	**0.520 in/hr Exfiltration over Wetted area** Phase-In= 0.01'
#2	Primary	35.60'	**10.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 1.5' Crest Height

Discarded OutFlow Max=0.14 cfs @ 12.32 hrs HW=35.73' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.14 cfs)

Primary OutFlow Max=1.51 cfs @ 12.32 hrs HW=35.73' TW=34.38' (Dynamic Tailwater)
2=Sharp-Crested Rectangular Weir (Weir Controls 1.51 cfs @ 1.18 fps)

Summary for Pond 307P: Swale-2

Inflow Area = 0.530 ac, 54.83% Impervious, Inflow Depth = 2.55" for 25-year event
Inflow = 1.78 cfs @ 12.25 hrs, Volume= 0.113 af
Outflow = 1.77 cfs @ 12.26 hrs, Volume= 0.113 af, Atten= 1%, Lag= 1.2 min
Discarded = 0.11 cfs @ 12.26 hrs, Volume= 0.042 af
Primary = 1.66 cfs @ 12.26 hrs, Volume= 0.071 af
Routed to Pond 306P : Swale-3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 36.44' @ 12.26 hrs Surf.Area= 1,269 sf Storage= 788 cf

Plug-Flow detention time= 37.9 min calculated for 0.113 af (100% of inflow)
Center-of-Mass det. time= 37.9 min (797.0 - 759.2)

Volume	Invert	Avail.Storage	Storage Description
#1	35.00'	1,727 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
35.00	59	41.0	0	0	59
36.00	771	249.0	348	348	4,861
37.00	2,095	457.0	1,379	1,727	16,552

Device	Routing	Invert	Outlet Devices
#1	Discarded	35.00'	**0.520 in/hr Exfiltration over Wetted area** Phase-In= 0.01'
#2	Primary	36.30'	**10.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 1.5' Crest Height

Discarded OutFlow Max=0.11 cfs @ 12.26 hrs HW=36.44' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=1.66 cfs @ 12.26 hrs HW=36.44' TW=35.71' (Dynamic Tailwater)
2=Sharp-Crested Rectangular Weir (Weir Controls 1.66 cfs @ 1.22 fps)

Summary for Pond 308P: Swale-1

Inflow Area = 0.483 ac, 60.24% Impervious, Inflow Depth = 4.92" for 25-year event
Inflow = 1.82 cfs @ 12.23 hrs, Volume= 0.198 af
Outflow = 1.80 cfs @ 12.25 hrs, Volume= 0.198 af, Atten= 1%, Lag= 1.3 min
Discarded = 0.10 cfs @ 12.25 hrs, Volume= 0.098 af
Primary = 1.70 cfs @ 12.25 hrs, Volume= 0.099 af
Routed to Pond 307P : Swale-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 36.94' @ 12.25 hrs Surf.Area= 1,281 sf Storage= 845 cf

Plug-Flow detention time= 66.1 min calculated for 0.198 af (100% of inflow)
Center-of-Mass det. time= 66.1 min (843.6 - 777.4)

Volume	Invert	Avail.Storage	Storage Description
#1	35.30'	926 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
35.30	66	97.0	0	0	66
36.00	342	146.0	130	130	1,017
37.00	1,363	354.0	796	926	9,297

Device	Routing	Invert	Outlet Devices
#1	Discarded	35.30'	**0.520 in/hr Exfiltration over Wetted area** Phase-In= 0.01'
#2	Primary	36.80'	**10.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 1.5' Crest Height

Discarded OutFlow Max=0.10 cfs @ 12.25 hrs HW=36.94' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.10 cfs)

Primary OutFlow Max=1.70 cfs @ 12.25 hrs HW=36.94' TW=36.44' (Dynamic Tailwater)
↑—**2=Sharp-Crested Rectangular Weir** (Weir Controls 1.70 cfs @ 1.23 fps)

Summary for Pond CB1: CB-1

Inflow Area = 0.397 ac, 18.25% Impervious, Inflow Depth = 3.57" for 25-year event
Inflow = 1.33 cfs @ 12.16 hrs, Volume= 0.118 af
Outflow = 1.33 cfs @ 12.16 hrs, Volume= 0.118 af, Atten= 0%, Lag= 0.0 min
Primary = 1.33 cfs @ 12.16 hrs, Volume= 0.118 af
Routed to Pond DMH1 : DMH-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 34.66' @ 12.16 hrs
Flood Elev= 38.05'

Device	Routing	Invert	Outlet Devices
#1	Primary	34.05'	**12.0" Round Culvert** L= 90.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 34.05' / 31.10' S= 0.0328 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.33 cfs @ 12.16 hrs HW=34.66' TW=31.83' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 1.33 cfs @ 2.66 fps)

Summary for Pond CB2: CB-2

Inflow Area = 0.228 ac, 98.80% Impervious, Inflow Depth = 5.93" for 25-year event
Inflow = 1.65 cfs @ 12.01 hrs, Volume= 0.112 af
Outflow = 1.65 cfs @ 12.01 hrs, Volume= 0.112 af, Atten= 0%, Lag= 0.0 min
Primary = 1.65 cfs @ 12.01 hrs, Volume= 0.112 af
Routed to Pond DMH1 : DMH-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Peak Elev= 31.99' @ 12.01 hrs
Flood Elev= 35.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	31.20'	**12.0" Round Culvert** L= 7.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 31.20' / 31.10' S= 0.0143 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.63 cfs @ 12.01 hrs HW=31.99' TW=31.69' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 1.63 cfs @ 3.38 fps)

Summary for Pond CB3: CB-3

Inflow Area = 0.314 ac, 84.27% Impervious, Inflow Depth = 5.55" for 25-year event
Inflow = 2.03 cfs @ 12.04 hrs, Volume= 0.145 af
Outflow = 2.03 cfs @ 12.04 hrs, Volume= 0.145 af, Atten= 0%, Lag= 0.0 min
Primary = 2.03 cfs @ 12.04 hrs, Volume= 0.145 af
Routed to Pond DET : Underground Detention System

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 31.93' @ 12.34 hrs
Flood Elev= 33.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	29.80'	**10.0" Round Culvert** L= 6.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 29.80' / 29.68' S= 0.0200 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.55 sf

Primary OutFlow Max=1.92 cfs @ 12.04 hrs HW=31.75' TW=31.21' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 1.92 cfs @ 3.52 fps)

Summary for Pond CB4: CB-4

Inflow Area = 0.218 ac, 79.40% Impervious, Inflow Depth = 5.42" for 25-year event
Inflow = 1.38 cfs @ 12.04 hrs, Volume= 0.099 af
Outflow = 1.38 cfs @ 12.04 hrs, Volume= 0.099 af, Atten= 0%, Lag= 0.0 min
Primary = 1.38 cfs @ 12.04 hrs, Volume= 0.099 af
Routed to Pond DMH2 : DMH-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 31.92' @ 12.35 hrs
Flood Elev= 33.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	30.80'	**12.0" Round Culvert** L= 12.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 30.80' / 30.60' S= 0.0167 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.19 cfs @ 12.04 hrs HW=31.57' TW=31.39' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.19 cfs @ 2.53 fps)

Summary for Pond CB5: CB-5

Inflow Area = 0.241 ac, 76.03% Impervious, Inflow Depth = 5.34" for 25-year event
Inflow = 1.54 cfs @ 12.03 hrs, Volume= 0.107 af
Outflow = 1.54 cfs @ 12.03 hrs, Volume= 0.107 af, Atten= 0%, Lag= 0.0 min
Primary = 1.54 cfs @ 12.03 hrs, Volume= 0.107 af
Routed to Pond DMH2 : DMH-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 31.92' @ 12.35 hrs
Flood Elev= 33.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	30.80'	**12.0" Round Culvert** L= 82.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 30.80' / 29.80' S= 0.0122 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.39 cfs @ 12.03 hrs HW=31.68' TW=31.34' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.39 cfs @ 2.55 fps)

Summary for Pond CB6: CB-6

Inflow Area = 0.056 ac,100.00% Impervious, Inflow Depth = 5.96" for 25-year event
Inflow = 0.41 cfs @ 12.01 hrs, Volume= 0.028 af
Outflow = 0.41 cfs @ 12.01 hrs, Volume= 0.028 af, Atten= 0%, Lag= 0.0 min
Primary = 0.41 cfs @ 12.01 hrs, Volume= 0.028 af
Routed to Pond DMH3 : DMH-3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 31.48' @ 12.36 hrs
Flood Elev= 33.65'

Device	Routing	Invert	Outlet Devices
#1	Primary	30.15'	**12.0" Round Culvert** L= 9.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 30.15' / 30.05' S= 0.0111 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.41 cfs @ 12.01 hrs HW=30.50' TW=29.46' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.41 cfs @ 2.48 fps)

Summary for Pond DET: Underground Detention System

Inflow Area = 1.759 ac, 72.75% Impervious, Inflow Depth = 5.19" for 25-year event
Inflow = 9.44 cfs @ 12.02 hrs, Volume= 0.761 af
Outflow = 4.06 cfs @ 12.34 hrs, Volume= 0.755 af, Atten= 57%, Lag= 19.2 min
Primary = 4.06 cfs @ 12.34 hrs, Volume= 0.755 af
Routed to Pond DMH3 : DMH-3
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond ECB1 : Ex. CB1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 31.89' @ 12.33 hrs Surf.Area= 0.144 ac Storage= 0.276 af
Flood Elev= 32.35' Surf.Area= 0.144 ac Storage= 0.302 af

Plug-Flow detention time= 170.3 min calculated for 0.755 af (99% of inflow)
Center-of-Mass det. time= 164.5 min (920.8 - 756.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	28.85'	0.118 af	**44.25'W x 125.54'L x 3.50'H Field A** 0.446 af Overall - 0.152 af Embedded = 0.294 af x 40.0% Voids
#2A	29.35'	0.152 af	**ADS_StormTech SC-740 +Cap** x 144 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 144 Chambers in 9 Rows
#3B	28.85'	0.016 af	**6.25'W x 111.30'L x 3.50'H Field B** 0.056 af Overall - 0.015 af Embedded = 0.041 af x 40.0% Voids
#4B	29.35'	0.015 af	**ADS_StormTech SC-740 +Cap** x 14 Inside #3 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
#5	28.85'	0.002 af	**5.00'D x 5.25'H Vertical Cone/Cylinder**
		0.303 af	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	28.85'	**12.0" Round Culvert** L= 116.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 28.85' / 28.30' S= 0.0047 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	28.85'	**1.5" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	29.80'	**5.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#4	Device 1	30.50'	**6.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#5	Device 1	32.00'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Secondary	33.65'	**2.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50

Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88
2.85 3.07 3.20 3.32

Primary OutFlow Max=3.28 cfs @ 12.34 hrs HW=31.88' TW=30.64' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 3.28 cfs @ 4.17 fps)
  ├─**2=Orifice/Grate** (Passes < 0.13 cfs potential flow)
  ├─**3=Orifice/Grate** (Passes < 1.47 cfs potential flow)
  ├─**4=Orifice/Grate** (Passes < 2.01 cfs potential flow)
  └─**5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=28.85' TW=25.50' (Dynamic Tailwater)
└─**6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond DMH1: DMH-1

Inflow Area = 0.624 ac, 47.61% Impervious, Inflow Depth = 4.43" for 25-year event
Inflow = 2.31 cfs @ 12.02 hrs, Volume= 0.231 af
Outflow = 2.31 cfs @ 12.02 hrs, Volume= 0.231 af, Atten= 0%, Lag= 0.0 min
Primary = 2.31 cfs @ 12.02 hrs, Volume= 0.231 af
Routed to Pond DET : Underground Detention System

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 31.94' @ 12.34 hrs
Flood Elev= 35.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	30.85'	**15.0" Round Culvert** L= 11.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 30.85' / 30.70' S= 0.0136 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.30 cfs @ 12.02 hrs HW=31.70' TW=31.09' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 2.30 cfs @ 3.68 fps)

Summary for Pond DMH2: DMH-2

Inflow Area = 0.459 ac, 77.63% Impervious, Inflow Depth = 5.38" for 25-year event
Inflow = 2.92 cfs @ 12.03 hrs, Volume= 0.206 af
Outflow = 2.92 cfs @ 12.03 hrs, Volume= 0.206 af, Atten= 0%, Lag= 0.0 min
Primary = 2.92 cfs @ 12.03 hrs, Volume= 0.206 af
Routed to Pond DET : Underground Detention System

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 31.91' @ 12.34 hrs
Flood Elev= 34.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	29.55'	**15.0" Round Culvert** L= 8.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 29.55' / 29.48' S= 0.0088 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.52 cfs @ 12.03 hrs HW=31.36' TW=31.18' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.52 cfs @ 2.05 fps)

Summary for Pond DMH3: DMH-3

Inflow Area = 1.815 ac, 73.60% Impervious, Inflow Depth > 5.17" for 25-year event
Inflow = 4.15 cfs @ 12.34 hrs, Volume= 0.782 af
Outflow = 4.15 cfs @ 12.34 hrs, Volume= 0.782 af, Atten= 0%, Lag= 0.0 min
Primary = 4.15 cfs @ 12.34 hrs, Volume= 0.782 af
Routed to Pond TF : Treatment Filter

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 31.48' @ 12.35 hrs
Flood Elev= 33.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	28.20'	**12.0" Round Culvert** L= 28.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 28.20' / 28.05' S= 0.0054 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.52 cfs @ 12.34 hrs HW=30.63' TW=30.47' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.52 cfs @ 1.94 fps)

Summary for Pond DMH4: DMH-4

Inflow Area = 1.815 ac, 73.60% Impervious, Inflow Depth > 5.17" for 25-year event
Inflow = 4.15 cfs @ 12.34 hrs, Volume= 0.782 af
Outflow = 4.15 cfs @ 12.34 hrs, Volume= 0.782 af, Atten= 0%, Lag= 0.0 min
Primary = 4.15 cfs @ 12.34 hrs, Volume= 0.782 af
Routed to Pond ECB1 : Ex. CB1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 28.29' @ 12.34 hrs
Flood Elev= 31.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	26.60'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 26.60' / 26.50' S= 0.0100 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=4.02 cfs @ 12.34 hrs HW=28.23' TW=26.63' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.02 cfs @ 5.12 fps)

Summary for Pond ECB1: Ex. CB1

Inflow Area = 3.315 ac, 58.46% Impervious, Inflow Depth > 3.79" for 25-year event
Inflow = 6.94 cfs @ 12.06 hrs, Volume= 1.048 af
Outflow = 6.94 cfs @ 12.06 hrs, Volume= 1.048 af, Atten= 0%, Lag= 0.0 min
Primary = 6.94 cfs @ 12.06 hrs, Volume= 1.048 af
Routed to Link DP#3 : Design Point #3 - Roadway Drainage System

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 26.82' @ 12.06 hrs
Flood Elev= 30.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	25.50'	**30.0" Round Culvert** L= 39.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 25.50' / 25.40' S= 0.0026 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 4.91 sf

Primary OutFlow Max=6.94 cfs @ 12.06 hrs HW=26.82' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 6.94 cfs @ 3.84 fps)

Summary for Pond ECB2: Ex. CB2

Inflow Area = 1.184 ac, 34.31% Impervious, Inflow Depth = 1.50" for 25-year event
Inflow = 2.13 cfs @ 12.06 hrs, Volume= 0.148 af
Outflow = 2.13 cfs @ 12.06 hrs, Volume= 0.148 af, Atten= 0%, Lag= 0.0 min
Primary = 2.13 cfs @ 12.06 hrs, Volume= 0.148 af
Routed to Pond ECB1 : Ex. CB1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 27.29' @ 12.06 hrs
Flood Elev= 29.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	26.30'	**12.0" Round Culvert** L= 53.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 26.30' / 25.60' S= 0.0132 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.13 cfs @ 12.06 hrs HW=27.29' TW=26.82' (Dynamic Tailwater)
1=Culvert (Outlet Controls 2.13 cfs @ 3.40 fps)

Summary for Pond TF: Treatment Filter

Inflow Area = 1.815 ac, 73.60% Impervious, Inflow Depth > 5.17" for 25-year event
Inflow = 4.15 cfs @ 12.34 hrs, Volume= 0.782 af
Outflow = 4.15 cfs @ 12.34 hrs, Volume= 0.782 af, Atten= 0%, Lag= 0.0 min
Primary = 4.15 cfs @ 12.34 hrs, Volume= 0.782 af
Routed to Pond DMH4 : DMH-4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Peak Elev= 30.74' @ 12.35 hrs
Flood Elev= 34.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	27.55'	**12.0" Round Culvert** L= 175.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.55' / 26.70' S= 0.0049 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.79 cfs @ 12.34 hrs HW=30.47' TW=28.23' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 3.79 cfs @ 4.83 fps)

Summary for Link DP#1: Design Point #1 Wetland

Inflow Area = 2.189 ac, 53.66% Impervious, Inflow Depth = 4.63" for 25-year event
Inflow = 10.30 cfs @ 12.10 hrs, Volume= 0.845 af
Primary = 10.30 cfs @ 12.10 hrs, Volume= 0.845 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Summary for Link DP#2: Design Point #2 - Wetland

Inflow Area = 0.272 ac, 7.37% Impervious, Inflow Depth = 3.33" for 25-year event
Inflow = 0.95 cfs @ 12.12 hrs, Volume= 0.075 af
Primary = 0.95 cfs @ 12.12 hrs, Volume= 0.075 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Summary for Link DP#3: Design Point #3 - Roadway Drainage System

Inflow Area = 3.611 ac, 54.83% Impervious, Inflow Depth > 3.77" for 25-year event
Inflow = 7.87 cfs @ 12.06 hrs, Volume= 1.136 af
Primary = 7.87 cfs @ 12.06 hrs, Volume= 1.136 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

APPENDIX F

Supplemental Calculations and Backup Data

Hydro International

First Defense® High Capacity

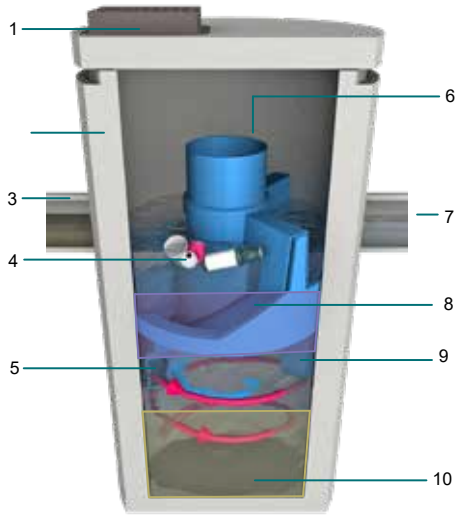
Advanced Hydrodynamic Separator

Product Summary

A Simple Solution for your Trickiest Sites

First Defense® High Capacity is a versatile stormwater separator with some of the highest approved flow rates in the United States, enabling engineers and contractors to save site space and projects costs by using the smallest possible footprint. It also works with single and multiple inlet pipes and inlet grates has an internal bypass to convey infrequent peak flows directly to the outlet.

