SITE PLAN REVIEW TECHNICAL ADVISORY COMMITTEE
PORTSMOUTH, NEW HAMPSHIRE

CONFERENCE ROOM A
CITY HALL, MUNICIPAL COMPLEX, 1 JUNKINS AVENUE

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https://us06web.zoom.us/webinar/register/WN_y2umoGNlRsO0rwGuwoxRJw

2:00 PM **November 3, 2026**

AGENDA

I. APPROVAL OF MINUTES

A. Approval of the October 6, 2026 Site Plan Review Technical Advisory Committee meeting minutes.

B. Approval of the October 13, 2026 Work Session meeting minutes.

II. OLD BUSINESS

A. The request of **Rafferty Investment Group LLC (Owner)**, for property located at **64 Bridge Street** requesting Site Plan Review approval for demolition of the existing structure and construction of a ten (10) room three-story Inn with associated site improvements. Said property is located on Assessor Map 126 Lot 55 and lies within the Mixed Residential Business (MRB) District, Character District 4 (CD4) and Downtown Overlay District. (LU-26-36)

B. The request of **St. Nicholas Greek Orthodox Church** (Owner), for property located at **0 Lafayette Road** (*Ledgewood Drive*) requesting Site Plan Review approval for the construction of a 15 unit, 3-story apartment building with associated site improvements. Said property is located on Assessor Map 229 Lot 6A and lies within the Gateway Corridor (G1) District. (LU-26-112)

III. ADJOURNMENT

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SITE PLAN REVIEW TECHNICAL ADVISORY COMMITTEE
PORTSMOUTH, NEW HAMPSHIRE

CONFERENCE ROOM A
CITY HALL, MUNICIPAL COMPLEX, 1 JUNKINS AVENUE

2:00 PM **October 6, 2026**

MEMBERS PRESENT:
Vincent Hayes; Chairperson, Planner II – Development Compliance, Peter Stith, Assistant Planning Director; David Desfosses, Project Manager – Engineering & Operations; Chad Putney, Acting Deputy Fire Chief; Peter Britz, Director of Planning & Sustainability; Shanti Wolph, Chief Building Inspector; Zachary Cronin, Assistant City Engineer; Mike Maloney; Deputy Police Chief; Eric Eby, Parking and Transportation Engineer

MEMBERS ABSENT:

ADDITIONAL STAFF PRESENT: Kate Homet, Environmental Planner/Sustainability Coordinator; Stefanie Casella, Planner II

MINUTES

A. Approval of the September 1, 2026 Site Plan Review Technical Advisory Committee meeting minutes.

B. Approval of the September 8, 2026 Work Session meeting minutes.

[5:01] The Committee voted to approve the September 1, 2026 and the September 8, 2026 minutes together as presented.

Motion: *P. Britz*
Second: *P. Stith*
Unanimous

I. OLD BUSINESS

A. The request of **Rafferty Investment Group LLC (Owner)**, for property located at **64 Bridge Street** requesting Site Plan Review approval for demolition of the existing structure and construction of a ten (10) room three-story Inn with associated site improvements. Said property is located on Assessor Map 126 Lot 55 and lies within the Mixed Residential

Business (MRB) District, Character District 4 (CD4) and Downtown Overlay District. (LU-26-36)

SPEAKING TO THE APPLICATION

[5:55] Scott Rafferty of Rafferty Investment Group and Stephen Haight of Civilworks New England came to present this application. Mr. Rafferty introduced the project and discussed what had been updated in the application since the previous submission.

TAC members asked about the roof drain, sump pump, kitchen waste and domestic waste. There was discussion about parking, loading zones and the potential removal of Hanover Street parking space. It was determined that changing the loading zone would have to go before the Parking Traffic & Safety Committee.

[11:17] Mr. Rafferty addressed the staff comments that had been received in advance of this meeting. A discussion continued with staff on how to address these comments. Mr. Rafferty noted that the use of the building would include a ground floor of the building would be a restaurant open to the public. The team also discussed the open space rules and permeability, they received clarification on how to calculate and will update.

The staff comments were as follows:

1) *Provide information on parking. The site review regs have changed to require off street parking for inn's.*
   Section 4.8 Off-Street Parking Provisions in the Downtown Overlay District
   1. The provisions of this Section recognize the availability of municipal parking facilities, on-street parking, and walkable development patterns within the Downtown Overlay District.
   2. Residential uses shall comply with Section 4.2.
   3. Hotels, inns, and motels shall provide:
   a. 0.75 parking spaces per guest room; and
   b. 1 parking space per 25 square feet of conference or banquet facilities.
   4. No minimum parking requirement shall apply to other nonresidential uses within the Downtown Overlay District.
   5. For uses within the Downtown Overlay District that are subject to a minimum parking requirement under this Section, the number of required off-street parking spaces shall be reduced by four (4) spaces.
2) *Please provide information on the "future/optional assembly and cater space"*
   a. *Will there be furniture? Any food heating and warming space?*
   b. *What are the dimensions of the space? This will be used to calculate the parking*
3) *Are the bathtubs found in the ADA Units walk-in tubs?*

4) *Why do some guest bathrooms have washing facilities and some don't?*
5) *Complete the zoning table the in plan set sheets*
6) *Please provide a cover letter that introduces the project*
7) *Need to provide a landscaping plan*
8) *Need to provide a lighting plan*
9) *Need to provide green building statement*
10) *Open space calculation must be 51% or more of green area*
11) *Is the roof drain also connected to the sump pump?*
12) *Is the proposed drainage connection to the existing connection left as part of the Bridge Street connection? If it is not then the existing drainage connection will need to be cut and capped at the main.*
13) *Confirm only appropriate kitchen waste will be directed to grease interceptor. All domestic waste shall be directed to domestic sewer service.*
14) *Show impacts to street parking on Hanover Street. Driveway location appears to eliminate one street parking space.*

C. Putney noted that the 'Exit Remoteness' requirement is not met with this proposal. C. Putney noted his design concerns and discussed why this was an issue. Mr. noted that they would look into it. S. Wolph noted that the rooftop use and with an occupant load of 46+ you would need at least two restrooms on the rooftop.

A discussion continued among TAC members and the applicants about additional outstanding issues and how to address them.

PUBLIC HEARING

[23:55] Opened up the public hearing, no one spoke, the public hearing was closed.

DISCUSSION AND DECISION OF THE BOARD

[24:25] E. Eby brought up the parking impacts again and informed the applicants of the Parking Traffic and Safety Committee schedule.

[25:39] ***Motion:*** *Z. Cronin motion to postpone this application to the November TAC meeting.*
Second: *P. Stith*
Unanimous

B. WITHDRAWN The request of **Colonial Properties LLC (Owner)**, for property located at **833 Islington Street** requesting a Parking Conditional Use Permit to allow 9 parking spaces where 21 are required. Said property is located on Assessor Map 165 Lot 6 and lies within the Character District 4-W (CD4-W). **WITHDRAWN** (LU-26-85)

[26:25] V. Hayes noted that the applicants for this property had withdrawn their submission.

C. The request of **St. Nicholas Greek Orthodox Church** (Owner), for property located at **0 Lafayette Road** (*Ledgewood Drive*) requesting Site Plan Review approval for the construction of a 15 unit, 3-story apartment building with associated site improvements. Said property is located on Assessor Map 229 Lot 6A and lies within the Gateway Corridor (G1) District. (LU-26-112)

SPEAKING TO THE APPLICATION

[27:05] Eric Poulin and Daniel Meditz of Jones and Beach Engineers came to present this application along with Ben Middleton of Martini Northern LLC and Brandon Holben of Winter Holben.

The team launched into responding to the staff comments received prior to the meeting and some of the remaining questions from the September meeting.

The staff comments were as follows:

1) *Please comply with site review regs 9.3. for dumpster placement including waste receptacle pads at 20 feet from both lot lines and dumpster placement near a stormwater inlet*
2) *Drainage easement will be needed to benefit the City at the southeast corner of the lot.*
3) *Please provide a sewer easement for 10 feet in width along the southern lot line*
4) *Update the existing conditions plan to show all trees and species on City property and obtain approval from trees and greenery before going to Planning Board*
5) *Extend 8" City water main to beginning of cul-de-sac in the road. Do not branch off existing water main as shown on plans. Keep water main within the road.*
6) *Any stormwater treatment devices in the City's right of way, including pocket pond #1, will require a license agreement with the City to perform ongoing maintenance of the treatment device.*
7) *Confirm elevations of sewer main and drainage culvert to the eastern side of property do not conflict.*

[32:58] Staff began discussing the projects and providing further comments and questions. The Fire Department discussed a flow test. D. Desfosses asked about the grading changes and the drainage impacts. He noted to the applicants the importance of getting permission to remove the landscaping in the City's ROW from the Trees & Greenery Committee before any drainage in the front of the property could be properly reviewed and approved. A discussion ensued about the water table, water lines, proposed drainage outlets, electric utilities,

S. Wolph noted the importance of correctly identifying and creating a table for the floors and corresponding room numbers for each floor.

P. Britz asked about inventorying the existing tree species on site and discussed with the applicants the requirement for identifying existing vegetation on site and what is to remain.

PUBLIC HEARING

[45:40] The public hearing was opened. No one spoke. The hearing was closed.

DISCUSSION AND DECISION OF THE BOARD

Applicant noted list of things to work on before the next meeting.

[48:27] ***Motion:*** *PB motion to postpone to November meeting.*
Second: *D. Desfosses.*
Unanimous.

II. NEW BUSINESS

A. The request of **Ryan Trust (Owner)**, for property located at **221 Woodbury Avenue** requesting Preliminary and Final Subdivision Approval to subdivide one lot into two lots with associated site improvements. Said property is located on Assessor Map 175 Lot 10 and lies within the General Residence A (GRA) District. (LU-26-57)

SPEAKING TO THE APPLICATION

[49:09] Martin Ryan, owner of the property, came to speak to this application for a subdivision. Mr. Ryan introduced the project proposal, the existing property and handed out hard copies of the plan. He began to review staff comments and address the issues raised in the comments. A discussion between the applicant and staff ensued in which the staff clarified their comments and provided suggestions for addressing the issues raised.

The staff comments were as follows:

1) *Subdivision plan needs to be stamped by licensed surveyor*
2) *Lot 2 building coverage is calculating to 26% please show calculations to show lot will comply with the 25% building coverage max or obtain a variance.*
3) *Garage sizes need to be consistent between plan sheets*
4) *Catch basin in driveway is shown connected to the sewer main. Update plan to connect to stormwater system.*

[59:41] S. Casella noted that the applicant is right at the 25% building coverage for Lot 1 and V. Hayes noted that the site diagram sheet C4, the house footprint is slightly larger than what is shown on the site plan. This increase would push the parcel past the 25% minimum for required open space, it is important that it is calculated correctly. S. Casella noted some other calculation and labelling issues that would need to be fixed prior to a Planning Board submission.

PUBLIC HEARING

[1:03:30] The public hearing was opened. No one spoke. The public hearing was closed.

DISCUSSION AND DECISION OF THE BOARD

[1:03:45] ***Motion:*** *D. Desfosses motion to recommend approval to the Planning Board with the following conditions:*

1) *Applicant shall submit the final utility design to the Department of Public Works (DPW) for review prior to Planning Board consideration.*
2) *Applicant shall have the plans stamped by a licensed land surveyor.*
3) *Applicant shall request a waiver from the Planning Board regarding the Subdivision Review Regulations requirement for a subdivision review agreement and surety.*

Second: *P. Britz*
Unanimous

B. The request of **Road to the West, LLC (Owner)**, for property located at **140 West Road** requesting Site Plan Approval for site improvements including parking, outdoor dining, lighting, drainage, and landscaping. Said property is located on Assessor Map 252 Lot 2-1301 and lies within the Industrial (I) District. (LU-26-107)

SPEAKING TO THE APPLICATION

[1:05:42] Alex Ross of Ross Engineering, Mark Gianniny of Portsmouth Architects, Alex Choquette of Anchor Management Group, John Bosen and Courtney Vaughn of Donahue, Tucker & Ciandella PLLC, came to speak to this application.

Mr. Bosen briefly gave background information on the property, what they were seeking for approval and what the applicants have been working on recently at this site and what they have done since the previous TAC work session.

[1:08:02] Mr. Ross reviewed what had been updated on the plan set since the previous TAC work session and then addressed the most recent staff comments received prior to this meeting. He noted that the team is looking to reduce the size of the proposed pergola as it would not meet side setbacks, potential changes could be a canvas awning or a temporary structure or request a variance from the Zoning Board of Adjustment. Mr. Gianniny spoke to the floor plans and the different uses/occupations of spaces. They addressed staff comments.

The staff comments were as follows:

1) *Pergola needs to comply with the side yard requirement*
2) *Total interior area must be assigned to a use (aisles are need to be assigned to a use, see definition of gross floor area)*
3) *Landscaping in the ROW needs to go to Trees and Greenery*

4) *Can the paved swale be vegetated?*
5) *How are the dumpsters being screened in compliance with Section 9.5 of the Site Review Regs?*
6) *Provide screening for the proposed future transformer and mechanical utilities in conformance with section 8.13.*

A discussion continued about parking, drainage, occupancy, licenses, plantings, dumpsters utility screenings, fire truck turning templates and widening the travel lane, along with installing bicycle racks and landscaped islands. They also discussed waivers needed.

PUBLIC HEARING

[1:43:19] Public hearing was opened, no one spoke, the public hearing was closed.

DISCUSSION AND DECISION OF THE BOARD

[1:43:43] V. Hayes and Z. Cronin listed off the comments made by staff throughout the meeting that need to be addressed.

[1:45:01] ***Motion:*** *Z. Cronin made a motion to recommend approval of this application to the Planning Board with the following conditions:*

1) *Landscaping proposed within the public right-of-way will require a license agreement for ongoing maintenance.*
2) *Applicant shall confirm whether irrigation meters are proposed. If irrigation is to be installed within the public right-of-way, a license agreement will also be required for the irrigation system.*
3) *The attached pergola does not comply with the required side yard setback and will require a variance unless redesigned to meet zoning requirements.*
4) *Applicant shall provide screening for the transformer or obtain a waiver from the Planning Board.*
5) *Applicant shall revise the truck-turning template to provide adequate turning radius required by the Fire Department.*
6) *The Site Review Regulations require two landscaped parking lot islands. Applicant shall either add the required islands or request a waiver from the Planning Board.*
7) *Applicant shall revise the stormwater design to increase the infiltration trench underdrain to a minimum 6-inch diameter pipe (8-inch preferred) and correct the pipe bedding depth to 12-inches.*
8) *Applicant shall provide bicycle parking.*

9) *City staff will recommend whether a site review agreement and surety should be required as part of the project approval.*

Second: *D. Desfosses*
Unanimous

III. ADJOURNMENT

The meeting adjourned at 3:41 p.m.

SITE PLAN REVIEW TECHNICAL ADVISORY COMMITTEE
PORTSMOUTH, NEW HAMPSHIRE

WORK SESSION

Conference Room A
City Hall, Municipal Complex, 1 Junkins Avenue

2:00 PM **October 13, 2026**

MINUTES

MEMBERS PRESENT:
Vincent Hayes; Chairperson, Planner II – Development Compliance, Peter Stith, Assistant Planning Director; David Desfosses, Project Manager – Engineering & Operations; Chad Putney, Acting Deputy Fire Chief; Peter Britz, Director of Planning & Sustainability; Zachary Cronin, Assistant City Engineer; Mike Maloney; Deputy Police Chief; Eric Eby, Parking and Transportation Engineer; Paul Garand, Assistant Building Inspector (Alternate)

MEMBERS ABSENT: Shanti Wolph, Chief Building Inspector;

ADDITIONAL STAFF PRESENT: Kate Homet, Environmental Planner/Sustainability Coordinator; Stefanie Casella, Planner II

635 Lincoln Avenue **Subdivision**
TFMoran Engineering, Engineer
(LUTW-26-15)

Edward Shiembob introduced himself and his surveyor, Brenda Kolbow, and proceeded to describe his desire to subdivide his parcel and the reasoning for proposing the split the way it is shown. Ms. Kolbow noted some of the constraints and variances that might be needed. TAC members asked questions about the existing garage, the street trees, sharing a driveway, compliance with the city sidewalk standards, code requirements for building separations, and the possibility of adding an ADU onto the lot.

No action was taken.

200 Market Street **Site Plan Review**
Haley Ward, Inc, Engineer
(LUTW-26-16)

John Chagnon (Haley Ward), Bill Bartell and Carla Goodknight (CJ architects), property owners Caroline Colella and Vincent Colella, and Duncan MacCallum, attorney.

Mr. Chagnon described the existing site and plans to merge adjacent lots to create the proposed commercial/residential mixed-use building along with parking inside the building. He went on to describe some site constraints and Ms. Goodknight described the large bedrock inhibiting the project. She described the proposed uses for the property and proposed parking structures along with more constraints on the property that may require seeking variances.

TAC members asked the project team questions about sewer routing, transformer placement, water requirements for the sprinkler system, the stacking levels for parking, open space materials, open space uses, turning radius and car maneuvering.

No action was taken.

105 Bartlett Street **Site Plan Review**
Tighe & Bond
(LUTW-26-17)

Neil Hansen of Tighe and Bond came to present this work session application. He spoke to the project as it was presented in the past and noted how a site walk for members would be beneficial. He went on to present the proposal to develop this lot for residential use.

TAC members asked about sprinkler system in the homes, the need for a fire truck turnaround if no sprinklers, the construction of the water line, the existing outfall into the North Mill Pond, connecting to the existing underdrain, the presence of basements, possibility of townhouse instead of single-family, restraints of the view corridor, hydrant location needing to move for snow plowing, concerns about narrowness of the street and need for a turnaround or cul-de-sac, oversight of the replacement of the brick box sewer, the extended floodplain delineation, creating larger swaths of open space, front and side lot lines and no structures below elevation 12.

No action was taken.

28 Langdon Street, Unit 5 **Site Plan Review**
Easterly Surveying, Inc.
(LUTW-26-14)

Anthony Balakier, owner of Unit #5 on the property, came to present this application. He described his proposal and sought feedback from members on how to move forward. TAC members asked about the size of the existing water and sewer services, parking requirements, emergency egress areas, building setbacks, the change of use, fire and building code impacts, overhead utilities and next steps for zoning compliance.

No action was taken.

The meeting adjourned at 3:04 p.m.

JONES & BEACH ENGINEERS INC.
100 Domain Drive, Suite 201, Exeter, NH 03833
603.772.4746 – JonesandBeach.com

October 21, 2026

City of Portsmouth Planning and Sustainability Department
Attn: Peter Britz, Director
1 Junkins Avenue, 3rd Floor
Portsmouth, NH 03801

RE: Response Letter
Lafayette Road, Portsmouth, NH
Tax Map 229, Lot 6A
JBE Project No. 25071.2

Dear Mr. Britz,

We are in receipt of comments from the Technical Advisory Committee dated October 5, 2026. Review comments are listed below with our responses in bold. In addition to the below comments, Dave Desfosses noted at the TAC meeting that the bottom of the pocket pond cannot be any lower than the grade of the edge of wetland. Spotgrades have been added to the edge of wetland closest to the pocket pond and the elevation of the highest point along the edge of wetland is 19.26. The bottom of the pocket pond has been raised to 19.3. Additionally, the pond outline has been revised to save approximately a 10' strip along the curb line in front of the property and an outlet control structure has been provided so that the pond could be made shallower and smaller.

1. *Please comply with site review regs 9.3. for dumpster placement including waste receptacle pads at 20 feet from both lot lines and dumpster placement near a stormwater inlet*
   Response: The dumpster pad has been moved to be 20' from property lines and drainage inlets to comply with site plan review regulations Section 9.3.

2. *Drainage easement will be needed to benefit the City at the southeast corner of the lot.*
   Response: A drainage easement has been added. See Sheet A1.

3. *Please provide a sewer easement for 10 feet in width along the southern lot line.*
   Response: A 10' wide sewer easement has been added. See Sheet A1.

4. *Update the existing conditions plan to show all trees and species on City property and obtain approval from trees and greenery before going to Planning Board.*
   Response: The existing conditions plan will be updated to show trees and species on City property and approval will be obtained from trees and greenery prior to going before the Planning Board. The required survey work has not been performed at this time.

5. *Extend 8" City water main to beginning of cul-de-sac in the road. Do not branch off existing water main as shown on plans. Keep water main within the road.*
   Response: The 8" line that was branching off from the main line has been removed. We are instead proposing to replace the existing 6" cast iron main with an 8" D.I. main within the roadway as discussed at the TAC meeting on October 6th.

6. *Any stormwater treatment devices in the City's right of way, including pocket pond #1, will require a license agreement with the City to perform ongoing maintenance of the treatment device.*
   Response: Understood.

7. *Confirm elevations of sewer main and drainage culvert to the eastern side of property do not conflict.*
   Response: The culvert invert and top of sewer elevation at the crossing have been added to Sheet C4 to confirm that they do not conflict.

Included with this response letter are the following:

1. One (1) Full Size Revised Plan Set.
2. One (1) Revised Drainage Analysis.
3. One (1) Revised Set of Architectural Plans.

If you have any questions or need any additional information, please feel free to contact our office. Thank you very much for your time.

Very truly yours,
JONES & BEACH ENGINEERS, INC.

Erik Poulin
Associate Principal

cc: Stefanie Casella, Portsmouth Planning Department (via email)
Ben Middleton, Martini Northern LLC (via email)
Peter Middleton, Martini Northern LLC (via email)
Glen Lambert, Winter Holben (via email)
Brandon Holben, Winter Holben (via email)

JONES & BEACH ENGINEERS INC.
100 Domain Drive, Suite 201, Exeter, NH 03833
603.772.4746 – JonesandBeach.com

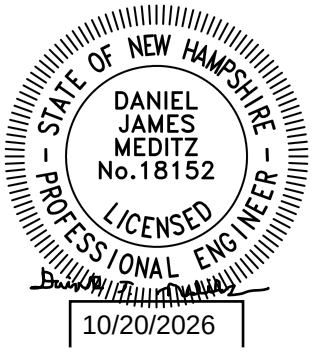
DRAINAGE ANALYSIS

SEDIMENT AND EROSION CONTROL PLAN

"Ledgewood Drive LLC"
Ledgewood Drive
Portsmouth, NH 03801
Tax Map 229, Lot 6A

Prepared for:

Ledgewood Drive LLC
Attn. Ben Middleton
10 Main Street
Newfields, NH 03856



Prepared by:
Jones & Beach Engineers, Inc.
100 Domain Drive
Suite 201
Exeter, NH 03833
(603) 772-4746
August 6, 2026
Last Revised October 19, 2026
JBE Project No. 25071.2

EXECUTIVE SUMMARY

Ledgewood Drive LLC proposes to construct an apartment building with associated indoor and outdoor parking, drainage, and utilities on the subject parcel with access from Ledgewood Drive in Portsmouth, NH. In the existing condition, the subject parcel is vacant and wooded, but surrounded by existing developed sites including a dentist's office to the west on abutting Tax Map 229, Lot 6, a residential subdivision immediately to the north, and the Portsmouth High School athletic field immediately to the east. This is important because the site receives significant offsite contributing watershed runoff from the north and west, and ultimately drains toward the east.

The intent of this analysis is to meet the requirements of Section 7 of the Portsmouth Site Plan Review Regulations, specifically as they relate to on-site stormwater management, and to mitigate the potential for adverse impacts to the subject parcel and downstream properties and water features resulting from the quality, quantity, and peak rate of runoff resulting from the proposed development as well as from upstream contributing watershed areas.

A drainage analysis of the subject parcel as well as offsite contributing watershed area was conducted for the purpose of estimating the peak rate and volume of stormwater runoff in the pre- and post-construction conditions, and to subsequently design adequate drainage structures so that the above-mentioned requirements could be met. Two models were compiled, one for this area in its existing (pre-construction) condition, and a second for the area in its proposed (post-construction) condition. A summary of the pre- and post-construction conditions peak rates of runoff toward the single analysis point, representing a wooded area just downstream of the subject parcel and adjacent to the Portsmouth High School ball field, in units of cubic feet per second (cfs) is as follows:

Analysis Point	2 Year		10 Year		25 Year		50 Year	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Analysis Point #1	2.01	1.99	4.75	4.74	9.47	9.00	15.16	14.74
Analysis Point #2	0.31	0.35	0.51	0.56	0.67	0.72	0.81	0.88

A similar summary of the existing and proposed peak volumes in units of acre-feet is as follows:

Analysis Point	2 Year		10 Year		25 Year		50 Year	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Analysis Point #1	0.188	0.187	0.572	0.572	0.990	0.973	1.425	1.396
Analysis Point #2	0.023	0.026	0.039	0.043	0.052	0.057	0.064	0.070

Per the above tables, the post-construction peak rate and volume of runoff is maintained or reduced toward Analysis Point 1 during the 2-, 10-, 25-, and 50-year 24-hour storms. The slight flow and volume increases toward Analysis Point 2 are due to the concurrent offsite sidewalk project by others and the 5' wide proposed paved apron in the right of way that is pitched toward Ledgewood Drive to keep road runoff off the site. The runoff resulting from the paved apron alone is negligible, and the increase toward Analysis Point 2 resulting from the offsite sidewalk project is outside of our control. Furthermore, runoff from all proposed impervious surfaces except for the aforementioned paved apron is treated post-construction, and the required pollutant removal thresholds have been met. The stormwater management system as designed meets all requirements of the City of Portsmouth stormwater regulations per Section 7 of the Site Plan Review Regulations.

TABLE OF CONTENTS

Executive Summary

1.0 Rainfall Characteristics

2.0 Existing Conditions Analysis

3.0 Proposed Conditions Analysis

4.0 Conclusion

Appendix I Existing Conditions Analysis

2 Year - 24 Hour Summary
10 Year - 24 Hour Complete
25 Year - 24 Hour Summary
50 Year - 24 Hour Complete

Appendix II Proposed Conditions Analysis

2 Year - 24 Hour Summary
10 Year - 24 Hour Complete
25 Year - 24 Hour Summary
50 Year - 24 Hour Complete

Appendix III Test Pit Logs
Appendix IV NRCS Soil Map
Appendix V Extreme Precipitation Estimates
Appendix VI Rip Rap Calculations
Appendix VII BMP Worksheets
Appendix VIII Pollutant Removal Calculations
Appendix IX Stormwater Operations and Maintenance Manual
Appendix X Pre- and Post-Construction Watershed Plans

1.0 RAINFALL CHARACTERISTICS

This drainage report includes an existing conditions analysis of the area involved in the proposed development, as well as a proposed condition, or post-construction analysis, of the same area. These analyses were accomplished using the USDA SCS TR-20 Method within the HydroCAD 10.20-6a Stormwater Modeling System. The curve numbers were developed using the SCS TR-55 Runoff Curve numbers for Urban Areas. A Type III SCS 24-hour rainfall distribution was utilized in analyzing the data for the 2 Year – 24 Hour (3.71"), 10 Year – 24 Hour (5.63"), 25 Year – 24 Hour (7.13"), and 50 Year – 24 Hour (8.54") storm events. This data was taken from the Extreme Precipitation Tables developed by the Northeast Regional Climate Center (NRCC), and the values have been increased by 15% due to the project being within the Coastal/Great Bay Region.

Post-construction peak rates and volumes of runoff will be equal to or less than pre-construction peak rates and volumes of runoff toward Analysis Point 1, stormwater runoff from proposed impervious surfaces will be treated as practicable, and required pollutant removal thresholds will be met, thereby minimizing any potential for a negative impact on abutting properties.

2.0 EXISTING CONDITIONS ANALYSIS

In the existing condition, the subject parcel is vacant and wooded, but surrounded by existing developed sites including a dentist's office to the west on abutting Tax Map 229, Lot 6, a residential subdivision immediately to the north, and the Portsmouth High School athletic field immediately to the east. This is important because the site receives significant offsite contributing watershed runoff from the north and west, which ultimately drains toward the east.

There are ultimately two analysis points toward which all runoff from the subject parcel and offsite contributing watershed areas as well as a stretch of Ledgewood Drive that was considered for the analysis, together referred to from this point forward as simply the "study area", drain.

Analysis point 1 (AP1) represents a small wetland pocket in the southeast corner of the subject parcel. Downstream of analysis point 1, runoff from the site flows on to the Portsmouth High School athletic field immediately to the east of the site. Therefore, it is very important that stormwater is not discharged from the site at a higher peak rate or volume post-construction as compared with the pre-construction condition so as to avoid discharging excessive water into the athletic field. Runoff from the entire subject parcel as well as offsite contributing watershed areas ultimately drains toward Analysis Point 1.

Analysis Point 2 (AP2) represents the outfall from the existing closed drainage system in Ledgewood Drive. Although runoff from the subject parcel itself does not drain toward Analysis Point 2, Analysis Point 2 has been analyzed as the proposed site driveway comes from a curb cut on Ledgewood Drive and therefore results in a slight modification to the watershed of Analysis Point 2 post-construction.

Existing on-site and offsite topography and drainage features in the area that drains through the site toward analysis point 1 divide the study area into three subcatchments. Subcatchment 3S represents the portion of the study area that drains directly toward AP1 without first passing through some sort of drainage feature.

Two existing drainage features were identified within the watershed of Analysis Point 1. The first, Pond 1P, is a shallow low area just to the east of the center of the subject parcel. Although this is only

a shallow area, there is a variable height berm with an existing trail on top just to the east of Pond 1P that stops water from overflowing directly toward Analysis Point 1. Near the northeast corner of the subject parcel there is a small opening in the berm that acts as an overflow and is modelled in the drainage calculations as a broad-crested rectangular weir outlet. Ponded water below this weir is modelled to directly infiltrate into the soil. Analysis Point 1 is modelled directly downstream of the broad crested rectangular weir outlet of Pond 1P in the existing conditions analysis.

The land within the study area from which runoff drains toward Pond 1P is modelled as Subcatchment 1S, which includes the bulk of the subject parcel as well as significant offsite contributing watershed area.

The second drainage feature, Pond 2P, appears to exist on the privately owned parcel that Legewood Drive passes through, right at the corner of Lafayette Road and Ledgewood Drive in front of the dentist office that is located on abutting Tax Map 229 Lot 6. Pond 2P has a culvert outlet, through which any water that overflows from the pond is discharged toward previously described Pond 1P, where it is further detained before ultimately infiltrating to groundwater or cresting over the existing berm break toward Analysis Point 1.

The land within the study area from which runoff drains toward Pond 2P is modelled as Subcatchment 2S, which includes the bulk of the existing dentist office site located at the corner of Lafayette Road and Ledgewood Drive and some of the Lafayette Road right of way and the privately-owned parcel that Ledgewood Drive passes through.

Two existing catch basins in Ledgewood Drive separate the watershed draining toward Analysis Point 2 into two subcatchments. The areas from which runoff drains toward catch basins 1 and 2, modelled as CB1 and CB2, respectively, are modelled as Subcatchments 4S and 5S.

NRCS Web Soil Survey was used to determine existing soil types on both the subject parcel itself and offsite contributing watershed areas within the study area. Through the use of this tool, it was determined that existing soil type that comprises the predominant majority of both the onsite and offsite components of the study area consists of the "Urban land – Canton complex" (SSSM symbol 799). While urban land complexes are typically not assigned a hydrologic soil group, one had to be assumed for the purposes of stormwater modelling. Due to the presence of Canton soils in the complex, it was assumed that the complex would behave similarly to Canton soils, which are classified as Hydrologic Soil Group B (HSG B) according to "Ksat Values for New Hampshire Soils," Special Publication No. 5 sponsored by the Society of Soil Scientists of Northern New England (SSSNNE). According to the same publication, Canton soils have a saturated hydraulic conductivity (Ksat) range of 2.0-6.0 inches per hour in the B horizon and a Ksat range of 6.0-20.0 inches per hour in the C horizon. The decision to model these study area as HSG B is further justified by the test pits that were performed on the subject parcel in 2025, indicating the presence of well-draining sandy loam and loamy sand components in the soil profile along with some sporadic silt loam or sandy clay loam inclusions in the periphery of the subject parcel, moderately deep seasonal high water tables, and no refusal observed to a depth of at least 50-70 inches.

A small part of the study area was shown by NRCS Web Soil Survey to consist of smoothed Udorthents and Urban land (SSSM symbols 299 and 699, respectively). While it is not possible to assign hydrologic soil groupings or saturated hydraulic conductivity ratings for these human-made soil descriptions, these areas were also modelled as HSG B as the great majority of the study area, which consists of the Urban land-Canton complex is modelled as HSG B due to the presence of Canton soils,

and the soil profile is assumed to be relatively consistent throughout the study area. Furthermore, infiltrating practices that are proposed are in the SSSM symbol 799 area, and the 299 and 699 areas are relatively small by comparison.

In accordance with standard engineering practice, the lowest published Ksat value provided for Canton soils (2.0 inches per hour) was divided by a factor of safety of two to determine the infiltration rate of 1.0 inches per hour to use for design due to the potential for sporadic inconsistencies in the soil profile.

3.0 PROPOSED CONDITIONS ANALYSIS

The construction of infrastructure associated with the proposed conservation subdivision as described in the executive summary divides the subject parcel into 11 subcatchments, all draining toward the same two analysis points as previously described. A stormwater management system consisting of two proprietary biofiltration systems with downstream chambers, as well as a filtration drip edge designed for roof runoff and a pocket pond in the right of way, has been designed to mimic pre-development hydrologic patterns in the post-construction condition, to ensure that there is no net increase in the peak flow or volume of runoff directed toward Analysis Point 1 resultant to the 2-, 10-, 25- or 50-year 24-hour storm events, and to meet the other stormwater design requirements for new developments per Section 7 of the Portsmouth Site Plan Review Regulations.

The existing berm that defines the low area modelled as Pond 1P in the existing conditions analysis is being removed for the proposed development. Due to this unique situation, a detention pond is proposed offsite in the private Ledgewood Drive parcel that has been designed to mimic the stormwater attenuation caused by the low area and berm that are being removed and built over. This detention pond is modelled as 1P in the post-construction analysis as it is intended to replicate pre-construction pond 1P, with the subcatchment from which runoff drains directly toward the proposed modelled as Subcatchment 1S.

Other than this, Subcatchments 2S-5S as well as Pond 2P and the two catch basins in Ledgewood Drive modelled as CB1 and CB2 are functionally the same as in the existing conditions analysis in terms of their hydrologic routing, but their outlines, areas, and surface covers have been altered due to the proposed development.

Subcatchment 6S represents the area from which runoff drains toward Focal Point 1, modelled as Pond 3P, in the post-construction condition. This subcatchment consists of the section of the proposed site driveway to the south of the high point, as well as the part the roof of the proposed building that is pitched such that runoff from it will drain via downspouts toward the Focal Point modelled as Pond 3P.

The "Focal Point" is a proprietary biofiltration system manufactured by Ferguson Waterworks that features a high-flow filter media so that it can be sized significantly smaller than a traditional bioretention system while still providing the same level of treatment. The proposed Focal Point modelled as Pond 3P will be lined and underdrained, and the runoff discharged from the underdrain and overflow structure of the Focal Point will drain through an outlet pipe toward a downstream subsurface chamber system modelled as Pond 4P.

Pond 4P is designed to infiltrate stormwater directed toward it to the extent practicable, and has been designed with an overflow pipe to gradually release any stormwater that cannot be infiltrated directly to groundwater. The overflow pipe from Pond 4P is connected to a closed drainage system consisting

of three drain manholes (DMH 1-3) through which the outflow is routed toward Analysis Point 1 in the northeast corner of the site.

Subcatchment 7S represents the area from which runoff drains toward Focal Point 2, modelled as Pond 5P. The part of the proposed development site to the north of the high point of the proposed driveway as well as the proposed outdoor parking lot and adjacent landscaped area is graded to drain directly toward Focal Point 2 and is therefore represented in Subcatchment 7S. Additionally, a large part of the roof of the proposed apartment building is pitched toward downspouts that drain into land area that is graded such that runoff drains toward Focal Point 2, so this roof sector is additionally included within Subcatchment 7S.

Focal Point 2 (Pond 5P) is lined and underdrain, and includes an overflow mechanism, similarly to the design of Focal Point 1 (Pond 3P). The outflow from the Pond 5P, including any overflow as well as treated runoff from the underdrain, is routed via a drain pipe toward an underground chamber system modelled as Pond 6P. This chamber system is unlined and is intended to infiltrate runoff directed toward it to the extent practicable. All outflow from Pond 6P that is not infiltrated to groundwater is routed via the same closed drainage system as the outflow from Pond 4P is routed into toward Analysis Point 1 at a lower rate and volume than in the existing condition. The intent is to combine the outflows from the two chamber systems and have one point of discharge for the stormwater management system.

Subcatchment 8S represents the easternmost part of the roof of the proposed building, to the east of the ridge of the section of the structure that is perpendicular to Ledgewood Drive. Runoff from Subcatchment 8S drains toward a filtration drip edge modelled as Pond 8P. The filtration drip edge is proposed adjacent to only part of the east face of the building roof so that wetland impacts can be avoided. However, several proposed downspouts along the east face of the proposed building will be connected to a roof leader that is proposed to drain into the filtration drip edge modelled as Pond 8P.

A "filtration drip edge" combines the filtration function of a bioretention pond with the infiltration function of a stone drip edge for improved water quality treatment, and so that the device can be designed closer to the water table due to site constraints. Filtration practices can be designed with a filter course as little as 1' above the seasonal high water table, while infiltration practices that rely on infiltration alone for water quality treatment require 3' separation from the bottom of stone to the seasonal high water table (or 4' in groundwater protection areas). Therefore, this device will have the dual benefit of providing enhanced treatment of runoff from the section of the roof directed to it as compared with a standard stone drip edge, and can be constructed in line with the existing grades and seasonal high water table elevations on site without causing a wetland impact.

Because the subject parcel happens to be situated at a point where it directly receives significant runoff from offsite watershed areas, diversion swales and culverts are proposed along the north and west edges of the subject parcel to keep runoff from offsite out of the stormwater management system for the proposed development itself.

Subcatchment 9S represents the contributing watershed area to a proposed diversion swale on the west end of the subject parcel to the north of the high point of the proposed driveway. This diversion swale is graded toward a low point, and a yard drain modelled as Pond YD is proposed at this low point. Subcatchment 9S is a sector of the same area from Subcatchment 1S in the pre-development model that is rerouted due to the proposed development.

Subcatchment 10S represents the contributing watershed area to a proposed diversion swale on the north end of the site that is graded to drain toward the east and ultimately into a proposed diversion culvert that is modelled as Pond 9P. Subcatchment 10S is a sector of the same area from Subcatchment 1S in the pre-development model that is rerouted due to the proposed development.

The outlet pipe from the yard drain modelled as Pond YD and the diversion culvert modelled as Pond 9P both daylight into proposed drain manhole 4, modelled as DMH4. Downstream of the outlet pipe from DMH 4, runoff flows through another diversion swale modelled as Reach 2R toward a proposed culvert, modelled as Pond 10P, pitched toward the east and running underneath the beginning of the proposed site driveway.

The land area from which runoff drains directly toward the proposed driveway culvert modelled as Pond 10P is represented as Subcatchment 11S. Subcatchment 11S is a sector of the same area from Subcatchment 1S in the pre-development model that is rerouted due to the proposed development.

As a result of the implementation of this stormwater management system, peak flows and runoff volumes are reduced toward Analysis Point 1 during all analyzed storm events in the proposed condition as compared with the existing condition. The NHDES Alteration of Terrain Bureau allows an increase in runoff volume of up to 0.1 acre-feet during the 2-year 24-hour storm event. We are decreasing runoff volumes and therefore this would be approvable by the AOT Bureau if the project needed an AOT permit (which it does not as the area of disturbance is below 100,000 SF).

Furthermore, the project as designed exceeds the AOT Bureau's groundwater recharge volume requirement. A GRV worksheet is contained within the appendix of this report in order to illustrate this. Therefore, we have designed the drainage system to avoid adverse impacts to abutting infrastructure and the requirement per Section 7.1 of the Site Plan Review Regulations to "design practices to the maximum extent practical (MEP) to reduce stormwater runoff volumes, maintain predevelopment site hydrology, and protect water quality in receiving waters" is met, and low impact development (LID) devices such as biofiltration practices, subsurface detention systems, and a filtration drip edge are used.

EPA Region 1 credits the same pollutant removal efficiencies for the Focal Point biofiltration system as for an enhanced biofiltration system with an internal storage reservoir. Specifically, this a 76% phosphorous load reduction and a 75% nitrogen load reduction are credited if the Focal Point biofiltration system has been designed for a 1" runoff from impervious areas, which has been done in accordance with the enclosed Focal Point design worksheet which includes the Focal Point design procedure that has been approved by NHDES. Direct infiltration practices that are designed per NHDES standards, such as but not limited to stone drip edges, feature a removal efficiency of nearly 100% for total suspended solids, total nitrogen, and total phosphorous according to the EPA performance curves included with the pollutant removal canulations in the appendix of this report. According to this document, filtration practices that are not underdrained and directly infiltrate treated runoff to groundwater can be counted as infiltration practices for the purpose of pollutant removal calculation, so the filtration drip edge is counted as an infiltration practice. Runoff from all proposed impervious surfaces is proposed to drain toward either a Focal Point or a filtration drip edge post-construction, with the exception of a small paved apron at the beginning of the proposed driveway that is pitched toward Ledgewood Drive. In effect, the required 80% TSS and 50% TN and TP pollutant removal thresholds will be met and exceeded. Pollutant removal calculations demonstrating this are included in the appendix of this report.

5.0 CONCLUSION

This proposed site development will have minimal adverse effect on abutting infrastructures, properties, and downstream wetlands by way of stormwater runoff or siltation. Appropriate steps will be taken to eliminate erosion and sedimentation; this will be accomplished through the of the above-described stormwater management system as well as temporary erosion control measures including but not limited to silt fence, a stabilized construction entrance, storm drain inlet protection, and temporary sediment traps during construction. Best Management Practices developed by the State of New Hampshire have been utilized in the design of this system and their application will be enforced throughout the construction process. Peak rates and volumes of runoff from the site will be reduced toward all analysis points during all analyzed storm events.

This project disturbs less than 100,000 S.F. and therefore does not require a NHDES Alteration of Terrain Permit.

Respectfully Submitted,
JONES & BEACH ENGINEERS, INC.

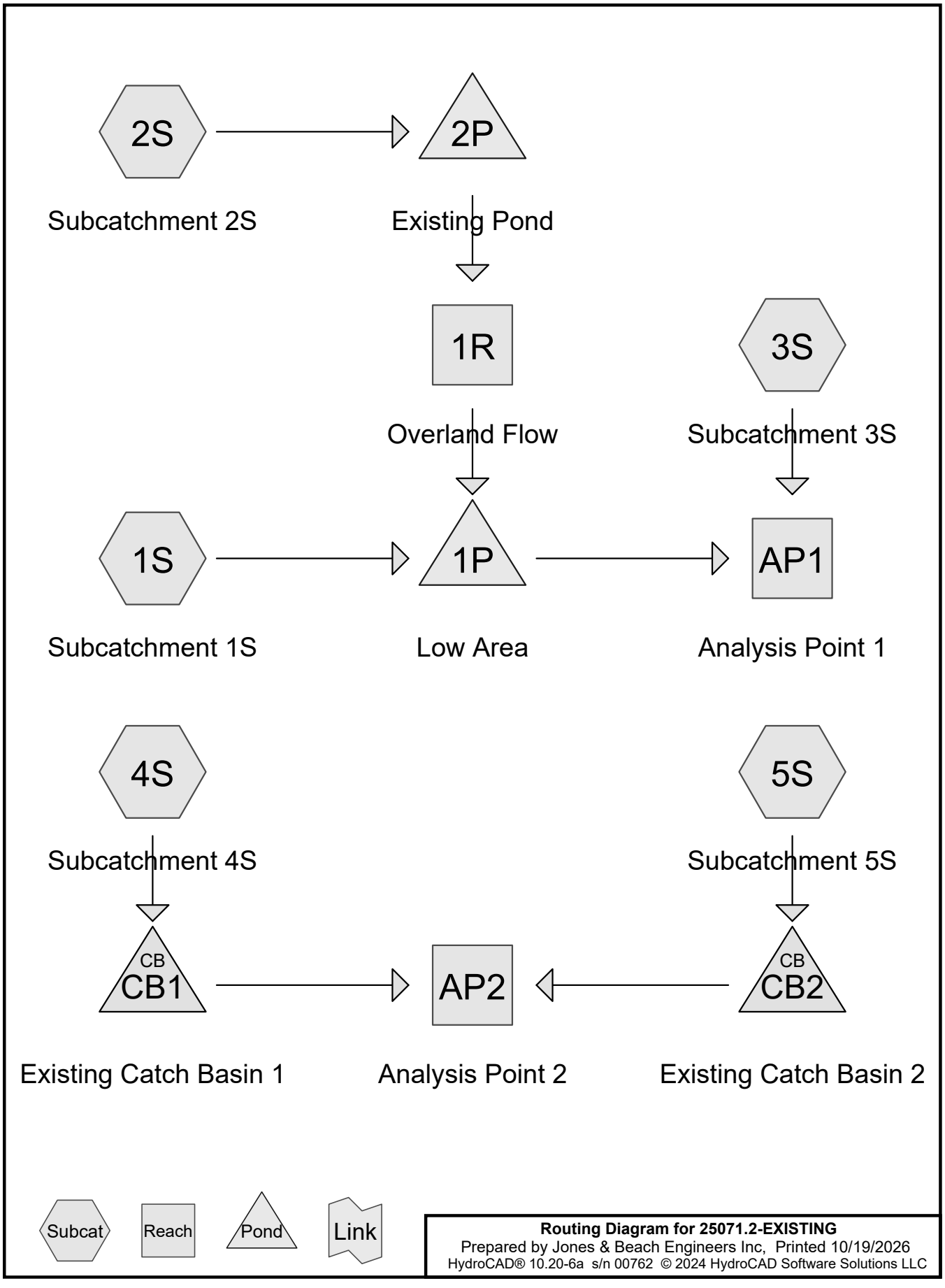
Daniel Meditz

Daniel Meditz, P.E
Lead Design Engineer

APPENDIX I

EXISTING CONDITIONS DRAINAGE ANALYSIS

Summary 2 YEAR
Complete 10 YEAR
Summary 25 YEAR
Complete 50 YEAR



Routing Diagram for 25071.2-EXISTING
Prepared by Jones & Beach Engineers Inc, Printed 10/19/2026
HydroCAD® 10.20-6a s/n 00762 © 2024 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.228	70	1/2 acre lots, 25% imp, HSG B (1S, 3S)
0.566	61	>75% Grass cover, Good, HSG B (1S, 2S, 4S, 5S)
0.086	48	Brush, Good, HSG B (2S)
0.177	98	Paved parking, HSG B (2S)
0.277	98	Paved roads w/curbs & sewers, HSG B (3S, 4S, 5S)
0.045	98	Roofs, HSG B (1S, 2S)
1.806	55	Woods, Good, HSG B (1S, 2S, 3S)
5.186	**66**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
5.186	HSG B	1S, 2S, 3S, 4S, 5S
0.000	HSG C	
0.000	HSG D	
0.000	Other	
5.186		**TOTAL AREA**

Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment1S: Subcatchment1S Runoff Area=112,469 sf 9.32% Impervious Runoff Depth=0.67"
Flow Length=421' Tc=15.9 min CN=61 Runoff=1.13 cfs 0.144 af

Subcatchment2S: Subcatchment2S Runoff Area=22,794 sf 37.44% Impervious Runoff Depth=1.26"
Tc=6.0 min CN=72 Runoff=0.73 cfs 0.055 af

Subcatchment3S: Subcatchment3S Runoff Area=86,121 sf 27.21% Impervious Runoff Depth=1.14"
Flow Length=612' Tc=11.7 min CN=70 Runoff=2.01 cfs 0.188 af

Subcatchment4S: Subcatchment4S Runoff Area=1,897 sf 76.96% Impervious Runoff Depth=2.55"
Tc=6.0 min CN=89 Runoff=0.13 cfs 0.009 af

Subcatchment5S: Subcatchment5S Runoff Area=2,633 sf 80.71% Impervious Runoff Depth=2.74"
Tc=6.0 min CN=91 Runoff=0.19 cfs 0.014 af

Reach 1R: Overland Flow Avg. Flow Depth=0.10' Max Vel=0.24 fps Inflow=0.36 cfs 0.034 af
n=0.070 L=80.0' S=0.0050 '/' Capacity=12.03 cfs Outflow=0.34 cfs 0.034 af

Reach AP1: Analysis Point 1 Inflow=2.01 cfs 0.188 af
Outflow=2.01 cfs 0.188 af

Reach AP2: Analysis Point 2 Inflow=0.31 cfs 0.023 af
Outflow=0.31 cfs 0.023 af

Pond 1P: Low Area Peak Elev=20.28' Storage=3,057 cf Inflow=1.45 cfs 0.178 af
Discarded=0.23 cfs 0.178 af Primary=0.00 cfs 0.000 af Outflow=0.23 cfs 0.178 af

Pond 2P: Existing Pond Peak Elev=21.31' Storage=436 cf Inflow=0.73 cfs 0.055 af
Discarded=0.05 cfs 0.021 af Primary=0.36 cfs 0.034 af Outflow=0.41 cfs 0.055 af

Pond CB1: Existing Catch Basin 1 Peak Elev=23.59' Inflow=0.13 cfs 0.009 af
12.0" Round Culvert n=0.012 L=28.0' S=0.0075 '/' Outflow=0.13 cfs 0.009 af

Pond CB2: Existing Catch Basin 2 Peak Elev=19.30' Inflow=0.19 cfs 0.014 af
12.0" Round Culvert n=0.012 L=36.0' S=0.0078 '/' Outflow=0.19 cfs 0.014 af

Total Runoff Area = 5.186 ac Runoff Volume = 0.410 af Average Runoff Depth = 0.95"
79.62% Pervious = 4.129 ac 20.38% Impervious = 1.057 ac

Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment1S: Subcatchment1S Runoff Area=112,469 sf 9.32% Impervious Runoff Depth=1.76"
Flow Length=421' Tc=15.9 min CN=61 Runoff=3.66 cfs 0.379 af

Subcatchment2S: Subcatchment2S Runoff Area=22,794 sf 37.44% Impervious Runoff Depth=2.69"
Tc=6.0 min CN=72 Runoff=1.62 cfs 0.117 af

Subcatchment3S: Subcatchment3S Runoff Area=86,121 sf 27.21% Impervious Runoff Depth=2.51"
Flow Length=612' Tc=11.7 min CN=70 Runoff=4.75 cfs 0.414 af

Subcatchment4S: Subcatchment4S Runoff Area=1,897 sf 76.96% Impervious Runoff Depth=4.38"
Tc=6.0 min CN=89 Runoff=0.21 cfs 0.016 af

Subcatchment5S: Subcatchment5S Runoff Area=2,633 sf 80.71% Impervious Runoff Depth=4.60"
Tc=6.0 min CN=91 Runoff=0.30 cfs 0.023 af

Reach 1R: Overland Flow Avg. Flow Depth=0.16' Max Vel=0.33 fps Inflow=0.99 cfs 0.086 af
n=0.070 L=80.0' S=0.0050 '/' Capacity=12.03 cfs Outflow=0.96 cfs 0.086 af

Reach AP1: Analysis Point 1 Inflow=4.75 cfs 0.572 af
Outflow=4.75 cfs 0.572 af

Reach AP2: Analysis Point 2 Inflow=0.51 cfs 0.039 af
Outflow=0.51 cfs 0.039 af

Pond 1P: Low Area Peak Elev=20.53' Storage=5,925 cf Inflow=4.61 cfs 0.465 af
Discarded=0.37 cfs 0.307 af Primary=2.20 cfs 0.158 af Outflow=2.57 cfs 0.465 af

Pond 2P: Existing Pond Peak Elev=21.54' Storage=831 cf Inflow=1.62 cfs 0.117 af
Discarded=0.06 cfs 0.031 af Primary=0.99 cfs 0.086 af Outflow=1.06 cfs 0.117 af

Pond CB1: Existing Catch Basin 1 Peak Elev=23.65' Inflow=0.21 cfs 0.016 af
12.0" Round Culvert n=0.012 L=28.0' S=0.0075 '/' Outflow=0.21 cfs 0.016 af

Pond CB2: Existing Catch Basin 2 Peak Elev=19.36' Inflow=0.30 cfs 0.023 af
12.0" Round Culvert n=0.012 L=36.0' S=0.0078 '/' Outflow=0.30 cfs 0.023 af

Total Runoff Area = 5.186 ac Runoff Volume = 0.950 af Average Runoff Depth = 2.20"
79.62% Pervious = 4.129 ac 20.38% Impervious = 1.057 ac

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 3.66 cfs @ 12.24 hrs, Volume= 0.379 af, Depth= 1.76"
Routed to Pond 1P : Low Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=5.63"

Area (sf)	CN	Description
37,341	70	1/2 acre lots, 25% imp, HSG B
1,147	98	Roofs, HSG B
14,520	61	>75% Grass cover, Good, HSG B
59,461	55	Woods, Good, HSG B
112,469	61	Weighted Average
101,987		90.68% Pervious Area
10,482		9.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	15	0.1000	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.71"
7.2	35	0.0308	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.71"
0.6	30	0.0308	0.88		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	25	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.1	92	0.0217	0.74		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	51	0.0392	0.99		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.5	74	0.0270	0.82		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.3	99	0.0202	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
15.9	421	Total			

Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 1.62 cfs @ 12.09 hrs, Volume= 0.117 af, Depth= 2.69"
Routed to Pond 2P : Existing Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=5.63"

Area (sf)	CN	Description
7,719	98	Paved parking, HSG B
815	98	Roofs, HSG B
9,211	61	>75% Grass cover, Good, HSG B
1,310	55	Woods, Good, HSG B
3,739	48	Brush, Good, HSG B
22,794	72	Weighted Average
14,260		62.56% Pervious Area
8,534		37.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 3S: Subcatchment 3S

Runoff = 4.75 cfs @ 12.17 hrs, Volume= 0.414 af, Depth= 2.51"
Routed to Reach AP1 : Analysis Point 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=5.63"

Area (sf)	CN	Description
17,892	55	Woods, Good, HSG B
8,500	98	Paved roads w/curbs & sewers, HSG B
59,729	70	1/2 acre lots, 25% imp, HSG B
86,121	70	Weighted Average
62,689		72.79% Pervious Area
23,432		27.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	50	0.0200	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.71"
0.7	55	0.0364	1.34		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	59	0.0476	1.53		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	208	0.0260	3.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	33	0.0303	1.22		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	86	0.0233	1.07		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	52	0.0385	0.98		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.4	69	0.0290	0.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.7	612	Total			

Summary for Subcatchment 4S: Subcatchment 4S

Runoff = 0.21 cfs @ 12.09 hrs, Volume= 0.016 af, Depth= 4.38"
Routed to Pond CB1 : Existing Catch Basin 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=5.63"

Area (sf)	CN	Description
1,460	98	Paved roads w/curbs & sewers, HSG B
437	61	>75% Grass cover, Good, HSG B
1,897	89	Weighted Average
437		23.04% Pervious Area
1,460		76.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 5S: Subcatchment 5S

Runoff = 0.30 cfs @ 12.09 hrs, Volume= 0.023 af, Depth= 4.60"
Routed to Pond CB2 : Existing Catch Basin 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=5.63"

Area (sf)	CN	Description
2,125	98	Paved roads w/curbs & sewers, HSG B
508	61	>75% Grass cover, Good, HSG B
2,633	91	Weighted Average
508		19.29% Pervious Area
2,125		80.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Reach 1R: Overland Flow

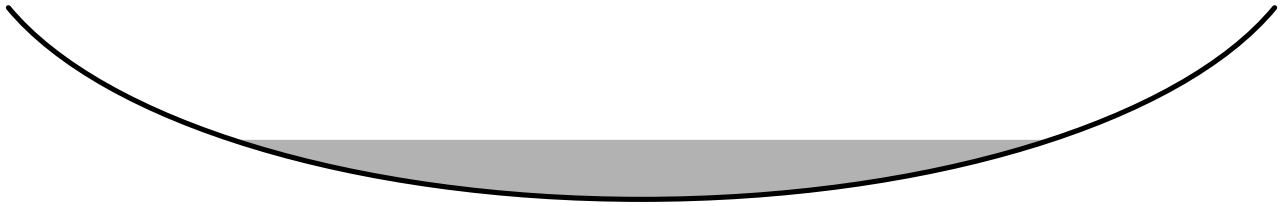
[79] Warning: Submerged Pond 2P Primary device # 2 OUTLET by 0.16'

Inflow Area = 0.523 ac, 37.44% Impervious, Inflow Depth = 1.98" for 10-YR STORM event
Inflow = 0.99 cfs @ 12.20 hrs, Volume= 0.086 af
Outflow = 0.96 cfs @ 12.26 hrs, Volume= 0.086 af, Atten= 4%, Lag= 3.6 min
Routed to Pond 1P : Low Area

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.33 fps, Min. Travel Time= 4.0 min
Avg. Velocity = 0.09 fps, Avg. Travel Time= 14.9 min

Peak Storage= 231 cf @ 12.26 hrs
Average Depth at Peak Storage= 0.16' , Surface Width= 27.87'
Bank-Full Depth= 0.50' Flow Area= 16.7 sf, Capacity= 12.03 cfs

50.00' x 0.50' deep Parabolic Channel, n= 0.070 Medium-dense brush, winter
Length= 80.0' Slope= 0.0050 '/'
Inlet Invert= 20.50', Outlet Invert= 20.10'



‡

Summary for Reach AP1: Analysis Point 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 5.082 ac, 19.17% Impervious, Inflow Depth = 1.35" for 10-YR STORM event
Inflow = 4.75 cfs @ 12.17 hrs, Volume= 0.572 af
Outflow = 4.75 cfs @ 12.17 hrs, Volume= 0.572 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Summary for Reach AP2: Analysis Point 2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.104 ac, 79.14% Impervious, Inflow Depth = 4.50" for 10-YR STORM event
Inflow = 0.51 cfs @ 12.09 hrs, Volume= 0.039 af
Outflow = 0.51 cfs @ 12.09 hrs, Volume= 0.039 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Summary for Pond 1P: Low Area

[62] Hint: Exceeded Reach 1R OUTLET depth by 0.31' @ 12.65 hrs

Inflow Area = 3.105 ac, 14.06% Impervious, Inflow Depth = 1.80" for 10-YR STORM event
Inflow = 4.61 cfs @ 12.24 hrs, Volume= 0.465 af
Outflow = 2.57 cfs @ 12.56 hrs, Volume= 0.465 af, Atten= 44%, Lag= 19.2 min
Discarded = 0.37 cfs @ 12.56 hrs, Volume= 0.307 af
Primary = 2.20 cfs @ 12.56 hrs, Volume= 0.158 af
Routed to Reach AP1 : Analysis Point 1

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 20.53' @ 12.56 hrs Surf.Area= 14,054 sf Storage= 5,925 cf

Plug-Flow detention time= 146.3 min calculated for 0.465 af (100% of inflow)
Center-of-Mass det. time= 146.3 min (1,010.9 - 864.6)

Volume	Invert	Avail.Storage	Storage Description
#1	19.50'	26,604 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)
19.50	1,371	213.0	0	0	1,371
20.00	3,961	394.0	1,277	1,277	10,115
20.50	14,054	688.0	4,246	5,523	35,431
22.00	14,054	688.0	21,081	26,604	36,463

Device	Routing	Invert	Outlet Devices
#1	Primary	20.40'	**20.0' long x 4.0' 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 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Discarded	19.50'	**1.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 16.67' Phase-In= 0.10'

Discarded OutFlow Max=0.37 cfs @ 12.56 hrs HW=20.53' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.37 cfs)

Primary OutFlow Max=2.18 cfs @ 12.56 hrs HW=20.53' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 2.18 cfs @ 0.85 fps)

Summary for Pond 2P: Existing Pond

Pond areas, elevations, and culvert parameters are assumed.

