JONES&BEACH
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February 14, 2022

Rochester Planning Board
Attn. Nel Sylvian
31 Wakefield Street
Rochester, NH 03867

RE: Response Letter 3
Wadleigh Road, Rochester, NH
Tax Map 137, Lot 35-1
JBE Project No. 21137

Dear Mr. Sylvian,

We are in receipt of comments from Renee Bourdeau, P.E. At Geosyntec dated January 11, 2022. Review comments are listed below with our responses in bold.

GEOSYTEC DRAINAGE ANALYSIS COMMENTS:

1. *Anticipated project state and completion dates, and duration of grading and construction activities are not provided.*
   RESPONSE: This section 218-8 B of the Stormwater Management & Erosion Control allows for sites that require SWPPP's to have the SMECP requirements added into that document. We would like to request that we do this for this development. This information will be provided as part of EPA SWPPP documents as they will outline all of this information. Dates of construction will be determined once all permits have been obtained.

2. *Documentation on what LID site planning and design strategies were used on-site or why using LID strategies are not feasible, as required under § 218-8.B(1)(d) is not provided.*
   RESPONSE: LID design features are included in the Drainage Report and include the use of Focal Point Treatment Systems to treat all parking lot runoff and also a portion of runoff from Wadleigh Road. The remainder of the road will utilize a bioretention basin designed to AoT specifications for water quality treatment. Design sheets for the Focal Point systems are included in the Drainage Report.

3. *Description of the proposed changes in impervious cover is not provided.*
   RESPONSE: Changes in impervious cover is described in the Drainage Report.

4. *Description of the procedures to limit and/or optimize use of deicing materials and minimize off-site increases in chloride levels in adjacent surface and groundwater is not provided.*
   RESPONSE: This site is not located in a Chloride Impaired area and typically NHDES AOT does not require salt minimizations plans for these sites. All of our stormwater treatment is downstream of the road network and the stormwater gets treated per AOT regulations prior to release.

5. *Description of the procedures to control waste such as discarded building materials, construction debris, sanitary waste, concrete washout, chemicals, litter are not provided.*
   RESPONSE: The above will be addressed in the SMECP and SWPPP Plan and will be provided by the contractor prior to construction.

6. *Copies are pertinent state permits (AoT and wetlands), if applicable, are not provided.*
   RESPONSE: State permits required for the project are listed on Sheet C3 of the plan set. All permits are currently pending and will be forwarded when received.

GEOSYTEC SITE DEVELOPMENT PLAN COMMENTS:

1. *Drainage patterns and direction of flow of stormwater runoff using arrows within the project area and 200-feet outside of the project boundary were not provided for the existing or proposed conditions on the site plans or watershed plans*
   RESPONSE: Flow arrows have been added to the Watershed Plans.

2. *A limit of earth disturbance is not shown on the site plans.*
   RESPONSE: A limit of work line is now shown on the Erosion Control Plans.

3. *A cut and fill plan was not provided.*
   RESPONSE: The above will be provided with the SMECP Plan when we submit that application.

4. *Location of equipment storage and staging areas are not shown. Procedures should be added to the Drainage Analysis Report to reflect the added controls.*
   RESPONSE: The above will be addressed in the SWPPP Plan will be provided by the contractor prior to construction.

5. *Location of vehicle fueling areas or equipment fueling areas are not shown. Procedures should be added to the Drainage Analysis Report to reflect the added controls.*
   RESPONSE: The above will be addressed in the SWPPP Plan will be provided by the contractor prior to construction.

6. *Locations of disposal facilities for solid waste, construction debris, sanitary waste, concrete washout, and plan for stump disposal (if applicable) are not shown.*
   RESPONSE: The above will be addressed in the SWPPP Plan will be provided by the contractor prior to construction.

7. *A Grading and Drainage Plan and Erosion Control Plan for the southern portion of the project should be provided.*
   RESPONSE: A Grading and Drainage Plan and Erosion Control Plan for the southern portion of the site is now included in the Plan Set.

GEOSYTEC TEMPORARY CONSTRUCTION STORMWATER DESIGN COMMENTS:

1. *Site plans show locations for proposed snow management areas. However, a snow storage area is show between the two parking areas which is also intended to be used to capture stormwater, as this area is uncurbed. The Applicant should find an alternative location for snow storage, as snow should not be stored in stormwater management facilities.*
   RESPONSE: The snow storage area between the two parking lots has been removed.

2. *Stabilization notes on the site plans and within the Drainage Analysis Report should be updated to reflect the requirements under § 218-9.A(8)(a), which state that temporary stabilization measures should be in place within 5 calendar days for exposed soil areas that are within 100-feet of a surface water body or a wetland.*
   RESPONSE: The above note has been added to the Drainage Report and on Sheet E1.

3. *Sediment traps are identified in the Drainage Analysis Report; however, are not proposed on the site plan. Locations for temporary sediment traps should be shown on the site plan.*
   RESPONSE: The above will be addressed in the SWPPP Plan will be provided by the contractor prior to construction.

4. *An inspection and maintenance schedule is not provided for the construction entrance, inlet protection, stockpiles, slope protection, and outlet protection.*
   RESPONSE: Permanent Erosion Control Items are included the Inspection and Maintenance (I&M) document. Temporary Erosion Control used during construction will be provided in the SWPPP Plan by the contractor.

GEOSYTEC POST-CONSTRUCTION STORMWATER COMMENTS:

1. *Calculations are not provided to demonstrate that the existing drainage system and catch basin grate located at the entrance of the site adjacent to Route 125 can accommodate additional flows and volumes from the proposed development. The drainage analysis shows that the peak discharge will increase to this area from all storm events presented. Further, water quality treatment is not provided for the impervious cover draining to this catch basin.*
   RESPONSE: A portion of the offsite Anchorage Inn drainage currently flowing to the existing drainage system along Route 125 has been redirected to a cross culvert under Wadleigh Road. In additions, a swale has been graded along the entry to Wadleigh Road to capture any offsite flow going to paved areas. These changes now allow for a decrease in flow to the catch basing on Route 125. The amount of

pavement flowing to this catch basin will remain the same therefore no additional treatment is planned for this runoff.

2. *Provide a planting plan for the Focal Point biofiltration systems. Native plants should be considered and proposed in density sufficient to prevent surface erosion and to achieve water quality treatment requirements. Also, an alternative to hardwood bark mulch should be considered as this tends to float, not reduce erosion at the inlet, and clog overflow structures.*
   RESPONSE: A planting plan for the Focal points is included on the Detail Sheet.

GEOSYTEC STORMWATER MANAGEMENT DESIGN STANDARDS FOR NEW DEVELOPMENT COMMENTS:

1. *Calculations are not provided to demonstrate that the total post-construction impervious area is treated to remove at least 80% total suspended solids and 50% removal of total phosphorus and total nitrogen, as required under § 218-10.C(1)(a). The Applicant should provide calculations that are consistent with the methods referenced in § 218-10.A(3)(a,b).*
   RESPONSE: FocalPoint is approved by NH AOT site development projects and provides the following standalone pollutant removal efficiencies: 91% TSS, 66% phosphorous and 48% nitrogen. A cut sheet for the Focal Point efficiencies is included with this submittal and listed in the Drainage Report.
   Bioretention Ponds are listed in AoT Stormwater Regulations as having pollutant removal efficiencies of 90% TSS, 65% PH and 65% Nitrogen. Combined with Deep sump catch basins and a Sediment Pond in the Treatment Train, the combined pollutant removal is almost 100% TSS. 70% PH and 70% Nitrogen and therefore exceed City requirements. The AoT Pollutant Removal Efficiency Table has been added to the Drainage Report for reference.

2. *Calculations are not provided to demonstrate that the stormwater treatment practices have been designed for the water quality volume or water quality flow, in accordance with Env- Wq 1504.10 and Env-Wq 1504.11, respectively, as required under § 218-10.C(1)(c).*
   RESPONSE: Focal Point Sizing is now included in the Drainage Report which demonstrates that the Focal Points are sized for the correct water quality volume. A BMP for the Bioretention Pond is also included in the Drainage Report to demonstrate that it is designed to treat the water quality volume per AoT standards.

3. *Calculations are not provided to demonstrate protection of groundwater resources by reducing the post-development stormwater runoff volume by infiltrating Groundwater Recharge Volume as required under § 218-10.C(2)(a,b).*
   RESPONSE: A portion of the stormwater runoff will infiltrate within the Stormtech Chambers and within the drip edge adjacent to the building. There is a small (3.4%) increase in runoff volume in the 25-year storm event.

4. *Calculations are not provided to demonstrate that the post-development stormwater runoff volumes do not exceed the pre-development stormwater runoff volumes for the 2-year, 10-year and 25-year, 24-hour design storm events, as required under § 218-10.C(3)(a).*
   RESPONSE: There is no increase in the peak rate of runoff for the 2-, 10- or 25-year storm event, however there remains a small increase (3.4%) in runoff volume in post development conditions because of the rocky soil type and limitations in infiltration area. We are requesting a waiver for this City requirement and will be requesting a similar waiver from AoT when submitted.

GEOSYTEC STORMWATER DRAINAGE SYSTEM COMMENTS:

1. *Calculations are not provided to demonstrate that the closed drainage system was sized for the 25-year, 24-hour storm event, as required under § 218-10.F(2)(a).*
   RESPONSE: The closed drainage system piping has been added to the Hydrocad model to demonstrate that it is sufficient size for all storm events.

2. *Calculations are not provided to demonstrate that the proposed culverts (both open bottom and circular) were sized in accordance with the New Hampshire Stream Crossing Guidelines in accordance with § 218-10.F(2)(b).*
   RESPONSE: Both culverts crossing Wadleigh Road are replacing existing culverts already in place. Neither of the culverts cross a stream. The cross culverts have been modeled using Hydrocad and have ample capacity to convey the required stormwater.

3. *Calculations are not provided to demonstrate that the closed drainage network has a minimum velocity of 2 feet per second, as required under § 218-10.F(2)(d).*
   RESPONSE: The velocities for the two culverts in the closed drainage system are included in the Drainage report.

4. *Rip-rap depths along slopes have not been specified in accordance with § 218-10.F(2)(e).*
   RESPONSE: Rip rap calculations are now included in the Drainage Report. Riprap sizes have been added the Grading Plans.

5. *Calculations are not provided to demonstration that velocities entering the proposed swale are less than 10 feet per second and that the maximum velocity within the swale is 1 foot per second during the 25-year, 24-hour storm event, as required under § 218-10.F(2)(c).*
   RESPONSE: The velocities within the swale are included in the Drainage Report.

6. *If the City will be accepting the road and associated utilities, maintenance access easements need to be established for the drainage network and should be provided on the plans, as required under § 218-10.F(3).*
   RESPONSE: We will be discussing any required easements with the City DPW and will provide what is necessary.

7. *In the pre-development condition, a swale exists along Wadleigh Road adjacent to the Anchorage Inn site to convey flows from the property to an existing catch basin. Based on the proposed grading, this existing swale is removed. The Applicant should provide details for how existing flows from the Anchorage Inn parcel will be conveyed adjacent to Wadleigh Road.*
   RESPONSE: A swale has been graded along Wadleigh Road in front of the Anchorage Inn to intercept runoff from the Anchorage Inn site and the slope in front of the Anchorage Inn will be regraded. The Anchorage Inn site runoff will flow to the same catch basin that it currently does.

GEOSYTEC POST CONSTRUCTION INSPECTION AND MAINTENANCE AGREEMENT COMMENTS:

1. *The inspection and Maintenance Plan should include the following:*
   a. *The name of the responsible party for inspections and maintenance*
      RESPONSE: These units are proposed as rental units and all maintenance will be the responsibility of the owners. Typically, AOT requires that projects of this size have annual maintenance inspection performed by a qualified third-party inspector

   b. *all of the proposed stormwater practices including but not limited to subsurface chambers, focal point media filters, pret-x units, riprap inlet and outlet protection, catch basin, and the closed drainage network.*
      RESPONSE: The I&M document discusses these best management practices

   c. *a proposed schedule of inspection frequency,*
      RESPONSE: We are proposing annual inspections. A checklist is provided in the I&M manual.

   d. *A plan identifying each BMP and associated details an inspection checklist and photo documentation requirements,*
      RESPONSE: A BMP plan has been added to the I&M document

   e. *Sample log to document each inspection and maintenance activity*
      RESPONSE: This has been added to the I&M document.

   f. *Sample deicing log to track amount and type of deicing materials I applied to the site*
      RESPONSE: This has been added to the I&M document.

   g. *description of maintenance response actions, including actions to be taking if invasive species begin to grow in stormwater practices, and*
      RESPONSE: We have added the information provided in the Stormwater Management and Erosion Control Chapter 218 into the I&M document

h. *documentation of how reports will be completed, submittal and retention procedures, and contingency plans if future maintenance is required.*
RESPONSE: This information is provided in the I&M document and will be handled on a case by case depending on the situation and we will make reports available upon request to the DPW.

GEOSYTEC OTHER COMMENTS:

1. *Stone slope protection hatching is show on Drawing No. C6 (Sheet 9) to be partially within a proposed swale adjacent to the parking area. The Applicant should clarify whether this swale should be a stone lined swale or a vegetated swale. Further, the Landscaping Plan (Drawing No. L1) shows this entire area as "lawn area" and does not show the rip-rap slope protection. The Applicant should ensure that the proposed trees do not encroach on the proposed swale. The plans should be updated to reflect the appropriate conditions.*
RESPONSE: The swale adjacent to the parking area has been called out as a stone-lined swale. The Landscape Plan has been revised to include the stone slope protection and the trees in this area have been removed. The "lawn area" label has been removed.

2. *Stone slope protection hatching shown on Drawing No. C6 (Sheet 9) adjacent to the existing wetland and proposed open box culvert is not shown on the Landscaping Plan (Drawing No. L1). A tree is also proposed at the top of this slope. The Applicant should ensure that there is sufficient room to accommodate the tree at the top of the slope.*
RESPONSE: Areas of riprap and stone slope protection are now shown on the Landscape Plan. The tree at the top of the slope has been removed.

3. *The Grading and Drainage Plan (Drawing No. C5) identifies Focal Point 1, 2 and 3. The Utility Plan (Drawing No. U2) also identifies a Focal Point 3 in an alternate location of the one specified in the Grading and Drainage Plan. The Applicant should reconcile the numbering and include a detail schedule on the Detail Sheet (Drawing No. D4) with the appropriate elevations as noted in the detail.*
RESPONSE: The numbering on the Focal Points has been corrected. A detail schedule of the Focal Point sizing and elevations is included on the Detail Sheet.

4. *The Grading and Drainage Plan (Drawing No. C5) identifies Pret-X filters 1, 2, 3, 4 and 5. The Utility Plan (Drawing No. U2) also identifies a Pret-X filter 3 in an alternate location of the one specified in the Grading and Drainage Plan. The Applicant should reconcile the numbering and provide a detail schedule on a detail sheet.*
RESPONSE: The numbering of the Pre-Tx filters has been reconciled.

5. *Detail for the Pret-X filters is not provided*
RESPONSE: A detail for the Pre-Tx filter has been added to the Detail Sheets.

6. *Bedding material specified for the Precast Rigid Frame Box Culvert should be consistent with native stream bed materials. The Applicant should provide material specifications consistent with recommendations from the New Hampshire Stream Crossing Standards.*
   RESPONSE: The Box Culvert is not located in an existing stream but is instead replacing and existing culvert already in place. The bedding under the culvert is specified on the Detail Sheet.

7. *For the proposed bioretention facility (Pond 3P), the detail shows the bottom of the sediment forebay at elevation 212; however, the invert out into the sediment forebay is 210.92.*
   RESPONSE: The bottom of the forebay has been regraded to be at elevation 208.95

8. *Details, specifications, and calculations are not provided for the proposed porous paver patio drip edge. Test pit data in the vicinity of the drip edge shows SHWT between 222.11 and 215.66, whereas the HydroCAD report shows bottom of the drip edge at 216.99. The Applicant should conduct additional test pits to confirm SHWT and infiltration calculations to confirm exfiltration rates.*
   RESPONSE: The bottom of the drip edge has been raised to elevation 217.50. Test pit #5 shows SHWT at 215.68 while Test Pit 4 shows high ledge within the building footprint. The ledge in the building area will be overblasted to well below the bottom of the building footing and removed and the area filled in with free drainage structural fill, which will allow some infiltration in the area of the drip edge.

9. *Permanent riprap apron outlet protection sizing calculations are not provided.*
   RESPONSE: Riprap calculations are now provided in the Drainage Report.

10. *Outlet protection is not shown at the outlet of Focal Point 3 on Utility Plan U2. Calculations should be provided to demonstrate that proposed velocities will not cause erosion to downstream soil/vegetation.*
    RESPONSE: Riprap and sizing has been added to this Focal Point outlet. Riprap calculations are included in the Drainage Report.

11. *The following comments are specific to the HydroCAD Report and Watershed Plans:*

    a. *The Existing Watershed Plan identifies an Analysis Point #2 which is not provided in the HydroCAD model. This Analysis Point should be added and peak discharge and runoff volumes summarized to this point in the Drainage Analysis Report.*
       RESPONSE: Analysis Point #2 has been added to the Hydrocad models.

    b. *The post-construction plan has subcatchment 10S being routed to Analysis Point #1. The existing conditions model has this area discharging to Analysis Point #2 (Columbus Avenue). This subcatchment should be routed to Analysis Point #2 and peak discharge and runoff volumes summarized to this point in the Drainage Analysis Report.*
       RESPONSE: The Subcatchments have been revised to flow to the corrected Analysis Points.

c. *The time of concentration paths are not provided on the Proposed Watershed Plan*
RESPONSE: The Tc Paths have been added to the Proposed Watershed Plans.

d. *Summary for Pond 2P: StormTech 2 has a 4" round culvert as the primary outlet. The Grading and Drainage Plan shows a 6" pipe out.*
RESPONSE: The pipes sizes have been corrected.

e. *Summary for Pond 3P: Pond 3P shows 100% void space (reflective of ponded area) between elevations 212.50 and 213.79; however, the detail-on-Detail Sheet D3 shows that between elevations 212.25 and 213.80 is the topsoil, mulch, and sand mixture.*
RESPONSE: The void space calculations have been revised.

f. *Outlet device table for Pond 3P: Pond 3P shows an 18" pipe with an invert of 208.5 whereas the detail-on-Detail Sheet D3 shows an 8" pipe out with an invert of 210.50. HydroCAD table also shows a 2" vertical orifice which is not shown on the detail.*
RESPONSE: The detail has been corrected to show to correct pipe size and invert to match the Hydrocad model. The 2" vertical orifice modeled within Hydrocad is shown on the detail as the 2" perforated Underdrain to drain the bottom 18" stone of the bioretention pond.

g. *The Focal Point media filters are not modeled. It is unclear if the proposed filters can convey the proposed storm events and where bypass flows go if the filters become clogged or overwhelmed.*
RESPONSE: Sizing for the Focal Points is now included in the Drainage Report.