Fig.1 The First Defense® High Capacity has internal components designed to efficiently capture pollutants and prevent washout at



Product Profile

1. Inlet Grate (optional)
2. Precast chamber
3. Inlet Pipe (optional)
4. Floatables Draw Off Slot (not pictured)
5. Inlet Chute
6. Internal Bypass
7. Outlet pipe
8. Oil and Floatables Storage
9. Outlet chute
10. Sediment Storage Sump

Applications

- Areas requiring a minimum of 50% TSS removal
- Stormwater treatment at the point of entry into the drainage line
- Sites constrained by space, topography or drainage profiles with limited slope and depth of cover
- Highways, car parks, industrial areas and urban developments
- Pre-treatment to ponds, storage systems, green infrastructure

How it Works

Highest Flow through the Smallest Footprint

Contaminated stormwater runoff enters the inlet chute from a surface grate and/or inlet pipe. The inlet chute introduces flow into the chamber tangentially to create a low energy vortex flow regime (magenta arrow) that directs sediment into the sump while oils, floating trash and debris rise to the surface.

Treated stormwater exits through a submerged outlet chute located opposite to the direction of the rotating flow (blue arrow). Enhanced vortex separation is provided by forcing the rotating flow within the vessel to follow the longest path possible rather than directly from inlet to outlet.

Higher flows bypass the treatment chamber to prevent turbulence and washout of captured pollutants. An internal bypass conveys infrequent peak flows directly to the outlet eliminating the need for, and expense of, external bypass control structures. A floatables draw off slot functions to convey floatables into the treatment chamber prior to bypass.

Benefits

Small & Simple

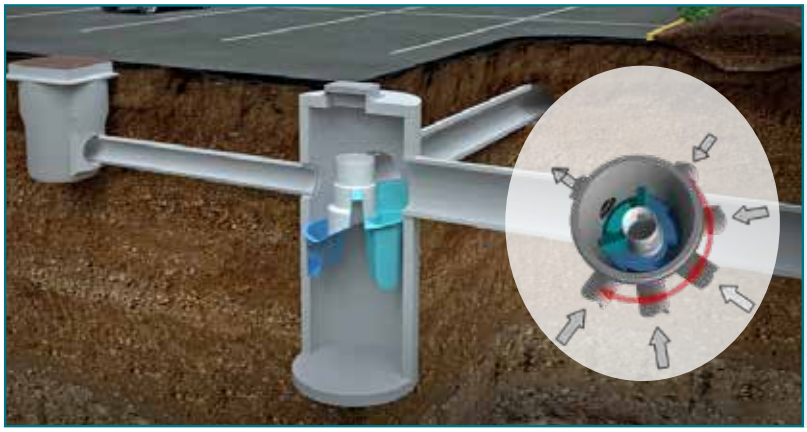
- Cut footprint size, cut costs: First Defense® provides space-saving, easy-to-install surface water treatment in standard sized chambers/ manholes.
- Adapt to site limitations: Variable configuratoins will help you effectively slip First Defense® into a tight spot. It also works well with large pipes, multiple inlet pipes and inlet grates.
- Save installation time: Every First Defense® unit is delivered to site pre-assembled and ready for installation – so installation is as easy as fitting any chamber/manhole.

Stormwater Solutions

→ hydro-int.com/firstdefense

Sizing & Design

This adaptable online treatment system works easily with large pipes, multiple inlet pipes, inlet grates and now, contains a high capacity bypass for the conveyance of large peak flows. Designed with site flexibility in mind, the First Defense® High Capacity allows engineers to maximize available site space without compromising treatment level.



Free Sizing Tool

This simple online tool will recommend the best separator, model size and online/offline arrangement based on site-specific data entered by the user.

Go to hydro-int.com/sizing to access the tool.

First Defense® High Capacity Model Number	Diameter	Typical TSS Treatment Flow Rates		Peak Online Flow Rate	Maximum Pipe Diameter[1]	Oil Storage Capacity	Typical Sediment Storage Capacity[2]	Minimum Distance from Outlet Invert to Top of Rim[3]	Standard Distance from Outlet Invert to Sump Floor
		NJDEP Certified	110µm						
	(ft / m)	(cfs / L/s)	(cfs / L/s)	(cfs / L/s)	(in / mm)	(gal / L)	(yd^3 / m^3)	(ft / m)	(ft / m)
FD-3HC	3 / 0.9	0.84 / 23.7	1.06 / 30.0	15 / 424	18 / 450	125 / 473	0.4 / 0.3	2.0 - 3.5 / 0.6 - 1.0	3.71 / 1.13
FD-4HC	4 / 1.2	1.50 / 42.4	1.88 / 53.2	18 / 510	24 / 600	191 / 723	0.7 / 0.5	2.3 - 3.9 / 0.7 - 1.2	4.97 / 1.5
FD-5HC	5 / 1.5	2.35 / 66.2	2.94 / 83.2	20 / 566	24 / 600	300 / 1135	1.1 / .84	2.5 - 4.5 / 0.7 - 1.3	5.19 / 1.5
FD-6HC	6 / 1.8	3.38 / 95.7	4.23 / 119.8	32 / 906	30 / 750	496 / 1,878	1.6 / 1.2	3.0 - 5.1 / 0.9 - 1.6	5.97 / 1.8
FD-8HC	8 / 2.4	6.00 / 169.9	7.52 / 212.9	50 / 1415	48 / 1200	1120 / 4239	2.8 / 2.1	3.0 - 6.0 / 0.9 -1.8	7.40 / 2.2
FD-10HC	10 / 3.0	9.38 / 265.6	11.75 / 332.7	50 / 1415	48 / 1200	1742 / 6594	4.4 / 3.3	6.5 -8.0 / 2.0 - 2.4	10.25 / 3.12

[1]Contact Hydro International when larger pipe sizes are required.
[2]Contact Hydro International when custom sediment storage capacity is required.
[3]Minimum distance for models depends on pipe diameter.

Maintenance

Easy vactor hose access through the center shaft of the system makes for quick, simple sump cleanout while trash and floatables can be fished out from the surface with a net.

Nobody maintains our systems better than we do. To ensure optimal, ongoing device performance, be sure to recommend Hydro International as a preferred service and maintenance provider to your clients.

Hydro International

Hydro International, 94 Hutchins Drive, Portland, ME 04102
Tel: (207) 756-6200
Email: stormwaterinquiry@hydro-int.com
Web: www.hydro-int.com/firstdefense

FD_SS_B_2105

Download Drawings!

→ hydro-int.com/fddrawings

Access the Operation & Maintenance Manual

→ hydro-int.com/fd-om

Jellyfish Design Calculation

CONTECH Stormwater Solutions Inc. Engineer	DRA	
Date Prepared:	**8/16/2023**	

Site Information

Project Name	**Proposed Hotel Old Post Road**	
Project State	**ME**	
Project City	**Kittery**	
Site Designation:	**JF**	
Total Drainage Area, Ad	**1.88**	ac
Post Development Impervious Area, Ai	**1.35**	ac
Pervious Area, Ap	**0.52**	ac
% Impervious	**72**	%
Runoff Coefficient, Rc	**0.70**	

Upstream Detention System

Detention pretreatment credit	**50%**	

Mass Loading Calculations

Mean Annual Rainfall, P	**46.7**	in
Agency Required % Removal	**80%**	
Percent Runoff Capture	**90%**	
Mean Annual Runoff, Vt	**199,949**	ft^3
Event Mean Concentration of Pollutant, EMC	**75**	mg/l
Annual Mass Load, M total	**936**	lbs

Water Quality Volume

90% Rainfall Depth	**0.95**	in	
Volume to be treated	**0.104**	ac-ft	
Volume to be treated by filters	**5,668**	ft^3	(provided)

Filter System

Filtration Brand	**Jelly Fish**	
Cartridge Length	**54**	in

Jelly Fish Sizing

Mass removed by pretreatment system	**468**	lbs
Mass load to filters after pretreatment	**468**	lbs
Mass to be Captured by System	**374**	lbs

Method to Use **MASS LOADING**

Summary			
Mass	Treatment Mass	438.00	lbs
	Required Size	**JF6-3-1**	

Hydrograph for Pond DET: Underground Detention System

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	28.85	0.00
0.10	0.00	0.000	28.85	0.00
0.20	0.00	0.000	28.85	0.00
0.30	0.00	0.000	28.85	0.00
0.40	0.00	0.000	28.85	0.00
0.50	0.00	0.000	28.85	0.00
0.60	0.00	0.000	28.85	0.00
0.70	0.00	0.000	28.85	0.00
0.80	0.00	0.000	28.85	0.00
0.90	0.00	0.000	28.85	0.00
1.00	0.00	0.000	28.85	0.00
1.10	0.00	0.000	28.85	0.00
1.20	0.00	0.000	28.85	0.00
1.30	0.00	0.000	28.85	0.00
1.40	0.00	0.000	28.85	0.00
1.50	0.00	0.000	28.85	0.00
1.60	0.00	0.000	28.85	0.00
1.70	0.00	0.000	28.85	0.00
1.80	0.00	0.000	28.85	0.00
1.90	0.00	0.000	28.85	0.00
2.00	0.00	0.000	28.85	0.00
2.10	0.00	0.000	28.85	0.00
2.20	0.00	0.000	28.85	0.00
2.30	0.00	0.000	28.85	0.00
2.40	0.00	0.000	28.85	0.00
2.50	0.00	0.000	28.85	0.00
2.60	0.00	0.000	28.85	0.00
2.70	0.00	0.000	28.85	0.00
2.80	0.00	0.000	28.85	0.00
2.90	0.00	0.000	28.85	0.00
3.00	0.00	0.000	28.85	0.00
3.10	0.00	0.000	28.85	0.00
3.20	0.00	0.000	28.85	0.00
3.30	0.00	0.000	28.85	0.00
3.40	0.00	0.000	28.85	0.00
3.50	0.00	0.000	28.85	0.00
3.60	0.00	0.000	28.85	0.00
3.70	0.00	0.000	28.85	0.00
3.80	0.00	0.000	28.85	0.00
3.90	0.00	0.000	28.85	0.00
4.00	0.00	0.000	28.85	0.00
4.10	0.00	0.000	28.85	0.00
4.20	0.01	0.000	28.86	0.00
4.30	0.01	0.000	28.86	0.00
4.40	0.01	0.000	28.86	0.00
4.50	0.01	0.000	28.86	0.00
4.60	0.01	0.000	28.86	0.00
4.70	0.01	0.001	28.86	0.00
4.80	0.01	0.001	28.86	0.00
4.90	0.01	0.001	28.86	0.00
5.00	0.01	0.001	28.86	0.00

Hydrograph for Pond DET: Underground Detention System (continued)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
5.10	0.01	0.001	28.86	0.00
5.20	0.01	0.001	28.87	0.00
5.30	0.01	0.001	28.87	0.00
5.40	0.01	0.001	28.87	0.00
5.50	0.01	0.001	28.87	0.00
5.60	0.01	0.001	28.87	0.00
5.70	0.01	0.001	28.87	0.00
5.80	0.01	0.001	28.88	0.00
5.90	0.01	0.001	28.88	0.00
6.00	0.01	0.001	28.88	0.00
6.10	0.01	0.002	28.88	0.00
6.20	0.01	0.002	28.88	0.00
6.30	0.01	0.002	28.88	0.00
6.40	0.02	0.002	28.89	0.00
6.50	0.02	0.002	28.89	0.00
6.60	0.02	0.002	28.89	0.00
6.70	0.02	0.002	28.89	0.00
6.80	0.02	0.002	28.89	0.01
6.90	0.02	0.002	28.90	0.01
7.00	0.02	0.003	28.90	0.01
7.10	0.02	0.003	28.90	0.01
7.20	0.02	0.003	28.90	0.01
7.30	0.02	0.003	28.90	0.01
7.40	0.02	0.003	28.91	0.01
7.50	0.03	0.003	28.91	0.01
7.60	0.03	0.003	28.91	0.01
7.70	0.03	0.003	28.91	0.01
7.80	0.03	0.004	28.92	0.01
7.90	0.03	0.004	28.92	0.01
8.00	0.03	0.004	28.92	0.01
8.10	0.03	0.004	28.92	0.01
8.20	0.03	0.004	28.93	0.02
8.30	0.04	0.004	28.93	0.02
8.40	0.04	0.004	28.93	0.02
8.50	0.04	0.005	28.94	0.02
8.60	0.04	0.005	28.94	0.02
8.70	0.04	0.005	28.94	0.02
8.80	0.05	0.005	28.95	0.02
8.90	0.05	0.005	28.95	0.02
9.00	0.05	0.006	28.95	0.02
9.10	0.05	0.006	28.96	0.03
9.20	0.05	0.006	28.96	0.03
9.30	0.06	0.006	28.97	0.03
9.40	0.06	0.006	28.97	0.03
9.50	0.06	0.007	28.98	0.03
9.60	0.06	0.007	28.98	0.03
9.70	0.06	0.007	28.99	0.03
9.80	0.07	0.007	28.99	0.03
9.90	0.07	0.008	29.00	0.03
10.00	0.07	0.008	29.00	0.04
10.10	0.08	0.008	29.01	0.04

Hydrograph for Pond DET: Underground Detention System (continued)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
10.20	0.08	0.009	29.01	0.04
10.30	0.08	0.009	29.02	0.04
10.40	0.09	0.009	29.03	0.04
10.50	0.09	0.010	29.04	0.04
10.60	0.10	0.010	29.04	0.04
10.70	0.10	0.011	29.05	0.04
10.80	0.11	0.011	29.06	0.05
10.90	0.11	0.012	29.07	0.05
11.00	0.12	0.012	29.08	0.05
11.10	0.13	0.013	29.09	0.05
11.20	0.14	0.014	29.11	0.05
11.30	0.16	0.014	29.12	0.05
11.40	0.18	0.015	29.14	0.06
11.50	0.19	0.016	29.16	0.06
11.60	0.31	0.018	29.19	0.06
11.70	0.46	0.021	29.24	0.07
11.80	0.61	0.024	29.31	0.07
11.90	0.78	0.029	29.38	0.08
12.00	**1.78**	0.039	29.46	0.09
12.10	**1.18**	0.052	29.58	0.10
12.20	0.79	0.058	29.64	0.10
12.30	0.62	0.063	29.68	0.10
12.40	0.45	0.067	29.72	0.11
12.50	0.29	0.069	29.74	0.11
12.60	0.23	0.070	29.75	0.11
12.70	0.20	0.071	29.75	0.11
12.80	0.18	0.072	29.76	0.11
12.90	0.17	0.072	29.77	0.11
13.00	0.15	0.073	29.77	0.11
13.10	0.14	0.073	29.77	0.11
13.20	0.14	0.073	29.77	0.11
13.30	0.13	0.074	29.78	0.11
13.40	0.13	0.074	29.78	0.11
13.50	0.12	0.074	29.78	0.11
13.60	0.12	0.074	29.78	0.11
13.70	0.11	**0.074**	**29.78**	**0.11**
13.80	0.11	**0.074**	**29.78**	**0.11**
13.90	0.10	0.074	29.78	0.11
14.00	0.10	0.074	29.78	0.11
14.10	0.10	0.074	29.78	0.11
14.20	0.09	0.074	29.78	0.11
14.30	0.09	0.073	29.78	0.11
14.40	0.09	0.073	29.77	0.11
14.50	0.09	0.073	29.77	0.11
14.60	0.09	0.073	29.77	0.11
14.70	0.08	0.073	29.77	0.11
14.80	0.08	0.072	29.77	0.11
14.90	0.08	0.072	29.76	0.11
15.00	0.08	0.072	29.76	0.11
15.10	0.07	0.072	29.76	0.11
15.20	0.07	0.071	29.76	0.11