Inflow Area = 0.523 ac, 37.44% Impervious, Inflow Depth = 2.69" for 10-YR STORM event
Inflow = 1.62 cfs @ 12.09 hrs, Volume= 0.117 af
Outflow = 1.06 cfs @ 12.20 hrs, Volume= 0.117 af, Atten= 35%, Lag= 6.5 min
Discarded = 0.06 cfs @ 12.20 hrs, Volume= 0.031 af
Primary = 0.99 cfs @ 12.20 hrs, Volume= 0.086 af
Routed to Reach 1R : Overland Flow

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 21.54' @ 12.20 hrs Surf.Area= 1,912 sf Storage= 831 cf

Plug-Flow detention time= 24.1 min calculated for 0.117 af (100% of inflow)
Center-of-Mass det. time= 23.8 min (860.4 - 836.6)

Volume	Invert	Avail.Storage	Storage Description
#1	21.00'	1,882 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)
21.00	1,209	140.0	0	0	1,209
22.00	2,647	210.0	1,882	1,882	3,166

Device	Routing	Invert	Outlet Devices
#1	Discarded	21.00'	**1.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 20.00' Phase-In= 0.10'
#2	Primary	21.00'	**15.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 21.00' / 20.50' S= 0.0167 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Discarded OutFlow Max=0.06 cfs @ 12.20 hrs HW=21.54' (Free Discharge)
1=Exfiltration (Controls 0.06 cfs)

Primary OutFlow Max=0.99 cfs @ 12.20 hrs HW=21.54' (Free Discharge)
2=Culvert (Inlet Controls 0.99 cfs @ 1.97 fps)

Summary for Pond CB1: Existing Catch Basin 1

End invert of pipe is assumed as inverts have not been measured on downstream structure

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[58] Hint: Peaked 0.24' above defined flood level

Inflow Area = 0.044 ac, 76.96% Impervious, Inflow Depth = 4.38" for 10-YR STORM event
Inflow = 0.21 cfs @ 12.09 hrs, Volume= 0.016 af
Outflow = 0.21 cfs @ 12.09 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.0 min
Primary = 0.21 cfs @ 12.09 hrs, Volume= 0.016 af
Routed to Reach AP2 : Analysis Point 2

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 23.65' @ 12.09 hrs
Flood Elev= 23.41'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.41'	**12.0" Round Culvert** L= 28.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 23.41' / 23.20' S= 0.0075 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.21 cfs @ 12.09 hrs HW=23.64' (Free Discharge)
1=Culvert (Barrel Controls 0.21 cfs @ 2.22 fps)

Summary for Pond CB2: Existing Catch Basin 2

End invert of pipe is assumed as inverts have not been measured on downstream structure

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Inflow Area = 0.060 ac, 80.71% Impervious, Inflow Depth = 4.60" for 10-YR STORM event
Inflow = 0.30 cfs @ 12.09 hrs, Volume= 0.023 af
Outflow = 0.30 cfs @ 12.09 hrs, Volume= 0.023 af, Atten= 0%, Lag= 0.0 min
Primary = 0.30 cfs @ 12.09 hrs, Volume= 0.023 af
Routed to Reach AP2 : Analysis Point 2

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 19.36' @ 12.09 hrs
Flood Elev= 22.23'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.08'	**12.0" Round Culvert** L= 36.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 19.08' / 18.80' S= 0.0078 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.29 cfs @ 12.09 hrs HW=19.36' (Free Discharge)
1=Culvert (Barrel Controls 0.29 cfs @ 2.49 fps)

Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment1S: Subcatchment1S Runoff Area=112,469 sf 9.32% Impervious Runoff Depth=2.80"
Flow Length=421' Tc=15.9 min CN=61 Runoff=6.04 cfs 0.602 af

Subcatchment2S: Subcatchment2S Runoff Area=22,794 sf 37.44% Impervious Runoff Depth=3.94"
Tc=6.0 min CN=72 Runoff=2.37 cfs 0.172 af

Subcatchment3S: Subcatchment3S Runoff Area=86,121 sf 27.21% Impervious Runoff Depth=3.73"
Flow Length=612' Tc=11.7 min CN=70 Runoff=7.11 cfs 0.614 af

Subcatchment4S: Subcatchment4S Runoff Area=1,897 sf 76.96% Impervious Runoff Depth=5.84"
Tc=6.0 min CN=89 Runoff=0.28 cfs 0.021 af

Subcatchment5S: Subcatchment5S Runoff Area=2,633 sf 80.71% Impervious Runoff Depth=6.07"
Tc=6.0 min CN=91 Runoff=0.39 cfs 0.031 af

Reach 1R: Overland Flow Avg. Flow Depth=0.19' Max Vel=0.38 fps Inflow=1.54 cfs 0.134 af
n=0.070 L=80.0' S=0.0050 '/' Capacity=12.03 cfs Outflow=1.49 cfs 0.134 af

Reach AP1: Analysis Point 1 Inflow=9.47 cfs 0.990 af
Outflow=9.47 cfs 0.990 af

Reach AP2: Analysis Point 2 Inflow=0.67 cfs 0.052 af
Outflow=0.67 cfs 0.052 af

Pond 1P: Low Area Peak Elev=20.63' Storage=7,347 cf Inflow=7.53 cfs 0.735 af
Discarded=0.38 cfs 0.359 af Primary=5.30 cfs 0.376 af Outflow=5.68 cfs 0.735 af

Pond 2P: Existing Pond Peak Elev=21.69' Storage=1,133 cf Inflow=2.37 cfs 0.172 af
Discarded=0.07 cfs 0.038 af Primary=1.54 cfs 0.134 af Outflow=1.61 cfs 0.172 af

Pond CB1: Existing Catch Basin 1 Peak Elev=23.68' Inflow=0.28 cfs 0.021 af
12.0" Round Culvert n=0.012 L=28.0' S=0.0075 '/' Outflow=0.28 cfs 0.021 af

Pond CB2: Existing Catch Basin 2 Peak Elev=19.40' Inflow=0.39 cfs 0.031 af
12.0" Round Culvert n=0.012 L=36.0' S=0.0078 '/' Outflow=0.39 cfs 0.031 af

Total Runoff Area = 5.186 ac Runoff Volume = 1.439 af Average Runoff Depth = 3.33"
79.62% Pervious = 4.129 ac 20.38% Impervious = 1.057 ac

Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment1S: Subcatchment1S Runoff Area=112,469 sf 9.32% Impervious Runoff Depth=3.86"
Flow Length=421' Tc=15.9 min CN=61 Runoff=8.48 cfs 0.831 af

Subcatchment2S: Subcatchment2S Runoff Area=22,794 sf 37.44% Impervious Runoff Depth=5.17"
Tc=6.0 min CN=72 Runoff=3.10 cfs 0.226 af

Subcatchment3S: Subcatchment3S Runoff Area=86,121 sf 27.21% Impervious Runoff Depth=4.93"
Flow Length=612' Tc=11.7 min CN=70 Runoff=9.42 cfs 0.813 af

Subcatchment4S: Subcatchment4S Runoff Area=1,897 sf 76.96% Impervious Runoff Depth=7.22"
Tc=6.0 min CN=89 Runoff=0.34 cfs 0.026 af

Subcatchment5S: Subcatchment5S Runoff Area=2,633 sf 80.71% Impervious Runoff Depth=7.46"
Tc=6.0 min CN=91 Runoff=0.48 cfs 0.038 af

Reach 1R: Overland Flow Avg. Flow Depth=0.22' Max Vel=0.41 fps Inflow=2.05 cfs 0.182 af
n=0.070 L=80.0' S=0.0050 '/' Capacity=12.03 cfs Outflow=2.00 cfs 0.182 af

Reach AP1: Analysis Point 1 Inflow=15.16 cfs 1.425 af
Outflow=15.16 cfs 1.425 af

Reach AP2: Analysis Point 2 Inflow=0.81 cfs 0.064 af
Outflow=0.81 cfs 0.064 af

Pond 1P: Low Area Peak Elev=20.71' Storage=8,479 cf Inflow=10.48 cfs 1.013 af
Discarded=0.38 cfs 0.400 af Primary=8.54 cfs 0.613 af Outflow=8.93 cfs 1.013 af

Pond 2P: Existing Pond Peak Elev=21.81' Storage=1,418 cf Inflow=3.10 cfs 0.226 af
Discarded=0.08 cfs 0.044 af Primary=2.05 cfs 0.182 af Outflow=2.14 cfs 0.226 af

Pond CB1: Existing Catch Basin 1 Peak Elev=23.71' Inflow=0.34 cfs 0.026 af
12.0" Round Culvert n=0.012 L=28.0' S=0.0075 '/' Outflow=0.34 cfs 0.026 af

Pond CB2: Existing Catch Basin 2 Peak Elev=19.44' Inflow=0.48 cfs 0.038 af
12.0" Round Culvert n=0.012 L=36.0' S=0.0078 '/' Outflow=0.48 cfs 0.038 af

Total Runoff Area = 5.186 ac Runoff Volume = 1.933 af Average Runoff Depth = 4.47"
79.62% Pervious = 4.129 ac 20.38% Impervious = 1.057 ac

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 8.48 cfs @ 12.23 hrs, Volume= 0.831 af, Depth= 3.86"
Routed to Pond 1P : Low Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR STORM Rainfall=8.54"

Area (sf)	CN	Description
37,341	70	1/2 acre lots, 25% imp, HSG B
1,147	98	Roofs, HSG B
14,520	61	>75% Grass cover, Good, HSG B
59,461	55	Woods, Good, HSG B
112,469	61	Weighted Average
101,987		90.68% Pervious Area
10,482		9.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	15	0.1000	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.71"
7.2	35	0.0308	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.71"
0.6	30	0.0308	0.88		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	25	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.1	92	0.0217	0.74		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	51	0.0392	0.99		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.5	74	0.0270	0.82		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.3	99	0.0202	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
15.9	421	Total			

Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 3.10 cfs @ 12.09 hrs, Volume= 0.226 af, Depth= 5.17"
Routed to Pond 2P : Existing Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR STORM Rainfall=8.54"

Area (sf)	CN	Description
7,719	98	Paved parking, HSG B
815	98	Roofs, HSG B
9,211	61	>75% Grass cover, Good, HSG B
1,310	55	Woods, Good, HSG B
3,739	48	Brush, Good, HSG B
22,794	72	Weighted Average
14,260		62.56% Pervious Area
8,534		37.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 3S: Subcatchment 3S

Runoff = 9.42 cfs @ 12.16 hrs, Volume= 0.813 af, Depth= 4.93"
Routed to Reach AP1 : Analysis Point 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR STORM Rainfall=8.54"

Area (sf)	CN	Description
17,892	55	Woods, Good, HSG B
8,500	98	Paved roads w/curbs & sewers, HSG B
59,729	70	1/2 acre lots, 25% imp, HSG B
86,121	70	Weighted Average
62,689		72.79% Pervious Area
23,432		27.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	50	0.0200	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.71"
0.7	55	0.0364	1.34		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	59	0.0476	1.53		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	208	0.0260	3.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	33	0.0303	1.22		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	86	0.0233	1.07		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	52	0.0385	0.98		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.4	69	0.0290	0.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.7	612	Total			

Summary for Subcatchment 4S: Subcatchment 4S

Runoff = 0.34 cfs @ 12.09 hrs, Volume= 0.026 af, Depth= 7.22"
Routed to Pond CB1 : Existing Catch Basin 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR STORM Rainfall=8.54"

Area (sf)	CN	Description
1,460	98	Paved roads w/curbs & sewers, HSG B
437	61	>75% Grass cover, Good, HSG B
1,897	89	Weighted Average
437		23.04% Pervious Area
1,460		76.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 5S: Subcatchment 5S

Runoff = 0.48 cfs @ 12.09 hrs, Volume= 0.038 af, Depth= 7.46"
Routed to Pond CB2 : Existing Catch Basin 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR STORM Rainfall=8.54"

Area (sf)	CN	Description
2,125	98	Paved roads w/curbs & sewers, HSG B
508	61	>75% Grass cover, Good, HSG B
2,633	91	Weighted Average
508		19.29% Pervious Area
2,125		80.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Reach 1R: Overland Flow

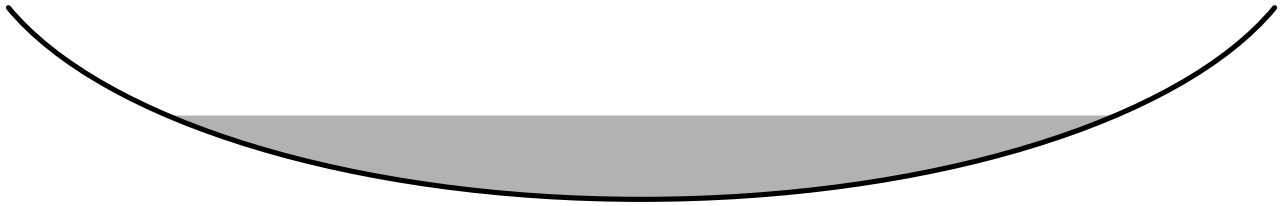
[79] Warning: Submerged Pond 2P Primary device # 2 OUTLET by 0.22'

Inflow Area = 0.523 ac, 37.44% Impervious, Inflow Depth = 4.17" for 50-YR STORM event
Inflow = 2.05 cfs @ 12.18 hrs, Volume= 0.182 af
Outflow = 2.00 cfs @ 12.23 hrs, Volume= 0.182 af, Atten= 3%, Lag= 2.6 min
Routed to Pond 1P : Low Area

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.41 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 0.11 fps, Avg. Travel Time= 12.4 min

Peak Storage= 385 cf @ 12.23 hrs
Average Depth at Peak Storage= 0.22' , Surface Width= 33.04'
Bank-Full Depth= 0.50' Flow Area= 16.7 sf, Capacity= 12.03 cfs

50.00' x 0.50' deep Parabolic Channel, n= 0.070 Medium-dense brush, winter
Length= 80.0' Slope= 0.0050 '/'
Inlet Invert= 20.50', Outlet Invert= 20.10'



‡

Summary for Reach AP1: Analysis Point 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 5.082 ac, 19.17% Impervious, Inflow Depth = 3.37" for 50-YR STORM event
Inflow = 15.16 cfs @ 12.26 hrs, Volume= 1.425 af
Outflow = 15.16 cfs @ 12.26 hrs, Volume= 1.425 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Summary for Reach AP2: Analysis Point 2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.104 ac, 79.14% Impervious, Inflow Depth = 7.36" for 50-YR STORM event
Inflow = 0.81 cfs @ 12.09 hrs, Volume= 0.064 af
Outflow = 0.81 cfs @ 12.09 hrs, Volume= 0.064 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Summary for Pond 1P: Low Area

[63] Warning: Exceeded Reach 1R INLET depth by 0.01' @ 12.40 hrs
[64] Warning: Exceeded Reach 1R outlet bank by 0.11' @ 12.34 hrs

Inflow Area = 3.105 ac, 14.06% Impervious, Inflow Depth = 3.91" for 50-YR STORM event
Inflow = 10.48 cfs @ 12.23 hrs, Volume= 1.013 af
Outflow = 8.93 cfs @ 12.34 hrs, Volume= 1.013 af, Atten= 15%, Lag= 7.1 min
Discarded = 0.38 cfs @ 12.34 hrs, Volume= 0.400 af
Primary = 8.54 cfs @ 12.34 hrs, Volume= 0.613 af
Routed to Reach AP1 : Analysis Point 1

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 20.71' @ 12.34 hrs Surf.Area= 14,054 sf Storage= 8,479 cf

Plug-Flow detention time= 91.4 min calculated for 1.012 af (100% of inflow)
Center-of-Mass det. time= 91.7 min (935.1 - 843.4)

Volume	Invert	Avail.Storage	Storage Description
#1	19.50'	26,604 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)
19.50	1,371	213.0	0	0	1,371
20.00	3,961	394.0	1,277	1,277	10,115
20.50	14,054	688.0	4,246	5,523	35,431
22.00	14,054	688.0	21,081	26,604	36,463

Device	Routing	Invert	Outlet Devices
#1	Primary	20.40'	**20.0' long x 4.0' 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 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Discarded	19.50'	**1.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 16.67' Phase-In= 0.10'

Discarded OutFlow Max=0.38 cfs @ 12.34 hrs HW=20.71' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.38 cfs)

Primary OutFlow Max=8.51 cfs @ 12.34 hrs HW=20.71' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 8.51 cfs @ 1.37 fps)

Summary for Pond 2P: Existing Pond

Pond areas, elevations, and culvert parameters are assumed.

Inflow Area = 0.523 ac, 37.44% Impervious, Inflow Depth = 5.17" for 50-YR STORM event
Inflow = 3.10 cfs @ 12.09 hrs, Volume= 0.226 af
Outflow = 2.14 cfs @ 12.18 hrs, Volume= 0.226 af, Atten= 31%, Lag= 5.5 min
Discarded = 0.08 cfs @ 12.18 hrs, Volume= 0.044 af
Primary = 2.05 cfs @ 12.18 hrs, Volume= 0.182 af
Routed to Reach 1R : Overland Flow

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 21.81' @ 12.18 hrs Surf.Area= 2,337 sf Storage= 1,418 cf

Plug-Flow detention time= 19.8 min calculated for 0.225 af (100% of inflow)
Center-of-Mass det. time= 19.9 min (837.7 - 817.8)

Volume	Invert	Avail.Storage	Storage Description
#1	21.00'	1,882 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)
21.00	1,209	140.0	0	0	1,209
22.00	2,647	210.0	1,882	1,882	3,166

Device	Routing	Invert	Outlet Devices
#1	Discarded	21.00'	**1.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 20.00' Phase-In= 0.10'
#2	Primary	21.00'	**15.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 21.00' / 20.50' S= 0.0167 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Discarded OutFlow Max=0.08 cfs @ 12.18 hrs HW=21.81' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.08 cfs)

Primary OutFlow Max=2.04 cfs @ 12.18 hrs HW=21.81' (Free Discharge)
↑—**2=Culvert** (Inlet Controls 2.04 cfs @ 2.42 fps)

Summary for Pond CB1: Existing Catch Basin 1

End invert of pipe is assumed as inverts have not been measured on downstream structure

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[58] Hint: Peaked 0.30' above defined flood level

Inflow Area = 0.044 ac, 76.96% Impervious, Inflow Depth = 7.22" for 50-YR STORM event
Inflow = 0.34 cfs @ 12.09 hrs, Volume= 0.026 af
Outflow = 0.34 cfs @ 12.09 hrs, Volume= 0.026 af, Atten= 0%, Lag= 0.0 min
Primary = 0.34 cfs @ 12.09 hrs, Volume= 0.026 af
Routed to Reach AP2 : Analysis Point 2

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 23.71' @ 12.09 hrs
Flood Elev= 23.41'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.41'	**12.0" Round Culvert** L= 28.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 23.41' / 23.20' S= 0.0075 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.33 cfs @ 12.09 hrs HW=23.71' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 0.33 cfs @ 2.50 fps)

Summary for Pond CB2: Existing Catch Basin 2

End invert of pipe is assumed as inverts have not been measured on downstream structure

Inflow Area = 0.060 ac, 80.71% Impervious, Inflow Depth = 7.46" for 50-YR STORM event
Inflow = 0.48 cfs @ 12.09 hrs, Volume= 0.038 af
Outflow = 0.48 cfs @ 12.09 hrs, Volume= 0.038 af, Atten= 0%, Lag= 0.0 min
Primary = 0.48 cfs @ 12.09 hrs, Volume= 0.038 af
Routed to Reach AP2 : Analysis Point 2

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 19.44' @ 12.09 hrs
Flood Elev= 22.23'

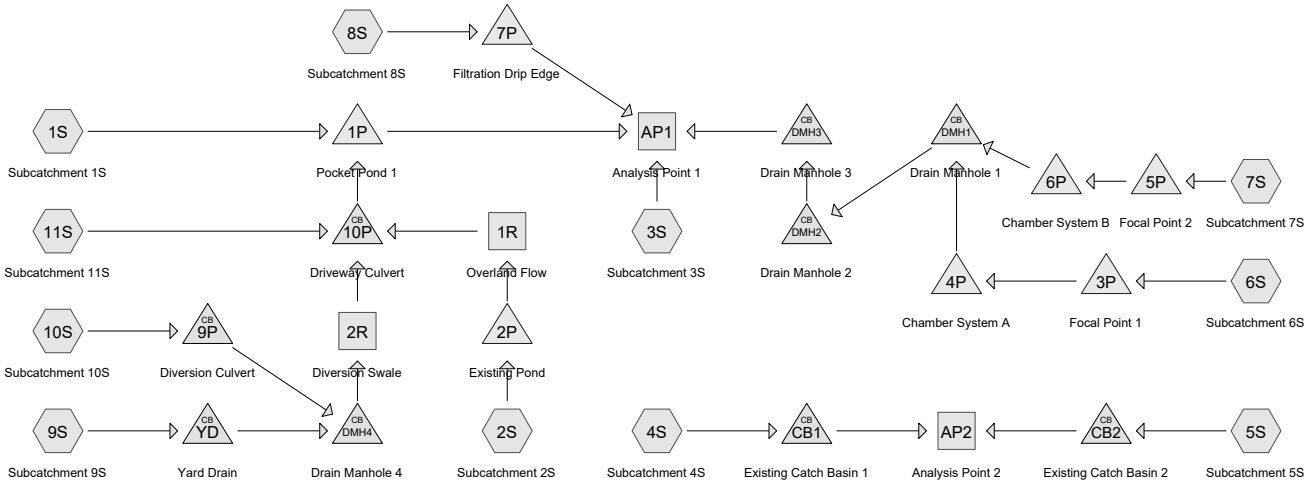
Device	Routing	Invert	Outlet Devices
#1	Primary	19.08'	**12.0" Round Culvert** L= 36.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 19.08' / 18.80' S= 0.0078 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.46 cfs @ 12.09 hrs HW=19.43' (Free Discharge)
1=Culvert (Barrel Controls 0.46 cfs @ 2.79 fps)

APPENDIX II

PROPOSED CONDITIONS DRAINAGE ANALYSIS

Summary 2 YEAR
Complete 10 YEAR
Summary 25 YEAR
Complete 50 YEAR



Subcat Reach Pond Link

Routing Diagram for 25071.2-PROPOSED

Prepared by Jones & Beach Engineers Inc, Printed 10/19/2026

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.228	70	1/2 acre lots, 25% imp, HSG B (3S, 10S)
0.890	61	>75% Grass cover, Good, HSG B (1S, 2S, 3S, 4S, 5S, 6S, 7S, 9S, 10S, 11S)
0.086	48	Brush, Good, HSG B (2S)
0.422	98	Paved parking, HSG B (2S, 6S, 7S)
0.298	98	Paved roads w/curbs & sewers, HSG B (1S, 3S, 4S, 5S)
0.336	98	Roofs, HSG B (2S, 6S, 8S, 10S)
0.034	98	Water Surface, 0% imp, HSG B (8S)
0.892	55	Woods, Good, HSG B (1S, 2S, 3S, 9S, 10S, 11S)
5.186	**71**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
5.186	HSG B	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S
0.000	HSG C	
0.000	HSG D	
0.000	Other	
5.186		**TOTAL AREA**

Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment1S: Subcatchment1S Runoff Area=6,934 sf 5.35% Impervious Runoff Depth=0.72"
Tc=6.0 min CN=62 Runoff=0.10 cfs 0.010 af

Subcatchment2S: Subcatchment2S Runoff Area=22,794 sf 37.44% Impervious Runoff Depth=1.26"
Tc=6.0 min CN=72 Runoff=0.73 cfs 0.055 af

Subcatchment3S: Subcatchment3S Runoff Area=81,653 sf 28.56% Impervious Runoff Depth=1.14"
Flow Length=599' Tc=10.5 min CN=70 Runoff=1.99 cfs 0.178 af

Subcatchment4S: Subcatchment4S Runoff Area=1,897 sf 80.02% Impervious Runoff Depth=2.74"
Tc=6.0 min CN=91 Runoff=0.13 cfs 0.010 af

Subcatchment5S: Subcatchment5S Runoff Area=2,929 sf 83.27% Impervious Runoff Depth=2.84"
Tc=6.0 min CN=92 Runoff=0.21 cfs 0.016 af

Subcatchment6S: Subcatchment6S Runoff Area=10,789 sf 86.15% Impervious Runoff Depth=2.94"
Tc=6.0 min CN=93 Runoff=0.80 cfs 0.061 af

Subcatchment7S: Subcatchment7S Runoff Area=7,595 sf 82.59% Impervious Runoff Depth=2.84"
Tc=6.0 min CN=92 Runoff=0.55 cfs 0.041 af

Subcatchment8S: Subcatchment8S Runoff Area=9,264 sf 83.81% Impervious Runoff Depth=3.48"
Tc=6.0 min CN=98 Runoff=0.75 cfs 0.062 af

Subcatchment9S: Subcatchment9S Runoff Area=3,563 sf 0.00% Impervious Runoff Depth=0.50"
Flow Length=79' Tc=8.0 min CN=57 Runoff=0.03 cfs 0.003 af

Subcatchment10S: Subcatchment10S Runoff Area=66,838 sf 16.07% Impervious Runoff Depth=0.92"
Flow Length=284' Tc=12.5 min CN=66 Runoff=1.16 cfs 0.117 af

Subcatchment11S: Subcatchment11S Runoff Area=11,665 sf 0.00% Impervious Runoff Depth=0.50"
Flow Length=120' Tc=8.0 min CN=57 Runoff=0.09 cfs 0.011 af

Reach 1R: Overland Flow Avg. Flow Depth=0.09' Max Vel=0.26 fps Inflow=0.36 cfs 0.034 af
n=0.070 L=66.0' S=0.0061 '/' Capacity=13.24 cfs Outflow=0.35 cfs 0.034 af

Reach 2R: Diversion Swale Avg. Flow Depth=0.31' Max Vel=1.31 fps Inflow=1.18 cfs 0.121 af
n=0.030 L=60.0' S=0.0050 '/' Capacity=12.47 cfs Outflow=1.18 cfs 0.121 af

Reach AP1: Analysis Point 1 Inflow=1.99 cfs 0.187 af
Outflow=1.99 cfs 0.187 af

Reach AP2: Analysis Point 2 Inflow=0.35 cfs 0.026 af
Outflow=0.35 cfs 0.026 af

Pond 1P: Pocket Pond 1 Peak Elev=20.88' Storage=3,270 cf Inflow=1.64 cfs 0.175 af
Discarded=0.19 cfs 0.167 af Primary=0.02 cfs 0.008 af Outflow=0.21 cfs 0.175 af

Pond 2P: Existing Pond Peak Elev=21.31' Storage=436 cf Inflow=0.73 cfs 0.055 af
Discarded=0.05 cfs 0.021 af Primary=0.36 cfs 0.034 af Outflow=0.41 cfs 0.055 af

Pond 3P: Focal Point 1 Peak Elev=22.58' Storage=59 cf Inflow=0.80 cfs 0.061 af
Outflow=0.80 cfs 0.061 af

Pond 4P: Chamber System A Peak Elev=19.84' Storage=968 cf Inflow=0.80 cfs 0.061 af
Discarded=0.15 cfs 0.061 af Primary=0.00 cfs 0.000 af Outflow=0.15 cfs 0.061 af

Pond 5P: Focal Point 2 Peak Elev=23.02' Storage=23 cf Inflow=0.55 cfs 0.041 af
Outflow=0.55 cfs 0.041 af

Pond 6P: Chamber System B Peak Elev=19.76' Storage=619 cf Inflow=0.55 cfs 0.041 af
Discarded=0.11 cfs 0.041 af Primary=0.00 cfs 0.000 af Outflow=0.11 cfs 0.041 af

Pond 7P: Filtration Drip Edge Peak Elev=20.82' Storage=960 cf Inflow=0.75 cfs 0.062 af
Discarded=0.27 cfs 0.051 af Primary=0.00 cfs 0.000 af Outflow=0.27 cfs 0.051 af

Pond 9P: Diversion Culvert Peak Elev=21.73' Inflow=1.16 cfs 0.117 af
18.0" Round Culvert n=0.013 L=20.0' S=0.0100 '/' Outflow=1.16 cfs 0.117 af

Pond 10P: Driveway Culvert Peak Elev=20.76' Inflow=1.56 cfs 0.166 af
18.0" Round Culvert n=0.013 L=36.0' S=0.0056 '/' Outflow=1.56 cfs 0.166 af

Pond CB1: Existing Catch Basin 1 Peak Elev=23.60' Inflow=0.13 cfs 0.010 af
12.0" Round Culvert n=0.012 L=28.0' S=0.0075 '/' Outflow=0.13 cfs 0.010 af

Pond CB2: Existing Catch Basin 2 Peak Elev=19.31' Inflow=0.21 cfs 0.016 af
12.0" Round Culvert n=0.012 L=36.0' S=0.0078 '/' Outflow=0.21 cfs 0.016 af

Pond DMH1: Drain Manhole 1 Peak Elev=20.15' Inflow=0.00 cfs 0.000 af
12.0" Round Culvert n=0.013 L=58.0' S=0.0052 '/' Outflow=0.00 cfs 0.000 af

Pond DMH2: Drain Manhole 2 Peak Elev=19.75' Inflow=0.00 cfs 0.000 af
12.0" Round Culvert n=0.013 L=140.0' S=0.0050 '/' Outflow=0.00 cfs 0.000 af

Pond DMH3: Drain Manhole 3 Peak Elev=18.95' Inflow=0.00 cfs 0.000 af
12.0" Round Culvert n=0.013 L=24.0' S=0.0062 '/' Outflow=0.00 cfs 0.000 af

Pond DMH4: Drain Manhole 4 Peak Elev=21.46' Inflow=1.18 cfs 0.121 af
18.0" Round Culvert n=0.013 L=92.0' S=0.0054 '/' Outflow=1.18 cfs 0.121 af

Pond YD: Yard Drain Peak Elev=21.78' Inflow=0.03 cfs 0.003 af
12.0" Round Culvert n=0.013 L=28.0' S=0.0107 '/' Outflow=0.03 cfs 0.003 af

Total Runoff Area = 5.186 ac Runoff Volume = 0.564 af Average Runoff Depth = 1.30"
68.90% Pervious = 3.574 ac 31.10% Impervious = 1.613 ac

Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment1S: Subcatchment1S Runoff Area=6,934 sf 5.35% Impervious Runoff Depth=1.84"
Tc=6.0 min CN=62 Runoff=0.32 cfs 0.024 af

Subcatchment2S: Subcatchment2S Runoff Area=22,794 sf 37.44% Impervious Runoff Depth=2.69"
Tc=6.0 min CN=72 Runoff=1.62 cfs 0.117 af

Subcatchment3S: Subcatchment3S Runoff Area=81,653 sf 28.56% Impervious Runoff Depth=2.51"
Flow Length=599' Tc=10.5 min CN=70 Runoff=4.66 cfs 0.393 af

Subcatchment4S: Subcatchment4S Runoff Area=1,897 sf 80.02% Impervious Runoff Depth=4.60"
Tc=6.0 min CN=91 Runoff=0.22 cfs 0.017 af

Subcatchment5S: Subcatchment5S Runoff Area=2,929 sf 83.27% Impervious Runoff Depth=4.71"
Tc=6.0 min CN=92 Runoff=0.34 cfs 0.026 af

Subcatchment6S: Subcatchment6S Runoff Area=10,789 sf 86.15% Impervious Runoff Depth=4.82"
Tc=6.0 min CN=93 Runoff=1.27 cfs 0.099 af

Subcatchment7S: Subcatchment7S Runoff Area=7,595 sf 82.59% Impervious Runoff Depth=4.71"
Tc=6.0 min CN=92 Runoff=0.88 cfs 0.068 af

Subcatchment8S: Subcatchment8S Runoff Area=9,264 sf 83.81% Impervious Runoff Depth=5.39"
Tc=6.0 min CN=98 Runoff=1.15 cfs 0.096 af

Subcatchment9S: Subcatchment9S Runoff Area=3,563 sf 0.00% Impervious Runoff Depth=1.46"
Flow Length=79' Tc=8.0 min CN=57 Runoff=0.11 cfs 0.010 af

Subcatchment10S: Subcatchment10S Runoff Area=66,838 sf 16.07% Impervious Runoff Depth=2.17"
Flow Length=284' Tc=12.5 min CN=66 Runoff=3.03 cfs 0.277 af

Subcatchment11S: Subcatchment11S Runoff Area=11,665 sf 0.00% Impervious Runoff Depth=1.46"
Flow Length=120' Tc=8.0 min CN=57 Runoff=0.37 cfs 0.032 af

Reach 1R: Overland Flow Avg. Flow Depth=0.15' Max Vel=0.36 fps Inflow=0.99 cfs 0.086 af
n=0.070 L=66.0' S=0.0061 '/' Capacity=13.24 cfs Outflow=0.97 cfs 0.086 af

Reach 2R: Diversion Swale Avg. Flow Depth=0.51' Max Vel=1.73 fps Inflow=3.13 cfs 0.287 af
n=0.030 L=60.0' S=0.0050 '/' Capacity=12.47 cfs Outflow=3.14 cfs 0.287 af

Reach AP1: Analysis Point 1 Inflow=4.74 cfs 0.572 af
Outflow=4.74 cfs 0.572 af

Reach AP2: Analysis Point 2 Inflow=0.56 cfs 0.043 af
Outflow=0.56 cfs 0.043 af

Pond 1P: Pocket Pond 1 Peak Elev=22.02' Storage=6,767 cf Inflow=4.60 cfs 0.430 af
Discarded=0.32 cfs 0.260 af Primary=1.21 cfs 0.170 af Outflow=1.54 cfs 0.430 af

Pond 2P: Existing Pond Peak Elev=21.54' Storage=831 cf Inflow=1.62 cfs 0.117 af
Discarded=0.06 cfs 0.031 af Primary=0.99 cfs 0.086 af Outflow=1.06 cfs 0.117 af

Pond 3P: Focal Point 1 Peak Elev=22.63' Storage=64 cf Inflow=1.27 cfs 0.099 af
Outflow=1.27 cfs 0.099 af

Pond 4P: Chamber System A Peak Elev=20.69' Storage=1,564 cf Inflow=1.27 cfs 0.099 af
Discarded=0.21 cfs 0.095 af Primary=0.14 cfs 0.005 af Outflow=0.35 cfs 0.099 af

Pond 5P: Focal Point 2 Peak Elev=23.05' Storage=25 cf Inflow=0.88 cfs 0.068 af
Outflow=0.89 cfs 0.068 af

Pond 6P: Chamber System B Peak Elev=20.37' Storage=1,110 cf Inflow=0.89 cfs 0.068 af
Discarded=0.15 cfs 0.068 af Primary=0.00 cfs 0.000 af Outflow=0.15 cfs 0.068 af

Pond 7P: Filtration Drip Edge Peak Elev=21.25' Storage=1,219 cf Inflow=1.15 cfs 0.096 af
Discarded=0.31 cfs 0.081 af Primary=0.38 cfs 0.004 af Outflow=0.69 cfs 0.085 af

Pond 9P: Diversion Culvert Peak Elev=22.12' Inflow=3.03 cfs 0.277 af
18.0" Round Culvert n=0.013 L=20.0' S=0.0100 '/' Outflow=3.03 cfs 0.277 af

Pond 10P: Driveway Culvert Peak Elev=21.30' Inflow=4.39 cfs 0.406 af
18.0" Round Culvert n=0.013 L=36.0' S=0.0056 '/' Outflow=4.39 cfs 0.406 af

Pond CB1: Existing Catch Basin 1 Peak Elev=23.65' Inflow=0.22 cfs 0.017 af
12.0" Round Culvert n=0.012 L=28.0' S=0.0075 '/' Outflow=0.22 cfs 0.017 af

Pond CB2: Existing Catch Basin 2 Peak Elev=19.38' Inflow=0.34 cfs 0.026 af
12.0" Round Culvert n=0.012 L=36.0' S=0.0078 '/' Outflow=0.34 cfs 0.026 af

Pond DMH1: Drain Manhole 1 Peak Elev=20.37' Inflow=0.14 cfs 0.005 af
12.0" Round Culvert n=0.013 L=58.0' S=0.0052 '/' Outflow=0.14 cfs 0.005 af

Pond DMH2: Drain Manhole 2 Peak Elev=19.97' Inflow=0.14 cfs 0.005 af
12.0" Round Culvert n=0.013 L=140.0' S=0.0050 '/' Outflow=0.14 cfs 0.005 af

Pond DMH3: Drain Manhole 3 Peak Elev=19.17' Inflow=0.14 cfs 0.005 af
12.0" Round Culvert n=0.013 L=24.0' S=0.0062 '/' Outflow=0.14 cfs 0.005 af

Pond DMH4: Drain Manhole 4 Peak Elev=21.88' Inflow=3.13 cfs 0.287 af
18.0" Round Culvert n=0.013 L=92.0' S=0.0054 '/' Outflow=3.13 cfs 0.287 af

Pond YD: Yard Drain Peak Elev=21.87' Inflow=0.11 cfs 0.010 af
12.0" Round Culvert n=0.013 L=28.0' S=0.0107 '/' Outflow=0.11 cfs 0.010 af

Total Runoff Area = 5.186 ac Runoff Volume = 1.161 af Average Runoff Depth = 2.69"
68.90% Pervious = 3.574 ac 31.10% Impervious = 1.613 ac

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 0.32 cfs @ 12.10 hrs, Volume= 0.024 af, Depth= 1.84"
Routed to Pond 1P : Pocket Pond 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=5.63"

Area (sf)	CN	Description
773	55	Woods, Good, HSG B
5,790	61	>75% Grass cover, Good, HSG B
371	98	Paved roads w/curbs & sewers, HSG B
6,934	62	Weighted Average
6,563		94.65% Pervious Area
371		5.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 1.62 cfs @ 12.09 hrs, Volume= 0.117 af, Depth= 2.69"
Routed to Pond 2P : Existing Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=5.63"

Area (sf)	CN	Description
7,719	98	Paved parking, HSG B
815	98	Roofs, HSG B
9,211	61	>75% Grass cover, Good, HSG B
1,310	55	Woods, Good, HSG B
3,739	48	Brush, Good, HSG B
22,794	72	Weighted Average
14,260		62.56% Pervious Area
8,534		37.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 3S: Subcatchment 3S

Runoff = 4.66 cfs @ 12.15 hrs, Volume= 0.393 af, Depth= 2.51"
Routed to Reach AP1 : Analysis Point 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=5.63"

Area (sf)	CN	Description
12,438	55	Woods, Good, HSG B
8,649	98	Paved roads w/curbs & sewers, HSG B
58,674	70	1/2 acre lots, 25% imp, HSG B
1,892	61	>75% Grass cover, Good, HSG B
81,653	70	Weighted Average
58,336		71.44% Pervious Area
23,318		28.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	50	0.0200	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.71"
0.7	55	0.0364	1.34		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	59	0.0476	1.53		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	208	0.0260	3.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	33	0.0303	1.22		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	86	0.0233	1.07		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	50	0.0385	0.98		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	58	0.0090	3.35	16.73	**Trap/Vee/Rect Channel Flow, Diversion Swale** Bot.W=2.00' D=1.00' Z= 3.0 '/' Top.W=8.00' n= 0.030 Earth, grassed & winding
10.5	599	Total			

Summary for Subcatchment 4S: Subcatchment 4S

Runoff = 0.22 cfs @ 12.09 hrs, Volume= 0.017 af, Depth= 4.60"
Routed to Pond CB1 : Existing Catch Basin 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=5.63"

Area (sf)	CN	Description
1,518	98	Paved roads w/curbs & sewers, HSG B
379	61	>75% Grass cover, Good, HSG B
1,897	91	Weighted Average
379		19.98% Pervious Area
1,518		80.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 5S: Subcatchment 5S

Runoff = 0.34 cfs @ 12.09 hrs, Volume= 0.026 af, Depth= 4.71"
Routed to Pond CB2 : Existing Catch Basin 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=5.63"

Area (sf)	CN	Description
2,439	98	Paved roads w/curbs & sewers, HSG B
490	61	>75% Grass cover, Good, HSG B
2,929	92	Weighted Average
490		16.73% Pervious Area
2,439		83.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 6S: Subcatchment 6S

Runoff = 1.27 cfs @ 12.09 hrs, Volume= 0.099 af, Depth= 4.82"
Routed to Pond 3P : Focal Point 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=5.63"

Area (sf)	CN	Description
4,405	98	Paved parking, HSG B
1,494	61	>75% Grass cover, Good, HSG B
4,890	98	Roofs, HSG B
10,789	93	Weighted Average
1,494		13.85% Pervious Area
9,295		86.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 7S: Subcatchment 7S

Runoff = 0.88 cfs @ 12.09 hrs, Volume= 0.068 af, Depth= 4.71"
Routed to Pond 5P : Focal Point 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=5.63"

Area (sf)	CN	Description
6,273	98	Paved parking, HSG B
1,322	61	>75% Grass cover, Good, HSG B
7,595	92	Weighted Average
1,322		17.41% Pervious Area
6,273		82.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 8S: Subcatchment 8S

Runoff = 1.15 cfs @ 12.09 hrs, Volume= 0.096 af, Depth= 5.39"
Routed to Pond 7P : Filtration Drip Edge

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=5.63"

Area (sf)	CN	Description
7,764	98	Roofs, HSG B
1,500	98	Water Surface, 0% imp, HSG B
9,264	98	Weighted Average
1,500		16.19% Pervious Area
7,764		83.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 9S: Subcatchment 9S

Runoff = 0.11 cfs @ 12.13 hrs, Volume= 0.010 af, Depth= 1.46"
Routed to Pond YD : Yard Drain

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=5.63"

Area (sf)	CN	Description
2,652	55	Woods, Good, HSG B
911	61	>75% Grass cover, Good, HSG B
3,563	57	Weighted Average
3,563		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	14	0.0500	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.71"
3.3	28	0.1429	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.71"
1.6	8	0.0714	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.71"
0.1	6	0.0714	1.87		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	23	0.0100	3.53	17.63	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.00' Z= 3.0 '/' Top.W=8.00' n= 0.030 Earth, grassed & winding
8.0	79	Total			

Summary for Subcatchment 10S: Subcatchment 10S

Intent of final Tc segment is to demonstrate adequacy of provided diversion swale dimensions.

Runoff = 3.03 cfs @ 12.18 hrs, Volume= 0.277 af, Depth= 2.17"
Routed to Pond 9P : Diversion Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=5.63"

Area (sf)	CN	Description
14,284	55	Woods, Good, HSG B
1,147	98	Roofs, HSG B
38,372	70	1/2 acre lots, 25% imp, HSG B
13,035	61	>75% Grass cover, Good, HSG B
66,838	66	Weighted Average
56,098		83.93% Pervious Area
10,740		16.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	15	0.1000	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.71"
7.2	35	0.0308	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.71"
0.6	30	0.0308	0.88		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	25	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.1	92	0.0217	0.74		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	51	0.0392	0.99		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	11	0.0270	0.82		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	16	0.0270	1.15		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	9	0.0160	4.46	22.30	**Trap/Vee/Rect Channel Flow, Diversion Swale Segment** Bot.W=2.00' D=1.00' Z= 3.0 '/' Top.W=8.00' n= 0.030 Earth, grassed & winding
12.5	284	Total			

Summary for Subcatchment 11S: Subcatchment 11S

Runoff = 0.37 cfs @ 12.13 hrs, Volume= 0.032 af, Depth= 1.46"
Routed to Pond 10P : Driveway Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=5.63"

Area (sf)	CN	Description
7,405	55	Woods, Good, HSG B
4,260	61	>75% Grass cover, Good, HSG B
11,665	57	Weighted Average
11,665		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	15	0.0667	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.71"
2.5	22	0.1818	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.71"
1.9	13	0.1176	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.71"
0.4	38	0.1176	1.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	32	0.0469	1.08		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.0	120	Total			

Summary for Reach 1R: Overland Flow

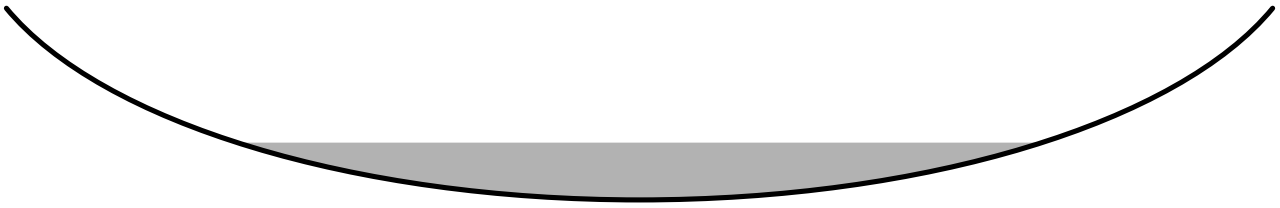
[79] Warning: Submerged Pond 2P Primary device # 2 OUTLET by 0.15'

Inflow Area = 0.523 ac, 37.44% Impervious, Inflow Depth = 1.98" for 10-YR STORM event
Inflow = 0.99 cfs @ 12.20 hrs, Volume= 0.086 af
Outflow = 0.97 cfs @ 12.25 hrs, Volume= 0.086 af, Atten= 2%, Lag= 2.7 min
Routed to Pond 10P : Driveway Culvert

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.36 fps, Min. Travel Time= 3.1 min
Avg. Velocity = 0.10 fps, Avg. Travel Time= 11.3 min

Peak Storage= 180 cf @ 12.25 hrs
Average Depth at Peak Storage= 0.15' , Surface Width= 27.35'
Bank-Full Depth= 0.50' Flow Area= 16.7 sf, Capacity= 13.24 cfs

50.00' x 0.50' deep Parabolic Channel, n= 0.070 Medium-dense brush, winter
Length= 66.0' Slope= 0.0061 '/'
Inlet Invert= 20.50', Outlet Invert= 20.10'



‡

Summary for Reach 2R: Diversion Swale

[88] Warning: Qout>Qin may require smaller dt or Finer Routing
[79] Warning: Submerged Pond DMH4 Primary device # 1 INLET by 0.01'

Inflow Area = 1.616 ac, 15.26% Impervious, Inflow Depth = 2.13" for 10-YR STORM event
Inflow = 3.13 cfs @ 12.18 hrs, Volume= 0.287 af
Outflow = 3.14 cfs @ 12.19 hrs, Volume= 0.287 af, Atten= 0%, Lag= 0.5 min
Routed to Pond 10P : Driveway Culvert

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.73 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 0.65 fps, Avg. Travel Time= 1.5 min

Peak Storage= 109 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.51' , Surface Width= 5.08'
Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 12.47 cfs

2.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 8.00'
Length= 60.0' Slope= 0.0050 '/'
Inlet Invert= 20.40', Outlet Invert= 20.10'



‡

Summary for Reach AP1: Analysis Point 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 5.076 ac, 29.98% Impervious, Inflow Depth = 1.35" for 10-YR STORM event
Inflow = 4.74 cfs @ 12.17 hrs, Volume= 0.572 af
Outflow = 4.74 cfs @ 12.17 hrs, Volume= 0.572 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Summary for Reach AP2: Analysis Point 2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.111 ac, 81.99% Impervious, Inflow Depth = 4.66" for 10-YR STORM event
Inflow = 0.56 cfs @ 12.09 hrs, Volume= 0.043 af
Outflow = 0.56 cfs @ 12.09 hrs, Volume= 0.043 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Summary for Pond 1P: Pocket Pond 1

[81] Warning: Exceeded Pond 10P by 1.35' @ 12.85 hrs

Inflow Area = 2.566 ac, 17.57% Impervious, Inflow Depth = 2.01" for 10-YR STORM event
Inflow = 4.60 cfs @ 12.19 hrs, Volume= 0.430 af
Outflow = 1.54 cfs @ 12.65 hrs, Volume= 0.430 af, Atten= 67%, Lag= 27.6 min
Discarded = 0.32 cfs @ 12.65 hrs, Volume= 0.260 af
Primary = 1.21 cfs @ 12.65 hrs, Volume= 0.170 af
Routed to Reach AP1 : Analysis Point 1

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 22.02' @ 12.65 hrs Surf.Area= 3,560 sf Storage= 6,767 cf

Plug-Flow detention time= 163.2 min calculated for 0.430 af (100% of inflow)
Center-of-Mass det. time= 163.4 min (1,017.0 - 853.6)

Volume	Invert	Avail.Storage	Storage Description
#1	19.30'	10,698 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)
19.30	1,521	221.0	0	0	1,521
20.00	2,006	241.0	1,231	1,231	2,274
22.00	3,546	291.0	5,479	6,710	4,456
23.00	4,448	310.0	3,988	10,698	5,414

Device	Routing	Invert	Outlet Devices
#1	Primary	19.90'	**18.0" Round Culvert** L= 24.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 19.90' / 19.70' S= 0.0083 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	20.30'	**1.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	21.00'	**3.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	21.25'	**5.0" W x 15.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	22.75'	**2.0" x 2.0" Horiz. Orifice/Grate X 18.00 columns** X 18 rows C= 0.600 in 48.0" x 48.0" Grate (56% open area) Limited to weir flow at low heads
#6	Discarded	19.30'	**1.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 18.80' Phase-In= 0.10'

Discarded OutFlow Max=0.32 cfs @ 12.65 hrs HW=22.02' (Free Discharge)
└─**6=Exfiltration** (Controls 0.32 cfs)

Primary OutFlow Max=1.21 cfs @ 12.65 hrs HW=22.02' (Free Discharge)
└─**1=Culvert** (Passes 1.21 cfs of 9.20 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.03 cfs @ 6.23 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 0.28 cfs @ 4.54 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 0.90 cfs @ 2.81 fps)
  └─**5=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 2P: Existing Pond

Pond areas, elevations, and culvert parameters are assumed.

Inflow Area = 0.523 ac, 37.44% Impervious, Inflow Depth = 2.69" for 10-YR STORM event
Inflow = 1.62 cfs @ 12.09 hrs, Volume= 0.117 af
Outflow = 1.06 cfs @ 12.20 hrs, Volume= 0.117 af, Atten= 35%, Lag= 6.5 min
Discarded = 0.06 cfs @ 12.20 hrs, Volume= 0.031 af
Primary = 0.99 cfs @ 12.20 hrs, Volume= 0.086 af
Routed to Reach 1R : Overland Flow

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 21.54' @ 12.20 hrs Surf.Area= 1,912 sf Storage= 831 cf

Plug-Flow detention time= 24.1 min calculated for 0.117 af (100% of inflow)
Center-of-Mass det. time= 23.8 min (860.4 - 836.6)

Volume	Invert	Avail.Storage	Storage Description
#1	21.00'	1,882 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)
21.00	1,209	140.0	0	0	1,209
22.00	2,647	210.0	1,882	1,882	3,166

Device	Routing	Invert	Outlet Devices
#1	Discarded	21.00'	**1.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 20.00' Phase-In= 0.10'
#2	Primary	21.00'	**15.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 21.00' / 20.50' S= 0.0167 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Discarded OutFlow Max=0.06 cfs @ 12.20 hrs HW=21.54' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.06 cfs)

Primary OutFlow Max=0.99 cfs @ 12.20 hrs HW=21.54' (Free Discharge)
↑—**2=Culvert** (Inlet Controls 0.99 cfs @ 1.97 fps)

Summary for Pond 3P: Focal Point 1

[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=6)

Inflow Area = 0.248 ac, 86.15% Impervious, Inflow Depth = 4.82" for 10-YR STORM event
Inflow = 1.27 cfs @ 12.09 hrs, Volume= 0.099 af
Outflow = 1.27 cfs @ 12.09 hrs, Volume= 0.099 af, Atten= 0%, Lag= 0.1 min
Primary = 1.27 cfs @ 12.09 hrs, Volume= 0.099 af
Routed to Pond 4P : Chamber System A

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 22.63' @ 12.09 hrs Surf.Area= 145 sf Storage= 64 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1.1 min (775.9 - 774.8)

Volume	Invert	Avail.Storage	Storage Description
#1	19.75'	18 cf	**4.00'W x 10.00'L x 2.25'H Focal Point Area 1** 90 cf Overall x 20.0% Voids
#2	22.00'	59 cf	**Surface Bowl (Prismatic)** Listed below (Recalc)
		77 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
22.00	40	0	0
22.75	118	59	59

Device	Routing	Invert	Outlet Devices
#1	Primary	19.25'	**12.0" Round Culvert** L= 9.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 19.25' / 19.20' S= 0.0056 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 3	19.75'	**100.000 in/hr Exfiltration over Surface area** Phase-In= 0.10'
#3	Device 1	19.25'	**6.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	22.50'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.24 cfs @ 12.09 hrs HW=22.62' (Free Discharge)
└─**1=Culvert** (Passes 1.24 cfs of 5.06 cfs potential flow)
  ├─**3=Orifice/Grate** (Passes 0.34 cfs of 2.13 cfs potential flow)
  │ └─**2=Exfiltration** (Exfiltration Controls 0.34 cfs)
  └─**4=Orifice/Grate** (Weir Controls 0.90 cfs @ 1.15 fps)

Summary for Pond 4P: Chamber System A

High existing grade = 21.0
SHWT depth = 34" per test pit #2
E(SHWT) = 18.17
Bottom of chambers = 19.2
However, credit is being taken for 12" stone layer underneath chambers down to 18.2. SHWT is modelled 6" lower as a factor of safety. Modelling the SHWT too close to the bottom of modelled storage renders inaccurate results.

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[81] Warning: Exceeded Pond 3P by 0.27' @ 13.90 hrs

Inflow Area = 0.248 ac, 86.15% Impervious, Inflow Depth = 4.82" for 10-YR STORM event
Inflow = 1.27 cfs @ 12.09 hrs, Volume= 0.099 af
Outflow = 0.35 cfs @ 12.45 hrs, Volume= 0.099 af, Atten= 72%, Lag= 21.6 min
Discarded = 0.21 cfs @ 12.45 hrs, Volume= 0.095 af
Primary = 0.14 cfs @ 12.45 hrs, Volume= 0.005 af
Routed to Pond DMH1 : Drain Manhole 1

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 20.69' @ 12.45 hrs Surf.Area= 2,048 sf Storage= 1,564 cf

Plug-Flow detention time= 83.4 min calculated for 0.099 af (100% of inflow)
Center-of-Mass det. time= 83.4 min (859.3 - 775.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	19.20'	0 cf	**8.00'W x 98.00'L x 2.67'H Field A** 2,093 cf Overall - 2,093 cf Embedded = 0 cf x 0.0% Voids
#2A	19.20'	1,400 cf	**Shea Leaching Chamber 8x14x2.7**x 7 Inside #1 Inside= 84.0"W x 24.0"H => 15.38 sf x 13.00'L = 200.0 cf Outside= 96.0"W x 32.0"H => 21.36 sf x 14.00'L = 299.0 cf
#3	18.19'	518 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		1,918 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
18.19	1,264	0.0	0	0
18.20	1,264	40.0	5	5
19.19	1,264	40.0	501	506
19.20	1,264	100.0	13	518

Device	Routing	Invert	Outlet Devices
#1	Primary	20.45'	**8.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.45' / 20.25' S= 0.0067 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Discarded	18.19'	**1.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 17.67' Phase-In= 0.10'

Discarded OutFlow Max=0.21 cfs @ 12.45 hrs HW=20.69' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.21 cfs)

Primary OutFlow Max=0.14 cfs @ 12.45 hrs HW=20.69' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 0.14 cfs @ 1.86 fps)

Summary for Pond 5P: Focal Point 2

[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=6)

Inflow Area = 0.174 ac, 82.59% Impervious, Inflow Depth = 4.71" for 10-YR STORM event
Inflow = 0.88 cfs @ 12.09 hrs, Volume= 0.068 af
Outflow = 0.89 cfs @ 12.09 hrs, Volume= 0.068 af, Atten= 0%, Lag= 0.1 min
Primary = 0.89 cfs @ 12.09 hrs, Volume= 0.068 af
Routed to Pond 6P : Chamber System B

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 23.05' @ 12.09 hrs Surf.Area= 80 sf Storage= 25 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.8 min (779.9 - 779.1)

Volume	Invert	Avail.Storage	Storage Description
#1	20.50'	13 cf	**4.00'W x 7.00'L x 2.25'H Focal Point Area 1** 63 cf Overall x 20.0% Voids
#2	22.75'	24 cf	**Surface Bowl (Prismatic)**Listed below (Recalc)
		37 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
22.75	28	0	0
23.25	68	24	24

Device	Routing	Invert	Outlet Devices
#1	Primary	20.00'	**12.0" Round Culvert** L= 32.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.00' / 19.80' S= 0.0062 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 3	20.50'	**100.000 in/hr Exfiltration over Surface area** Phase-In= 0.10'
#3	Device 1	20.00'	**6.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	22.95'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.86 cfs @ 12.09 hrs HW=23.05' (Free Discharge)
└─**1=Culvert** (Passes 0.86 cfs of 4.77 cfs potential flow)
  ├─**3=Orifice/Grate** (Passes 0.19 cfs of 2.01 cfs potential flow)
  │ └─**2=Exfiltration** (Exfiltration Controls 0.19 cfs)
  └─**4=Orifice/Grate** (Weir Controls 0.68 cfs @ 1.05 fps)

Summary for Pond 6P: Chamber System B

High existing grade = ~21.4
SHWT depth = 34" per test pit #2
E(SHWT) = 18.57
Bottom of chambers = 19.6
However, credit is being taken for 12" stone layer underneath chambers down to 18.6. SHWT is modelled 6" lower as a factor of safety. Modelling the SHWT too close to the bottom of modelled storage renders inaccurate results.