Included with this response letter are the following:

1. Three (3) Full Size Plan Sets.
2. Sixteen (16) Half-Size Plan Sets.
3. Three (3) Revised Drainage Analysis.
4. Waiver Request Letter.

Thank you very much for your time.

Very truly yours,
JONES & BEACH ENGINEERS, INC.

Brad Jones
Vice President

cc: Fenton Groen, Groen Construction (via email)

JONES & BEACH
ENGINEERS INC.
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February 11, 2022

Rochester Planning Board
Attn. Nel Sylvian
31 Wakefield Street
Rochester, NH 03867

RE: Waiver Request
Wadleigh Road, Rochester, NH
Tax Map 137, Lot 35-1
JBE Project No. 21137

Dear Mr. Sylvian,

Jones & Beach Engineers, Inc. is the Engineer of Record for the Proposed Wadleigh Road Apartment Project currently under review by the City of Rochester Planning Board.

We respectfully request a waiver from section 218-10 C(2) Groundwater Recharge Requirements. Using multiple stormwater management technologies, we have been successful is decreasing the peak stormwater discharge from this project for all studied storm events. We have attempted to infiltrate as much stormwater as possible to also reduce stormwater volume, however, due to high water tables and the quantity of ledge on this site, we are unable to reduce the volume of stormwater to the level that exists in pre-existing conditions. We anticipate a calculated increase in total stormwater volume of 3.4% with this development over the entire parcel.

All stormwater from the project flows to Axe Handle Brook, which abuts the property. This brook has enough capacity to accept the small increase in stormwater volume discharged from the site and will not cause adverse impacts to downstream properties, infrastructure, aquatic habitat, or water quality degradation in downstream water bodies. We will be detaining much of the stormwater on site so as not to increase the peak amount of stormwater.

Thank you very much for your time.

Very truly yours,
JONES & BEACH ENGINEERS, INC.

Brad Jones
Vice President

cc: Fenton Groen, Groen Construction (via email)

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DRAINAGE ANALYSIS

SEDIMENT AND EROSION CONTROL PLAN

Wadleigh Road Apartments
Tax Map 137 Lot 35-1
Route 125
Rochester, NH 03839

Prepared for:

Groen Construction
120 Washington Street
Suite 302
Rochester, NH 03839

Prepared by:
Jones & Beach Engineers, Inc.
85 Portsmouth Avenue
P.O. Box 219
Stratham, NH 03885
(603) 772-4746
November 3, 2021
Revised December 14, 2021
Revised February 10, 2022
JBE Project No. 21137

EXECUTIVE SUMMARY

Groen Construction proposes to construct a 52-Unit Apartment Building on a ±8.4-acre parcel of land located at the end of Wadleigh Road in Rochester, NH. A drainage analysis of this parcel was conducted for the purpose of estimating the peak rate of stormwater runoff and to subsequently design adequate drainage structures. Two models were compiled, one for the area in its existing (pre-construction) condition, and a second for its proposed (post-construction) condition. The analysis was conducted using data for the 2 Year – 24 Hour (3.08"), 10 Year – 24 Hour (4.63"), 25 Year– 24 Hour (5.84") storm events using the USDA SCS TR-20 method within the HydroCAD Stormwater Modeling System environment. A summary of the existing and proposed conditions peak rates of runoff is as follows:

COMPONENT	**PEAK RATE OF RUNOFF (CUBIC FEET/SECOND)**					
	2 Year		10 Year		25 Year	
	Existing	Proposed	Existing	Proposed	Existing	Proposed
Analysis Point #1	10.49	9.41	23.94	20.61	35.83	30.95
Analysis Point #2	2.39	2.10	4.33	3.95	5.87	5.43

The project site is located in Zone Highway/Commercial. The subject parcel consists primarily woodlands with an existing cell tower and gravel access road. The site is primarily undeveloped with the exception of the cell tower structure. The entrance to the site is by way of the existing paved Wadleigh Road which is the entrance to the abutting Anchorage Inn. The existing topography is such that the existing conditions site analysis requires four (4) subcatchments. The site drains in a northerly direction to a wetland adjacent to Axe Handle Brook (Analysis Point #1). The existing paved portion drains westerly to an existing drainage system located at the entrance of the site adjacent to Route 125, which outlets to Analysis Point #2.

The proposed site development consists of the aforementioned apartment complex with associated paved parking areas. The site is accessed by an approximate 650-foot extension of the existing Wadleigh Road. Wadleigh Road will also be widened from 20' to 26' to accommodate the increase in traffic and the addition of a bike lane. The remainder of the site is divided into fifteen subcatchments. The runoff from these subcatchments has increased from that of the existing conditions due to the addition of the impervious buildings and paving. This runoff will be directed via site grading and closed drainage to three stormwater management areas located throughout the site. As shown in the above table, the proposed peak rates of stormwater runoff will be reduced from that of existing conditions for all analysis points.

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Appendix I Existing Conditions Analysis

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

Appendix II Proposed Conditions Analysis

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

Appendix III Charts, Graphs, and Calculations

Enclosed: Sheet W1 Existing Conditions Watershed Plan
Sheet W2 Proposed Conditions Watershed Plan

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 location. These analyses were accomplished using the USDA SCS TR-20 Method within the HydroCAD 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 (3.08”), 10 Year – 24 Hour (4.63”), and 25 Year – 24 Hour (5.84") storm events.

As the table in the Executive Summary demonstrates, the proposed peak rates of runoff will be reduced from the existing conditions of the site, thereby minimizing any potential for a negative impact on abutting properties or infrastructure by allowing for better control of peak rates of stormwater runoff.

2.0 EXISTING CONDITIONS ANALYSIS

The subject parcel consists primarily of undeveloped woodland with the exception of a cell tower structure and gravel access road. The entrance to the site is by way of the existing paved Wadleigh Road which is the entrance to the abutting Anchorage Inn. The existing topography is such that the existing conditions site analysis requires four (4) subcatchment. The topography of the site varies from flat to steep throughout the site, with some slopes that are adjacent to the wetland exceeding 15%.

Classified through the use of the Natural Resources Conservation Service’s web soil survey, the land of the site is composed of two soil types. The in-situ soils are categorized into Hydrologic Soil Group C, with an area of D soils located in the northwest portion of the site (see appendix for soil types and HSG designations). Most of the development is located on HSG C type soils that comprise most of the site.

The majority of the site drains in a northerly direction to a wetland area adjacent to Axe Handle Brook (Analysis Point #1). The remainder of the site drains southerly to an existing catch basin and drainage system located southerly of the site adjacent to Route 125 (Analysis Point #2).

3.0 PROPOSED CONDITIONS ANALYSIS

The addition of the proposed impervious paved areas and buildings causes an increase in the curve number (C_n) and a decrease in the time of concentration (T_c), the net result being a potential increase in peak rates of runoff from the site. The proposed site development consists of the aforementioned apartment building with associated pavement/parking areas. The site is accessed by the construction of an approximately 650- foot extension of Wadleigh Road. Wadleigh Road will also be widened to allow for an increase of traffic. Wadleigh Road will be regraded to allow for the southerly half to continue to flow to the existing drainage system (Subcatchment 12S). Subcatchment 11S consists of the northerly half of Wadleigh, which will be regraded to flow into a focal point stormwater treatment system and be released to Analysis Point 1.

The runoff from the extended Wadleigh Road, Subcatchments 7S1 and 7S2, will flow via closed drainage to Bioretention Pond 3P, which outlets to AP1. A portion of the Existing Anchorage Inn site

(Subcatchment 7S) will be redirected to flow to a cross culvert under Wadleigh Road to eliminate offsite flow over the travelway and to Analysis Point #1.

The remainder of the site is divided into 11 subcatchments. The runoff from Subcatchments 2S and 3S will flow to Focal Point Treatment systems and to a subsurface detention system located under the main parking area. The runoff from Subcatchment 5S will flow to an additional Focal Point and subsurface detention system located under the parking area southerly of the building. Stormwater from both of these systems will be treated using Pre-Tx structures outletting to focal points. As shown in the above table, the proposed peak rates of stormwater runoff will be reduced from that of existing conditions for all analysis points.

As shown in the table within the Executive Summary, the proposed peak rates of stormwater runoff will be reduced from that of existing conditions for all analysis points.

In an effort to reduce sedimentation and erosion, the outlets of all culverts will be protected from erosion by the use of riprap protection aprons. Overall, the structures outlined in this proposal provide for adequate treatment of stormwater runoff for sediment and associated pollutants.

Pollutant Removal

FocalPoint is approved by NH AOT site development projects and provides the following standalone pollutant removal efficiencies: 91% TSS, 66% phosphorous and 48% nitrogen. A cut sheet for the Focal Point efficiencies is included with this submittal and listed in the Drainage Report. Bioretention Ponds are listed in AoT Stormwater Regulations as having pollutant removal efficiencies of 90% TSS, 65% PH and 65% Nitrogen. Combined with Deep sump catch basins and a Sediment Pond in the Treatment Train, the combined pollutant removal for the Bioretention Area is almost 100% TSS. 70% PH and 70% Nitrogen.

4.0 SEDIMENT & EROSION CONTROL BEST MANAGEMENT PRACTICES

The proposed site development is protected from erosion and the roadways and abutting properties are protected from sediment by the use of Best Management Practices as outlined in the NHDES Stormwater Manual. Any area disturbed by construction will be re-stabilized within 30 days and abutting properties and wetlands will suffer minimal adversity resultant of this development. All swales and drainage structures will be constructed and stabilized prior to having runoff directed to them.

4.1 Organic Filter Berm

The plan set demonstrates the location of organic filter berm for sediment control. Sheet E1 – Erosion and Sediment Control Details, has the specifications for installation and maintenance of the filter berm. In areas where the limits of construction need to be emphasized to operators, construction fence for added visibility will be installed. Orange construction fence will be VISI Perimeter Fence by Conwed Plastic Fencing, or equal. The four-foot fencing to be installed using six foot posts at least two feet in the ground at a spacing of six to eight feet.

4.2 Stabilized Construction Entrance

A temporary gravel construction entrance provides an area where mud can be dislodged from tires before the vehicle leaves the construction site to reduce the amount of mud and sediment transported onto paved municipal and state roads. The stone size for the pad should be between 1 to 2 inch coarse aggregate, and the pad itself constructed to a minimum length of 50 feet for the full width of the access road. The aggregate should be placed at least six inches thick. A plan view and profile are shown on Sheet E1.

4.3 Environmental Dust Control

Dust will be controlled on the site by the use of multiple Best Management Practices. Mulching and temporary seeding will be the first line of protection to be utilized where problems occur. If dust problems are not solved by these applications, the use of water can be applied. Dump trucks hauling material from the construction site will be covered with a tarpaulin.

4.4 Vegetated Stabilization

All areas that are disturbed during construction will be stabilized with vegetated material within 30 days of breaking ground. Construction will be managed in such a manner that erosion is prevented and that no abutting property will be subjected to any siltation, unless otherwise permitted. All areas to be planted with grass for long-term cover will follow the specification on Sheet E1 using seeding mixture C.

4.5 Stone Grade Stabilization Structures (Check Dams)

Stone check dams will be constructed in the ditch line where specified on the plan set and in accordance with Figures 15.2 and 15.3 of the NHDES Stormwater Manual. They will be constructed from 2-inch to 3-inch stone riprap to a height of 24-inches. The maximum slope of the stone will be 2 to 1. The check dams will be spaced based on a flow depth of 18-inches so that the top of one check dam is at an equal elevation to the toe of the next up-slope check dam. For example, for a slope of 8% the spacing will be 18.75 feet (1.5’ / .08 ‘/’ = 18.75').

4.6 Temporary Sediment Traps

Temporary Sediment Traps are small temporary ponding areas that are formed by excavation or by constructing an earthen embankment across a drainage way and providing a stabilized outlet. These structures intercept sediment-laden runoff from small, disturbed areas and detain it long enough for the majority of the sediment to settle out into the sump of the trap.

4.7 Riprap Outlet Protection

Riprap Outlet Protection will be provided at the outlet of all culverts that discharge runoff into the environment (as opposed to a catch basin). The riprap outlet protection has been designed with the equations provided in the NHDES Stormwater Manual depending on inlet or outlet control. Details of the protection design can be found on Sheet E1 – Erosion & Sediment Control Details.

4.8 Riprap Inlet Protection Aprons

Riprap Inlet Protection Aprons are four-foot by four-foot sections of riprap placed on the ground in front of the inlet of a culvert. These aprons, built to the same specifications as the outlet protection

aprons mentioned above, help to prevent the growth of vegetation directly adjacent to an inlet, therefore reducing the potential for a debilitating clog.

4.9 Drain Manholes

A drain manhole is a pre-cast concrete structure intended for the transport of stormwater, typically utilized in streets and parking areas.. These structures are to be cleaned regularly.

4.10 Catch Basins with Grease Hoods and Sumps

A Catch Basin is a pre-cast concrete structure intended for the transport of stormwater, typically utilized in streets and parking areas. All Catch Basins are to be equipped with grease hoods designed to trap oils and floatable sediment and three-foot sedimentation sumps in order to provide an area for sediment to settle out of runoff prior to its discharge from the structure. These structures are to be cleaned regularly.

4.11 Erosion Control Blanket (Jute Mat)

In newly graded areas where there exists the potential for extensive erosion prior to the establishment of an adequate vegetative cover, an erosion control blanket or jute mat may be required. A tightly woven fabric of fibers (preferably biodegradable) or a synthetic mesh, the blanket provides stability by trapping soil particles, shields loam and seed from rain and runoff, retains moisture for seed germination, deposits additional bio-mass after the blanket rots, and provides temporary (or permanent) reinforcement to turf on slopes, in channels, and along shorelines.

4.12 Rock Stabilized Steep Slope

In newly graded areas where there exists the potential for extensive erosion because of steep slope conditions, a Rock Stabilized Slope may be required. A tightly woven fabric of fibers or a synthetic mesh should be placed under the rock and a layer of sand to be placed over the fabric to protect from puncture. The blanket provides stability by trapping soil particles, and provides temporary (or permanent) reinforcement to turf on slopes, in channels, and along shorelines.

4.13 LOW IMPACT DEVELOPMENT (LID) PRACTICES

LID is a site planning and design strategy intended to maintain or replicate predevelopment hydrology through the use of site planning, source control, and small-scale practices integrated throughout the site to prevent, infiltrate, and manage stormwater runoff as close to its source as possible. Examples of LID strategies are pervious pavement, rain gardens, green roofs, bioretention basins and swales, filtration trenches, and other functionally similar BMPs located near the stormwater runoff source.

4.14 Raingarden - Bioretention cells

Construction Component – Excavate a hole at least 3 ft deep and consist of, from the bottom up:

- A geotextile fabric between natural soils and constructed media

- A base of coarse clean stone in which a 4 to 6 inch perforated underdrain is usually installed
- A layer of lightly compacted soil media at least 18 inches thick. See detail sheet for Soil filter media blend specifications.
- Vegetation mix that are both drought and flood tolerant. See Detail sheet for recommended plantings.
- Covers of 2-3 inches of aged, fibrous bark mulch.

4.15 FocalPoint Bioretention System

1. FocalPoint Biofiltration System

FocalPoint is an ultra-efficient, modular biofiltration system that treats and drains large volumes of stormwater runoff in a small footprint to meet post-construction stormwater treatment requirements. The system removes pollutants from stormwater runoff through the physical, chemical and biological mechanisms of its soil, plant and microbe complex infiltration flow rates for the system's standard media.

I. Summary

The following general specifications describe the components and installation requirements for a volume based High Performance Modular Biofiltration System (HPMBS) that utilizes physical, chemical and biological mechanisms of a soil, plant and microbe complex to remove pollutants typically found in urban storm water runoff. The modular treatment system in which the biologically active biofiltration media is used shall be a complete, integrated system designed to be placed in Square Foot or Linear Foot increments per the approved drawings to treat contaminated runoff from impervious surfaces.

The High Performance Modular Biofiltration System (HPMBS) is comprised of the following components:

A. Plant Component

1. Manufacturer shall provide a regionalized list of acceptable plants.

2. Plants, as specified in the approved drawings/manufacturer's plant list, shall be installed at the time the HPMBS is commissioned for use.

3. Plants and planting are typically included in landscape contract.

B. Biofilter Component

1. This component employs a high performance cross-section in which each element is highly dependent on the others to meet the performance specification for the complete system. It is important that this entire cross-section be provided as a complete system and installed as such.

2. As indicated in the approved drawings, the elements of the Biofilter include:

   A. A mulch protective layer (if specified).

B. An advanced high infiltration rate biofiltration planting media bed which utilizes physical, chemical and biological mechanisms of the soil, plant, and microbe complex, to remove pollutants found in storm water runoff.

C. A separation layer which utilizes the concept of 'bridging' to separate the biofiltration media from the underdrain without the use of geotextile fabrics.

D. A wide aperture mesh layer utilized to prevent bridging stone from entering the underdrain/storage element.

E. A modular, high infiltration rate 'flat pipe' style underdrain/storage system which is designed to directly infiltrate or exfiltrate water through its surface. The modular underdrain must provide a minimum of 95% void space.

C. Energy Dissipation Component

1. An Energy Dissipation Component is typically specified to slow and spread out water as it enters the system. This component is dependent upon the design in the approved drawings, but typically consists of a rock gabion, rock filter dam or dense vegetation element, such as native grasses, either surrounding the Biofiltration Component or located immediately upstream of it.

D. Pretreatment Component

1. Pretreatment, when specified, is typically accomplished by locating the Biofiltration Component downstream of a swale, curb cut/rock apron, sediment forebay, deep or shallow sump water quality manhole, etc. These BMPs should target trash and debris and medium to coarse sediment.

E. Observation and Maintenance Component

1. An Observation and Maintenance Port shall be installed per the approved drawings to provide for easy inspection of the underdrain/storage element, and cleanout access if needed.

F. Extreme Event Overflow (by others)

1. An Extreme Event Overflow should be located external to, but near the Biofiltration element to provide bypass when needed. This may be an overland flow bypass structure, beehive overflow grate structure, or equivalent that serves the purpose. If beehive overflow structures is utilized it should include a removable filter insert to provide a minimum of 50% TSS removal and control of gross pollutants, trash and floatables.

II. Quality Assurance and Performance Specifications

The quality and composition of all system components and all other appurtenances and their assembly process shall be subject to inspection upon delivery of the system to the work

site.

Installation is to be performed only by skilled work people with satisfactory record of performance on earthworks, pipe, chamber, or pond/landfill construction projects of comparable size and quality.