Hydrograph for Pond DET: Underground Detention System (continued)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
15.30	0.07	0.071	29.75	0.11
15.40	0.07	0.071	29.75	0.11
15.50	0.06	0.070	29.75	0.11
15.60	0.06	0.070	29.74	0.11
15.70	0.06	0.070	29.74	0.11
15.80	0.06	0.069	29.74	0.11
15.90	0.06	0.069	29.73	0.11
16.00	0.05	0.068	29.73	0.11
16.10	0.05	0.068	29.73	0.11
16.20	0.05	0.068	29.72	0.11
16.30	0.05	0.067	29.72	0.11
16.40	0.05	0.067	29.71	0.11
16.50	0.05	0.066	29.71	0.11
16.60	0.05	0.066	29.70	0.11
16.70	0.05	0.065	29.70	0.10
16.80	0.05	0.065	29.70	0.10
16.90	0.04	0.064	29.69	0.10
17.00	0.04	0.064	29.69	0.10
17.10	0.04	0.063	29.68	0.10
17.20	0.04	0.063	29.68	0.10
17.30	0.04	0.062	29.67	0.10
17.40	0.04	0.062	29.67	0.10
17.50	0.04	0.061	29.66	0.10
17.60	0.04	0.061	29.66	0.10
17.70	0.04	0.060	29.65	0.10
17.80	0.04	0.059	29.65	0.10
17.90	0.03	0.059	29.64	0.10
18.00	0.03	0.058	29.64	0.10
18.10	0.03	0.058	29.63	0.10
18.20	0.03	0.057	29.63	0.10
18.30	0.03	0.057	29.62	0.10
18.40	0.03	0.056	29.62	0.10
18.50	0.03	0.056	29.61	0.10
18.60	0.03	0.055	29.61	0.10
18.70	0.03	0.054	29.60	0.10
18.80	0.03	0.054	29.60	0.10
18.90	0.03	0.053	29.59	0.10
19.00	0.03	0.053	29.59	0.10
19.10	0.03	0.052	29.58	0.10
19.20	0.03	0.052	29.58	0.10
19.30	0.03	0.051	29.57	0.10
19.40	0.03	0.051	29.57	0.10
19.50	0.03	0.050	29.56	0.10
19.60	0.03	0.049	29.56	0.09
19.70	0.03	0.049	29.55	0.09
19.80	0.03	0.048	29.55	0.09
19.90	0.03	0.048	29.54	0.09
20.00	0.03	0.047	29.54	0.09
20.10	0.03	0.047	29.53	0.09
20.20	0.03	0.046	29.53	0.09
20.30	0.03	0.046	29.52	0.09

Hydrograph for Pond DET: Underground Detention System (continued)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
20.40	0.03	0.045	29.52	0.09
20.50	0.03	0.045	29.51	0.09
20.60	0.03	0.044	29.51	0.09
20.70	0.03	0.043	29.50	0.09
20.80	0.03	0.043	29.50	0.09
20.90	0.02	0.042	29.49	0.09
21.00	0.02	0.042	29.49	0.09
21.10	0.02	0.041	29.48	0.09
21.20	0.02	0.041	29.48	0.09
21.30	0.02	0.040	29.47	0.09
21.40	0.02	0.040	29.47	0.09
21.50	0.02	0.039	29.46	0.09
21.60	0.02	0.039	29.46	0.09
21.70	0.02	0.038	29.45	0.09
21.80	0.02	0.038	29.45	0.09
21.90	0.02	0.037	29.45	0.09
22.00	0.02	0.036	29.44	0.09
22.10	0.02	0.036	29.44	0.09
22.20	0.02	0.035	29.43	0.09
22.30	0.02	0.035	29.43	0.08
22.40	0.02	0.034	29.42	0.08
22.50	0.02	0.034	29.42	0.08
22.60	0.02	0.033	29.41	0.08
22.70	0.02	0.033	29.41	0.08
22.80	0.02	0.032	29.40	0.08
22.90	0.02	0.032	29.40	0.08
23.00	0.02	0.031	29.39	0.08
23.10	0.02	0.031	29.39	0.08
23.20	0.02	0.030	29.38	0.08
23.30	0.02	0.030	29.38	0.08
23.40	0.02	0.029	29.38	0.08
23.50	0.02	0.029	29.37	0.08
23.60	0.02	0.028	29.37	0.08
23.70	0.02	0.028	29.36	0.08
23.80	0.02	0.027	29.36	0.08
23.90	0.02	0.027	29.35	0.08
24.00	0.02	0.026	29.35	0.08
24.10	0.00	0.026	29.34	0.08
24.20	0.00	0.025	29.32	0.08
24.30	0.00	0.024	29.31	0.07
24.40	0.00	0.024	29.30	0.07
24.50	0.00	0.023	29.29	0.07
24.60	0.00	0.023	29.28	0.07
24.70	0.00	0.022	29.27	0.07
24.80	0.00	0.021	29.26	0.07
24.90	0.00	0.021	29.25	0.07
25.00	0.00	0.020	29.23	0.07
25.10	0.00	0.020	29.22	0.07
25.20	0.00	0.019	29.21	0.06
25.30	0.00	0.019	29.20	0.06
25.40	0.00	0.018	29.19	0.06

Hydrograph for Pond DET: Underground Detention System (continued)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
25.50	0.00	0.018	29.18	0.06
25.60	0.00	0.017	29.17	0.06
25.70	0.00	0.017	29.17	0.06
25.80	0.00	0.016	29.16	0.06
25.90	0.00	0.016	29.15	0.06
26.00	0.00	0.015	29.14	0.06
26.10	0.00	0.015	29.13	0.06
26.20	0.00	0.014	29.12	0.05
26.30	0.00	0.014	29.11	0.05
26.40	0.00	0.013	29.10	0.05
26.50	0.00	0.013	29.10	0.05
26.60	0.00	0.013	29.09	0.05
26.70	0.00	0.012	29.08	0.05
26.80	0.00	0.012	29.07	0.05
26.90	0.00	0.011	29.07	0.05
27.00	0.00	0.011	29.06	0.05
27.10	0.00	0.011	29.05	0.04
27.20	0.00	0.010	29.05	0.04
27.30	0.00	0.010	29.04	0.04
27.40	0.00	0.010	29.03	0.04
27.50	0.00	0.009	29.03	0.04
27.60	0.00	0.009	29.02	0.04
27.70	0.00	0.009	29.01	0.04
27.80	0.00	0.008	29.01	0.04
27.90	0.00	0.008	29.00	0.04
28.00	0.00	0.008	29.00	0.03
28.10	0.00	0.007	28.99	0.03
28.20	0.00	0.007	28.99	0.03
28.30	0.00	0.007	28.98	0.03
28.40	0.00	0.007	28.98	0.03
28.50	0.00	0.006	28.97	0.03
28.60	0.00	0.006	28.97	0.03
28.70	0.00	0.006	28.96	0.03
28.80	0.00	0.006	28.96	0.03
28.90	0.00	0.006	28.96	0.02
29.00	0.00	0.005	28.95	0.02
29.10	0.00	0.005	28.95	0.02
29.20	0.00	0.005	28.94	0.02
29.30	0.00	0.005	28.94	0.02
29.40	0.00	0.005	28.94	0.02
29.50	0.00	0.005	28.94	0.02
29.60	0.00	0.004	28.93	0.02
29.70	0.00	0.004	28.93	0.02
29.80	0.00	0.004	28.93	0.02
29.90	0.00	0.004	28.93	0.01
30.00	0.00	0.004	28.92	0.01
30.10	0.00	0.004	28.92	0.01
30.20	0.00	0.004	28.92	0.01
30.30	0.00	0.004	28.92	0.01
30.40	0.00	0.003	28.92	0.01
30.50	0.00	0.003	28.91	0.01

Hydrograph for Pond DET: Underground Detention System (continued)

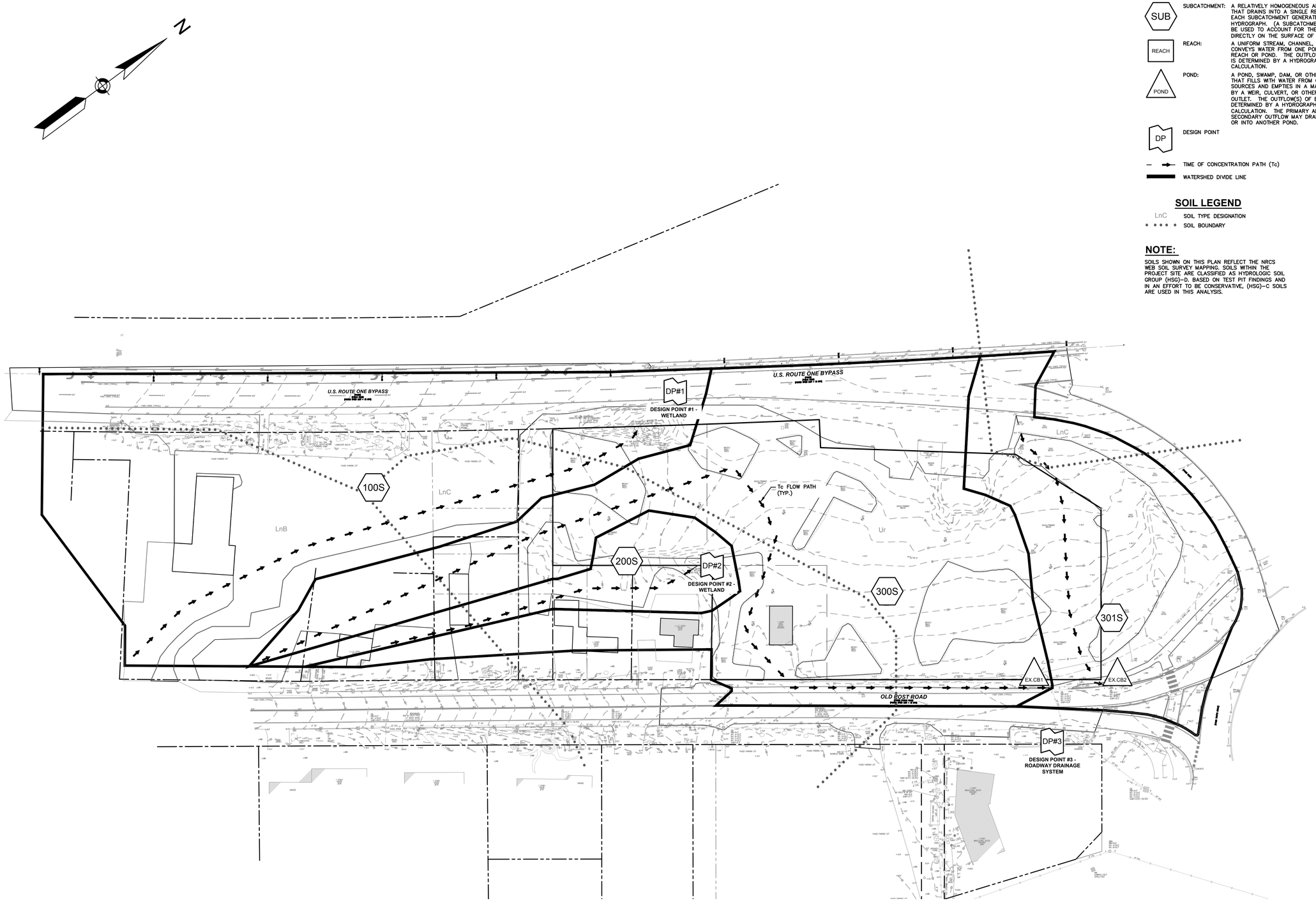
Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)	
30.60	0.00	0.003	28.91	0.01	
30.70	0.00	0.003	28.91	0.01	
30.80	0.00	0.003	28.91	0.01	
30.90	0.00	0.003	28.91	0.01	
31.00	0.00	0.003	28.91	0.01	
31.10	0.00	0.003	28.90	0.01	
31.20	0.00	0.003	28.90	0.01	
31.30	0.00	0.003	28.90	0.01	
31.40	0.00	0.003	28.90	0.01	
31.50	0.00	0.003	28.90	0.01	
31.60	0.00	0.003	28.90	0.01	
31.70	0.00	0.003	28.90	0.01	
31.80	0.00	0.002	28.90	0.01	
31.90	0.00	0.002	28.90	0.01	
32.00	0.00	0.002	28.90	0.01	
32.10	0.00	0.002	28.89	0.01	
32.20	0.00	0.002	28.89	0.01	WQV Detention Time
32.30	0.00	0.002	28.89	0.00	
32.40	0.00	0.002	28.89	0.00	
32.50	0.00	0.002	28.89	0.00	
32.60	0.00	0.002	28.89	0.00	
32.70	0.00	0.002	28.89	0.00	
32.80	0.00	0.002	28.89	0.00	
32.90	0.00	0.002	28.89	0.00	
33.00	0.00	0.002	28.89	0.00	
33.10	0.00	0.002	28.89	0.00	
33.20	0.00	0.002	28.89	0.00	
33.30	0.00	0.002	28.89	0.00	
33.40	0.00	0.002	28.89	0.00	
33.50	0.00	0.002	28.89	0.00	
33.60	0.00	0.002	28.88	0.00	
33.70	0.00	0.002	28.88	0.00	
33.80	0.00	0.002	28.88	0.00	
33.90	0.00	0.002	28.88	0.00	
34.00	0.00	0.002	28.88	0.00	
34.10	0.00	0.002	28.88	0.00	
34.20	0.00	0.002	28.88	0.00	
34.30	0.00	0.002	28.88	0.00	
34.40	0.00	0.002	28.88	0.00	
34.50	0.00	0.002	28.88	0.00	
34.60	0.00	0.002	28.88	0.00	
34.70	0.00	0.002	28.88	0.00	
34.80	0.00	0.002	28.88	0.00	
34.90	0.00	0.002	28.88	0.00	
35.00	0.00	0.002	28.88	0.00	
35.10	0.00	0.002	28.88	0.00	
35.20	0.00	0.002	28.88	0.00	
35.30	0.00	0.001	28.88	0.00	
35.40	0.00	0.001	28.88	0.00	
35.50	0.00	0.001	28.88	0.00	
35.60	0.00	0.001	28.88	0.00	

Hydrograph for Pond DET: Underground Detention System (continued)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
35.70	0.00	0.001	28.88	0.00
35.80	0.00	0.001	28.88	0.00
35.90	0.00	0.001	28.88	0.00
36.00	0.00	0.001	28.88	0.00

APPENDIX G

Drainage Area Plans



WATERSHED LEGEND

SUB — SUBCATCHMENT: A RELATIVELY HOMOGENEOUS AREA OF LAND THAT DRAINS INTO A SINGLE REACH OR POND. EACH SUBCATCHMENT GENERATES A RUNOFF HYDROGRAPH. (A SUBCATCHMENT MAY ALSO BE USED TO ACCOUNT FOR THE RAIN FALLING DIRECTLY ON THE SURFACE OF A POND.)

REACH — REACH: A UNIFORM STREAM, CHANNEL, OR PIPE THAT CONVEYS WATER FROM ONE POINT TO ANOTHER REACH OR POND. THE OUTFLOW OF EACH REACH IS DETERMINED BY A HYDROGRAPH ROUTING CALCULATION.

POND — POND: A POND, SWAMP, DAM, OR OTHER IMPOUNDMENT THAT FILLS WITH WATER FROM ONE OR MORE SOURCES AND EMPTIES IN A MANNER DETERMINED BY A WEIR, CULVERT, OR OTHER DEVICE(S) AT ITS OUTLET. THE OUTFLOW(S) OF EACH POND IS DETERMINED BY A HYDROGRAPH ROUTING CALCULATION. THE PRIMARY AND/OR SECONDARY OUTFLOW MAY DRAIN INTO A REACH OR INTO ANOTHER POND.

DP — DESIGN POINT

TIME OF CONCENTRATION PATH (Tc)

WATERSHED DIVIDE LINE

SOIL LEGEND

LnC — SOIL TYPE DESIGNATION

SOIL BOUNDARY

NOTE:

SOILS SHOWN ON THIS PLAN REFLECT THE NRCS WEB SOIL SURVEY MAPPING. SOILS WITHIN THE PROJECT SITE ARE CLASSIFIED AS HYDROLOGIC SOIL GROUP (HSG)–D. BASED ON TEST PIT FINDINGS AND IN AN EFFORT TO BE CONSERVATIVE, (HSG)–C SOILS ARE USED IN THIS ANALYSIS.