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[79] Warning: Submerged Pond 5P Primary device # 1 INLET by 0.37'

Inflow Area = 0.174 ac, 82.59% Impervious, Inflow Depth = 4.71" for 10-YR STORM event
Inflow = 0.89 cfs @ 12.09 hrs, Volume= 0.068 af
Outflow = 0.15 cfs @ 12.58 hrs, Volume= 0.068 af, Atten= 83%, Lag= 29.3 min
Discarded = 0.15 cfs @ 12.58 hrs, Volume= 0.068 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond DMH1 : Drain Manhole 1

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 20.37' @ 12.58 hrs Surf.Area= 2,096 sf Storage= 1,110 cf

Plug-Flow detention time= 79.4 min calculated for 0.068 af (100% of inflow)
Center-of-Mass det. time= 79.4 min (859.3 - 779.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	19.60'	0 cf	**16.00'W x 56.00'L x 2.67'H Field A** 2,392 cf Overall - 2,392 cf Embedded = 0 cf x 0.0% Voids
#2A	19.60'	1,600 cf	**Shea Leaching Chamber 8x14x2.7**x 8 Inside #1 Inside= 84.0"W x 24.0"H => 15.38 sf x 13.00'L = 200.0 cf Outside= 96.0"W x 32.0"H => 21.36 sf x 14.00'L = 299.0 cf 8 Chambers in 2 Rows
#3	18.59'	492 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		2,092 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
18.59	1,200	0.0	0	0
18.60	1,200	40.0	5	5
19.59	1,200	40.0	475	480
19.60	1,200	100.0	12	492

Device	Routing	Invert	Outlet Devices
#1	Primary	20.80'	**8.0" Round Culvert** L= 8.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.80' / 20.75' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Discarded	18.59'	**1.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 18.07' Phase-In= 0.10'

Discarded OutFlow Max=0.15 cfs @ 12.58 hrs HW=20.37' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.15 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=18.59' (Free Discharge)
↑—**1=Culvert** (Controls 0.00 cfs)

Summary for Pond 7P: Filtration Drip Edge

Inflow Area = 0.213 ac, 83.81% Impervious, Inflow Depth = 5.39" for 10-YR STORM event
Inflow = 1.15 cfs @ 12.09 hrs, Volume= 0.096 af
Outflow = 0.69 cfs @ 12.22 hrs, Volume= 0.085 af, Atten= 40%, Lag= 7.8 min
Discarded = 0.31 cfs @ 12.20 hrs, Volume= 0.081 af
Primary = 0.38 cfs @ 12.22 hrs, Volume= 0.004 af
Routed to Reach AP1 : Analysis Point 1

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 21.25' @ 12.20 hrs Surf.Area= 4,500 sf Storage= 1,219 cf

Plug-Flow detention time= 117.0 min calculated for 0.085 af (89% of inflow)
Center-of-Mass det. time= 65.1 min (811.2 - 746.1)

Volume	Invert	Avail.Storage	Storage Description
#1	20.25'	600 cf	**12.00'W x 125.00'L x 1.00'H Prismatoid** 1,500 cf Overall x 40.0% Voids
#2	18.75'	113 cf	**12.00'W x 125.00'L x 1.50'H Prismatoid** 2,250 cf Overall x 5.0% Voids
#3	18.50'	56 cf	**12.00'W x 125.00'L x 0.25'H Prismatoid** 375 cf Overall x 15.0% Voids
#4	17.75'	450 cf	**12.00'W x 125.00'L x 0.75'H Prismatoid**-Impervious 1,125 cf Overall x 40.0% Voids
		1,219 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#0	Primary	21.25'	**Automatic Storage Overflow** (Discharged without head)
#1	Discarded	18.50'	**1.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 17.67' Phase-In= 0.10'

Discarded OutFlow Max=0.31 cfs @ 12.20 hrs HW=21.25' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.31 cfs)

Primary OutFlow Max=0.00 cfs @ 12.22 hrs HW=21.25' (Free Discharge)

Summary for Pond 9P: Diversion Culvert

Inflow Area = 1.534 ac, 16.07% Impervious, Inflow Depth = 2.17" for 10-YR STORM event
Inflow = 3.03 cfs @ 12.18 hrs, Volume= 0.277 af
Outflow = 3.03 cfs @ 12.18 hrs, Volume= 0.277 af, Atten= 0%, Lag= 0.0 min
Primary = 3.03 cfs @ 12.18 hrs, Volume= 0.277 af
Routed to Pond DMH4 : Drain Manhole 4

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 22.12' @ 12.18 hrs
Flood Elev= 23.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	21.20'	**18.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.20' / 21.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.99 cfs @ 12.18 hrs HW=22.11' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 2.99 cfs @ 3.81 fps)

Summary for Pond 10P: Driveway Culvert

[63] Warning: Exceeded Reach 1R INLET depth by 0.66' @ 12.20 hrs
[64] Warning: Exceeded Reach 1R outlet bank by 0.70' @ 12.20 hrs
[63] Warning: Exceeded Reach 2R INLET depth by 0.39' @ 12.20 hrs
[64] Warning: Exceeded Reach 2R outlet bank by 0.20' @ 12.20 hrs

Inflow Area = 2.407 ac, 18.38% Impervious, Inflow Depth = 2.02" for 10-YR STORM event
Inflow = 4.39 cfs @ 12.20 hrs, Volume= 0.406 af
Outflow = 4.39 cfs @ 12.20 hrs, Volume= 0.406 af, Atten= 0%, Lag= 0.0 min
Primary = 4.39 cfs @ 12.20 hrs, Volume= 0.406 af
Routed to Pond 1p : Pocket Pond 1

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 21.30' @ 12.20 hrs
Flood Elev= 22.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.10'	**18.0" Round Culvert** L= 36.0' CPP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 20.10' / 19.90' S= 0.0056 '/' Cc= 0.900
n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.37 cfs @ 12.20 hrs HW=21.30' (Free Discharge)
1=Culvert (Barrel Controls 4.37 cfs @ 3.94 fps)

Summary for Pond CB1: Existing Catch Basin 1

End invert of pipe is assumed as inverts have not been measured on downstream structure

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[58] Hint: Peaked 0.24' above defined flood level

Inflow Area = 0.044 ac, 80.02% Impervious, Inflow Depth = 4.60" for 10-YR STORM event
Inflow = 0.22 cfs @ 12.09 hrs, Volume= 0.017 af
Outflow = 0.22 cfs @ 12.09 hrs, Volume= 0.017 af, Atten= 0%, Lag= 0.0 min
Primary = 0.22 cfs @ 12.09 hrs, Volume= 0.017 af
Routed to Reach AP2 : Analysis Point 2

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 23.65' @ 12.09 hrs
Flood Elev= 23.41'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.41'	**12.0" Round Culvert**
			L= 28.0' RCP, groove end projecting, Ke= 0.200
			Inlet / Outlet Invert= 23.41' / 23.20' S= 0.0075 '/' Cc= 0.900
			n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.21 cfs @ 12.09 hrs HW=23.65' (Free Discharge)
1=Culvert (Barrel Controls 0.21 cfs @ 2.24 fps)

Summary for Pond CB2: Existing Catch Basin 2

End invert of pipe is assumed as inverts have not been measured on downstream structure

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Inflow Area = 0.067 ac, 83.27% Impervious, Inflow Depth = 4.71" for 10-YR STORM event
Inflow = 0.34 cfs @ 12.09 hrs, Volume= 0.026 af
Outflow = 0.34 cfs @ 12.09 hrs, Volume= 0.026 af, Atten= 0%, Lag= 0.0 min
Primary = 0.34 cfs @ 12.09 hrs, Volume= 0.026 af
Routed to Reach AP2 : Analysis Point 2

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 19.38' @ 12.09 hrs
Flood Elev= 22.23'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.08'	**12.0" Round Culvert**
			L= 36.0' RCP, groove end projecting, Ke= 0.200
			Inlet / Outlet Invert= 19.08' / 18.80' S= 0.0078 '/' Cc= 0.900
			n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.33 cfs @ 12.09 hrs HW=19.38' (Free Discharge)
1=Culvert (Barrel Controls 0.33 cfs @ 2.57 fps)

Summary for Pond DMH1: Drain Manhole 1

[79] Warning: Submerged Pond 4P Primary device # 1 OUTLET by 0.12'

Inflow Area = 0.422 ac, 84.68% Impervious, Inflow Depth = 0.13" for 10-YR STORM event
Inflow = 0.14 cfs @ 12.45 hrs, Volume= 0.005 af
Outflow = 0.14 cfs @ 12.45 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min
Primary = 0.14 cfs @ 12.45 hrs, Volume= 0.005 af
Routed to Pond DMH2 : Drain Manhole 2

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 20.37' @ 12.45 hrs
Flood Elev= 24.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.15'	**12.0" Round Culvert** L= 58.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.15' / 19.85' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.14 cfs @ 12.45 hrs HW=20.37' (Free Discharge)
1=Culvert (Barrel Controls 0.14 cfs @ 1.69 fps)

Summary for Pond DMH2: Drain Manhole 2

[79] Warning: Submerged Pond DMH1 Primary device # 1 OUTLET by 0.12'

Inflow Area = 0.422 ac, 84.68% Impervious, Inflow Depth = 0.13" for 10-YR STORM event
Inflow = 0.14 cfs @ 12.45 hrs, Volume= 0.005 af
Outflow = 0.14 cfs @ 12.45 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min
Primary = 0.14 cfs @ 12.45 hrs, Volume= 0.005 af
Routed to Pond DMH3 : Drain Manhole 3

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 19.97' @ 12.45 hrs
Flood Elev= 23.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.75'	**12.0" Round Culvert** L= 140.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 19.75' / 19.05' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.14 cfs @ 12.45 hrs HW=19.97' (Free Discharge)
1=Culvert (Barrel Controls 0.14 cfs @ 1.71 fps)

Summary for Pond DMH3: Drain Manhole 3

[79] Warning: Submerged Pond DMH2 Primary device # 1 OUTLET by 0.12'

Inflow Area = 0.422 ac, 84.68% Impervious, Inflow Depth = 0.13" for 10-YR STORM event
Inflow = 0.14 cfs @ 12.45 hrs, Volume= 0.005 af
Outflow = 0.14 cfs @ 12.45 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min
Primary = 0.14 cfs @ 12.45 hrs, Volume= 0.005 af
Routed to Reach AP1 : Analysis Point 1

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 19.17' @ 12.45 hrs
Flood Elev= 21.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.95'	**12.0" Round Culvert** L= 24.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 18.95' / 18.80' S= 0.0062 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.14 cfs @ 12.45 hrs HW=19.17' (Free Discharge)
1=Culvert (Barrel Controls 0.14 cfs @ 1.72 fps)

Summary for Pond DMH4: Drain Manhole 4

[79] Warning: Submerged Pond 9P Primary device # 1 INLET by 0.67'
[81] Warning: Exceeded Pond YD by 0.02' @ 12.20 hrs

Inflow Area = 1.616 ac, 15.26% Impervious, Inflow Depth = 2.13" for 10-YR STORM event
Inflow = 3.13 cfs @ 12.18 hrs, Volume= 0.287 af
Outflow = 3.13 cfs @ 12.18 hrs, Volume= 0.287 af, Atten= 0%, Lag= 0.0 min
Primary = 3.13 cfs @ 12.18 hrs, Volume= 0.287 af
Routed to Reach 2R : Diversion Swale

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 21.88' @ 12.18 hrs
Flood Elev= 24.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.90'	**18.0" Round Culvert** L= 92.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.90' / 20.40' S= 0.0054 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.09 cfs @ 12.18 hrs HW=21.87' (Free Discharge)
1=Culvert (Barrel Controls 3.09 cfs @ 3.63 fps)

Summary for Pond YD: Yard Drain

Inflow Area = 0.082 ac, 0.00% Impervious, Inflow Depth = 1.46" for 10-YR STORM event
Inflow = 0.11 cfs @ 12.13 hrs, Volume= 0.010 af
Outflow = 0.11 cfs @ 12.13 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.0 min
Primary = 0.11 cfs @ 12.13 hrs, Volume= 0.010 af
Routed to Pond DMH4 : Drain Manhole 4

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 21.87' @ 12.13 hrs
Flood Elev= 23.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	21.70'	**12.0" Round Culvert** L= 28.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.70' / 21.40' S= 0.0107 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.11 cfs @ 12.13 hrs HW=21.87' (Free Discharge)
1=Culvert (Barrel Controls 0.11 cfs @ 1.97 fps)

Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment1S: Subcatchment1S Runoff Area=6,934 sf 5.35% Impervious Runoff Depth=2.90"
Tc=6.0 min CN=62 Runoff=0.52 cfs 0.038 af

Subcatchment2S: Subcatchment2S Runoff Area=22,794 sf 37.44% Impervious Runoff Depth=3.94"
Tc=6.0 min CN=72 Runoff=2.37 cfs 0.172 af

Subcatchment3S: Subcatchment3S Runoff Area=81,653 sf 28.56% Impervious Runoff Depth=3.73"
Flow Length=599' Tc=10.5 min CN=70 Runoff=6.97 cfs 0.582 af

Subcatchment4S: Subcatchment4S Runoff Area=1,897 sf 80.02% Impervious Runoff Depth=6.07"
Tc=6.0 min CN=91 Runoff=0.28 cfs 0.022 af

Subcatchment5S: Subcatchment5S Runoff Area=2,929 sf 83.27% Impervious Runoff Depth=6.18"
Tc=6.0 min CN=92 Runoff=0.44 cfs 0.035 af

Subcatchment6S: Subcatchment6S Runoff Area=10,789 sf 86.15% Impervious Runoff Depth=6.30"
Tc=6.0 min CN=93 Runoff=1.64 cfs 0.130 af

Subcatchment7S: Subcatchment7S Runoff Area=7,595 sf 82.59% Impervious Runoff Depth=6.18"
Tc=6.0 min CN=92 Runoff=1.14 cfs 0.090 af

Subcatchment8S: Subcatchment8S Runoff Area=9,264 sf 83.81% Impervious Runoff Depth=6.89"
Tc=6.0 min CN=98 Runoff=1.45 cfs 0.122 af

Subcatchment9S: Subcatchment9S Runoff Area=3,563 sf 0.00% Impervious Runoff Depth=2.40"
Flow Length=79' Tc=8.0 min CN=57 Runoff=0.20 cfs 0.016 af

Subcatchment10S: Subcatchment10S Runoff Area=66,838 sf 16.07% Impervious Runoff Depth=3.31"
Flow Length=284' Tc=12.5 min CN=66 Runoff=4.72 cfs 0.423 af

Subcatchment11S: Subcatchment11S Runoff Area=11,665 sf 0.00% Impervious Runoff Depth=2.40"
Flow Length=120' Tc=8.0 min CN=57 Runoff=0.66 cfs 0.054 af

Reach 1R: Overland Flow Avg. Flow Depth=0.18' Max Vel=0.41 fps Inflow=1.54 cfs 0.134 af
n=0.070 L=66.0' S=0.0061 '/' Capacity=13.24 cfs Outflow=1.52 cfs 0.134 af

Reach 2R: Diversion Swale Avg. Flow Depth=0.64' Max Vel=1.95 fps Inflow=4.89 cfs 0.439 af
n=0.030 L=60.0' S=0.0050 '/' Capacity=12.47 cfs Outflow=4.90 cfs 0.439 af

Reach AP1: Analysis Point 1 Inflow=9.00 cfs 0.973 af
Outflow=9.00 cfs 0.973 af

Reach AP2: Analysis Point 2 Inflow=0.72 cfs 0.057 af
Outflow=0.72 cfs 0.057 af

Pond 1P: Pocket Pond 1 Peak Elev=22.74' Storage=9,563 cf Inflow=7.29 cfs 0.665 af
Discarded=0.41 cfs 0.308 af Primary=2.69 cfs 0.357 af Outflow=3.11 cfs 0.665 af

Pond 2P: Existing Pond Peak Elev=21.69' Storage=1,133 cf Inflow=2.37 cfs 0.172 af
Discarded=0.07 cfs 0.038 af Primary=1.54 cfs 0.134 af Outflow=1.61 cfs 0.172 af

Pond 3P: Focal Point 1 Peak Elev=22.66' Storage=67 cf Inflow=1.64 cfs 0.130 af
Outflow=1.65 cfs 0.130 af

Pond 4P: Chamber System A Peak Elev=20.98' Storage=1,765 cf Inflow=1.65 cfs 0.130 af
Discarded=0.23 cfs 0.111 af Primary=0.55 cfs 0.019 af Outflow=0.78 cfs 0.130 af

Pond 5P: Focal Point 2 Peak Elev=23.08' Storage=26 cf Inflow=1.14 cfs 0.090 af
Outflow=1.15 cfs 0.090 af

Pond 6P: Chamber System B Peak Elev=20.87' Storage=1,508 cf Inflow=1.15 cfs 0.090 af
Discarded=0.19 cfs 0.090 af Primary=0.01 cfs 0.000 af Outflow=0.20 cfs 0.090 af

Pond 7P: Filtration Drip Edge Peak Elev=21.25' Storage=1,219 cf Inflow=1.45 cfs 0.122 af
Discarded=0.31 cfs 0.098 af Primary=0.98 cfs 0.014 af Outflow=1.29 cfs 0.112 af

Pond 9P: Diversion Culvert Peak Elev=22.41' Inflow=4.72 cfs 0.423 af
18.0" Round Culvert n=0.013 L=20.0' S=0.0100 '/' Outflow=4.72 cfs 0.423 af

Pond 10P: Driveway Culvert Peak Elev=21.75' Inflow=6.92 cfs 0.627 af
18.0" Round Culvert n=0.013 L=36.0' S=0.0056 '/' Outflow=6.92 cfs 0.627 af

Pond CB1: Existing Catch Basin 1 Peak Elev=23.69' Inflow=0.28 cfs 0.022 af
12.0" Round Culvert n=0.012 L=28.0' S=0.0075 '/' Outflow=0.28 cfs 0.022 af

Pond CB2: Existing Catch Basin 2 Peak Elev=19.42' Inflow=0.44 cfs 0.035 af
12.0" Round Culvert n=0.012 L=36.0' S=0.0078 '/' Outflow=0.44 cfs 0.035 af

Pond DMH1: Drain Manhole 1 Peak Elev=20.60' Inflow=0.55 cfs 0.020 af
12.0" Round Culvert n=0.013 L=58.0' S=0.0052 '/' Outflow=0.55 cfs 0.020 af

Pond DMH2: Drain Manhole 2 Peak Elev=20.19' Inflow=0.55 cfs 0.020 af
12.0" Round Culvert n=0.013 L=140.0' S=0.0050 '/' Outflow=0.55 cfs 0.020 af

Pond DMH3: Drain Manhole 3 Peak Elev=19.40' Inflow=0.55 cfs 0.020 af
12.0" Round Culvert n=0.013 L=24.0' S=0.0062 '/' Outflow=0.55 cfs 0.020 af

Pond DMH4: Drain Manhole 4 Peak Elev=22.20' Inflow=4.89 cfs 0.439 af
18.0" Round Culvert n=0.013 L=92.0' S=0.0054 '/' Outflow=4.89 cfs 0.439 af

Pond YD: Yard Drain Peak Elev=21.93' Inflow=0.20 cfs 0.016 af
12.0" Round Culvert n=0.013 L=28.0' S=0.0107 '/' Outflow=0.20 cfs 0.016 af

Total Runoff Area = 5.186 ac Runoff Volume = 1.684 af Average Runoff Depth = 3.90"
68.90% Pervious = 3.574 ac 31.10% Impervious = 1.613 ac

Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment1S: Subcatchment1S Runoff Area=6,934 sf 5.35% Impervious Runoff Depth=3.98"
Tc=6.0 min CN=62 Runoff=0.72 cfs 0.053 af

Subcatchment2S: Subcatchment2S Runoff Area=22,794 sf 37.44% Impervious Runoff Depth=5.17"
Tc=6.0 min CN=72 Runoff=3.10 cfs 0.226 af

Subcatchment3S: Subcatchment3S Runoff Area=81,653 sf 28.56% Impervious Runoff Depth=4.93"
Flow Length=599' Tc=10.5 min CN=70 Runoff=9.24 cfs 0.770 af

Subcatchment4S: Subcatchment4S Runoff Area=1,897 sf 80.02% Impervious Runoff Depth=7.46"
Tc=6.0 min CN=91 Runoff=0.34 cfs 0.027 af

Subcatchment5S: Subcatchment5S Runoff Area=2,929 sf 83.27% Impervious Runoff Depth=7.58"
Tc=6.0 min CN=92 Runoff=0.53 cfs 0.042 af

Subcatchment6S: Subcatchment6S Runoff Area=10,789 sf 86.15% Impervious Runoff Depth=7.70"
Tc=6.0 min CN=93 Runoff=1.98 cfs 0.159 af

Subcatchment7S: Subcatchment7S Runoff Area=7,595 sf 82.59% Impervious Runoff Depth=7.58"
Tc=6.0 min CN=92 Runoff=1.39 cfs 0.110 af

Subcatchment8S: Subcatchment8S Runoff Area=9,264 sf 83.81% Impervious Runoff Depth=8.30"
Tc=6.0 min CN=98 Runoff=1.74 cfs 0.147 af

Subcatchment9S: Subcatchment9S Runoff Area=3,563 sf 0.00% Impervious Runoff Depth=3.39"
Flow Length=79' Tc=8.0 min CN=57 Runoff=0.29 cfs 0.023 af

Subcatchment10S: Subcatchment10S Runoff Area=66,838 sf 16.07% Impervious Runoff Depth=4.45"
Flow Length=284' Tc=12.5 min CN=66 Runoff=6.40 cfs 0.570 af

Subcatchment11S: Subcatchment11S Runoff Area=11,665 sf 0.00% Impervious Runoff Depth=3.39"
Flow Length=120' Tc=8.0 min CN=57 Runoff=0.96 cfs 0.076 af

Reach 1R: Overland Flow Avg. Flow Depth=0.21' Max Vel=0.45 fps Inflow=2.05 cfs 0.182 af
n=0.070 L=66.0' S=0.0061 '/' Capacity=13.24 cfs Outflow=2.03 cfs 0.182 af

Reach 2R: Diversion Swale Avg. Flow Depth=0.74' Max Vel=2.11 fps Inflow=6.70 cfs 0.593 af
n=0.030 L=60.0' S=0.0050 '/' Capacity=12.47 cfs Outflow=6.66 cfs 0.593 af

Reach AP1: Analysis Point 1 Inflow=14.74 cfs 1.396 af
Outflow=14.74 cfs 1.396 af

Reach AP2: Analysis Point 2 Inflow=0.88 cfs 0.070 af
Outflow=0.88 cfs 0.070 af

Pond 1P: Pocket Pond 1 Peak Elev=22.95' Storage=10,464 cf Inflow=10.02 cfs 0.903 af
Discarded=0.44 cfs 0.342 af Primary=7.58 cfs 0.561 af Outflow=8.02 cfs 0.903 af

Pond 2P: Existing Pond Peak Elev=21.81' Storage=1,418 cf Inflow=3.10 cfs 0.226 af
Discarded=0.08 cfs 0.044 af Primary=2.05 cfs 0.182 af Outflow=2.14 cfs 0.226 af

Pond 3P: Focal Point 1 Peak Elev=22.68' Storage=70 cf Inflow=1.98 cfs 0.159 af
Outflow=1.98 cfs 0.159 af

Pond 4P: Chamber System A Peak Elev=21.78' Storage=1,918 cf Inflow=1.98 cfs 0.159 af
Discarded=0.28 cfs 0.125 af Primary=1.32 cfs 0.034 af Outflow=1.60 cfs 0.159 af

Pond 5P: Focal Point 2 Peak Elev=23.10' Storage=27 cf Inflow=1.39 cfs 0.110 af
Outflow=1.39 cfs 0.110 af

Pond 6P: Chamber System B Peak Elev=21.13' Storage=1,720 cf Inflow=1.39 cfs 0.110 af
Discarded=0.20 cfs 0.102 af Primary=0.22 cfs 0.008 af Outflow=0.43 cfs 0.110 af

Pond 7P: Filtration Drip Edge Peak Elev=21.25' Storage=1,219 cf Inflow=1.74 cfs 0.147 af
Discarded=0.31 cfs 0.113 af Primary=1.45 cfs 0.024 af Outflow=1.76 cfs 0.137 af

Pond 9P: Diversion Culvert Peak Elev=22.69' Inflow=6.40 cfs 0.570 af
18.0" Round Culvert n=0.013 L=20.0' S=0.0100 '/' Outflow=6.40 cfs 0.570 af

Pond 10P: Driveway Culvert Peak Elev=22.36' Inflow=9.45 cfs 0.850 af
18.0" Round Culvert n=0.013 L=36.0' S=0.0056 '/' Outflow=9.45 cfs 0.850 af

Pond CB1: Existing Catch Basin 1 Peak Elev=23.72' Inflow=0.34 cfs 0.027 af
12.0" Round Culvert n=0.012 L=28.0' S=0.0075 '/' Outflow=0.34 cfs 0.027 af

Pond CB2: Existing Catch Basin 2 Peak Elev=19.46' Inflow=0.53 cfs 0.042 af
12.0" Round Culvert n=0.012 L=36.0' S=0.0078 '/' Outflow=0.53 cfs 0.042 af

Pond DMH1: Drain Manhole 1 Peak Elev=20.91' Inflow=1.37 cfs 0.042 af
12.0" Round Culvert n=0.013 L=58.0' S=0.0052 '/' Outflow=1.37 cfs 0.042 af

Pond DMH2: Drain Manhole 2 Peak Elev=20.48' Inflow=1.37 cfs 0.042 af
12.0" Round Culvert n=0.013 L=140.0' S=0.0050 '/' Outflow=1.37 cfs 0.042 af

Pond DMH3: Drain Manhole 3 Peak Elev=19.72' Inflow=1.37 cfs 0.042 af
12.0" Round Culvert n=0.013 L=24.0' S=0.0062 '/' Outflow=1.37 cfs 0.042 af

Pond DMH4: Drain Manhole 4 Peak Elev=22.64' Inflow=6.70 cfs 0.593 af
18.0" Round Culvert n=0.013 L=92.0' S=0.0054 '/' Outflow=6.70 cfs 0.593 af

Pond YD: Yard Drain Peak Elev=21.97' Inflow=0.29 cfs 0.023 af
12.0" Round Culvert n=0.013 L=28.0' S=0.0107 '/' Outflow=0.29 cfs 0.023 af

Total Runoff Area = 5.186 ac Runoff Volume = 2.203 af Average Runoff Depth = 5.10"
68.90% Pervious = 3.574 ac 31.10% Impervious = 1.613 ac

APPENDIX III

Test Pit Logs

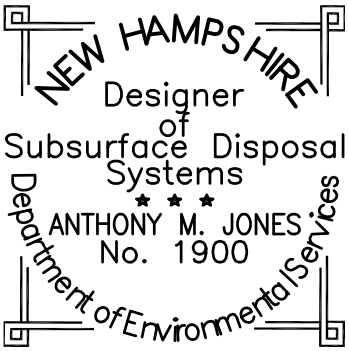
TEST PITS
FOR
LEDGEWOOD DRIVE
PORTSMOUTH, NEW HAMPSHIRE
JULY 31, 2025
JBE Project No. 25071

Performed by: Anthony Jones, Jones & Beach Engineers, Inc., SSD #1900

Test Pit #1

0"- 28"	10YR 3/3	dark brown fine sandy loam granular, friable many roots
28" – 38"	2.5Y 5/4	light olive brown fine sandy loam granular, friable common roots
38" – 58"	10YR 4/6	dark yellowish brown loamy sand massive, friable Many, distinct redox

SHWT = 38"
Roots: 38"
No H_2O observed
No Refusal observed



Test Pit #2

0"- 18"	10YR 4/2	dark grayish brown fine sandy loam granular, friable common roots
18" – 34"	10YR 3/6	dark yellowish brown loamy sand massive, friable common roots
34" – 62"	2.5Y 5/2	grayish brown loamy sand massive, friable Common, distinct redox

SHWT = 34"
Roots: 34"
No H_2O observed
No Refusal observed

Test Pit #3

0"- 6"	10YR 4/2	dark grayish brown fine sandy loam granular, friable common roots
6" – 20"	2.5Y 6/4	light yellowish brown fine sandy loam angular blocky, friable few roots
20" – 50"	2.5Y 6/3	light yellowish brown sandy clay loam angular blocky, very firm Many, distinct redox

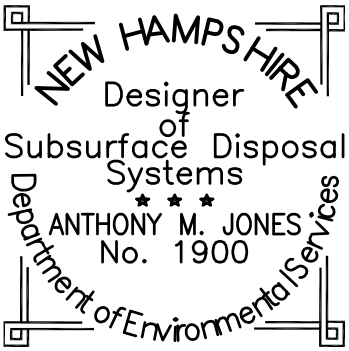
SHWT = 20"
Roots: 26"
No H_2O observed
Refusal observed at: 50"

NEW HAMPSHIRE Designer of Subsurface Disposal Systems
ANTHONY M. JONES No. 1900
Department of Environmental Services

Test Pit #4

0"- 48"	10YR 4/3	brown fine sandy loam granular, friable common roots
48" – 56"	2.5Y 6/3	light yellowish brown silt loam blocky, friable common roots
56" – 70"	2.5Y 6/4	light yellowish brown silt loam blocky, friable Many, distinct redox

SHWT = 56"
Roots: 58"
No H_2O observed
No Refusal observed



APPENDIX IV

NRCS Soil Map

Soil Map—Rockingham County, New Hampshire
(25071.2 Soil Map)



Map Scale: 1:1,470 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

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 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Rockingham County, New Hampshire
Survey Area Data: Version 28, Sep 9, 2025

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
299	Udorthents, smoothed	0.7	9.9%
699	Urban land	0.3	4.4%
799	Urban land-Canton complex, 3 to 15 percent slopes	6.3	85.7%
Totals for Area of Interest		**7.4**	**100.0%**

APPENDIX V

Extreme Precipitation Estimates

Extreme Precipitation in New York & New England

An Interactive Web Tool for Extreme Precipitation Analysis

About this Project | Data & Products | Daily Monitoring | Documentation

Select Product ?

- Extreme Precipitation Tables - HTML ?
- Extreme Precipitation Tables - Text/CSV ?
- Partial Duration Series - by Point ?
- Partial Duration Series - by Station ?
- Distribution Curves - Graphical ?
- Distribution Curves - Text/TBL ?
- Intensity Frequency Duration Graphs ?
- Precipitation Frequency Duration Graphs ?
- GIS Data Files ?
- Regional/State Maps ?

Select Location ? *Double-click map to place a marker, or enter address or latitude/longitude.*

Hybrid | Map | Satellite | Terrain

Locate by Address ? Ledgewood Drive, Ports →

Locate by Lat/Lon ? 43.05 °N -70.76 °W →

Locate by State/County ?



Select Options ?

Smoothing ?	Delivery ?
Yes	Popup

Submit ?

Version 2.0 Copyright 2010-2022

This project is a joint collaboration between:

Northeast Regional Climate Center (NRCC) | Natural Resources Conservation Service (NRCS)

Contact: precip@cornell.edu

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Metadata for Point	
Smoothing	Yes
State	
Location	
Latitude	43.057 degrees North
Longitude	70.768 degrees West
Elevation	0 feet
Date/Time	Fri Jun 26 2026 14:28:08 GMT-0400 (Eastern Daylight Time)

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.65	0.82	1.04	**1yr**	0.70	0.98	1.21	1.57	2.04	2.67	2.93	**1yr**	2.36	2.82	3.23	3.96	4.57	**1yr**
2yr	0.32	0.50	0.62	0.82	1.02	1.30	**2yr**	0.88	1.18	1.52	1.94	2.50	3.22	3.58	**2yr**	2.85	3.45	3.95	4.70	5.35	**2yr**
5yr	0.37	0.58	0.73	0.98	1.25	1.61	**5yr**	1.08	1.47	1.89	2.44	3.15	4.08	4.60	**5yr**	3.61	4.42	5.06	5.96	6.73	**5yr**
10yr	0.41	0.65	0.82	1.12	1.45	1.89	**10yr**	1.25	1.73	2.24	2.90	3.76	4.89	5.55	**10yr**	4.33	5.34	6.11	7.14	8.01	**10yr**
25yr	0.48	0.76	0.97	1.34	1.78	2.34	**25yr**	1.53	2.15	2.78	3.64	4.76	6.20	7.13	**25yr**	5.49	6.86	7.85	9.07	10.10	**25yr**
50yr	0.54	0.86	1.10	1.54	2.08	2.76	**50yr**	1.79	2.53	3.30	4.34	5.68	7.42	8.62	**50yr**	6.57	8.29	9.48	10.87	12.03	**50yr**
100yr	0.60	0.97	1.25	1.78	2.42	3.27	**100yr**	2.09	2.99	3.92	5.18	6.80	8.90	10.43	**100yr**	7.87	10.03	11.46	13.04	14.35	**100yr**
200yr	0.68	1.10	1.43	2.05	2.83	3.85	**200yr**	2.45	3.53	4.63	6.15	8.12	10.66	12.61	**200yr**	9.44	12.13	13.85	15.64	17.11	**200yr**
500yr	0.80	1.32	1.72	2.49	3.49	4.78	**500yr**	3.01	4.39	5.79	7.74	10.27	13.55	16.22	**500yr**	11.99	15.60	17.81	19.91	21.61	**500yr**

x 1.15

3.71

5.63

7.13

8.54

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.36	0.44	0.59	0.72	0.88	**1yr**	0.63	0.87	0.92	1.33	1.68	2.25	2.53	**1yr**	1.99	2.43	2.88	3.18	3.91	**1yr**
2yr	0.32	0.49	0.60	0.81	1.00	1.19	**2yr**	0.86	1.16	1.37	1.82	2.34	3.07	3.47	**2yr**	2.72	3.34	3.84	4.57	5.10	**2yr**
5yr	0.35	0.54	0.67	0.92	1.17	1.40	**5yr**	1.01	1.37	1.61	2.12	2.73	3.81	4.22	**5yr**	3.37	4.06	4.74	5.57	6.28	**5yr**
10yr	0.39	0.59	0.74	1.03	1.33	1.60	**10yr**	1.15	1.57	1.81	2.39	3.06	4.40	4.90	**10yr**	3.89	4.71	5.49	6.46	7.24	**10yr**
25yr	0.44	0.67	0.83	1.19	1.57	1.90	**25yr**	1.35	1.86	2.10	2.75	3.53	4.75	5.95	**25yr**	4.20	5.72	6.72	7.87	8.75	**25yr**
50yr	0.48	0.74	0.92	1.32	1.77	2.17	**50yr**	1.53	2.12	2.35	3.07	3.93	5.37	6.88	**50yr**	4.75	6.61	7.83	9.14	10.11	**50yr**
100yr	0.54	0.81	1.02	1.47	2.02	2.47	**100yr**	1.74	2.42	2.63	3.41	4.35	6.04	7.95	**100yr**	5.35	7.65	9.12	10.64	11.68	**100yr**
200yr	0.60	0.90	1.14	1.64	2.29	2.82	**200yr**	1.98	2.76	2.94	3.77	4.79	6.78	9.19	**200yr**	6.00	8.84	10.63	12.40	13.51	**200yr**
500yr	0.69	1.03	1.32	1.92	2.73	3.37	**500yr**	2.36	3.30	3.42	4.30	5.45	7.90	11.13	**500yr**	7.00	10.70	13.00	15.20	16.37	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.29	0.44	0.54	0.72	0.89	1.09	**1yr**	0.77	1.06	1.26	1.74	2.20	2.99	3.17	**1yr**	2.65	3.05	3.60	4.39	5.06	**1yr**
2yr	0.34	0.52	0.64	0.87	1.07	1.27	**2yr**	0.92	1.24	1.48	1.96	2.51	3.44	3.71	**2yr**	3.04	3.57	4.10	4.85	5.65	**2yr**
5yr	0.40	0.62	0.77	1.05	1.34	1.62	**5yr**	1.15	1.59	1.88	2.53	3.25	4.36	4.97	**5yr**	3.85	4.78	5.40	6.39	7.17	**5yr**
10yr	0.47	0.72	0.89	1.25	1.61	1.98	**10yr**	1.39	1.93	2.28	3.11	3.95	5.36	6.21	**10yr**	4.74	5.97	6.82	7.85	8.77	**10yr**
25yr	0.58	0.88	1.09	1.56	2.05	2.57	**25yr**	1.77	2.52	2.95	4.07	5.15	7.80	8.34	**25yr**	6.90	8.02	9.13	10.35	11.42	**25yr**
50yr	0.67	1.02	1.27	1.83	2.47	3.13	**50yr**	2.13	3.06	3.60	5.00	6.31	9.76	10.44	**50yr**	8.64	10.04	11.41	12.73	13.97	**50yr**
100yr	0.79	1.20	1.50	2.16	2.97	3.82	**100yr**	2.56	3.73	4.37	6.15	7.75	12.21	13.07	**100yr**	10.81	12.57	14.24	15.70	17.09	**100yr**
200yr	0.93	1.39	1.76	2.55	3.56	4.66	**200yr**	3.07	4.56	5.34	7.58	9.52	15.32	16.38	**200yr**	13.56	15.75	17.81	19.34	20.91	**200yr**
500yr	1.15	1.71	2.20	3.20	4.54	6.05	**500yr**	3.92	5.92	6.93	10.02	12.53	20.69	22.08	**500yr**	18.31	21.23	23.93	25.48	27.32	**500yr**

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Northeast Regional Climate Center

APPENDIX VI

Rip Rap Calculations

RIP RAP CALCULATIONS
"Ledgewood Drive LLC"
Ledgewood Drive
Portsmouth, NH 03801

Jones & Beach Engineers, Inc.
100 Domain Drive, Suite 201
Exeter, NH 03833
8/17/2026 Last Revised 10/19/2026

Rip Rap equations were obtained from the *Stormwater Management and Erosion Control Handbook for Urban and Developing Areas in New Hampshire.*
Aprons are sized for the 25-Year storm event.

TAILWATER < HALF THE D_o

$L_a = (1.8 \times Q) / D_0^{3/2} + (7 \times D_o)$
$W = L_a + (3 \times D_o)$ or defined channel width
$d_{50} = (0.02 \times Q^{4/3}) / (T_w \times D_0)$

Culvert or Catch Basin (Sta. No.)	Tailwater (Feet) T_w	Discharge (C.F.S.) Q	Diameter of Pipe D_o	Length of Rip Rap L_a (feet)	Width of Rip Rap W (feet)	d_{50}-Median Stone Rip Rap d50 (feet)
DMH 3 (12" HDPE)	0.3	0.55	1	8.0	11	0.03
1P (18" HDPE)	0.54	2.69	1.5	13.1	18	0.09

TAILWATER > HALF THE D_o

$L_a = (3.0 \times Q) / D_0^{3/2} + (7 \times D_o)$
$W = (0.4 \times L_a) + (3 \times D_o)$ or defined channel width
$d_{50} = (0.02 \times Q^{4/3}) / (T_w \times D_0)$

Culvert or Catch Basin (Sta. No.)	Tailwater (Feet) T_w	Discharge (C.F.S.) Q	Diameter of Pipe D_o	Length of Rip Rap L_a (feet)	Width of Rip Rap W (feet)	d_{50}-Median Stone Rip Rap d50 (feet)
10P (18" HDPE)	1.1	6.92	1.5	21.8	13	0.16
DMH 4 (18" HDPE)	0.86	4.89	1.5	18.5	12	0.13

Table 7-24 -- Recommended Rip Rap Gradation Ranges				
d_{50} Size =	0.25	Feet	3	Inches
% of Weight Smaller		Size of Stone (Inches)		
Than the Given d_{50} Size		From		To
100%		5		6
85%		4		5
50%		3		5
15%		1		2

Table 7-24 -- Recommended Rip Rap Gradation Ranges				
d_{50} Size =	0.5	Feet	6	Inches
% of Weight Smaller		Size of Stone (Inches)		
Than the Given d_{50} Size		From		To
100%		9		12
85%		8		11
50%		6		9
15%		2		3

APPENDIX VII

BMP Worksheets

GROUNDWATER RECHARGE VOLUME (GRV)
(Env-Wq 1504.12)

	ac	Area of HSG A soil that was replaced by impervious cover	0.40"
0.56	ac	Area of HSG B soil that was replaced by impervious cover	0.25"
	ac	Area of HSG C soil that was replaced by impervious cover	0.10"
	ac	Area of HSG D soil or impervious cover that was replaced by impervious cover	0.0"
0.25	inches	Rd = Weighted groundwater recharge depth	
0.1393	ac-in	GRV = AI * Rd	
505	cf	GRV conversion (ac-in x 43,560 sf/ac x 1ft/12”)	
	← Y/N	Is a stage-storage table attached showing that the GRV can be stored below the lowest invert of the outlet structure (if applicable)? Multiple stormwater control measures may be used to meet the GRV requirements.	

Provide calculations/discussion below showing that the project meets the groundwater recharge requirements (Env-Wq 1507.04):

980 cf stored below outlet invert in chamber system A

1,075 cf stored below outlet invert in chamber system B

713 cf stored in filtration drip edge

1075+1075+713 = 2,863 cf total GRV provided >> 505 cf GRV required

GENERAL CALCULATIONS - WQV and WQF
(optional worksheet)

This worksheet may be useful when designing a BMP that does not fit into one of the specific worksheets already provided (such as for a technology which is not a stormwater wetland, infiltration practice, etc.)

Water Quality Volume (WQV)

0.25	ac	A = Area draining to the practice
0.21	ac	A_I = Impervious area draining to the practice
0.86	decimal	I = Percent impervious area draining to the practice, in decimal form
0.83	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)
0.20	ac-in	WQV= 1" x Rv x A
743	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")

Water Quality Flow (WQF)

1	inches	P = Amount of rainfall. For WQF in NH, P = 1".
0.83	inches	Q = Water quality depth. Q = WQV/A
98	unitless	CN = Unit peak discharge curve number. $CN = 1000/(10+5P+10Q-10*[Q^2 + 1.25*Q*P]^{0.5})$
0.2	inches	S = Potential maximum retention. S = (1000/CN) - 10
0.033	inches	Ia = Initial abstraction. Ia = 0.2S
6.0	minutes	T_c = Time of Concentration
700.0	$cfs/mi^2/in$	q_u is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III.
0.224	cfs	WQF = q_u x WQV. Conversion: to convert "$cfs/mi^2/in$ * ac-in" to "cfs" multiply by $1mi^2/640ac$.

Designer's Notes:

For design of Focal Point 1 (Pond 3P) in conjunction with Focal Point design worksheet.

DESIGN WORKSHEET

FOCALPOINT

NEW HAMPSHIRE AOT PROJECTS

1. **Determine FocalPoint bed area (minimum 174 sf/acre of impervious area - ex: 0.2 acres = 35 sf)**
   See step 2 to determine if minimum size is appropriate.
   - Tributary impervious area: = 0.214 ac **(A)**
   - Tributary pervious area: = 0.034 ac **(B)**
   - Minimum FocalPoint bed area required: **= ((A x 1.0) + (B x 0.4)) * 174** = 39.6 sf
   - FocalPoint bed area provided: = 40 sf
   - Dimensions of proposed FocalPoint: = 10 ft x 4 ft

2. **Model a Type II & III 24-hr rainfall event that generates the water quality volume to demonstrate that the entire storm volume is treated prior to activation of the overflow (typically set at 6 - 12 in above the mulch). Note: a 1.2 - 1.3 in rainfall event usually generates 1.0 in of runoff.**
   Contact ACF for a sample HydroCAD node.
   - Water quality volume (WQv) goal: = 743 ft^3
   - Type II & III 24-hr rainfall depth to generate WQv: = 1.49 in
   - Temporary storage depth provided: = 6.0 in
     (typically 6 - 12 in)
   - Temporary storage volume provided at above depth: = 51 ft^3
   - Peak ponding depth from Type III 24-hr storm event: = 1.9 in

3. **Size the Harco PVC domed overflow riser.**
   Note: ACF recommends installation of a Fabco domed overflow filter kit for overflow protection.
   - Domed overflow riser diameter: = 24 in
   - Rim elevation of overflow riser: = 22.50
     (typically 6 - 12 in above mulch surface)
   - 6 in invert in elevation from FocalPoint: = 19.25
     (typically 3 ft below mulch surface)
   - 12 in invert out elevation: = 19.25

4. **Flood control - peak flow attenuation of major storms**
   The treated flow and bypass flow can be routed to a detention system such as an open pond or a subsurface solution like an expanded R-Tank system. (contact ACF for additional information on designing expanded R-Tank systems)

5. **Prepare a landscape plan for the FocalPoint bed area** ☑

6. **Design review and installation oversight by manufacturer's representative**
   - The design has been reviewed by ACF Environmental ☐
   - Engineer will coordinate installation inspection with ACF Environmental ☑

Contact Rob Woodman - Senior Stormwater Engineer
Cell: 207.272.4431 | Email: rwoodman@acfenv.com

ACF ENVIRONMENTAL

DESIGNING WITH FOCALPOINT IN NEW HAMPSHIRE

The New Hampshire Department of Environmental Services has approved the FocalPoint (High Performance Modular Biofiltration System) for use on AoT site development projects in the State of New Hampshire.

SIZING CRITERIA SUMMARY

- The surface area of the media within FocalPoint must be a minimum of 174 sf per 1.0 acre of impervious area (26 sf per 0.15 acres). The thickness of the media is to be no less than 1.5 ft (18 in).
- The system must be modelled in HydroCAD (or similar TR-55 modeling software) to demonstrate that the entire volume of a 1.22 in Type II or III 24-hr storm is treated prior to activation of the bypass/overflow (typically set at 6 - 12 in above the mulch surface). Note: A 1.22 in rainfall event typically generates 1.0 in of runoff.
- The R-Tank modular underdrain can be expanded beyond the footprint of the FocalPoint media bed for expanded infiltration and peak flow attenuation/detention post treatment.

FOCALPOINT SYSTEMS:






FOCALPOINT ACCESSORIES:



Pretreatment - Rain Guardian Turret



Pretreatment - Rain Guardian Foxhole



Pretreatment - PreTx



Bypass protection - Domed overflow with filter insert

For additional information please visit: www.acfenvironmental.com

Contact Rob Woodman - Senior Stormwater Engineer
Cell: 207.272.4431 | Email: rwoodman@acfenv.com

Summary for Pond 3P: Focal Point 1

[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=9)

Inflow Area = 0.248 ac, 86.15% Impervious, Inflow Depth = 0.86" for Focal Point 1 WQF event
Inflow = 0.24 cfs @ 12.09 hrs, Volume= 0.018 af
Outflow = 0.23 cfs @ 12.12 hrs, Volume= 0.018 af, Atten= 5%, Lag= 1.9 min
Primary = 0.23 cfs @ 12.12 hrs, Volume= 0.018 af
Routed to Pond 4P : Chamber System A

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 22.18' @ 12.12 hrs Surf.Area= 98 sf Storage= 27 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.8 min (823.0 - 822.2)

Volume	Invert	Avail.Storage	Storage Description
#1	19.75'	18 cf	**4.00'W x 10.00'L x 2.25'H Focal Point Area 1** 90 cf Overall x 20.0% Voids
#2	22.00'	59 cf	**Surface Bowl (Prismatic)**Listed below (Recalc)
		77 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
22.00	40	0	0
22.75	118	59	59

Device	Routing	Invert	Outlet Devices
#1	Primary	19.25'	**12.0" Round Culvert** L= 9.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 19.25' / 19.20' S= 0.0056 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 3	19.75'	**100.000 in/hr Exfiltration over Surface area** Phase-In= 0.10'
#3	Device 1	19.25'	**6.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	22.50'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.22 cfs @ 12.12 hrs HW=22.15' (Free Discharge)
└**1=Culvert** (Passes 0.22 cfs of 4.63 cfs potential flow)
  └**3=Orifice/Grate** (Passes 0.22 cfs of 1.96 cfs potential flow)
    └**2=Exfiltration** (Exfiltration Controls 0.22 cfs)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Stage-Area-Storage for Pond 3P: Focal Point 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
19.75	40	0
19.80	40	0
19.85	40	1
19.90	40	1
19.95	40	2
20.00	40	2
20.05	40	2
20.10	40	3
20.15	40	3
20.20	40	4
20.25	40	4
20.30	40	4
20.35	40	5
20.40	40	5
20.45	40	6
20.50	40	6
20.55	40	6
20.60	40	7
20.65	40	7
20.70	40	8
20.75	40	8
20.80	40	8
20.85	40	9
20.90	40	9
20.95	40	10
21.00	40	10
21.05	40	10
21.10	40	11
21.15	40	11
21.20	40	12
21.25	40	12
21.30	40	12
21.35	40	13
21.40	40	13
21.45	40	14
21.50	40	14
21.55	40	14
21.60	40	15
21.65	40	15
21.70	40	16
21.75	40	16
21.80	40	16
21.85	40	17
21.90	40	17
21.95	40	18
22.00	80	18
22.05	85	20
22.10	90	23
22.15	96	25
22.20	101	28
22.25	106	31
22.30	111	35
22.35	116	38
22.40	122	42
22.45	127	47
22.50	132	51
22.55	137	56
22.60	142	61
22.65	148	66
22.70	153	71
22.75	**158**	**77**

Overflow el. = 22.5
Temporary storage volume = 51 cf

Stage-Discharge for Pond 3P: Focal Point 1

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
19.75	0.00	20.79	0.09	21.83	0.09
19.77	0.02	20.81	0.09	21.85	0.09
19.79	0.04	20.83	0.09	21.87	0.09
19.81	0.06	20.85	0.09	21.89	0.09
19.83	0.07	20.87	0.09	21.91	0.09
19.85	0.09	20.89	0.09	21.93	0.09
19.87	0.09	20.91	0.09	21.95	0.09
19.89	0.09	20.93	0.09	21.97	0.09
19.91	0.09	20.95	0.09	21.99	0.09
19.93	0.09	20.97	0.09	22.01	0.19
19.95	0.09	20.99	0.09	22.03	0.19
19.97	0.09	21.01	0.09	22.05	0.20
19.99	0.09	21.03	0.09	22.07	0.20
20.01	0.09	21.05	0.09	22.09	0.21
20.03	0.09	21.07	0.09	22.11	0.21
20.05	0.09	21.09	0.09	22.13	0.22
20.07	0.09	21.11	0.09	22.15	0.22
20.09	0.09	21.13	0.09	22.17	0.23
20.11	0.09	21.15	0.09	22.19	0.23
20.13	0.09	21.17	0.09	22.21	0.24
20.15	0.09	21.19	0.09	22.23	0.24
20.17	0.09	21.21	0.09	22.25	0.25
20.19	0.09	21.23	0.09	22.27	0.25
20.21	0.09	21.25	0.09	22.29	0.25
20.23	0.09	21.27	0.09	22.31	0.26
20.25	0.09	21.29	0.09	22.33	0.26
20.27	0.09	21.31	0.09	22.35	0.27
20.29	0.09	21.33	0.09	22.37	0.27
20.31	0.09	21.35	0.09	22.39	0.28
20.33	0.09	21.37	0.09	22.41	0.28
20.35	0.09	21.39	0.09	22.43	0.29
20.37	0.09	21.41	0.09	22.45	0.29
20.39	0.09	21.43	0.09	22.47	0.30
20.41	0.09	21.45	0.09	22.49	0.30
20.43	0.09	21.47	0.09	22.51	0.33
20.45	0.09	21.49	0.09	22.53	0.42
20.47	0.09	21.51	0.09	22.55	0.55
20.49	0.09	21.53	0.09	22.57	0.70
20.51	0.09	21.55	0.09	22.59	0.88
20.53	0.09	21.57	0.09	22.61	1.08
20.55	0.09	21.59	0.09	22.63	1.30
20.57	0.09	21.61	0.09	22.65	1.54
20.59	0.09	21.63	0.09	22.67	1.79
20.61	0.09	21.65	0.09	22.69	2.05
20.63	0.09	21.67	0.09	22.71	2.33
20.65	0.09	21.69	0.09	22.73	2.63
20.67	0.09	21.71	0.09	22.75	**2.93**
20.69	0.09	21.73	0.09		
20.71	0.09	21.75	0.09		
20.73	0.09	21.77	0.09		
20.75	0.09	21.79	0.09		
20.77	0.09	21.81	0.09		

WQF goal = 0.224 cfs
E(WQF) = 22.16
Bottom of surface storage = 22.0
1.92" ponding depth on WQF event

INFILTRATION PRACTICE CRITERIA
(Env-Wq 1508.07)

Type/Node Name: **Chamber System A (Pond 4P)**

Enter the type of infiltration practice (such as basin, trench) and the node name in the drainage analysis, if applicable.

Yes		Have you reviewed Env-Wq 1508.07(a) to ensure that infiltration is allowed?	**← yes**
0.25	ac	A = Area draining to the practice	
0.21	ac	A_I = Impervious area draining to the practice	
0.86	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.83	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.20	ac-in	WQV= 1" x Rv x A	
743	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
186	cf	25% x WQV (check calc for sediment forebay volume)	
N/A		Method of pretreatment? (not required for clean or roof runoff)	
	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
980	cf	V = Volume[1] (attach a stage-storage table)	**≥ WQV**
784	sf	A_{SA} = Surface area of the bottom of the pond	
1.00	iph	$Ksat_{DESIGN}$ = Design infiltration rate[2]	
11.4	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
19.20	feet	E_{BTM} = Elevation of the bottom of the basin	
18.17	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
16.17	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
1.03	feet	D_{SHWT} = Separation from SHWT	**≥ *** [3]
3.0	feet	D_{ROCK} = Separation from bedrock	**≥ *** [3]
	ft	D_{amend} = Depth of amended soil, if applicable due high infiltation rate	**≥ 24"**
	ft	D_T = Depth of trench, if trench proposed	**4 - 10 ft**
	Yes/No	If a trench or underground system is proposed, has observation well been provided?	**←yes**
		If a trench is proposed, does material meet Env-Wq 1508.07(k)(2) requirements.[4]	**← yes**
	Yes/No	If a basin is proposed, Is the perimeter curvilinear, and basin floor flat?	**← yes**
	:1	If a basin is proposed, pond side slopes.	**≥3:1**
20.69	ft	Peak elevation of the 10-year storm event (infiltration can be used in analysis)	
21.78	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
21.87	ft	Elevation of the top of the practice (if a basin, this is the elevation of the berm)	
YES		10 peak elevation ≤ Elevation of the top of the trench?[5]	**← yes**
YES		If a basin is proposed, 50-year peak elevation ≤ Elevation of berm?	**← yes**

1. Volume below the lowest invert of the outlet structure and excludes forebay volume
2. $Ksat_{DESIGN}$ includes a factor of safety. See Env-Wq 1504.14 for requirements for determining the infiltr. rate
3. 1' separation if treatment not required; 4' for treatment in GPAs & WSIPAs; & 3' in all other areas.
4. Clean, washed well graded diameter of 1.5 to 3 inches above the in-situ soil.
5. If 50-year peak elevation exceeds top of trench, the overflow must be routed in HydroCAD as secondary discharge.

Designer's Notes:

Runoff is already treated through focal point. WQV calculation is irrelevant & only 1' SHWT separation necessary

No stage storage table is attached. 7*14'*8' = 784 sf

Outlet 1.25' above pond bottom, so 784 sf * 1.25 ft = 980 cf

Storage above top of chamber in 50 year storm is in side stone layer

GENERAL CALCULATIONS - WQV and WQF
(optional worksheet)

This worksheet may be useful when designing a BMP that does not fit into one of the specific worksheets already provided (such as for a technology which is not a stormwater wetland, infiltration practice, etc.)

Water Quality Volume (WQV)

0.17	ac	A = Area draining to the practice
0.14	ac	A_I = Impervious area draining to the practice
0.83	decimal	I = Percent impervious area draining to the practice, in decimal form
0.79	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)
0.14	ac-in	WQV= 1" x Rv x A
501	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")

Water Quality Flow (WQF)

1	inches	P = Amount of rainfall. For WQF in NH, P = 1".
0.79	inches	Q = Water quality depth. Q = WQV/A
98	unitless	CN = Unit peak discharge curve number. CN =1000/(10+5P+10Q–10*[Q^2 + 1.25*Q*P] $^{0.5}$)
0.2	inches	S = Potential maximum retention. S = (1000/CN) - 10
0.040	inches	Ia = Initial abstraction. Ia = 0.2S
6.0	minutes	T_c = Time of Concentration
700.0	cfs/mi^2/in	q_u is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III.
0.151	cfs	WQF = q_u x WQV. Conversion: to convert "cfs/mi^2/in * ac-in" to "cfs" multiply by 1mi^2/640ac.

Designer's Notes:

For design of Focal Point 2 (Pond 5P) in conjunction with Focal Point design worksheet.

DESIGN WORKSHEET

FOCALPOINT

NEW HAMPSHIRE AOT PROJECTS

1. **Determine FocalPoint bed area (minimum 174 sf/acre of impervious area - ex: 0.2 acres = 35 sf)**
   See step 2 to determine if minimum size is appropriate.
   - Tributary impervious area: = 0.144 ac **(A)**
   - Tributary pervious area: = 0.030 ac **(B)**
   - Minimum FocalPoint bed area required: **= ((A x 1.0) + (B x 0.4)) * 174** = 27.1 sf
   - FocalPoint bed area provided: = 28 sf
   - Dimensions of proposed FocalPoint: = 4 ft x 7 ft

2. **Model a Type II & III 24-hr rainfall event that generates the water quality volume to demonstrate that the entire storm volume is treated prior to activation of the overflow (typically set at 6 - 12 in above the mulch). Note: a 1.2 - 1.3 in rainfall event usually generates 1.0 in of runoff.**
   Contact ACF for a sample HydroCAD node.
   - Water quality volume (WQv) goal: = 501 ft^3
   - Type II & III 24-hr rainfall depth to generate WQv: = 1.40 in
   - Temporary storage depth provided: = 2.4 in
     (typically 6 - 12 in)
   - Temporary storage volume provided at above depth: = 20 ft^3
   - Peak ponding depth from Type III 24-hr storm event: = 1.68 in

3. **Size the Harco PVC domed overflow riser.**
   Note: ACF recommends installation of a Fabco domed overflow filter kit for overflow protection.
   - Domed overflow riser diameter: = 24 in
   - Rim elevation of overflow riser: = 22.95
     (typically 6 - 12 in above mulch surface)
   - 6 in invert in elevation from FocalPoint: = 20.00
     (typically 3 ft below mulch surface)
   - 12 in invert out elevation: = 20.00

4. **Flood control - peak flow attenuation of major storms**
   The treated flow and bypass flow can be routed to a detention system such as an open pond or a subsurface solution like an expanded R-Tank system. (contact ACF for additional information on designing expanded R-Tank systems)

5. **Prepare a landscape plan for the FocalPoint bed area** ☑

6. **Design review and installation oversight by manufacturer's representative**
   - The design has been reviewed by ACF Environmental ☑
   - Engineer will coordinate installation inspection with ACF Environmental ☑

Contact Rob Woodman - Senior Stormwater Engineer
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SIZING CRITERIA SUMMARY

- The surface area of the media within FocalPoint must be a minimum of 174 sf per 1.0 acre of impervious area (26 sf per 0.15 acres). The thickness of the media is to be no less than 1.5 ft (18 in).
- The system must be modelled in HydroCAD (or similar TR-55 modeling software) to demonstrate that the entire volume of a 1.22 in Type II or III 24-hr storm is treated prior to activation of the bypass/overflow (typically set at 6 - 12 in above the mulch surface). Note: A 1.22 in rainfall event typically generates 1.0 in of runoff.
- The R-Tank modular underdrain can be expanded beyond the footprint of the FocalPoint media bed for expanded infiltration and peak flow attenuation/detention post treatment.