A. Plants

1. Plants must be compatible with the HPMBS media and the associated highly variable hydrologic regime. Plants are typically facultative with fibrous roots systems such a native grasses and shrubs.

2. Manufacturer shall provide a regionalized list of acceptable plants.

3. All plant material shall comply with the type and size required by the approved drawings and shall be alive and free of obvious signs of disease.

B. Mulch

1. Mulch, typically double shredded hardwood (non-floatable), shall comply with the type and size required by the approved drawings, and shall be screened to minimize fines. Rock mulch is an alternative to wood based mulch and typically consists of clean, rounded river rock (3-4" diam in size).

C. Biofiltration Media

1. Biologically active biofiltration media shall be visually inspected to ensure appropriate volume, texture and consistency with the approved drawings, and must bear a batch number marking from the manufacturer which certifies performance testing of the batch to meet or exceed the required infiltration rate (100 in/hr). A third-party laboratory test must be provided to certify the 100 in/hr rate.

2. At no additional cost and within the first year following installation, authorized value-added reseller shall provide one site visit/maintenance training at the request of owner or owners representative. The owner or owners' rep will be supplied with the first round of replacement mulch by the reseller at no cost, so long as it occurs in the first year following installation.

3. Pollutant Removal performance, composition and characteristics of the Biofiltration Media must meet or exceed the following minimum standards as demonstrated by testing acceptable to the project engineer:

Pollutant	Removal Efficiency
TSS	91%
Phosphorus	66%
Nitrogen	48%
Composition and Characteristics	
Sand - Fine	< 5%
Sand – Medium	10% - 15%

Sand – Coarse	15% - 25%
Sand – Very Coarse	40% - 45%
Gravel	10% - 20%
Infiltration Rate	>100 inches per hour
Peat Moss*	5% - 15%
*** Peat Moss Specification**	
Listed by Organic Materials Review Institute 100% natural peat (no composted, sludge, yard or leaf waste) Total Carbon >85% Carbon to Nitrogen Ratio 15:1 to 23:1 Lignin Content 49% to 52% Humic Acid >18% pH 6.0 to 7.0 Moisture Content 30% to 50% 95% to 100% passing 2.0mm sieve > 80% passing 1.0mm sieve	

D. Underdrain/Storage System

1. Underdrain/storage components shall be manufactured in an ISO certified facility and be manufactured from at least 90% recycled materials.

2. Underdrain/storage components shall meet or exceed the following characteristics:

Property	Value
Surface Void Area	≥ 85%
Unit Weight	3.25 lbs/cf
Service Temperature	-14° to 167°
Unconfined Crush Strength	32.48 psi
180 Day Creep Test	
Load Applied – Initial and Sustained	11.16 psi
• Creep Sustained – After 180 Days	0.20 inches
• Creep Sustained – After 180 Days	1.13 %
• Projected Creep – 40 years	1.72%

E. Separation Mesh

1. Separation Mesh shall be composed of high-tenacity monofilament polypropylene yarns that are woven together to produce an open mesh geotextile which shall be inert to biological degradation and resistant to naturally encountered chemicals, alkalis and acids. The mesh shall meet or exceed the following characteristics:

Properties	Test Method	Unit	Min Ave Roll Value	
			MD	CD
Tensile Strength	ASTM D4595	kN/m (lbs/ft)	21 (1440)	25.3 (1733)

Creep Reduced Strength	ASTM D5262	kN/m (lbs/ft)	6.9 (471)	8.3 (566)
Long Term Allowable Design Load	GRI GG-4	kN/m (lbs/ft)	5.9 (407)	7.2 (490)
UV Resistance (at 500 hours)	-	% strength retained	90	
Aperture Size (machine direction)	-	mm (in)	2 (0.08)	
Aperture Size (cross machine direction)	-	mm (in)	2 (0.08)	
Mass/Unit Area	ASTM D5261	g/m^2 (oz/yd^2)	197 (5.8)	

F. Bridging Stone

1. Bridging Stone shall be 3/8" pea gravel, or other diameter sized to prevent migration of filter media, as specified by manufacturer.

2. Stone must be washed and free from sediment, soil and contaminants.

4.16 Construction Sequence

2. Prior to the start of *any* activity, it is the responsibility of the site's Developer (or Owner) to file a Notice of Intent (NOI) form and a copy of one (shared) Stormwater Pollution Prevention Plan (SWPPP) with the U.S. Environmental Protection Agency (EPA) in order to gain coverage under the NPDES General Permit for Stormwater Discharges from Construction Activities. A pre-construction meeting shall be held prior to the start of construction to discuss the SWPPP and all associated responsibilities. Participants shall include the developer (or owner), the General Contractor, the Site Contractor, and the Engineer.

3. Wetland boundaries shall be clearly marked by the project's land surveyor prior to the start of construction.

4. Cut and remove trees in construction area as required or directed.

5. Install silt fencing, and construction entrances prior to the start of earthwork. These shall be maintained until the final pavement surfacing and landscaping areas are established.

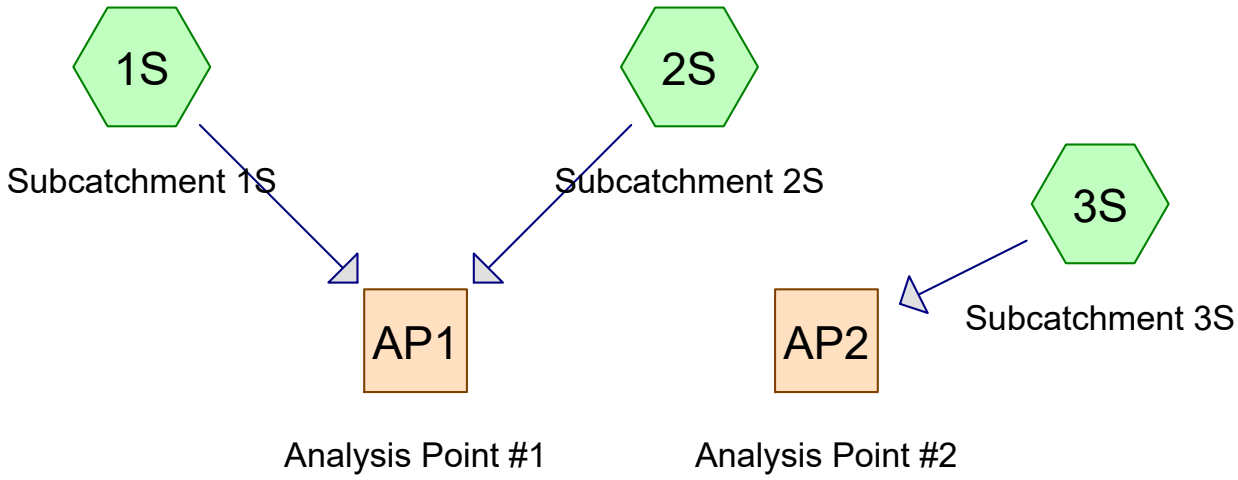
6. Clear, cut, grub, and dispose of debris in approved facilities. This includes any required demolition of existing structures, utilities, etc.

7. Construct and/or install temporary sediment basin(s) as required. These facilities shall be installed and stabilized prior to directing runoff to them.

APPENDIX I

EXISTING CONDITIONS DRAINAGE ANALYSIS

Summary 2 YEAR
Summary 10 YEAR
Complete 25 YEAR



Subcat Reach Pond Link

Routing Diagram for 21137-PRE DEVELOPMENT
Prepared by {enter your company name here}, Printed 10/29/2021
HydroCAD® 10.10-5a s/n 10589 © 2020 HydroCAD Software Solutions LLC

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-YR STORM	Type III 24-hr		Default	24.00	1	3.08	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.235	74	>75% Grass cover, Good, HSG C (3S)
0.286	96	Gravel surface, HSG C (1S, 2S, 3S)
0.188	98	Paved parking, HSG C (3S)
5.978	70	Woods, Good, HSG C (1S, 2S)
0.838	77	Woods, Good, HSG D (2S)
7.525	**73**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
6.687	HSG C	1S, 2S, 3S
0.838	HSG D	2S
0.000	Other	
7.525		**TOTAL AREA**

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)
1	2S	0.00	0.00	22.0	0.0330	0.011	0.0	18.0	0.0

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment 1S Runoff Area=173,493 sf 0.00% Impervious Runoff Depth>0.80"
Flow Length=350' Tc=9.6 min CN=71 Runoff=2.95 cfs 0.267 af

Subcatchment 2S: Subcatchment 2S Runoff Area=134,265 sf 0.00% Impervious Runoff Depth>0.90"
Flow Length=575' Tc=13.7 min CN=73 Runoff=2.35 cfs 0.232 af

Subcatchment 3S: Subcatchment 3S Runoff Area=20,050 sf 40.93% Impervious Runoff Depth>1.73"
Tc=6.0 min CN=86 Runoff=0.92 cfs 0.066 af

Reach AP1: Analysis Point #1 Inflow=5.17 cfs 0.499 af
Outflow=5.17 cfs 0.499 af

Reach AP2: Analysis Point #2 Inflow=0.92 cfs 0.066 af
Outflow=0.92 cfs 0.066 af

Total Runoff Area = 7.525 ac Runoff Volume = 0.566 af Average Runoff Depth = 0.90"
97.50% Pervious = 7.337 ac 2.50% Impervious = 0.188 ac

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	10-YR STORM	Type III 24-hr		Default	24.00	1	4.63	2

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment 1S Runoff Area=173,493 sf 0.00% Impervious Runoff Depth>1.84"
Flow Length=350' Tc=9.6 min CN=71 Runoff=7.34 cfs 0.610 af

Subcatchment 2S: Subcatchment 2S Runoff Area=134,265 sf 0.00% Impervious Runoff Depth>1.99"
Flow Length=575' Tc=13.7 min CN=73 Runoff=5.52 cfs 0.511 af

Subcatchment 3S: Subcatchment 3S Runoff Area=20,050 sf 40.93% Impervious Runoff Depth>3.12"
Tc=6.0 min CN=86 Runoff=1.63 cfs 0.120 af

Reach AP1: Analysis Point #1 Inflow=12.60 cfs 1.121 af
Outflow=12.60 cfs 1.121 af

Reach AP2: Analysis Point #2 Inflow=1.63 cfs 0.120 af
Outflow=1.63 cfs 0.120 af

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 7.34 cfs @ 12.15 hrs, Volume= 0.610 af, Depth> 1.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=4.63"

Area (sf)	CN	Description
169,441	70	Woods, Good, HSG C
4,052	96	Gravel surface, HSG C
173,493	71	Weighted Average
173,493		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	50	0.1200	0.14		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.11"
3.5	300	0.0800	1.41		**Shallow Concentrated Flow, Shallow Flow** Woodland Kv= 5.0 fps
9.6	350	Total			

Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 5.52 cfs @ 12.20 hrs, Volume= 0.511 af, Depth> 1.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=4.63"

Area (sf)	CN	Description
90,962	70	Woods, Good, HSG C
36,501	77	Woods, Good, HSG D
3,547	96	Gravel surface, HSG C
3,255	96	Gravel surface, HSG C
134,265	73	Weighted Average
134,265		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	50	0.0400	0.09		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.11"
0.5	50	0.0400	1.56		**Sheet Flow, Sheet Flow Gravel** Smooth surfaces n= 0.011 P2= 3.11"
3.1	250	0.0720	1.34		**Shallow Concentrated Flow, Shallow Flow** Woodland Kv= 5.0 fps
0.6	175	0.0460	5.11	170.24	**Parabolic Channel, Flow through Wetland** W=100.00' D=0.50' Area=33.3 sf Perim=100.0' n= 0.030 Stream, clean & straight
0.0	22	0.0330	12.76	22.55	**Pipe Channel, Culvert** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.0	28	0.3800	30.38	121.51	**Parabolic Channel, Channel Flow**

W=6.00' D=1.00' Area=4.0 sf Perim=6.4'
n= 0.022 Earth, clean & straight

13.7	575	Total

Summary for Subcatchment 3S: Subcatchment 3S

Runoff = 1.63 cfs @ 12.09 hrs, Volume= 0.120 af, Depth> 3.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=4.63"

Area (sf)	CN	Description
10,253	74	>75% Grass cover, Good, HSG C
1,591	96	Gravel surface, HSG C
8,206	98	Paved parking, HSG C
20,050	86	Weighted Average
11,844		59.07% Pervious Area
8,206		40.93% Impervious Area

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

Summary for Reach AP1: Analysis Point #1

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

Inflow Area = 7.065 ac, 0.00% Impervious, Inflow Depth > 1.90" for 10-YR STORM event
Inflow = 12.60 cfs @ 12.16 hrs, Volume= 1.121 af
Outflow = 12.60 cfs @ 12.16 hrs, Volume= 1.121 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Reach AP2: Analysis Point #2

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

Inflow Area = 0.460 ac, 40.93% Impervious, Inflow Depth > 3.12" for 10-YR STORM event
Inflow = 1.63 cfs @ 12.09 hrs, Volume= 0.120 af
Outflow = 1.63 cfs @ 12.09 hrs, Volume= 0.120 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	50-YR STORM	Type III 24-hr		Default	24.00	1	6.96	2

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment 1S Runoff Area=173,493 sf 0.00% Impervious Runoff Depth>3.68"
Flow Length=350' Tc=9.6 min CN=71 Runoff=15.02 cfs 1.223 af

Subcatchment 2S: Subcatchment 2S Runoff Area=134,265 sf 0.00% Impervious Runoff Depth>3.89"
Flow Length=575' Tc=13.7 min CN=73 Runoff=10.96 cfs 0.999 af

Subcatchment 3S: Subcatchment 3S Runoff Area=20,050 sf 40.93% Impervious Runoff Depth>5.32"
Tc=6.0 min CN=86 Runoff=2.72 cfs 0.204 af

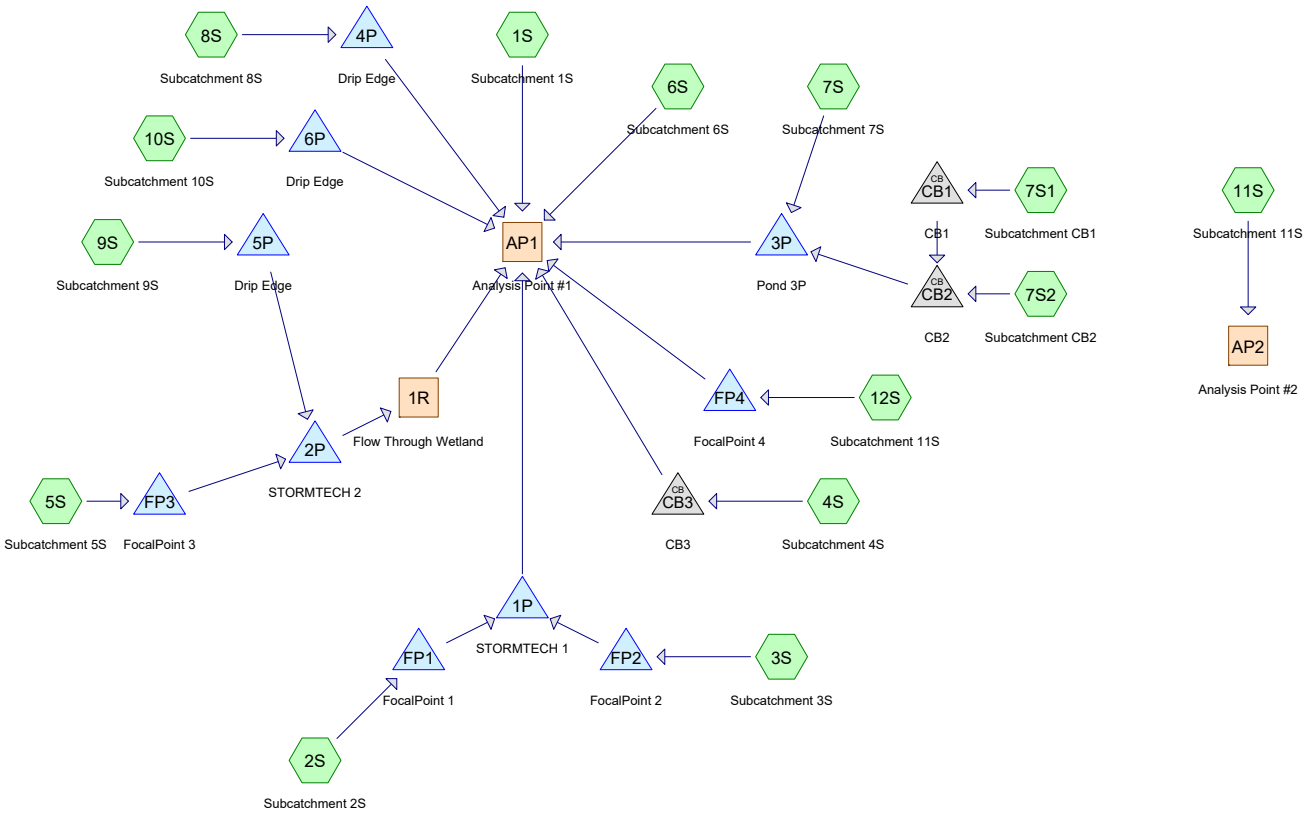
Reach AP1: Analysis Point #1 Inflow=25.49 cfs 2.222 af
Outflow=25.49 cfs 2.222 af

Reach AP2: Analysis Point #2 Inflow=2.72 cfs 0.204 af
Outflow=2.72 cfs 0.204 af

APPENDIX II

PROPOSED CONDITIONS DRAINAGE ANALYSIS

Summary 2 YEAR
Summary 10 YEAR
Complete 25 YEAR



Subcat Reach Pond Link

Routing Diagram for 21137 - POST DEV -W-FP

Prepared by {enter your company name here}, Printed 10/29/2021

HydroCAD® 10.10-5a s/n 10589 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.891	74	>75% Grass cover, Good, HSG C (1S, 2S, 3S, 4S, 5S, 6S, 7S, 11S)
0.054	80	>75% Grass cover, Good, HSG D (6S)
0.114	96	Gravel surface, HSG C (6S)
1.555	98	Paved parking, HSG C (1S, 2S, 3S, 5S, 7S1, 7S2, 11S, 12S)
0.032	98	Paved parking, HSG D (7S2)
0.401	98	Roofs, HSG C (8S, 9S, 10S)
2.726	70	Woods, Good, HSG C (1S, 4S, 6S, 7S)
0.752	77	Woods, Good, HSG D (6S)
7.525	**80**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
6.687	HSG C	1S, 2S, 3S, 4S, 5S, 6S, 7S, 7S1, 7S2, 8S, 9S, 10S, 11S, 12S
0.838	HSG D	6S, 7S2
0.000	Other	
7.525		**TOTAL AREA**