GPI
Engineering
Design
Planning
Construction Management
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44 Stiles Road, Suite One
Salem, NH 03079

PREPARED FOR
KITTERY CIRCLE, LLC
321D LAFAYETTE ROAD
HAMPTON, NH 03842

ASSESSORS MAP 14 LOTS 10, 12 & 12A
139 OLD POST ROAD,
112 & 120 US ROUTE 1 BYPASS
KITTERY, MAINE

REVISIONS		
NO.	REVISION	DATE

AUGUST 17, 2023

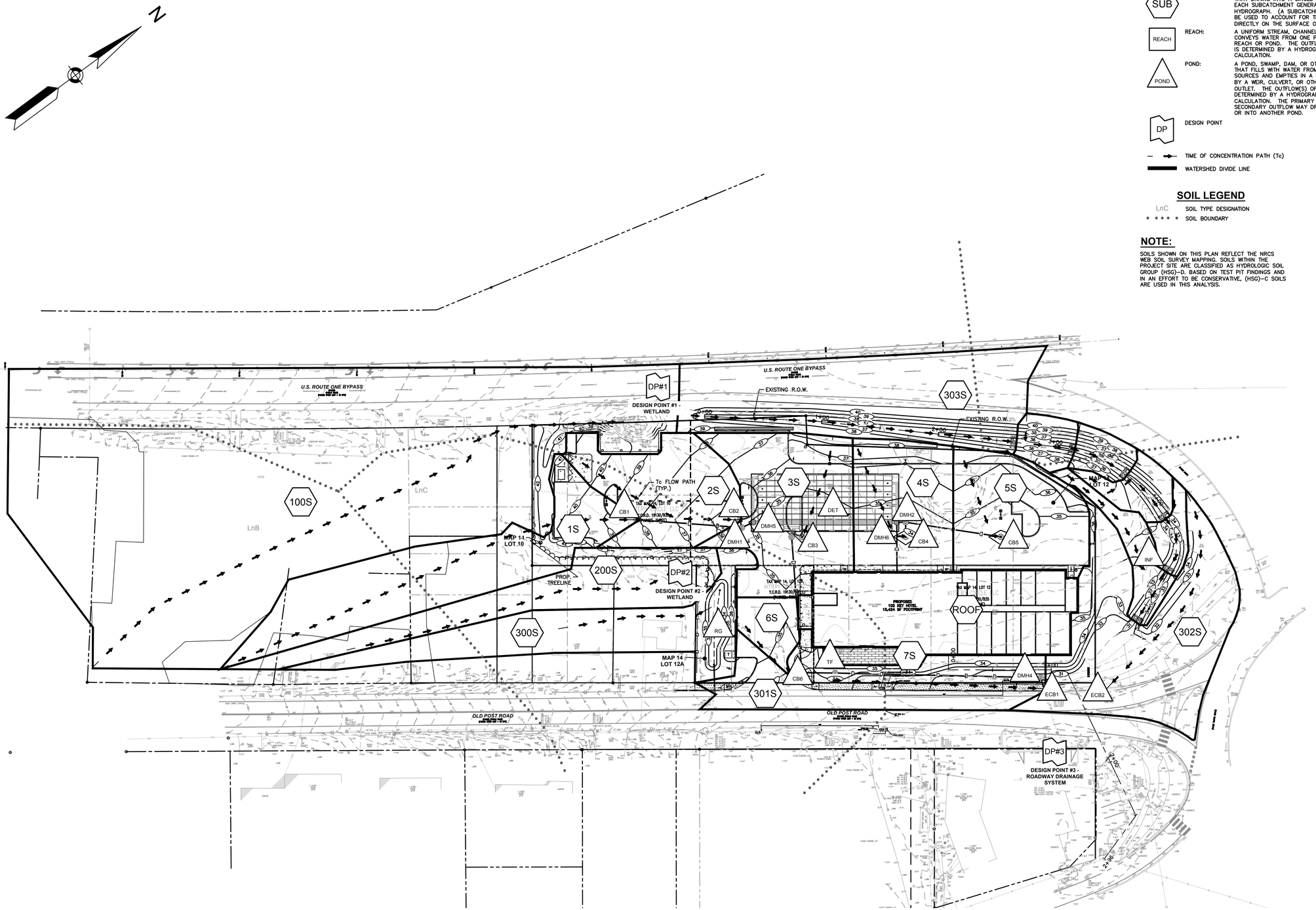
DRAWN/DESIGN BY	CHECKED BY
SMS/CNM	DRJ

PRE - DEVELOPMENT DRAINAGE AREA PLAN

SCALE: 1"=40'

PROJECT NO. NEX-2200380

F:\Projects\NEX-2200380_ Kittery, ME _ Tropic Star\Drainage\Drainage Area Plans (CAD)\2200380_Pre Dev.dwg Pre 8/17/23 9:17am cmason



WATERSHED LEGEND

- SUB — SUBCATCHMENT: A RELATIVELY HOMOGENEOUS AREA OF LAND THAT DRAINS INTO A SINGLE REACH OR POND. EACH SUBCATCHMENT GENERATES A RUNOFF HYDROGRAPH. (A SUBCATCHMENT MAY ALSO BE USED TO ACCOUNT FOR THE RAIN FALLING DIRECTLY ON THE SURFACE OF A POND.)
- REACH — REACH: A UNIFORM STREAM, CHANNEL, OR PIPE THAT CONVEYS WATER FROM ONE POINT TO ANOTHER REACH OR POND. THE OUTFLOW OF EACH REACH IS DETERMINED BY A HYDROGRAPH ROUTING CALCULATION.
- POND — POND: A POND, SWAMP, DAM, OR OTHER IMPOUNDMENT THAT FILLS WITH WATER FROM ONE OR MORE SOURCES AND EMPTIES IN A MANNER DETERMINED BY A WEIR, CULVERT, OR OTHER DEVICE(S) AT ITS OUTLET. THE OUTFLOW(S) OF EACH POND IS DETERMINED BY A HYDROGRAPH ROUTING CALCULATION. THE PRIMARY AND/OR SECONDARY OUTFLOW MAY DRAIN INTO A REACH OR INTO ANOTHER POND.
- DP — DESIGN POINT
- TIME OF CONCENTRATION PATH (Tc)
- WATERSHED DIVIDE LINE

SOIL LEGEND

- LnC — SOIL TYPE DESIGNATION
- SOIL BOUNDARY

NOTE:

SOILS SHOWN ON THIS PLAN REFLECT THE NRCS WEB SOIL SURVEY MAPPING. SOILS WITHIN THE PROJECT SITE ARE CLASSIFIED AS HYDROLOGIC SOIL GROUP (HSG)–D. BASED ON TEST PIT FINDINGS AND IN AN EFFORT TO BE CONSERVATIVE, (HSG)–C SOILS ARE USED IN THIS ANALYSIS.

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PREPARED FOR
KITTERY CIRCLE, LLC
321D LAFAYETTE ROAD
HAMPTON, NH 03842

ASSESSORS MAP 14 LOTS 10, 12 & 12A
139 OLD POST ROAD, 112 & 120 US ROUTE 1 BYPASS
KITTERY, MAINE

REVISIONS		
2	MISC. REVISIONS	1/25/24
1	MISC. REVISIONS	10/2/23
NO.	REVISION	DATE

AUGUST 17, 2023

DRAWN/DESIGN BY	CHECKED BY
SMS/CNM	DRJ

POST - DEVELOPMENT DRAINAGE AREA PLAN

SCALE: 1"=40'

PROJECT NO. NEX-2200380

INSPECTION & MAINTENANCE PLAN FOR STORMWATER MANAGEMENT SYSTEMS

PROPOSED HOTEL DEVELOPMENT
ASSESSOR'S MAP 14 LOTS 10, 12 & 12A
139 OLD POST ROAD, 112 & 120 US ROUTE 1 BYPASS
KITTERY, MAINE

GPI

44 Stiles Road, Suite One
Salem, NH 03079
(603) 893-0720

Prepared For:
Kittery Circle, LLC
321D Lafayette Road
Hampton, NH 03842

Revised: January 25, 2024
August 17, 2023

(GPI Project No.: NEX-2200380)

Kittery Circle, LLC
Proposed Hotel Development
Inspection & Maintenance Plan (I&M)

TABLE OF CONTENTS

SECTION 1 I & M DOCUMENTATION REQUIREMENTS

The Owner of Record shall be responsible for the continued operation, and maintenance of all stormwater management systems in accordance with this manual. Logs of inspections and maintenance shall be maintained and filed with the Town of Kittery by July 1st each year. Copies will need to be kept for the most recent three years and made available to the Planning Board upon request.

Logs shall 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 cleanout of any sediments or debris, the location where the sediment and debris was disposed after removal will be indicated. Disposal of the accumulated sediment and hydrocarbons must be in accordance with applicable local, state, and federal guidelines and regulations.

All stormwater facilities associated with this development are identified on Figure 1 contained within Section 4 of this manual, and shall be inspected and maintained in accordance with the procedures outlined in Section 2, and results and observations listed individually on the log form included in Section 5.

SECTION 2 BMP SPECIFIC I & M PROCEDURES

Driveway/Parking Lot Sweeping

Sweeping shall be done once in the early fall and then immediately following spring snowmelt to remove sand and other debris and when visual buildup of debris is apparent. Pavement surfaces shall be swept at other times such as in the fall after leaves have dropped to remove accumulated debris. Since contaminants typically accumulate within 12 inches of the curbline, street cleaning operations should concentrate in cleaning curb and gutter lines for maximum pollutant removal efficiency. Other areas shall also be swept periodically when visual buildup of debris is apparent. Once removed from paved surfaces, the sweeping must be handled and disposed of properly. Disposal of the accumulated sediment and hydrocarbons must be in accordance with applicable local, state, and federal guidelines and regulations.

Deep Sump Hooded Catch Basins

Inspect and clean as required all catch basins at least once per year at the end of the snow removal season. Sediment must be removed whenever the depth of deposits is greater than or equal to one half the depth from the bottom of sump to the invert of the lowest pipe in the basin. If the basin outlet is designed with a hood to trap floatable materials check to ensure watertight seal is working. Damaged hoods should be replaced when noted by inspection. At a minimum, remove floating debris and hydrocarbons at the time of the inspection. Sediment and debris can be removed by a clamshell bucket; however, a vacuum truck is preferred. Disposal of the accumulated sediment and hydrocarbons must be in accordance with applicable local, state, and federal guidelines and regulations.

Hydrodynamic Separators (First Defense Units)

Initial maintenance to be performed twice a year for the first year after the unit is online and operational. A vacuum truck must be used at a minimum of once per year for sediment removal. Refer to the attached First Defense Owner's manual for operation and maintenance procedures and schedules thereafter.

Treatment Filter (Jellyfish)

See attached product maintenance materials by Contech ES.

Underground Detention System

All subsurface systems should initially be inspected within the first three months after completion of the site's construction.

Preventive maintenance should be performed at least every six months and sediment shall be removed from pretreatment BMP's after every major storm event. The Detention System shall be inspected on regular bi-annual scheduled dates. Sediment and debris removal should be through the use of truck mounted vacuum equipment. Outlet pipes should be flushed to point of discharge on the same frequency as mentioned above. Disposal of the accumulated sediment and hydrocarbons must be in accordance with applicable local, state, and federal guidelines and regulations.

The following is the recommended procedure to inspect the underground system in service:

1. Locate the riser or cleanout section of the system. The riser/cleanout will typically be 6 or 12" in diameter or larger.
2. Remove the lid from the riser/cleanout.
3. Measure the sediment buildup at each riser and cleanout location. Only certified confined space entry personnel having appropriate equipment should be permitted to enter the system.
4. Inspect each manifold, all laterals, and outlet pipes for sediment build up, obstructions, or other problems. Obstructions should be removed at this time.
5. If measured sediment build up is between 2" to 8", cleaning should be considered; if sediment build up exceeds 8", cleaning should be performed at the earliest opportunity. A thorough cleaning of the system (manifolds and laterals) shall be performed by water jets and/or truck mounted vacuum equipment.

Pretreatment BMP's shall be inspected and cleaned during the regular bi-annual inspections.

The inlet and outlet of the subsurface systems should be checked periodically to ensure that flow structures are not blocked by debris. All pipes connecting the structures to the system should be checked for debris that may obstruct flow.

Refer to the Stormtech Isolator Row O&M Manual in Section 6 for additional information.

Grassed Underdrained Soil Filter

The filter should be inspected semi-annually and following major storm events (>2.5 inches in a 24-hour period). Debris and sediment buildup should be removed from the basin as needed. Any bare area or erosion rills should be repaired with new filter media, seeded and mulched.

Sediment and plant debris should be removed at least annually. If mowing is desired, only handheld string trimmers or push mowers are allowed on the filter (no tractor) and the grass bed should be mowed no more than 2 times per growing season to maintain grass heights of no less than 6 inches. Fertilization of the filter area should be avoided unless absolutely necessary to establish vegetation. Harvesting and pruning of excessive growth should be done occasionally. Weeding to control unwanted or invasive plants may also be necessary. Maintaining a healthy vegetative cover will minimize clogging with fine sediments. If ponding exceeds 48 hours, the top of the filter bed should be rototilled to reestablish the soil's filtration capacity. Soil Filter Replacement: The top several inches of the filter can be replaced with fresh material if water is ponding for more than 72 hours, or the basin can be rototilled, seeded and mulched.

Stone Aprons/Spillways

Inspect at least once annually for damage and deterioration. Repair damages immediately. Replace any dislodged stones within spillways and weirs.

Permeable Paver Patio

Inspect monthly during the first three months following construction for signs of ponding or clogging. Thereafter, inspect once annually and after major storm events. Check for surface ponding that could indicate failure due to clogging of stone reservoir course. Non-routine

maintenance may require reconstruction of the paver course, and possibly the stone reservoir course to relieve major clogging.

Routine maintenance shall be as follows: Prevent sedimentation due to run-on from grassed or mulched areas. Sweep, vacuum, and/or pressure wash patio twice annually to remove sediment. Remove leaves and organic debris in the fall. Limit salt use for deicing and do not use sand.

Grassed Swale/Vegetated Areas

Inspect slopes and embankments early in the growing season 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. During the summer months, all landscape features are to be maintained with the minimum possible amount of fertilizers, pesticides or herbicides.

Winter Maintenance

Proposed snow storage is located along the edge of the parking areas and driveways and shown on Figure 1. Any excess snow is to be trucked offsite. During the winter months all snow is to be stored such that snowmelt is controlled. Avoid disposing of snow on top of storm drain catch basins or in stormwater drainage swales or ditches. The minimum amount of deicing chemicals needed is to be used.

SECTION 3 HOUSEKEEPING PLAN

The primary focus of the Housekeeping Plan is to establish procedures and controls for limiting the potential sources of pollutants, including nutrients that may contribute to excessive contaminant levels in the site's stormwater runoff. To this end the following source controls and procedures will be in place at the site:

- **Good Housekeeping** – It shall be the responsibility of the property owner to keep the site clean at all times. Refuse disposal and pickup shall occur on a regular basis and all material shall be disposed of in the specified dumpster location area on the Site Development Plans.
- **Storing Material and waste products inside or under cover** – No material storage is to take place outside the proposed facility on either paved or lawn areas. All material stored on site will conform with all storage requirements of local, state and federal agencies.
- **Routine inspections and maintenance of stormwater BMP's** – Refer to the Operation and Maintenance procedures for each BMP as described in the I&M Plan as described herein.
- **Maintenance of lawns, gardens and other landscaped areas** – All landscaping and maintenance to be performed by an authorized company chosen by the property owner.
- **Storage and use of fertilizers, herbicides and pesticides** – All landscape maintenance will be conducted by an authorized company chosen by the property owner. Any application of herbicides or pesticides will be applied by a licensed applicator.
- **Proper management of deicing chemicals and snow** – Deicing chemicals and snow removal shall primarily be the responsibility of the property owner additional information can be found in the I&M Plan as described herein.
- **Nutrient management plan** - The goal of the nutrient management plan is to minimize the potential sources of excess nutrients on the site and the release of nutrients in the stormwater from the site. This minimization relates both to infiltrated water and runoff. In general, the nature of the site use will tend to reduce the nutrients in the stormwater. Further, procedures indicated above or in the I&M Plan related to deicing procedures, BMP maintenance procedures, and street sweeping will act to reduce the levels of nutrients in the stormwater, and the nutrients entering the adjacent wetland and the groundwater.

SECTION 4 BMP MAINTENANCE EXHIBIT

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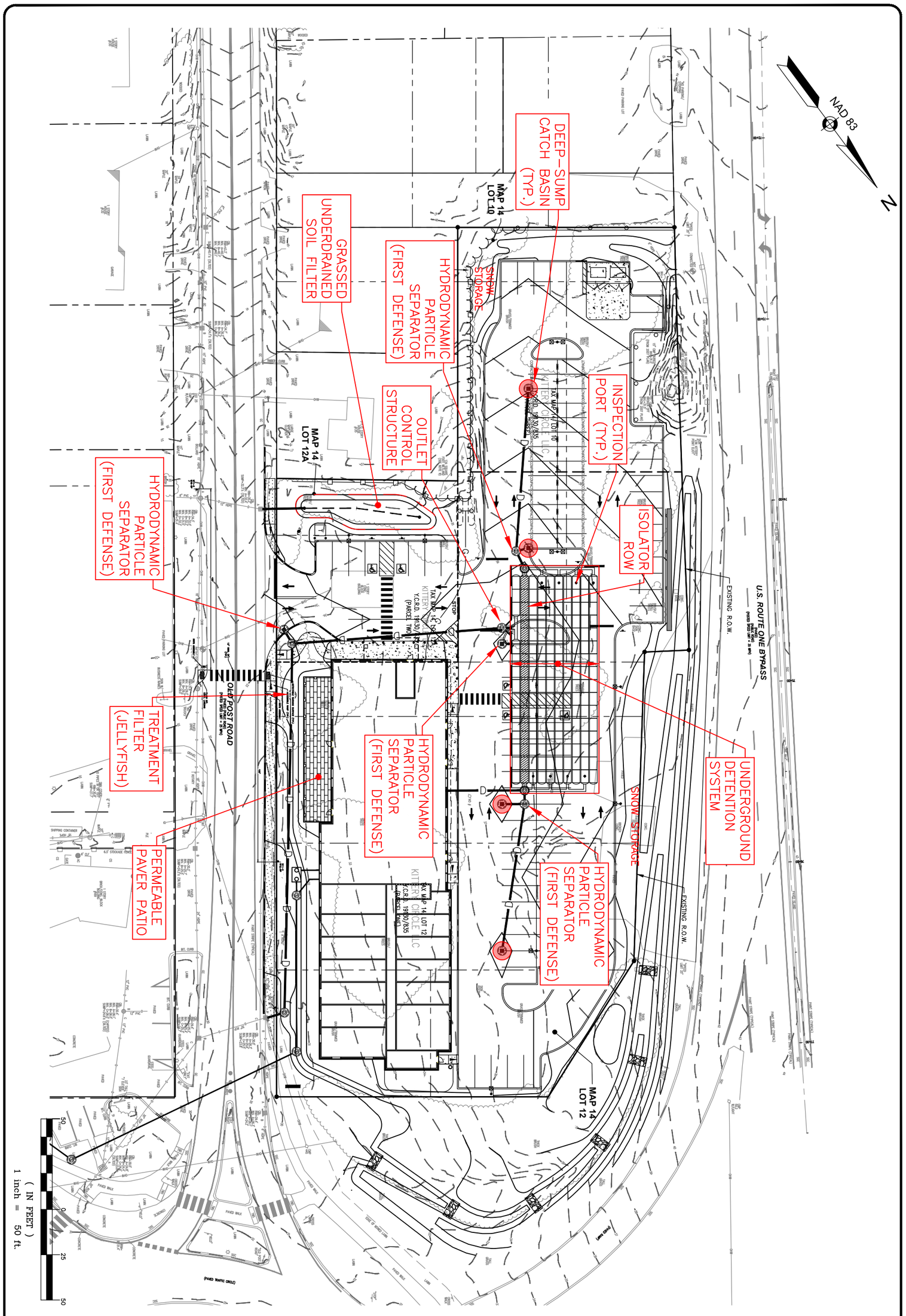