FOCALPOINT SYSTEMS:






FOCALPOINT ACCESSORIES:



Pretreatment - Rain Guardian Turret



Pretreatment - Rain Guardian Foxhole



Pretreatment - PreTx



Bypass protection - Domed overflow with filter insert

For additional information please visit: www.acfenvironmental.com

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Summary for Pond 5P: Focal Point 2

[88] Warning: Qout>Qin may require smaller dt or Finer Routing
[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=7)

Inflow Area = 0.174 ac, 82.59% Impervious, Inflow Depth = 0.72" for Focal Point 2 WQF event
Inflow = 0.14 cfs @ 12.09 hrs, Volume= 0.010 af
Outflow = 0.15 cfs @ 12.12 hrs, Volume= 0.010 af, Atten= 0%, Lag= 1.5 min
Primary = 0.15 cfs @ 12.12 hrs, Volume= 0.010 af
Routed to Pond 6P : Chamber System B

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 22.89' @ 12.12 hrs Surf.Area= 67 sf Storage= 17 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.8 min (832.3 - 831.5)

Volume	Invert	Avail.Storage	Storage Description
#1	20.50'	13 cf	**4.00'W x 7.00'L x 2.25'H Focal Point Area 1** 63 cf Overall x 20.0% Voids
#2	22.75'	24 cf	**Surface Bowl (Prismatic)**Listed below (Recalc)
		37 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
22.75	28	0	0
23.25	68	24	24

Device	Routing	Invert	Outlet Devices
#1	Primary	20.00'	**12.0" Round Culvert** L= 32.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.00' / 19.80' S= 0.0062 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 3	20.50'	**100.000 in/hr Exfiltration over Surface area** Phase-In= 0.10'
#3	Device 1	20.00'	**6.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	22.95'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.14 cfs @ 12.12 hrs HW=22.81' (Free Discharge)
└**1=Culvert** (Passes 0.14 cfs of 4.54 cfs potential flow)
  ├**3=Orifice/Grate** (Passes 0.14 cfs of 1.93 cfs potential flow)
  │ └**2=Exfiltration** (Exfiltration Controls 0.14 cfs)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Stage-Area-Storage for Pond 5P: Focal Point 2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.50	28	0
20.55	28	0
20.60	28	1
20.65	28	1
20.70	28	1
20.75	28	1
20.80	28	2
20.85	28	2
20.90	28	2
20.95	28	3
21.00	28	3
21.05	28	3
21.10	28	3
21.15	28	4
21.20	28	4
21.25	28	4
21.30	28	4
21.35	28	5
21.40	28	5
21.45	28	5
21.50	28	6
21.55	28	6
21.60	28	6
21.65	28	6
21.70	28	7
21.75	28	7
21.80	28	7
21.85	28	8
21.90	28	8
21.95	28	8
22.00	28	8
22.05	28	9
22.10	28	9
22.15	28	9
22.20	28	10
22.25	28	10
22.30	28	10
22.35	28	10
22.40	28	11
22.45	28	11
22.50	28	11
22.55	28	11
22.60	28	12
22.65	28	12
22.70	28	12
22.75	56	13
22.80	60	14
22.85	64	16
22.90	68	18
22.95	72	20
23.00	76	22
23.05	80	25
23.10	84	27
23.15	88	30
23.20	92	33
23.25	**96**	**37**

Overflow el. = 22.95
Temporary storage
volume = 20 cf

Stage-Discharge for Pond 5P: Focal Point 2

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
20.50	0.00	21.54	0.06	22.58	0.06
20.52	0.01	21.56	0.06	22.60	0.06
20.54	0.03	21.58	0.06	22.62	0.06
20.56	0.04	21.60	0.06	22.64	0.06
20.58	0.05	21.62	0.06	22.66	0.06
20.60	0.06	21.64	0.06	22.68	0.06
20.62	0.06	21.66	0.06	22.70	0.06
20.64	0.06	21.68	0.06	22.72	0.06
20.66	0.06	21.70	0.06	22.74	0.06
20.68	0.06	21.72	0.06	22.76	0.13
20.70	0.06	21.74	0.06	22.78	0.14
20.72	0.06	21.76	0.06	22.80	0.14
20.74	0.06	21.78	0.06	22.82	0.14
20.76	0.06	21.80	0.06	22.84	0.15
20.78	0.06	21.82	0.06	22.86	0.15
20.80	0.06	21.84	0.06	22.88	0.15
20.82	0.06	21.86	0.06	22.90	0.16
20.84	0.06	21.88	0.06	22.92	0.16
20.86	0.06	21.90	0.06	22.94	0.16
20.88	0.06	21.92	0.06	22.96	0.19
20.90	0.06	21.94	0.06	22.98	0.28
20.92	0.06	21.96	0.06	23.00	0.41
20.94	0.06	21.98	0.06	23.02	0.56
20.96	0.06	22.00	0.06	23.04	0.74
20.98	0.06	22.02	0.06	23.06	0.94
21.00	0.06	22.04	0.06	23.08	1.15
21.02	0.06	22.06	0.06	23.10	1.39
21.04	0.06	22.08	0.06	23.12	1.64
21.06	0.06	22.10	0.06	23.14	1.90
21.08	0.06	22.12	0.06	23.16	2.18
21.10	0.06	22.14	0.06	23.18	2.48
21.12	0.06	22.16	0.06	23.20	2.78
21.14	0.06	22.18	0.06	23.22	3.10
21.16	0.06	22.20	0.06	23.24	**3.43**
21.18	0.06	22.22	0.06		
21.20	0.06	22.24	0.06		
21.22	0.06	22.26	0.06		
21.24	0.06	22.28	0.06		
21.26	0.06	22.30	0.06		
21.28	0.06	22.32	0.06		
21.30	0.06	22.34	0.06		
21.32	0.06	22.36	0.06		
21.34	0.06	22.38	0.06		
21.36	0.06	22.40	0.06		
21.38	0.06	22.42	0.06		
21.40	0.06	22.44	0.06		
21.42	0.06	22.46	0.06		
21.44	0.06	22.48	0.06		
21.46	0.06	22.50	0.06		
21.48	0.06	22.52	0.06		
21.50	0.06	22.54	0.06		
21.52	0.06	22.56	0.06		

WQF goal = 0.151 cfs
E(WQF) = 22.89
Bottom of surface storage = 22.75
1.68" ponding depth on WQF event

INFILTRATION PRACTICE CRITERIA
(Env-Wq 1508.07)

Type/Node Name: **Chamber System B (Pond 6P)**

Enter the type of infiltration practice (such as basin, trench) and the node name in the drainage analysis, if applicable.

Yes		Have you reviewed Env-Wq 1508.07(a) to ensure that infiltration is allowed?	**← yes**
0.17	ac	A = Area draining to the practice	
0.14	ac	A_I = Impervious area draining to the practice	
0.83	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.79	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.14	ac-in	WQV= 1" x Rv x A	
501	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
125	cf	25% x WQV (check calc for sediment forebay volume)	
N/A		Method of pretreatment? (not required for clean or roof runoff)	
	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
1,075	cf	V = Volume[1] (attach a stage-storage table)	**≥ WQV**
896	sf	A_{SA} = Surface area of the bottom of the pond	
1.00	iph	$Ksat_{DESIGN}$ = Design infiltration rate[2]	
6.7	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
19.60	feet	E_{BTM} = Elevation of the bottom of the basin	
18.57	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
16.90	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
1.03	feet	D_{SHWT} = Separation from SHWT	**≥ *** [3]
2.7	feet	D_{ROCK} = Separation from bedrock	**≥ *** [3]
	ft	D_{amend} = Depth of amended soil, if applicable due high infiltation rate	**≥ 24"**
	ft	D_T = Depth of trench, if trench proposed	**4 - 10 ft**
	Yes/No	If a trench or underground system is proposed, has observation well been provided?	**←yes**
		If a trench is proposed, does material meet Env-Wq 1508.07(k)(2) requirements.[4]	**← yes**
	Yes/No	If a basin is proposed, Is the perimeter curvilinear, and basin floor flat?	**← yes**
	:1	If a basin is proposed, pond side slopes.	**≥3:1**
20.37	ft	Peak elevation of the 10-year storm event (infiltration can be used in analysis)	
21.13	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
21.60	ft	Elevation of the top of the practice (if a basin, this is the elevation of the berm)	
YES		10 peak elevation ≤ Elevation of the top of the trench?[5]	**← yes**
YES		If a basin is proposed, 50-year peak elevation ≤ Elevation of berm?	**← yes**

1. Volume below the lowest invert of the outlet structure and excludes forebay volume
2. $Ksat_{DESIGN}$ includes a factor of safety. See Env-Wq 1504.14 for requirements for determining the infiltr. rate
3. 1' separation if treatment not required; 4' for treatment in GPAs & WSIPAs; & 3' in all other areas.
4. Clean, washed well graded diameter of 1.5 to 3 inches above the in-situ soil.
5. If 50-year peak elevation exceeds top of trench, the overflow must be routed in HydroCAD as secondary discharge.

Designer's Notes:

Runoff is already treated through focal point. WQV calculation is irrelevant & only 1' SHWT separation necessary

No stage storage table is attached. 8*14'*8' = 896 sf

Outlet 1.2' above pond bottom, so 896 sf * 1.2 ft = 1,075 cf

FILTRATION PRACTICE DESIGN CRITERIA
(Env-Wq 1508.08)

Type/Node Name: **Filtration Drip Edge / Pond 8P**

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.08(a).	
0.21	ac	A = Area draining to the practice	
0.18	ac	A_I = Impervious area draining to the practice	
0.84	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.80	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.17	ac-in	WQV= 1" x Rv x A	
622	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
155	cf	25% x WQV (check calc for sediment forebay volume)	
466	cf	75% x WQV (check calc for surface sand filter volume)	
N/A		Method of Pretreatment? (not required for clean or roof runoff)	
	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
Calculate time to drain if system IS NOT underdrained:			
1,500	sf	A_{SA} = Surface area of the practice	
1.00	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
		If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
N/A	Yes/No	(Use the calculations below)	
5.0	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
Calculate time to drain if system IS underdrained:			
	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
-	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	**≤ 72-hrs**
18.75	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
17.67	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
15.67	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
18.75	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	**≥ 1'**
3.08	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	**≥ 1'**
1.08	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	**≥ 1'**
21.25	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
21.25	ft	Elevation of the top of the practice	
YES		50 peak elevation ≤ Elevation of the top of the practice	**← yes**
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	**< 10 ac**
	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ 75%WQV**
	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	**← yes**

If a bioretention area is proposed:			
YES	ac	Drainage Area no larger than 5 ac?	**← yes**
713	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ WQV**
18.0	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification	
3.0	:1	Pond side slopes	**≥ 3:1**
Sheet		Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
	acres	A_{SA} = Surface area of the pervious pavement	
	:1	Ratio of the contributing area to the pervious surface area	**≤ 5:1**
	inches	D_{FC} = Filter course thickness	**12", or 18" if within GPA mod. 304.1 (see spec)**
Sheet		Note what sheet in the plan set contains the filter course spec.	

1. Rate of the limiting layer (either the filter course or the underlying soil). Ksat $_{design}$ includes factor of safey. See Env-Wq 1504.14 for guidance on determining the infiltration rate.

2. See lines 34, 40 and 48 for required depths of filter media.

3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet stucture, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes:

Natural elevation of 20.5 assumed prior to installation of berm. Conservative assumptions:

Using test pit 2 to determine 34" depth to water table and test pit 1 for 58" depth to bottom of test pit

20.5-(34"/12") = 17.67 SHWT

20.5-(58"/12") = 15.67 "Bedrock" (bottom of test pit, bedrock not observed)

12'*125' = 1,500 S.F. surface area

1,568 sf * (1'*0.4 + 1.5'*0.05) = 713 cf storage volume above stone layer

No stage storage table needed

APPENDIX VIII

Pollutant Removal Calculations

POLLUTANT REMOVAL CALCULATIONS

BMP	Focal Point 1 (3P)	Focal Point 2 (5P)	Filter Drip Edge (7P)	Nothing	Total	Required
Acres Impervious	0.214	0.144	0.179	0.021	0.557	
TSS Removal (%)	90%	90%	95%	0%	**88%**	**80%**
TN Removal (%)	75%	75%	98%	0%	**80%**	**50%**
TP Removal (%)	76%	76%	95%	0%	**79%**	**50%**

Existing offsite impervious within watersheds is excluded from calculation.
Pollutant removal efficiencies are per annotated EPA Performance curves enclosed with these calculations
TSS removal of 89% provided exceeds 80% requirement
TN removal of 80% provided exceeds 50% requirement
TP removal of 79% provided exceeds 50% requriement

REGION 1
BOSTON, MA 02109
Dated by Signature

MEMORANDUM

SUBJECT: FocalPoint Crediting Direction

FROM: Damien Houlihan, Stormwater Permits Section
Water Division

TO: Robert J. Woodman
Director - Engineering and Green Stormwater Infrastructure
Ferguson Waterworks

On June 7, 2021, Ferguson Waterworks (Ferguson) submitted a request to EPA Region 1 regarding the use of the FocalPoint biofiltration system (also known also as the High Performance Modular Biofiltration System, hereinafter "FocalPoint biofiltration system"). Based on the review of documents submitted by Ferguson, EPA Region 1 finds that entities wishing to deploy the FocalPoint biofiltration system may calculate phosphorus and nitrogen reductions under the 2016 Massachusetts Municipal Separate Storm Sewer Permit (MA MS4 Permit) and the 2017 New Hampshire Municipal Separate Storm Sewer Permit (NH MS4 Permit) using the performance quantification for Enhanced Biofiltration found on Table 3-20 and Figure 3-15 of Attachment 3 to Appendix F of the MA MS4 permit and Table 3-20 and Figure 3-15 of Attachment 3 to Appendix F of the NH MS4 permit (also attached to this document for reference) provided the following standard FocalPoint design requirements and other conditions are met:

1. Ferguson's FocalPoint biofiltration systems are to be designed with pretreatment to remove coarse sediment and debris before they reach and prematurely close the filter bed. Pretreatment measures must be designed to dissipate velocities and spread water out over a 2 to 4 ft width.
2. Ferguson's FocalPoint biofiltration systems are to be designed with a minimum and maximum surface ponding depths of 3 inches and 18 inches, respectively.
3. Ferguson's FocalPoint biofiltration systems are to be separated or otherwise isolated from the groundwater table to ensure that groundwater does not inundate the filter bed either using an impermeable liner or physical separation.
4. Ferguson's FocalPoint biofiltration systems are to be designed such that the system bed area is sized to be a minimum of 174 square feet per acre of tributary area. Stormwater modelling software shall be used to demonstrate that the runoff volume goal is treated prior to bypass.
5. System maintenance of Ferguson's FocalPoint biofiltration systems should occur once every 6 months, at a minimum, and filter media and pretreatment measures shall be replaced such that the performance of the systems are maintained as originally designed.

6. Stormwater quality monitoring must be used to ensure system performance has not declined over time. EPA recommends this monitoring commence once the filter bed media reaches two (2) years in age to ensure system performance has not declined. All monitoring data must be submitted to EPA by the entity claiming pollution reduction credit for the FocalPoint biofiltration system and filter media shall be replaced if monitoring data shows a decline in performance from original design.

This pollution reduction crediting of the FocalPoint biofiltration system is consistent with the Alternative Methods request process contained in Attachment 3 to Appendix F in the MA MS4 Permit and Attachment 3 to Appendix F of the NH MS4 Permit and may be used unless EPA Region 1 requires an alternative pollution reduction crediting methodology based on new or additional modeling of high-flow-rate filtering systems in a future NPDES permit. All stormwater quality monitoring data shall be submitted to EPA consistent with the requirements of the MA MS4 Permit or the NH MS4 Permit.

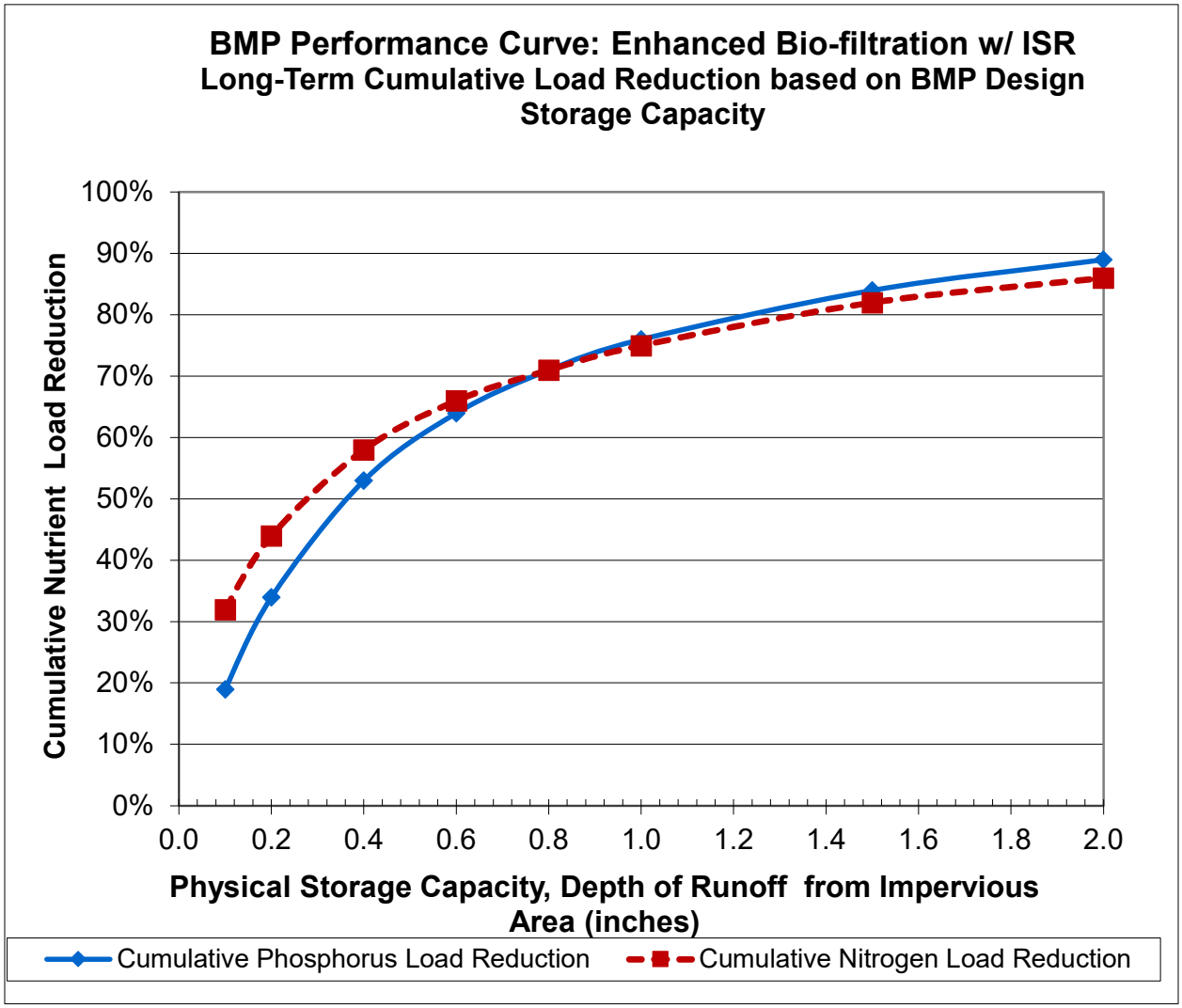
Table 3- 20: Enhanced Bio-filtration* with Internal Storage Reservoir (ISR) BMP Performance Table

Enhanced Bio-filtration* w/ ISR BMP Performance Table: Long-Term Phosphorus & Nitrogen Load Reduction								
BMP Capacity: Depth of Runoff from Impervious Area (inches)	0.1	0.2	0.4	0.6	0.8	1.0	1.5	2.0
Cumulative Phosphorus Load Reduction	19%	34%	53%	64%	71%	76%	84%	89%
Cumulative Nitrogen Load Reduction	32%	44%	58%	66%	71%	75%	82%	86%

***Filter media augmented with phosphorus sorbing materials to enhance phosphorus removal.**

JBE added note: 90% TSS removal assumed due to infiltration system directly downstream

Figure 3-15: BMP Performance Curve: Enhanced Bio-filtration with Internal Storage Reservoir (ISR) BMP Performance Table



SCM Performance Tables for Soil Infiltration Rate: Infiltration Trench

		Load Reduction (%)					
Infiltration Rate (in/hr)	Depth of Runoff from Impervious Area (inches)	Volume	Phos-phorus	Nitrogen	TSS	Zinc	Bacteria
0.52	0.1	16	30	54	44	36	27
	0.2	28	47	71	62	53	44
	0.4	49	69	86	78	71	68
	0.6	63	82	93	86	81	83
	0.8	74	89	96	91	88	90
	1.0	81	93	98	94	92	94
	1.5	91	98	99	98	97	99
	2.0	96	99	100	99	99	100
1.02 For filtration drip edge (Pond 8P)	0.1	19	34	56	44	36	30
	0.2	34	51	73	62	54	48
	0.4	55	74	88	79	73	72
	0.6	70	86	94	87	83	86
	0.8	80	92	97	92	89	93
	1.0	86	95	98	95	93	96
	1.5	94	99	100	99	98	99
	2.0	97	100	100	100	99	100
2.41	0.1	25	40	59	45	38	34
	0.2	43	60	76	64	57	55
	0.4	66	82	91	82	77	81
	0.6	80	92	96	90	87	92
	0.8	88	96	98	94	92	97
	1.0	92	98	99	97	96	99
	1.5	98	100	100	99	99	100
	2.0	99	100	100	100	100	100
8.27	0.1	42	58	68	50	46	49
	0.2	65	79	86	72	68	74
	0.4	86	94	96	89	87	94
	0.6	94	98	99	95	94	99
	0.8	97	99	99	98	98	100
	1.0	99	100	100	99	99	100
	1.5	100	100	100	100	100	100
	2.0	100	100	100	100	100	100

APPENDIX IX

Stormwater Operations and Maintenance Manual

STORMWATER MANAGEMENT OPERATIONS AND MAINTENANCE MANUAL

"Ledgewood Drive LLC"
Ledgewood Drive
Portsmouth, NH 03801
Tax Map 229, Lot 6A

Prepared for:

Ledgewood Drive LLC
Attn. Ben Middleton
10 Main Street
Newfields, NH 03856

Prepared by:
Jones & Beach Engineers, Inc.
100 Domain Drive
Suite 201
Exeter, NH 03833
(603) 772-4746
August 17, 2026
Revised October 19, 2026
JBE Project No. 25071.2

JONES&BEACH ENGINEERS INC.

Inspection and Maintenance of Facilities and Property

A. Maintenance of Common Facilities or Property

1. The Landowner, future owners and assigns are responsible to perform the maintenance obligations themselves or hire a qualified professional to review the site on an annual basis for maintenance and certification of the stormwater system. The Landowner, future owners and assigns shall keep receipts and records of all maintenance companies hired throughout the year to submit along with the following form and shall submit an Operations and Maintenance report on a yearly basis to the Portsmouth Planning Department.

B. General Inspection and Maintenance Requirements

1. Permanent stormwater and sediment and erosion control facilities to be maintained on the site include, but are not limited to, the following:

    a. Driveway and Parking Lot
    b. Vegetation and landscaping
    c. Focal Points
    d. Rain Guardian
    e. Yard Drain
    f. Chamber Systems
    g. Drain Manhole
    h. Filtration Drip Edge
    i. Culverts and Roof Drains
    j. Rip-Rap Outlet Protection Aprons

2. Maintenance of permanent measures shall follow the following schedule:

    a. Normal winter driveway & parking lot maintenance including plowing and snow removal. Road sweeping at the end of every winter, preferably before the start of the spring rain season.

    b. **Annual inspection** of the site for erosion, destabilization, settling, and sloughing. Any needed repairs are to be conducted immediately. **Annual inspection** of site's vegetation and landscaping. Any areas that are bare shall be reseeded and mulched with hay or, if the case is extreme, loamed and seeded or sodded to ensure adequate vegetative cover. Landscape specimens shall be replaced in kind, if they are found to be dead or dying.

    c. Focal Points: See enclosed inspection and maintenance guidance document.

    d. Rain Guardians: See enclosed inspection and maintenance guidance document.

    e. **Annual inspection** of yard drains to determine if they need to be cleaned. Yard drains are to be cleaned if the depth of deposits is greater than one-half the depth from the basin bottom to the invert of the lowest pipe or opening into or out of the basin. If a yard drain significantly exceeds the one-half depth standard during the inspection, then it shall be cleaned more frequently. If woody debris or trash accumulates in the yard drain, then it shall be cleaned on a weekly basis. The yard drain can be cleaned either manually or by specially designed equipment including, but not limited to, bucket loaders and vacuum

pumps. Before any materials can be disposed, it is necessary to perform a detailed chemical analysis to determine if the materials meet the EPA criteria for hazardous waste. This will help determine how the materials shall be stored, treated, and disposed. Grease hoods are to be wiped clean and the rags disposed of properly. Debris obscuring the grate inlet shall also be removed.

f. Chamber system: Once annually, open the inspection ports and visually inspect the condition of the stone base. If more than 6" of sediment is observed, plug the outlet and flush the system thoroughly. Pump water into system until at least 1" of standing water covers the system bottom. Repeat at both inspection ports and pump out back-flush water. Capture sediment-laden water for proper disposal according to local state, and EPA regulation. Additionally, vacuum all adjacent manhole structures.

g. **Annual inspection** of drain manholes to determine if they need to be cleaned. Manholes shall be cleaned of any material upon inspection. Manholes can be cleaned either manually or by specially designed equipment including, but not limited to, bucket loaders and vacuum pumps. Before any materials can be disposed, it is necessary to perform a detailed chemical analysis to determine if the materials meet the EPA criteria for hazardous waste. This will help determine how the materials shall be stored, treated, and disposed.

h. Filtration drip edge:

The following course of action will help assure that the filtration drip edge is maintained to preserve its effectiveness.

In the spring and fall, visually inspect the area around the edges and repair any erosion. Use small stones to stabilize erosion along drainage paths. Inspect stone area to ensure that it has not been displaced, undermined, or otherwise damaged. Displaced rock shall be replaced, or additional rock added in order to maintain the structure(s) in their undamaged state. Woody vegetation shall not be allowed to become established in stone areas, and/or any debris removed from the void spaces between the stones

i. **Inspection** of culvert inlets and outlets **including any roof drain outfalls** at least **once every three months** during the rainy season (March to November). Any debris is to be removed and disposed of properly.

j. Rock riprap shall be **inspected annually** in order to ensure that it has not been displaced, undermined, or otherwise damaged. Displaced rock shall be replaced, or additional rock added in order to maintain the structure(s) in their undamaged state. Woody vegetation must not be allowed to become established in riprap areas, and/or any debris removed from the void spaces between the rocks. Remove any excessive vegetation that grows in the voids of the stone. If the riprap is adjacent to a stream or other waterbody, the water shall be kept clear of obstructions, debris, and sediment deposits.

See attached sample forms as a guideline.

Any inquiries in regards to the design, function, and/or maintenance of any one of the above-mentioned facilities or tasks shall be directed to the project engineer:

Jones & Beach Engineers, Inc.
100 Domain Drive, Suite 201
Exeter, NH 03833
T#: (603) 772-4746

Commitment to maintenance requirements

I agree to complete and/or observe all of the required maintenance practices and their respective schedules as outlined above.

_____

Signature

_____

Print Name

_____

Title

_____

Date

Annual Operations and Maintenance Report

The Landowner, future owners and assigns are responsible to perform the maintenance obligations themselves or hire a qualified professional to review the site on an annual basis for maintenance and certification of the stormwater system. The Landowner, future owners and assigns shall keep receipts and records of all maintenance companies hired throughout the year to submit along with the following form and shall submit an Operations and Maintenance report on a yearly basis to the Portsmouth Planning Department.

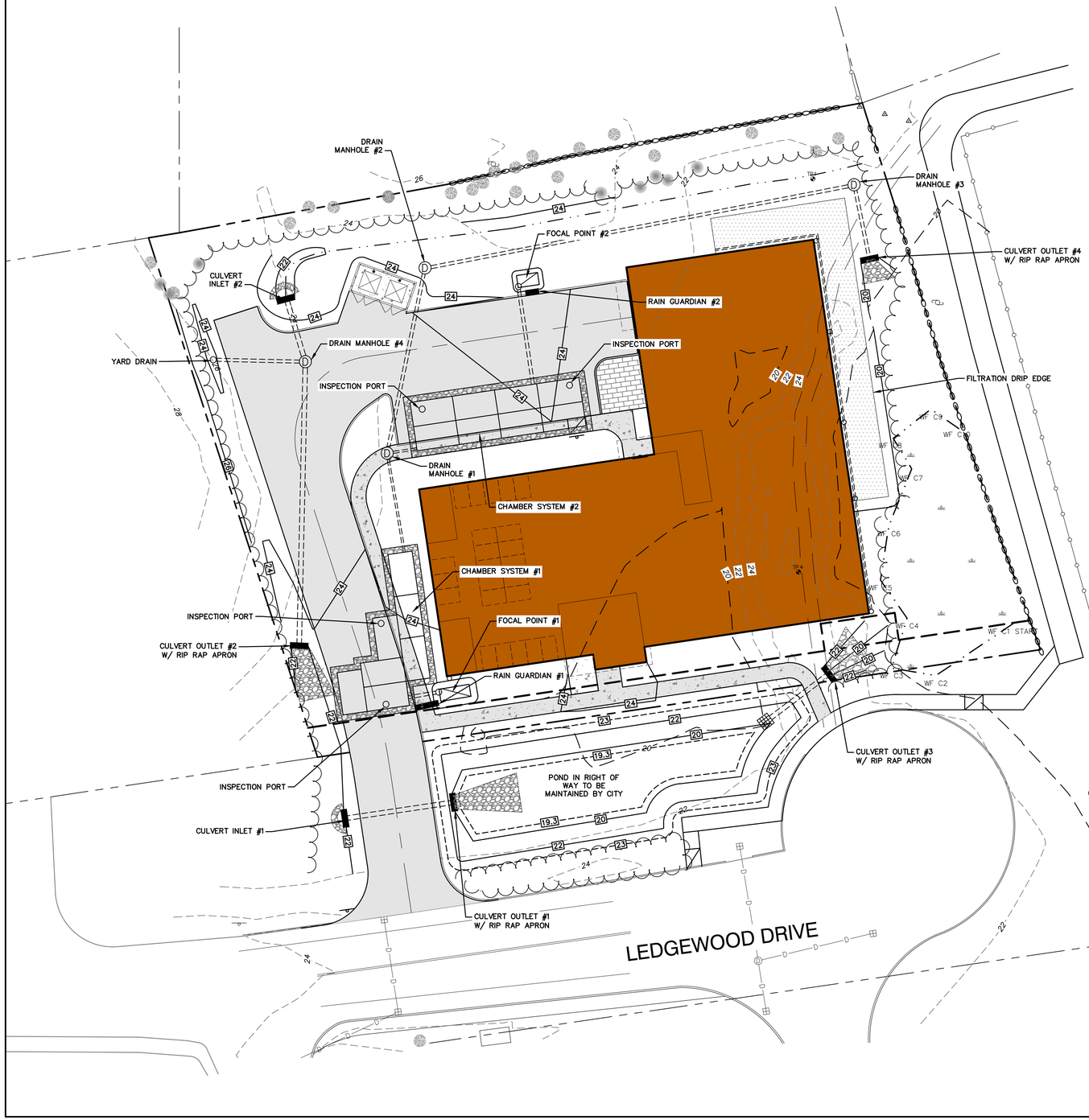
a. Driveway and Parking Lot
b. Vegetation and landscaping
c. Focal Points
d. Rain Guardian
e. Yard Drain
f. Chamber Systems
g. Drain Manhole
h. Filtration Drip Edge
i. Culverts and Roof Drains
j. Rip-Rap Outlet Protection Aprons

Area	Date of Inspection	Who Inspected	Findings of Inspector
Driveway and Parking Lot			
Vegetation and Landscaping			
Focal Point #1			
Focal Point #2			

Rain Guardian #1			
Rain Guardian #2			
Yard Drain			
Chamber System #1			
Chamber System #2			
Drain Manhole #1			
Drain Manhole #2			
Drain Manhole #3			

Drain Manhole #4			
Filtration Drip Edge			
Culvert Inlet #1			
Culvert Inlet #2			
Culvert Outlet #1 w/ rip rap outlet protection apron			
Culvert Outlet #2 w/ rip rap outlet protection apron			
Culvert Outlet #3 w/ rip rap outlet protection apron			

Culvert Outlet #4 w/ rip rap outlet protection apron			
Roof Drains			
Other (please note):			
Other (please note):			



APPROX

NOTES:

1. THIS PLAN IS NOT FOR CONSTRUCTION. THE INTENT OF THIS PLAN IS TO GUIDE ONGOING STORMWATER SYSTEM INSPECTIONS AND MAINTENANCE ACTIVITIES. CONTRACTOR TO REFER TO APPROVED PLAN SET.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 feet

PROJECT PARCEL
TOWN OF PORTSMOUTH
TAX MAP 229, LOT 6A

APPLICANT
LEDGEWOOD DRIVE LLC
ATTN. BEN MIDDLETON
10 MAIN STREET
NEWFIELDS, NH 03856

TOTAL LOT AREA
43,255 SQ. FT.
0.99 ACRES

Design: DJM	Draft: TCR	Date: 01/08/26
Checked: EMP	Scale: AS NOTED	Project No.: 25071.2
Drawing Name: 25071.2-PLAN.dwg		

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM JONES & BEACH ENGINEERS, INC. (JBE). ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO JBE.

REV.	DATE	REVISION	BY
3	10/19/26	REVISED PER TAC COMMENTS	DJM
2	09/22/26	REVISED PER TAC COMMENTS	DJM
1	09/01/26	UPDATED TITLE BLOCK	DJM
0	08/17/26	ISSUED FOR REVIEW	DJM

Designed and Produced in NH
Jones & Beach Engineers, Inc.
100 Domain Dr.
Suite 201
Exeter, NH 03833
Civil Engineering Services
603-772-4746
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: **OPERATIONS AND MAINTENANCE PLAN**

Project: LEDGEWOOD DRIVE LLC
LEDGEWOOD DRIVE, PORTSMOUTH, NH 03801

Owner of Record: ST NICHOLAS GREEK ORTHODOX CHURCH
40 ANDREW JARVIS DRIVE, PORTSMOUTH, NH 03801

DRAWING No.
O&M
SHEET 1 OF 1
JBE PROJECT NO. 25071.2

APPENDIX X

Pre- and Post-Construction Watershed Plans



OFFSITE TOPOGRAPHY SHOWN HEREON IS FROM NH GRANIT LIDAR EXCEPT FOR STRETCH OF LEDGEWOOD DRIVE IN FRONT OF SUBJECT PARCEL. NH GRANIT LIDAR TOPOGRAPHY WAS USED LOOSELY TO GENERATE EXISTING WATERSHED BOUNDARIES AND FLOW PATHS IN CONJUNCTION WITH FIELD EVIDENCE THAT IN SOME CASES CONTRADICTS LIDAR TOPOGRAPHY WHICH MAY NOT TAKE INTO ACCOUNT FINE GRADING OF DEVELOPED AREAS, RETAINING WALLS, AND CURB LINES.

LEGEND

- SUBCATCHMENT BOUNDARY
- SUBCATCHMENT (X)
- REACH (X)
- POND (X)
- TC PATH
- WETLANDS
- NRCS SOILS
- FLOW ARROW

APPROX

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 feet

PROJECT PARCEL
TOWN OF PORTSMOUTH
TAX MAP 229, LOT 6A

APPLICANT
LEDGEWOOD DRIVE LLC
ATTN. BEN MIDDLETON
10 MAIN STREET
NEWFIELDS, NH 03856

TOTAL LOT AREA
43,255 SQ. FT.
0.99 ACRES

Design: DJM	Draft: TCR	Date: 07/28/26
Checked: EMP	Scale: AS NOTED	Project No.: 25071.2
Drawing Name: 25071.2-WATERSHED.dwg		

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM JONES & BEACH ENGINEERS, INC. (JBE). ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO JBE.

STATE OF NEW HAMPSHIRE
DANIEL JAMES MEDITZ
No.18152
LICENSED PROFESSIONAL ENGINEER
10/20/2026

REV.	DATE	REVISION	BY
2	10/19/26	REVISED PER TAC COMMENTS	DJM
1	09/22/26	REVISED PER TAC COMMENTS	DJM
0	08/17/26	ISSUED FOR REVIEW	DJM

Designed and Produced in NH
Jones & Beach Engineers, Inc.
Civil Engineering Services
100 Domain Dr.
Suite 201
Exeter, NH 03833
603-772-4746
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	EXISTING WATERSHED PLAN
Project:	LEDGEWOOD DRIVE LLC LEDGEWOOD DRIVE, PORTSMOUTH, NH
Owner of Record:	ST NICHOLAS GREEK ORTHODOX CHURCH 40 ANDREW JARVIS DRIVE, PORTSMOUTH, NH 03801

DRAWING No.
W1
SHEET 1 OF 2
JBE PROJECT NO. 25071.2



OFFSITE TOPOGRAPHY SHOWN HEREON IS FROM NH GRANIT LIDAR EXCEPT FOR STRETCH OF LEDGEWOOD DRIVE IN FRONT OF SUBJECT PARCEL. NH GRANIT LIDAR TOPOGRAPHY WAS USED LOOSELY TO GENERATE EXISTING WATERSHED BOUNDARIES AND FLOW PATHS IN CONJUNCTION WITH FIELD EVIDENCE THAT IN SOME CASES CONTRADICTS LIDAR TOPOGRAPHY WHICH MAY NOT TAKE INTO ACCOUNT FINE GRADING OF DEVELOPED AREAS, RETAINING WALLS, AND CURB LINES.

LEGEND

- SUBCATCHMENT BOUNDARY
- SUBCATCHMENT (X)
- REACH [X]
- POND (X)
- TC PATH
- WETLANDS
- NRCS SOILS
- FLOW ARROW

APPROX

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 feet

PROJECT PARCEL
TOWN OF PORTSMOUTH
TAX MAP 229, LOT 6A

APPLICANT
LEDGEWOOD DRIVE LLC
ATTN. BEN MIDDLETON
10 MAIN STREET
NEWFIELDS, NH 03856

TOTAL LOT AREA
43,255 SQ. FT.
0.99 ACRES

Design: DJM	Draft: TCR	Date: 07/28/26
Checked: EMP	Scale: AS NOTED	Project No.: 25071.2
Drawing Name: 25071.2-WATERSHED.dwg		

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STATE OF NEW HAMPSHIRE – DANIEL JAMES MEDITZ No.18152 – PROFESSIONAL ENGINEER – LICENSED
10/20/2026

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Jones & Beach Engineers, Inc.
100 Domain Dr.
Suite 201
Exeter, NH 03833
Civil Engineering Services
603-772-4746
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: PROPOSED WATERSHED PLAN
Project: LEDGEWOOD DRIVE LLC
LEDGEWOOD DRIVE, PORTSMOUTH, NH
Owner of Record: ST NICHOLAS GREEK ORTHODOX CHURCH
40 ANDREW JARVIS DRIVE, PORTSMOUTH, NH 03801

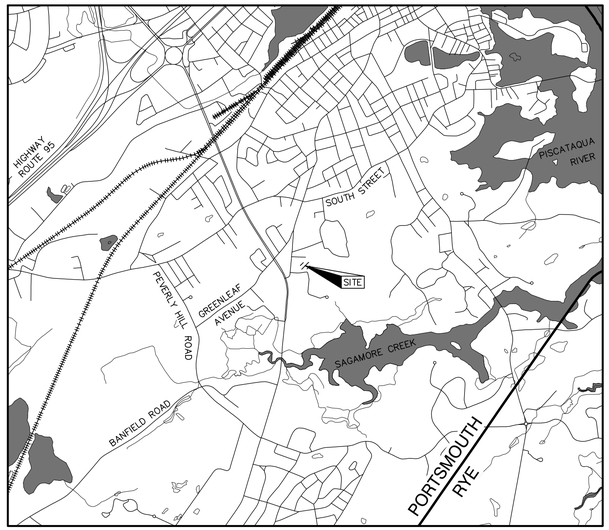
DRAWING No.
W2
SHEET 2 OF 2
JBE PROJECT NO. 25071.2

MULTI-FAMILY RESIDENTIAL DEVELOPMENT
"LEDGEWOOD DRIVE LLC"
TAX MAP 229, LOT 6A
LEDGEWOOD DRIVE, PORTSMOUTH, NH 03801

Know what's **below** **811** **before you dig**

GENERAL LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY LINES
		SETBACK LINES
		CENTERLINE
		FRESHWATER WETLANDS LINE
		TIDAL WETLANDS LINE
		STREAM CHANNEL
		TREE LINE
		STONEWALL
		BARBED WIRE
		FENCE
		STOCKADE FENCE
		SOIL BOUNDARY
		AQUIFER PROTECTION LINE
		FLOOD PLAIN LINE
		ZONELINE
		EASEMENT
100	100	MAJOR CONTOUR
98	98	MINOR CONTOUR
VGC	VGC	EDGE OF PAVEMENT
SGC	SGC	VERTICAL GRANITE CURB
CCB	CCB	SLOPE GRANITE CURB
PCC	PCC	CAPE COD BERM
		POURED CONCRETE CURB
X	X	SILT FENCE
D		DRAINAGE LINE
S		SEWER LINE
FM	FM	SEWER FORCE MAIN
G	G	GAS LINE
W	W	WATER LINE
WS	WS	WATER SERVICE
OHE	OHE	OVERHEAD ELECTRIC
UGE	UGE	UNDERGROUND ELECTRIC
		GUARDRAIL
UD	UD	UNDERDRAIN
F	F	FIRE PROTECTION LINE
	W	THRUST BLOCK
		IRON PIPE/IRON ROD
		DRILL HOLE
		IRON ROD/DRILL HOLE
		STONE/GRANITE BOUND
100x0	100x0	SPOT GRADE
100.00	100.00	PAVEMENT SPOT GRADE
100.00 99.50	100.00 99.50	CURB SPOT GRADE
		BENCHMARK (TBM)
		DOUBLE POST SIGN
		SINGLE POST SIGN
		WELL
TP1		TEST PIT
PT		FAILED TEST PIT
	M	MONITORING WELL
		PERC TEST
1		PHOTO LOCATION
		TREES AND BUSHES
		UTILITY POLE
		LIGHT POLES
	D	DRAIN MANHOLE
		SEWER MANHOLE
		HYDRANT
		WATER GATE
		WATER SHUT OFF
		REDUCER
		SINGLE GRATE CATCH BASIN
		DOUBLE GRATE CATCH BASIN
		TRANSFORMER
		CULVERT W/WINGWALLS
		CULVERT W/FLARED END SECTION
		CULVERT W/STRAIGHT HEADWALL
		STONE CHECK DAM
		DRAINAGE FLOW DIRECTION
		4K SEPTIC AREA
		WETLAND IMPACT
		VEGETATED FILTER STRIP
		RIPRAP
		PAVEMENT HATCH
		OPEN WATER
		FRESHWATER WETLANDS
		TIDAL WETLANDS
		STABILIZED CONSTRUCTION ENTRANCE
		CONCRETE
		GRAVEL
		SNOW STORAGE
		RETAINING WALL



LOCUS MAP
SCALE 1" = 2000'

SHEET INDEX

CS	COVER SHEET
C1	EXISTING CONDITIONS PLAN
TR1	TREE REMOVAL PLAN
C2	SITE PLAN
C3	GRADING AND DRAINAGE PLAN
C4	UTILITY PLAN
L1	LIGHTING PLAN
L2	LANDSCAPING PLAN
T1	TRUCK TURNING PLAN
D1-D5	DETAIL SHEETS
E1-E2	EROSION AND SEDIMENT CONTROL DETAILS

CIVIL ENGINEER / SURVEYOR
JONES & BEACH ENGINEERS, INC.
100 DOMAIN DRIVE, SUITE 201
EXETER, NH 03833
(603) 772-4746
CONTACT: ERIK POULIN, P.E.
E-MAIL: EPOULIN@JONESANDBEACH.COM

WETLAND CONSULTANT
GOVE ENVIRONMENTAL SERVICES
8 CONTINENTAL DRIVE, UNIT H
EXETER, NH 03833-7507
(603) 778-0644
CONTACT: BRENDEN WALDEN

LANDSCAPE DESIGNER
LM LAND DESIGN, LLC
11 SOUTH ROAD
BRENTWOOD, NH 03833
(603) 770-7728
CONTACT: LISE MCNAUGHTON

WATER
CITY OF PORTSMOUTH
DEPARTMENT OF PUBLIC WORKS
WATER DIVISION
680 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801
(603) 427-1530

SEWER
CITY OF PORTSMOUTH
DEPARTMENT OF PUBLIC WORKS
SEWER DIVISION
680 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801
(603) 766-1421

LIGHTING DESIGN
EXPOSURE LIGHTING
501 ISLINGTON STREET,UNIT 1A
PORTSMOUTH, NH 03801
CONTACT: KEN SWEENEY

ELECTRIC
EVERSOURCE
1700 LAFAYETTE ROAD
PORTSMOUTH, NH 03801
(800) 662-7764

TELEPHONE
CONSOLIDATED COMMUNICATIONS
1575 GREENLAND ROAD
GREENLAND, NH 03840
(800) 427-5525

CABLE TV
COMCAST COMMUNICATION CORPORATION
334-B CALEF HIGHWAY
EPPING, NH 03042-2325
(603) 679-5695

PROJECT PARCEL
TOWN OF PORTSMOUTH
TAX MAP 229, LOT 6A

APPLICANT
LEDGEWOOD DRIVE LLC
ATTN. BEN MIDDLETON
10 MAIN STREET
NEWFIELDS, NH 03856

TOTAL LOT AREA
43,255 SQ. FT.
0.99 ACRES

CITY OF PORTSMOUTH PLANNING BOARD

CHAIRPERSON _____ DATE _____

Design: DJM	Draft: TCR	Date: 01/08/26
Checked: EMP	Scale: AS NOTED	Project No.: 25071.2
Drawing Name: 25071.2-PLAN.dwg		

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STATE OF NEW HAMPSHIRE – DANIEL JAMES MEDITZ No.18152 – LICENSED PROFESSIONAL ENGINEER
10/20/2026

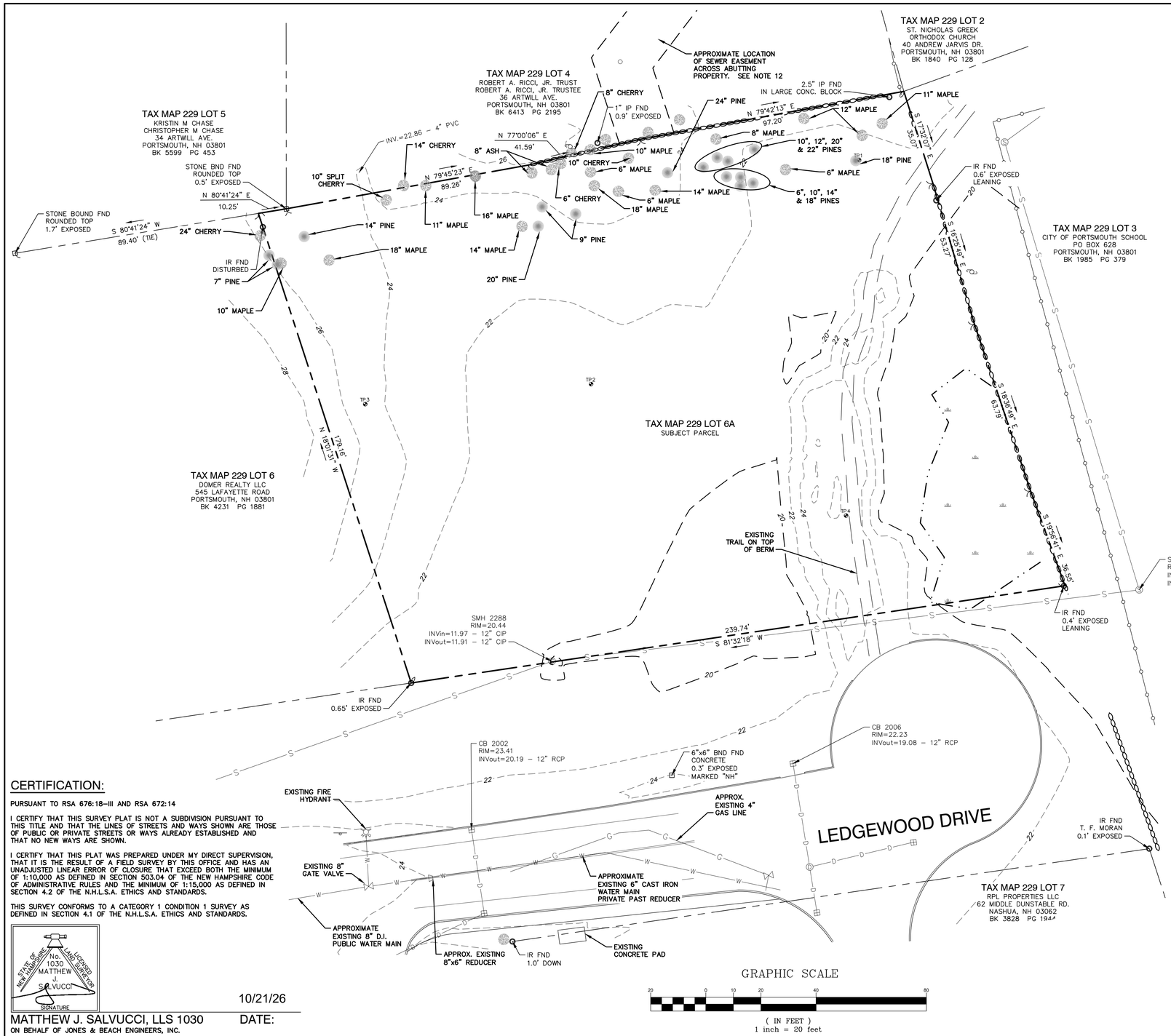
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2	09/22/26	REVISED PER TAC COMMENTS	DJM
1	09/01/26	UPDATED TITLE BLOCK	DJM
0	08/17/26	ISSUED FOR REVIEW	DJM

Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
Civil Engineering Services
100 Domain Dr. Suite 201 Exeter, NH 03833
603-772-4746
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	COVER SHEET
Project:	LEDGEWOOD DRIVE LLC LEDGEWOOD DRIVE, PORTSMOUTH, NH 03801
Owner of Record:	ST NICHOLAS GREEK ORTHODOX CHURCH 40 ANDREW JARVIS DRIVE, PORTSMOUTH, NH 03801

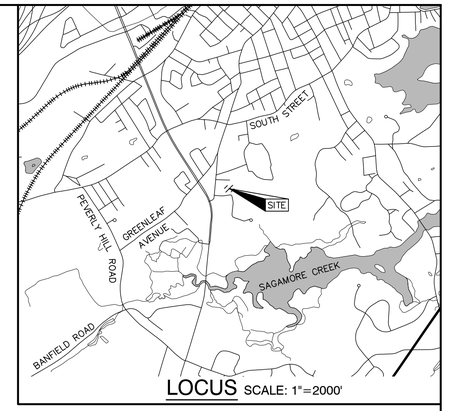
DRAWING No.
CS
SHEET 1 OF17
JBE PROJECT NO. 25071.2

LEDGEWOOD DRIVE, PORTSMOUTH, NH 03801
JBE # 25071.2 REVISION 3, 10/19/26



PLAN REFERENCES:

1. "PLAN OF THE HOMESTEAD FARM OF THE LATE SAMUEL LANGDON, PORTSMOUTH, NH" DRAWN BY A.C. HOYT, DATED MAY 23, 1882, COPIED BY JOHN W. DURGIN, NOVEMBER 7, 1927. R.C.R.D. 0364.
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4. "LAND IN PORTSMOUTH, NH, SAMUEL S. LANGDON TO JOHN L. PHELPS" BY JOHN W. DURGIN, DATED SEPTEMBER 1935. R.C.R.D. 01017.
5. "PLAN OF LOTS OWNED BY BEATRICE L. HOPLEY, LAFAYETTE ROAD, PORTSMOUTH, NH" BY JOHN W. DURGIN, DATED DECEMBER 1, 1957. R.C.R.D. 02632.
6. "PLAN OF LOTS OWNED BY BEATRICE L. HOPLEY, LAFAYETTE ROAD, PORTSMOUTH, NH" BY JOHN W. DURGIN, DATED NOVEMBER 12, 1958. R.C.R.D. 02637.
7. "PLAN OF LAND IN PORTSMOUTH, NH" SURVEYED FORY THOMAS B. KREMP." PREPARED BY TPE ASSOCIATES. DATED FEBRUARY 19, 1982. R.C.R.D. 10640.
8. "EASEMENT PLAN, TAX MAP 229 – LOT 5, KRISTEN M. CHASE TO THE CITY OF PORTSMOUTH" BY GREENMAN–PEDERSON, INC., DATED JANUARY 24, 2018. R.C.R.D. 40627.
9. "CORRECTIVE SEWER EASEMENT PLAN OVER LAND OF KARONA, LLC, 36 ARTWILL AVENUE, PORTSMOUTH, NH, ASSESOR'S PARCEL 229–4, FOR KARONA, LLC" BY JAMES VERRA AND ASSOCIATES, INC., DATED FEBRUARY 9, 2021. R.C.R.D. 42611.



LOCUS SCALE: 1"=2000'

NOTES:

1. THE INTENT OF THIS PLAN IS TO SHOW THE BOUNDARY AND EXISTING CONDITIONS OF PORTSMOUTH TAX MAP 229 LOT 6A.
2. UNDERGROUND FACILITIES, UTILITIES AND STRUCTURES HAVE BEEN SKETCHED IN PER UTILITY LAYOUT PROVIDED BY PORTSMOUTH DEPARTMENT OF PUBLIC WORKS AND THEIR LOCATION MUST BE CONSIDERED APPROXIMATE ONLY. NEITHER JONES & BEACH ENGINEERS, INC., ANY OF THEIR EMPLOYEES, NOR PORTSMOUTH DEPARTMENT OF PUBLIC WORKS TAKE RESPONSIBILITY FOR THE LOCATION OF ANY UNDERGROUND STRUCTURES OR UTILITIES NOT SHOWN THAT MAY EXIST. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE ALL UNDERGROUND STRUCTURES AND/OR UTILITIES LOCATED PRIOR TO EXCAVATION WORK BY CALLING 1–888–DIG–SAFE (1–888–344–7233).
3. BASIS OF BEARING: HORIZONTAL – NH STATE PLANE. VERTICAL – NAVD88.
4. CERTAIN DATA HEREON MAY VARY FROM RECORDED DATA DUE TO DIFFERENCES IN DECLINATION, ORIENTATION, AND METHODS OF MEASUREMENT.
5. ALL BOOK AND PAGE NUMBERS REFER TO THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
6. THE TAX MAP AND LOT NUMBERS ARE BASED ON THE TOWN OF PORTSMOUTH TAX RECORDS AND ARE SUBJECT TO CHANGE.
7. THIS SURVEY IS NOT A CERTIFICATION TO OWNERSHIP OR TITLE OF LANDS SHOWN. OWNERSHIP AND ENCUMBRANCES ARE MATTERS OF TITLE EXAMINATION NOT OF A BOUNDARY SURVEY. THE INTENT OF THIS PLAN IS TO RETRACE THE BOUNDARY LINES OF DEEDS REFERENCED HEREON. OWNERSHIP OF ADJOINING PROPERTIES IS ACCORDING TO ASSESSOR'S RECORDS. THIS PLAN MAY OR MAY NOT INDICATE ALL ENCUMBRANCES EXPRESSED, IMPLIED OR PRESCRIPTIVE.
8. ANY USE OF THIS PLAN AND OR ACCOMPANYING DESCRIPTIONS SHOULD BE DONE WITH LEGAL COUNSEL, TO BE CERTAIN THAT TITLES ARE CLEAR, THAT INFORMATION IS CURRENT, AND THAT ANY NECESSARY CERTIFICATES ARE IN PLACE FOR A PARTICULAR CONVEYANCE, OR OTHER USES.
9. SUBJECT PROPERTY IS NOT LOCATED WITHIN FEDERALLY DESIGNATED FLOOD HAZARD ZONE. REFERENCE FEMA COMMUNITY PANEL NO. 33015C0270F, DATED JANUARY 29, 2021.
10. THE LIMITS OF JURISDICTIONAL WETLANDS WERE DELINEATED BY BRENDEN WALDEN DURING SUMMER, 2025 IN ACCORDANCE WITH THE FOLLOWING GUIDANCE DOCUMENTS:
    a. THE CORPS OF ENGINEERS FEDERAL MANUAL FOR IDENTIFYING AND DELINEATING JURISDICTIONAL WETLANDS.
    b. THE NORTH CENTRAL & NORTHEAST REGIONAL SUPPLEMENT TO THE FEDERAL MANUAL.
    c. THE CURRENT VERSION OF THE FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND, AS PUBLISHED BY THE NEW ENGLAND INTERSTATE WATER POLLUTION CONTROL COMMISSION AND/OR THE CURRENT VERSION OF THE FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, AS PUBLISHED BY THE USDA, NRCS, AS APPROPRIATE.
    d. THE CURRENT NATIONAL LIST OF PLANT SPECIES THAT OCCUR IN WETLANDS, AS PUBLISHED BY THE US FISH AND WILDLIFE SERVICE.
11. SURVEY TIE LINES SHOWN HEREON ARE NOT BOUNDARY LINES. THEY SHOULD ONLY BE USED TO LOCATE THE PARCEL SURVEYED FROM THE FOUND MONUMENTS SHOWN AND LOCATED BY THIS SURVEY.
12. THE OWNER OF TAX MAP 229 LOT 4 CLAIMS THAT THE SEWER SERVICE FOR THAT LOT, AND POSSIBLY OTHER LOTS ALONG ARTWILL AVENUE, RUNS ACROSS THE SURVEYED PARCEL. NO EVIDENCE OF THAT LINE WAS OBSERVED IN THE FIELD, AND INVESTIGATION IS ONGOING AS OF THE DATE OF THIS PLAN.

LEGEND

- PROPERTY LINE
- ABUTTER PROPERTY LINE
- SURVEY TIE LINES
- WETLANDS
- IRON ROD
- DRILL HOLE
- GRANITE BOUND
- TREE LINE
- EDGE OF PAVEMENT
- STONE WALL
- REMNANT STONE WALL
- MAJOR CONTOUR
- MINOR CONTOUR
- DRAIN LINE
- CATCH BASIN
- DRAIN MANHOLE
- WATER LINE
- HYDRANT
- WATER GATE VALVE
- WATER SHUTOFF
- SEWER LINE
- SEWER MANHOLE
- UTILITY POLE
- GAS LINE
- GAS GATE VALVE

J/B STATE PLANE

CERTIFICATION:

PURSUANT TO RSA 676:18–III AND RSA 672:14

I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW WAYS ARE SHOWN.

I CERTIFY THAT THIS PLAT WAS PREPARED UNDER MY DIRECT SUPERVISION, THAT IT IS THE RESULT OF A FIELD SURVEY BY THIS OFFICE AND HAS AN UNADJUSTED LINEAR ERROR OF CLOSURE THAT EXCEED BOTH THE MINIMUM OF 1:10,000 AS DEFINED IN SECTION 503.04 OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES AND THE MINIMUM OF 1:15,000 AS DEFINED IN SECTION 4.2 OF THE N.H.L.S.A. ETHICS AND STANDARDS.

THIS SURVEY CONFORMS TO A CATEGORY 1 CONDITION 1 SURVEY AS DEFINED IN SECTION 4.1 OF THE N.H.L.S.A. ETHICS AND STANDARDS.

STATE OF NEW HAMPSHIRE No. 1030 MATTHEW J. SALVUCCI LICENSED LAND SURVEYOR

SIGNATURE

10/21/26

MATTHEW J. SALVUCCI, LLS 1030 DATE:

ON BEHALF OF JONES & BEACH ENGINEERS, INC.