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)
1	6S	0.00	0.00	50.0	0.1400	0.040	2.0	1.0	0.0
2	1P	223.60	223.42	35.0	0.0051	0.013	0.0	8.0	0.0
3	2P	220.80	220.50	48.0	0.0063	0.013	0.0	6.0	0.0
4	3P	210.50	210.30	26.0	0.0077	0.013	0.0	8.0	0.0
5	CB1	211.92	211.82	20.0	0.0050	0.013	0.0	15.0	0.0
6	CB2	211.72	211.62	20.0	0.0050	0.013	0.0	15.0	0.0
7	CB3	225.00	224.40	120.0	0.0050	0.013	0.0	12.0	0.0
8	FP1	225.66	225.56	10.0	0.0100	0.013	0.0	15.0	0.0
9	FP2	225.66	225.56	10.0	0.0100	0.013	0.0	15.0	0.0
10	FP3	222.49	222.39	10.0	0.0100	0.013	0.0	12.0	0.0
11	FP4	189.80	189.70	15.0	0.0067	0.013	0.0	6.0	0.0

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment 1S Runoff Area=102,651 sf 0.77% Impervious Runoff Depth>0.85"
Flow Length=350' Tc=9.6 min CN=72 Runoff=1.88 cfs 0.168 af

Subcatchment 2S: Subcatchment 2S Runoff Area=17,857 sf 85.11% Impervious Runoff Depth>2.43"
Tc=6.0 min CN=94 Runoff=1.10 cfs 0.083 af

Subcatchment 3S: Subcatchment 3S Runoff Area=14,768 sf 90.79% Impervious Runoff Depth>2.63"
Tc=6.0 min CN=96 Runoff=0.95 cfs 0.074 af

Subcatchment 4S: Subcatchment 4S Runoff Area=12,745 sf 0.00% Impervious Runoff Depth>0.90"
Flow Length=350' Tc=9.6 min CN=73 Runoff=0.25 cfs 0.022 af

Subcatchment 5S: Subcatchment 5S Runoff Area=14,630 sf 78.26% Impervious Runoff Depth>2.33"
Tc=6.0 min CN=93 Runoff=0.87 cfs 0.065 af

Subcatchment 6S: Subcatchment 6S Runoff Area=104,590 sf 0.00% Impervious Runoff Depth>0.96"
Flow Length=597' Tc=14.7 min CN=74 Runoff=1.91 cfs 0.191 af

Subcatchment 7S: Subcatchment 7S Runoff Area=5,959 sf 0.00% Impervious Runoff Depth>0.96"
Tc=6.0 min CN=74 Runoff=0.14 cfs 0.011 af

Subcatchment 7S1: Subcatchment CB1 Runoff Area=5,639 sf 100.00% Impervious Runoff Depth>2.85"
Tc=6.0 min CN=98 Runoff=0.38 cfs 0.031 af

Subcatchment 7S2: Subcatchment CB2 Runoff Area=7,419 sf 100.00% Impervious Runoff Depth>2.85"
Tc=6.0 min CN=98 Runoff=0.50 cfs 0.040 af

Subcatchment 8S: Subcatchment 8S Runoff Area=5,280 sf 100.00% Impervious Runoff Depth>2.85"
Tc=6.0 min CN=98 Runoff=0.35 cfs 0.029 af

Subcatchment 9S: Subcatchment 9S Runoff Area=3,313 sf 100.00% Impervious Runoff Depth>2.85"
Tc=6.0 min CN=98 Runoff=0.22 cfs 0.018 af

Subcatchment 10S: Subcatchment 10S Runoff Area=8,865 sf 100.00% Impervious Runoff Depth>2.85"
Tc=6.0 min CN=98 Runoff=0.59 cfs 0.048 af

Subcatchment 11S: Subcatchment 11S Runoff Area=18,787 sf 52.98% Impervious Runoff Depth>1.81"
Tc=6.0 min CN=87 Runoff=0.90 cfs 0.065 af

Subcatchment 12S: Subcatchment 11S Runoff Area=5,279 sf 100.00% Impervious Runoff Depth>2.85"
Tc=6.0 min CN=98 Runoff=0.35 cfs 0.029 af

Reach 1R: Flow Through Wetland Avg. Flow Depth=0.03' Max Vel=0.79 fps Inflow=0.32 cfs 0.063 af
n=0.030 L=210.0' S=0.0548 '/' Capacity=185.74 cfs Outflow=0.32 cfs 0.063 af

Reach AP1: Analysis Point #1 Inflow=4.84 cfs 0.699 af
Outflow=4.84 cfs 0.699 af

Reach AP2: Analysis Point #2 Inflow=0.90 cfs 0.065 af
Outflow=0.90 cfs 0.065 af

Pond 1P: STORMTECH 1 Peak Elev=224.20' Storage=0.045 af Inflow=2.61 cfs 0.157 af
Discarded=0.00 cfs 0.000 af Primary=0.62 cfs 0.149 af Outflow=0.62 cfs 0.149 af

Pond 2P: STORMTECH 2 Peak Elev=221.25' Storage=0.013 af Inflow=1.18 cfs 0.065 af
Discarded=0.00 cfs 0.000 af Primary=0.32 cfs 0.063 af Outflow=0.32 cfs 0.063 af

Pond 3P: Pond 3P Peak Elev=212.73' Storage=1,786 cf Inflow=1.02 cfs 0.082 af
Outflow=0.08 cfs 0.075 af

Pond 4P: Drip Edge Peak Elev=230.24' Storage=406 cf Inflow=0.35 cfs 0.029 af
Discarded=0.04 cfs 0.029 af Primary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.029 af

Pond 5P: Drip Edge Peak Elev=229.79' Storage=225 cf Inflow=0.22 cfs 0.018 af
Discarded=0.03 cfs 0.018 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.018 af

Pond 6P: Drip Edge Peak Elev=222.00' Storage=1,872 cf Inflow=0.59 cfs 0.048 af
Outflow=0.02 cfs 0.005 af

Pond CB1: CB1 Peak Elev=212.73' Inflow=0.38 cfs 0.031 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=0.38 cfs 0.031 af

Pond CB2: CB2 Peak Elev=212.73' Inflow=0.87 cfs 0.071 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=0.87 cfs 0.071 af

Pond CB3: CB3 Peak Elev=225.29' Inflow=0.25 cfs 0.022 af
12.0" Round Culvert n=0.013 L=120.0' S=0.0050 '/' Outflow=0.25 cfs 0.022 af

Pond FP1: FocalPoint 1 Peak Elev=230.05' Storage=347 cf Inflow=1.10 cfs 0.083 af
Outflow=1.77 cfs 0.083 af

Pond FP2: FocalPoint 2 Peak Elev=229.95' Storage=346 cf Inflow=0.95 cfs 0.074 af
Outflow=0.91 cfs 0.074 af

Pond FP3: FocalPoint 3 Peak Elev=226.92' Storage=346 cf Inflow=0.87 cfs 0.065 af
Outflow=1.18 cfs 0.065 af

Pond FP4: FocalPoint 4 Peak Elev=193.02' Storage=224 cf Inflow=0.35 cfs 0.029 af
Outflow=0.19 cfs 0.025 af

Total Runoff Area = 7.525 ac Runoff Volume = 0.874 af Average Runoff Depth = 1.39"
73.58% Pervious = 5.537 ac 26.42% Impervious = 1.988 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment 1S Runoff Area=102,651 sf 0.77% Impervious Runoff Depth>0.29"
Flow Length=350' Tc=9.6 min CN=72 Runoff=0.45 cfs 0.057 af

Subcatchment 2S: Subcatchment 2S Runoff Area=17,857 sf 85.11% Impervious Runoff Depth>1.40"
Tc=6.0 min CN=94 Runoff=0.65 cfs 0.048 af

Subcatchment 3S: Subcatchment 3S Runoff Area=14,768 sf 90.79% Impervious Runoff Depth>1.57"
Tc=6.0 min CN=96 Runoff=0.59 cfs 0.044 af

Subcatchment 4S: Subcatchment 4S Runoff Area=12,745 sf 0.00% Impervious Runoff Depth>0.32"
Flow Length=350' Tc=9.6 min CN=73 Runoff=0.07 cfs 0.008 af

Subcatchment 5S: Subcatchment 5S Runoff Area=14,630 sf 78.26% Impervious Runoff Depth>1.31"
Tc=6.0 min CN=93 Runoff=0.50 cfs 0.037 af

Subcatchment 6S: Subcatchment 6S Runoff Area=104,590 sf 0.00% Impervious Runoff Depth>0.35"
Flow Length=597' Tc=14.7 min CN=74 Runoff=0.55 cfs 0.070 af

Subcatchment 7S: Subcatchment 7S Runoff Area=5,959 sf 0.00% Impervious Runoff Depth>0.35"
Tc=6.0 min CN=74 Runoff=0.04 cfs 0.004 af

Subcatchment 7S1: Subcatchment CB1 Runoff Area=5,639 sf 100.00% Impervious Runoff Depth>1.77"
Tc=6.0 min CN=98 Runoff=0.24 cfs 0.019 af

Subcatchment 7S2: Subcatchment CB2 Runoff Area=7,419 sf 100.00% Impervious Runoff Depth>1.77"
Tc=6.0 min CN=98 Runoff=0.32 cfs 0.025 af

Subcatchment 8S: Subcatchment 8S Runoff Area=5,280 sf 100.00% Impervious Runoff Depth>1.77"
Tc=6.0 min CN=98 Runoff=0.23 cfs 0.018 af

Subcatchment 9S: Subcatchment 9S Runoff Area=3,313 sf 100.00% Impervious Runoff Depth>1.77"
Tc=6.0 min CN=98 Runoff=0.14 cfs 0.011 af

Subcatchment 10S: Subcatchment 10S Runoff Area=8,865 sf 100.00% Impervious Runoff Depth>1.77"
Tc=6.0 min CN=98 Runoff=0.38 cfs 0.030 af

Subcatchment 11S: Subcatchment 11S Runoff Area=18,787 sf 52.98% Impervious Runoff Depth>0.90"
Tc=6.0 min CN=87 Runoff=0.45 cfs 0.033 af

Subcatchment 12S: Subcatchment 11S Runoff Area=5,279 sf 100.00% Impervious Runoff Depth>1.77"
Tc=6.0 min CN=98 Runoff=0.23 cfs 0.018 af

Reach 1R: Flow Through Wetland Avg. Flow Depth=0.02' Max Vel=0.66 fps Inflow=0.18 cfs 0.035 af
n=0.030 L=210.0' S=0.0548 '/' Capacity=185.74 cfs Outflow=0.18 cfs 0.035 af

Reach AP1: Analysis Point #1 Inflow=1.59 cfs 0.314 af
Outflow=1.59 cfs 0.314 af

Reach AP2: Analysis Point #2 Inflow=0.45 cfs 0.033 af
Outflow=0.45 cfs 0.033 af

Pond 1P: STORMTECH 1 Peak Elev=224.01' Storage=0.031 af Inflow=0.44 cfs 0.092 af
Discarded=0.00 cfs 0.000 af Primary=0.34 cfs 0.085 af Outflow=0.34 cfs 0.085 af

Pond 2P: STORMTECH 2 Peak Elev=221.11' Storage=0.009 af Inflow=0.20 cfs 0.037 af
Discarded=0.00 cfs 0.000 af Primary=0.18 cfs 0.035 af Outflow=0.18 cfs 0.035 af

Pond 3P: Pond 3P Peak Elev=212.35' Storage=1,001 cf Inflow=0.60 cfs 0.048 af
Outflow=0.07 cfs 0.044 af

Pond 4P: Drip Edge Peak Elev=229.60' Storage=211 cf Inflow=0.23 cfs 0.018 af
Discarded=0.04 cfs 0.018 af Primary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.018 af

Pond 5P: Drip Edge Peak Elev=229.33' Storage=110 cf Inflow=0.14 cfs 0.011 af
Discarded=0.03 cfs 0.011 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.011 af

Pond 6P: Drip Edge Peak Elev=221.07' Storage=1,310 cf Inflow=0.38 cfs 0.030 af
Outflow=0.00 cfs 0.000 af

Pond CB1: CB1 Peak Elev=212.35' Inflow=0.24 cfs 0.019 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=0.24 cfs 0.019 af

Pond CB2: CB2 Peak Elev=212.35' Inflow=0.56 cfs 0.044 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=0.56 cfs 0.044 af

Pond CB3: CB3 Peak Elev=225.15' Inflow=0.07 cfs 0.008 af
12.0" Round Culvert n=0.013 L=120.0' S=0.0050 '/' Outflow=0.07 cfs 0.008 af

Pond FP1: FocalPoint 1 Peak Elev=229.83' Storage=344 cf Inflow=0.65 cfs 0.048 af
Outflow=0.23 cfs 0.048 af

Pond FP2: FocalPoint 2 Peak Elev=229.67' Storage=286 cf Inflow=0.59 cfs 0.044 af
Outflow=0.21 cfs 0.044 af

Pond FP3: FocalPoint 3 Peak Elev=226.38' Storage=203 cf Inflow=0.50 cfs 0.037 af
Outflow=0.20 cfs 0.037 af

Pond FP4: FocalPoint 4 Peak Elev=192.83' Storage=157 cf Inflow=0.23 cfs 0.018 af
Outflow=0.19 cfs 0.015 af

Total Runoff Area = 7.525 ac Runoff Volume = 0.421 af Average Runoff Depth = 0.67"
73.58% Pervious = 5.537 ac 26.42% Impervious = 1.988 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment 1S Runoff Area=102,651 sf 0.77% Impervious Runoff Depth>1.91"
Flow Length=350' Tc=9.6 min CN=72 Runoff=4.54 cfs 0.376 af

Subcatchment 2S: Subcatchment 2S Runoff Area=17,857 sf 85.11% Impervious Runoff Depth>3.94"
Tc=6.0 min CN=94 Runoff=1.73 cfs 0.135 af

Subcatchment 3S: Subcatchment 3S Runoff Area=14,768 sf 90.79% Impervious Runoff Depth>4.16"
Tc=6.0 min CN=96 Runoff=1.47 cfs 0.118 af

Subcatchment 4S: Subcatchment 4S Runoff Area=12,745 sf 0.00% Impervious Runoff Depth>1.99"
Flow Length=350' Tc=9.6 min CN=73 Runoff=0.59 cfs 0.049 af

Subcatchment 5S: Subcatchment 5S Runoff Area=14,630 sf 78.26% Impervious Runoff Depth>3.83"
Tc=6.0 min CN=93 Runoff=1.39 cfs 0.107 af

Subcatchment 6S: Subcatchment 6S Runoff Area=104,590 sf 0.00% Impervious Runoff Depth>2.07"
Flow Length=597' Tc=14.7 min CN=74 Runoff=4.38 cfs 0.413 af

Subcatchment 7S: Subcatchment 7S Runoff Area=5,959 sf 0.00% Impervious Runoff Depth>2.07"
Tc=6.0 min CN=74 Runoff=0.32 cfs 0.024 af

Subcatchment 7S1: Subcatchment CB1 Runoff Area=5,639 sf 100.00% Impervious Runoff Depth>4.39"
Tc=6.0 min CN=98 Runoff=0.57 cfs 0.047 af

Subcatchment 7S2: Subcatchment CB2 Runoff Area=7,419 sf 100.00% Impervious Runoff Depth>4.39"
Tc=6.0 min CN=98 Runoff=0.75 cfs 0.062 af

Subcatchment 8S: Subcatchment 8S Runoff Area=5,280 sf 100.00% Impervious Runoff Depth>4.39"
Tc=6.0 min CN=98 Runoff=0.54 cfs 0.044 af

Subcatchment 9S: Subcatchment 9S Runoff Area=3,313 sf 100.00% Impervious Runoff Depth>4.39"
Tc=6.0 min CN=98 Runoff=0.34 cfs 0.028 af

Subcatchment 10S: Subcatchment 10S Runoff Area=8,865 sf 100.00% Impervious Runoff Depth>4.39"
Tc=6.0 min CN=98 Runoff=0.90 cfs 0.074 af

Subcatchment 11S: Subcatchment 11S Runoff Area=18,787 sf 52.98% Impervious Runoff Depth>3.22"
Tc=6.0 min CN=87 Runoff=1.57 cfs 0.116 af

Subcatchment 12S: Subcatchment 11S Runoff Area=5,279 sf 100.00% Impervious Runoff Depth>4.39"
Tc=6.0 min CN=98 Runoff=0.54 cfs 0.044 af

Reach 1R: Flow Through Wetland Avg. Flow Depth=0.03' Max Vel=0.92 fps Inflow=0.52 cfs 0.105 af
n=0.030 L=210.0' S=0.0548 '/' Capacity=185.74 cfs Outflow=0.52 cfs 0.105 af

Reach AP1: Analysis Point #1 Inflow=10.88 cfs 1.372 af
Outflow=10.88 cfs 1.372 af

Reach AP2: Analysis Point #2 Inflow=1.57 cfs 0.116 af
Outflow=1.57 cfs 0.116 af

Pond 1P: STORMTECH 1 Peak Elev=224.59' Storage=0.072 af Inflow=3.31 cfs 0.252 af
Discarded=0.00 cfs 0.000 af Primary=1.02 cfs 0.242 af Outflow=1.02 cfs 0.242 af

Pond 2P: STORMTECH 2 Peak Elev=221.63' Storage=0.023 af Inflow=1.81 cfs 0.107 af
Discarded=0.00 cfs 0.000 af Primary=0.52 cfs 0.105 af Outflow=0.52 cfs 0.105 af

Pond 3P: Pond 3P Peak Elev=213.08' Storage=2,566 cf Inflow=1.65 cfs 0.133 af
Outflow=0.51 cfs 0.114 af

Pond 4P: Drip Edge Peak Elev=231.29' Storage=724 cf Inflow=0.54 cfs 0.044 af
Discarded=0.05 cfs 0.044 af Primary=0.00 cfs 0.000 af Outflow=0.05 cfs 0.044 af

Pond 5P: Drip Edge Peak Elev=230.50' Storage=407 cf Inflow=0.34 cfs 0.028 af
Discarded=0.04 cfs 0.028 af Primary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.028 af

Pond 6P: Drip Edge Peak Elev=222.01' Storage=1,875 cf Inflow=0.90 cfs 0.074 af
Outflow=0.42 cfs 0.032 af

Pond CB1: CB1 Peak Elev=213.08' Inflow=0.57 cfs 0.047 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=0.57 cfs 0.047 af

Pond CB2: CB2 Peak Elev=213.08' Inflow=1.32 cfs 0.110 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=1.32 cfs 0.110 af

Pond CB3: CB3 Peak Elev=225.45' Inflow=0.59 cfs 0.049 af
12.0" Round Culvert n=0.013 L=120.0' S=0.0050 '/' Outflow=0.59 cfs 0.049 af