BMP MAINTENANCE EXHIBIT

139 OLD POST ROAD
112 & 120 ROUTE 1 BYPASS
KITTERY, MAINE

GPI Engineering Design Planning Construction Management
603.893.0720 GPINET.COM
Greenman-Pedersen, Inc.
44 Stiles Road, Suite One
Salem, NH 03079

DRAWN BY:	CNM
PROJECT #:	NEX-2200380
DATE:	8/17/23
REV.:	1/25/24
FIGURE	1

SECTION 5 STORMWATER INSPECTION & MAINTENANCE LOG

STORMWATER INSPECTION AND MAINTENANCE LOG

139 Old Post Road - Kittery, ME

General Information			
Project Name	Proposed Hotel Development	**Location**	Kittery, ME
Date of Inspection		**Start/ End Time**	
Inspector's Name(s)			
Inspector's Title(s)			
Inspector's Contact Information			

	Site Specific BMP's	Maintenance Interval
1	Driveway/Parking Lot Sweeping	6 Months
2	Deep Sump Catch Basins	1 Year (Spring)
3	Hydrodynamic Separators (First Defense)	1 Year - refer to manufacturer O&M
4	Treatment Filter (Jellyfish)	1 Year - refer to manufacturer O&M
5	Underground Detention System	6 Months
6	Grassed Underdrained Soil Filter	6 Months
7	Stone Aprons/Spillways	1 Year
8	Permeable Paver Patio	6 Months
9	Grassed Swale/Vegetated Areas	1 Year

BMP Description	Corrective Action Required?		Notes
Driveway/Parking Lot Sweeping			
Evidence of debris accumulation	YES	NO	
Evidence of oil grease	YES	NO	
Other (specify)	YES	NO	
Deep Sump Catch Basins			
Grates clear of debris	YES	NO	
Inlet and outlet clear of debris	YES	NO	
Evidence of oil grease	YES	NO	
Observance of accumulated sediment	YES	NO	Sediment Depth =
Evidence of structural deterioration	YES	NO	
Evidence of flow bypassing facility	YES	NO	
Other (specify)	YES	NO	
Hydrodynamic Separator (First Defense)			
See separate maintenance log for First Defense Unit			
Treatment Filter (Jellyfish)			
See separate maintenance log for Jellyfish Filter			
Underground Detention System			
Inlet and outlet clear of debris	YES	NO	
Bottom surface clear of debris	YES	NO	
Observance of accumulated sediment	YES	NO	Sediment Depth =
Bottom dewaters within 72 hrs. of a storm event	YES	NO	
Standing water	YES	NO	
Other (specify)	YES	NO	
Grassed Underdrained Soil Filter			
Inlet and outlet clear of debris	YES	NO	
Underdrain functioning	YES	NO	
Bottom surface clear of debris	YES	NO	
Evidence of rilling or gullying	YES	NO	
Observance of accumulated sediment	YES	NO	Sediment Depth =
Bottom dewaters between storms	YES	NO	
Vegetation healthy and growing	YES	NO	
Standing water or wet spots	YES	NO	
Tree growth	YES	NO	
Other (specify)	YES	NO	
Stone Aprons/Spillways			
Clear of debris	YES	NO	
Evidence of settling or washout	YES	NO	
Evidence of rilling or gullying	YES	NO	
Tree growth	YES	NO	
Other (specify)	YES	NO	

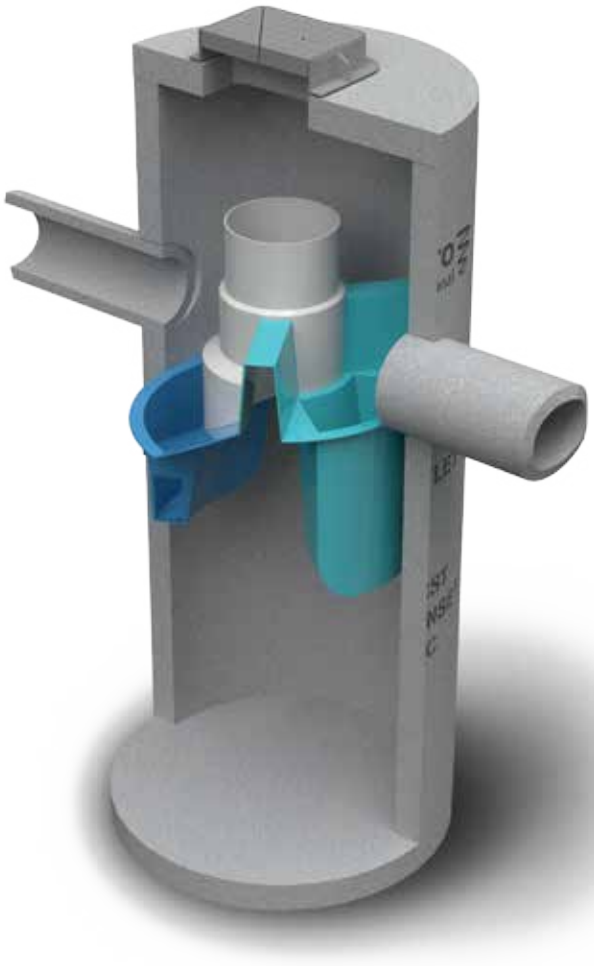
Permeable Paver Patio			
Clear of debris	YES	NO	
Evidence of settling or washout	YES	NO	
Standing water or wet spots	YES	NO	
Observance of accumulated sediment	YES	NO	Sediment Depth =
Vegetation growth	YES	NO	
Other (specify)	YES	NO	
Grassed Swale/Vegetated Areas			
Clear of debris	YES	NO	
Evidence of rilling or gullying	YES	NO	
Observance of accumulated sediment	YES	NO	Sediment Depth =
Vegetation healthy and growing	YES	NO	
Standing water or wet spots	YES	NO	
Tree growth	YES	NO	
Other (specify)	YES	NO	

NOTE: Photos shall be provided with each inspection log and shall be sufficiently labeled to identify photo location.

INSPECTION AND MAINTENANCE PLAN FOR STORMWATER MANAGEMENT STRUCTURES (BMPS)

	INSPECTION SCHEDULE	CORRECTIVE ACTIONS
VEGETATED AREAS	Annually early spring and after heavy rains	Inspect all slopes and embankments and replant areas of bare soil or with sparse growth
		Armor rill erosion areas with riprap or divert the runoff to a stable area
		Inspect and repair down-slope of all spreaders and turn-outs for erosion
		Mow vegetation as specified for the area
DITCHES, SWALES AND OPEN STORMWATER CHANNELS	Annually spring and late fall and after heavy rains	Remove obstructions, sediments or debris from ditches, swales and other open channels
		Repair any erosion of the ditch lining
		Mow vegetated ditches
		Remove woody vegetation growing through riprap
		Repair any slumping side slopes
		Repair riprap where underlying filter fabric or gravel is showing or if stones have dislodge
CULVERTS	Spring and late fall and after heavy rains	Remove accumulated sediments and debris at the inlet, outlet, or within the conduit
		Remove any obstruction to flow
		Repair any erosion damage at the culvert's inlet and outlet
CATCH BASINS	Annually in the spring	Remove sediments and debris from the bottom of the basin and inlet grates
		Remove floating debris and oils (using oil absorptive pads) from any trap
ROADWAYS AND PARKING AREAS	Annually in the spring or as needed	Clear and remove accumulated winter sand in parking lots and along roadways
		Sweep pavement to remove sediment
		Grade road shoulders and remove accumulated winter sand
		Grade gravel roads and gravel shoulders
		Clean out the sediment within water bars or open-top culverts
		Ensure that stormwater runoff is not impeded by false ditches of sediment in the shoulder
RESOURCE AND TREATMENT BUFFERS	Annually in the spring	Inspect buffers for evidence of erosion, concentrated flow, or encroachment by development
		Manage the buffer's vegetation with the requirements in any deed restrictions
		Repair any sign of erosion within a buffer
		Inspect and repair down-slope of all spreaders and turn-outs for erosion
		Install more level spreaders, or ditch turn-outs if needed for a better distribution of flow
		Clean out any accumulation of sediment within the spreader bays or turnout pools
		Mow non-wooded buffers no shorter than six inches and less than three times per year
WETPONDS AND DETENTION BASINS	Annually in fall and after heavy rains	Inspect the embankments for settlement, slope erosion, piping, and slumping
		Mow the embankment to control woody vegetation
		Inspect the outlet structure for broken seals, obstructed orifices, and plugged trash racks
		Remove and dispose of sediments and debris within the control structure
		Repair any damage to trash racks or debris guards
		Replace any dislodged stone in riprap spillways
		Remove and dispose of accumulated sediments within the impoundment and forebay
FILTRATION AND INFILTRATION BASINS	Annually in the spring and late fall	Clean the basin of debris, sediment and hydrocarbons
		Provide for the removal and disposal of accumulated sediments within the basin
		Renew the basin media if it fails to drain within 72 hours after a one inch rainfall event
		Till, seed and mulch the basin if vegetation is sparse
		Repair riprap where underlying filter fabric or gravel is showing or where stones have dislodged
PROPRIETARY DEVICES	As specified by manufacturer	Contract with a third-party for inspection and maintenance
		Follow the manufacturer's plan for cleaning of devices
OTHER PRACTICES	As specified for devices	Contact the department for appropriate inspection and maintenance requirements for other drainage control and runoff treatment measures.

SECTION 6 MANUFACTURER MAINTENANCE DOCUMENTS



Operation and Maintenance Manual

First Defense® and First Defense®-HC

Vortex Separator for Stormwater Treatment

Stormwater Solutions

Turning Water Around ...®

Table of Contents

Hydro International (Stormwater), 94 Hutchins Drive, Portland ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212 Web: www.hydro-int.com

I. First Defense® by Hydro International

Introduction

The First Defense® is an enhanced vortex separator that combines an effective and economical stormwater treatment chamber with an integral peak flow bypass. It efficiently removes total suspended solids (TSS), trash and hydrocarbons from stormwater runoff without washing out previously captured pollutants. The First Defense® is available in several model configurations (refer to *Section II. Model Sizes & Configurations*, page 4) to accommodate a wide range of pipe sizes, peak flows and depth constraints.

Operation

The First Defense® operates on simple fluid hydraulics. It is self-activating, has no moving parts, no external power requirement and is fabricated with durable non-corrosive components. No manual procedures are required to operate the unit and maintenance is limited to monitoring accumulations of stored pollutants and periodic clean-outs. The First Defense® has been designed to allow for easy and safe access for inspection, monitoring and clean-out procedures. Neither entry into the unit nor removal of the internal components is necessary for maintenance, thus safety concerns related to confined-space-entry are avoided.

Pollutant Capture and Retention

The internal components of the First Defense® have been designed to optimize pollutant capture. Sediment is captured and retained in the base of the unit, while oil and floatables are stored on the water surface in the inner volume (Fig.1).

The pollutant storage volumes are isolated from the built-in bypass chamber to prevent washout during high-flow storm events. The sump of the First Defense® retains a standing water level between storm events. This ensures a quiescent flow regime at the onset of a storm, preventing resuspension and washout of pollutants captured during previous events.

Accessories such as oil absorbent pads are available for enhanced oil removal and storage. Due to the separation of the oil and floatable storage volume from the outlet, the potential for washout of stored pollutants between clean-outs is minimized.

Applications

- Stormwater treatment at the point of entry into the drainage line
- Sites constrained by space, topography or drainage profiles with limited slope and depth of cover
- Retrofit installations where stormwater treatment is placed on or tied into an existing storm drain line
- Pretreatment for filters, infiltration and storage

Advantages

- Inlet options include surface grate or multiple inlet pipes
- Integral high capacity bypass conveys large peak flows without the need for “offline” arrangements using separate junction manholes
- Proven to prevent pollutant washout at up to 500% of its treatment flow
- Long flow path through the device ensures a long residence time within the treatment chamber, enhancing pollutant settling
- Delivered to site pre-assembled and ready for installation

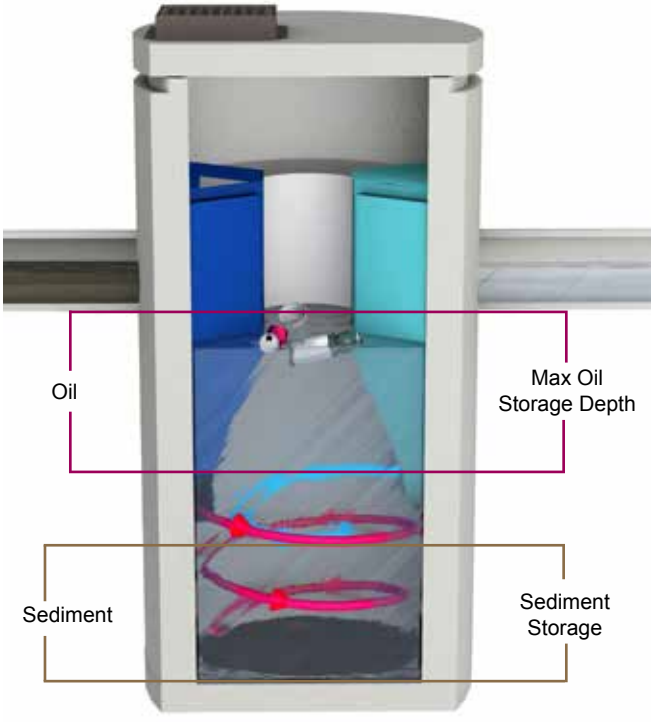


Fig.1 Pollutant storage volumes in the First Defense®.

II. Model Sizes & Configurations

The First Defense® inlet and internal bypass arrangements are available in several model sizes and configurations. The components of the First Defense®-4HC and First Defense®-6HC have modified geometries as to allow greater design flexibility needed to accommodate various site constraints.

All First Defense® models include the internal components that are designed to remove and retain total suspended solids (TSS), gross solids, floatable trash and hydrocarbons (Fig.2a - 2b). First Defense® model parameters and design criteria are shown in Table 1.

First Defense® Components

1. **Built-In Bypass**
2. **Inlet Pipe**
3. **Inlet Chute**
4. **Floatables Draw-off Port**
5. **Outlet Pipe**
6. **Floatables Storage**
7. **Sediment Storage**
8. **Inlet Grate or Cover**

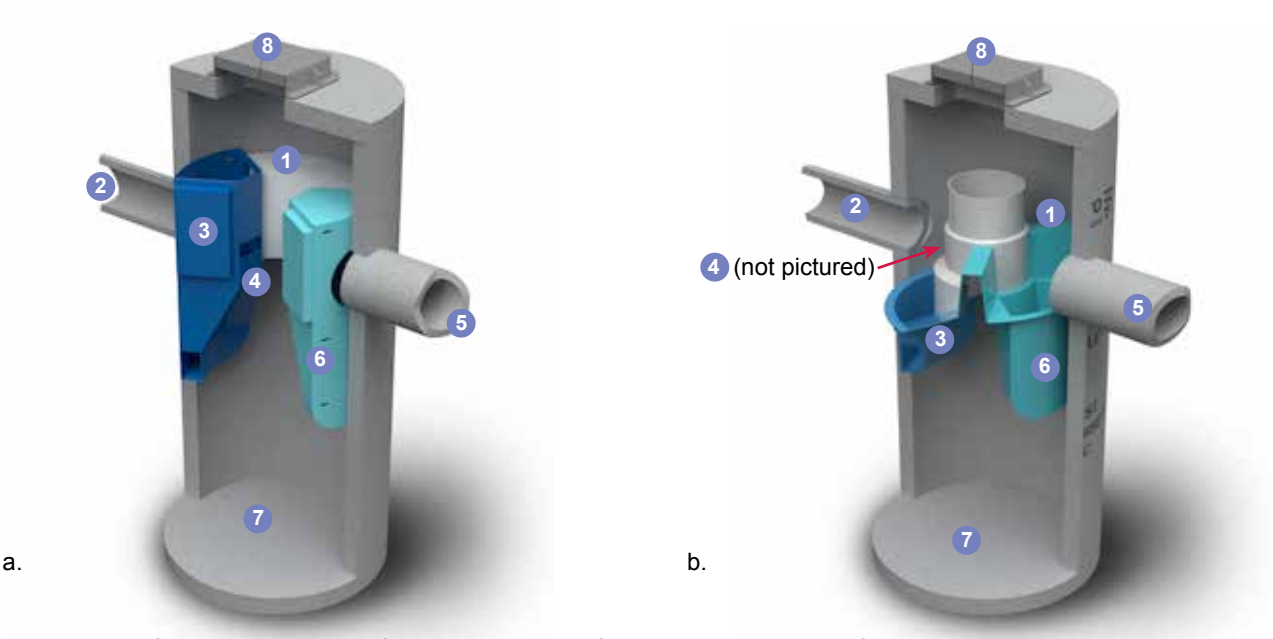


Fig.2a) First Defense®-4 and First Defense®-6; b) First Defense®-4HC and First Defense®-6HC, with higher capacity dual internal bypass and larger maximum pipe diameter.