ZONING SUMMARY		
ZONE	GATEWAY CORRIDOR (G1)	
	REQUIRED	PROPOSED
FRONT SETBACK	10' MIN., 30' MAX	15'
MINIMUM SIDE SETBACK	15'	28.7'
MINIMUM REAR SETBACK	20'	41.3'
MINIMUM WETLAND BUFFER	0 (WETLAND < 10,000 S.F.)	
MINIMUM OPEN SPACE	20% OF LOT	47.8%
MAXIMUM BUILDING COVERAGE	50%	29.3%
MINIMUM STREET FRONTAGE	50'	239.74'
MAXIMUM BUILDING HEIGHT	4 STORIES OR 50'	36'

PROJECT PARCEL
TOWN OF PORTSMOUTH
TAX MAP 229, LOT 6A

APPLICANT
LEDGEWOOD DRIVE LLC
ATTN. BEN MIDDLETON
10 MAIN STREET
NEWFIELDS, NH 03856

TOTAL LOT AREA
43,255 SQ. FT.
0.99 ACRES

3	10/19/26	REVISED PER TAC COMMENTS	DJM
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Drawing Name: 25071.2-PLAN.dwg		

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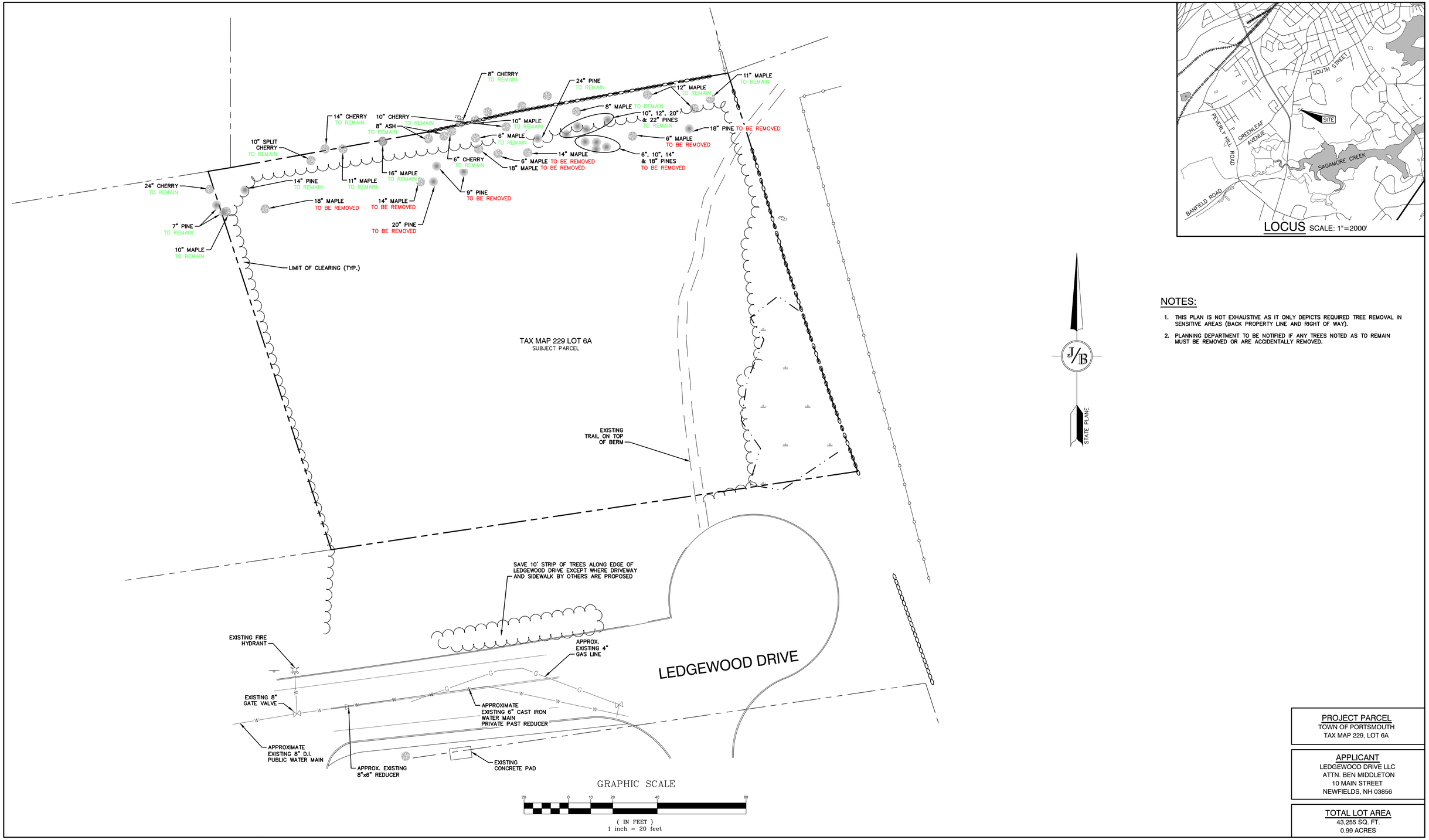
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J/B Jones & Beach Engineers, Inc.
Civil Engineering Services
100 Domain Dr.
Suite 201
Exeter, NH 03833
603-772-4746
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: EXISTING CONDITIONS PLAN

Project: LEDGEWOOD DRIVE LLC
LEDGEWOOD DRIVE, PORTSMOUTH, NH 03801

Owner of Record: ST NICHOLAS GREEK ORTHODOX CHURCH
40 ANDREW JARVIS DRIVE, PORTSMOUTH, NH 03801

DRAWING No.
C1
SHEET 2 OF17
JBE PROJECT NO. 25071.2



NOTES:

1. THIS PLAN IS NOT EXHAUSTIVE AS IT ONLY DEPICTS REQUIRED TREE REMOVAL IN SENSITIVE AREAS (BACK PROPERTY LINE AND RIGHT OF WAY).
2. PLANNING DEPARTMENT TO BE NOTIFIED IF ANY TREES NOTED AS TO REMAIN MUST BE REMOVED OR ARE ACCIDENTALLY REMOVED.

PROJECT PARCEL
TOWN OF PORTSMOUTH
TAX MAP 229, LOT 6A

APPLICANT
LEDGEWOOD DRIVE LLC
ATTN. BEN MIDDLETON
10 MAIN STREET
NEWFIELDS, NH 03856

TOTAL LOT AREA
43,255 SQ. FT.
0.99 ACRES

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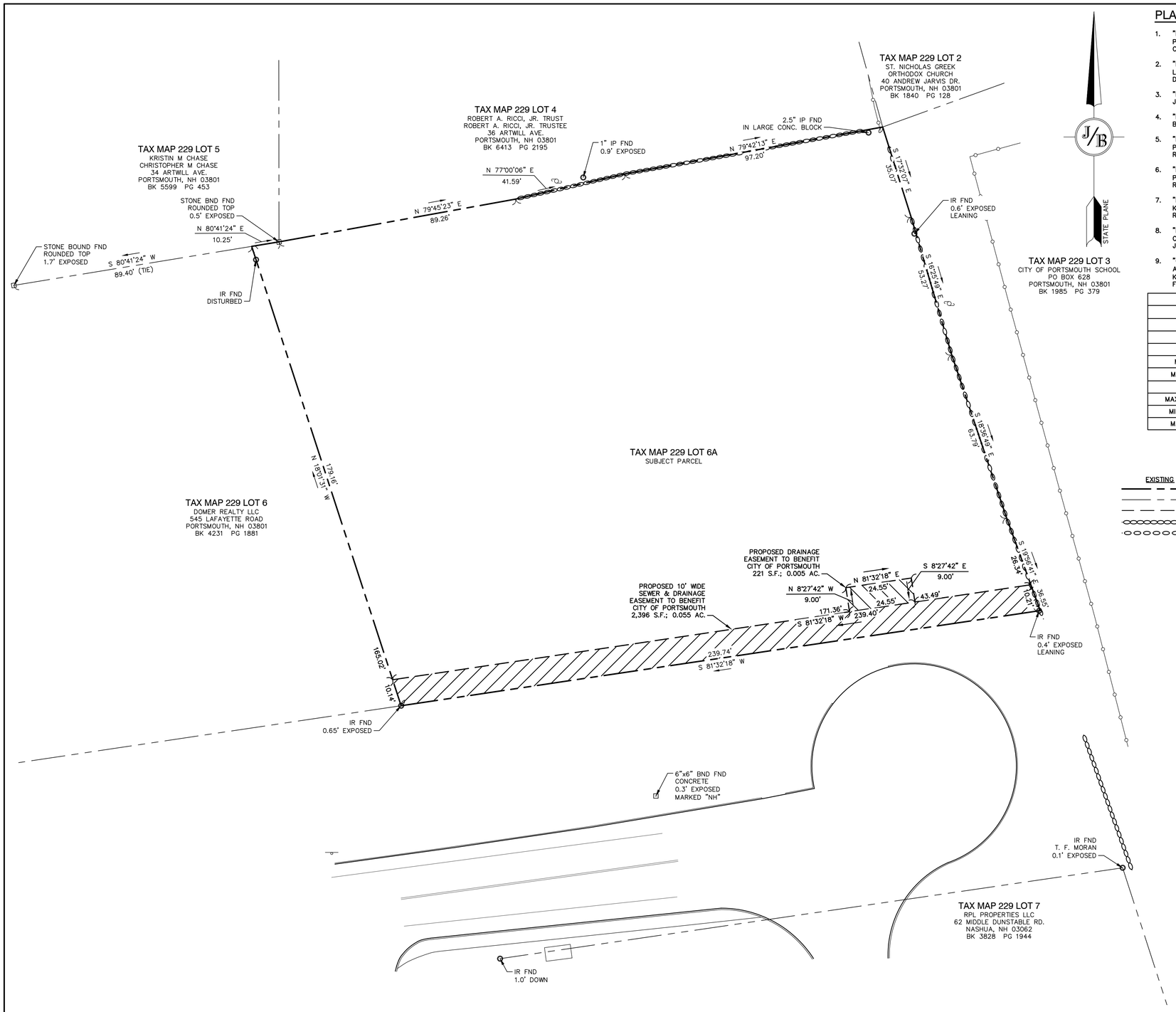
STATE OF NEW HAMPSHIRE
DANIEL JAMES MEDITZ
No.18152
LICENSED PROFESSIONAL ENGINEER
10/20/2026

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J/B Jones & Beach Engineers, Inc.
Civil Engineering Services
100 Domain Dr. Suite 201 Exeter, NH 03833
603-772-4746
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: TREE REMOVAL PLAN
Project: LEDGEWOOD DRIVE LLC
LEDGEWOOD DRIVE, PORTSMOUTH, NH 03801
Owner of Record: ST NICHOLAS GREEK ORTHODOX CHURCH
40 ANDREW JARVIS DRIVE, PORTSMOUTH, NH 03801

DRAWING No.
TR1
SHEET 3 OF17
JBE PROJECT NO. 25071.2



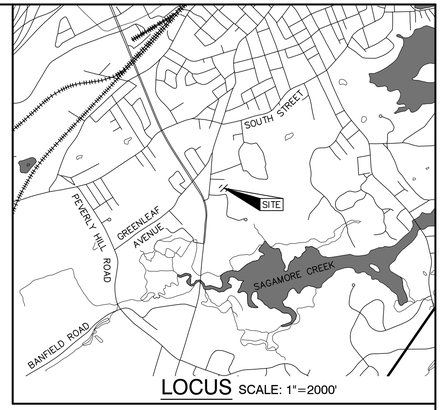
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4. "LAND IN PORTSMOUTH, NH, SAMUEL S. LANGDON TO JOHN L. PHELPS" BY JOHN W. DURGIN, DATED SEPTEMBER 1935. R.C.R.D. 01017.
5. "PLAN OF LOTS OWNED BY BEATRICE L. HOPLEY, LAFAYETTE ROAD, PORTSMOUTH, NH" BY JOHN W. DURGIN, DATED DECEMBER 1, 1957. R.C.R.D. 02632.
6. "PLAN OF LOTS OWNED BY BEATRICE L. HOPLEY, LAFAYETTE ROAD, PORTSMOUTH, NH" BY JOHN W. DURGIN, DATED NOVEMBER 12, 1958. R.C.R.D. 02637.
7. "PLAN OF LAND IN PORTSMOUTH, NH" SURVEYED FORY THOMAS B. KREMP." PREPARED BY TPE ASSOCIATES. DATED FEBRUARY 19, 1982. R.C.R.D. 10640.
8. "EASEMENT PLAN, TAX MAP 229 – LOT 5, KRISTEN M. CHASE TO THE CITY OF PORTSMOUTH" BY GREENMAN–PEDERSON, INC., DATED JANUARY 24, 2018. R.C.R.D. 40627.
9. "CORRECTIVE SEWER EASEMENT PLAN OVER LAND OF KARONA, LLC, 36 ARTWILL AVENUE, PORTSMOUTH, NH, ASSESOR'S PARCEL 229–4, FOR KARONA, LLC" BY JAMES VERRA AND ASSOCIATES, INC., DATED FEBRUARY 9, 2021. R.C.R.D. 42611.

ZONING SUMMARY	
ZONE	GATEWAY CORRIDOR (G1)
	REQUIRED
FRONT SETBACK	10' MIN., 30' MAX
MINIMUM SIDE SETBACK	15'
MINIMUM REAR SETBACK	20'
MINIMUM WETLAND BUFFER	0 (WETLAND < 10,000 S.F.)
MINIMUM OPEN SPACE	20% OF LOT
MAXIMUM BUILDING COVERAGE	50%
MINIMUM STREET FRONTAGE	50'
MAXIMUM BUILDING HEIGHT	4 STORIES OR 50'

LEGEND

EXISTING	PROPOSED	
		PROPERTY LINE
		ABUTTER PROPERTY LINE
		EASEMENT
		STONE WALL
		REMNANT STONE WALL



LOCUS SCALE: 1"=2000'

NOTES:

1. THE INTENT OF THIS PLAN IS TO SHOW A PROPOSED 10' SEWER EASEMENT ALONG THE FRONTAGE OF PORTSMOUTH TAX MAP 229, LOT 6A.
2. SUBJECT PROPERTY IS NOT LOCATED WITHIN FEDERALLY DESIGNATED FLOOD HAZARD ZONE. REFERENCE FEMA COMMUNITY PANEL NO. 33015C0270F, DATED JANUARY 29, 2021
3. WETLANDS WERE DELINEATED BY BRENDEN WALDEN DURING SUMMER 2025, AND LOCATED BY THIS OFFICE.
4. ALL BOOK AND PAGE NUMBERS REFER TO THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
5. THE TAX MAP AND LOT NUMBERS AND ABUTTING OWNERS ARE BASED ON THE CITY OF PORTSMOUTH TAX RECORDS AND ARE SUBJECT TO CHANGE.
6. RESEARCH WAS PERFORMED AT THE CITY OF PORTSMOUTH ASSESSORS OFFICE AND THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
7. THIS SURVEY IS NOT A CERTIFICATION TO OWNERSHIP OR TITLE OF LANDS SHOWN. OWNERSHIP AND ENCUMBRANCES ARE MATTERS OF TITLE EXAMINATION NOT OF A BOUNDARY SURVEY. THE INTENT OF THIS PLAN IS TO RETRACE THE BOUNDARY LINES OF DEEDS REFERENCED HEREON. OWNERSHIP OF ADJOINING PROPERTIES IS ACCORDING TO ASSESSOR'S RECORDS. THIS PLAN MAY OR MAY NOT INDICATE ALL ENCUMBRANCES EXPRESSED, IMPLIED OR PRESCRIPTIVE.
8. ANY USE OF THIS PLAN AND OR ACCOMPANYING DESCRIPTIONS SHOULD BE DONE WITH LEGAL COUNSEL TO BE CERTAIN THAT TITLES ARE CLEAR, THAT INFORMATION IS CURRENT, AND THAT ANY NECESSARY CERTIFICATES ARE IN PLACE FOR A PARTICULAR CONVEYANCE, OR OTHER USES.
9. SURVEY TIE LINES SHOWN HEREON ARE NOT BOUNDARY LINES. THEY SHOULD ONLY BE USED TO LOCATE THE PARCEL SURVEYED FROM THE FOUND MONUMENTS SHOWN AND LOCATED BY THIS SURVEY.

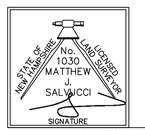
CERTIFICATION:

PURSUANT TO RSA 676:18–III AND RSA 672:14

I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW WAYS ARE SHOWN.

I CERTIFY THAT THIS PLAT WAS PREPARED UNDER MY DIRECT SUPERVISION, THAT IT IS THE RESULT OF A FIELD SURVEY BY THIS OFFICE AND HAS AN UNADJUSTED LINEAR ERROR OF CLOSURE THAT EXCEED BOTH THE MINIMUM OF 1:10,000 AS DEFINED IN SECTION 503.04 OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES AND THE MINIMUM OF 1:15,000 AS DEFINED IN SECTION 4.2 OF THE N.H.L.S.A. ETHICS AND STANDARDS.

THIS SURVEY CONFORMS TO A CATEGORY 1 CONDITION 1 SURVEY AS DEFINED IN SECTION 4.1 OF THE N.H.L.S.A. ETHICS AND STANDARDS.



10/21/26

MATTHEW J. SALVUCCI, LLS 1030 DATE:

ON BEHALF OF JONES & BEACH ENGINEERS, INC.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 feet

CITY OF PORTSMOUTH PLANNING BOARD

CHAIRPERSON DATE

PROJECT PARCEL
TOWN OF PORTSMOUTH
TAX MAP 229, LOT 6A

APPLICANT
LEDGEWOOD DRIVE LLC
ATTN. BEN MIDDLETON
10 MAIN STREET
NEWFIELDS, NH 03856

TOTAL LOT AREA
43,255 SQ. FT.
0.99 ACRES

Design: DJM	Draft: TCR	Date: 01/08/26
Checked: EMP	Scale: AS NOTED	Project No.: 25071.2
Drawing Name: 25071.2-PLAN.dwg		

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM JONES & BEACH ENGINEERS, INC. (JBE). ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO JBE.

REV.	DATE	REVISION	BY
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2	09/22/26	REVISED PER TAC COMMENTS	DJM
1	09/01/26	UPDATED TITLE BLOCK	DJM
0	08/17/26	ISSUED FOR REVIEW	DJM

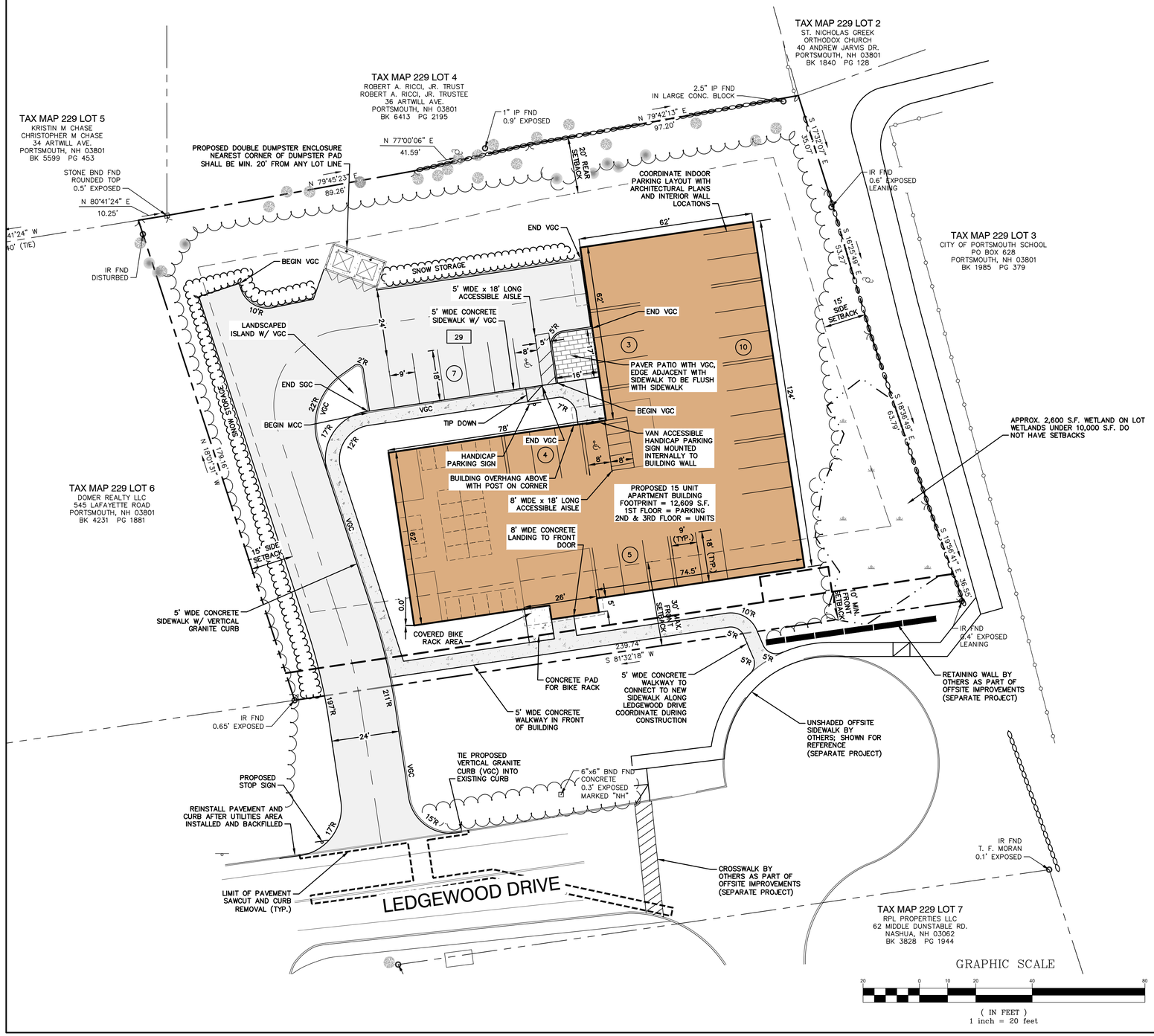
Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
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100 Domain Drive
Suite 201
Exeter, NH 03833
603-772-4746
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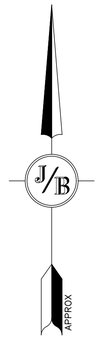
Plan Name: EASEMENT PLAN
MAP 229, LOT 6A

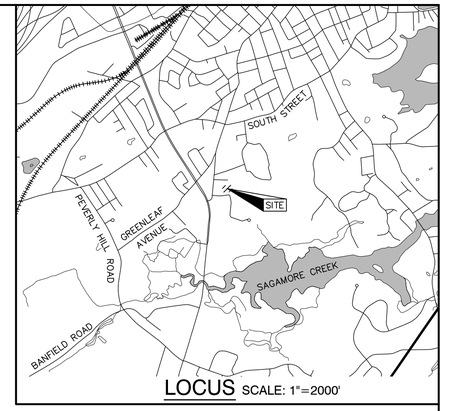
Project: LEDGEWOOD DRIVE LLC
LEDGEWOOD DRIVE, PORTSMOUTH, NH 03801

Owner of Record: ST NICHOLAS GREEK ORTHODOX CHURCH
40 ANDREW JARVIS DRIVE, PORTSMOUTH, NH 03801

DRAWING No.
A1
SHEET 4 OF17
JBE PROJECT NO. 25071.2







LOCUS SCALE: 1"=2000'

SITE NOTES:

1. THE INTENT OF THIS PLAN IS TO CONSTRUCT A 15-UNIT APARTMENT BUILDING WITH ASSOCIATED PARKING.
2. PARKING CALCULATIONS:
   .5 SPACES PER UNIT FOR UNITS < 500 S.F.
   1 SPACE PER UNIT FOR UNITS 500-750 S.F.
   1.3 SPACES PER UNIT FOR UNITS > 750 S.F.
   15 UNITS > 750 S.F.
   15 UNITS * 1.3 SPACES PER UNIT = 20 SPACES
   20 PARKING SPACES REQUIRED
   29 PARKING SPACES PROPOSED
3. THIS PLAN SET HAS BEEN PREPARED BY JONES & BEACH ENGINEERS, INC., FOR MUNICIPAL AND STATE APPROVALS AND FOR CONSTRUCTION BASED ON DATA OBTAINED FROM ON-SITE FIELD SURVEY AND EXISTING MUNICIPAL RECORDS. THROUGHOUT THE CONSTRUCTION PROCESS, THE CONTRACTOR SHALL INFORM THE ENGINEER IMMEDIATELY OF ANY FIELD DISCREPANCY FROM DATA AS SHOWN ON THE DESIGN PLANS, INCLUDING ANY UNFORESEEN CONDITIONS, SUBSURFACE OR OTHERWISE, FOR EVALUATION AND RECOMMENDATIONS. ANY CONTRADICTION BETWEEN ITEMS ON THIS PLAN/PLAN SET, OR BETWEEN THE PLANS AND ON-SITE CONDITIONS, MUST BE RESOLVED BEFORE RELATED CONSTRUCTION HAS BEEN INITIATED. CONTRACTOR TO ALWAYS CONTACT DIG SAFE PRIOR TO DIGGING ONSITE OR OFFSITE TO ENSURE SAFETY AND OBEY THE LAW.
4. ALL CONSTRUCTION SHALL CONFORM TO CITY STANDARDS AND REGULATIONS, AND NHDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, WHICHEVER IS MORE STRINGENT.
5. SUBJECT PROPERTY IS NOT LOCATED WITHIN FEDERALLY DESIGNATED FLOOD HAZARD ZONE. REFERENCE FEMA COMMUNITY PANEL NO. 33015C0270F, DATED JANUARY 29, 2021.
6. LANDOWNERS ARE RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL WETLAND REGULATIONS, INCLUDING PERMITTING REQUIRED UNDER THESE REGULATIONS.
7. ALL CONSTRUCTION ACTIVITIES SHALL BE PERFORMED IN ACCORDANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN (S.W.P.P.P.). THIS DOCUMENT IS TO BE KEPT ONSITE AT ALL TIMES AND UPDATED AS REQUIRED.
8. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER, ARCHITECT AND/OR OWNER, IN ORDER TO OBTAIN AND/OR PAY ALL THE NECESSARY LOCAL PERMITS, FEES AND BONDS.
9. ALL PROPOSED SIGNAGE SHALL CONFORM WITH THE CITY ZONING REGULATIONS, UNLESS A VARIANCE IS OTHERWISE REQUESTED.
10. ALL SIGNAGE AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.) AND NHDOT STANDARDS AND SPECIFICATIONS (NON-REFLECTORIZED PAVEMENT MARKINGS), UNLESS OTHERWISE NOTED.
11. ALL PARKING STALLS SHALL BE SEPARATED USING 4" WIDE SOLID STRIPES. STRIPING SHALL BE 100% ACRYLIC TYPE, LOW VOC, FAST DRYING, IN A COLOR OF WHITE.
12. ALL STOP BARS SHALL BE 18" IN WIDTH IN A COLOR OF WHITE; ALL TRAFFIC ARROWS SHALL BE PAINTED IN A COLOR OF WHITE.
13. ALL BUILDING DIMENSIONS SHALL BE VERIFIED WITH THE ARCHITECTURAL AND STRUCTURAL PLANS PROVIDED BY THE OWNER. ANY DISCREPANCIES SHSALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND OWNER PRIOR TO THE START OF CONSTRUCTION. BUILDING DIMENSIONS AND AREAS TO BE TO OUTSIDE OF MASONRY, UNLESS OTHERWISE NOTED.
14. SNOW TO BE STORED AT EDGE OF PAVEMENT AND IN AREAS SHOWN ON THE PLANS.
15. ALL CONSTRUCTION ACTIVITIES SHALL CONFORM TO LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) RULES AND REGULATIONS.
16. ALL PRECAST CONCRETE PRODUCTS WILL BE SOURCED FROM MANUFACTURING FACILITIES IN COMPLIANCE WITH THE NATIONAL PRECAST CONCRETE ASSOCIATION (NPCA) PLANT CERTIFICATION PROGRAM. EVIDENCE OF COMPLIANCE WILL BE PROVIDED FOR THE CURRENT CALENDAR YEAR THE PRODUCTS WERE MANUFACTURED WITHIN.
17. AN ACCESS EASEMENT SHALL BE GRANTED TO THE CITY OF PORTSMOUTH FOR ACCESS AND LEAK DETECTION OF THE WATER MAIN, SHUTOFFS, AND METERS ON THE PROPERTY. EASEMENT DESCRIPTION MUST BE APPROVED BY THE CITY'S LEGAL DEPARTMENT AND ACCEPTED BY THE CITY COUNCIL.
18. ALL IMPROVEMENTS SHOWN ON THIS SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THE SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE PORTSMOUTH PLANNING DIRECTOR.
19. ALL CONDITIONS ON THIS PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.
20. THE SUBJECT PARCEL IS NOT LOCATED WITHIN A WELLHEAD PROTECTION AREA OR GROUNDWATER PROTECTION ZONE PER NHDES ONESTOP DATA.

ZONING SUMMARY		
ZONE	GATEWAY CORRIDOR (G1)	
	REQUIRED	PROPOSED
FRONT SETBACK	10' MIN., 30' MAX	14' TO OVERHANG, 15' TO WALL
MINIMUM SIDE SETBACK	15'	28.7'
MINIMUM REAR SETBACK	20'	39.2'
MINIMUM WETLAND BUFFER	0 (WETLAND < 10,000 S.F.)	
MINIMUM OPEN SPACE	20% OF LOT	47.6%
MAXIMUM BUILDING COVERAGE	50%	29.2%
MINIMUM STREET FRONTAGE	50'	239.74'
MAXIMUM BUILDING HEIGHT	4 STORIES OR 50'	36'

PROJECT PARCEL
TOWN OF PORTSMOUTH
TAX MAP 229, LOT 6A

APPLICANT
LEDGEWOOD DRIVE LLC
ATTN. BEN MIDDLETON
10 MAIN STREET
NEWFIELDS, NH 03856

TOTAL LOT AREA
43,255 SQ. FT.
0.99 ACRES

CITY OF PORTSMOUTH PLANNING BOARD

CHAIRPERSON _____ DATE _____

Design: DJM	Draft: TCR	Date: 01/08/26	
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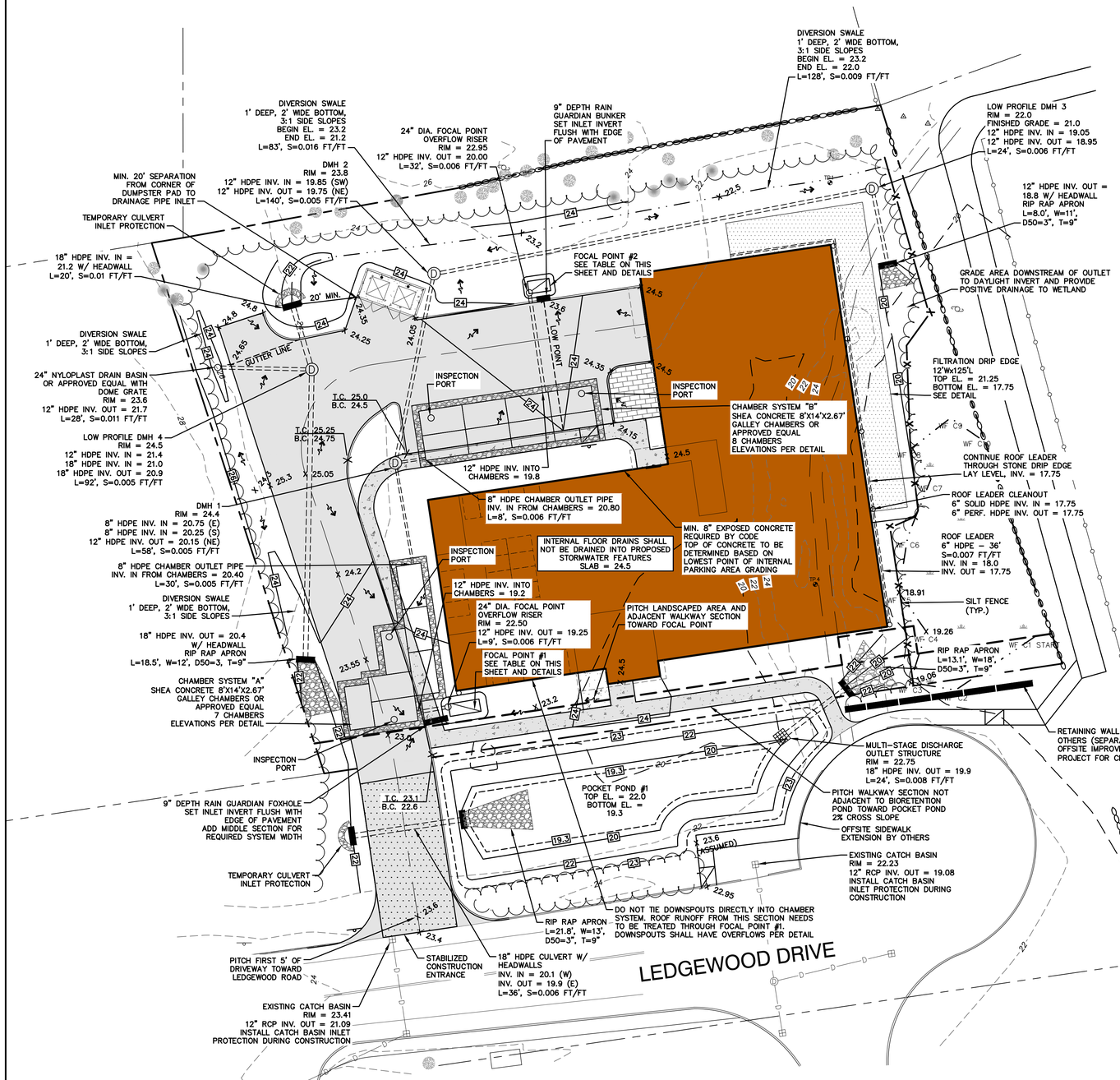
STATE OF NEW HAMPSHIRE - DANIEL JAMES MEDITZ No.18152 - LICENSED PROFESSIONAL ENGINEER
10/20/2026

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REV.	DATE	REVISION	BY

Designed and Produced in NH
Jones & Beach Engineers, Inc.
Civil Engineering Services
100 Domain Dr.
Suite 201
Exeter, NH 03833
603-772-4746
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	SITE PLAN MAP 229, LOT 6A
Project:	LEDGEWOOD DRIVE LLC LEDGEWOOD DRIVE, PORTSMOUTH, NH 03801
Owner of Record:	ST NICHOLAS GREEK ORTHODOX CHURCH 40 ANDREW JARVIS DRIVE, PORTSMOUTH, NH 03801

DRAWING No.
C2
SHEET 5 OF17
JBE PROJECT NO. 25071.2



GRADING AND DRAINAGE NOTES:

1. UNDERGROUND FACILITIES, UTILITIES AND STRUCTURES HAVE BEEN PLOTTED FROM FIELD OBSERVATION AND THEIR LOCATION MUST BE CONSIDERED APPROXIMATE ONLY. NEITHER JONES & BEACH ENGINEERS, INC., NOR ANY OF THEIR EMPLOYEES TAKE RESPONSIBILITY FOR THE LOCATION OF ANY UNDERGROUND STRUCTURES AND/OR UTILITIES NOT SHOWN THAT MAY EXIST. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE ALL UNDERGROUND STRUCTURES AND/OR UTILITIES LOCATED PRIOR TO EXCAVATION WORK BY CALLING 888-DIG-SAFE (888-344-7233).
2. ALL BENCHMARKS AND TOPOGRAPHY SHALL BE FIELD VERIFIED BY THE CONTRACTOR.
3. SITE GRADING SHALL NOT PROCEED UNTIL EROSION CONTROL MEASURES HAVE BEEN INSTALLED. SEE CONSTRUCTION SEQUENCE ON SHEET E1.
4. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR IS REQUIRED TO HAVE THE PROJECT'S LAND SURVEYOR STAKE OR FLAG CLEARING LIMITS. A MINIMUM OF 48 HOURS NOTICE IS REQUIRED.
5. ALL ROOF DRAINS FROM BUILDING SHALL END 5' OUTSIDE THE BUILDING LIMITS AS SHOWN ON PLAN AND SHALL BE PROVIDED WITH A TEMPORARY PLUG AND WITNESS AT THE END. ALL EXTERIOR ROOF DOWNSPOUTS ARE TO BE INSTALLED WITH OVERFLOW DEVICES.
6. ALL SWALES AND DETENTION PONDS ARE TO BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
7. PROPOSED RIM ELEVATIONS OF DRAINAGE STRUCTURES ARE APPROXIMATE. FINAL ELEVATIONS ARE TO BE SET FLUSH WITH FINISH GRADES.
8. ALL SWALES AND ANY SLOPES GREATER THAN 3:1 SHALL BE STABILIZED WITH NORTH AMERICAN GREEN S150 EROSION CONTROL BLANKETS (OR AN EQUIVALENT APPROVED IN WRITING BY THE ENGINEER), UNLESS OTHERWISE SPECIFIED.
9. ALL DRAINAGE AND SANITARY STRUCTURE INTERIOR DIAMETERS (4' MIN) SHALL BE DETERMINED BY THE MANUFACTURER BASED ON THE PIPE CONFIGURATIONS SHOWN ON THESE PLANS. CATCH BASINS SHALL HAVE 3' DEEP SUMPS WITH GREASE HOODS, UNLESS OTHERWISE NOTED.
10. ALL DRAINAGE STRUCTURES SHALL BE PRECAST, UNLESS OTHERWISE SPECIFIED. SEE DETAIL SHEETS FOR DRAINAGE DETAILS.
11. ALL DRAINAGE STRUCTURES AND STORMWATER PIPES SHALL MEET HEAVY DUTY TRAFFIC H20 LOADING AND SHALL BE INSTALLED ACCORDINGLY.
12. IMMEDIATELY APPLY AND COMPACT STONE BASE FOR BUILDING PAD TO +/-½" PRIOR TO EXCAVATING INTERIOR AND PERIMETER FOOTINGS.
13. IN AREAS WHERE CONSTRUCTION IS PROPOSED ADJACENT TO ABUTTING PROPERTIES, THE CONTRACTOR SHALL INSTALL ORANGE CONSTRUCTION FENCING ALONG PROPERTY LINES IN ALL AREAS WHERE SILT FENCING IS NOT REQUIRED.
14. ALL DRAINAGE PIPE SHALL BE NON-PERFORATED ADS N-12 OR APPROVED EQUAL, UNLESS OTHERWISE SPECIFIED.
15. STONE INLET PROTECTION SHALL BE PLACED AT EXISTING CATCH BASINS. SEE DETAIL WITHIN THE DETAIL SHEETS.
16. LAND DISTURBING ACTIVITIES SHALL NOT COMMENCE UNTIL APPROVAL TO DO SO HAS BEEN RECEIVED BY ALL GOVERNING AUTHORITIES. THE GENERAL CONTRACTOR SHALL STRICTLY ADHERE TO THE EPA SWPPP DURING CONSTRUCTION OPERATIONS.
17. ALL EXPOSED AREAS SHALL BE SEEDED AS SPECIFIED WITHIN 3 DAYS OF FINAL GRADING AND ANYTIME CONSTRUCTION STOPS FOR LONGER THAN 3 DAYS.
18. MAINTAIN EROSION CONTROL MEASURES AFTER EACH RAIN EVENT OF 0.25" OR GREATER IN A 24 HOUR PERIOD AND AT LEAST ONCE A WEEK.
19. THIS PLAN SHALL NOT BE CONSIDERED ALL INCLUSIVE, AS THE GENERAL CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SEDIMENT FROM LEAVING THE SITE.
20. CONSTRUCTION VEHICLES SHALL UTILIZE THE STABILIZED CONSTRUCTION ENTRANCE TO THE EXTENT POSSIBLE THROUGHOUT CONSTRUCTION.
21. IF INSTALLATION OF STORM DRAINAGE SYSTEM SHOULD BE INTERRUPTED BY WEATHER OR NIGHTFALL, THE PIPE ENDS SHALL BE COVERED WITH FILTER FABRIC.
22. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO TAKE WHATEVER MEANS NECESSARY TO ESTABLISH PERMANENT SOIL STABILIZATION.
23. SEDIMENT SHALL BE REMOVED FROM ALL SEDIMENT BASINS BEFORE THEY ARE 25% FULL.
24. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH PROJECT SPECIFICATIONS.
25. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED, IF DEEMED NECESSARY BY ON-SITE INSPECTION BY ENGINEER AND/OR REGULATORY OFFICIALS.
26. SEE ALSO EROSION AND SEDIMENT CONTROL SPECIFICATIONS ON SHEETS E1-E2.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 feet

FOCAL POINT SCHEDULE

FOCAL POINT	BOTTOM SIZE	SIDE SLOPES	BERM EL.	BOTTOM OF SURFACE PONDING	BOTTOM OF FILTER COURSE	R-TANK UNDERDRAIN INVERT
1	4' X 10'	3:1	22.75	22.00	20.25	19.25
2	4' X 7'	3:1	23.25	22.75	21.00	20.00

PROJECT PARCEL
TOWN OF PORTSMOUTH
TAX MAP 229, LOT 6A

APPLICANT
LEDGEWOOD DRIVE LLC
ATTN. BEN MIDDLETON
10 MAIN STREET
NEWFIELDS, NH 03856

TOTAL LOT AREA
43,255 SQ. FT.
0.99 ACRES

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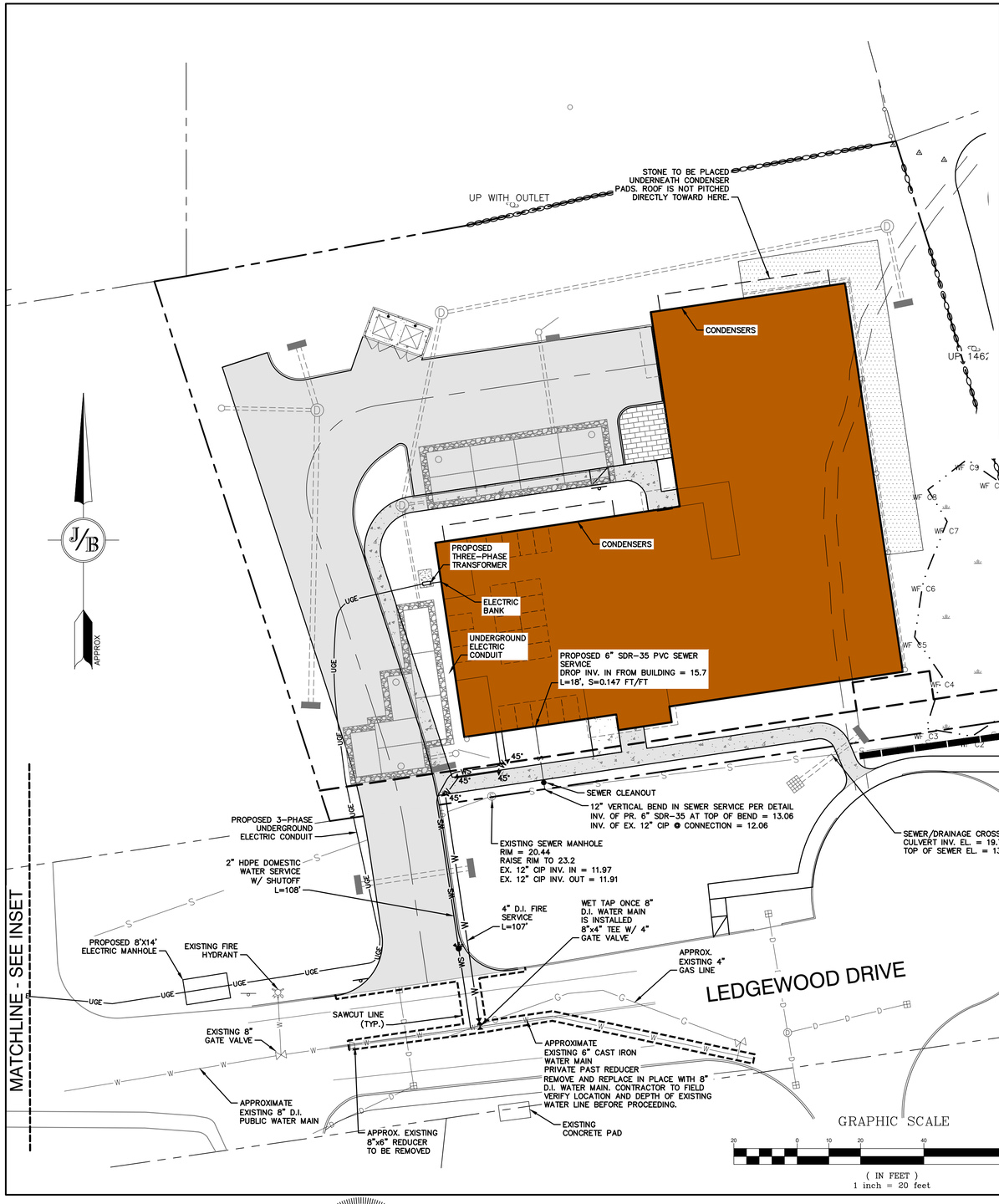
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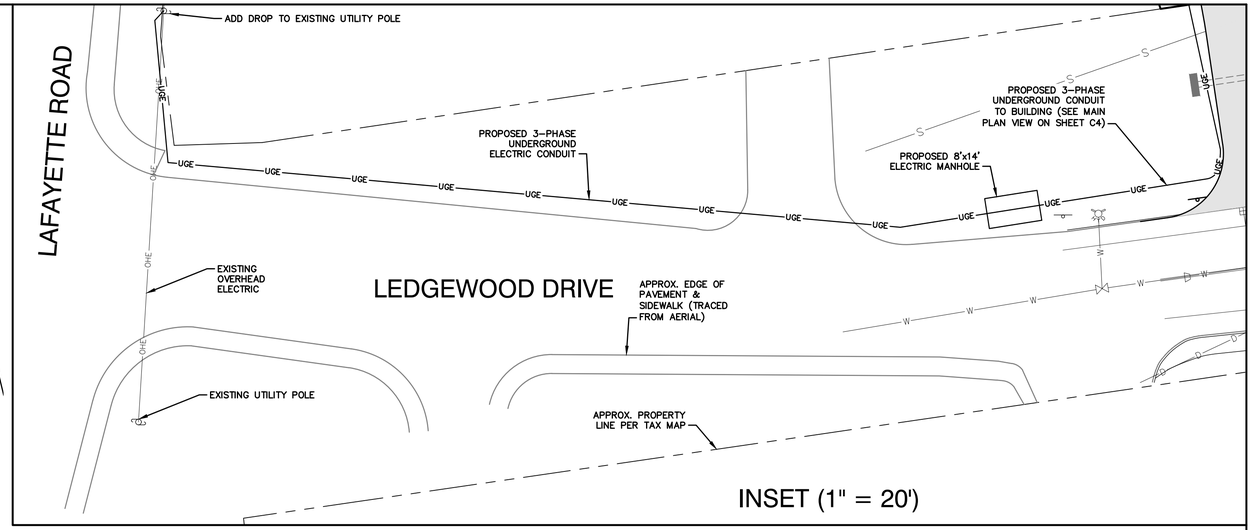
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Civil Engineering Services
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603-772-4746
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	GRADING AND DRAINAGE PLAN
Project:	LEDGEWOOD DRIVE LLC LEDGEWOOD DRIVE, PORTSMOUTH, NH 03801
Owner of Record:	ST NICHOLAS GREEK ORTHODOX CHURCH 40 ANDREW JARVIS DRIVE, PORTSMOUTH, NH 03801

DRAWING No.
C3
SHEET 6 OF17
JBE PROJECT NO. 25071.2





UTILITY NOTES:

1. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER, ARCHITECT AND/OR OWNER, IN ORDER TO OBTAIN AND/OR PAY ALL THE NECESSARY LOCAL PERMITS, CONNECTION FEES AND BONDS.
2. THE CONTRACTOR SHALL PROVIDE A MINIMUM NOTICE OF FOURTEEN (14) DAYS TO ALL CORPORATIONS, COMPANIES AND/OR LOCAL AUTHORITIES OWNING OR HAVING A JURISDICTION OVER UTILITIES RUNNING TO, THROUGH OR ACROSS PROJECT AREAS PRIOR TO DEMOLITION AND/OR CONSTRUCTION ACTIVITIES.
3. THE LOCATION, SIZE, DEPTH AND SPECIFICATIONS FOR CONSTRUCTION OF PROPOSED PRIVATE UTILITY SERVICES SHALL BE TO THE STANDARDS AND REQUIREMENTS OF THE RESPECTIVE UTILITY COMPANY (ELECTRIC, TELEPHONE, CABLE TELEVISION, FIRE ALARM, WATER, SEWER, ETC.).
4. A PRE-CONSTRUCTION MEETING SHALL BE HELD WITH THE OWNER, ENGINEER, ARCHITECT, CONTRACTOR, LOCAL OFFICIALS, AND ALL PROJECT-RELATED UTILITY COMPANIES (PUBLIC AND PRIVATE) PRIOR TO START OF CONSTRUCTION.
5. ALL CONSTRUCTION SHALL CONFORM TO THE CITY STANDARDS AND REGULATIONS, AND NHDES STANDARDS AND SPECIFICATIONS, WHICHEVER ARE MORE STRINGENT, UNLESS OTHERWISE SPECIFIED.
6. ALL CONSTRUCTION ACTIVITIES SHALL CONFORM TO LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) RULES AND REGULATIONS.
7. BUILDING TO BE SERVICED BY UNDERGROUND UTILITIES UNLESS OTHERWISE NOTED.
8. THE CONTRACTOR IS TO VERIFY LOCATION AND DEPTH OF ALL EXISTING UTILITY STUBS PRIOR TO CONSTRUCTION AND DISCONNECT ALL EXISTING SERVICE CONNECTIONS AT THEIR RESPECTIVE MAINS IN ACCORDANCE WITH THE RESPECTIVE UTILITY COMPANY'S STANDARDS AND SPECIFICATIONS. ENGINEER TO BE NOTIFIED.
9. AS-BUILT PLANS SHALL BE SUBMITTED TO DEPARTMENT OF PUBLIC WORKS.
10. INVERTS AND SHELVES: MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT, CONSTRUCTED TO CONFORM TO THE SIZE OF PIPE AND FLOW AT CHANGES IN DIRECTION. THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST RADIUS POSSIBLE TANGENT TO THE CENTER LINE OF THE SEWER PIPES. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE THROUGH CHANNEL UNDERLAYMENT OF INVERT, AND SHELF SHALL CONSIST OF BRICK MASONRY.
11. FRAMES AND COVERS: MANHOLE FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN AND PROVIDE A 30 INCH DIA. CLEAR OPENING. THE WORD "SEWER" OR "DRAIN", AS APPLICABLE, SHALL BE CAST INTO THE CENTER OF THE UPPER FACE OF EACH COVER WITH RAISED, 3" LETTERS.
12. SHALLOW MANHOLE: IN LIEU OF A CONE SECTION, WHEN MANHOLE DEPTH IS LESS THAN 6 FEET, A REINFORCED CONCRETE SLAB COVER MAY BE USED HAVING AN ECCENTRIC ENTRANCE OPENING AND CAPABLE OF SUPPORTING H20 LOADS.
13. CONTRACTOR SHALL PLACE 2" WIDE METAL WIRE IMPREGNATED RED PLASTIC WARNING TAPE OVER ENTIRE LENGTH OF ALL GRAVITY SEWERS, SERVICES, AND FORCE MAINS.
14. SANITARY SEWER FLOW CALCULATIONS:
    15 UNITS, AVERAGE OF 2 PEOPLE PER UNIT ASSUMED
    77 GALLONS PER DAY PER CAPITA IN TWO-PERSON HOUSEHOLD ACCORDING TO METCALF & EDDY TABLE 3-2
    (77 GPD/PERSON)*(2 PEOPLE PER UNIT)*(15 UNITS) = 2,310 GPD
15. ALL SANITARY STRUCTURE INTERIOR DIAMETERS (4' MIN) SHALL BE DETERMINED BY THE MANUFACTURER BASED ON THE PIPE CONFIGURATIONS SHOWN ON THESE PLANS.
16. PROPOSED RIM ELEVATIONS OF DRAINAGE AND SANITARY MANHOLES ARE APPROXIMATE. FINAL ELEVATIONS ARE TO BE SET FLUSH WITH FINISH GRADES. ADJUST ALL OTHER RIM ELEVATIONS OF MANHOLES, WATER GATES, AND OTHER UTILITY STRUCTURES TO FINISHED GRADE AS SHOWN ON THE GRADING AND DRAINAGE PLAN.
17. ALL WATER MAINS AND SERVICE PIPES SHALL HAVE A MINIMUM 12" VERTICAL AND 24" HORIZONTAL SEPARATION TO MANHOLES, OR CONTRACTOR SHALL INSTALL BOARD INSULATION FOR FREEZING PROTECTION.
18. WATER MAINS SHALL BE HYDROSTATICALLY PRESSURE TESTED FOR LEAKAGE PRIOR TO ACCEPTANCE. WATERMAINS SHALL BE TESTED AT 1.5 TIMES THE WORKING PRESSURE OR 150 PSI, WHICH EVER IS GREATER. TESTING SHALL BE CONDUCTED IN ACCORDANCE WITH SECTION 4 OF AWWA STANDARD C 600. WATERMAINS SHALL BE DISINFECTED AFTER THE ACCEPTANCE OF THE PRESSURE AND LEAKAGE TESTS ACCORDING TO AWWA STANDARD C 651.
19. IF THE BUILDING IS REQUIRED TO HAVE A SPRINKLER SYSTEM, A PRE-CONSTRUCTION MEETING SHALL BE HELD BETWEEN THE CONTRACTOR, OWNER, ARCHITECT AND THE LOCAL FIRE DEPARTMENT PRIOR TO THE INSTALLATION.
20. THRUST BLOCKS SHALL BE PROVIDED AT ALL WATER MAIN BENDS, TEES, MECHANICAL JOINTS AND FIRE HYDRANTS.
21. DIMENSIONS ARE SHOWN TO CENTERLINE OF PIPE OR FITTING.
22. THE CONTRACTOR SHALL HAVE THE APPROVAL OF ALL GOVERNING AGENCIES HAVING JURISDICTION OVER FIRE PROTECTION SYSTEM PRIOR TO INSTALLATION.
23. CONTRACTOR TO FURNISH SHOP DRAWINGS FOR UTILITY RELATED ITEMS TO ENSURE CONFORMANCE WITH THE PLANS AND SPECIFICATIONS. SHOP DRAWINGS SHALL BE SENT TO THE DESIGN ENGINEER FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.
24. EXISTING UTILITIES SHALL BE DIGSAFED BEFORE CONSTRUCTION.
25. WATER SERVICES SHALL HAVE TESTABLE BACKFLOW PREVENTERS AT THE ENTRANCE TO THE BUILDING.
26. ALL GRAVITY SEWER PIPE SHALL BE TESTED ACCORDING TO NHDES STANDARDS OF DESIGN AND CONSTRUCTION FOR SEWAGE AND WASTEWATER TREATMENT FACILITIES, CHAPTER ENV-WQ 700. ADOPTED ON 10-15-14.
27. ENV-WQ 704.06 GRAVITY SEWER PIPE TESTING:
    A. ALL NEW GRAVITY SEWERS SHALL BE TESTED FOR WATER TIGHTNESS BY THE USE FO LOW-PRESSURE AIR TESTS.
    B. LOW PRESSURE AIR TESTING SHALL BE IN CONFORMANCE WITH THE FOLLOWNG TESTING STANDARDS IN EFFECT AT THE TIME THE TEST IS CONDUCTED:
        B.1. ASTM F1417 "STANDARD TEST METHOD FOR INSTALLATION ACCEPTANCE OF PLASTIC GRAVITY SEWER LINES USING LOW PRESSURE AIR", AVAILABLE AS NOTED IN APPENDIX D OF THE NHDES ENV-WQ 700 RULES; OR
        B.2. UNI-BELL PVC PIPE ASSOCIATION UNI-B-6, "LOW PRESSURE AIR TESTING OF INSTALLED SEWER PIPE", AVAILABLE AS NOTED IN APPENDIX D OF THE NHDES ENV-WQ 700 RULES.
    C. ALL NEW GRAVITY SEWERS SHALL BE:
        C.1. CLEANED AND VISUALLY INSPECTED USING A LAMP TEST NAD BY INTRODUCING WATER TO DETERMINE THAT THERE IS NO STANDING WATER IN THE SEWER; OR,
        C.2. TRUE TO LINE AND GRADE FOLLOWING INSTALLATION AND PRIOR TO USE.
    D. ALL PLASTIC SEWER PIPE SHALL BE VISUALLY INSPECTED AND DEFLECTION TESTED NOT LESS THAN 30 DAYS NOR MORE THAN 49 DAYS FOLLOWING INSPECTION.
    E. THE MAXIMUM ALLOWABLE DEFLECTION OF FLEXIBLE SEWER PIPE SHALL BE 5% OF AVERAGE INSIDE DIAMETER. A RIGID BALL OR MANDREL WITH A DIAMETER OF AT LEAST 95% OF THE AVERAGE INSIDE PIPE DIAMETER SHALL BE USED FOR TESTING PIPE DEFLECTION. THE DEFLECTION TEST SHALL BE CONDUCTED WITHOUT MECHANICAL PULLING DEVICES.
28. SANITARY SEWER LINES SHALL BE LOCATED AT LEAST TEN (10) FEET HORIZONTALLY FROM AN EXISTING OR PROPOSED WATER LINE. WHEN A SEWER LINE CROSSES UNDER A WATER LINE, THE SEWER PIPE JOINTS SHALL BE LOCATED AT LEAST 6 FEET HORIZONTALLY FROM THE WATERMAIN. THE SEWER LINE SHALL ALSO MAINTAIN A VERTICAL SEPARATION OF NOT LESS THAN 18 INCHES.
29. SEWERS SHALL BE BURIED TO A MINIMUM DEPTH OF 6 FEET BELOW GRADE IN ALL ROADWAY LOCATIONS, AND TO A MINIMUM DEPTH OF 4 FEET BELOW GRADE IN ALL CROSS-COUNTRY LOCATIONS. PROVIDE TWO-INCHES OF R-10 FOAM BOARD INSULATION 2-FOOT WIDE TO BE INSTALLED 6-INCHES OVER SEWER PIPE IN AREAS WHERE REQUIRED DEPTH IS NOT ACHIEVED. A WAIVER FROM THE DEPARTMENT OF ENVIRONMENTAL SERVICES WASTEWATER ENGINEERING BUREAU IS REQUIRED PRIOR TO INSTALLING SEWER AT LESS THAN MINIMUM COVER.
30. THE CONTRACTOR SHALL MINIMIZE THE DISRUPTIONS TO THE EXISTING SEWER FLOWS AND THOSE INTERRUPTIONS SHALL BE LIMITED TO FOUR (4) HOURS OR LESS AS DESIGNATED BY DPW.
31. LIGHTING CONDUIT SHALL BE SCHEDULE 40 PVC, AND SHALL BE INSTALLED IN CONFORMANCE WITH THE NATIONAL ELECTRIC CODE. CONTRACTOR SHALL PROVIDE EXCAVATION AND BACKFILL.
32. ALL TRENCHING, PIPE LAYING, AND BACKFILLING SHALL BE IN ACCORDANCE WITH FEDERAL OSHA REGULATIONS.
33. DISINFECTION OF WATER MAINS SHALL BE CARRIED OUT IN STRICT ACCORDANCE WITH AWWA STANDARD C651, LATEST EDITION. THE BASIC PROCEDURE TO BE FOLLOWED FOR DISINFECTING WATER MAINS IS AS FOLLOWS:
    a. PREVENT CONTAMINATING MATERIALS FROM ENTERING THE WATER MAIN DURING STORAGE, CONSTRUCTION, OR REPAIR.
    b. REMOVE, BY FLUSHING OR OTHER MEANS, THOSE MATERIALS THAT MAY HAVE ENTERED THE WATER MAINS.
    c. CHLORINATE ANY RESIDUAL CONTAMINATION THAT MAY REMAIN, AND FLUSH THE CHLORINATED WATER FROM THE MAIN.
    d. PROTECT THE EXISTING DISTRIBUTION SYSTEM FROM BACKFLOW DUE TO HYDROSTATIC PRESSURE TEST AND DISINFECTION PROCEDURES.
    e. DETERMINE THE BACTERIOLOGICAL QUALITY BY LABORATORY TEST AFTER DISINFECTION.
    f. MAKE FINAL CONNECTION OF THE APPROVED NEW WATER MAIN TO THE ACTIVE DISTRIBUTION SYSTEM
37. DOMESTIC SHUTOFFS & VALVES SHALL BE PAINTED BLUE.
38. SEWER TRENCH DAMS SHALL BE INSTALLED EVERY 75' ALONG GRAVITY SEWER PIPE.
39. IF IRRIGATION IS TO BE USED, THE PIPING SYSTEM SHALL BE REVIEWED AND APPROVED BY THE PORTSMOUTH CITY PLANNER, CITY ENGINEER, AND THE WATER DEPARTMENT PRIOR TO INSTALLATION.
40. WATER LINE TO BE CONSTRUCTED PER CITY OF PORTSMOUTH SPECIFICATIONS.
41. AN AS-BUILT PLAN OF THE WATER LINE IS TO BE PREPARED AND SUBMITTED TO THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS.
42. IRRIGATION METERS SHALL BE USED IF IRRIGATION IS DESIRED. IF USED, THEY SHALL BE ABOVE GROUND AND INSIDE OF THE BUILDING, AND SHALL HAVE BACKFLOW ENCLOSURES.