Pond FP1: FocalPoint 1 Peak Elev=230.07' Storage=348 cf Inflow=1.73 cfs 0.135 af
Outflow=1.88 cfs 0.135 af

Pond FP2: FocalPoint 2 Peak Elev=230.02' Storage=347 cf Inflow=1.47 cfs 0.118 af
Outflow=1.44 cfs 0.118 af

Pond FP3: FocalPoint 3 Peak Elev=226.99' Storage=348 cf Inflow=1.39 cfs 0.107 af
Outflow=1.81 cfs 0.107 af

Pond FP4: FocalPoint 4 Peak Elev=193.84' Storage=344 cf Inflow=0.54 cfs 0.044 af
Outflow=0.33 cfs 0.041 af

Total Runoff Area = 7.525 ac Runoff Volume = 1.637 af Average Runoff Depth = 2.61"
73.58% Pervious = 5.537 ac 26.42% Impervious = 1.988 ac

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 4.54 cfs @ 12.14 hrs, Volume= 0.376 af, Depth> 1.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=4.63"

Area (sf)	CN	Description
48,626	70	Woods, Good, HSG C
8,966	70	Woods, Good, HSG C
6,940	70	Woods, Good, HSG C
794	98	Paved parking, HSG C
36,539	74	>75% Grass cover, Good, HSG C
786	74	>75% Grass cover, Good, HSG C
102,651	72	Weighted Average
101,857		99.23% Pervious Area
794		0.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	50	0.1200	0.14		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.11"
3.5	300	0.0800	1.41		**Shallow Concentrated Flow, Shallow Flow** Woodland Kv= 5.0 fps
9.6	350	Total			

Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 1.73 cfs @ 12.09 hrs, Volume= 0.135 af, Depth> 3.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=4.63"

Area (sf)	CN	Description
14,373	98	Paved parking, HSG C
825	98	Paved parking, HSG C
1,360	74	>75% Grass cover, Good, HSG C
1,299	74	>75% Grass cover, Good, HSG C
17,857	94	Weighted Average
2,659		14.89% Pervious Area
15,198		85.11% 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 = 1.47 cfs @ 12.09 hrs, Volume= 0.118 af, Depth> 4.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=4.63"

Area (sf)	CN	Description
13,408	98	Paved parking, HSG C
1,360	74	>75% Grass cover, Good, HSG C
14,768	96	Weighted Average
1,360		9.21% Pervious Area
13,408		90.79% Impervious Area

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

Summary for Subcatchment 4S: Subcatchment 4S

Runoff = 0.59 cfs @ 12.14 hrs, Volume= 0.049 af, Depth> 1.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=4.63"

Area (sf)	CN	Description
3,468	70	Woods, Good, HSG C
9,277	74	>75% Grass cover, Good, HSG C
12,745	73	Weighted Average
12,745		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	50	0.1200	0.14		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.11"
3.5	300	0.0800	1.41		**Shallow Concentrated Flow, Shallow Flow** Woodland Kv= 5.0 fps
9.6	350	Total			

Summary for Subcatchment 5S: Subcatchment 5S

Runoff = 1.39 cfs @ 12.09 hrs, Volume= 0.107 af, Depth> 3.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=4.63"

Area (sf)	CN	Description
10,386	98	Paved parking, HSG C
1,064	98	Paved parking, HSG C
2,992	74	>75% Grass cover, Good, HSG C
188	74	>75% Grass cover, Good, HSG C
14,630	93	Weighted Average
3,180		21.74% Pervious Area
11,450		78.26% 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 = 4.38 cfs @ 12.21 hrs, Volume= 0.413 af, Depth> 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=4.63"

Area (sf)	CN	Description
31,117	70	Woods, Good, HSG C
18,906	70	Woods, Good, HSG C
4,969	96	Gravel surface, HSG C
12,429	74	>75% Grass cover, Good, HSG C
2,075	74	>75% Grass cover, Good, HSG C
2,358	80	>75% Grass cover, Good, HSG D
32,736	77	Woods, Good, HSG D
104,590	74	Weighted Average
104,590		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	50	0.0400	0.09		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.11"
0.5	50	0.0400	1.56		**Sheet Flow, Sheet over Gravel** Smooth surfaces n= 0.011 P2= 3.11"
3.1	250	0.0720	1.34		**Shallow Concentrated Flow, Shallow Flow** Woodland Kv= 5.0 fps
0.6	175	0.0460	5.11	170.24	**Parabolic Channel, Flow through Wetland** W=100.00' D=0.50' Area=33.3 sf Perim=100.0' n= 0.030 Stream, clean & straight
0.7	50	0.1400	1.27	0.02	**Pipe Channel, Culvert** 2.0" x 1.0" Box Area= 0.0 sf Perim= 0.5' r= 0.03' n= 0.040 Earth, cobble bottom, clean sides
0.3	22	0.1200	1.23	0.65	**Parabolic Channel,** W=8.00' D=0.10' Area=0.5 sf Perim=8.0' n= 0.069 Riprap, 6-inch
14.7	597	Total			

Summary for Subcatchment 7S: Subcatchment 7S

Runoff = 0.32 cfs @ 12.10 hrs, Volume= 0.024 af, Depth> 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=4.63"

Area (sf)	CN	Description
740	70	Woods, Good, HSG C
5,219	74	>75% Grass cover, Good, HSG C
5,959	74	Weighted Average
5,959		100.00% Pervious Area

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

Summary for Subcatchment 7S1: Subcatchment CB1

Runoff = 0.57 cfs @ 12.09 hrs, Volume= 0.047 af, Depth> 4.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=4.63"

Area (sf)	CN	Description
5,639	98	Paved parking, HSG C
5,639		100.00% Impervious Area

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

Summary for Subcatchment 7S2: Subcatchment CB2

Runoff = 0.75 cfs @ 12.09 hrs, Volume= 0.062 af, Depth> 4.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=4.63"

Area (sf)	CN	Description
6,012	98	Paved parking, HSG C
1,407	98	Paved parking, HSG D
7,419	98	Weighted Average
7,419		100.00% 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 = 0.54 cfs @ 12.09 hrs, Volume= 0.044 af, Depth> 4.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=4.63"

Area (sf)	CN	Description
5,280	98	Roofs, HSG C
5,280		100.00% 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 = 0.34 cfs @ 12.09 hrs, Volume= 0.028 af, Depth> 4.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=4.63"

Area (sf)	CN	Description
3,313	98	Roofs, HSG C
3,313		100.00% Impervious Area

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

Summary for Subcatchment 10S: Subcatchment 10S

Runoff = 0.90 cfs @ 12.09 hrs, Volume= 0.074 af, Depth> 4.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=4.63"

Area (sf)	CN	Description
8,865	98	Roofs, HSG C
8,865		100.00% Impervious Area

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

Summary for Subcatchment 11S: Subcatchment 11S

Runoff = 1.57 cfs @ 12.09 hrs, Volume= 0.116 af, Depth> 3.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=4.63"

Area (sf)	CN	Description
9,953	98	Paved parking, HSG C
3,298	74	>75% Grass cover, Good, HSG C
5,536	74	>75% Grass cover, Good, HSG C
18,787	87	Weighted Average
8,834		47.02% Pervious Area
9,953		52.98% Impervious Area

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

Summary for Subcatchment 12S: Subcatchment 11S

Runoff = 0.54 cfs @ 12.09 hrs, Volume= 0.044 af, Depth> 4.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=4.63"

Area (sf)	CN	Description
5,279	98	Paved parking, HSG C
5,279		100.00% Impervious Area

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

Summary for Reach 1R: Flow Through Wetland

Inflow Area = 0.412 ac, 82.28% Impervious, Inflow Depth > 3.05" for 10-YR STORM event
Inflow = 0.52 cfs @ 12.32 hrs, Volume= 0.105 af
Outflow = 0.52 cfs @ 12.39 hrs, Volume= 0.105 af, Atten= 0%, Lag= 4.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.92 fps, Min. Travel Time= 3.8 min
Avg. Velocity = 0.42 fps, Avg. Travel Time= 8.2 min

Peak Storage= 119 cf @ 12.39 hrs
Average Depth at Peak Storage= 0.03' , Surface Width= 25.72'
Bank-Full Depth= 0.50' Flow Area= 33.3 sf, Capacity= 185.74 cfs

100.00' x 0.50' deep Parabolic Channel, n= 0.030 Stream, clean & straight
Length= 210.0' Slope= 0.0548 '/'
Inlet Invert= 220.50', Outlet Invert= 209.00'

‡

Summary for Reach AP1: Analysis Point #1

Inflow Area = 7.094 ac, 24.80% Impervious, Inflow Depth > 2.32" for 10-YR STORM event
Inflow = 10.88 cfs @ 12.17 hrs, Volume= 1.372 af
Outflow = 10.88 cfs @ 12.17 hrs, Volume= 1.372 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Reach AP2: Analysis Point #2

Inflow Area = 0.431 ac, 52.98% Impervious, Inflow Depth > 3.22" for 10-YR STORM event
Inflow = 1.57 cfs @ 12.09 hrs, Volume= 0.116 af
Outflow = 1.57 cfs @ 12.09 hrs, Volume= 0.116 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Pond 1P: STORMTECH 1

Inflow Area = 0.749 ac, 87.68% Impervious, Inflow Depth > 4.04" for 10-YR STORM event
Inflow = 3.31 cfs @ 12.09 hrs, Volume= 0.252 af
Outflow = 1.02 cfs @ 12.39 hrs, Volume= 0.242 af, Atten= 69%, Lag= 17.9 min
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 1.02 cfs @ 12.39 hrs, Volume= 0.242 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 224.59' @ 12.39 hrs Surf.Area= 0.066 ac Storage= 0.072 af

Plug-Flow detention time= 80.3 min calculated for 0.242 af (96% of inflow)
Center-of-Mass det. time= 57.9 min (833.9 - 776.0)

Volume	Invert	Avail.Storage	Storage Description
#1	223.60'	0.135 af	**ADS_StormTech SC-740 +Cap** x 128 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 128 Chambers in 8 Rows

Device	Routing	Invert	Outlet Devices
#1	Primary	223.60'	**8.0" Round Culvert** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 223.60' / 223.42' S= 0.0051 '/' Cc= 0.900

n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2 Discarded 223.60' **2.000 in/hr Exfiltration over Surface area**
Conductivity to Groundwater Elevation = 220.83'

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=223.60' (Free Discharge)
2=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=1.02 cfs @ 12.39 hrs HW=224.59' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.02 cfs @ 2.91 fps)

Summary for Pond 2P: STORMTECH 2

Inflow Area = 0.412 ac, 82.28% Impervious, Inflow Depth > 3.12" for 10-YR STORM event
Inflow = 1.81 cfs @ 12.06 hrs, Volume= 0.107 af
Outflow = 0.52 cfs @ 12.32 hrs, Volume= 0.105 af, Atten= 71%, Lag= 15.9 min
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.52 cfs @ 12.32 hrs, Volume= 0.105 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 221.63' @ 12.32 hrs Surf.Area= 0.026 ac Storage= 0.023 af

Plug-Flow detention time= 48.3 min calculated for 0.105 af (98% of inflow)
Center-of-Mass det. time= 34.5 min (821.1 - 786.6)

Volume	Invert	Avail.Storage	Storage Description
#1	220.80'	0.051 af	**ADS_StormTech SC-740 +Cap** x 48 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 48 Chambers in 8 Rows

Device	Routing	Invert	Outlet Devices
#1	Discarded	220.80'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 215.39'
#2	Primary	220.80'	**6.0" Round Culvert** L= 48.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 220.80' / 220.50' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=220.80' (Free Discharge)
1=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.52 cfs @ 12.32 hrs HW=221.63' TW=220.53' (Dynamic Tailwater)
2=Culvert (Barrel Controls 0.52 cfs @ 2.66 fps)

Summary for Pond 3P: Pond 3P

Inflow Area = 0.437 ac, 68.66% Impervious, Inflow Depth > 3.66" for 10-YR STORM event
Inflow = 1.65 cfs @ 12.09 hrs, Volume= 0.133 af
Outflow = 0.51 cfs @ 12.41 hrs, Volume= 0.114 af, Atten= 69%, Lag= 19.5 min
Primary = 0.51 cfs @ 12.41 hrs, Volume= 0.114 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Starting Elev= 129.08' Storage= 0 cf
Peak Elev= 213.08' @ 12.41 hrs Surf.Area= 2,363 sf Storage= 2,566 cf

Plug-Flow detention time= 249.3 min calculated for 0.114 af (86% of inflow)
Center-of-Mass det. time= 185.6 min (950.9 - 765.3)

Volume	Invert	Avail.Storage	Storage Description
#1	210.49'	6,106 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
210.49	930	153.0	0.0	0	0	930
210.50	930	153.0	40.0	4	4	932
212.00	1,720	190.0	40.0	783	787	1,974
212.01	1,720	190.0	5.0	1	788	1,976
212.25	1,863	195.0	5.0	21	809	2,136
212.26	2,010	200.0	100.0	19	828	2,293
212.51	2,010	200.0	100.0	503	1,331	2,343
213.00	2,316	210.0	100.0	1,059	2,390	2,684
213.80	2,835	234.0	100.0	2,057	4,447	3,551
214.00	3,900	254.0	100.0	671	5,117	4,329
214.25	4,010	256.0	100.0	989	6,106	4,432

Device	Routing	Invert	Outlet Devices
#1	Primary	210.50'	**8.0" Round Culvert** L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 210.50' / 210.30' S= 0.0077 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	210.83'	**1.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	213.00'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.51 cfs @ 12.41 hrs HW=213.07' TW=0.00' (Dynamic Tailwater)
↑└─**1=Culvert** (Passes 0.51 cfs of 1.99 cfs potential flow)
  ↑└─**2=Orifice/Grate** (Orifice Controls 0.09 cfs @ 7.11 fps)
  └─**3=Orifice/Grate** (Weir Controls 0.42 cfs @ 0.89 fps)

Summary for Pond 4P: Drip Edge

Inflow Area = 0.121 ac,100.00% Impervious, Inflow Depth > 4.39" for 10-YR STORM event
Inflow = 0.54 cfs @ 12.09 hrs, Volume= 0.044 af
Outflow = 0.05 cfs @ 13.01 hrs, Volume= 0.044 af, Atten= 92%, Lag= 55.6 min
Discarded = 0.05 cfs @ 13.01 hrs, Volume= 0.044 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 231.29' @ 13.01 hrs Surf.Area= 756 sf Storage= 724 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 123.2 min (872.1 - 748.9)

Volume	Invert	Avail.Storage	Storage Description
#1	228.90'	1,240 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 3,100 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
228.90	756	0	0
229.00	756	76	76
230.00	756	756	832
232.00	756	1,512	2,344
233.00	756	756	3,100

Device	Routing	Invert	Outlet Devices
#1	Discarded	228.90'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 220.83'
#2	Primary	232.00'	**156.0' long x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.05 cfs @ 13.01 hrs HW=231.29' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.05 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=228.90' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 5P: Drip Edge

Inflow Area = 0.076 ac,100.00% Impervious, Inflow Depth > 4.39" for 10-YR STORM event
Inflow = 0.34 cfs @ 12.09 hrs, Volume= 0.028 af
Outflow = 0.04 cfs @ 12.81 hrs, Volume= 0.028 af, Atten= 90%, Lag= 43.2 min
Discarded = 0.04 cfs @ 12.81 hrs, Volume= 0.028 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 230.50' @ 12.81 hrs Surf.Area= 634 sf Storage= 407 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 80.3 min (829.2 - 748.9)

Volume	Invert	Avail.Storage	Storage Description
#1	228.90'	1,040 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 2,599 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
228.90	634	0	0
229.00	634	63	63
230.00	634	634	697
232.00	634	1,268	1,965
233.00	634	634	2,599

Device	Routing	Invert	Outlet Devices
#1	Discarded	228.90'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 220.83'
#2	Primary	232.00'	**132.0' long x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.04 cfs @ 12.81 hrs HW=230.50' (Free Discharge)
└**1=Exfiltration** (Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=228.90' TW=220.80' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 6P: Drip Edge

Inflow Area = 0.204 ac,100.00% Impervious, Inflow Depth > 4.39" for 10-YR STORM event
Inflow = 0.90 cfs @ 12.09 hrs, Volume= 0.074 af
Outflow = 0.42 cfs @ 12.29 hrs, Volume= 0.032 af, Atten= 53%, Lag= 12.2 min
Primary = 0.42 cfs @ 12.29 hrs, Volume= 0.032 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 222.01' @ 12.30 hrs Surf.Area= 1,509 sf Storage= 1,875 cf

Plug-Flow detention time= 302.3 min calculated for 0.032 af (42% of inflow)
Center-of-Mass det. time= 155.5 min (904.4 - 748.9)

Volume	Invert	Avail.Storage	Storage Description
#1	218.90'	2,475 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 6,187 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
218.90	1,509	0	0
219.00	1,509	151	151
220.00	1,509	1,509	1,660
222.00	1,509	3,018	4,678
223.00	1,509	1,509	6,187

Device	Routing	Invert	Outlet Devices
#1	Primary	222.00'	**312.0' long x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.41 cfs @ 12.29 hrs HW=222.01' TW=0.00' (Dynamic Tailwater)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 0.41 cfs @ 0.21 fps)

Summary for Pond CB1: CB1

Inflow Area = 0.129 ac,100.00% Impervious, Inflow Depth > 4.39" for 10-YR STORM event
Inflow = 0.57 cfs @ 12.09 hrs, Volume= 0.047 af
Outflow = 0.57 cfs @ 12.09 hrs, Volume= 0.047 af, Atten= 0%, Lag= 0.0 min
Primary = 0.57 cfs @ 12.09 hrs, Volume= 0.047 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 213.08' @ 12.50 hrs
Flood Elev= 215.17'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.92'	**15.0" Round Culvert** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 211.92' / 211.82' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=212.65' TW=212.70' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Summary for Pond CB2: CB2

Inflow Area = 0.300 ac,100.00% Impervious, Inflow Depth > 4.39" for 10-YR STORM event
Inflow = 1.32 cfs @ 12.09 hrs, Volume= 0.110 af
Outflow = 1.32 cfs @ 12.09 hrs, Volume= 0.110 af, Atten= 0%, Lag= 0.0 min
Primary = 1.32 cfs @ 12.09 hrs, Volume= 0.110 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 213.08' @ 12.45 hrs
Flood Elev= 215.17'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.72'	**15.0" Round Culvert** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 211.72' / 211.62' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=212.70' TW=212.72' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Summary for Pond CB3: CB3