Table 1. First Defense® Pollutant Storage Capacities and Maximum Clean out Depths

First Defense® Model Number	Diameter	Oil Storage Capacity	Oil Clean Out Depth	Maximum Sediment Storage Capacity[1]		Recommended Sediment Clean-out Capacity	
				Volume	Depth	Volume	Depth
	(ft / m)	(gal / L)	(in / cm)	(yd^3 / m^3)	(in / cm)	(yd^3 / m^3)	(in / cm)
FD-4	4 / 1.2	180 / 681	<23.5 / 60	1.3 / 1.0	33 / 84	0.7 / 0.5	18 / 46
FD-4HC		191 / 723	<24.4 / 62				
FD-6	6 / 1.8	420 / 1,590	<23.5 / 60	3.3 / 2.5	37.5 / 95	1.3 / 1.0	15 / 38
FD-6HC		496 / 1,878	<28.2 / 72				

NOTE

[1] Sediment storage capacity and clean out depth may vary, as larger sediment storage sump volumes are provided when required.

III. Maintenance

Overview

The First Defense® protects the environment by removing a wide range of pollutants from stormwater runoff. Periodic removal of these captured pollutants is essential to the continuous, long-term functioning of the First Defense®. The First Defense® will capture and retain sediment and oil until the sediment and oil storage volumes are full to capacity. When sediment and oil storage capacities are reached, the First Defense® will no longer be able to store removed sediment and oil. Maximum pollutant storage capacities are provided in Table 1.

The First Defense® allows for easy and safe inspection, monitoring and clean-out procedures. A commercially or municipally owned sump-vac is used to remove captured sediment and floatables. Access ports are located in the top of the manhole.

Maintenance events may include Inspection, Oil & Floatables Removal, and Sediment Removal. Maintenance events do not require entry into the First Defense®, nor do they require the internal components of the First Defense® to be removed. In the case of inspection and floatables removal, a vactor truck is not required. However, a vactor truck is required if the maintenance event is to include oil removal and/or sediment removal.

Maintenance Equipment Considerations

The internal components of the First Defense®-HC have a centrally located circular shaft through which the sediment storage sump can be accessed with a sump vac hose. The open diameter of this access shaft is 15 inches in diameter (Fig.3). Therefore, the nozzle fitting of any vactor hose used for maintenance should be less than 15 inches in diameter.

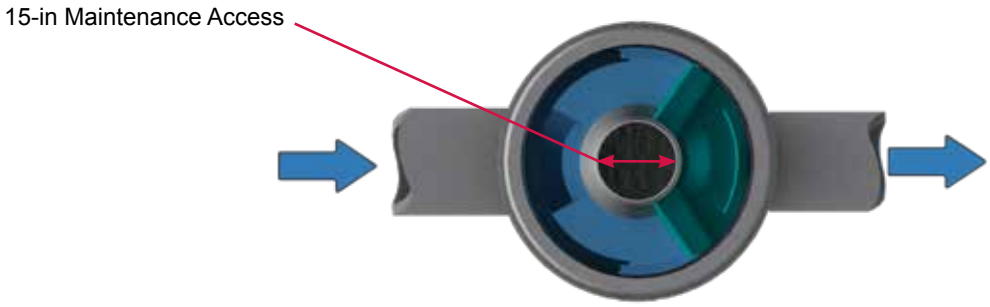


Fig.3 The central opening to the sump of the First Defense®-HC is 15 inches in diameter.

Determining Your Maintenance Schedule

The frequency of clean out is determined in the field after installation. During the first year of operation, the unit should be inspected every six months to determine the rate of sediment and floatables accumulation. A simple probe such as a Sludge-Judge® can be used to determine the level of accumulated solids stored in the sump. This information can be recorded in the maintenance log (see page 9) to establish a routine maintenance schedule.

The vactor procedure, including both sediment and oil / flotables removal, for a 6-ft First Defense® typically takes less than 30 minutes and removes a combined water/oil volume of about 765 gallons.

Inspection Procedures

1. Set up any necessary safety equipment around the access port or grate of the First Defense® as stipulated by local ordinances. Safety equipment should notify passing pedestrian and road traffic that work is being done.

2. Remove the grate or lid to the manhole.

3. Without entering the vessel, look down into the chamber to inspect the inside. Make note of any irregularities. Fig.4 shows the standing water level that should be observed.

4. Without entering the vessel, use the pole with the skimmer net to remove floatables and loose debris from the components and water surface.

5. Using a sediment probe such as a Sludge Judge®, measure the depth of sediment that has collected in the sump of the vessel.

6. On the Maintenance Log (see page 9), record the date, unit location, estimated volume of floatables and gross debris removed, and the depth of sediment measured. Also note any apparent irregularities such as damaged components or blockages.

7. Securely replace the grate or lid.

8. Take down safety equipment.

9. Notify Hydro International of any irregularities noted during inspection.

Floatables and Sediment Clean Out

Floatables clean out is typically done in conjunction with sediment removal. A commercially or municipally owned sump-vac is used to remove captured sediment and floatables (Fig.5).

Floatables and loose debris can also be netted with a skimmer and pole. The access port located at the top of the manhole provides unobstructed access for a vactor hose and skimmer pole to be lowered to the base of the sump.

Scheduling

- Floatables and sump clean out are typically conducted once a year during any season.

- Floatables and sump clean out should occur as soon as possible following a spill in the contributing drainage area.

Fig.4 Floatables are removed with a vactor hose (First Defense model FD-4, shown).

Recommended Equipment

- Safety Equipment (traffic cones, etc)
- Crow bar or other tool to remove grate or lid
- Pole with skimmer or net (if only floatables are being removed)
- Sediment probe (such as a Sludge Judge®)
- Vactor truck (flexible hose recommended)
- First Defense® Maintenance Log

Floatables and sediment Clean Out Procedures

1. Set up any necessary safety equipment around the access port or grate of the First Defense® as stipulated by local ordinances. Safety equipment should notify passing pedestrian and road traffic that work is being done.

2. Remove the grate or lid to the manhole.

3. Without entering the vessel, look down into the chamber to inspect the inside. Make note of any irregularities.

4. Remove oil and floatables stored on the surface of the water with the vactor hose (Fig.5) or with the skimmer or net (not pictured).

5. Using a sediment probe such as a Sludge Judge®, measure the depth of sediment that has collected in the sump of the vessel and record it in the Maintenance Log (page 9).

6. Once all floatables have been removed, drop the vactor hose to the base of the sump. Vactor out the sediment and gross debris off the sump floor (Fig.5).

7. Retract the vactor hose from the vessel.

8. On the Maintenance Log provided by Hydro International, record the date, unit location, estimated volume of floatables and gross debris removed, and the depth of sediment measured. Also note any apparent irregularities such as damaged components, blockages, or irregularly high or low water levels.

9. Securely replace the grate or lid.

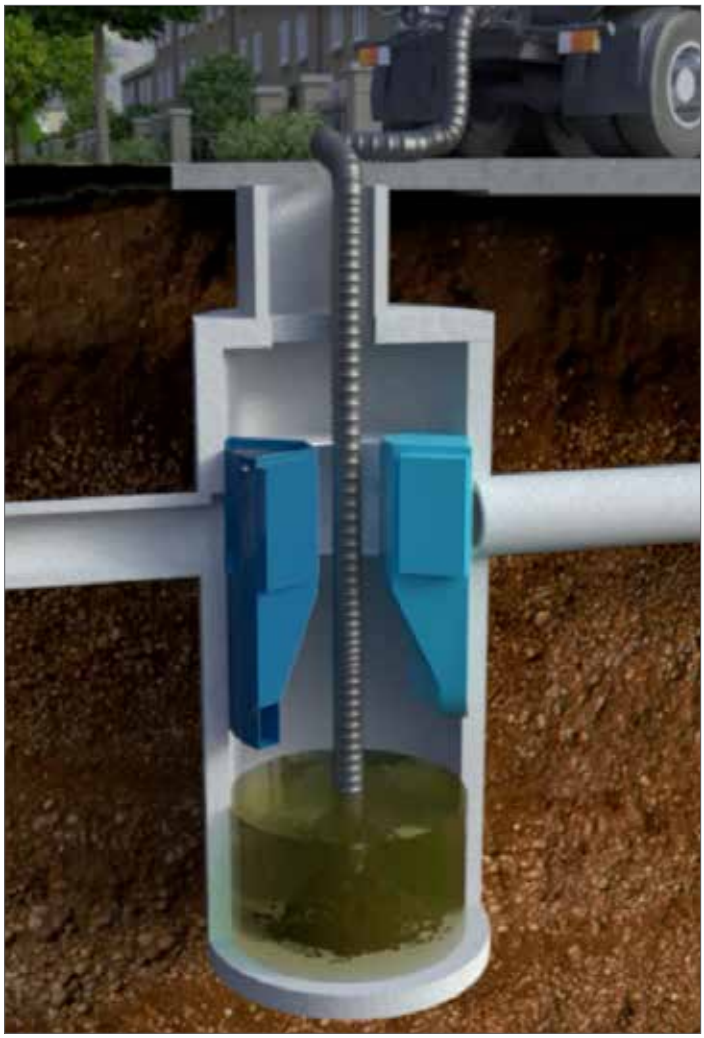


Fig.5 Sediment is removed with a vactor hose (First Defense model FD-4, shown).

Maintenance at a Glance

Activity	Frequency
Inspection	- Regularly during first year of installation - Every 6 months after the first year of installation
Oil and Floatables Removal	- Once per year, with sediment removal - Following a spill in the drainage area
Sediment Removal	- Once per year or as needed - Following a spill in the drainage area
NOTE: For most clean outs the entire volume of liquid does not need to be removed from the manhole. Only remove the first few inches of oils and floatables from the water surface to reduce the total volume of liquid removed during a clean out.	

First Defense® Installation Log

HYDRO INTERNATIONAL REFERENCE NUMBER:	
SITE NAME:	
SITE LOCATION:	
OWNER:	CONTRACTOR:
CONTACT NAME:	CONTACT NAME:
COMPANY NAME:	COMPANY NAME:
ADDRESS:	ADDRESS:
TELEPHONE:	TELEPHONE:
FAX:	FAX:

INSTALLATION DATE: / /

MODEL SIZE (CIRCLE ONE): **FD-4** **FD-4HC** **FD-6** **FD-6HC**

INLET (CIRCLE ALL THAT APPLY): **GRATED INLET (CATCH BASIN)** **INLET PIPE (FLOW THROUGH)**

Hydro International (Stormwater), 94 Hutchins Drive, Portland ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212 Web: www.hydro-int.com

First Defense® Inspection and Maintenance Log

Date	Initials	Depth of Floatables and Oils	Sediment Depth Measured	Volume of Sediment Removed	Site Activity and Comments

Hydro International (Stormwater), 94 Hutchins Drive, Portland ME 04102
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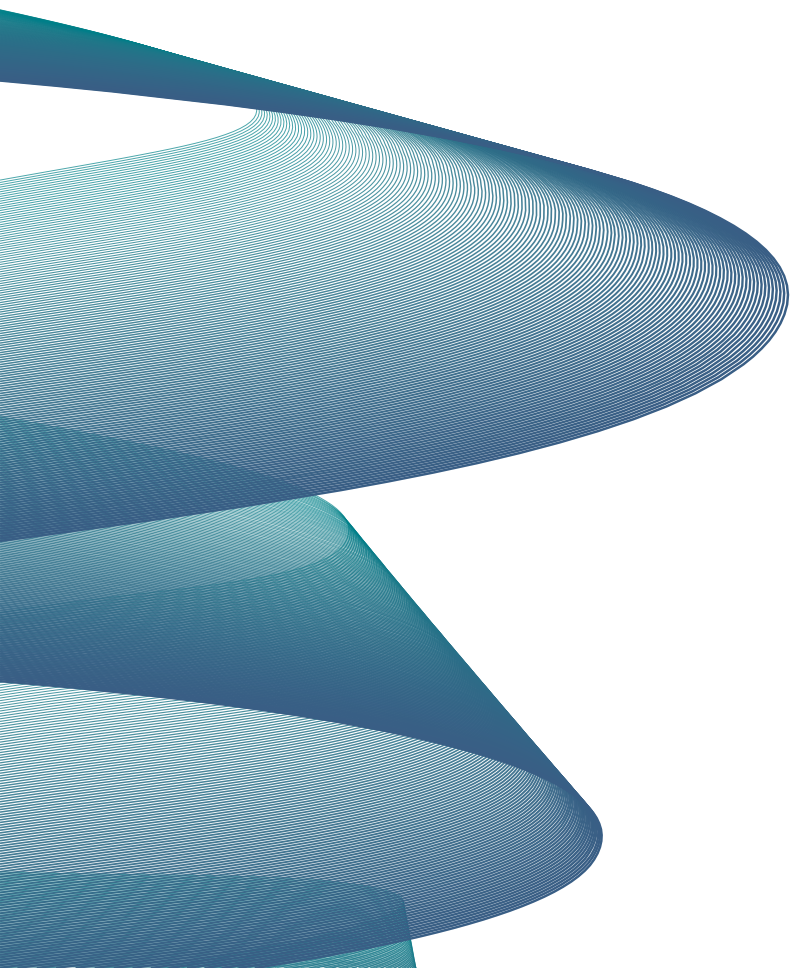
What is HX?

HX is Hydro Experience, it is the essence of Hydro. It's interwoven into every strand of Hydro's story, from our products to our people, our engineering pedigree to our approach to business and problem-solving.

HX is a stamp of quality and a mark of our commitment to optimum process performance. A Hydro solution is tried, tested and proven.

There is no equivalent to Hydro HX.



Stormwater Solutions

94 Hutchins Drive
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Tel: (207) 756-6200
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stormwaterinquiry@hydro-int.com

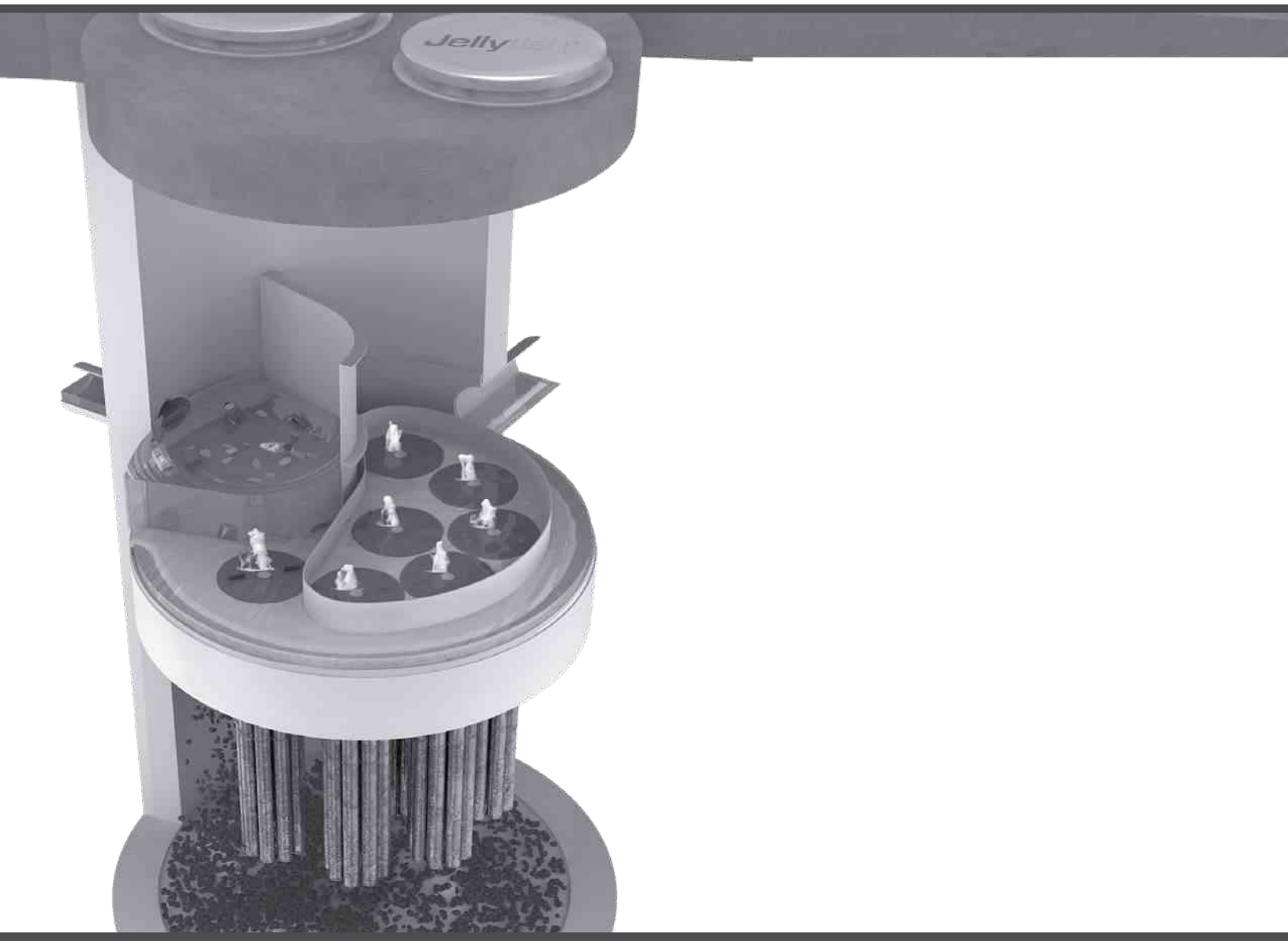
www.hydro-int.com

Turning Water Around...®

FD_O+M_D1502

CONTECH®
ENGINEERED SOLUTIONS

Jellyfish® Filter Maintenance Guide



Jellyfish®

JELLYFISH® FILTER
INSPECTION & MAINTENANCE GUIDE

Jellyfish units are often just one of many structures in a more comprehensive stormwater drainage and treatment system.

In order for maintenance of the Jellyfish filter to be successful, it is imperative that all other components be properly maintained. The maintenance and repair of upstream facilities should be carried out prior to Jellyfish maintenance activities.

In addition to considering upstream facilities, it is also important to correct any problems identified in the drainage area. Drainage area concerns may include: erosion problems, heavy oil loading, and discharges of inappropriate materials.