Design: DJM	Draft: TCR	Date: 01/08/26
Checked: EMP	Scale: AS NOTED	Project No.: 25071.2
Drawing Name: 25071.2-PLAN.dwg		

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM JONES & BEACH ENGINEERS, INC. (JBE). ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO JBE.

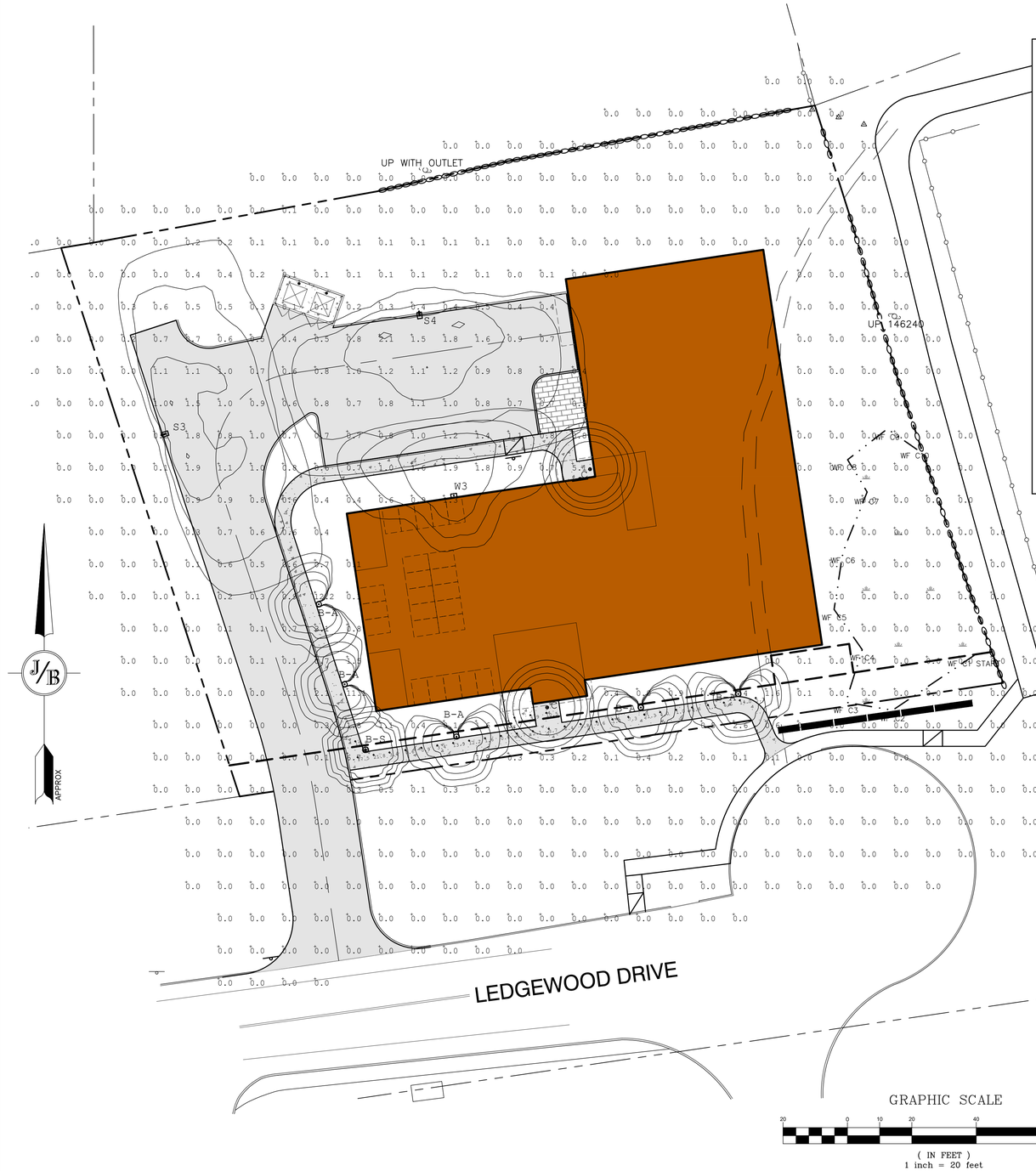
STATE OF NEW HAMPSHIRE
DANIEL JAMES MEDITZ
No. 18152
LICENSED PROFESSIONAL ENGINEER
10/20/2026

REV.	DATE	REVISION	BY
3	10/19/26	REVISED PER TAC COMMENTS	DJM
2	09/22/26	REVISED PER TAC COMMENTS	DJM
1	09/01/26	UPDATED TITLE BLOCK	DJM
0	08/17/26	ISSUED FOR REVIEW	DJM

Designed and Produced in NH
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Plan Name:	UTILITY PLAN
Project:	LEDGEWOOD DRIVE LLC LEDGEWOOD DRIVE, PORTSMOUTH, NH 03801
Owner of Record:	ST NICHOLAS GREEK ORTHODOX CHURCH 40 ANDREW JARVIS DRIVE, PORTSMOUTH, NH 03801

DRAWING No.
C4
SHEET 7 OF17
JBE PROJECT NO. 25071.2



CLRv3 Select

Commercial Recessed LED Downlight

Product Description

Designed for both new construction and retrofit applications, the CLR Select series can be installed directly into drywall, a ceiling grid or an existing 4", or 6" mounting frame using spring loaded retention tabs. The CCT and output selectable design allows for easy adjustment to 3000, 3500, 4000, or 5000K and standard, medium or high output. With Standard and Low Output models available, the lighting can be easily tailored to match the space or meet rebate levels. With accessory trims in black and offering a full range of dimming via 1-10 volts, the CLR Select is adaptable to most any environment. The versatility of this light source is perfect for commercial applications, such as educational, governmental, retail and grocery, office or hospitality lighting.

Construction
- Spun aluminum trim
- Plastic driver housing
- 3' flexible metal conduit (FMC) whip
- Matte white powder coat
- Black faceplates available

Optical System
- Precision engineered polystyrene diffuser provides high uniformity, and reduced glare
- No visible diodes, hot spots, or shadows
- 4 CCT selection (3000K, 3500K, 4000K, 5000K) via switch on driver cover

Electrical
- 3 Wire whip - 3 Input (L,N,G) and 2 controls (DIM+, DIM-)
- Universal range input (120 - 277 VAC, 60Hz)
- 3 wattage selection (Standard, Medium, High) via switch on driver cover
- 0-10V dimming of 4000K and Standard output
- 2 models of output - Standard and Low

Controls
- Dimming via 1-10VDC controls
- Available with Bluetooth Wireless Controls Accessory. See: www.nicorlighting.com/network-lighting-controls

Mounting and Installation
- Adjustable, spring loaded retention tabs ensure secure fixture retention on ceilings up to 1½" thick
- Easy installation into most 4", 6" or 8" Incandescent or fluorescent frames
- Frame out needed for new construction installation
- NON-IC Operating temperature of 0°F to 104°F (-18°C to 40°C)
- IC Operating temperature of 0°F to 77°F (-18° to 25°C)
- Metal rough-in templates and frames available
- For installations where power surge may be possible, NICOR recommends installing additional surge protection at the fixture or electrical distribution panel

Listings
- cULus 1598 Listed for wet locations
- Certified for direct contact with insulation. -I" model only
- Meets ASTM E283 airtight requirements
- TAA compliant
- RoHS compliant
- Meets FCC Part 15, Subpart B, Class A standards for conducted and radiated emissions
- TM-21 Reported L70(6) life >72,000 hours
- LM-79, LM-80 testing performed in accordance with IESNA standards

Warranty
- 5 year limited system warranty standard
- Warranty does not cover product failure due to an overvoltage event (power surge)

Project
Catalog
Type
Date



CLRv3

Commercial LED Downlight

4", 6", 8" Diameters

Selectable Wattage & CCT

V-Locity® Small (VALS)

Outdoor LED Area Light

Catalog #
Project
Type
Prepared by
Date

IP66 1K07



OVERVIEW	
Lumen Package	6,000 – 27,000
Wattage Range	36 – 178
Efficacy Range (LPW)	96 – 171
Weight lbs(kg)	20 (9.1)
Control Options	MSBT, ALB, ALS, 7-Pin, PCI

QUICK LINKS

Ordering Guide | Performance | Photometrics | Dimensions

FEATURES & SPECIFICATIONS

Construction
- Rugged die-cast aluminum housing contains factory prewired driver and optical units. Cast aluminum wiring access door located underneath.
- Self-contained optic, board and heat sink assembly can be rotated or replaced in the field.
- Fixtures are finished with LSI's DuraGrip® polyester powder coat finishing process. The DuraGrip finish withstands extreme weather changes without cracking or peeling. Other standard LSI finishes available. Consult factory.
- Extended housing available with 1/2" threaded hubs for surface conduit and rated wire.
- Standard luminaire shipping weight: TBD lbs in carton.
- Max luminaire shipping weight: 12 lbs in carton (20 lbs w/EH option)

Optical System
- State-of-the-Art one piece silicone optic provides industry leading optical control while also acting as an integrated gasket reducing system complexity and improving fixture reliability.
- Proprietary silicone refractor optics provide exceptional coverage and uniformity in distribution types 2, 3, 4, and FT.
- Silicone optical material does not yellow or crack with age and provides a typical light transmittance of 93%.
- Zero uplight.
- 5000K, 4000K, 3500K, 3000K, and 2700K color temperatures per ANSI C78.377. Also available in Phosphor Converted Amber with peak intensity at 610nm.
- 70 or 80CRI Minimum.

Electrical
- High-performance programmable driver features over-voltage, under-voltage, short circuit and over temperature protection. Custom lumen and wattage packages available.
- Available in 5000K, 4000K, 3000K, and 2700K color temperatures per ANSI C78.377. Also available in Phosphor Converted Amber. Consult Factory for other color temperature requirements.
- Minimum CRI of 70.

Electrical
- High-performance programmable driver features over-voltage, under-voltage, short-circuit and over temperature protection. Custom lumen and wattage packages available.
- 0-10V dimming (10% - 100%) standard.
- Standard Universal Voltage (120-277 VAC) input 50/60 Hz or optional High Voltage (347-480 VAC) input.
- L80 Calculated Life: >100k Hours
- Total harmonic distortion: <20%
- Operating temperature: -40°C to 40°C (-40°F to +104°F).
- Power factor (PF): >.90
- Input power stays constant over life.
- Optional 10kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).
- High-efficacy LEDs mounted to metal-core circuit board to maximize heat dissipation
- Components are fully encased in potting material for moisture resistance. Driver complies with FCC standards. Driver and key electronic components can easily be accessed via hinged door.
- Optional integral emergency battery pack provides 90-minutes of constant power to the LED system, ensuring code compliance. A test switch/indicator button is installed on the housing for ease of maintenance. The fixture delivers 1500 lumens during emergency mode.

Controls
- Integral passive infrared Bluetooth™ motion sensor options. Fixtures operate independently and can be commissioned via an iOS or Android configuration app. Updates and modifications to the control strategy are easily implemented via an intuitive app.
- AirLink™ Blue wireless control system with technology partner Silvair incorporates Luminaire Level Lighting Controls (LLLC) and high-end trim

Installation
- Universal wall mounting plate mounts directly to vertical surface or 4" junction box (octagonal or square).
- Luminaire hinges to the top of the mounting plate and is secured via two flush mount screws that help to conceal the hardware and prevent over tightening during installation.

Warranty
- LSI luminaires carry a 5-year limited warranty. Refer to https://www.lsicorp.com/resources/terms-conditions-warranty/ for more information.

Listings
- Listed to UL 1598 and UL 8750.
- Meets Buy American Act requirements.
- DarkSky approved with 3000K or warmer color temperature selection and fixed mounting arms / non-adjustable brackets.
- Title 24 Compliant; see local ordinance for qualification information.
- Suitable for wet locations.
- IP65 rated luminaire per IEC 60598-1.
- 3G rated for ANSI C136.31 high vibration applications when pole mounted (using optional XPMA bracket) or wall mounted.
- IK10 rated luminaire per IEC 66262 mechanical impact code.
- DesignLights Consortium® (DLC) Premium qualified product. Not all versions of this product may be DLC Premium qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL, to confirm which versions are qualified.

Installation
- Easy leveling even in uneven areas and full 360-degree rotation for precise alignment during installation.
- Base plate installs with four heavy-duty 3/8" x 10" galvanized steel anchor bolts.
- Base plate attaches to lower extruded housing via four stainless steel roll pins.

Warranty
- LSI luminaires carry a 5-year limited warranty. Refer to https://www.lsicorp.com/resources/terms-conditions-warranty/ for more information.

Listings
- Listed to UL 1598 and UL 8750.
- RoHS Compliant.
- Suitable for wet locations.
- IP66 rated Driver compartment and IP66 rated optical chamber per IEC 60598.
- DarkSky Approved with 3000K or warmer color temperature selection.
- Buy American Act (BAA) and Build America, Buy America (BABA) Compliant Fixture.
  - Compliance dependent on SKU and configuration. Confirm with factory.

Mirada Bollard (MRB)

Low Level Lighting

Catalog #
Project
Type
Prepared by
Date

IP66



OVERVIEW	
Lumen Package (lm)	1,000 – 5,000
Wattage Range (W)	23 – 38
Efficacy Range (LPW)	72 – 84
Weight lbs (kg)	40 (18)

QUICK LINKS

Ordering Guide | Performance | Photometrics | Dimensions

FEATURES & SPECIFICATIONS

Construction
- Precision 2pc die-cast aluminum head maintains durability and consistency while providing vandal resistance, effective heat dissipation, and superior aesthetics.
- 8-5/8" OD one-piece extruded aluminum heavy wall .322 inch thick seamless shaft. Various heights are available in 6" increments starting at a minimum of 26" (maximum height is 62").
- Lower housing attaches to cast aluminum universal base plate with four stainless steel roll pins. Accommodates 4.5" - 6" bolt circles.
- Optional roughneck zinc plated steel base plate (.375" thick) with welded U shaped reinforcement. 5/8" diameter 302 stainless steel roll pins with 50,000 lb. shear load.
- IP66 rated Optical and Driver compartments isolate electrical components from harsh environments.
- Fixtures are finished with LSI's DuraGrip® polyester powder coat finishing process. The DuraGrip finish withstands extreme weather changes without cracking or peeling. Other standard LSI finishes available. Consult factory.
- Luminaire is proudly manufactured in the U.S. of U.S. and imported parts.
- Shipping weight: 40 lbs in carton.

Optical System
- Available in two optical distributions, symmetrical and asymmetrical.
- High transmission clear flat acrylic lens seals the luminaire's optical chamber to IP66.
- Available in 5000K, 4000K, 3000K, and 2700K color temperatures per ANSI C78.377. Also available in Phosphor Converted Amber. Consult Factory for other color temperature requirements.
- Minimum CRI of 70.

Electrical
- High-performance programmable driver features over-voltage, under-voltage, short-circuit and over temperature protection. Custom lumen and wattage packages available.
- 0-10V dimming (10% - 100%) standard.
- Standard Universal Voltage (120-277 VAC) input 50/60 Hz. Optional High Voltage (347-480 Vac) input available.
- L91 Calculated Life: >100k Hours calculated @ 25°C per IESNA TM-21-11.
- Total harmonic distortion: <20%.
- Operating temperature: -40°C to +50°C (-40°F to +122°F). Cold-weather emergency battery backup rated for -20°C minimum ambient.
- Power factor: >.90.
- Input power stays constant over life.
- High-efficacy LEDs with integrated circuit board mount to the housing to maximize heat dissipation and promote long life.
- Driver components are fully encased in potting long material for moisture resistance. Driver complies with FCC standards. Driver and key electronic components can easily be accessed.
- Electrical components are mounted on a removable power tray.
- Field replaceable surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).
- Optional 120v-277v integral emergency battery pack is available. The 90- minute batteries provide constant power to the LED system, ensuring code compliance. A test switch/indicator button is installed on the housing for ease of maintenance.

Installation
- Easy leveling even in uneven areas and full 360-degree rotation for precise alignment during installation.
- Base plate installs with four heavy-duty 3/8" x 10" galvanized steel anchor bolts.
- Base plate attaches to lower extruded housing via four stainless steel roll pins.

Warranty
- LSI luminaires carry a 5-year limited warranty. Refer to https://www.lsicorp.com/resources/terms-conditions-warranty/ for more information.

Listings
- Listed to UL 1598 and UL 8750.
- Meets Buy American Act requirements.
- DarkSky approved with 3000K or warmer color temperature selection and fixed mounting arms / non-adjustable brackets.
- Title 24 Compliant; see local ordinance for qualification information.
- Suitable for wet locations.
- IP65 rated luminaire per IEC 60598-1.
- 3G rated for ANSI C136.31 high vibration applications when pole mounted (using optional XPMA bracket) or wall mounted.
- IK10 rated luminaire per IEC 66262 mechanical impact code.
- DesignLights Consortium® (DLC) Premium qualified product. Not all versions of this product may be DLC Premium qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL, to confirm which versions are qualified.

Mirada Small Silicone (XWS SIL)

Outdoor Wall Sconce

Catalog #
Project
Type
Prepared by
Date

IP65 1K10



OVERVIEW	
Lumen Package (lm)	1,000 – 8,000
Wattage Range (W)	10 – 67
Efficacy Range (LPW)	124 – 162
Weight lbs (kg)	12 (5.5)
Control Options	MSBT, ALB, ALS, PCI

QUICK LINKS

Ordering Guide | Performance | Photometrics | Dimensions

FEATURES & SPECIFICATIONS

Construction
- Rugged die-cast aluminum housing.
- Fixtures are finished with LSI's DuraGrip® polyester powder coat finishing process. The DuraGrip finish withstands extreme weather changes without cracking or peeling. Other standard LSI finishes available. Consult factory.
- Extended housing available with 1/2" threaded hubs for surface conduit and rated wire.
- Standard luminaire shipping weight: TBD lbs in carton.
- Max luminaire shipping weight: 12 lbs in carton (20 lbs w/EH option)

Optical System
- State-of-the-Art one piece silicone optic provides industry leading optical control while also acting as an integrated gasket reducing system complexity and improving fixture reliability.
- Proprietary silicone refractor optics provide exceptional coverage and uniformity in distribution types 2, 3, 4, and FT.
- Silicone optical material does not yellow or crack with age and provides a typical light transmittance of 93%.
- Zero uplight.
- 5000K, 4000K, 3500K, 3000K, and 2700K color temperatures per ANSI C78.377. Also available in Phosphor Converted Amber with peak intensity at 610nm.
- 70 or 80CRI Minimum.

Electrical
- High-performance programmable driver features over-voltage, under-voltage, short circuit and over temperature protection. Custom lumen and wattage packages available.
- 0-10V dimming (10% - 100%) standard.
- Standard Universal Voltage (120-277 VAC) input 50/60 Hz or optional High Voltage (347-480 VAC).
- L80 Calculated Life: >100k Hours
- Total harmonic distortion (THD): <20%
- Operating temperature: -40°C to 40°C (-40°F to +104°F).
- Power factor (PF): >.90
- Input power stays constant over life.
- Optional 10kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).
- High-efficacy LEDs mounted to metal-core circuit board to maximize heat dissipation
- Components are fully encased in potting material for moisture resistance. Driver complies with FCC standards. Driver and key electronic components can easily be accessed via hinged door.
- Optional integral emergency battery pack provides 90-minutes of constant power to the LED system, ensuring code compliance. A test switch/indicator button is installed on the housing for ease of maintenance. The fixture delivers 1500 lumens during emergency mode.

Controls
- Integral passive infrared Bluetooth™ motion sensor options. Fixtures operate independently and can be commissioned via an iOS or Android configuration app. Updates and modifications to the control strategy are easily implemented via an intuitive app.
- AirLink™ Blue wireless control system with technology partner Silvair incorporates Luminaire Level Lighting Controls (LLLC) and high-end trim

Installation
- Universal wall mounting plate mounts directly to vertical surface or 4" junction box (octagonal or square).
- Luminaire hinges to the top of the mounting plate and is secured via two flush mount screws that help to conceal the hardware and prevent over tightening during installation.

Warranty
- LSI luminaires carry a 5-year limited warranty. Refer to https://www.lsicorp.com/resources/terms-conditions-warranty/ for more information.

Listings
- Listed to UL 1598 and UL 8750.
- Meets Buy American Act requirements.
- DarkSky approved with 3000K or warmer color temperature selection and fixed mounting.
- Title 24 Compliant; see local ordinance for qualification information.
- Suitable for wet locations.
- IP65 rated luminaire per IEC 60598-1.
- 3G rated for ANSI C136.31 high vibration applications when pole mounted (using optional XPMA bracket) or wall mounted.
- IK10 rated luminaire per IEC 66262 mechanical impact code.
- DesignLights Consortium® (DLC) Premium qualified product. Not all versions of this product may be DLC Premium qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL, to confirm which versions are qualified.

LIGHTING AND ELECTRICAL NOTES:

1. SITE ELECTRICAL CONTRACTOR SHALL COORDINATE LOCATION OF EASEMENTS, UNDERGROUND UTILITIES AND DRAINAGE BEFORE DRILLING POLE BASES.
2. CONTRACTOR SHALL INSTALL PROPOSED LIGHT POLES ACCORDING TO CITY REGULATIONS.
3. ALL OUTDOOR LIGHTING SYSTEMS SHALL BE EQUIPPED WITH TIMERS TO REDUCE ILLUMINATION LEVELS TO NON-OPERATIONAL VALUES PER CITY REGULATIONS.
4. LIGHTING CONDUIT SHALL BE SCHEDULE 40 PVC, AND SHALL BE INSTALLED IN CONFORMANCE WITH THE NATIONAL ELECTRICAL CODE. CONTRACTOR SHALL PROVIDE EXCAVATION AND BACKFILL.
5. ILLUMINATION READINGS SHOWN ARE BASED ON A TOTAL LLF OF 0.75 AT GRADE. ILLUMINATION READINGS SHOWN ARE IN UNITS OF FOOT-CANDLES.
6. LIGHTING CALCULATIONS SHOWN ARE NOT A SUBSTITUTE FOR INDEPENDENT ENGINEERING ANALYSIS OF LIGHTING SYSTEM AND SAFETY.
7. ALL LIGHTING FIXTURES SHALL BE FULL CUT-OFF DARK-SKY COMPLIANT, UNLESS OTHERWISE NOTED.
8. THE PROPOSED LIGHTING CALCULATIONS AND DESIGN WAS PERFORMED BY EXPOSURE LIGHTING LLC., 501 ISLINGTON ST., UNIT 1A, PORTSMOUTH, NH 03801 ATTENTION KEN SWEENEY. AN EQUAL LIGHTING DESIGN SHALL BE SUBMITTED FOR REVIEW IF EQUAL SUBSTITUTIONS ARE PROPOSED BY THE CONTRACTOR OR OWNER.

PROGRESS LIGHTING

Project
Fixture Type
Location
Contact

Callahan LED

Wall Mounted - Wet Location Listed PROGRESS LED

P560052-020-30

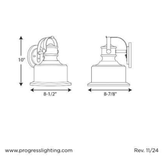
Description:

Callahan Collection One-Light LED Small Wall Lantern

Specifications:
- Antique Bronze Aluminum Shade
- Dimmable to 10% brightness (See Dimming Notes)
- Back plate covers a standard 4" recessed outlet box. 5 ¼ W, 0.875 in ht., 3 ½ in depth
- Mounting strap for outlet box included
- 6 in of wire supplied
- Yes, per photometry (not registered with ISA)

Performance:

Number of Modules	1
Input Power	9 W
Input Voltage	120 V
Input Frequency	60 Hz
Lumens/LPW (Source)	624/66 (LM-82)
Lumens/LPW (Delivered)	339/36.5 (LM-79)
CCT	3000 K
CRI	90+ CRI
Life (hours)	60000 (L70/TM-21)
EMI/RFI	Meets FCC Title 47, Part 15 Class B
Max. Operating Temp	30EC
Warranty	5-year Limited Warranty
Labels	cCSAus Wet Location Listed Meets California Title 24 JA8-2016



Dimensions:

Width: 8.5 in
Depth: 8-7/8 in
Height: 10 in
H/CTR: 3 3/4 in

Antique Bronze Aluminum Shade:
Diameter: 8-1/2 in
Height: 5-1/8 in



Luminaire Schedule					
Symbol	Qty	Label	Arrangement	Description	[MANUFAC]
	5	B-A	Single	MRB-LED-25L-ACR-A-UNV-DIM-30-HSS	LSI INDUSTRIES, INC.
	1	B-S	Single	MRB-LED-25L-ACR-S-UNV-DIM-30-CXX	LSI INDUSTRIES, INC.
	2	C	Single	CLR63SUS9WH	NICOR
	1	S3	Single	VALS-06L-3W-UNV-30K8-CXX-SA-TS / 4SQ B3 S11G15 S CXX AB 4BC	LSI INDUSTRIES, INC.
	1	S4	Single	VALS-06L-4W-UNV-30K8-CXX-SA / 4SQ B3 S11G15 S CXX AB 4BC	LSI INDUSTRIES, INC.
	1	W3	Single	XWS-LED-02L-SIL-3-UNV-DIM-30-80CRI-CXX	LSI INDUSTRIES, INC.

Design: DJM	Draft: TCR	Date: 01/08/26	
Checked: EMP	Scale: AS NOTED	Project No.: 25071.2	
Drawing Name: 25071.2-PLAN.dwg			

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STATE OF NEW HAMPSHIRE
DANIEL JAMES MEDITZ
No.18152
LICENSED PROFESSIONAL ENGINEER
10/20/2026

REV.	DATE	REVISION	BY
3	10/19/26	REVISED PER TAC COMMENTS	DJM
2	09/22/26	REVISED PER TAC COMMENTS	DJM
1	09/01/26	UPDATED TITLE BLOCK	DJM
0	08/17/26	ISSUED FOR REVIEW	DJM

Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: LIGHTING PLAN

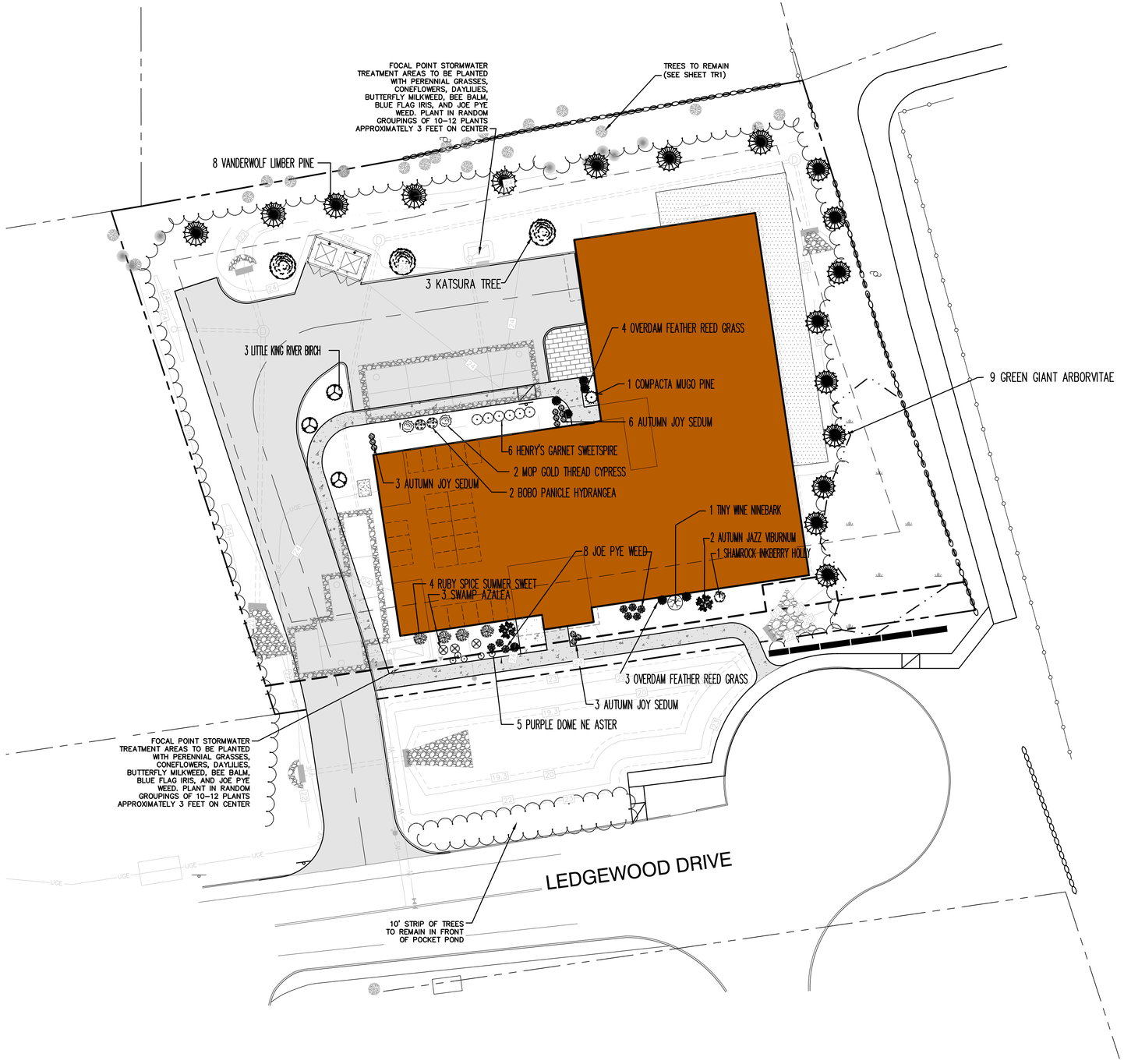
Project: LEDGEWOOD DRIVE LLC
LEDGEWOOD DRIVE, PORTSMOUTH, NH 03801

Owner of Record: ST NICHOLAS GREEK ORTHODOX CHURCH
40 ANDREW JARVIS DRIVE, PORTSMOUTH, NH 03801

DRAWING No.

L1

SHEET 8 OF17
JBE PROJECT NO. 25071.2





Quantity	Botanical Name	Common Name	Size
5	Aster novae-angliae 'Purple Dome'	PURPLE DOME NE ASTER	1 Gallon
3	Azalea viscosum	SWAMP AZALEA	3 Gallon
3	Betula nigra 'Little King'	LITTLE KING RIVER BIRCH	5'-7' B&B Multi
7	Calamagrostis x acutiflora 'Overdam'	OVERDAM FEATHER REED GRASS	2 Gallon
2	Chamaecyparis pisifera 'Mop'	MOP GOLD THREAD CYPRESS	5 Gallon
4	Clethra alnifolia 'Ruby Spice'	RUBY SPICE SUMMER SWEET	3 Gallon
8	Eupatorium purpureum	JOE PYE WEED	1 Gallon
2	Hydrangea paniculata 'Bobo'	BOBO PANICLE HYDRANGEA	3 Gallon
1	Ilex glabra 'Shamrock'	SHAMROCK INKBERRY HOLLY	5 Gallon
6	Itea virginica 'Henry's Garnet'	HENRY'S GARNET SWEETSPIRE	3 Gallon
1	Physocarpus opulifolius 'SMNPOTW'	TINY WINE NINEBARK	3 Gallon
8	Pinus flexilis "Vanderwolf's"	VANDERWOLF'S LIMBER PINE	5'-7' B&B
1	Pinus mugo 'Compacta'	COMPACTA MUGO PINE	5 Gallon
3	Cercidiphyllum japonicum	KATSURA TREE	3.5" Caliper B&B
12	Sedum 'Autumn Joy'	AUTUMN JOY SEDUM	1 Gallon
2	Viburnum dentatum 'Autumn Jazz'	AUTUMN JAZZ VIBURNUM	5 Gallon
9	Thuja plicata 'Green Giant'	GREEN GIANT ARBORVITAE	5'-7' B&B

LANDSCAPE NOTES:

1. THE CONTRACTOR SHALL LOCATE AND VERIFY THE EXISTENCE OF ALL UTILITIES PRIOR TO STARTING WORK.
2. THE CONTRACTOR SHALL SUPPLY ALL PLANT MATERIALS IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTINGS SHOWN ON THE DRAWINGS.
3. ALL MATERIAL SHALL CONFORM TO THE GUIDELINES ESTABLISHED BY THE CURRENT AMERICAN STANDARD FOR NURSERY STOCK PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
4. ALL PLANT SUBSTITUTIONS MUST BE APPROVED THE LANDSCAPE DESIGNER.
5. ALL PLANT MATERIALS SHALL BE EXACTLY AS SPECIFIED BY THE LANDSCAPE DESIGNER.
6. PLANTS SHALL BE SUBJECT TO INSPECTION AND APPROVAL AT THE PLACE OF GROWTH, UPON DELIVERY OR AT THE JOB SITE WHILE WORK IS ON-GOING FOR CONFORMITY TO SPECIFIED QUALITY, SIZE AND VARIETY.
7. PLANTS FURNISHED IN CONTAINERS SHALL HAVE THE ROOTS WELL ESTABLISHED IN THE SOIL MASS AND SHALL HAVE AT LEAST ONE (1) GROWING SEASON. ROOT-BOUND PLANTS OR INADEQUATELY SIZED CONTAINERS TO SUPPORT THE PLANT MAY BE DEEMED UNACCEPTABLE.
8. NO PLANT SHALL BE PUT IN THE GROUND BEFORE GRADING HAS BEEN COMPLETED
9. ALL WORK AND PLANTS SHALL BE DONE, INSTALLED AND DETAILED IN STRICT ACCORDANCE WITH PROJECT SPECIFICATIONS.
10. ALL PLANTS SHALL BE WATERED THOROUGHLY TWICE DURING THE FIRST 24-HOUR PERIOD AFTER PLANTING. ALL PLANTS SHALL BE WATERED WEEKLY, OR MORE OFTEN IF NECESSARY, DURING THE FIRST GROWING SEASON.
11. ALL LANDSCAPE AREAS TO BE GRASS COMMON TO REGION, EXCEPT FOR INTERIOR LANDSCAPED ISLANDS OR WHERE OTHER PLANT MATERIAL IS SPECIFIED.
12. ALL TREES AND SHRUBS SHALL BE PLANTED IN MULCH BEDS WITH EDGE STRIPS TO SEPARATE TURF GRASS AREAS.
13. THE CONTRACTOR SHALL REMOVE WEEDS, ROCKS, CONSTRUCTION ITEMS, ETC. FROM ANY LANDSCAPE AREA SO DESIGNATED TO REMAIN, WHETHER ON OR OFF-SITE. GRASS SEED OR PINE BARK MULCH SHALL BE APPLIED AS DEPICTED ON PLANS.
14. FINISHED GRADES IN LANDSCAPED ISLANDS SHALL BE INSTALLED SO THAT THEY ARE 1" HIGHER THAN THE TOP OF THE SURROUNDING CURB.
15. ALL LANDSCAPING SHALL MEET THE CITY STANDARDS AND REGULATIONS.
16. EXISTING TREES TO REMAIN SHALL BE PROTECTED WITH TEMPORARY SNOW FENCING AT THE DRIPLINE OF THE TREE. THE CONTRACTOR SHALL NOT STORE VEHICLES OR MATERIALS WITHIN THE LANDSCAPED AREAS. ANY DAMAGE TO EXISTING TREES, SHRUBS OR LAWN SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
17. ALL MULCH AREAS SHALL RECEIVE A 3" LAYER OF SHREDDED PINE BARK MULCH OVER A 10 MIL WEED MAT EQUAL TO 'WEEDBLOCK' BY EASY GARDENER OR DEWITT WEED BARRIER.
18. ALL LANDSCAPED AREAS SHALL HAVE SELECT MATERIALS REMOVED TO A DEPTH OF AT LEAST 9" BELOW FINISH GRADE. THE RESULTING VOID IS TO BE FILLED WITH A MINIMUM OF 9" HIGH-QUALITY SCREENED LOAM AMENDED WITH 3" OF AGED ORGANIC COMPOST.
19. THIS PLAN IS INTENDED FOR LANDSCAPING PURPOSES ONLY. REFER TO CIVIL/SITE DRAWINGS FOR OTHER SITE CONSTRUCTION INFORMATION.
20. IRRIGATION PIPING SYSTEM SHALL BE REVIEWED AND APPROVED BY OWNER AND ENGINEER PRIOR TO INSTALLATION.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 feet

Design: DJM	Draft: TCR	Date: 01/08/26
Checked: EMP	Scale: AS NOTED	Project No.: 25071.2
Drawing Name: 25071.2-PLAN.dwg		

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0	08/17/26	ISSUED FOR REVIEW	DJM

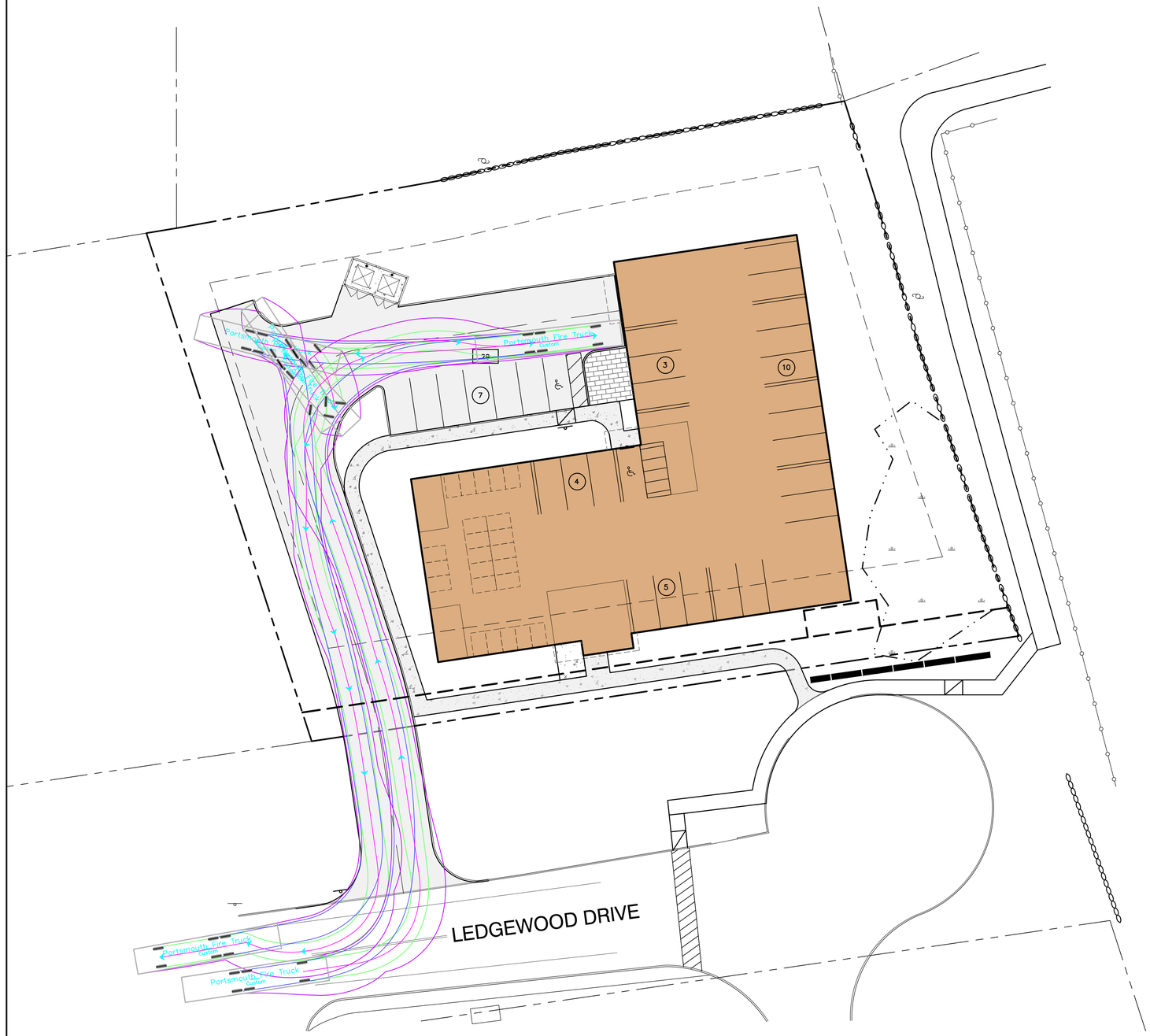
Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
Civil Engineering Services
603-772-4746
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	LANDSCAPE PLAN
Project:	LEDGEWOOD DRIVE LLC LEDGEWOOD DRIVE, PORTSMOUTH, NH 03801
Owner of Record:	ST NICHOLAS GREEK ORTHODOX CHURCH 40 ANDREW JARVIS DRIVE, PORTSMOUTH, NH 03801

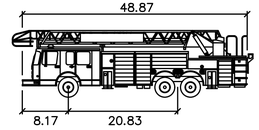
DRAWING No.

L2

SHEET 9 OF17
JBE PROJECT NO. 25071.2



APPROX



Portsmouth Fire Truck

	feet
Width	: 8.50
Track	: 6.91
Lock to Lock Time	: 6.0
Steering Angle	: 38.7

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 feet

PROJECT PARCEL
TOWN OF PORTSMOUTH
TAX MAP 229, LOT 6A

APPLICANT
LEDGEWOOD DRIVE LLC
ATTN. BEN MIDDLETON
10 MAIN STREET
NEWFIELDS, NH 03856

TOTAL LOT AREA
43,255 SQ. FT.
0.99 ACRES

Design: DJM	Draft: TCR	Date: 01/08/26
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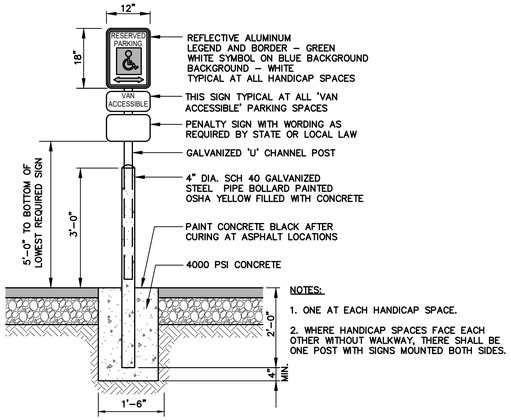
STATE OF NEW HAMPSHIRE
DANIEL JAMES MEDITZ
No. 18152
LICENSED PROFESSIONAL ENGINEER
10/20/2026

REV.	DATE	REVISION	BY
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1	09/01/26	UPDATED TITLE BLOCK	DJM
0	08/17/26	ISSUED FOR REVIEW	DJM

Designed and Produced in NH
Jones & Beach Engineers, Inc.
Civil Engineering Services
100 Domain Dr.
Suite 201
Exeter, NH 03833
603-772-4746
E-MAIL: JBE@JONESANDBEACH.COM

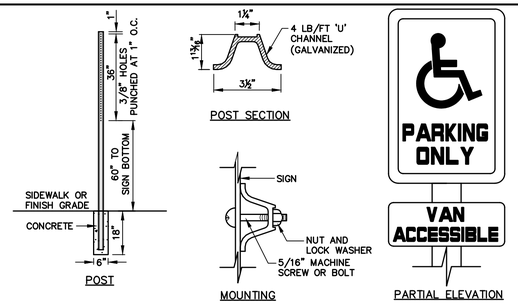
Plan Name:	TRUCK TURNING PLAN
Project:	LEDGEWOOD DRIVE LLC LEDGEWOOD DRIVE, PORTSMOUTH, NH 03801
Owner of Record:	ST NICHOLAS GREEK ORTHODOX CHURCH 40 ANDREW JARVIS DRIVE, PORTSMOUTH, NH 03801

DRAWING No.
T1
SHEET 10 OF17
JBE PROJECT NO. 25071.2



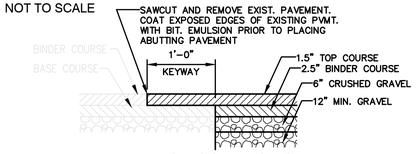
HANDICAP PARKING SIGN (R7-8)

NOT TO SCALE



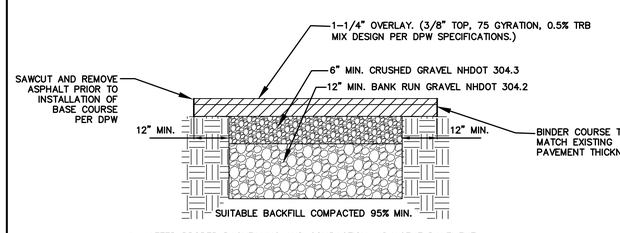
HANDICAP SIGN DETAILS

NOT TO SCALE



KEYWAY DETAIL FOR CONNECTION TO EXISTING PAVEMENT

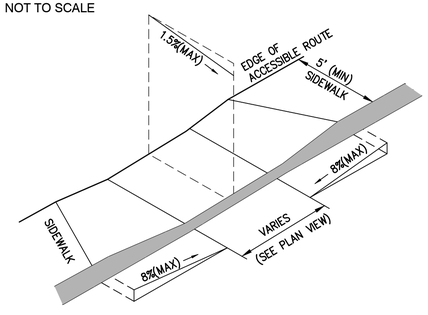
NOT TO SCALE



1. AFTER PROPER BACKFILLING AND COMPACTION, ADJACENT PAVEMENT MUST BE "SAW CUT" (STRAIGHT CUTS) A MINIMUM OF ONE FOOT (1') AROUND THE PERIMETER OF THE EXCAVATION. PAVEMENT MUST BE REMOVED.
2. INSTALL BASE COURSE LEAVING A REVEAL FOR SURFACE COURSE.
3. INSTALL SURFACE COURSE OF ASPHALT PAVING.
4. APPLY EMULSION SEALANT AT PERIMETER OF JOINT OVERLAPPING BASE COURSE. INSTALL WEARING COURSE OF ASPHALT TO GRADE. APPLY LIGHT SAND TO ABSORB EXCESS JOINT SEALANT.
5. GRAVEL COMPACTIONS TO MEET 95% MINIMUM.

TYPICAL PAVEMENT REPAIR DETAIL

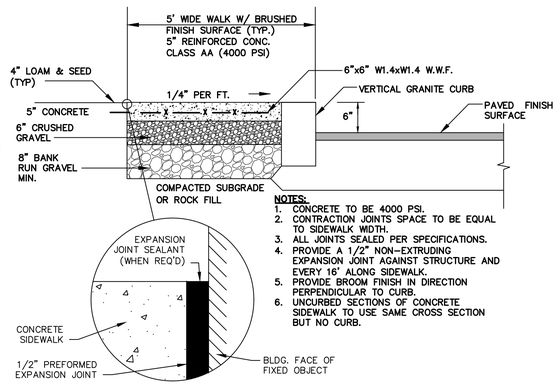
NOT TO SCALE



NOTES:
1. THE MAXIMUM ALLOWABLE CROSS SLOPE OF ACCESSIBLE ROUTE (SIDEWALK) AND CURB SHALL BE 1.5%.
2. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE 5%.
3. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE (SIDEWALK) CURB RAMPS SHALL BE 8%.
4. A MINIMUM OF 4 FEET CLEAR SHALL BE MAINTAINED AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (i.e., HYDRANTS, UTLITY POLES, TREE WELLS, SIGNS, ETC.).
5. CURB TREATMENT VARIES, SEE PLANS FOR CURB TYPE.
6. BASE OF RAMP SHALL BE GRADED TO PREVENT PONDING.
7. SEE TYPICAL SECTION FOR RAMP CONSTRUCTION.

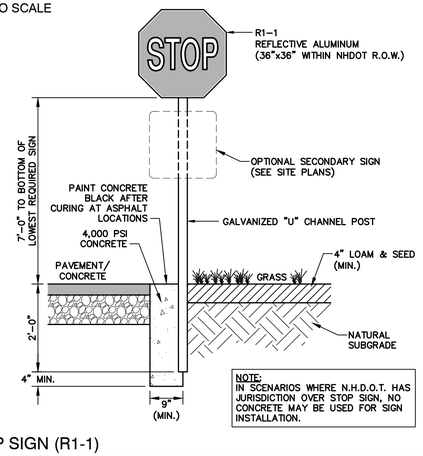
ACCESSIBLE CURB RAMP (TYPE 'A')

NOT TO SCALE



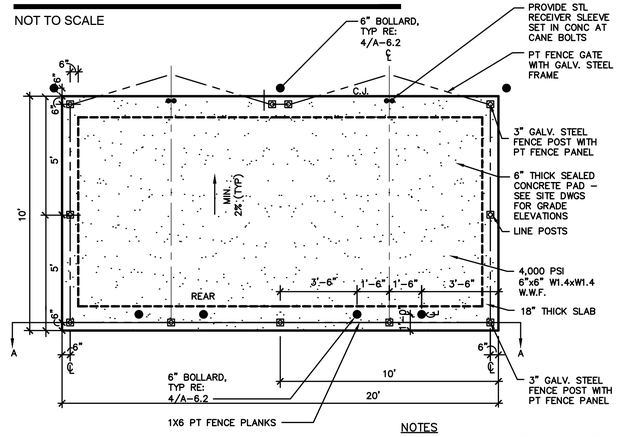
CONCRETE SIDEWALK W/ VERTICAL GRANITE CURB

NOT TO SCALE



STOP SIGN (R1-1)

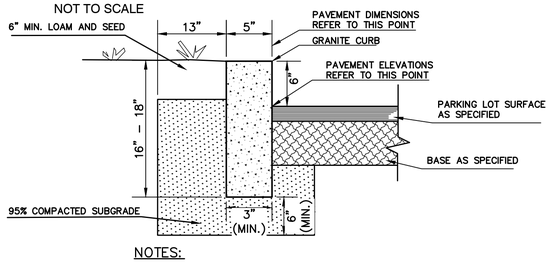
NOT TO SCALE



NOTES
1. ALL LUMBER TO BE PRESSURE TREATED.
2. WOOD FENCE TO BE PAINTED OR STAINED TO MATCH BUILDING FOUNDATION.
3. DUMPSTER SIZE VARIES, SEE SITE PLANS FOR SCREENING SIZE

DUMPSTER ENCLOSURE PLAN

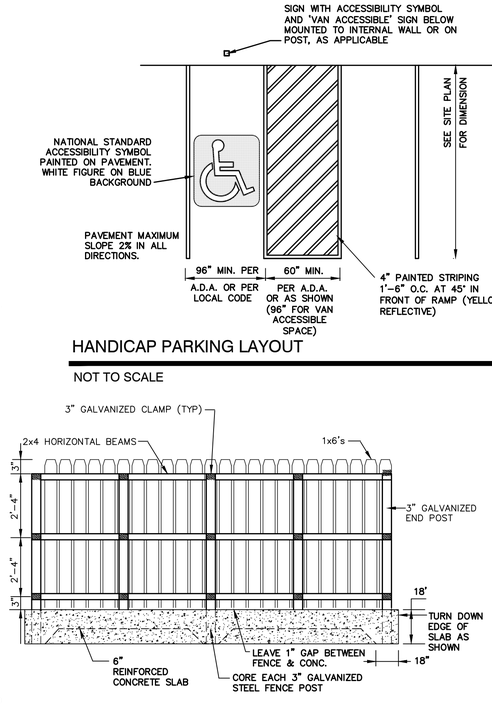
NOT TO SCALE



NOTES:
1. EDGING TO BE PLACED PRIOR TO PLACING TOP SURFACE COURSE.
2. JOINTS BETWEEN STONES SHALL BE MORTARED.

VERTICAL GRANITE CURB

NOT TO SCALE



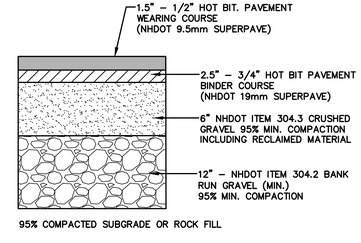
STANDARD BRICK PAVER

NOT TO SCALE

HANDICAP PARKING LAYOUT

NOT TO SCALE

SECTION A–A



TYPICAL BITUMINOUS PAVEMENT

NOT TO SCALE

Design: DJM	Draft: TCR
Checked: EMP	Scale: AS NOTED
Drawing Name: 25071.2-PLAN.dwg	Date: 01/08/26
	Project No.: 25071.2

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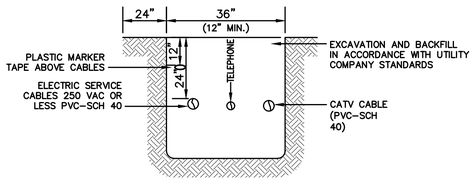
STATE OF NEW HAMPSHIRE – DANIEL JAMES MEDITZ No.18152 – LICENSED PROFESSIONAL ENGINEER
10/20/2026

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Designed and Produced in NH
Jones & Beach Engineers, Inc.
Civil Engineering Services
100 Domain Dr. Suite 201 Exeter, NH 03833
603-772-4746
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	DETAIL SHEET
Project:	LEDGEWOOD DRIVE LLC LEDGEWOOD DRIVE, PORTSMOUTH, NH 03801
Owner of Record:	ST NICHOLAS GREEK ORTHODOX CHURCH 40 ANDREW JARVIS DRIVE, PORTSMOUTH, NH 03801

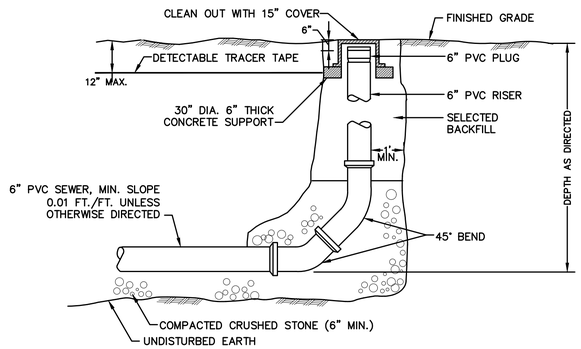
DRAWING No.
D1
SHEET 11 OF17
JBE PROJECT NO. 25071.2



NOTE: ALL UTILITIES SHALL BE REVIEWED AND APPROVED BY APPROPRIATE UTILITY COMPANY.