Inflow Area = 0.293 ac, 0.00% Impervious, Inflow Depth > 1.99" for 10-YR STORM event
Inflow = 0.59 cfs @ 12.14 hrs, Volume= 0.049 af
Outflow = 0.59 cfs @ 12.14 hrs, Volume= 0.049 af, Atten= 0%, Lag= 0.0 min
Primary = 0.59 cfs @ 12.14 hrs, Volume= 0.049 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 225.45' @ 12.14 hrs
Flood Elev= 229.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	225.00'	**12.0" Round Culvert** L= 120.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 225.00' / 224.40' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.58 cfs @ 12.14 hrs HW=225.44' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 0.58 cfs @ 2.54 fps)

Summary for Pond FP1: FocalPoint 1

Inflow Area = 0.410 ac, 85.11% Impervious, Inflow Depth > 3.94" for 10-YR STORM event
Inflow = 1.73 cfs @ 12.09 hrs, Volume= 0.135 af
Outflow = 1.88 cfs @ 12.10 hrs, Volume= 0.135 af, Atten= 0%, Lag= 0.5 min
Primary = 1.88 cfs @ 12.10 hrs, Volume= 0.135 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 230.07' @ 12.09 hrs Surf.Area= 80 sf Storage= 348 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 6.1 min (781.3 - 775.2)

Volume	Invert	Avail.Storage	Storage Description
#1	228.81'	36 cf	**10.00'W x 8.00'L x 2.25'H FocalPoint** 180 cf Overall x 20.0% Voids
#2	228.80'	327 cf	**Surface Bowl Area (Prismatic)**Listed below (Recalc) -Impervious
		363 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
228.80	250	0	0
228.81	250	2	2
229.81	400	325	327

Device	Routing	Invert	Outlet Devices
#1	Device 2	229.81'	**15.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	225.66'	**15.0" Round Culvert** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 225.66' / 225.56' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#3	Primary	228.81'	**100.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 220.83' Phase-In= 0.01'

Primary OutFlow Max=1.83 cfs @ 12.10 hrs HW=230.06' TW=224.29' (Dynamic Tailwater)
└**2=Culvert** (Passes 1.62 cfs of 9.06 cfs potential flow)
└**1=Orifice/Grate** (Weir Controls 1.62 cfs @ 1.64 fps)
└**3=Exfiltration** (Controls 0.21 cfs)

Summary for Pond FP2: FocalPoint 2

Inflow Area = 0.339 ac, 90.79% Impervious, Inflow Depth > 4.16" for 10-YR STORM event
Inflow = 1.47 cfs @ 12.09 hrs, Volume= 0.118 af
Outflow = 1.44 cfs @ 12.08 hrs, Volume= 0.118 af, Atten= 2%, Lag= 0.0 min
Primary = 1.44 cfs @ 12.08 hrs, Volume= 0.118 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 230.02' @ 12.08 hrs Surf.Area= 80 sf Storage= 347 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 6.1 min (769.9 - 763.8)

Volume	Invert	Avail.Storage	Storage Description
#1	228.81'	36 cf	**10.00'W x 8.00'L x 2.25'H FocalPoint** 180 cf Overall x 20.0% Voids
#2	228.80'	327 cf	**Surface Bowl Area (Prismatic)**Listed below (Recalc) -Impervious
		363 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
228.80	250	0	0
228.81	250	2	2
229.81	400	325	327

Device	Routing	Invert	Outlet Devices
#1	Device 2	229.81'	**15.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	225.66'	**15.0" Round Culvert** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 225.66' / 225.56' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#3	Primary	228.81'	**100.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 220.83' Phase-In= 0.01'

Primary OutFlow Max=1.41 cfs @ 12.08 hrs HW=230.02' TW=224.24' (Dynamic Tailwater)
└**2=Culvert** (Passes 1.20 cfs of 9.01 cfs potential flow)
└**1=Orifice/Grate** (Weir Controls 1.20 cfs @ 1.48 fps)
└**3=Exfiltration** (Controls 0.21 cfs)

Summary for Pond FP3: FocalPoint 3

Inflow Area = 0.336 ac, 78.26% Impervious, Inflow Depth > 3.83" for 10-YR STORM event
Inflow = 1.39 cfs @ 12.09 hrs, Volume= 0.107 af
Outflow = 1.81 cfs @ 12.06 hrs, Volume= 0.107 af, Atten= 0%, Lag= 0.0 min
Primary = 1.81 cfs @ 12.06 hrs, Volume= 0.107 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 226.99' @ 12.06 hrs Surf.Area= 80 sf Storage= 348 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 6.5 min (786.6 - 780.2)

Volume	Invert	Avail.Storage	Storage Description
#1	225.74'	36 cf	**10.00'W x 8.00'L x 2.25'H FocalPoint** 180 cf Overall x 20.0% Voids
#2	225.73'	328 cf	**Surface Bowl Area (Prismatic)**Listed below (Recalc) -Impervious
		364 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
225.73	250	0	0
225.74	250	3	3
226.74	400	325	328

Device	Routing	Invert	Outlet Devices
#1	Device 2	226.74'	**15.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	222.49'	**12.0" Round Culvert** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 222.49' / 222.39' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Primary	225.74'	**100.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 215.39' Phase-In= 0.01'

Primary OutFlow Max=1.68 cfs @ 12.06 hrs HW=226.98' TW=221.25' (Dynamic Tailwater)
- **2=Culvert** (Passes 1.47 cfs of 5.96 cfs potential flow)
  - **1=Orifice/Grate** (Weir Controls 1.47 cfs @ 1.59 fps)
- **3=Exfiltration** (Controls 0.21 cfs)

Summary for Pond FP4: FocalPoint 4

Inflow Area = 0.121 ac,100.00% Impervious, Inflow Depth > 4.39" for 10-YR STORM event
Inflow = 0.54 cfs @ 12.09 hrs, Volume= 0.044 af
Outflow = 0.33 cfs @ 12.20 hrs, Volume= 0.041 af, Atten= 38%, Lag= 7.0 min
Primary = 0.33 cfs @ 12.20 hrs, Volume= 0.041 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 193.84' @ 12.20 hrs Surf.Area= 80 sf Storage= 344 cf

Plug-Flow detention time= 77.5 min calculated for 0.041 af (93% of inflow)
Center-of-Mass det. time= 37.9 min (786.8 - 748.9)

Volume	Invert	Avail.Storage	Storage Description
#1	192.80'	36 cf	**10.00'W x 8.00'L x 2.25'H FocalPoint** 180 cf Overall x 20.0% Voids
#2	192.29'	328 cf	**193.7 (Prismatic)**Listed below (Recalc) -Impervious
		364 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
192.29	250	0	0
192.30	250	3	3
193.30	400	325	328

Device	Routing	Invert	Outlet Devices
#1	Device 2	193.80'	**15.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	189.80'	**6.0" Round Culvert** L= 15.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 189.80' / 189.70' S= 0.0067 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Primary	192.80'	**100.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 188.00' Phase-In= 0.01'

Primary OutFlow Max=0.32 cfs @ 12.20 hrs HW=193.84' TW=0.00' (Dynamic Tailwater)
- **2=Culvert** (Passes 0.10 cfs of 1.45 cfs potential flow)
  - **1=Orifice/Grate** (Weir Controls 0.10 cfs @ 0.65 fps)
- **3=Exfiltration** (Controls 0.23 cfs)

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment 1S Runoff Area=102,651 sf 0.77% Impervious Runoff Depth>0.29"
Flow Length=350' Tc=9.6 min CN=72 Runoff=0.45 cfs 0.057 af

Subcatchment 2S: Subcatchment 2S Runoff Area=17,857 sf 85.11% Impervious Runoff Depth>1.40"
Tc=6.0 min CN=94 Runoff=0.65 cfs 0.048 af

Subcatchment 3S: Subcatchment 3S Runoff Area=14,768 sf 90.79% Impervious Runoff Depth>1.57"
Tc=6.0 min CN=96 Runoff=0.59 cfs 0.044 af

Subcatchment 4S: Subcatchment 4S Runoff Area=12,745 sf 0.00% Impervious Runoff Depth>0.32"
Flow Length=350' Tc=9.6 min CN=73 Runoff=0.07 cfs 0.008 af

Subcatchment 5S: Subcatchment 5S Runoff Area=14,630 sf 78.26% Impervious Runoff Depth>1.31"
Tc=6.0 min CN=93 Runoff=0.50 cfs 0.037 af

Subcatchment 6S: Subcatchment 6S Runoff Area=104,590 sf 0.00% Impervious Runoff Depth>0.35"
Flow Length=597' Tc=14.7 min CN=74 Runoff=0.55 cfs 0.070 af

Subcatchment 7S: Subcatchment 7S Runoff Area=5,959 sf 0.00% Impervious Runoff Depth>0.35"
Tc=6.0 min CN=74 Runoff=0.04 cfs 0.004 af

Subcatchment 7S1: Subcatchment CB1 Runoff Area=5,639 sf 100.00% Impervious Runoff Depth>1.77"
Tc=6.0 min CN=98 Runoff=0.24 cfs 0.019 af

Subcatchment 7S2: Subcatchment CB2 Runoff Area=7,419 sf 100.00% Impervious Runoff Depth>1.77"
Tc=6.0 min CN=98 Runoff=0.32 cfs 0.025 af

Subcatchment 8S: Subcatchment 8S Runoff Area=5,280 sf 100.00% Impervious Runoff Depth>1.77"
Tc=6.0 min CN=98 Runoff=0.23 cfs 0.018 af

Subcatchment 9S: Subcatchment 9S Runoff Area=3,313 sf 100.00% Impervious Runoff Depth>1.77"
Tc=6.0 min CN=98 Runoff=0.14 cfs 0.011 af

Subcatchment 10S: Subcatchment 10S Runoff Area=8,865 sf 100.00% Impervious Runoff Depth>1.77"
Tc=6.0 min CN=98 Runoff=0.38 cfs 0.030 af

Subcatchment 11S: Subcatchment 11S Runoff Area=18,787 sf 52.98% Impervious Runoff Depth>0.90"
Tc=6.0 min CN=87 Runoff=0.45 cfs 0.033 af

Subcatchment 12S: Subcatchment 11S Runoff Area=5,279 sf 100.00% Impervious Runoff Depth>1.77"
Tc=6.0 min CN=98 Runoff=0.23 cfs 0.018 af

Reach 1R: Flow Through Wetland Avg. Flow Depth=0.02' Max Vel=0.66 fps Inflow=0.18 cfs 0.035 af
n=0.030 L=210.0' S=0.0548 '/' Capacity=185.74 cfs Outflow=0.18 cfs 0.035 af

Reach AP1: Analysis Point #1 Inflow=1.59 cfs 0.314 af
Outflow=1.59 cfs 0.314 af

Reach AP2: Analysis Point #2 Inflow=0.45 cfs 0.033 af
Outflow=0.45 cfs 0.033 af

Pond 1P: STORMTECH 1 Peak Elev=224.01' Storage=0.031 af Inflow=0.44 cfs 0.092 af
Discarded=0.00 cfs 0.000 af Primary=0.34 cfs 0.085 af Outflow=0.34 cfs 0.085 af

Pond 2P: STORMTECH 2 Peak Elev=221.11' Storage=0.009 af Inflow=0.20 cfs 0.037 af
Discarded=0.00 cfs 0.000 af Primary=0.18 cfs 0.035 af Outflow=0.18 cfs 0.035 af

Pond 3P: Pond 3P Peak Elev=212.35' Storage=1,001 cf Inflow=0.60 cfs 0.048 af
Outflow=0.07 cfs 0.044 af

Pond 4P: Drip Edge Peak Elev=229.60' Storage=211 cf Inflow=0.23 cfs 0.018 af
Discarded=0.04 cfs 0.018 af Primary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.018 af

Pond 5P: Drip Edge Peak Elev=229.33' Storage=110 cf Inflow=0.14 cfs 0.011 af
Discarded=0.03 cfs 0.011 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.011 af

Pond 6P: Drip Edge Peak Elev=221.07' Storage=1,310 cf Inflow=0.38 cfs 0.030 af
Outflow=0.00 cfs 0.000 af

Pond CB1: CB1 Peak Elev=212.35' Inflow=0.24 cfs 0.019 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=0.24 cfs 0.019 af

Pond CB2: CB2 Peak Elev=212.35' Inflow=0.56 cfs 0.044 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=0.56 cfs 0.044 af

Pond CB3: CB3 Peak Elev=225.15' Inflow=0.07 cfs 0.008 af
12.0" Round Culvert n=0.013 L=120.0' S=0.0050 '/' Outflow=0.07 cfs 0.008 af

Pond FP1: FocalPoint 1 Peak Elev=229.83' Storage=344 cf Inflow=0.65 cfs 0.048 af
Outflow=0.23 cfs 0.048 af

Pond FP2: FocalPoint 2 Peak Elev=229.67' Storage=286 cf Inflow=0.59 cfs 0.044 af
Outflow=0.21 cfs 0.044 af

Pond FP3: FocalPoint 3 Peak Elev=226.38' Storage=203 cf Inflow=0.50 cfs 0.037 af
Outflow=0.20 cfs 0.037 af

Pond FP4: FocalPoint 4 Peak Elev=192.83' Storage=157 cf Inflow=0.23 cfs 0.018 af
Outflow=0.19 cfs 0.015 af

Total Runoff Area = 7.525 ac Runoff Volume = 0.421 af Average Runoff Depth = 0.67"
73.58% Pervious = 5.537 ac 26.42% Impervious = 1.988 ac

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 0.45 cfs @ 12.19 hrs, Volume= 0.057 af, Depth> 0.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr FP1 Rainfall=2.00"

Area (sf)	CN	Description
48,626	70	Woods, Good, HSG C
8,966	70	Woods, Good, HSG C
6,940	70	Woods, Good, HSG C
794	98	Paved parking, HSG C
36,539	74	>75% Grass cover, Good, HSG C
786	74	>75% Grass cover, Good, HSG C
102,651	72	Weighted Average
101,857		99.23% Pervious Area
794		0.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	50	0.1200	0.14		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.11"
3.5	300	0.0800	1.41		**Shallow Concentrated Flow, Shallow Flow** Woodland Kv= 5.0 fps
9.6	350	Total			

Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 0.65 cfs @ 12.09 hrs, Volume= 0.048 af, Depth> 1.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr FP1 Rainfall=2.00"

Area (sf)	CN	Description
14,373	98	Paved parking, HSG C
825	98	Paved parking, HSG C
1,360	74	>75% Grass cover, Good, HSG C
1,299	74	>75% Grass cover, Good, HSG C
17,857	94	Weighted Average
2,659		14.89% Pervious Area
15,198		85.11% 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 = 0.59 cfs @ 12.09 hrs, Volume= 0.044 af, Depth> 1.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr FP1 Rainfall=2.00"

Area (sf)	CN	Description
13,408	98	Paved parking, HSG C
1,360	74	>75% Grass cover, Good, HSG C
14,768	96	Weighted Average
1,360		9.21% Pervious Area
13,408		90.79% Impervious Area

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

Summary for Subcatchment 4S: Subcatchment 4S

Runoff = 0.07 cfs @ 12.17 hrs, Volume= 0.008 af, Depth> 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr FP1 Rainfall=2.00"

Area (sf)	CN	Description
3,468	70	Woods, Good, HSG C
9,277	74	>75% Grass cover, Good, HSG C
12,745	73	Weighted Average
12,745		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	50	0.1200	0.14		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.11"
3.5	300	0.0800	1.41		**Shallow Concentrated Flow, Shallow Flow** Woodland Kv= 5.0 fps
9.6	350	Total			

Summary for Subcatchment 5S: Subcatchment 5S

Runoff = 0.50 cfs @ 12.09 hrs, Volume= 0.037 af, Depth> 1.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr FP1 Rainfall=2.00"

Area (sf)	CN	Description
10,386	98	Paved parking, HSG C
1,064	98	Paved parking, HSG C
2,992	74	>75% Grass cover, Good, HSG C
188	74	>75% Grass cover, Good, HSG C
14,630	93	Weighted Average
3,180		21.74% Pervious Area
11,450		78.26% 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 = 0.55 cfs @ 12.26 hrs, Volume= 0.070 af, Depth> 0.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr FP1 Rainfall=2.00"

Area (sf)	CN	Description
31,117	70	Woods, Good, HSG C
18,906	70	Woods, Good, HSG C
4,969	96	Gravel surface, HSG C
12,429	74	>75% Grass cover, Good, HSG C
2,075	74	>75% Grass cover, Good, HSG C
2,358	80	>75% Grass cover, Good, HSG D
32,736	77	Woods, Good, HSG D
104,590	74	Weighted Average
104,590		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	50	0.0400	0.09		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.11"
0.5	50	0.0400	1.56		**Sheet Flow, Sheet over Gravel** Smooth surfaces n= 0.011 P2= 3.11"
3.1	250	0.0720	1.34		**Shallow Concentrated Flow, Shallow Flow** Woodland Kv= 5.0 fps
0.6	175	0.0460	5.11	170.24	**Parabolic Channel, Flow through Wetland** W=100.00' D=0.50' Area=33.3 sf Perim=100.0' n= 0.030 Stream, clean & straight
0.7	50	0.1400	1.27	0.02	**Pipe Channel, Culvert** 2.0" x 1.0" Box Area= 0.0 sf Perim= 0.5' r= 0.03' n= 0.040 Earth, cobble bottom, clean sides
0.3	22	0.1200	1.23	0.65	**Parabolic Channel,** W=8.00' D=0.10' Area=0.5 sf Perim=8.0' n= 0.069 Riprap, 6-inch
14.7	597	Total			

Summary for Subcatchment 7S: Subcatchment 7S

Runoff = 0.04 cfs @ 12.12 hrs, Volume= 0.004 af, Depth> 0.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr FP1 Rainfall=2.00"

Area (sf)	CN	Description
740	70	Woods, Good, HSG C
5,219	74	>75% Grass cover, Good, HSG C
5,959	74	Weighted Average
5,959		100.00% Pervious Area

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

Summary for Subcatchment 7S1: Subcatchment CB1

Runoff = 0.24 cfs @ 12.09 hrs, Volume= 0.019 af, Depth> 1.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr FP1 Rainfall=2.00"

Area (sf)	CN	Description
5,639	98	Paved parking, HSG C
5,639		100.00% Impervious Area

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

Summary for Subcatchment 7S2: Subcatchment CB2

Runoff = 0.32 cfs @ 12.09 hrs, Volume= 0.025 af, Depth> 1.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr FP1 Rainfall=2.00"

Area (sf)	CN	Description
6,012	98	Paved parking, HSG C
1,407	98	Paved parking, HSG D
7,419	98	Weighted Average
7,419		100.00% 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 = 0.23 cfs @ 12.09 hrs, Volume= 0.018 af, Depth> 1.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr FP1 Rainfall=2.00"

Area (sf)	CN	Description
5,280	98	Roofs, HSG C
5,280		100.00% 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 = 0.14 cfs @ 12.09 hrs, Volume= 0.011 af, Depth> 1.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr FP1 Rainfall=2.00"