TABLE OF CONTENTS

1.0 Inspection and Maintenance Overview

The primary purpose of the Jellyfish® Filter is to capture and remove pollutants from stormwater runoff. As with any filtration system, these pollutants must be removed to maintain the filter's maximum treatment performance. Regular inspection and maintenance are required to insure proper functioning of the system.

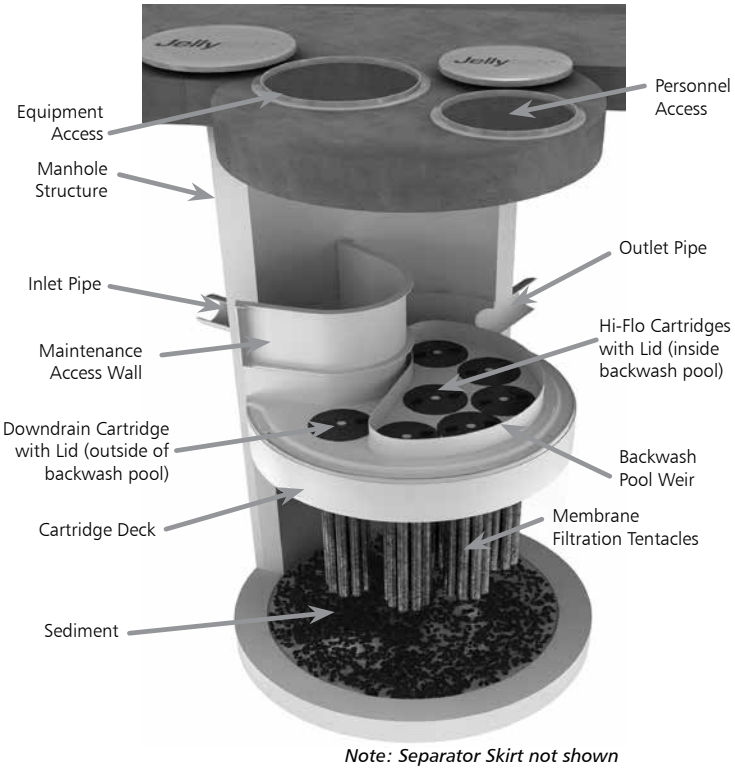
Maintenance frequencies and requirements are site specific and vary depending on pollutant loading. Additional maintenance activities may be required in the event of non-storm event runoff, such as base-flow or seasonal flow, an upstream chemical spill or due to excessive sediment loading from site erosion or extreme runoff events. It is a good practice to inspect the system after major storm events.

Inspection activities are typically conducted from surface observations and include:

- Observe if standing water is present
- Observe if there is any physical damage to the deck or cartridge lids
- Observe the amount of debris in the Maintenance Access Wall (MAW) or inlet bay for vault systems

Maintenance activities include:

- Removal of oil, floatable trash and debris
- Removal of collected sediments
- Rinsing and re-installing the filter cartridges
- Replace filter cartridge tentacles, as needed



Note: Separator Skirt not shown

2.0 Inspection Timing

Inspection of the Jellyfish Filter is key in determining the maintenance requirements for, and to develop a history of, the site's pollutant loading characteristics. In general, inspections should be performed at the times indicated below; *or per the approved project stormwater quality documents (if applicable), whichever is more frequent*.

1. A minimum of quarterly inspections during the first year of operation to assess the sediment and floatable pollutant accumulation, and to ensure proper functioning of the system.
2. Inspection frequency in subsequent years is based on the inspection and maintenance plan developed in the first year of operation. Minimum frequency should be once per year.
3. Inspection is recommended after each major storm event.
4. Inspection is required immediately after an upstream oil, fuel or other chemical spill.

3.0 Inspection Procedure

The following procedure is recommended when performing inspections:

1. Provide traffic control measures as necessary.
2. Inspect the MAW or inlet bay for floatable pollutants such as trash, debris, and oil sheen.
3. Measure oil and sediment depth in several locations, by lowering a sediment probe until contact is made with the floor of the structure. Record sediment depth, and presences of any oil layers.
4. Inspect cartridge lids. Missing or damaged cartridge lids to be replaced.
5. Inspect the MAW (where appropriate), cartridge deck and receptacles, and backwash pool weir, for damaged or broken components.

3.1 Dry weather inspections

- Inspect the cartridge deck for standing water, and/or sediment on the deck.
- No standing water under normal operating conditions.
- Standing water inside the backwash pool, but not outside the backwash pool indicates, that the filter cartridges need to be rinsed.

Inspection Utilizing Sediment Probe

- Standing water outside the backwash pool is not anticipated and may indicate a backwater condition caused by high water elevation in the receiving water body, or possibly a blockage in downstream infrastructure.
- Any appreciable sediment (≥1/16") accumulated on the deck surface should be removed.

3.2 Wet weather inspections

- Observe the rate and movement of water in the unit. Note the depth of water above deck elevation within the MAW or inlet bay.
- Less than 6 inches, flow should be exiting the cartridge lids of each of the draindown cartridges (i.e. cartridges located outside the backwash pool).
- Greater than 6 inches, flow should be exiting the cartridge lids of each of the draindown cartridges and each of the hi-flo cartridges (i.e. cartridges located inside the backwash pool), and water should be overflowing the backwash pool weir.
- 18 inches or greater and relatively little flow is exiting the cartridge lids and outlet pipe, this condition indicates that the filter cartridges need to be rinsed.

4.0 Maintenance Requirements

Required maintenance for the Jellyfish Filter is based upon results of the most recent inspection, historical maintenance records, or the site specific water quality management plan; whichever is more frequent. In general, maintenance requires some combination of the following:

1. Sediment removal for depths reaching 12 inches or greater, or within 3 years of the most recent sediment cleaning, whichever occurs sooner.
2. Floatable trash, debris, and oil removal.
3. Deck cleaned and free from sediment.
4. Filter cartridges rinsed and re-installed as required by the most recent inspection results, or within 12 months of the most recent filter rinsing, whichever occurs sooner.
5. Replace tentacles if rinsing does not restore adequate hydraulic capacity, remove accumulated sediment, or if damaged or missing. It is recommended that tentacles should remain in service no longer than 5 years before replacement.
6. Damaged or missing cartridge deck components must be repaired or replaced as indicated by results of the most recent inspection.
7. The unit must be cleaned out and filter cartridges inspected immediately after an upstream oil, fuel, or chemical spill. Filter cartridge tentacles should be replaced if damaged or compromised by the spill.

5.0 Maintenance Procedure

The following procedures are recommended when maintaining the Jellyfish Filter:

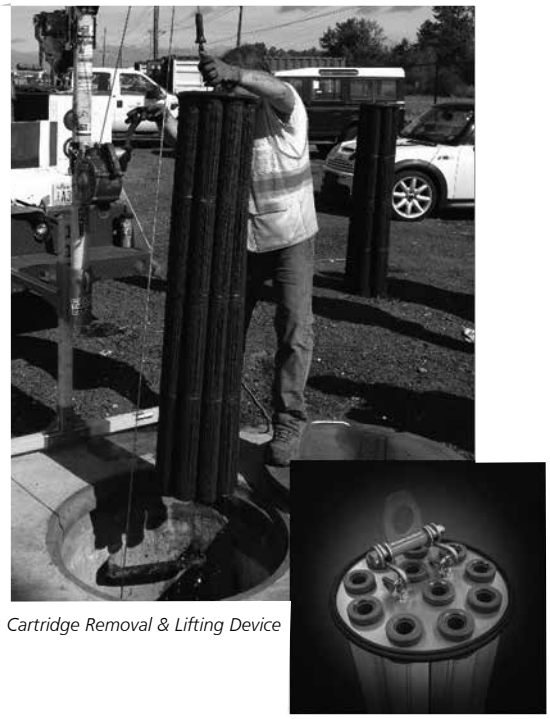
1. Provide traffic control measures as necessary.
2. Open all covers and hatches. Use ventilation equipment as required, according to confined space entry procedures. *Caution: Dropping objects onto the cartridge deck may cause damage*.
3. Perform Inspection Procedure prior to maintenance activity.
4. To access the cartridge deck for filter cartridge service, descend into the structure and step directly onto the deck. Caution: Do not step onto the maintenance access wall (MAW) or backwash pool weir, as damage may result. Note that the cartridge deck may be slippery.
5. Maximum weight of maintenance crew and equipment on the cartridge deck not to exceed 450 lbs.

5.1 Filter Cartridge Removal

1. Remove a cartridge lid.
2. Remove cartridges from the deck using the lifting loops in the cartridge head plate. Rope or a lifting device (available from Contech) should be used. *Caution: Should a snag occur, do not force the cartridge upward as damage to the tentacles may result. Wet cartridges typically weigh between 100 and 125 lbs*.
3. Replace and secure the cartridge lid on the exposed empty receptacle as a safety precaution. Contech does not recommend exposing more than one empty cartridge receptacle at a time.

5.2 Filter Cartridge Rinsing

1. Remove all 11 tentacles from the cartridge head plate. Take care not to lose or damage the O-ring seal as well as the plastic threaded nut and connector.



Cartridge Removal & Lifting Device

2. Position tentacles in a container (or over the MAW), with the threaded connector (open end) facing down, so rinse water is flushed through the membrane and captured in the container.
3. Using the Jellyfish rinse tool (available from Contech) or a low-pressure garden hose sprayer, direct water spray onto the tentacle membrane, sweeping from top to bottom along the length of the tentacle. Rinse until all sediment is removed from the membrane. *Caution: Do not use a high pressure sprayer or focused stream of water on the membrane. Excessive water pressure may damage the membrane*.

4. Collected rinse water is typically removed by vacuum hose.
5. Reassemble cartridges as detailed later in this document. Reuse O-rings and nuts, ensuring proper placement on each tentacle.

5.3 Sediment and Flotables Extraction

1. Perform vacuum cleaning of the Jellyfish Filter only after filter cartridges have been removed from the system. Access the lower chamber for vacuum cleaning only through the maintenance access wall (MAW) opening. Be careful not to damage the flexible plastic separator skirt that is attached to the underside of the deck on manhole systems. Do not lower the vacuum wand through a cartridge receptacle, as damage to the receptacle will result.
2. Vacuum floatable trash, debris, and oil, from the MAW opening or inlet bay. Alternatively, floatable solids may be removed by a net or skimmer.

Vacuuming Sump Through MAW

3. Pressure wash cartridge deck and receptacles to remove all sediment and debris. Sediment should be rinsed into the sump area. Take care not to flush rinse water into the outlet pipe.
4. Remove water from the sump area. Vacuum or pump equipment should only be introduced through the MAW or inlet bay.
5. Remove the sediment from the bottom of the unit through the MAW or inlet bay opening.

Vacuuming Sump Through MAW

6. For larger diameter Jellyfish Filter manholes (≥8-ft) and some vaults complete sediment removal may be facilitated by removing a cartridge lid from an empty receptacle and inserting a jetting wand (not a vacuum wand) through the receptacle. Use the sprayer to rinse loosened sediment toward the vacuum hose in the MAW opening, being careful not to damage the receptacle.

5.4 Filter Cartridge Reinstallation and Replacement

1. Cartridges should be installed after the deck has been cleaned. It is important that the receptacle surfaces be free from grit and debris.
2. Remove cartridge lid from deck and carefully lower the filter cartridge into the receptacle until head plate gasket is seated squarely in receptacle. ***Caution: Do not force the cartridge downward; damage may occur.***
3. Replace the cartridge lid and check to see that both male threads are properly seated before rotating approximately 1/3 of a full rotation until firmly seated. Use of an approved rim gasket lubricant may facilitate installation. See next page for additional details.
4. If rinsing is ineffective in removing sediment from the tentacles, or if tentacles are damaged, provisions must be made to replace the spent or damaged tentacles with new tentacles. Contact Contech to order replacement tentacles.

5.5 Chemical Spills

Caution: If a chemical spill has been captured, do not attempt maintenance. Immediately contact the local hazard response agency and contact Contech.

5.6 Material Disposal

The accumulated sediment found in stormwater treatment and conveyance systems must be handled and disposed of in accordance with regulatory protocols. It is possible for sediments to contain measurable concentrations of heavy metals and organic chemicals (such as pesticides and petroleum products). Areas with the greatest potential for high pollutant loading include industrial areas and heavily traveled roads. Sediments and water must be disposed of in accordance with all applicable waste disposal regulations. When scheduling maintenance, consideration must be made for the disposal of solid and liquid wastes. This typically requires coordination with a local landfill for solid waste disposal. For liquid waste disposal a number of options are available including a municipal vacuum truck decant facility, local waste water treatment plant or on-site treatment and discharge.

Jellyfish Filter Components & Filter Cartridge Assembly and Installation

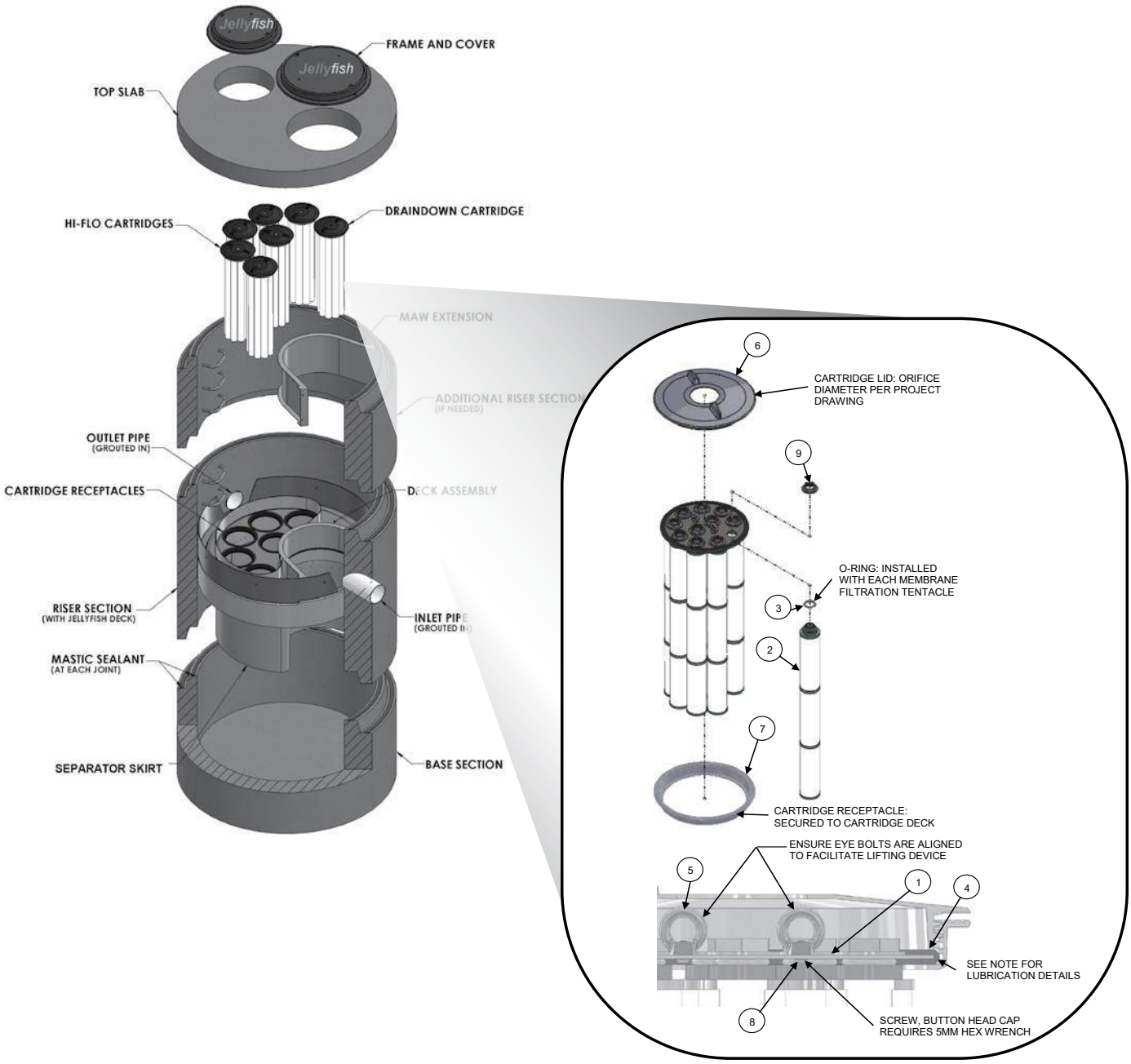


TABLE 1: BOM

ITEM NO.	DESCRIPTION
1	JF HEAD PLATE
2	JF TENTACLE
3	JF O-RING
4	JF HEAD PLATE GASKET
5	JF CARTRIDGE EYELET
6	JF 14IN COVER
7	JF RECEPTACLE
8	BUTTON HEAD CAP SCREW M6X14MM SS
9	JF CARTRIDGE NUT

TABLE 2: APPROVED GASKET LUBRICANTS

PART NO.	MFR	DESCRIPTION
78713	LA-CO	LUBRI-JOINT
40501	HERCULES	DUCK BUTTER
30600	OATEY	PIPE LUBRICANT
PSLUBXL1Q	PROSELECT	PIPE JOINT LUBRICANT

NOTES:

Head Plate Gasket Installation:
Install Head Plate Gasket (Item 4) onto the Head Plate (Item 1) and liberally apply a lubricant from Table 2: Approved Gasket Lubricants onto the gasket where it contacts the Receptacle (Item 7) and Cartridge Lide (ITem 6). Follow Lubricant manufacturer's instructions.

Lid Assembly:
Rotate Cartridge Lid counter-clockwise until both male threads drop down and properly seat. Then rotate Cartridge Lid clock-wise approximately one-third of a full rotation until Cartridge Lid is firmly secured, creating a watertight seal.