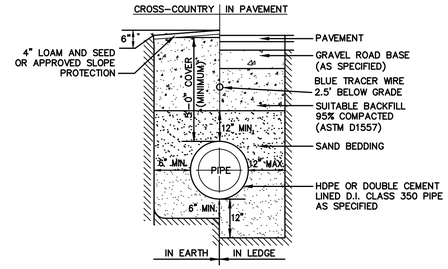
UTILITY TRENCH

NOT TO SCALE



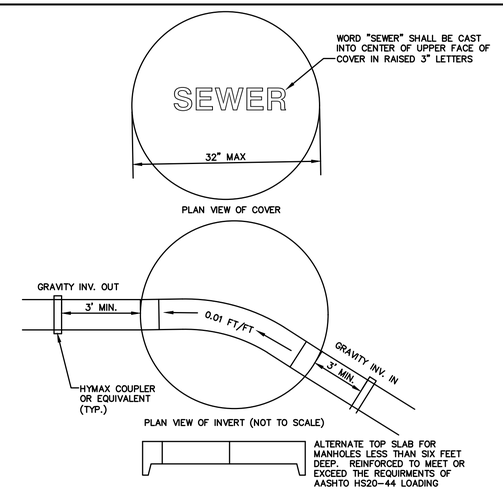
SEWER CLEAN OUT

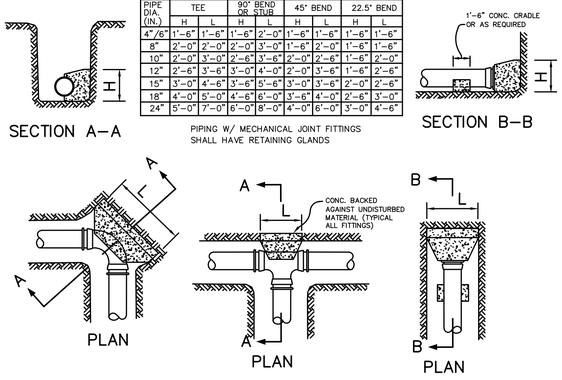
NOT TO SCALE



WATER SYSTEM TRENCH

NOT TO SCALE



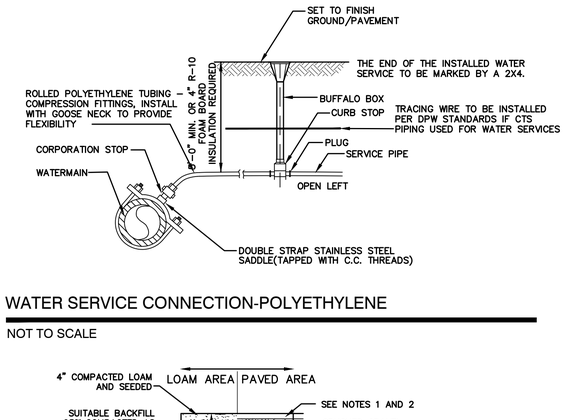


CONCRETE THRUST BLOCK DIMENSIONS								
PIPE DIA. (IN.)	TEE		90° BEND OR STUB		45° BEND		22.5° BEND	
	H	L	H	L	H	L	H	L
4"/6"	1'–6"	1'–6"	1'–6"	2'–0"	1'–6"	1'–6"	1'–6"	1'–6"
8"	2'–0"	2'–0"	2'–0"	3'–0"	1'–6"	2'–0"	1'–6"	1'–6"
10"	2'–0"	3'–0"	2'–6"	3'–6"	2'–0"	2'–6"	1'–6"	2'–0"
12"	2'–6"	3'–6"	3'–0"	4'–0"	2'–0"	3'–6"	1'–6"	2'–6"
15"	3'–0"	4'–6"	3'–6"	5'–6"	3'–0"	3'–6"	2'–0"	2'–6"
18"	4'–0"	5'–0"	4'–6"	6'–0"	3'–6"	4'–0"	2'–6"	3'–0"
24"	5'–0"	7'–0"	6'–0"	8'–0"	4'–0"	6'–0"	3'–0"	4'–6"

PIPING W/ MECHANICAL JOINT FITTINGS SHALL HAVE RETAINING GLANDS

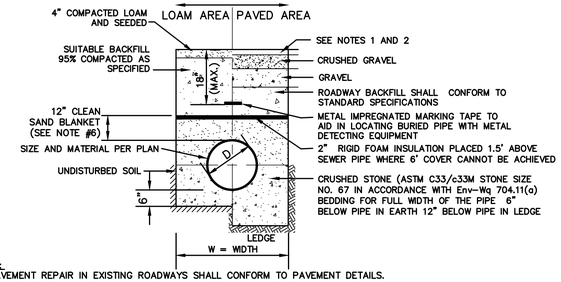
THRUST BLOCK DETAILS

NOT TO SCALE



WATER SERVICE CONNECTION-POLYETHYLENE

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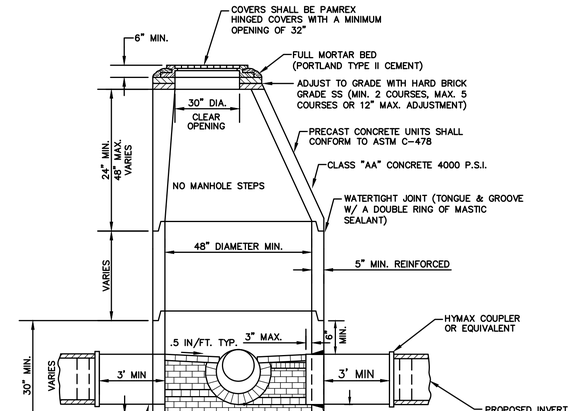


NOTES:

1. PAVEMENT REPAIR IN EXISTING ROADWAYS SHALL CONFORM TO PAVEMENT DETAILS.
2. NEW ROADWAY CONSTRUCTION SHALL CONFORM TO SUBDIVISION SPECIFICATIONS.
3. TRENCH BACKFILL SHALL CONFORM WITH ENV. Wq 704.11(h) AND BE FREE OF DEBRIS, PAVEMENT, ORGANIC MATTER, TOP SOIL, WET OR SOFT MUCK, PEAT OR CLAY, EXCAVATED LEDGE OR ROCKS OVER SIX INCHES.
4. W= MAXIMUM ALLOWABLE TRENCH WIDTH TO A PLANE 12" INCHES ABOVE THE PIPE. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, WIDTH SHALL BE NO MORE THAN 36"; FOR PIPES GREATER THAN 15 INCHES NOMINAL DIAMETER, WIDTH SHALL BE 24 INCHES PLUS PIPE O.D. WIDTH SHALL ALSO BE THE PAYMENT WIDTH FOR LEDGE EXCAVATION AND FOR ORDERED EXCAVATION BELOW GRADE.
5. RIGID FOAM INSULATION TO BE PROVIDED WHERE COVER IN THE ROADWAY IS LESS THAN 6' AND CROSS COUNTRY IS LESS THAN 4', PURSUANT TO DES WAIVER BEING ISSUED.
6. PIPE SAND BLANKET MATERIAL SHALL BE GRADED SAND, FREE FROM ORGANIC MATERIALS, GRADED SUCH THAT 100% PASSES A 1/2 " SIEVE AND A MAXIMUM OF 15% PASSES A #200 SIEVE IN ACCORDANCE WITH Env–Wq 704.11(b).
7. JOINT SEALS FOR PVC PIPE SHALL BE OIL RESISTANT COMPRESSION RINGS OF ELASTOMERIC MATERIAL AND CERTIFIED BY THE MANUFACTURER AS CONFORMING TO THE ASTM D3212 STANDARD IN EFFECT WHEN THE JOINT SEALS WERE MANUFACTURED, AND SHALL BE PUSH–ON, BELL–AND–SPIGOT TYPE PER Env–Wq 704.05 (e).
8. PVC PIPE SHALL CONFORM WITH ASTM D3034 AND ASTM D2412.

GRAVITY SEWER TRENCH

NOT TO SCALE

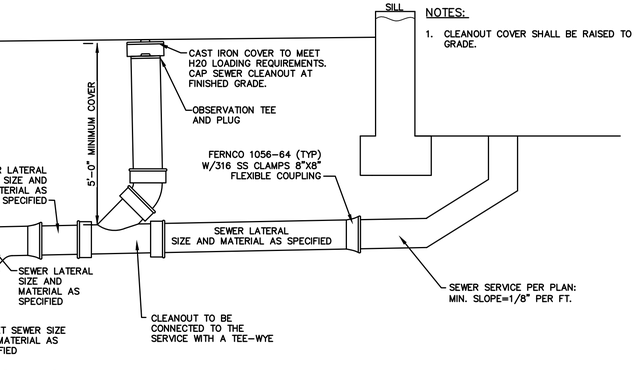


NOTES:

1. PER NHDES ENV–WQ 704.13(C), THE MORTAR SPECIFICATION SHALL BE AS FOLLOWS:
   1. MORTAR SHALL BE COMPOSED OF PORTLAND CEMENT AND SAND WITH OR WITHOUT HYDRATED LIME ADDITION;
   2. PROPORTIONS IN MORTAR OF PARTS BY VOLUMES SHALL BE:
      A. 4.5 PARTS SAND AND 1.5 PARTS CEMENT; OR
      B. 4.5 PARTS SAND, ONE PART CEMENT AND 0.5 PART HYDRATED LIME;
   3. CEMENT SHALL BE TYPE II PORTLAND CEMENT CONFORMING TO ASTM C150–05;
   4. HYDRATED LIME SHALL BE TYPE S CONFORMING TO THE ASTM C207–06 'STANDARD SPECIFICATIONS FOR HYDRATED LIME FOR MASONRY PURPOSES';
   5. SAND SHALL CONSIST OF INERT NATURAL SAND CONFORMING TO THE ASTM C33–03 'STANDARD SPECIFICATIONS FOR CONCRETE, FINE AGGREGATES';
2. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE HIGHEST PIPE CROWN AND SLOPED TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL IN ACCORDANCE WITH ENV–WQ 704.12 (K).
3. ALL MANHOLES SHALL BE TESTED FOR LEAKAGE IN ACCORDANCE WITH ENV–WQ 704.17 (a) THROUGH (e).
4. SEWER MANHOLE COVERS SHALL CONFORM TO ASTM A48 WITH A CASTING EQUAL TO CLASS 30 IN ACCORDANCE WITH ENV–WQ 704.13 (a).
5. ALL ASBESTOS CONTAINING WASTE MATERIALS MUST BE PROPERLY IDENTIFIED, PACKAGED AND DELIVERED TO A LANDFILL LICENCED BY THE NHDES SOLID WASTE MANAGEMENT PROGRAM FOR DISPOSAL. CALL (603) 271–2925 FOR MORE INFORMATION.
6. PORTSMOUTH STANDARD SEWER MANHOLE SHALL BE USED.
7. CONTRACTOR TO PURCHASE SEWER MANHOLE COVERS FROM THE CITY OF PORTSMOUTH DIRECTLY.
8. MANHOLE BASE SECTIONS SHALL BE MONOLITHIC TO A POINT AT LEAST 6" ABOVE THE HIGHEST INCOMING SEWER PIPE PER ENV–WQ 704.12 (e).
9. MANHOLE CASTINGS SHALL CONFORM TO ASTM A48 PER ENV–WQ 704.13 (a) (8).

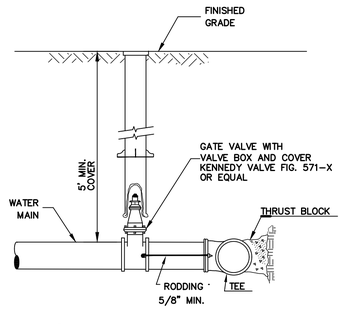
PORTSMOUTH SEWER MANHOLE

NOT TO SCALE



SEWER SERVICE

NOT TO SCALE



BURIED GATE VALVE DETAIL

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Checked: EMP	Scale: AS NOTED	Project No.: 25071.2
Drawing Name: 25071.2-PLAN.dwg		

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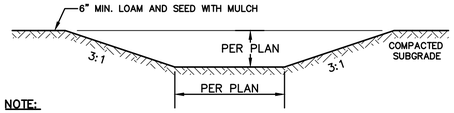
STATE OF NEW HAMPSHIRE – DANIEL JAMES MEDITZ No.18152 – LICENSED PROFESSIONAL ENGINEER
10/20/2026

REV.	DATE	REVISION	BY
3	10/19/26	REVISED PER TAC COMMENTS	DJM
2	09/22/26	REVISED PER TAC COMMENTS	DJM
1	09/01/26	UPDATED TITLE BLOCK	DJM
0	08/17/26	ISSUED FOR REVIEW	DJM

Designed and Produced in NH
Jones & Beach Engineers, Inc.
Civil Engineering Services
100 Domain Dr.
Suite 201
Exeter, NH 03833
603-772-4746
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	DETAIL SHEET
Project:	LEDGEWOOD DRIVE LLC LEDGEWOOD DRIVE, PORTSMOUTH, NH 03801
Owner of Record:	ST NICHOLAS GREEK ORTHODOX CHURCH 40 ANDREW JARVIS DRIVE, PORTSMOUTH, NH 03801

DRAWING No.
D2
SHEET 12 OF17
JBE PROJECT NO. 25071.2

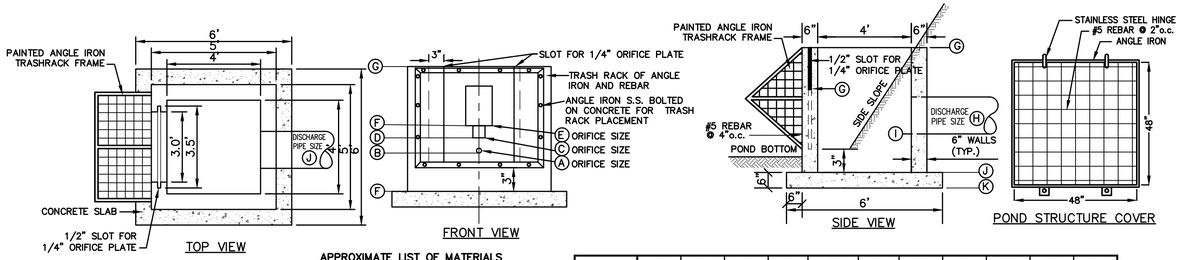


NOTE:

1. STABILIZE AREA PRIOR TO DIRECTING RUNOFF TO SWALE

VEGETATED SWALE

NOT TO SCALE



APPROXIMATE LIST OF MATERIALS

1. 3 C.Y. – 5000 PSI CONCRETE
2. 15 ANGLE IRONS @ 4' LENGTH
3. REQUIRED S.S. BOLTS AND FASTENERS
4. 1/4" STEEL PLATE WITH DRILLED ORIFICES
5. 1 C.Y. – CRUSHED STONE FOR BASE
6. 48 #5 REBARS @ 1', 2' AND 3' LENGTHS
7. 32 #4 REBARS @ 4.5' LENGTH

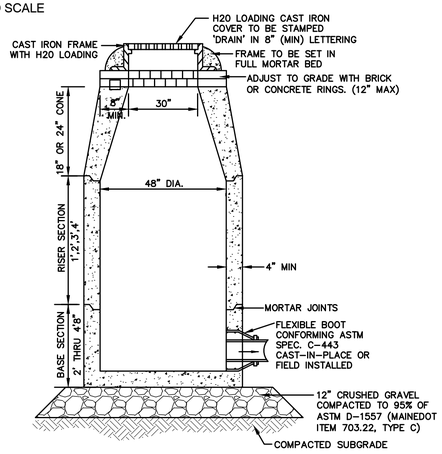
	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ	Ⓕ	Ⓖ	Ⓗ	Ⓘ	Ⓙ	Ⓚ
MSDOS A	1.0"	20.30	3"x3"	21.00	5"Wx15"H	21.25	22.75	18"	19.90	19.20	18.70

NOTES:

1. REINFORCING STEEL SHALL CONSIST OF A SINGLE LAYER OF HORIZONTAL AND VERTICAL PLACED #4 REBAR @ 12" O.C.
2. CONCRETE BOX TO BE CONSTRUCTED OR PRECAST OF EQUAL DIMENSIONS AND REINFORCING.
3. CONCRETE SLAB TO BE CONSTRUCTED ALONG WITH BASE. FOR PRECAST BOX, A SLOTTED CONCRETE SLAB TO BE USED.
4. SECTION JOINTS AND PIPE OPENING SHALL BE SEALED WATERTIGHT WITH MORTAR BY CONTRACTOR.
5. ALL REBAR SHALL BE PROVIDED AS EPOXY COATED.
6. TO BE SUPPLIED BY CAPITAL CONCRETE PRODUCTS OF HENNIKER, N.H., (1-603-428-3218) OR EQUAL.
7. STRUCTURE TO HAVE TEMPORARY PLYWOOD INSTALLED IN THE ORIFICE PLATE SLOT UNTIL THE SITE IS STABILIZED.
8. STRUCTURE IS TO BE DESIGNED FOR H20 LOADING.
9. SOIL UNDERLYING THE STRUCTURE IS TO BE COMPACTED TO 95% MODIFIED PROCTOR.
10. CONTRACTOR TO BACKFILL OUTLET STRUCTURE AND PLACE STRUCTURE IN SIDE SLOPE OF DETENTION POND AS SHOWN. ALL ORIFICES SHALL DAYLIGHT.

MULTI-STAGE DISCHARGE OUTLET STRUCTURE (MSDOS)

NOT TO SCALE

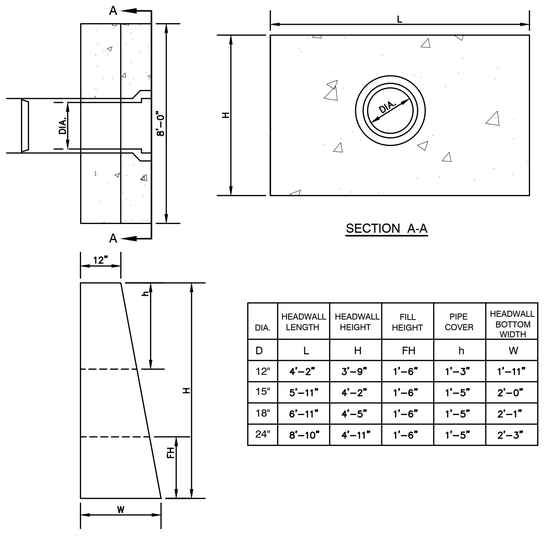


NOTES:

1. BASE SECTION SHALL BE MONOLITHIC WITH 48" INSIDE DIAMETER.
2. ALL SECTIONS SHALL BE DESIGNED FOR H20 LOADING.
3. CONCRETE SHALL BE COMPRESSIVE STRENGTH 4000 PSI, TYPE II CEMENT.
4. FRAMES AND GRATES SHALL BE HEAVY DUTY AND DESIGNED FOR H20 LOADING.
5. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS SO AS TO BE WATERTIGHT.
6. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE BUTYL RUBBER.
7. ALL DRAIN MANHOLE FRAMES AND GRATES SHALL BE NEENAH R-1798 OR APPROVED EQUAL (30" DIA. TYPICAL).
8. STANDARD FRAME(S) AND GRATE(S) SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR (2 BRICK COURSES TYPICALLY, 5 BRICK COURSES MAXIMUM, BUT NO MORE THAN 12"), OR PRECAST CONCRETE 'DONUTS'.

DRAIN MANHOLE (4' DIAM.)

NOT TO SCALE



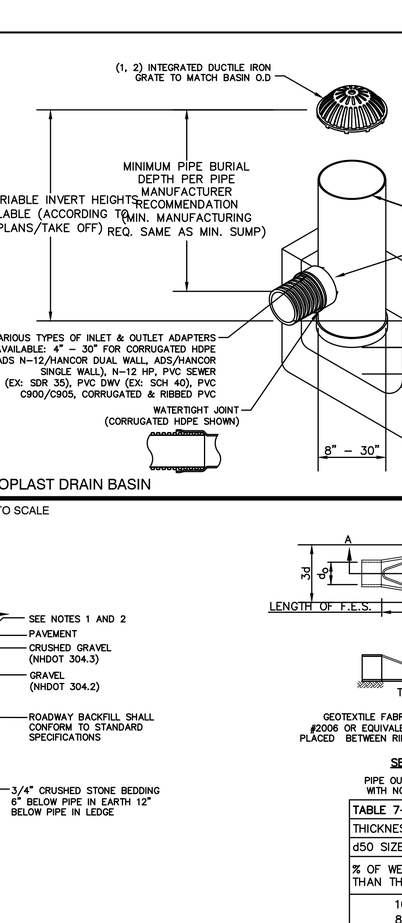
DIA.	HEADWALL LENGTH	HEADWALL HEIGHT	FILL HEIGHT	PIPE COVER	HEADWALL BOTTOM WIDTH
D	L	H	FH	h	W
12"	4'-2"	3'-9"	1'-6"	1'-3"	1'-11"
15"	5'-11"	4'-2"	1'-6"	1'-5"	2'-0"
18"	6'-11"	4'-5"	1'-6"	1'-5"	2'-1"
24"	8'-10"	4'-11"	1'-6"	1'-5"	2'-3"

NOTES:

1. ALL DIMENSIONS GIVEN IN FEET & INCHES.
2. PROVIDE BELL END AT INLET HEADWALL, AND SPIGOT END AT OUTLET END HEADWALL.
3. CONCRETE: 5,000 PSI MINIMUM AFTER 28 DAYS. CEMENT TO BE TYPE III PER ASTM C-150. REINFORCING TO MEET OR EXCEED ASTM A-615 GRADE 60 DEFORMED BARS.
4. 1" THREADED INSERTS PROVED FOR FINAL ATTACHMENT IN FIELD BY OTHERS.

PRECAST CONCRETE HEADWALL

NOT TO SCALE

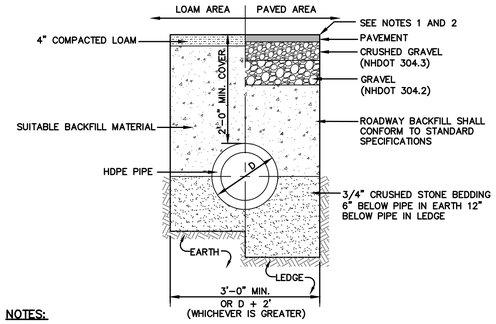


NOTES:

1 – 8" – 30" DOME GRATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05 FOR YARD DRAIN. UNDERDRAIN CLEANOUT SHALL HAVE A SOLID COVER TO PREVENT INTRUSION OF SURFACE WATER.
2 – 8" & 10" DOME GRATES FIT ONTO THE DRAIN BASINS WITH THE USE OF A PVC BODY TOP. SEE DRAWING NO. 7001-110-045.
3 – DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-065.
4 – DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP, & PVC SEWER (4" – 24").
5 – ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.
6 – 8" – 30" DOME GRATES HAVE NO LOAD RATING.

NYLOPLAST DRAIN BASIN

NOT TO SCALE



NOTES:

1. PAVEMENT REPAIR IN EXISTING ROADWAYS SHALL CONFORM TO STREET OPENING REGULATIONS.
2. NEW ROADWAY CONSTRUCTION SHALL CONFORM WITH PROJECT AND TOWN SPECIFICATIONS.
3. ALL MATERIALS ARE TO BE COMPACTED TO 95% OF ASTM D-1557.

DRAINAGE TRENCH

NOT TO SCALE



NOTES:

1. DO NOT DISCHARGE SEDIMENT LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOFF, WATER FROM EXCAVATIONS) TO POCKET POND.
2. DO NOT TRAFFIC EXPOSE SOIL SURFACE WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATION WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE POND.
3. AFTER THE BASIN IS EXCAVATED TO THE FINAL DESIGN ELEVATION, THE FLOOR SHALL BE DEEPLY TILLED WITH A ROTARY TILLER OR DISC HARROW TO RESTORE INFILTRATION RATES, FOLLOWED BY A PASS WITH A LEVELING DRAG.
4. VEGETATION SHALL BE ESTABLISHED IMMEDIATELY.
5. DO NOT PLACE POND INTO SERVICE UNTIL THE CONTRIBUTING AREA HAS BEEN FULLY STABILIZED.
6. ANY FILL MATERIAL USED UNDER INFILTRATION PONDS SHALL BE FREE-DRAINING.
7. SUBGRADE MATERIAL SHALL BE FREE OF ORGANICS, SILTS, CLAY AND ROOTS.
8. IF THE POCKET POND DOES NOT DRAIN WITHIN 72-HOURS FOLLOWING A RAINFALL EVENT, THEN A QUALIFIED PROFESSIONAL SHALL ASSESS THE CONDITION OF THE FACILITY TO DETERMINE MEASURES REQUIRED TO RESTORE INFILTRATION FUNCTION, INCLUDING BUT NOT LIMITED TO REMOVAL OF ACCUMULATED SEDIMENTS OR RECONSTRUCTION OF THE SYSTEM.

POCKET INFILTRATION POND SECTION

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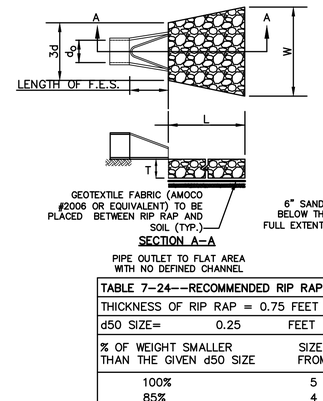


TABLE 7-24--RECOMMENDED RIP RAP GRADATION RANGES				
THICKNESS OF RIP RAP = 0.75 FEET				
d50 SIZE=	0.25	FEET	3	INCHES
% OF WEIGHT SMALLER THAN THE GIVEN d50 SIZE	SIZE OF STONE (INCHES) FROM		TO	
100%	5		6	
85%	4		5	
50%	3		5	
15%	1		2	

TABLE 7-24--RECOMMENDED RIP RAP GRADATION RANGES				
THICKNESS OF RIP RAP = 1.5 FEET				
d50 SIZE=	0.50	FEET	6	INCHES
% OF WEIGHT SMALLER THAN THE GIVEN d50 SIZE	SIZE OF STONE (INCHES) FROM		TO	
100%	9		12	
85%	8		11	
50%	6		9	
15%	2		3	

NOTES:

1. THE SUBGRADE FOR THE GEOTEXTILE FABRIC AND RIP RAP SHALL BE PREPARED TO THE LINES AND GRADES SHOWN ON THE PLANS.
2. THE RIP RAP SHALL CONFORM TO THE SPECIFIED GRADATION.
3. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE ROCK RIP. DAMAGED AREAS IN THE FABRIC SHALL BE REPAIRED BY PLACING A PIECE OF FABRIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACEMENT OF THE FABRIC. ALL OVERLAPS REQUIRED FOR REPAIRS OR JOINING TWO PIECES OF FABRIC SHALL BE A MINIMUM OF 12 INCHES.
4. STONE FOR THE RIP RAP MAY BE PLACED BY EQUIPMENT AND SHALL BE CONSTRUCTED TO THE FULL LAYER THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO PREVENT SEGREGATION OF THE STONE SIZES.
5. OUTLETS TO A DEFINED CHANNEL SHALL HAVE 2:1 OR FLATTER SIDE SLOPES AND SHALL BEGIN AT THE TOP OF THE CULVERT AND TAPER DOWN TO THE CHANNEL BOTTOM THROUGH THE LENGTH OF THE APRON.
6. MAINTENANCE: THE OUTLET PROTECTION SHALL BE CHECKED AT LEAST ANNUALLY AND AFTER EVERY MAJOR STORM. IF THE RIP RAP HAS BEEN DISPLACED, UNDERMINED OR DAMAGED, IT SHALL BE REPAIRED IMMEDIATELY. THE CHANNEL IMMEDIATELY BELOW THE OUTLET SHALL BE CHECKED TO SEE THAT EROSION IS NOT OCCURRING. THE DOWNSTREAM CHANNEL SHALL BE KEPT CLEAR OF OBSTRUCTIONS SUCH AS FALLEN TREES, DEBRIS, AND SEDIMENT THAT COULD CHANGE FLOW PATTERNS AND/OR TAILWATER DEPTHS ON THE PIPES. REPAIRS MUST BE CARRIED OUT IMMEDIATELY TO AVOID ADDITIONAL DAMAGE TO OUTLET PROTECTION.

RIP RAP OUTLET PROTECTION APRON

NOT TO SCALE

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Drawing Name: 25071.2-PLAN.dwg		

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10/20/2026

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0	08/17/26	ISSUED FOR REVIEW	DJM

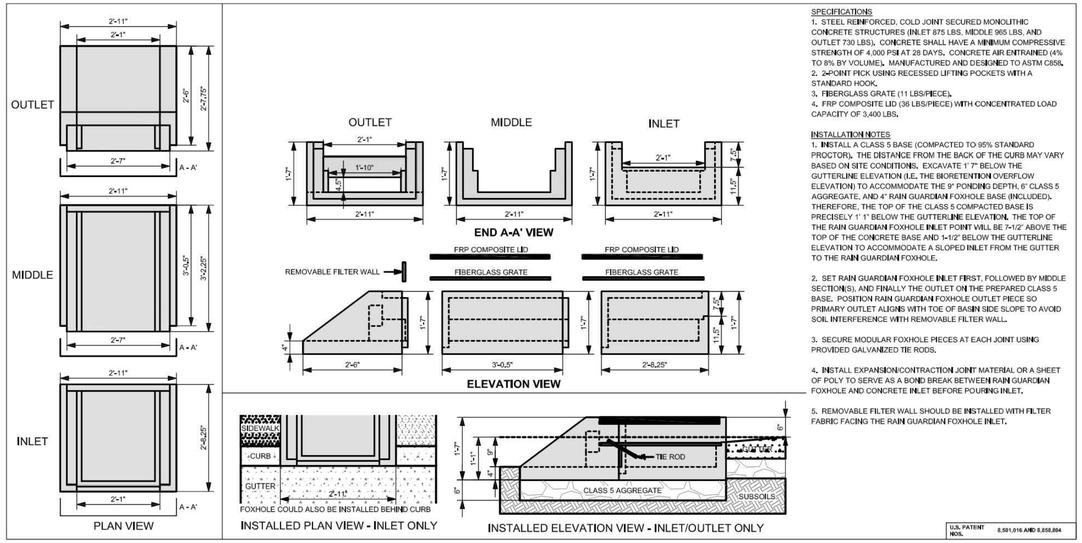
Designed and Produced in NH
Jones & Beach Engineers, Inc.
Civil Engineering Services
100 Domain Dr. Suite 201 Exeter, NH 03833
603-772-4746
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	DETAIL SHEET
Project:	LEDGEWOOD DRIVE LLC LEDGEWOOD DRIVE, PORTSMOUTH, NH 03801
Owner of Record:	ST NICHOLAS GREEK ORTHODOX CHURCH 40 ANDREW JARVIS DRIVE, PORTSMOUTH, NH 03801

DRAWING No.

D3

SHEET 13 OF17
JBE PROJECT NO. 25071.2



SPECIFICATIONS

1. STEEL REINFORCED, COLD JOINT SECURED MONOLITHIC CONCRETE STRUCTURES (INLET 875 LBS, MIDDLE 965 LBS, AND OUTLET 730 LBS). CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS. CONCRETE AIR ENTRAINED (4% TO 8% BY VOLUME). MANUFACTURED AND DESIGNED TO ASTM C858.
2. 24-POINT PICK USING RECESSED LIFTING POCKETS WITH A STANDARD HOOK.
3. FIBERGLASS GRATE (11 LBS/PIECE).
4. FRP COMPOSITE LID (36 LBS/PIECE) WITH CONCENTRATED LOAD CAPACITY OF 3,400 LBS.

INSTALLATION NOTES

1. INSTALL A CLASS 5 BASE (COMPACTED TO 95% STANDARD PROCTOR). THE DISTANCE FROM THE BACK OF THE CURB MAY VARY BASED ON SITE CONDITIONS. EXCAVATE 1'-7" BELOW THE GUTTERLINE ELEVATION (I.E. THE BIORETENTION OVERFLOW ELEVATION) TO ACCOMMODATE THE 9" PONDING DEPTH, 6" CLASS 5 AGGREGATE, AND 4" RAIN GUARDIAN FOXHOLE BASE (INCLUDED). THEREFORE, THE TOP OF THE CLASS 5 COMPACTED BASE IS PRECISELY 1'-1" BELOW THE GUTTERLINE ELEVATION. THE TOP OF THE RAIN GUARDIAN FOXHOLE INLET POINT WILL BE 7-1/2" ABOVE THE TOP OF THE CONCRETE BASE AND 1-1/2" BELOW THE GUTTERLINE ELEVATION TO ACCOMMODATE A SLOPED INLET FROM THE GUTTER TO THE RAIN GUARDIAN FOXHOLE.

2. SET RAIN GUARDIAN FOXHOLE INLET FIRST, FOLLOWED BY MIDDLE SECTION(S), AND FINALLY THE OUTLET ON THE PREPARED CLASS 5 BASE. POSITION RAIN GUARDIAN FOXHOLE OUTLET PIECE SO PRIMARY OUTLET ALIGNS WITH TOE OF BASIN SIDE SLOPE TO AVOID SOIL INTERFERENCE WITH REMOVABLE FILTER WALL.

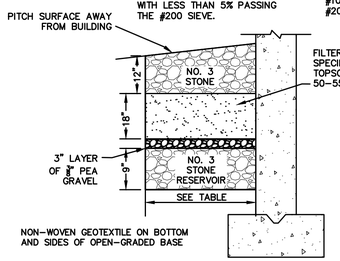
3. SECURE MODULAR FOXHOLE PIECES AT EACH JOINT USING PROVIDED GALVANIZED TIE RODS.

4. INSTALL EXPANSION/CONTRACTION JOINT MATERIAL OR A SHEET OF POLY TO SERVE AS A BOND BREAK BETWEEN RAIN GUARDIAN FOXHOLE AND CONCRETE INLET BEFORE POURING INLET.

5. REMOVABLE FILTER WALL SHOULD BE INSTALLED WITH FILTER FABRIC FACING THE RAIN GUARDIAN FOXHOLE INLET.

RAIN GARDIAN FOXHOLE MODULAR PRETREAMENT CHAMBER

NOT TO SCALE



TOPSOIL SPECIFICATION

LOAMY SAND TOPSOIL WITH MINIMAL CLAY CONTENT AND BETWEEN 15 TO 25% FINES PASSING THE #200 SIEVE.

MULCH SPECIFICATION

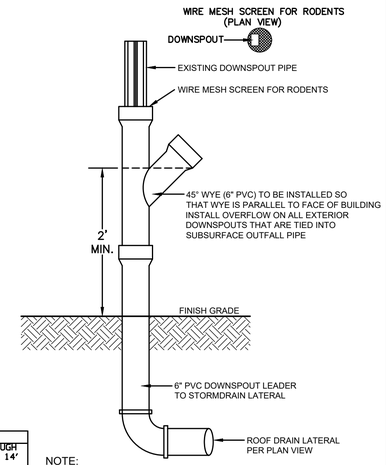
MODERATELY FINE, SHREDDED BARK OR WOOD FIBER MULCH WITH LESS THAN 5% PASSING THE #200 SIEVE.

SAND SPECIFICATION

SIEVE SIZE	% BY WEIGHT
⅜"	100
#4	95–100
#8	80–100
#16	50–85
#30	25–60
#60	10–30
#100	2–10
#200	0–5

FILTRATION DRIP EDGE DETAIL

NOT TO SCALE



NOTE:

1. OVERFLOWS ARE TO BE INSTALLED ON EXTERIOR DOWNSPOUT LEADERS ONLY.

DOWNSPOUT OVERFLOW

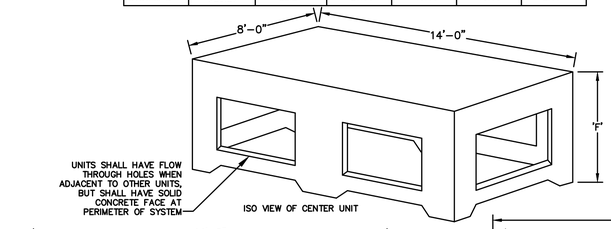
NOT TO SCALE

CONTRACTOR ORDER SCHEDULE

	FLOW-THROUGH HOLES ON ALL SIDES	NO FLOW-THROUGH HOLES ON ONE 14' SIDE	NO FLOW-THROUGH HOLES ON TWO 14' SIDES	NO FLOW-THROUGH HOLES ON TWO 8' AND ONE 14' SIDE	NO FLOW-THROUGH HOLES ON ONE 14' AND ONE 8' SIDE	NO FLOW-THROUGH HOLES ON ONE 14' SIDE
SYSTEM A	1	1	0	1	3	1
SYSTEM B	0	0	4	0	4	0

ELEVATION SCHEDULE

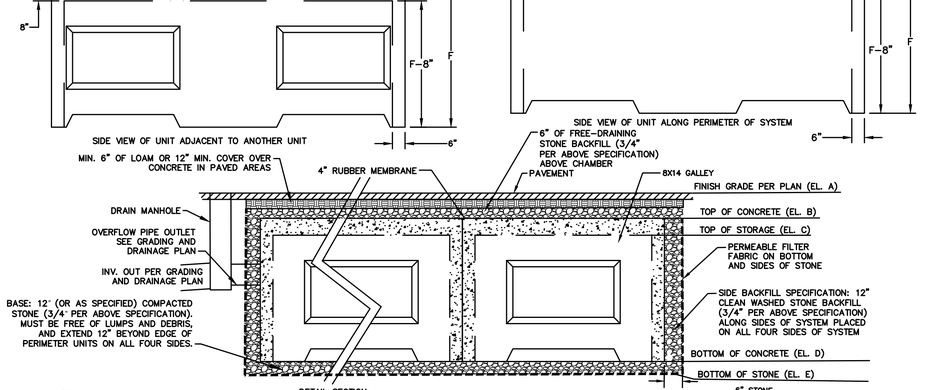
	EL. A	EL. B	EL. C	EL. D	EL. E	F (HEIGHT)
SYSTEM A	>22.87	21.87	21.20	19.20	18.20	2.67'
SYSTEM B	>23.27	22.27	21.60	19.60	18.60	2.67'



STONE BACKFILL SPECIFICATION

SIEVE SIZE	% BY WEIGHT
1"	100
¾"	90–100
⅜"	40–90
#8	23–49
#200	2–8

HEIGHT(H)	VOLUME(EA)	WEIGHT
4'-8"	400CF	18,300#



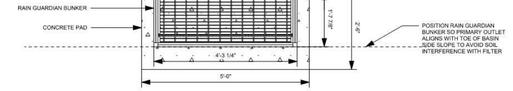
NOTES:

1. CONCRETE: 5,000 PSI MINIMUM AFTER 28 DAYS.
2. DESIGNED FOR AASHTO HS-20 LOAD, 0 TO 5FT COVER. CAN BE DESIGNED FOR ADDITIONAL COVER IF REQUIRED.
3. STANDARD SLAB DESIGN WITHSTANDS 40KIP OUTRIGGER LOAD ON A 24" SQUARE PAD WITH 24" COVER OVER SLAB.
4. CORE HOLE FOR MORTAR JOINT AT INVERT IN LOCATION(S). PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS SO AS TO BE WATERTIGHT
5. COMPACT SUBGRADE TO A BEARING CAPACITY OF AT LEAST 2000 PSF PRIOR TO PLACEMENT OF SYSTEM.
6. GALLEY 8X14 UNITS THAT ARE ADJACENT TO OTHER GALLEY 8X14 UNITS ON ALL SIDES SHALL HAVE FLOW THROUGH HOLES ON ALL SIDES. UNITS THAT ARE NOT ADJACENT TO OTHER UNITS ON AT LEAST ONE SIDE SHALL HAVE A SOLID CONCRETE FACE ON THE SIDES ON THE UNIT THAT ARE NOT ADJACENT TO OTHER UNITS (ALONG PERIMETER OF SYSTEM).
7. SEE OUTLET PIPE SIZES, INVERTS, AND MATERIALS ON GRADING AND DRAINAGE PLAN.

SHEA CONCRETE PRODUCTS "GALLEY 8x14"

NOT TO SCALE

PLAN VIEW



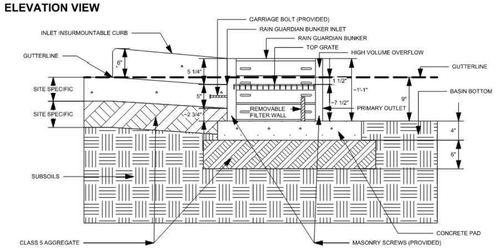
PLAN VIEW NOTES

1. INLET WIDTH AND DISTANCE BETWEEN BACK OF CURB AND RAIN GUARDIAN BUNKER MAY VARY WITH SITE CONDITIONS. INSTALLATION FLUSH WITH THE BACK OF THE CURB CAN ALSO BE COMPLETED WITH THE RAIN GUARDIAN BUNKER.
2. CONCRETE PAD EXTENDS BEYOND THE FILTER WALL OF THE RAIN GUARDIAN BUNKER TO SERVE AS A SPLASH DISSIPATOR.

3D VIEWS



ELEVATION VIEW



ELEVATION VIEW NOTES

1. THE TOP OF THE CLASS 5 BASE (COMPACTED TO 95% STANDARD PROCTOR) IS PRECISELY 1'-1" BELOW THE GUTTERLINE ELEVATION.
2. THE TOP OF THE CONCRETE PAD IS PRECISELY 9" BELOW THE GUTTERLINE.

SPECIFICATIONS

1. CHAMBER CONSTRUCTED OF RECYCLED PLASTIC LUMBER (95%+) MANUFACTURED AND DESIGNED TO ASTM C1028, D6108, D6109, D6111, D6117, AND D6341 (54 LBS).
2. TOP GALVANIZED METAL GRATE (35 LBS, 1" THICK) - 316 LB CONCENTRATED LOAD OR 158 LB/SQ-FT UNIFORM LOAD.

INSTALLATION NOTES

1. INSTALL THE CONCRETE PAD WITH A 1'-10" OFFSET FROM THE BACK OF THE CURB TO ACCOMMODATE THE CONCRETE INLET. THIS DISTANCE MAY VARY BASED ON SITE CONDITIONS, BUT CONSIDERATIONS SHOULD INCLUDE SLOPE OF THE INLET AND BASIN SIDE SLOPES ADJACENT TO THE RAIN GUARDIAN BUNKER. POSITION RAIN GUARDIAN BUNKER SO PRIMARY OUTLET ALIGNS WITH TOE OF BASIN SIDE SLOPE TO AVOID SOIL INTERFERENCE WITH REMOVABLE FILTER WALL. THE CONCRETE PAD SHOULD BE REINFORCED WITH REBAR.
2. EXCAVATE 1'-7" BELOW THE GUTTERLINE ELEVATION (I.E. THE BIORETENTION OVERFLOW ELEVATION) TO ACCOMMODATE THE 9" PONDING DEPTH, 6" CLASS 5 AGGREGATE, AND 4" CONCRETE PAD TO WHICH THE RAIN GUARDIAN BUNKER WILL BE SECURED. THEREFORE, THE TOP OF THE FINISHED CONCRETE PAD IS PRECISELY 9" BELOW THE GUTTERLINE ELEVATION. THE TOP OF THE RAIN GUARDIAN BUNKER METAL GRATE WILL BE 7-1/2" ABOVE THE TOP OF THE CONCRETE PAD AND 1-1/2" BELOW THE GUTTERLINE ELEVATION TO ACCOMMODATE A SLOPED INLET FROM THE GUTTER TO THE RAIN GUARDIAN BUNKER.
3. THE RAIN GUARDIAN BUNKER SHOULD BE POSITIONED 2" FROM THE EDGE OF THE CONCRETE PAD CLOSEST TO THE BACK OF THE CURB. THEREFORE, THE RAIN GUARDIAN BUNKER WILL BE 2' FROM THE BACK OF THE CURB.
4. USING THE PILOT HOLE IN EACH OF THE FOUR CORNER POSTS, PREDRILL 5/32" HOLES INTO THE CONCRETE PAD WITH A 4-1/2" MASONRY BIT AND HAMMER DRILL.
5. SECURE RAIN GUARDIAN BUNKER TO CONCRETE PAD WITH FOUR 3/16" X 2-3/4" MASONRY SCREWS (PROVIDED).
6. INSTALL FRAMING FOR INLET BETWEEN RAIN GUARDIAN BUNKER AND BACK OF CURB. TOP ELEVATIONS OF THE FRAMING SHOULD MATCH THE TOP OF THE CURB ON THE STREET SIDE AND THE TOP OF THE RAIN GUARDIAN BUNKER ON THE BIORETENTION SIDE.
7. WHEN POURING THE CONCRETE INLET, ENSURE THE CARRIAGE BOLTS ON THE RAIN GUARDIAN BUNKER ARE SURROUNDED BY AT LEAST 2" OF CONCRETE ON ALL SIDES.
8. SIDE CURBS OF THE POURED INLET MUST HAVE AN INSURMOUNTABLE PROFILE TO PREVENT WATER FLOW FROM OVERTOPPING THE DOWNSTREAM SIDE OF THE INLET.
9. WRAP CABLE THROUGH TOP METAL GRATE AND SECURE WITH PROVIDED CLAMP. ENSURE SUFFICIENT SLACK EXISTS IN CABLE TO ALLOW FOR GRATE REMOVAL AND PLACEMENT IN CONCRETE INLET DURING CLEANING. REMOVABLE FILTER WALL SHOULD BE INSTALLED WITH FILTER FABRIC FACING THE RAIN GUARDIAN BUNKER INLET.

RAIN GUARDIAN U.S. PATENT NOS. 8,501,016 AND 8,858,804
PRETREATMENT FOR BIORETENTION
Rain Gardens • Swales • Filtration Basins • Infiltration Basins
www.RainGuardian.biz

NOTE: THE 9" RAIN GUARDIAN BUNKER IS A NON-STANDARD PRODUCT AND REQUIRES ADVANCED NOTICE WHEN ORDERING.

RAIN GUARDIAN BUNKER PRETREATMENT CHAMBER BIORETENTION PONDING DEPTH: 9" TYPICAL DETAIL

REVISION HISTORY

REV.	BY	DATE	DESCRIPTION
A	MOH	02/22/2022	BUNKER - 9"
SCALE		VARIABLE	
U.S. PATENT NOS.		8,501,016 AND 8,858,804	

DEVELOPED/MANUFACTURED BY: ANOKA CONSERVATION DISTRICT

Design: DJM	Draft: TCR	Date: 01/08/26
Checked: EMP	Scale: AS NOTED	Project No.: 25071.2
Drawing Name: 25071.2-PLAN.dwg		

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STATE OF NEW HAMPSHIRE – DANIEL JAMES MEDITZ No.18152 – LICENSED PROFESSIONAL ENGINEER
10/20/2026

REV.	DATE	REVISION	BY
3	10/19/26	REVISED PER TAC COMMENTS	DJM
2	09/22/26	REVISED PER TAC COMMENTS	DJM
1	09/01/26	UPDATED TITLE BLOCK	DJM
0	08/17/26	ISSUED FOR REVIEW	DJM

Designed and Produced in NH
Jones & Beach Engineers, Inc.
Civil Engineering Services
100 Domain Dr. Suite 201 Exeter, NH 03833
603-772-4746
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	DETAIL SHEET
Project:	LEDGEWOOD DRIVE LLC LEDGEWOOD DRIVE, PORTSMOUTH, NH 03801
Owner of Record:	ST NICHOLAS GREEK ORTHODOX CHURCH 40 ANDREW JARVIS DRIVE, PORTSMOUTH, NH 03801

DRAWING No.

D4

SHEET 14 OF17
JBE PROJECT NO. 25071.2

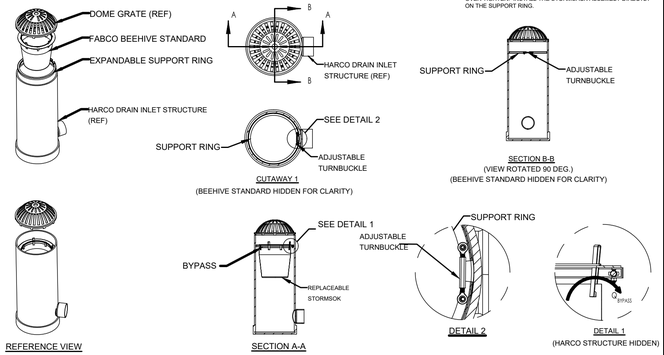
STRUCTURE DIAMETER (IN.)	DEBRIS CAPACITY (CU.FT)	FILTERED FLOWRATE (CFS)	BYPASS FLOWRATE (CFS)
12	0.66	1.7	1.0
15	1.0	2.1	1.3
18	1.2	2.3	1.4
24	2.8	3.9	2.2
30	2.8	3.9	2.2

NOTES:

1. MATERIAL:
   - A) SUPPORT FLANGE: ALUMINUM ALLOY PLATE, 5000 SERIES
   - B) STORMSOK: WOVEN POLYPROPYLENE GEOTEXTILE
   - C) EXPANSION RING: ALUMINUM ALLOY CHANNEL, 6000 SERIES
   - D) HARDWARE: STAINLESS STEEL
2. RECOMMENDED MINIMUM VAULT DEPTH: 2-IN BELOW STORMSOK
3. USE ONLY WITH FABCO REPLACEABLE STORMSOK

GENERAL INSTALLATION:

ADJUST THE TURNBUCKLE DOWN TO GIVE THE SMALLEST RING DIAMETER AND LOCATE THE EXPANSION RING INTO THE HARCO STRUCTURE MINIMUM OF 6-IN DOWN FROM THE TOP OPENING AS SHOWN. BEGIN OPENING THE TURNBUCKLE UNTIL THE EXPANSION RING IS SELF SUPPORTING, THEN VERIFY THE RING IS LEVEL AND PLUMB TO THE HARCO STRUCTURE. USING A CALIBRATED TORQUE WRENCH, CONTINUE TO OPEN THE TURNBUCKLE TO GIVEN TORQUE (MODEL-SPECIFIC). DO NOT OVER TIGHTEN. INSTALL THE STORMSACK ASSEMBLY DIRECTLY ON THE SUPPORT RING.



ACF BEEHIVE OVERFLOW FILTER STRUCTURE DETAILS

FOR MORE INFORMATION CONTACT ACF ENVIRONMENTAL
WWW.ACFENVIRONMENTAL.COM
800.448.3636

FocalPoint
FOR A HEALTHY ENVIRONMENT

REVISED
AUG 2020

FOCALPOINT HP PERFORMANCE SPECIFICATION:

HIGH PERFORMANCE MEDIA

HIGH PERFORMANCE MEDIA MUST MEET A MINIMUM OF 100" PER HOUR INFILTRATION RATE.

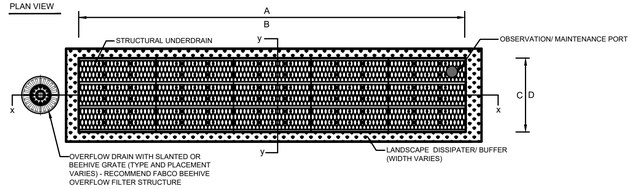
HIGH PERFORMANCE STRUCTURAL UNDERDRAIN

R-TANK MINI OR APPROVED EQUAL
MUST HAVE A MINIMUM OF 15 SQUARE INCHES OF ORIFICE OPENING PER SQUARE FOOT.
MUST MEET H20 LOADING REQUIREMENTS.
MUST BE MODULAR IN NATURE AND ASSEMBLED ON SITE.
MUST HAVE MINIMUM 90% INTERIOR VOID SPACE.

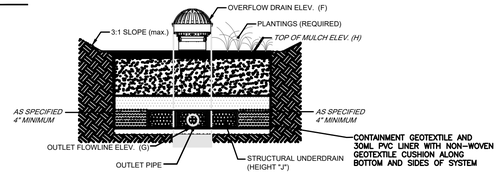
PLANT COMPONENT

SUPPLIER SHALL PROVIDE LIST OF ACCEPTABLE PLANTS
IF PLANTS ARE NOT INCLUDED IN THE LANDSCAPE CONTRACT/PLANS. SITE CONTRACTOR SHALL PROVIDE PLANTS.
PLANTS SHALL BE INSTALLED AT THE TIME THE SYSTEM IS COMMISSIONED FOR USE. PLANTING OUTSIDE THIS TIME REQUIRES APPROVAL BY THE ENGINEER/LANDSCAPE ARCHITECT OF RECORD.
SEE FOCALPOINT INSTALLATION GUIDE FOR PLANT SPACING, PLANTING PROCEDURES ETC.

PLAN VIEW



SECTION Y-Y



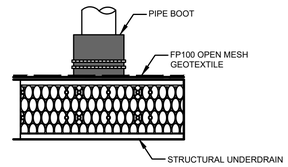
FOCALPOINT HP CONSTRUCTION GUIDE

FOR MORE INFORMATION CONTACT ACF ENVIRONMENTAL
WWW.ACFENVIRONMENTAL.COM
800.448.3636

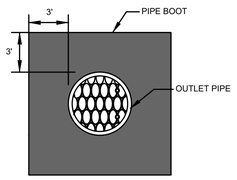
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FOR A HEALTHY ENVIRONMENT

REVISED
AUG 2020

OBSERVATION/ MAINTENANCE PORT CONNECTION

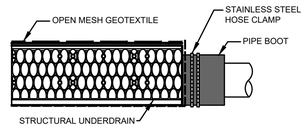


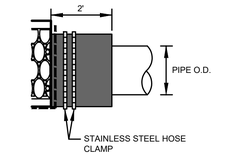
PIPE BOOT DETAIL



FRONT VIEW

OUTLET/ INLET PIPE CONNECTION





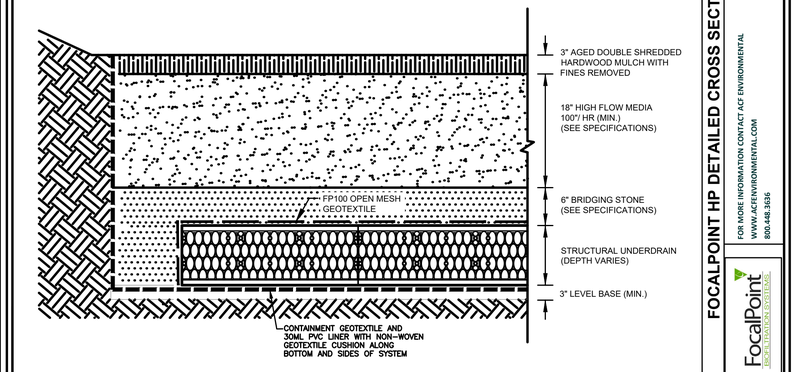
SIDE VIEW

FOCALPOINT PIPE CONNECTION

FOR MORE INFORMATION CONTACT ACF ENVIRONMENTAL
WWW.ACFENVIRONMENTAL.COM
800.448.3636

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AUG 2020

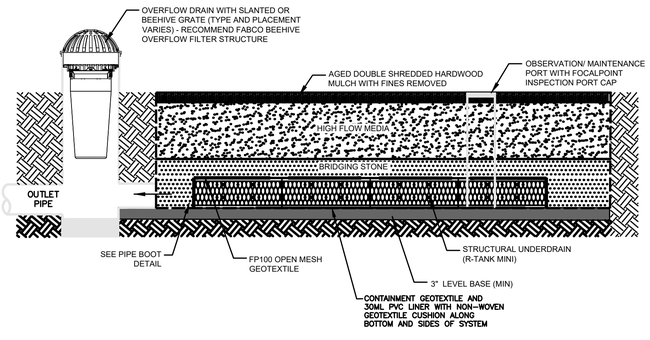


FOCALPOINT HP DETAILED CROSS SECTION

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FOCALPOINT HP SECTION X-X

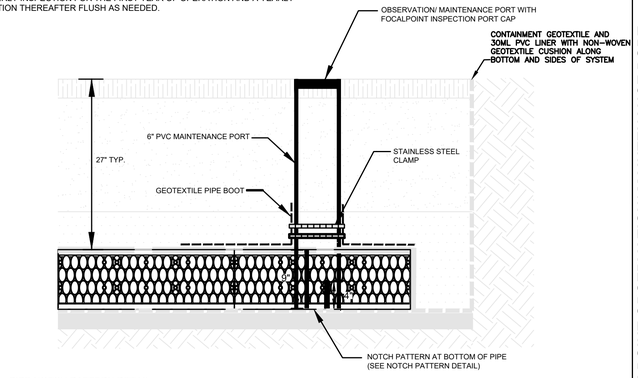
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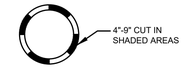
REVISED
AUG 2020

OBSERVATION/ MAINTENANCE PORT

PORT USED FOR INSPECTION PURPOSES AND FOR SYSTEM MAINTENANCE AS REQUIRED. WATER SHALL BE PUMPED INTO THE SYSTEM AND RESUSPEND ACCUMULATED SEDIMENT. MINIMUM REQUIRED MAINTENANCE INCLUDES A QUARTERLY INSPECTION FOR THE FIRST YEAR OF OPERATION AND A YEARLY INSPECTION THEREAFTER FLUSH AS NEEDED.



PIPE NOTCH PATTERN DETAIL



FOCALPOINT OBSERVATION/ MAINTENANCE PORT

FOR MORE INFORMATION CONTACT ACF ENVIRONMENTAL
WWW.ACFENVIRONMENTAL.COM
800.448.3636

FocalPoint
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REVISED
AUG 2020

Design: DJM	Draft: TCR
Checked: EMP	Scale: AS NOTED
Drawing Name: 25071.2-PLAN.dwg	Date: 01/08/26
	Project No.: 25071.2

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STATE OF NEW HAMPSHIRE
DANIEL JAMES MEDITZ
No.18152
LICENSED PROFESSIONAL ENGINEER
10/20/2026

REV.	DATE	REVISION	BY
3	10/19/26	REVISED PER TAC COMMENTS	DJM
2	09/22/26	REVISED PER TAC COMMENTS	DJM
1	09/01/26	UPDATED TITLE BLOCK	DJM
0	08/17/26	ISSUED FOR REVIEW	DJM

Designed and Produced in NH
Jones & Beach Engineers, Inc.
Civil Engineering Services
100 Domain Dr.
Suite 201
Exeter, NH 03833
603-772-4746
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	DETAIL SHEET
Project:	LEDGEWOOD DRIVE LLC LEDGEWOOD DRIVE, PORTSMOUTH, NH 03801
Owner of Record:	ST NICHOLAS GREEK ORTHODOX CHURCH 40 ANDREW JARVIS DRIVE, PORTSMOUTH, NH 03801

DRAWING No.

D5

SHEET 15 OF17
JBE PROJECT NO. 25071.2

TEMPORARY EROSION CONTROL NOTES

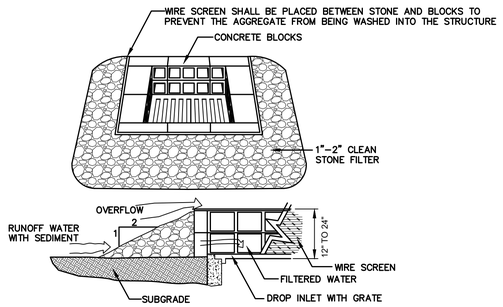
1. THE SMALLEST PRACTICAL AREA OF LAND SHALL BE EXPOSED AT ANY ONE TIME. AT NO TIME SHALL AN AREA IN EXCESS OF 5 ACRES BE EXPOSED AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED.
2. EROSION, SEDIMENT AND DETENTION MEASURES SHALL BE INSTALLED AS SHOWN ON THE PLANS AND AT LOCATIONS AS REQUIRED, DIRECTED BY THE ENGINEER.
3. ALL DISTURBED AREAS (INCLUDING POND AREAS BELOW THE PROPOSED WATERLINE) SHALL BE RETURNED TO PROPOSED GRADES AND ELEVATIONS. DISTURBED AREAS SHALL BE LOAMED WITH A MINIMUM OF 6" OF SCREENED ORGANIC LOAM AND SEEDED WITH SEED MIXTURE 'C' AT A RATE NOT LESS THAN 1.10 POUNDS OF SEED PER 1,000 S.F. OF AREA (48 LBS. / ACRE).
4. SILT FENCES AND OTHER BARRIERS SHALL BE INSPECTED EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS OF A RAINFALL OF 0.5" OR GREATER. ALL DAMAGED AREAS SHALL BE REPAIRED, AND SEDIMENT DEPOSITS SHALL PERIODICALLY BE REMOVED AND DISPOSED OF.
5. AFTER ALL DISTURBED AREAS HAVE BEEN STABILIZED, THE TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED AND THE AREA DISTURBED BY THE REMOVAL SMOOTHED AND RE-VEGETATED.
6. AREAS MUST BE SEEDED AND MULCHED OR OTHERWISE PERMANENTLY STABILIZED WITHIN 3 DAYS OF FINAL GRADING, OR TEMPORARILY STABILIZED WITHIN 14 DAYS OF THE INITIAL DISTURBANCE OF SOIL. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.
7. ALL PROPOSED VEGETATED AREAS THAT DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED BY SEEDING AND INSTALLING NORTH AMERICAN GREEN S150 EROSION CONTROL BLANKETS (OR AN EQUIVALENT APPROVED IN WRITING BY THE ENGINEER) ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.
8. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.
9. AFTER OCTOBER 15th, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3" OF CRUSHED GRAVEL PER NHDOT ITEM 304.3.
10. IN AREAS TO BE PAVED, "STABLE" MEANS THAT BASE COURSE GRAVELS MEETING THE REQUIREMENTS OF NHDOT STANDARD FOR ROAD AND BRIDGE CONSTRUCTION, 2016, ITEM 304.2 HAVE BEEN INSTALLED.

    IN AREAS THAT WILL NOT BE PAVED, "STABLE MEANS THAT:

    a. A MINIMUM OF 85% VEGETATIVE COVER HAS BEEN ESTABLISHED IN A MANNER THAT IS EVENLY DISTRIBUTED OVER THE SITE, WITH NO LARGE AREAS OF BARE SOIL;

    b. A MINIMUM OF 3 INCHES OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED; OR

    c. EROSION CONTROL BLANKETS HAVE BEEN INSTALLED IN ACCORDANCE WITH ENV-WQ 1506.03.
11. FUGITIVE DUST CONTROL IS REQUIRED TO BE CONTROLLED IN ACCORDANCE WITH ENV-A 1000, AND THE PROJECT IS TO MEET THE REQUIREMENTS AND INTENT OF RSA 430:53 AND AGR 3800 RELATIVE TO INVASIVE SPECIES.