Area (sf)	CN	Description
3,313	98	Roofs, HSG C
3,313		100.00% Impervious Area

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

Summary for Subcatchment 10S: Subcatchment 10S

Runoff = 0.38 cfs @ 12.09 hrs, Volume= 0.030 af, Depth> 1.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr FP1 Rainfall=2.00"

Area (sf)	CN	Description
8,865	98	Roofs, HSG C
8,865		100.00% Impervious Area

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

Summary for Subcatchment 11S: Subcatchment 11S

Runoff = 0.45 cfs @ 12.10 hrs, Volume= 0.033 af, Depth> 0.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr FP1 Rainfall=2.00"

Area (sf)	CN	Description
9,953	98	Paved parking, HSG C
3,298	74	>75% Grass cover, Good, HSG C
5,536	74	>75% Grass cover, Good, HSG C
18,787	87	Weighted Average
8,834		47.02% Pervious Area
9,953		52.98% Impervious Area

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

Summary for Subcatchment 12S: Subcatchment 11S

Runoff = 0.23 cfs @ 12.09 hrs, Volume= 0.018 af, Depth> 1.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr FP1 Rainfall=2.00"

Area (sf)	CN	Description
5,279	98	Paved parking, HSG C
5,279		100.00% Impervious Area

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

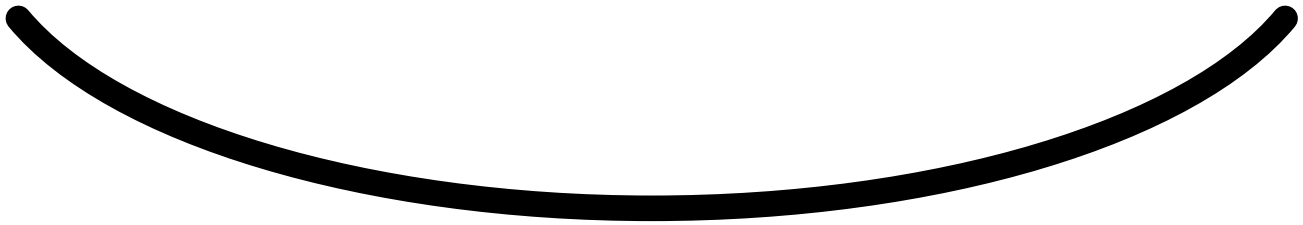
Summary for Reach 1R: Flow Through Wetland

Inflow Area = 0.412 ac, 82.28% Impervious, Inflow Depth > 1.02" for FP1 event
Inflow = 0.18 cfs @ 12.88 hrs, Volume= 0.035 af
Outflow = 0.18 cfs @ 12.89 hrs, Volume= 0.035 af, Atten= 1%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.66 fps, Min. Travel Time= 5.3 min
Avg. Velocity = 0.34 fps, Avg. Travel Time= 10.4 min

Peak Storage= 58 cf @ 12.89 hrs
Average Depth at Peak Storage= 0.02' , Surface Width= 20.17'
Bank-Full Depth= 0.50' Flow Area= 33.3 sf, Capacity= 185.74 cfs

100.00' x 0.50' deep Parabolic Channel, n= 0.030 Stream, clean & straight
Length= 210.0' Slope= 0.0548 '/'
Inlet Invert= 220.50', Outlet Invert= 209.00'



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Summary for Reach AP1: Analysis Point #1

Inflow Area = 7.094 ac, 24.80% Impervious, Inflow Depth > 0.53" for FP1 event
Inflow = 1.59 cfs @ 12.21 hrs, Volume= 0.314 af
Outflow = 1.59 cfs @ 12.21 hrs, Volume= 0.314 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Reach AP2: Analysis Point #2

Inflow Area = 0.431 ac, 52.98% Impervious, Inflow Depth > 0.90" for FP1 event
Inflow = 0.45 cfs @ 12.10 hrs, Volume= 0.033 af
Outflow = 0.45 cfs @ 12.10 hrs, Volume= 0.033 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Pond 1P: STORMTECH 1

Inflow Area = 0.749 ac, 87.68% Impervious, Inflow Depth > 1.48" for FP1 event
Inflow = 0.44 cfs @ 12.36 hrs, Volume= 0.092 af
Outflow = 0.34 cfs @ 13.07 hrs, Volume= 0.085 af, Atten= 23%, Lag= 43.1 min
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.34 cfs @ 13.07 hrs, Volume= 0.085 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 224.01' @ 13.07 hrs Surf.Area= 0.075 ac Storage= 0.031 af

Plug-Flow detention time= 115.1 min calculated for 0.085 af (93% of inflow)
Center-of-Mass det. time= 77.9 min (881.5 - 803.6)

Volume	Invert	Avail.Storage	Storage Description
#1	223.60'	0.135 af	**ADS_StormTech SC-740 +Cap** x 128 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 128 Chambers in 8 Rows

Device	Routing	Invert	Outlet Devices
#1	Primary	223.60'	**8.0" Round Culvert** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 223.60' / 223.42' S= 0.0051 '/' Cc= 0.900

			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Discarded	223.60'	**2.000 in/hr Exfiltration over Surface area**
			Conductivity to Groundwater Elevation = 220.83'

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=223.60' (Free Discharge)
2=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.34 cfs @ 13.07 hrs HW=224.01' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.34 cfs @ 2.15 fps)

Summary for Pond 2P: STORMTECH 2

Inflow Area = 0.412 ac, 82.28% Impervious, Inflow Depth > 1.07" for FP1 event
Inflow = 0.20 cfs @ 12.34 hrs, Volume= 0.037 af
Outflow = 0.18 cfs @ 12.88 hrs, Volume= 0.035 af, Atten= 7%, Lag= 32.3 min
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.18 cfs @ 12.88 hrs, Volume= 0.035 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 221.11' @ 12.88 hrs Surf.Area= 0.028 ac Storage= 0.009 af

Plug-Flow detention time= 70.3 min calculated for 0.035 af (96% of inflow)
Center-of-Mass det. time= 45.8 min (860.6 - 814.8)

Volume	Invert	Avail.Storage	Storage Description
#1	220.80'	0.051 af	**ADS_StormTech SC-740 +Cap** x 48
			Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
			Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
			48 Chambers in 8 Rows

Device	Routing	Invert	Outlet Devices
#1	Discarded	220.80'	**2.000 in/hr Exfiltration over Surface area**
			Conductivity to Groundwater Elevation = 215.39'
#2	Primary	220.80'	**6.0" Round Culvert**
			L= 48.0' CPP, projecting, no headwall, Ke= 0.900
			Inlet / Outlet Invert= 220.80' / 220.50' S= 0.0063 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=220.80' (Free Discharge)
1=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.18 cfs @ 12.88 hrs HW=221.11' TW=220.52' (Dynamic Tailwater)
2=Culvert (Barrel Controls 0.18 cfs @ 2.03 fps)

Summary for Pond 3P: Pond 3P

Inflow Area = 0.437 ac, 68.66% Impervious, Inflow Depth > 1.33" for FP1 event
Inflow = 0.60 cfs @ 12.09 hrs, Volume= 0.048 af
Outflow = 0.07 cfs @ 12.75 hrs, Volume= 0.044 af, Atten= 88%, Lag= 39.9 min
Primary = 0.07 cfs @ 12.75 hrs, Volume= 0.044 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Starting Elev= 129.08' Storage= 0 cf
Peak Elev= 212.35' @ 12.75 hrs Surf.Area= 2,010 sf Storage= 1,001 cf

Plug-Flow detention time= 194.3 min calculated for 0.044 af (92% of inflow)
Center-of-Mass det. time= 152.5 min (930.3 - 777.9)

Volume	Invert	Avail.Storage	Storage Description
#1	210.49'	6,106 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
210.49	930	153.0	0.0	0	0	930
210.50	930	153.0	40.0	4	4	932
212.00	1,720	190.0	40.0	783	787	1,974
212.01	1,720	190.0	5.0	1	788	1,976
212.25	1,863	195.0	5.0	21	809	2,136
212.26	2,010	200.0	100.0	19	828	2,293
212.51	2,010	200.0	100.0	503	1,331	2,343
213.00	2,316	210.0	100.0	1,059	2,390	2,684
213.80	2,835	234.0	100.0	2,057	4,447	3,551
214.00	3,900	254.0	100.0	671	5,117	4,329
214.25	4,010	256.0	100.0	989	6,106	4,432

Device	Routing	Invert	Outlet Devices
#1	Primary	210.50'	**8.0" Round Culvert** L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 210.50' / 210.30' S= 0.0077 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	210.83'	**1.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	213.00'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.07 cfs @ 12.75 hrs HW=212.35' TW=0.00' (Dynamic Tailwater)
↑└─**1=Culvert** (Passes 0.07 cfs of 1.63 cfs potential flow)
  ↑─**2=Orifice/Grate** (Orifice Controls 0.07 cfs @ 5.81 fps)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 4P: Drip Edge

Inflow Area = 0.121 ac,100.00% Impervious, Inflow Depth > 1.77" for FP1 event
Inflow = 0.23 cfs @ 12.09 hrs, Volume= 0.018 af
Outflow = 0.04 cfs @ 12.56 hrs, Volume= 0.018 af, Atten= 83%, Lag= 28.1 min
Discarded = 0.04 cfs @ 12.56 hrs, Volume= 0.018 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 229.60' @ 12.56 hrs Surf.Area= 756 sf Storage= 211 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 31.7 min (798.6 - 767.0)

Volume	Invert	Avail.Storage	Storage Description
#1	228.90'	1,240 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 3,100 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
228.90	756	0	0
229.00	756	76	76
230.00	756	756	832
232.00	756	1,512	2,344
233.00	756	756	3,100

Device	Routing	Invert	Outlet Devices
#1	Discarded	228.90'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 220.83'
#2	Primary	232.00'	**156.0' long x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.04 cfs @ 12.56 hrs HW=229.60' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=228.90' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 5P: Drip Edge

Inflow Area = 0.076 ac,100.00% Impervious, Inflow Depth > 1.77" for FP1 event
Inflow = 0.14 cfs @ 12.09 hrs, Volume= 0.011 af
Outflow = 0.03 cfs @ 12.50 hrs, Volume= 0.011 af, Atten= 78%, Lag= 24.5 min
Discarded = 0.03 cfs @ 12.50 hrs, Volume= 0.011 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 229.33' @ 12.50 hrs Surf.Area= 634 sf Storage= 110 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 18.0 min (785.0 - 767.0)

Volume	Invert	Avail.Storage	Storage Description
#1	228.90'	1,040 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 2,599 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
228.90	634	0	0
229.00	634	63	63
230.00	634	634	697
232.00	634	1,268	1,965
233.00	634	634	2,599

Device	Routing	Invert	Outlet Devices
#1	Discarded	228.90'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 220.83'
#2	Primary	232.00'	**132.0' long x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.03 cfs @ 12.50 hrs HW=229.33' (Free Discharge)
└**1=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=228.90' TW=220.80' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 6P: Drip Edge

Inflow Area = 0.204 ac,100.00% Impervious, Inflow Depth > 1.77" for FP1 event
Inflow = 0.38 cfs @ 12.09 hrs, Volume= 0.030 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 221.07' @ 24.00 hrs Surf.Area= 1,509 sf Storage= 1,310 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	218.90'	2,475 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 6,187 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
218.90	1,509	0	0
219.00	1,509	151	151
220.00	1,509	1,509	1,660
222.00	1,509	3,018	4,678
223.00	1,509	1,509	6,187

Device	Routing	Invert	Outlet Devices
#1	Primary	222.00'	**312.0' long x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=218.90' TW=0.00' (Dynamic Tailwater)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond CB1: CB1

Inflow Area = 0.129 ac,100.00% Impervious, Inflow Depth > 1.77" for FP1 event
Inflow = 0.24 cfs @ 12.09 hrs, Volume= 0.019 af
Outflow = 0.24 cfs @ 12.09 hrs, Volume= 0.019 af, Atten= 0%, Lag= 0.0 min
Primary = 0.24 cfs @ 12.09 hrs, Volume= 0.019 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 212.35' @ 12.83 hrs
Flood Elev= 215.17'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.92'	**15.0" Round Culvert** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 211.92' / 211.82' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.20 cfs @ 12.09 hrs HW=212.23' TW=212.15' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.20 cfs @ 1.28 fps)

Summary for Pond CB2: CB2

Inflow Area = 0.300 ac,100.00% Impervious, Inflow Depth > 1.77" for FP1 event
Inflow = 0.56 cfs @ 12.09 hrs, Volume= 0.044 af
Outflow = 0.56 cfs @ 12.09 hrs, Volume= 0.044 af, Atten= 0%, Lag= 0.0 min
Primary = 0.56 cfs @ 12.09 hrs, Volume= 0.044 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 212.35' @ 12.79 hrs
Flood Elev= 215.17'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.72'	**15.0" Round Culvert** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 211.72' / 211.62' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.54 cfs @ 12.09 hrs HW=212.15' TW=211.78' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.54 cfs @ 2.18 fps)

Summary for Pond CB3: CB3

Inflow Area = 0.293 ac, 0.00% Impervious, Inflow Depth > 0.32" for FP1 event
Inflow = 0.07 cfs @ 12.17 hrs, Volume= 0.008 af
Outflow = 0.07 cfs @ 12.17 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.0 min
Primary = 0.07 cfs @ 12.17 hrs, Volume= 0.008 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 225.15' @ 12.17 hrs
Flood Elev= 229.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	225.00'	**12.0" Round Culvert** L= 120.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 225.00' / 224.40' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.07 cfs @ 12.17 hrs HW=225.15' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 0.07 cfs @ 1.37 fps)

Summary for Pond FP1: FocalPoint 1

Inflow Area = 0.410 ac, 85.11% Impervious, Inflow Depth > 1.40" for FP1 event
Inflow = 0.65 cfs @ 12.09 hrs, Volume= 0.048 af
Outflow = 0.23 cfs @ 12.36 hrs, Volume= 0.048 af, Atten= 64%, Lag= 16.0 min
Primary = 0.23 cfs @ 12.36 hrs, Volume= 0.048 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 229.83' @ 12.37 hrs Surf.Area= 80 sf Storage= 344 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 8.4 min (811.6 - 803.2)

Volume	Invert	Avail.Storage	Storage Description
#1	228.81'	36 cf	**10.00'W x 8.00'L x 2.25'H FocalPoint** 180 cf Overall x 20.0% Voids
#2	228.80'	327 cf	**Surface Bowl Area (Prismatic)**Listed below (Recalc) -Impervious
		363 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
228.80	250	0	0
228.81	250	2	2
229.81	400	325	327

Device	Routing	Invert	Outlet Devices
#1	Device 2	229.81'	**15.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	225.66'	**15.0" Round Culvert** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 225.66' / 225.56' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#3	Primary	228.81'	**100.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 220.83' Phase-In= 0.01'

Primary OutFlow Max=0.23 cfs @ 12.36 hrs HW=229.82' TW=223.93' (Dynamic Tailwater)
└**2=Culvert** (Passes 0.02 cfs of 8.78 cfs potential flow)
└**1=Orifice/Grate** (Weir Controls 0.02 cfs @ 0.40 fps)
└**3=Exfiltration** (Controls 0.21 cfs)

Summary for Pond FP2: FocalPoint 2

Inflow Area = 0.339 ac, 90.79% Impervious, Inflow Depth > 1.57" for FP1 event
Inflow = 0.59 cfs @ 12.09 hrs, Volume= 0.044 af
Outflow = 0.21 cfs @ 12.36 hrs, Volume= 0.044 af, Atten= 65%, Lag= 16.6 min
Primary = 0.21 cfs @ 12.36 hrs, Volume= 0.044 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 229.67' @ 12.36 hrs Surf.Area= 80 sf Storage= 286 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 6.9 min (795.0 - 788.1)

Volume	Invert	Avail.Storage	Storage Description
#1	228.81'	36 cf	**10.00'W x 8.00'L x 2.25'H FocalPoint** 180 cf Overall x 20.0% Voids
#2	228.80'	327 cf	**Surface Bowl Area (Prismatic)**Listed below (Recalc) -Impervious
		363 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
228.80	250	0	0
228.81	250	2	2
229.81	400	325	327

Device	Routing	Invert	Outlet Devices
#1	Device 2	229.81'	**15.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	225.66'	**15.0" Round Culvert** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 225.66' / 225.56' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#3	Primary	228.81'	**100.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 220.83' Phase-In= 0.01'

Primary OutFlow Max=0.21 cfs @ 12.36 hrs HW=229.67' TW=223.93' (Dynamic Tailwater)
- **2=Culvert** (Passes 0.00 cfs of 8.58 cfs potential flow)
  - **1=Orifice/Grate** (Controls 0.00 cfs)
- **3=Exfiltration** (Controls 0.21 cfs)

Summary for Pond FP3: FocalPoint 3

Inflow Area = 0.336 ac, 78.26% Impervious, Inflow Depth > 1.31" for FP1 event
Inflow = 0.50 cfs @ 12.09 hrs, Volume= 0.037 af
Outflow = 0.20 cfs @ 12.34 hrs, Volume= 0.037 af, Atten= 61%, Lag= 14.9 min
Primary = 0.20 cfs @ 12.34 hrs, Volume= 0.037 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 226.38' @ 12.34 hrs Surf.Area= 80 sf Storage= 203 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 5.2 min (814.8 - 809.5)

Volume	Invert	Avail.Storage	Storage Description
#1	225.74'	36 cf	**10.00'W x 8.00'L x 2.25'H FocalPoint** 180 cf Overall x 20.0% Voids
#2	225.73'	328 cf	**Surface Bowl Area (Prismatic)**Listed below (Recalc) -Impervious
		364 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
225.73	250	0	0
225.74	250	3	3
226.74	400	325	328

Device	Routing	Invert	Outlet Devices
#1	Device 2	226.74'	**15.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	222.49'	**12.0" Round Culvert** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 222.49' / 222.39' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Primary	225.74'	**100.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 215.39' Phase-In= 0.01'

Primary OutFlow Max=0.20 cfs @ 12.34 hrs HW=226.38' TW=221.08' (Dynamic Tailwater)
- **2=Culvert** (Passes 0.00 cfs of 5.49 cfs potential flow)
  - **1=Orifice/Grate** (Controls 0.00 cfs)
- **3=Exfiltration** (Controls 0.20 cfs)

Summary for Pond FP4: FocalPoint 4

Inflow Area = 0.121 ac,100.00% Impervious, Inflow Depth > 1.77" for FP1 event
Inflow = 0.23 cfs @ 12.09 hrs, Volume= 0.018 af
Outflow = 0.19 cfs @ 12.15 hrs, Volume= 0.015 af, Atten= 17%, Lag= 3.8 min
Primary = 0.19 cfs @ 12.15 hrs, Volume= 0.015 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 192.83' @ 12.14 hrs Surf.Area= 80 sf Storage= 157 cf