Jellyfish Filter Inspection and Maintenance Log

Owner:				Jellyfish Model No:		
Location:				GPS Coordinates:		
Land Use:	Commercial:		Industrial:		Service Station:	
	Roadway/Highway:		Airport:		Residential:	

Date/Time:						
Inspector:						
Maintenance Contractor:						
Visible Oil Present: (Y/N)						
Oil Quantity Removed:						
Floatable Debris Present: (Y/N)						
Floatable Debris Removed: (Y/N)						
Water Depth in Backwash Pool						
Draindown Cartridges externally rinsed and recommissioned: (Y/N)						
New tentacles put on Draindown Cartridges: (Y/N)						
Hi-Flo Cartridges externally rinsed and recommissioned: (Y/N)						
New tentacles put on Hi-Flo Cartridges: (Y/N)						
Sediment Depth Measured: (Y/N)						
Sediment Depth (inches or mm):						
Sediment Removed: (Y/N)						
Cartridge Lids intact: (Y/N)						
Observed Damage:						
Comments:						

Jellyfish®

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Support

- Drawings and specifications are available at www.conteches.com/jellyfish.
- Site-specific design support is available from Contech Engineered Solutions.
- Find a Certified Maintenance Provider at www.conteches.com/ccmp

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StormTech®
Detention • Retention • Water Quality
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Isolator® Row O&M Manual

THE MOST **ADVANCED** NAME IN WATER MANAGEMENT SOLUTIONS™

ADS®

THE ISOLATOR® ROW

INTRODUCTION

An important component of any Stormwater Pollution Prevention Plan is inspection and maintenance. The StormTech Isolator Row is a technique to inexpensively enhance Total Suspended Solids (TSS) and Total Phosphorus (TP) removal with easy access for inspection and maintenance.

THE ISOLATOR ROW

The Isolator Row is a row of StormTech chambers, either SC-160, SC-310, SC-310-3, SC-740, DC-780, MC-3500 or MC-4500 models, that is surrounded with filter fabric and connected to a closely located manhole for easy access. The fabric-wrapped chambers provide for settling and filtration of sediment as storm water rises in the Isolator Row and ultimately passes through the filter fabric. The open bottom chambers and perforated sidewalls (SC-310, SC- 310-3 and SC-740 models) allow storm water to flow both vertically and horizontally out of the chambers. Sediments are captured in the Isolator Row protecting the storage areas of the adjacent stone and chambers from sediment accumulation.

A woven geotextile fabric is placed between the stone and the Isolator Row chambers. The woven geotextile provides a media for stormwater filtration, a durable surface for maintenance, prevents scour of the underlying stone and remains intact during high pressure jetting. A non-woven fabric is placed over the chambers to provide a filter media for flows passing through the perforations in the sidewall of the chamber. The non-woven fabric is not required over the SC-160, DC-780, MC-3500 or MC-4500 models as these chambers do not have perforated side walls.

The Isolator Row is typically designed to capture the “first flush” and offers the versatility to be sized on a volume basis or flow rate basis. An upstream manhole provides access to the Isolator Row and typically includes a high flow weir. When flow rates or volumes exceed the Isolator Row weir capacity the water will flow over the weir and discharge through a manifold to the other chambers.

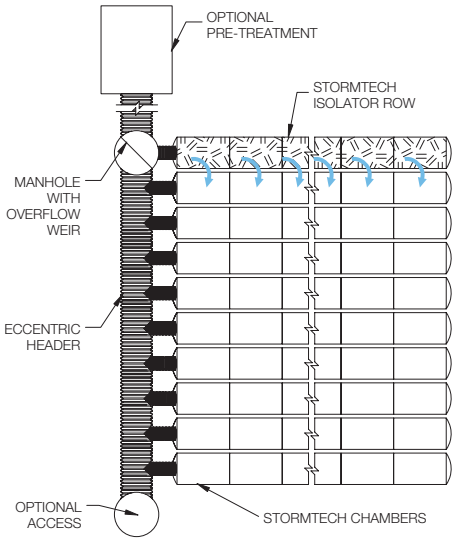
Another acceptable design uses one open grate inlet structure. Using a “high/low” design (low invert elevation on the Isolator Row and a higher invert elevation on the manifold) an open grate structure can provide the advantages of the Isolator Row by creating a differential between the Isolator Row and manifold thus allowing for settlement in the Isolator Row.

The Isolator Row may be part of a treatment train system. The design of the treatment train and selection of pretreatment devices by the design engineer is often driven by regulatory requirements. Whether pretreatment is used or not, the Isolator Row is recommended by StormTech as an effective means to minimize maintenance requirements and maintenance costs.

Note: See the StormTech Design Manual for detailed information on designing inlets for a StormTech system, including the Isolator Row.

Looking down the Isolator Row from the manhole opening, woven geotextile is shown between the chamber and stone base.

StormTech Isolator Row with Overflow Spillway (not to scale)



ISOLATOR ROW INSPECTION/MAINTENANCE

INSPECTION

The frequency of inspection and maintenance varies by location. A routine inspection schedule needs to be established for each individual location based upon site specific variables. The type of land use (i.e. industrial, commercial, residential), anticipated pollutant load, percent imperviousness, climate, etc. all play a critical role in determining the actual frequency of inspection and maintenance practices.

At a minimum, StormTech recommends annual inspections. Initially, the Isolator Row should be inspected every 6 months for the first year of operation. For subsequent years, the inspection should be adjusted based upon previous observation of sediment deposition.

The Isolator Row incorporates a combination of standard manhole(s) and strategically located inspection ports (as needed). The inspection ports allow for easy access to the system from the surface, eliminating the need to perform a confined space entry for inspection purposes.

If upon visual inspection it is found that sediment has accumulated, a stadia rod should be inserted to determine the depth of sediment. When the average depth of sediment exceeds 3 inches throughout the length of the Isolator Row, clean-out should be performed.

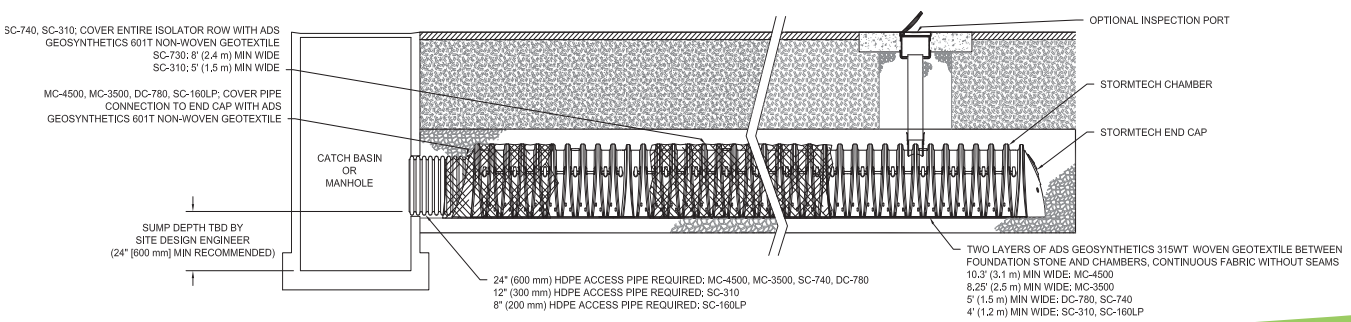
MAINTENANCE

The Isolator Row was designed to reduce the cost of periodic maintenance. By "isolating" sediments to just one row, costs are dramatically reduced by eliminating the need to clean out each row of the entire storage bed. If inspection indicates the potential need for maintenance, access is provided via a manhole(s) located on the end(s) of the row for cleanout. If entry into the manhole is required, please follow local and OSHA rules for a confined space entries.

Maintenance is accomplished with the JetVac process. The JetVac process utilizes a high pressure water nozzle to propel itself down the Isolator Row while scouring and suspending sediments. As the nozzle is retrieved, the captured pollutants are flushed back into the manhole for vacuuming. Most sewer and pipe maintenance companies have vacuum/JetVac combination vehicles. Selection of an appropriate JetVac nozzle will improve maintenance efficiency. Fixed nozzles designed for culverts or large diameter pipe cleaning are preferable. Rear facing jets with an effective spread of at least 45" are best. Most JetVac reels have 400 feet of hose allowing maintenance of an Isolator Row up to 50 chambers long. **The JetVac process shall only be performed on StormTech Isolator Rows that have AASHTO class 1 woven geotextile (as specified by StormTech) over their angular base stone.**

StormTech Isolator Row (not to scale)

Note: Non-woven fabric is only required over the inlet pipe connection into the end cap for SC-160LP, DC-780, MC-3500 and MC-4500 chamber models and is not required over the entire Isolator Row.



ISOLATOR ROW STEP BY STEP MAINTENANCE PROCEDURES

STEP 1

Inspect Isolator Row for sediment.

A) Inspection ports (if present)
- i. Remove lid from floor box frame
- ii. Remove cap from inspection riser
- iii. Using a flashlight and stadia rod,measure depth of sediment and record results on maintenance log.
- iv. If sediment is at or above 3 inch depth, proceed to Step 2. If not, proceed to Step 3.

B) All Isolator Rows
- i. Remove cover from manhole at upstream end of Isolator Row
- ii. Using a flashlight, inspect down Isolator Row through outlet pipe
  1. Mirrors on poles or cameras may be used to avoid a confined space entry
  2. Follow OSHA regulations for confined space entry if entering manhole
- iii. If sediment is at or above the lower row of sidewall holes (approximately 3 inches), proceed to Step 2. If not, proceed to Step 3.

STEP 2

Clean out Isolator Row using the JetVac process.

A) A fixed floor cleaning nozzle with rear facing nozzle spread of 45 inches or more is preferable

B) Apply multiple passes of JetVac until backflush water is clean

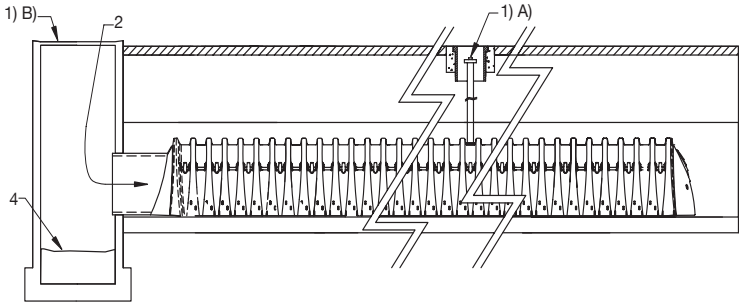
C) Vacuum manhole sump as required

STEP 3

Replace all caps, lids and covers, record observations and actions.

STEP 4

Inspect & clean catch basins and manholes upstream of the StormTech system.



SAMPLE MAINTENANCE LOG

Date	Stadia Rod Readings		Sediment Depth (1)–(2)	Observations/Actions	Inspector
	Fixed point to chamber bottom (1)	Fixed point to top of sediment (2)			
3/15/11	6.3 ft	none		New installation. Fixed point is CI frame at grade	DJM
9/24/11		6.2	0.1 ft	Some grit felt	SM
6/20/13		5.8	0.5 ft	Mucky feel, debris visible in manhole and in Isolator Row, maintenance due	NV
7/7/13	6.3 ft		0	System jetted and vacuumed	DJM

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Portsmouth, New Hampshire
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www.cmaengineers.com

February 22, 2024

Maxim Zakian, Town Planner
Town of Kittery
200 Rogers Road
Kittery, Maine 03904

RE: **Town of Kittery, Planning Board Services**
Hotel Development Review #2
Tax Map 14, Lots 10, 12 & 12A
CMA #591.160

Dear Max:

CMA Engineers has received the following information for Assignment #160, review #2 of the proposed hotel at 139 Old Post Road, 112 & 120 US Route 1 Bypass (Tax Map 14, Lots 10, 12 and 12A).

1) "Site Development Plans Proposed Hotel for Assessor's Map 1 Lots 10, 12 & 12A, 139 Old Post Road, 112 & 120 US Route 1 Bypass, Kittery, Maine" Prepared for: Kittery Circle, LLC, 321D Lafayette Road, Hampton, NH 03842" by GPA dated August 2, 2023 and revised January 25, 2024.
2) "Stormwater Management Report, Proposed Hotel Development, Assessor's Map 14 Lots 10, 12 & 12A, 139 Old Post Road, 112 & 120 US Route 1 Bypass, Kittery, Maine" by GPI dated August 17, 2023 and Revised January 25, 2024.
3) Response letter from GPI dated January 25, 2024.
4) Response to Traffic Impact Study Review from GPI dated September 13, 2023.

The project consists of three lots (Map 14, Lots 10, 1 and 12A) with a combined area of approximately 1.96-acres. The lots are in the Commercial 3 (C-3) district. There are two small wetlands on site, but no impacts are proposed. The project includes demolition of an existing building and construction of a 102-room hotel with associated parking and access drive.

The development will be served by public sewer and Kittery Water District water. The building is proposed to be sprinklered and there is a proposed hydrant on site. Proposed drainage includes an underdrained raingarden and closed drainage that ties into the existing drainage system in Old Post Road.

We have reviewed the information submitted for conformance with the Kittery Land Use and Development Code (LUDC) and general engineering practices and offer the comments below that correspond directly to the Town's Ordinances.

16.7 General Development Requirements

16.7.11 Performance Standards and Approval Criteria

16.7.11.A. Water supply

The applicant should secure information from Kittery Water District with respect to design approval and capacity. A letter was provided previously for capacity. We reiterate that design approval is needed.

16.7.11.B. Sewage disposal

The applicant should secure information from Kittery Sewer Services with respect to design approval. A letter was provided previously for capacity. We reiterate that design approval is needed.

16.7.11.C. Stormwater and Surface Drainage

The proposed stormwater management system uses closed drainage, hydrodynamic particle separators, an underground detention system, a stormwater treatment filter, permeable pavers, and stone drip edges to manage stormwater generated on site.

We have the following comments on the drainage analysis:

1) Section 3 references "municipal water" but should say "Kittery Water District". This comment remains unaddressed.
2) There were no test pits completed in the areas of the permeable pavers. The applicant has indicated that they will perform a test pit in this area to confirm soil conditions prior to construction of the pavers. Please add a note to the plans.
3) The Post Development Drainage Area Plan should be updated to remove the infiltration pond in the DOT right-of-way. This area is not infiltrating and the model should be updated (larger/additional runoff area, additional runoff, etc.)

16.7.D.(3)(d)[c]

Section 1 of the Stormwater Inspection & Maintenance Plan should specify that reports of inspection and maintenance are due to the Town by July 1st. The applicant indicated that this has been revised but we did not receive a revised copy.

We have the following additional comments on the Stormwater Inspection & Maintenance Plan:

1) Under the Grassed Underdrained Soil Filter section, a major storm is defined as **less than** 2.5". Is this correct? The applicant indicated that this has been revised but we did not receive a revised copy.

We have the following comments on the plans:

Sheet 7 – Site Plan

1) The * under the Zoning Regulations table should indicate that a modification has been granted (not just requested).
2) The plan should show the location(s) of the proposed open space. This comment was unaddressed.

Sheet 10 – Sewer Connection Plan

1) Has the condition of the existing sewer manhole to be cored been assessed?
2) A cleanout should be provided for the sewer service. The applicant indicates that a cleanout has been added but none is shown. We note that a detail has been added to Sheet 16.
3) Has the sewer design evaluated alternatives to a bend in the service? A cleanout at this location makes sense. The applicant indicates that a cleanout has been added but none is shown. We note that a detail has been added to Sheet 16.

Sheet 14 – Detail Sheet

1. The Pavement Section shows 9" of 304.13. Generally 12" is preferred.

Sheet 17 – Detail Sheet

1. There is green text in some places.

We have the following comments on the response letter dated September 13, 2023 to our traffic study review dated September 6,2023:

1) There will be pedestrians generated from the hotel that want to access adjacent commercial facilities (convenient store, grocery store, restaurants). To safely accommodate these pedestrians, the applicant should include appropriate offsite improvements. This is a comment we had previously.

   We concur with the applicant's suggestion that a midblock crossing should include a Rectangular Rapid Flashing Beacon (RRFB) and accompanying warning signs in advance of the crossing.

   We maintain our position that guests at the hotel will want access to the businesses across the street and are unlikely to use the sidewalk up to the traffic circle and then come back down the road for access. Adding the crosswalk, RRFB and signage will enable safe pedestrian traffic.

2) The applicant identifies the traffic circle as a High Crash Location and offers to complete an intersection safety assessment prior to Certificate of Occupancy. Completing this study now could help identify improvements to improve safety that could be funded in part by the applicant.

   We reiterate our position that this should be completed during this stage of the project, rather than prior to issuance of a certificate of occupancy.

Should you have any questions, please do not hesitate to call.

Very truly yours,

CMA ENGINEERS, INC.

Jodie Bray Strickland

Jodie Bray Strickland, P.E.
Senior Project Engineer

cc: David Jordan, P.E., Greenman-Pederson, Inc.

TOWN OF KITTERY, MAINE

SEWER DEPARTMENT
200 Rogers Road, Kittery, ME 03904
Telephone: (207) 439-4646 Fax: (207) 439-2799

120 US Route One By-Pass
Kittery, ME 03904

January 30, 2024

RE:Sewer Availability

This letter is to confirm that the sewer system (piping and pumping stations) and the treatment facility has the capacity and ability to handle the increased flow from the project located at 120 US Route One By-Pass.

This letter is only confirming the sewer department capacity, Impact and Entrance Fees will be calculated after project receives all required approvals.

If you have further questions or concerns, please contact me.

Sincerely Yours

Timothy Babkirk
Superintendent of Sewer Services
Town of Kittery
200 Rogers Rd
Kittery ME 03904
1-207-439-4646
tbabkirk@kitteryme.org