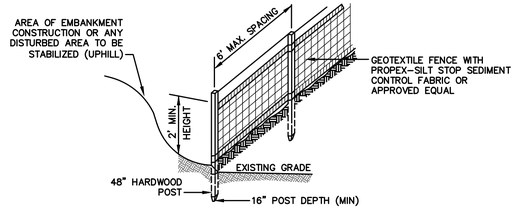


MAINTENANCE NOTE:

1. ALL STRUCTURES SHOULD BE INSPECTED AFTER EVERY RAINFALL AND REPAIRS MADE AS NECESSARY. SEDIMENT SHOULD BE REMOVED FROM TRAPPING DEVICES AFTER THE SEDIMENT HAS REACHED A MAXIMUM OF ONE HALF THE DEPTH OF THE TRAP. THE SEDIMENT SHOULD BE DISPOSED IN A SUITABLE UPLAND AREA AND PROTECTED FROM EROSION BY EITHER STRUCTURE OR VEGETATIVE MEANS. THE TEMPORARY TRAPS SHOULD BE REMOVED AND THE AREA REPAIRED AS SOON AS THE CONTRIBUTING DRAINAGE AREA TO THE INLET HAS BEEN COMPLETELY STABILIZED.

TEMPORARY CATCH BASIN INLET PROTECTION
(Block and Gravel Drop Inlet Sediment Filter)

NOT TO SCALE

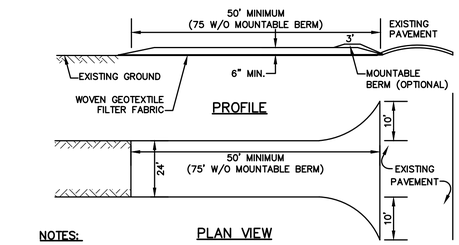


CONSTRUCTION SPECIFICATIONS:

1. WOVEN FABRIC FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. FILTER CLOTH SHALL BE FASTENED TO WOVEN WIRE EVERY 24" AT TOP, MID AND BOTTOM AND EMBEDDED IN THE GROUND A MINIMUM OF 8" AND THEN COVERED WITH SOIL.
2. THE FENCE POSTS SHALL BE A MINIMUM OF 48" LONG, SPACED A MAXIMUM 6' APART, AND DRIVEN A MINIMUM OF 16" INTO THE GROUND.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THE ENDS OF THE FABRIC SHALL BE OVERLAPPED 6", FOLDED AND STAPLED TO PREVENT SEDIMENT FROM BY-PASSING.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND SEDIMENT REMOVED AND PROPERLY DISPOSED OF WHEN IT IS 6" DEEP OR VISIBLE 'BULGES' DEVELOP IN THE SILT FENCE.
5. PLACE THE ENDS OF THE SILT FENCE UP CONTOUR TO PROVIDE FOR SEDIMENT STORAGE.
6. SILT FENCE SHALL REMAIN IN PLACE FOR 24 MONTHS.

SILT FENCE

NOT TO SCALE



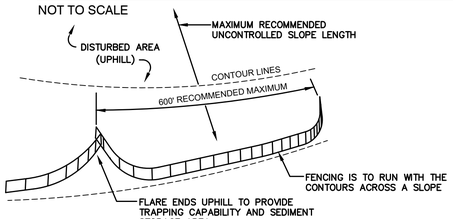
PLAN VIEW

NOTES:

1. STONE FOR STABILIZED CONSTRUCTION ENTRANCE SHALL BE 3 INCH STONE, RECLAIMED STONE, OR RECYCLED CONCRETE EQUIVALENT.
2. THE LENGTH OF THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 50 FEET, 75' WITHOUT A MOUNTABLE BERM, AND EXCEPT FOR A SINGLE RESIDENTIAL LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY.
3. THICKNESS OF THE STONE FOR THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 6 INCHES.
4. THE WIDTH OF THE ENTRANCE SHALL NOT BE LESS THAN THE FULL WIDTH OF THE ENTRANCE WHERE INGRESS OR EGRESS OCCURS, OR 10 FEET, WHICHEVER IS GREATER.
5. GEOTEXTILE FILTER FABRIC SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING THE STONE. FILTER FABRIC IS NOT REQUIRED FOR A SINGLE FAMILY RESIDENTIAL LOT.
6. ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION ENTRANCE SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A STONE BERM WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
7. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO THE PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, WASHED, OR TRACKED ONTO THE PUBLIC RIGHT-OF-WAY MUST BE REMOVED PROMPTLY.

STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE



7. SILT FENCES SHALL BE REMOVED WHEN NO LONGER NEEDED AND THE SEDIMENT COLLECTED SHALL BE DISPOSED AS DIRECTED BY THE ENGINEER. THE AREA DISTURBED BY THE REMOVAL SHALL BE SMOOTHED AND REVEGETATED.

MAINTENANCE:

1. SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS THAT ARE REQUIRED SHALL BE DONE IMMEDIATELY.
2. IF THE FABRIC ON A SILT FENCE SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, THE FABRIC SHALL BE REPLACED PROMPTLY.
3. SEDIMENT DEPOSITS SHOULD BE INSPECTED AFTER EVERY STORM EVENT. THE DEPOSITS SHOULD BE REMOVED WHEN THEY REACH APPROXIMATELY ONE HALF THE HEIGHT OF THE BARRIER.
4. SEDIMENT DEPOSITS THAT ARE REMOVED, OR LEFT IN PLACE AFTER THE FABRIC HAS BEEN REMOVED, SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.

SEEDING SPECIFICATIONS

1. GRADING AND SHAPING
    A. SLOPES SHALL NOT BE STEEPER THAN 2:1 WITHOUT APPROPRIATE EROSION CONTROL MEASURES AS SPECIFIED ON THE PLANS (3:1 SLOPES OR FLATTER ARE PREFERRED).
    B. WHERE MOWING WILL BE DONE, 3:1 SLOPES OR FLATTER ARE RECOMMENDED.
2. SEEDBED PREPARATION
    A. SURFACE AND SEEPAGE WATER SHOULD BE DRAINED OR DIVERTED FROM THE SITE TO PREVENT DROWNING OR WINTER KILLING OF THE PLANTS.
    B. STONES LARGER THAN 4 INCHES AND TRASH SHOULD BE REMOVED BECAUSE THEY INTERFERE WITH SEEDING AND FUTURE MAINTENANCE OF THE AREA. WHERE FEASIBLE, THE SOIL SHOULD BE TILLED TO A DEPTH OF ABOUT 4 INCHES TO PREPARE A SEEDBED AND FERTILIZER AND LIME MIXED INTO THE SOIL. THE SEEDBED SHOULD BE LEFT IN A REASONABLY FIRM AND SMOOTH CONDITION. THE LAST TILLAGE OPERATION SHOULD BE PERFORMED ACROSS THE SLOPE WHEREVER PRACTICAL.
3. ESTABLISHING A STAND
    A. LIME AND FERTILIZER SHOULD BE APPLIED PRIOR TO OR AT THE TIME OF SEEDING AND INCORPORATED INTO THE SOIL. TYPES AND AMOUNTS OF LIME AND FERTILIZER SHOULD BE BASED ON AN EVALUATION OF SOIL TESTS. WHEN A SOIL TEST IS NOT AVAILABLE, THE FOLLOWING MINIMUM AMOUNTS SHOULD BE APPLIED:
    AGRICULTURAL LIMESTONE, 2 TONS PER ACRE OR 100 LBS. PER 1,000 SQ.FT.
    NITROGEN(N), 50 LBS. PER ACRE OR 1.1 LBS. PER 1,000 SQ.FT.
    PHOSPHATE(P2O5), 100 LBS. PER ACRE OR 2.2 LBS. PER 1,000 SQ.FT.
    POTASH(K2O), 100 LBS. PER ACRE OR 2.2 LBS. PER 1,000 SQ.FT.
    (NOTE: THIS IS THE EQUIVALENT OF 500 LBS. PER ACRE OF 10-20-20 FERTILIZER OR 1,000 LBS. PER ACRE OF 5-10-10.)
    B. SEED SHOULD BE SPREAD UNIFORMLY BY THE METHOD MOST APPROPRIATE FOR THE SITE. METHODS INCLUDE BROADCASTING, DRILLING AND HYDROSEEDING. WHERE BROADCASTING IS USED, COVER SEED WITH .25 INCH OF SOIL OR LESS, BY CULTIPACKING OR RAKING.
    C. REFER TO THE 'SEEDING GUIDE' AND 'SEEDING RATES' TABLES ON THIS SHEET FOR APPROPRIATE SEED MIXTURES AND RATES OF SEEDING. ALL LEGUMES (CROWNVETCH, BIRDSFOOT, TREFOIL AND FLATPEA) MUST BE INOCULATED WITH THEIR SPECIFIC INOCULANT PRIOR TO THEIR INTRODUCTION TO THE SITE.
    D. WHEN SEEDED AREAS ARE MULCHED, PLANTINGS MAY BE MADE FROM EARLY SPRING TO EARLY OCTOBER. WHEN SEEDED AREAS ARE NOT MULCHED, PLANTINGS SHOULD BE MADE FROM EARLY SPRING TO MAY 20th OR FROM AUGUST 10th TO SEPTEMBER 1st.
4. MULCH
    A. HAY, STRAW, OR OTHER MULCH, WHEN NEEDED, SHOULD BE APPLIED IMMEDIATELY AFTER SEEDING.
    B. MULCH WILL BE HELD IN PLACE USING APPROPRIATE TECHNIQUES FROM THE BEST MANAGEMENT PRACTICE FOR MULCHING. HAY OR STRAW MULCH SHALL BE PLACED AT A RATE OF 90 LBS PER 1000 S.F.
5. MAINTENANCE TO ESTABLISH A STAND
    A. PLANTED AREAS SHOULD BE PROTECTED FROM DAMAGE BY FIRE, GRAZING, TRAFFIC, AND DENSE WEED GROWTH.
    B. FERTILIZATION NEEDS SHOULD BE DETERMINED BY ONSITE INSPECTIONS. SUPPLEMENTAL FERTILIZER IS USUALLY THE KEY TO FULLY COMPLETE THE ESTABLISHMENT OF THE STAND BECAUSE MOST PERENNIALS TAKE 2 TO 3 YEARS TO BECOME FULLY ESTABLISHED.
    C. IN WATERWAYS, CHANNELS, OR SWALES WHERE UNIFORM FLOW CONDITIONS ARE ANTICIPATED, ANNUAL MOWING MAY BE NECESSARY TO CONTROL GROWTH OF WOODY VEGETATION.

USE	SEEDING MIXTURE 1/	DROUGHTY	WELL DRAINED	MODERATELY WELL DRAINED	POORLY DRAINED
STEEP CUTS AND FILLS, BORROW AND DISPOSAL AREAS	A	FAIR	GOOD	GOOD	FAIR
	B	POOR	GOOD	FAIR	FAIR
	C	POOR	GOOD	EXCELLENT	GOOD
	D	FAIR	EXCELLENT	EXCELLENT	POOR
WATERWAYS, EMERGENCY SPILLWAYS, AND OTHER CHANNELS WITH FLOWING WATER.	A	GOOD	GOOD	GOOD	FAIR
	C	GOOD	EXCELLENT	EXCELLENT	FAIR
LIGHTLY USED PARKING LOTS, ODD AREAS, UNUSED LANDS, AND LOW INTENSITY USE RECREATION SITES.	A	GOOD	GOOD	GOOD	FAIR
	B	GOOD	GOOD	FAIR	POOR
	C	GOOD	EXCELLENT	EXCELLENT	FAIR
PLAY AREAS AND ATHLETIC FIELDS. (TOPSOIL IS ESSENTIAL FOR GOOD TURF.)	E	FAIR	EXCELLENT	EXCELLENT	2/
	F	FAIR	EXCELLENT	EXCELLENT	2/

GRAVEL PIT, SEE NH-PM-24 IN APPENDIX FOR RECOMMENDATION REGARDING RECLAMATION OF SAND AND GRAVEL PITS.

1/ REFER TO SEEDING MIXTURES AND RATES IN TABLE BELOW.
2/ POORLY DRAINED SOILS ARE NOT DESIRABLE FOR USE AS PLAYING AREA AND ATHLETIC FIELDS.

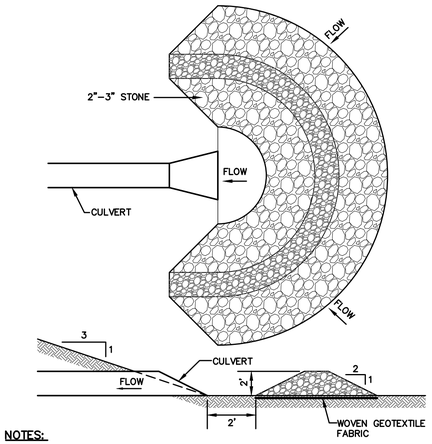
NOTE: TEMPORARY SEED MIX FOR STABILIZATION OF TURF SHALL BE WINTER RYE OR OATS AT A RATE OF 2.5 LBS. PER 1000 S.F. AND SHALL BE PLACED PRIOR TO OCTOBER 15th, IF PERMANENT SEEDING NOT YET COMPLETE.

SEEDING GUIDE

MIXTURE	POUNDS PER ACRE	POUNDS PER 1,000 Sq. Ft.
A. TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
RED TOP	2	0.05
TOTAL	42	0.95
B. TALL FESCUE	15	0.35
CREEPING RED FESCUE	10	0.25
CROWN VETCH	15	0.35
OR		
FLAT PEA	30	0.75
TOTAL	40 OR 55	0.95 OR 1.35
* C. TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
BIRDS FOOT TREFOIL	8	0.20
TOTAL	48	1.10
D. TALL FESCUE	20	0.45
FLAT PEA	30	0.75
TOTAL	50	1.20
E. CREEPING RED FESCUE 1/	50	1.15
KENTUCKY BLUEGRASS 1/	50	1.15
TOTAL	100	2.30
F. TALL FESCUE 1	150	3.60

1/ FOR HEAVY USE ATHLETIC FIELDS CONSULT THE UNIVERSITY OF NEW HAMPSHIRE COOPERATIVE EXTENSION TURF SPECIALIST FOR CURRENT VARIETIES AND SEEDING RATES.

SEEDING RATES



NOTES:

1. TEMPORARY CULVERT INLET PROTECTION CHECK DAMS SHALL BE CONSTRUCTED OF 2-3" STONE OVER WOVEN GEOTEXTILE FABRIC.
2. INLET PROTECTION MEASURES SHALL BE INSTALLED AT THE OPENINGS OF ALL EXISTING AND PROPOSED CULVERTS LOCATED BELOW (DOWNSTREAM) FROM AND WITHIN 100' OF THE PROJECT SITE.
3. SEDIMENT SHALL BE REMOVED FROM BEHIND THE STRUCTURE WHEN IT HAS ACCUMULATED TO ONE HALF THE ORIGINAL HEIGHT OF THE STRUCTURE.
4. STRUCTURES SHALL BE REMOVED WHEN THE SITE IS STABILIZED WITH VEGETATION AND THE CHANNEL SHALL BE SMOOTHED AND REVEGETATED.

TEMPORARY CULVERT INLET PROTECTION CHECK DAM

NOT TO SCALE

CONSTRUCTION SEQUENCE

1. PRIOR TO THE START OF ANY ACTIVITY, IT IS THE RESPONSIBILITY OF THE SITE'S SITE DEVELOPER (OR OWNER) TO FILE A NOTICE OF INTENT (NOI) FORM WITH THE ENVIRONMENTAL PROTECTION AGENCY (EPA) IN ORDER TO GAIN COVERAGE UNDER THE NPDES GENERAL PERMIT FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES. A PRE CONSTRUCTION MEETING IS TO BE HELD WITH ALL DEPARTMENT HEADS PRIOR TO THE START OF CONSTRUCTION.
2. WETLAND BOUNDARIES ARE TO BE CLEARLY MARKED PRIOR TO THE START OF CONSTRUCTION.
3. CUT AND REMOVE TREES IN CONSTRUCTION AREA AS REQUIRED OR DIRECTED.
4. INSTALL SILT FENCING, HAY BALES AND CONSTRUCTION ENTRANCES PRIOR TO THE START OF CONSTRUCTION. THESE ARE TO BE MAINTAINED UNTIL THE FINAL PAVEMENT SURFACING AND LANDSCAPING AREAS ARE ESTABLISHED.
5. CLEAR, CUT, GRUB AND DISPOSE OF DEBRIS IN APPROVED FACILITIES. THIS INCLUDES ANY REQUIRED DEMOLITION OF EXISTING STRUCTURES, UTILITIES, ETC.
6. CONSTRUCT AND/OR INSTALL TEMPORARY OR PERMANENT SEDIMENT AND/OR DETENTION BASIN(S) AS REQUIRED. THESE FACILITIES SHALL BE INSTALLED AND STABILIZED PRIOR TO DIRECTING RUN-OFF TO THEM.
7. STRIP LOAM PER THE RECOMMENDATIONS OF THE PROJECT ENGINEER AND STOCKPILE EXCESS MATERIAL. STABILIZE STOCKPILE AS NECESSARY.
8. PERFORM PRELIMINARY SITE GRADING IN ACCORDANCE WITH THE PLANS, INCLUDING THE CONSTRUCTION OF ANY RETAINING WALLS AND SOUND WALLS.
9. PREPARE BUILDING PAD(S) TO ENABLE BUILDING CONSTRUCTION TO BEGIN.
10. INSTALL THE SEWER AND DRAINAGE SYSTEMS FIRST, THEN ANY OTHER UTILITIES IN ACCORDANCE WITH THE PLAN AND DETAILS. ANY CONFLICTS BETWEEN UTILITIES ARE TO BE RESOLVED WITH THE INVOLVEMENT AND APPROVAL OF THE ENGINEER.
11. ALL SWALES AND DRAINAGE STRUCTURES ARE TO BE CONSTRUCTED AND STABILIZED PRIOR TO HAVING RUN-OFF DIRECTED TO THEM.
12. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINAGE DITCHES, CHECK DAMS, SEDIMENT TRAPS, ETC., TO PREVENT EROSION ON THE SITE AND PREVENT ANY SILTATION OF ABUTTING WATERS AND/OR PROPERTY.
13. PERFORM FINAL FINE GRADING, INCLUDING PLACEMENT OF 'SELECT' SUBGRADE MATERIALS.
14. PAVE ALL PARKING LOT AND DRIVEWAYS WITH INITIAL 'BASE COURSE'.
15. PERFORM ALL REMAINING SITE CONSTRUCTION (i.e. BUILDING, CURBING, UTILITY CONNECTIONS, ETC.).
16. LOAM AND SEED ALL DISTURBED AREAS AND INSTALL ANY REQUIRED SEDIMENT AND EROSION CONTROL FACILITIES (i.e. RIP RAP, EROSION CONTROL BLANKETS, ETC.).
17. FINISH PAVING PARKING LOT AND DRIVEWAYS WITH 'FINISH' COURSE.
18. PARKING LOT AND DRIVEWAYS SHALL BE STABILIZED (PER REQUIREMENTS OF NHDES ENV-WQ 1502.61) WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
19. ALL CUT AND FILL SLOPES SHALL BE SEEDED/LOAMED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
20. COMPLETE PERMANENT SEEDING AND LANDSCAPING.
21. REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER SEEDING AREAS HAVE BEEN 75%-85% ESTABLISHED AND SITE IMPROVEMENTS ARE COMPLETE. SMOOTH AND RE-VEGETATE ALL DISTURBED AREAS.
22. CLEAN SITE AND ALL DRAINAGE STRUCTURES, PIPES AND SUMPS OF ALL SILT AND DEBRIS.
23. INSTALL ALL PAINTED PAVEMENT MARKINGS AND SIGNAGE PER THE PLANS AND DETAILS.
24. ALL EROSION CONTROLS SHALL BE INSPECTED WEEKLY AND AFTER EVERY QUARTER-INCH OF RAINFALL.
25. UPON COMPLETION OF CONSTRUCTION, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY ANY RELEVANT PERMITTING AGENCIES THAT THE CONSTRUCTION HAS BEEN FINISHED IN A SATISFACTORY MANNER.

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Checked: EMP	Scale: AS NOTED
Drawing Name: 25071.2-PLAN.dwg	Date: 01/08/26
	Project No.: 25071.2

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STATE OF NEW HAMPSHIRE — DANIEL JAMES MEDITZ No.18152 LICENSED PROFESSIONAL ENGINEER — 10/20/2026

REV.	DATE	REVISION	BY
3	10/19/26	REVISED PER TAC COMMENTS	DJM
2	09/22/26	REVISED PER TAC COMMENTS	DJM
1	09/01/26	UPDATED TITLE BLOCK	DJM
0	08/17/26	ISSUED FOR REVIEW	DJM

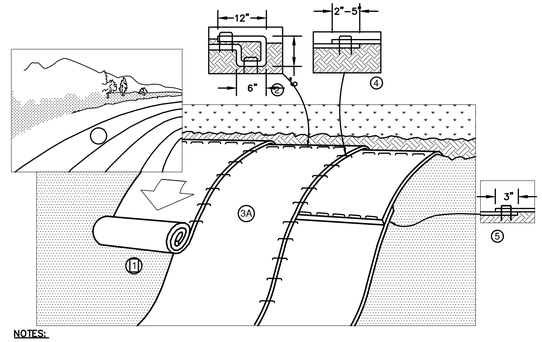
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Jones & Beach Engineers, Inc.
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100 Domain Dr.
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Exeter, NH 03833
603-772-4746
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: EROSION AND SEDIMENT CONTROL DETAILS

Project: LEDGEWOOD DRIVE LLC
LEDGEWOOD DRIVE, PORTSMOUTH, NH 03801

Owner of Record: ST NICHOLAS GREEK ORTHODOX CHURCH
40 ANDREW JARVIS DRIVE, PORTSMOUTH, NH 03801

DRAWING No.
E1
SHEET 16 OF17
JBE PROJECT NO. 25071.2



NOTES:

1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.

2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" DEEP BY 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE BLANKET.

3. ROLL THE BLANKETS (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING OPTIONAL DOT SYSTEM™, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.

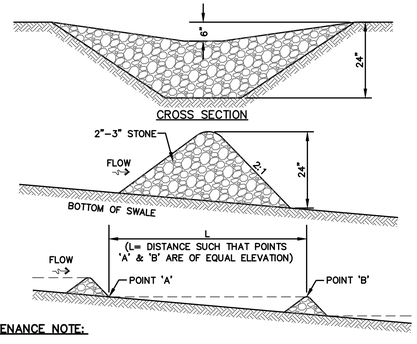
4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2"-5" OVERLAP DEPENDING ON BLANKET TYPE. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH ON THE PREVIOUSLY INSTALLED BLANKET.

5. CONSECUTIVE BLANKETS SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE BLANKET WIDTH. NOTE: IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE BLANKETS.

NORTH AMERICAN GREEN
14649 HIGHWAY 41 NORTH
EVANSVILLE, INDIANA 47725
1-800-772-2040

EROSION CONTROL BLANKET SLOPE INSTALLATION
(North American Green SC150BN)

NOT TO SCALE



MAINTENANCE NOTE:

1. STONE CHECK DAMS SHOULD BE CHECKED AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY NECESSARY REPAIRS SHOULD BE MADE IMMEDIATELY. PARTICULAR ATTENTION SHOULD BE GIVEN TO END RUN AND EROSION AT THE DOWNSTREAM TOE OF THE STRUCTURE. WHEN THE STRUCTURES ARE REMOVED, THE DISTURBED PORTION SHOULD BE BROUGHT TO THE EXISTING CHANNEL GRADE AND THE AREAS PREPARED, SEEDED AND MULCHED. WHILE THIS PRACTICE IS NOT INTENDED TO BE USED PRIMARILY FOR SEDIMENT TRAPPING, SOME SEDIMENT WILL ACCUMULATE BEHIND THE STRUCTURES. SEDIMENT SHALL BE REMOVED FROM BEHIND THE STRUCTURES WHEN IT HAS ACCUMULATED TO ONE HALF OF THE ORIGINAL HEIGHT OF THE STRUCTURE.

STONE CHECK DAM

NOT TO SCALE

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Checked: EMP	Scale: AS NOTED
Drawing Name: 25071.2-PLAN.dwg	Date: 01/08/26
Project No.: 25071.2	

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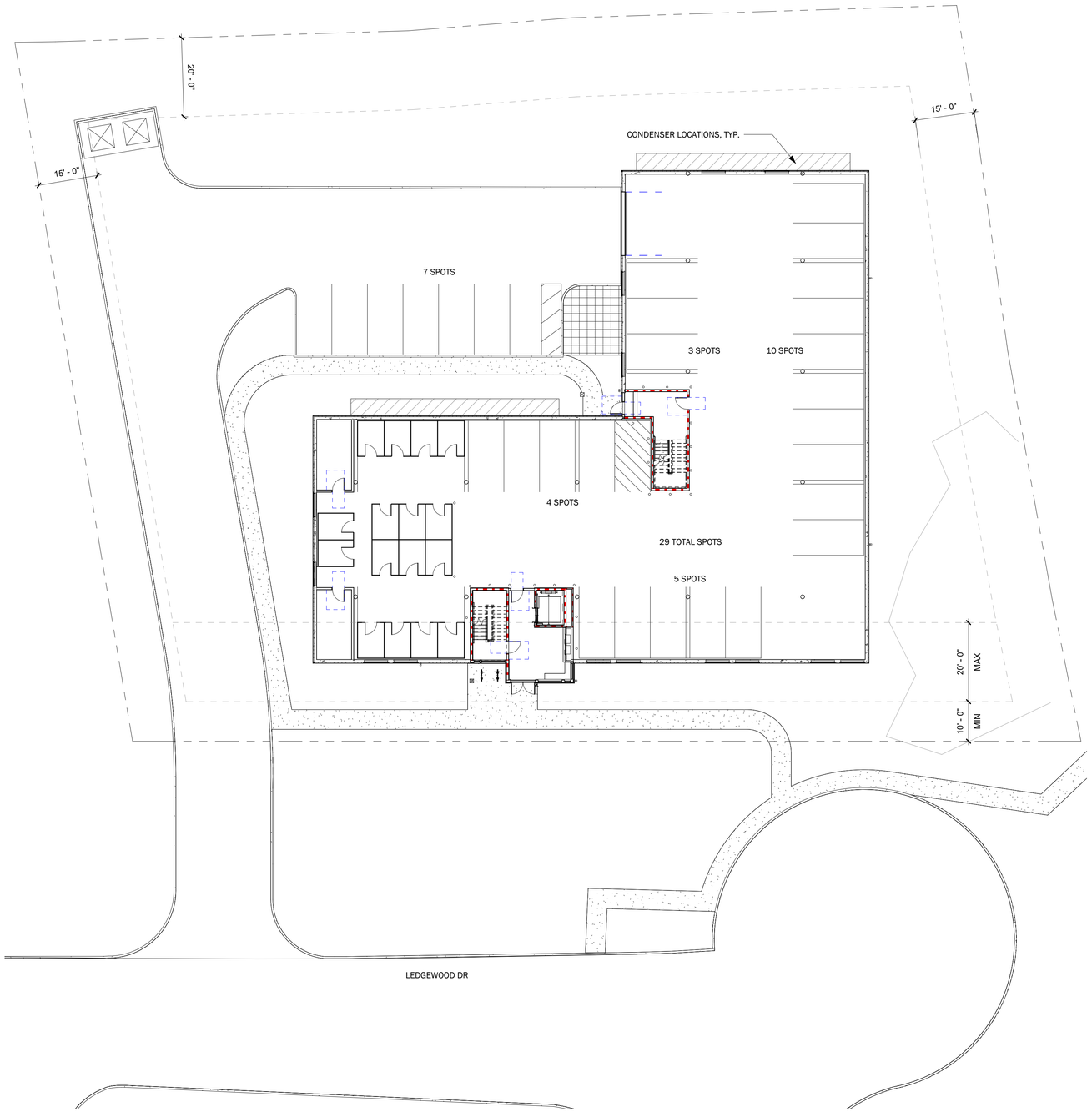
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DRAWING No.
E2
SHEET 17 OF 17
JBE PROJECT NO. 25071.2



1 01.1 - SITE SKETCH
1/16" = 1'-0"

LEDGEWOOD DR

PORTSMOUTH, NH

CONSTRUCTION DOCUMENTS

LEDGEWOOD DRIVE LLC

WINTER HOLBEN

3 WALKER ST
KITTERY, MAINE 03904
207.994.3104

Drawn By:	HP/GL
Drawing Checked By:	BH
Drawing Scale:	1/16" = 1'-0"
Drawing Date:	10/19/2026
Project Number:	26061

drawing revisions:

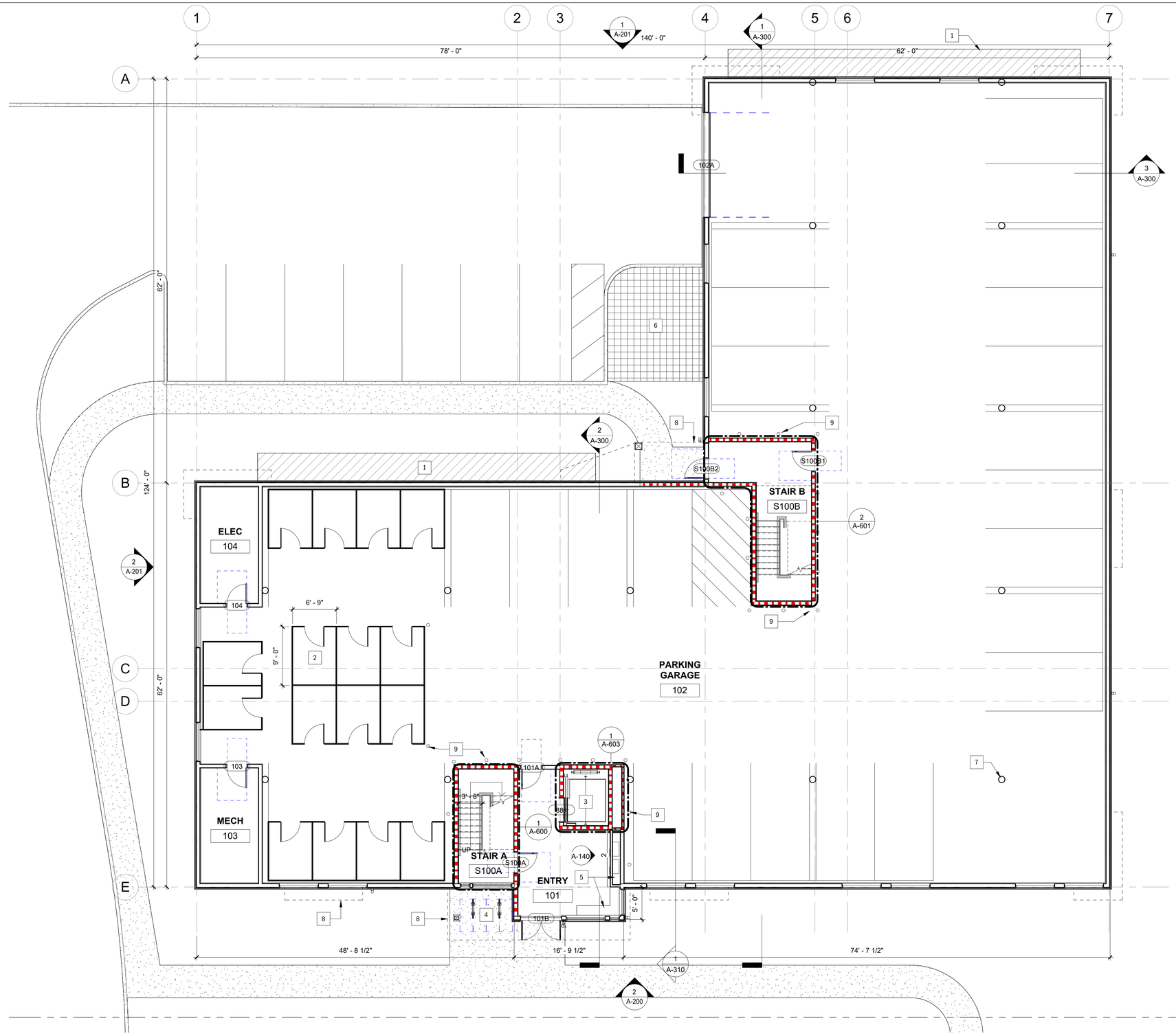
No.	Description	Date

ARCHITECTURAL SITE SKETCH

A-001

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10/15/2026 9:27:38 AM



1 LEVEL 1 PLAN
1/8" = 1'-0"

LEGEND - PLAN

	NEW WALL
A	WINDOW TAG
101	DOOR TAG
1A	WALL TAG
	ALIGN
1	KEYNOTE

GENERAL NOTES - PLAN

A. ALL DIMENSIONS ARE TO FACE OF STUD U.N.O. DIMENSIONS INDICATED AS "CLEAR" SHALL MAINTAIN A CLEAR OPENING WIDTH FROM FACE OF FINISHES. DIMENSIONS TO EXISTING CONSTRUCTION ARE TO FACE OF FINISH UNLESS NOTED OTHERWISE.

B. SEE UNIT PLANS, ELEVATIONS, SECTIONS, AND DETAILS FOR ADDITIONAL INFORMATION.

C. SEE ENLARGED PLANS AND INTERIOR ELEVATIONS FOR ADDITIONAL INFORMATION.

D. ALL INTERIOR PARTITIONS ARE TYPE NW1 U.N.O. ALL FURRED PARTITIONS ARE TYPE NF1 U.N.O. ALL CORRIDOR AND UNIT DEMISING WALLS ARE TYPE 30W1 U.N.O.

E. ALL EXTERIOR WALLS ARE TYPE E1 U.N.O.

F. ANY DISCREPANCIES IN THESE PLANS SHALL BE BROUGHT TO THE ARCHITECT'S ATTENTION IMMEDIATELY.

G. REFER TO MECHANICAL, ELECTRICAL, PLUMBING, AND FIRE PROTECTION DRAWINGS AND SPECIFICATIONS FOR FULL SCOPE OF WORK.

H. THE LOCATION OF DOOR OPENINGS NOT DIMENSIONED SHALL BE 6" FROM ADJACENT WALL (FACE OF FRAMING TO ROUGH OPENING).

I. PROVIDE BLOCKING BEHIND SURFACE APPLIED FIXTURES, TRIM, GRAB BARS, SHELVES, CHAIR RAILS, PICTURE RAILS, WOOD TRIM AND BASE, AND OTHER ACCESSORIES WHEN MOUNTED ON STUD WALLS.

J. WHERE WALLS OR INFILLS ABUT OR INTERSECT EXISTING WALLS, TAPE AND FINISH JOINTS AT INTERSECTIONS SMOOTH AND CONTINUOUS. USE METAL TRIM WHERE GYPSUM BOARD INTERSECTS OTHER MATERIALS.

KEYNOTES - PLAN

NO.	DESCRIPTION
1	HATCHED AREA INDICATES APPROX. OUTDOOR CONDENSER UNIT LOCATIONS, SEE MEP DWGS
2	STORAGE UNIT W/ CHAINLINK WALLS AND LOCKABLE GATE, TYP.
3	STRETCHER COMPLIANT ELEVATOR, OTIS GEN 3 CORE 3500# BASIS OF DESIGN, CONFIRM ALL CLEARANCES WITH SELECTED MODEL
4	SARIS CIRCLE DOCK BIKE RACK, SEE CIVIL DWGS
5	MAILBOX BUILD-OUT AND BENCHES
6	PATIO AREA, SEE CIVIL DWGS
7	STRUCTURAL COLUMN AND LATERAL BRACING, SEE STRUCT DWGS, TYP.
8	DASHED LINE OF CANOPY/BALCONY ABOVE, TYP.
9	PARKING BOLLARD

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LEVEL 1 PLAN

A-100

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1 LEVEL 2 AREA PLANS
1/8" = 1'-0"

UNIT AREAS

ROOM NAME	ROOM TYPE	AREA
LEVEL 2		
UNIT 201	3 BED	1,293 SF
UNIT 202	2 BED	1,374 SF
UNIT 203	2 BED	1,377 SF
UNIT 204	3 BED	1,394 SF
UNIT 205	3 BED	1,391 SF
UNIT 206	2 BED	1,320 SF
UNIT 207	2 BED	1,310 SF
UNIT 208	2 BED	1,247 SF
8		**10,706 SF**
LEVEL 3		
UNIT 301	3 BED	1,294 SF
UNIT 302	2 BED	1,376 SF
UNIT 303	2 BED	1,375 SF
UNIT 304	3 BED	1,389 SF
UNIT 305	3 BED	2,023 SF
UNIT 306	3 BED	2,032 SF
UNIT 307	2 BED	1,246 SF
7		**10,735 SF**
		21,441 SF

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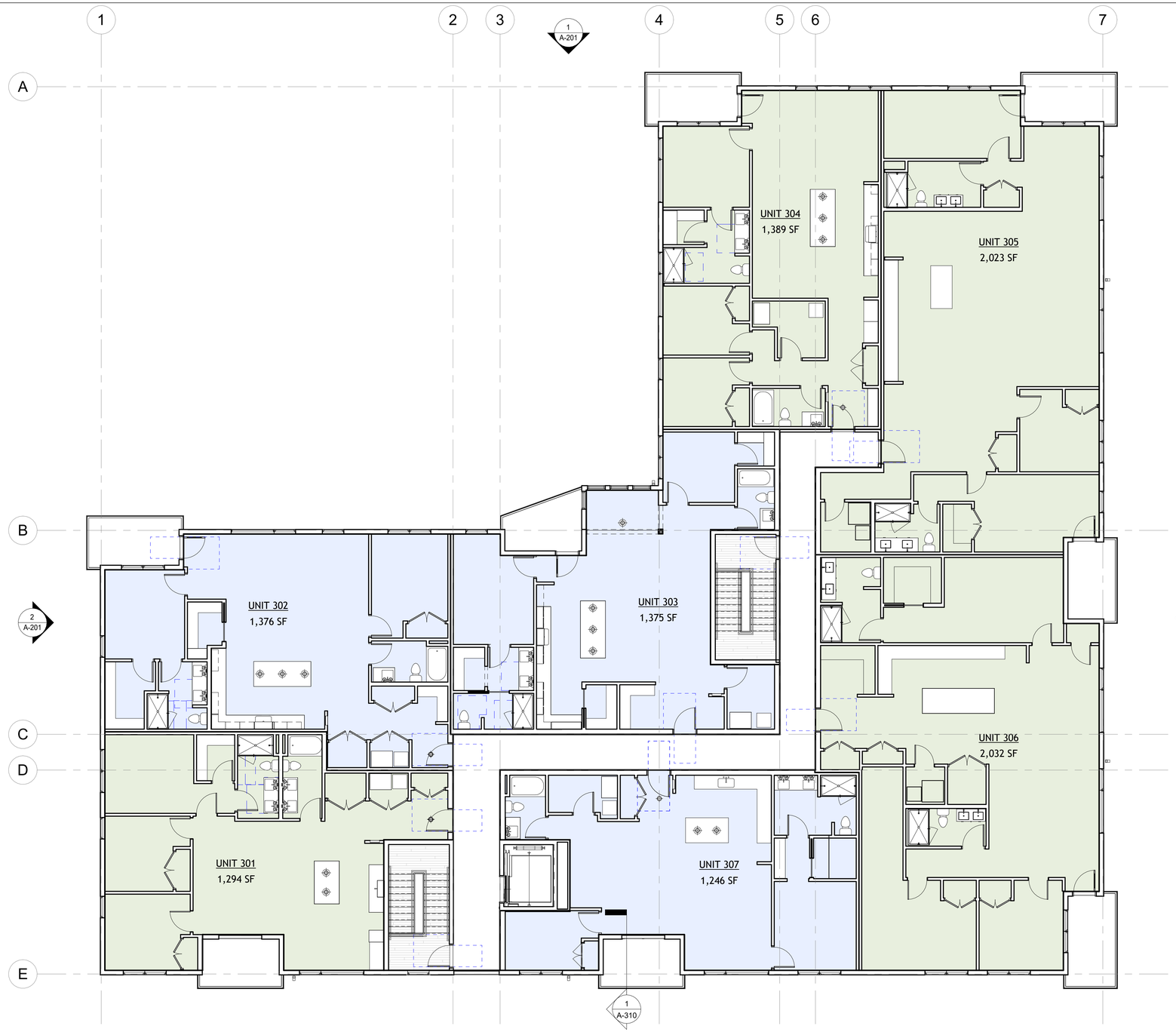
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LEVEL 2 AREA PLAN

A-101

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1 LEVEL 3 AREA PLANS
1/8" = 1'-0"

UNIT AREAS

ROOM NAME	ROOM TYPE	AREA
LEVEL 2		
UNIT 201	3 BED	1,293 SF
UNIT 202	2 BED	1,374 SF
UNIT 203	2 BED	1,377 SF
UNIT 204	3 BED	1,394 SF
UNIT 205	3 BED	1,391 SF
UNIT 206	2 BED	1,320 SF
UNIT 207	2 BED	1,310 SF
UNIT 208	2 BED	1,247 SF
8		**10,706 SF**
LEVEL 3		
UNIT 301	3 BED	1,294 SF
UNIT 302	2 BED	1,376 SF
UNIT 303	2 BED	1,375 SF
UNIT 304	3 BED	1,389 SF
UNIT 305	3 BED	2,023 SF
UNIT 306	3 BED	2,032 SF
UNIT 307	2 BED	1,246 SF
7		**10,735 SF**
		21,441 SF

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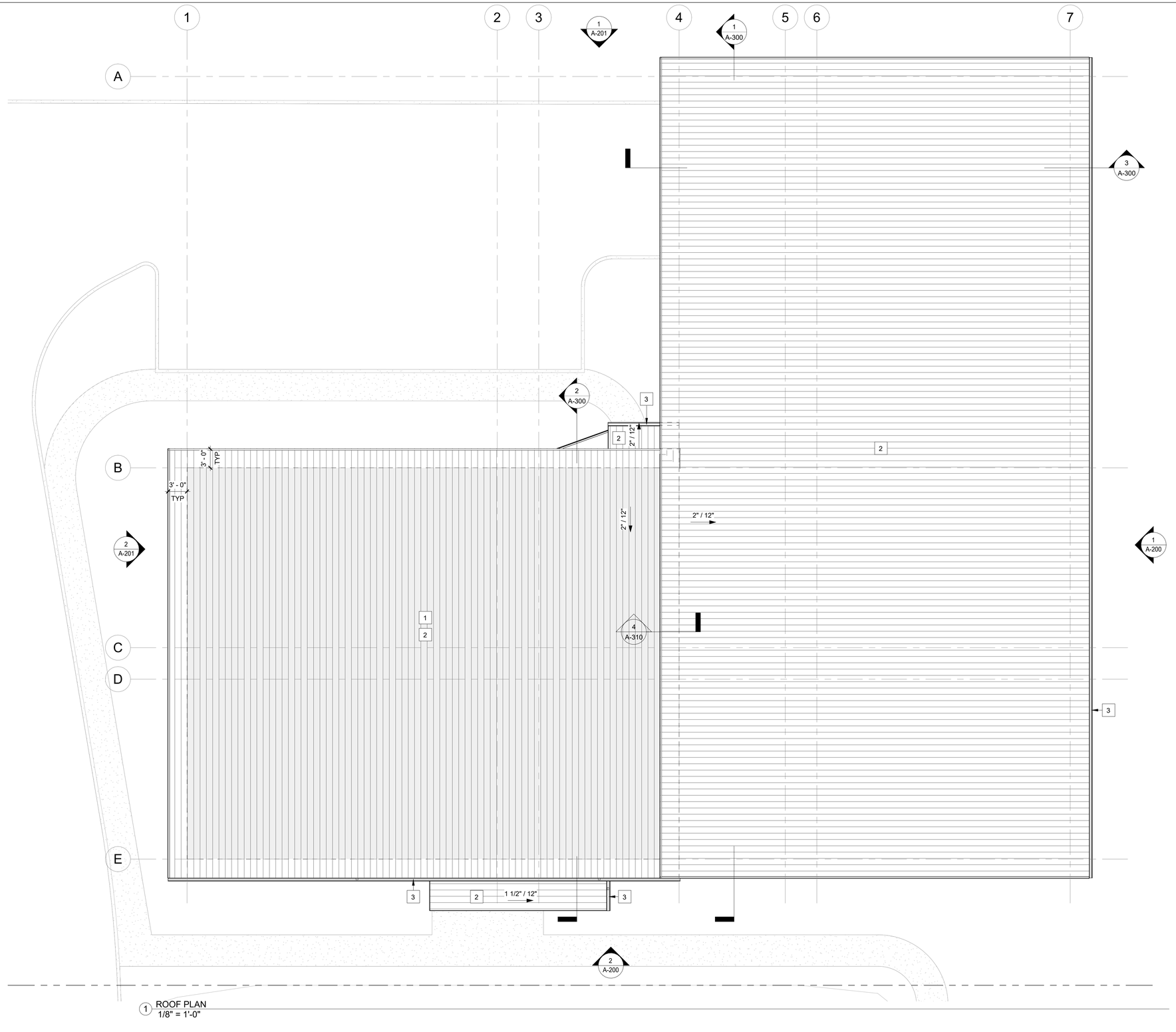
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LEVEL 3 AREA PLAN

A-102

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1 ROOF PLAN
1/8" = 1'-0"

ROOF FINISH LEGEND

STANDING SEAM ROOFING SYSTEM

ROOF PLAN NOTES

A. PROVIDE WALKWAY PROTECTION STRIPS 2 FEET WIDE FULLY AROUND ALL ROOF TOP MECHANICAL UNIT(S) AND CREATE A PATHWAY 2 FEET WIDE FROM ROOF ACCESS LOCATION(S)

B. PROTECT ALL OPENINGS CUT IN THE EXISTING ROOF. PROVIDE TEMPORARY ROOFING IF WORK IS TO BE UNFINISHED DURING ADVERSE WEATHER CONDITIONS.

C. PROVIDE FLASHING AT ALL ROOF PENETRATIONS, WHETHER SHOWN ON THE ROOF PLAN OR NOT, UNLESS NOTED OTHERWISE. REFER TO STRUCTURAL, MECHANICAL AND ELECTRICAL PLANS FOR NUMBER, LOCATION, AND SIZE OF PENETRATIONS.

D. SEE ELEVATIONS, SECTIONS, AND DETAILS FOR ADDITIONAL INFORMATION

KEYNOTES - ROOF	
NO.	DESCRIPTION
1	HATCH INDICATES AREA OF SOLAR-READY ROOF (APPROX 4600 SF), COORDINATE WITH ROOF TRUSS DESIGN
2	STANDING SEAM ROOFING SYSTEM
3	GUTTER AND DOWNSPOUT, COORDINATE W/ CIVIL DWGS

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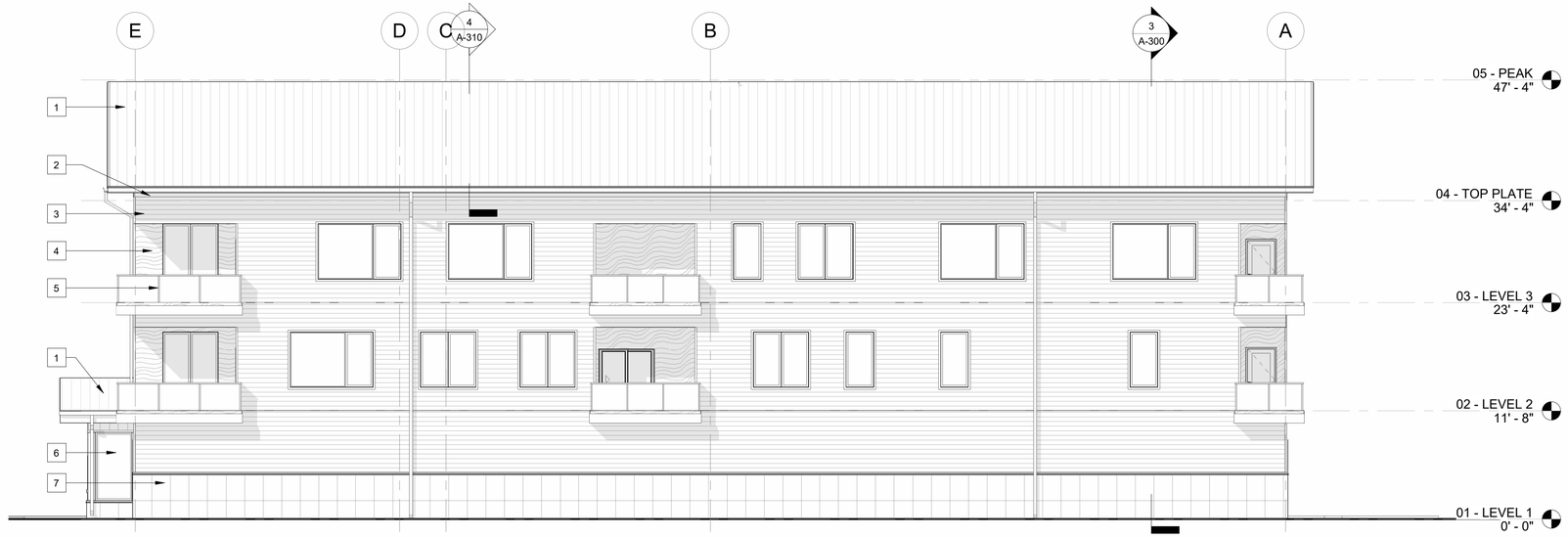
ROOF PLAN

A-103

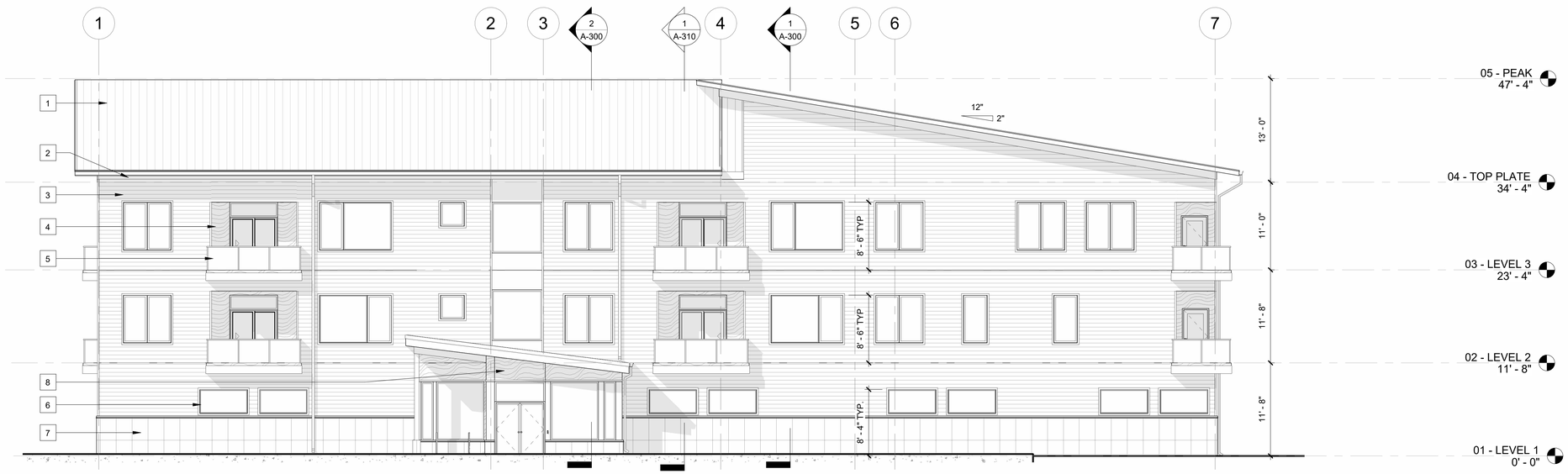
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KEYNOTES - ELEVATIONS	
NO.	DESCRIPTIONS
1	STANDING SEAM ROOFING SYSTEM
2	1X12 COMPOSITE FRIEZE BOARD
3	6" EXPOSURE HARDIEPLANK SIDING W/ CORNER BOARDS
4	WOOD-LOOK COMPOSITE PANEL
5	FROSTED GLASS RAILING SYSTEM - VIEWRAIL BASIS OF DESIGN
6	FIBERGLASS WINDOWS/DOORS - PELLA IMPERVIA BASIS OF DESIGN
7	T-CLEAR WALLGUARD CONCRETE-FACED INSULATION PANEL
8	COMPOSITE BOARD & BATTEN SIDING
9	WOOD-LOOK COMPOSITE SOFFIT



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



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

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EXTERIOR ELEVATIONS

A-200

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



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

KEYNOTES - ELEVATIONS	
NO.	DESCRIPTIONS
1	STANDING SEAM ROOFING SYSTEM
2	1X12 COMPOSITE FRIEZE BOARD
3	6" EXPOSURE HARDIEPLANK SIDING W/ CORNER BOARDS
4	WOOD-LOOK COMPOSITE PANEL
5	FROSTED GLASS RAILING SYSTEM - VIEWRAIL BASIS OF DESIGN
6	FIBERGLASS WINDOWS/DOORS - PELLA IMPERVIA BASIS OF DESIGN
7	T-CLEAR WALLGUARD CONCRETE-FACED INSULATION PANEL
8	COMPOSITE BOARD & BATTEN SIDING
9	WOOD-LOOK COMPOSITE SOFFIT

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EXTERIOR ELEVATIONS

A-201

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1 PERSPECTIVE 1



2 PERSPECTIVE 2



3 PERSPECTIVE 3



4 PERSPECTIVE 4

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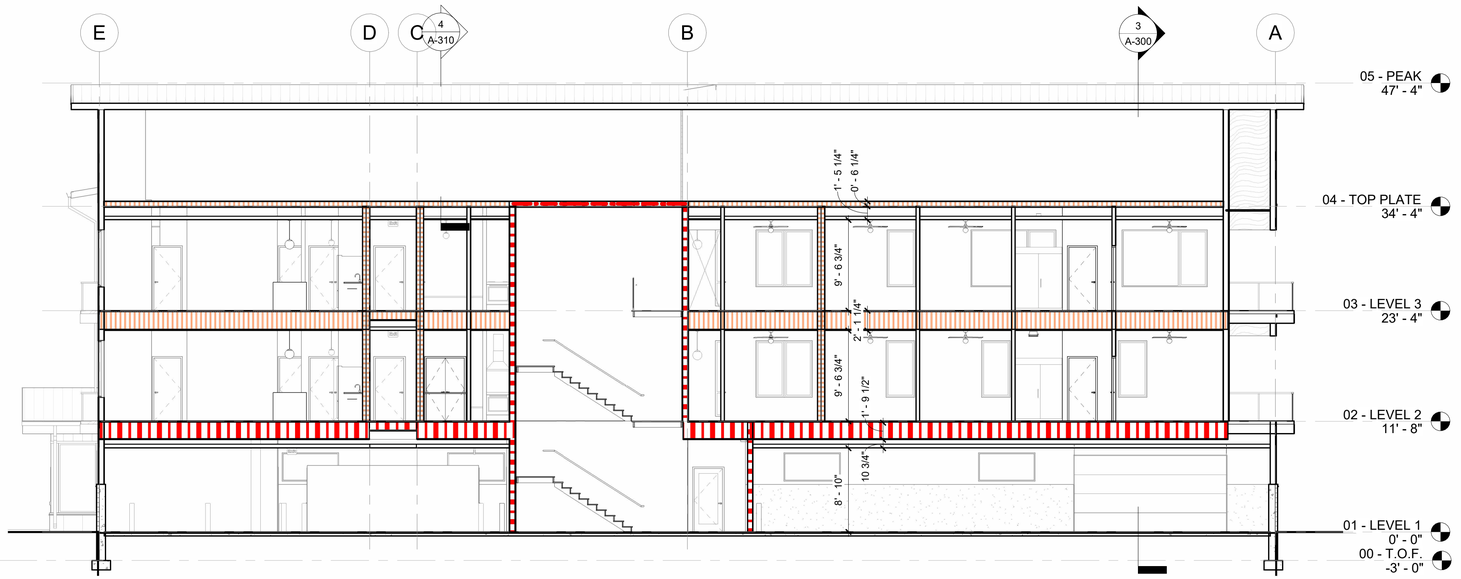
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EXTERIOR PERSPECTIVES

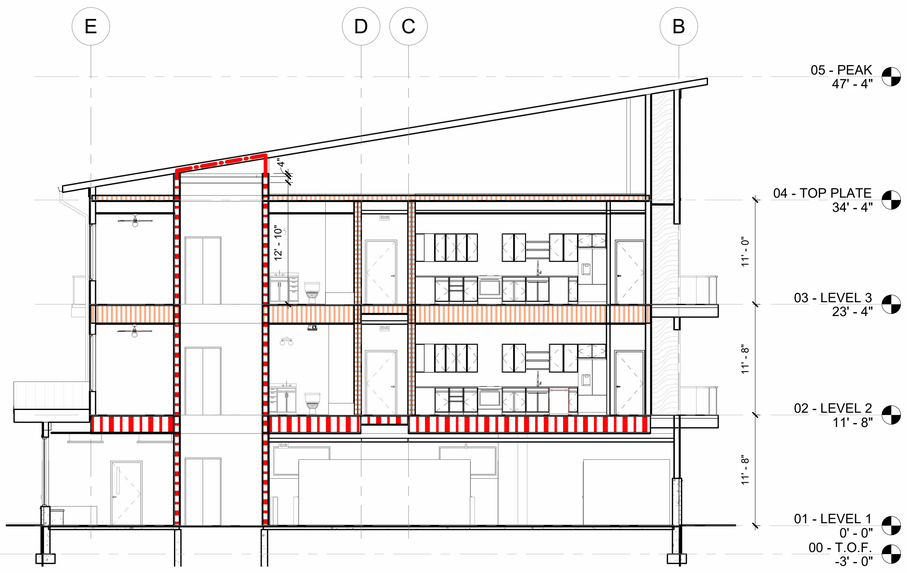
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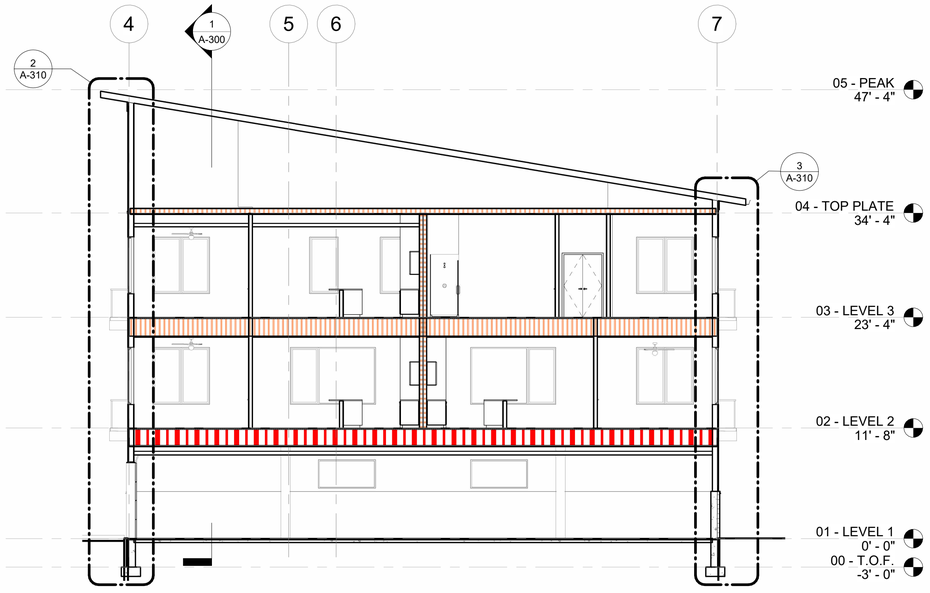
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1 BUILDING SECTION 1
1/8" = 1'-0"



2 BUILDING SECTION 2
1/8" = 1'-0"



3 BUILDING SECTION 3
1/8" = 1'-0"

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BUILDING SECTIONS

A-300

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