Plug-Flow detention time= 124.7 min calculated for 0.015 af (82% of inflow)
Center-of-Mass det. time= 54.5 min (821.4 - 767.0)

Volume	Invert	Avail.Storage	Storage Description
#1	192.80'	36 cf	**10.00'W x 8.00'L x 2.25'H FocalPoint** 180 cf Overall x 20.0% Voids
#2	192.29'	328 cf	**193.7 (Prismatic)**Listed below (Recalc) -Impervious
		364 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
192.29	250	0	0
192.30	250	3	3
193.30	400	325	328

Device	Routing	Invert	Outlet Devices
#1	Device 2	193.80'	**15.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	189.80'	**6.0" Round Culvert** L= 15.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 189.80' / 189.70' S= 0.0067 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Primary	192.80'	**100.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 188.00' Phase-In= 0.01'

Primary OutFlow Max=0.19 cfs @ 12.15 hrs HW=192.83' TW=0.00' (Dynamic Tailwater)
- **2=Culvert** (Passes 0.00 cfs of 1.24 cfs potential flow)
  - **1=Orifice/Grate** (Controls 0.00 cfs)
- **3=Exfiltration** (Controls 0.19 cfs)

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment 1S Runoff Area=102,651 sf 0.77% Impervious Runoff Depth>3.79"
Flow Length=350' Tc=9.6 min CN=72 Runoff=9.15 cfs 0.744 af

Subcatchment 2S: Subcatchment 2S Runoff Area=17,857 sf 85.11% Impervious Runoff Depth>6.24"
Tc=6.0 min CN=94 Runoff=2.67 cfs 0.213 af

Subcatchment 3S: Subcatchment 3S Runoff Area=14,768 sf 90.79% Impervious Runoff Depth>6.48"
Tc=6.0 min CN=96 Runoff=2.24 cfs 0.183 af

Subcatchment 4S: Subcatchment 4S Runoff Area=12,745 sf 0.00% Impervious Runoff Depth>3.89"
Flow Length=350' Tc=9.6 min CN=73 Runoff=1.17 cfs 0.095 af

Subcatchment 5S: Subcatchment 5S Runoff Area=14,630 sf 78.26% Impervious Runoff Depth>6.13"
Tc=6.0 min CN=93 Runoff=2.17 cfs 0.172 af

Subcatchment 6S: Subcatchment 6S Runoff Area=104,590 sf 0.00% Impervious Runoff Depth>4.00"
Flow Length=597' Tc=14.7 min CN=74 Runoff=8.56 cfs 0.800 af

Subcatchment 7S: Subcatchment 7S Runoff Area=5,959 sf 0.00% Impervious Runoff Depth>4.00"
Tc=6.0 min CN=74 Runoff=0.63 cfs 0.046 af

Subcatchment 7S1: Subcatchment CB1 Runoff Area=5,639 sf 100.00% Impervious Runoff Depth>6.72"
Tc=6.0 min CN=98 Runoff=0.86 cfs 0.072 af

Subcatchment 7S2: Subcatchment CB2 Runoff Area=7,419 sf 100.00% Impervious Runoff Depth>6.72"
Tc=6.0 min CN=98 Runoff=1.14 cfs 0.095 af

Subcatchment 8S: Subcatchment 8S Runoff Area=5,280 sf 100.00% Impervious Runoff Depth>6.72"
Tc=6.0 min CN=98 Runoff=0.81 cfs 0.068 af

Subcatchment 9S: Subcatchment 9S Runoff Area=3,313 sf 100.00% Impervious Runoff Depth>6.72"
Tc=6.0 min CN=98 Runoff=0.51 cfs 0.043 af

Subcatchment 10S: Subcatchment 10S Runoff Area=8,865 sf 100.00% Impervious Runoff Depth>6.72"
Tc=6.0 min CN=98 Runoff=1.36 cfs 0.114 af

Subcatchment 11S: Subcatchment 11S Runoff Area=18,787 sf 52.98% Impervious Runoff Depth>5.44"
Tc=6.0 min CN=87 Runoff=2.59 cfs 0.195 af

Subcatchment 12S: Subcatchment 11S Runoff Area=5,279 sf 100.00% Impervious Runoff Depth>6.72"
Tc=6.0 min CN=98 Runoff=0.81 cfs 0.068 af

Reach 1R: Flow Through Wetland Avg. Flow Depth=0.04' Max Vel=1.03 fps Inflow=0.77 cfs 0.168 af
n=0.030 L=210.0' S=0.0548 '/' Capacity=185.74 cfs Outflow=0.76 cfs 0.168 af

Reach AP1: Analysis Point #1 Inflow=23.83 cfs 2.519 af
Outflow=23.83 cfs 2.519 af

Reach AP2: Analysis Point #2 Inflow=2.59 cfs 0.195 af
Outflow=2.59 cfs 0.195 af

Pond 1P: STORMTECH 1 Peak Elev=225.30' Storage=0.114 af Inflow=5.08 cfs 0.396 af
Discarded=0.00 cfs 0.000 af Primary=1.55 cfs 0.385 af Outflow=1.55 cfs 0.385 af

Pond 2P: STORMTECH 2 Peak Elev=222.35' Storage=0.040 af Inflow=2.57 cfs 0.171 af
Discarded=0.00 cfs 0.000 af Primary=0.77 cfs 0.168 af Outflow=0.77 cfs 0.168 af

Pond 3P: Pond 3P Peak Elev=213.22' Storage=2,916 cf Inflow=2.63 cfs 0.213 af
Outflow=2.07 cfs 0.184 af

Pond 4P: Drip Edge Peak Elev=232.01' Storage=941 cf Inflow=0.81 cfs 0.068 af
Discarded=0.05 cfs 0.060 af Primary=0.53 cfs 0.008 af Outflow=0.58 cfs 0.068 af

Pond 5P: Drip Edge Peak Elev=231.73' Storage=719 cf Inflow=0.51 cfs 0.043 af
Discarded=0.04 cfs 0.043 af Primary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.043 af

Pond 6P: Drip Edge Peak Elev=222.02' Storage=1,881 cf Inflow=1.36 cfs 0.114 af
Outflow=1.77 cfs 0.071 af

Pond CB1: CB1 Peak Elev=213.31' Inflow=0.86 cfs 0.072 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=0.86 cfs 0.072 af

Pond CB2: CB2 Peak Elev=213.30' Inflow=2.00 cfs 0.168 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=2.00 cfs 0.168 af

Pond CB3: CB3 Peak Elev=225.66' Inflow=1.17 cfs 0.095 af
12.0" Round Culvert n=0.013 L=120.0' S=0.0050 '/' Outflow=1.17 cfs 0.095 af

Pond FP1: FocalPoint 1 Peak Elev=230.15' Storage=349 cf Inflow=2.67 cfs 0.213 af
Outflow=2.77 cfs 0.213 af

Pond FP2: FocalPoint 2 Peak Elev=230.11' Storage=348 cf Inflow=2.24 cfs 0.183 af
Outflow=2.32 cfs 0.183 af

Pond FP3: FocalPoint 3 Peak Elev=227.06' Storage=349 cf Inflow=2.17 cfs 0.172 af
Outflow=2.57 cfs 0.171 af

Pond FP4: FocalPoint 4 Peak Elev=193.99' Storage=346 cf Inflow=0.81 cfs 0.068 af
Outflow=1.25 cfs 0.065 af

Total Runoff Area = 7.525 ac Runoff Volume = 2.908 af Average Runoff Depth = 4.64"
73.58% Pervious = 5.537 ac 26.42% Impervious = 1.988 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment 1S Runoff Area=102,651 sf 0.77% Impervious Runoff Depth>0.29"
Flow Length=350' Tc=9.6 min CN=72 Runoff=0.45 cfs 0.057 af

Subcatchment 2S: Subcatchment 2S Runoff Area=17,857 sf 85.11% Impervious Runoff Depth>1.40"
Tc=6.0 min CN=94 Runoff=0.65 cfs 0.048 af

Subcatchment 3S: Subcatchment 3S Runoff Area=14,768 sf 90.79% Impervious Runoff Depth>1.57"
Tc=6.0 min CN=96 Runoff=0.59 cfs 0.044 af

Subcatchment 4S: Subcatchment 4S Runoff Area=12,745 sf 0.00% Impervious Runoff Depth>0.32"
Flow Length=350' Tc=9.6 min CN=73 Runoff=0.07 cfs 0.008 af

Subcatchment 5S: Subcatchment 5S Runoff Area=14,630 sf 78.26% Impervious Runoff Depth>1.31"
Tc=6.0 min CN=93 Runoff=0.50 cfs 0.037 af

Subcatchment 6S: Subcatchment 6S Runoff Area=104,590 sf 0.00% Impervious Runoff Depth>0.35"
Flow Length=597' Tc=14.7 min CN=74 Runoff=0.55 cfs 0.070 af

Subcatchment 7S: Subcatchment 7S Runoff Area=5,959 sf 0.00% Impervious Runoff Depth>0.35"
Tc=6.0 min CN=74 Runoff=0.04 cfs 0.004 af

Subcatchment 7S1: Subcatchment CB1 Runoff Area=5,639 sf 100.00% Impervious Runoff Depth>1.77"
Tc=6.0 min CN=98 Runoff=0.24 cfs 0.019 af

Subcatchment 7S2: Subcatchment CB2 Runoff Area=7,419 sf 100.00% Impervious Runoff Depth>1.77"
Tc=6.0 min CN=98 Runoff=0.32 cfs 0.025 af

Subcatchment 8S: Subcatchment 8S Runoff Area=5,280 sf 100.00% Impervious Runoff Depth>1.77"
Tc=6.0 min CN=98 Runoff=0.23 cfs 0.018 af

Subcatchment 9S: Subcatchment 9S Runoff Area=3,313 sf 100.00% Impervious Runoff Depth>1.77"
Tc=6.0 min CN=98 Runoff=0.14 cfs 0.011 af

Subcatchment 10S: Subcatchment 10S Runoff Area=8,865 sf 100.00% Impervious Runoff Depth>1.77"
Tc=6.0 min CN=98 Runoff=0.38 cfs 0.030 af

Subcatchment 11S: Subcatchment 11S Runoff Area=18,787 sf 52.98% Impervious Runoff Depth>0.90"
Tc=6.0 min CN=87 Runoff=0.45 cfs 0.033 af

Subcatchment 12S: Subcatchment 11S Runoff Area=5,279 sf 100.00% Impervious Runoff Depth>1.77"
Tc=6.0 min CN=98 Runoff=0.23 cfs 0.018 af

Reach 1R: Flow Through Wetland Avg. Flow Depth=0.02' Max Vel=0.66 fps Inflow=0.18 cfs 0.035 af
n=0.030 L=210.0' S=0.0548 '/' Capacity=185.74 cfs Outflow=0.18 cfs 0.035 af

Reach AP1: Analysis Point #1 Inflow=1.59 cfs 0.314 af
Outflow=1.59 cfs 0.314 af

Reach AP2: Analysis Point #2 Inflow=0.45 cfs 0.033 af
Outflow=0.45 cfs 0.033 af

Pond 1P: STORMTECH 1 Peak Elev=224.01' Storage=0.031 af Inflow=0.44 cfs 0.092 af
Discarded=0.00 cfs 0.000 af Primary=0.34 cfs 0.085 af Outflow=0.34 cfs 0.085 af

Pond 2P: STORMTECH 2 Peak Elev=221.11' Storage=0.009 af Inflow=0.20 cfs 0.037 af
Discarded=0.00 cfs 0.000 af Primary=0.18 cfs 0.035 af Outflow=0.18 cfs 0.035 af

Pond 3P: Pond 3P Peak Elev=212.35' Storage=1,001 cf Inflow=0.60 cfs 0.048 af
Outflow=0.07 cfs 0.044 af

Pond 4P: Drip Edge Peak Elev=229.60' Storage=211 cf Inflow=0.23 cfs 0.018 af
Discarded=0.04 cfs 0.018 af Primary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.018 af

Pond 5P: Drip Edge Peak Elev=229.33' Storage=110 cf Inflow=0.14 cfs 0.011 af
Discarded=0.03 cfs 0.011 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.011 af

Pond 6P: Drip Edge Peak Elev=221.07' Storage=1,310 cf Inflow=0.38 cfs 0.030 af
Outflow=0.00 cfs 0.000 af

Pond CB1: CB1 Peak Elev=212.35' Inflow=0.24 cfs 0.019 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=0.24 cfs 0.019 af

Pond CB2: CB2 Peak Elev=212.35' Inflow=0.56 cfs 0.044 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=0.56 cfs 0.044 af

Pond CB3: CB3 Peak Elev=225.15' Inflow=0.07 cfs 0.008 af
12.0" Round Culvert n=0.013 L=120.0' S=0.0050 '/' Outflow=0.07 cfs 0.008 af

Pond FP1: FocalPoint 1 Peak Elev=229.83' Storage=344 cf Inflow=0.65 cfs 0.048 af
Outflow=0.23 cfs 0.048 af

Pond FP2: FocalPoint 2 Peak Elev=229.67' Storage=286 cf Inflow=0.59 cfs 0.044 af
Outflow=0.21 cfs 0.044 af

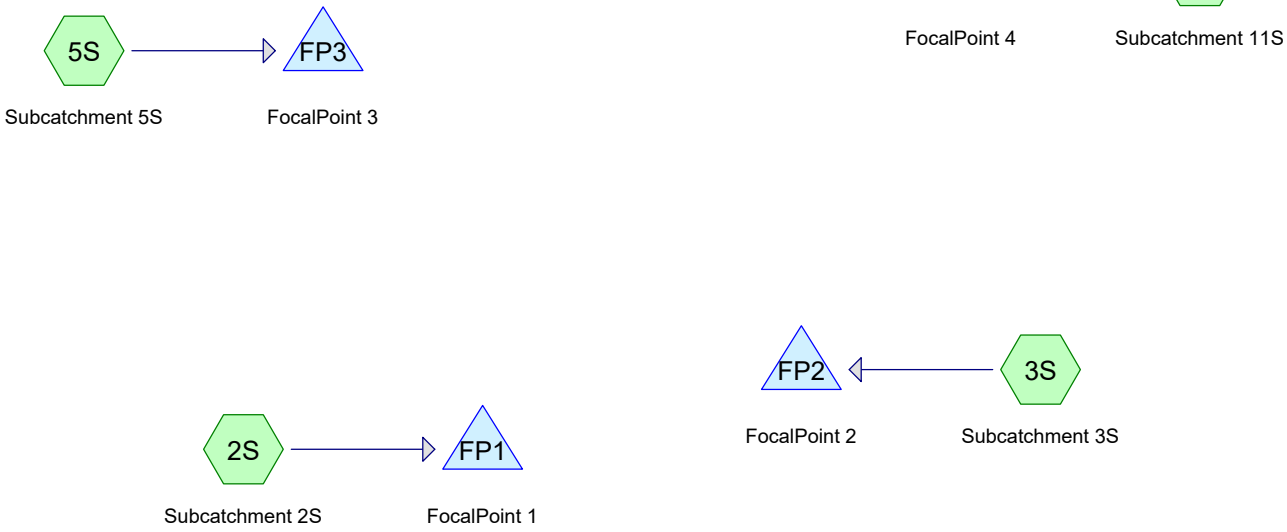
Pond FP3: FocalPoint 3 Peak Elev=226.38' Storage=203 cf Inflow=0.50 cfs 0.037 af
Outflow=0.20 cfs 0.037 af

Pond FP4: FocalPoint 4 Peak Elev=192.83' Storage=157 cf Inflow=0.23 cfs 0.018 af
Outflow=0.19 cfs 0.015 af

Total Runoff Area = 7.525 ac Runoff Volume = 0.421 af Average Runoff Depth = 0.67"
73.58% Pervious = 5.537 ac 26.42% Impervious = 1.988 ac

APPENDIX III

Charts, Graphs, and Calculations



Subcat Reach Pond Link

Routing Diagram for 21137 - FOCAL POINT
Prepared by {enter your company name here}, Printed 2/10/2022
HydroCAD® 10.10-5a s/n 10589 © 2020 HydroCAD Software Solutions LLC

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 2S: Subcatchment 2S Runoff Area=17,980 sf 82.31% Impervious Runoff Depth>0.69"
Tc=6.0 min CN=94 Runoff=0.33 cfs 1,032 cf

Subcatchment 3S: Subcatchment 3S Runoff Area=14,764 sf 87.15% Impervious Runoff Depth>0.76"
Tc=6.0 min CN=95 Runoff=0.30 cfs 931 cf

Subcatchment 5S: Subcatchment 5S Runoff Area=16,022 sf 73.94% Impervious Runoff Depth>0.57"
Tc=6.0 min CN=92 Runoff=0.25 cfs 762 cf

Subcatchment 11S: Subcatchment 11S Runoff Area=7,712 sf 91.44% Impervious Runoff Depth>0.83"
Tc=6.0 min CN=96 Runoff=0.17 cfs 534 cf

Pond FP1: FocalPoint 1 Peak Elev=226.81' Storage=95 cf Inflow=0.33 cfs 1,032 cf
Outflow=0.15 cfs 1,033 cf

Pond FP2: FocalPoint 2 Peak Elev=226.71' Storage=83 cf Inflow=0.30 cfs 931 cf
Outflow=0.14 cfs 931 cf

Pond FP3: FocalPoint 3 Peak Elev=223.48' Storage=45 cf Inflow=0.25 cfs 762 cf
Outflow=0.15 cfs 762 cf

Pond FP4: FocalPoint 4 Peak Elev=190.97' Storage=53 cf Inflow=0.17 cfs 534 cf
Outflow=0.07 cfs 534 cf

Total Runoff Area = 56,478 sf Runoff Volume = 3,258 cf Average Runoff Depth = 0.69"
17.55% Pervious = 9,914 sf 82.45% Impervious = 46,564 sf

Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 0.33 cfs @ 12.09 hrs, Volume= 1,032 cf, Depth> 0.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 1.22-in Rainfall=1.22"

Area (sf)	CN	Description
13,990	98	Paved parking, HSG C
809	98	Paved parking, HSG C
3,181	74	>75% Grass cover, Good, HSG C
17,980	94	Weighted Average
3,181		17.69% Pervious Area
14,799		82.31% 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 = 0.30 cfs @ 12.09 hrs, Volume= 931 cf, Depth> 0.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 1.22-in Rainfall=1.22"

Area (sf)	CN	Description
12,867	98	Paved parking, HSG C
1,897	74	>75% Grass cover, Good, HSG C
14,764	95	Weighted Average
1,897		12.85% Pervious Area
12,867		87.15% 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 = 0.25 cfs @ 12.09 hrs, Volume= 762 cf, Depth> 0.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 1.22-in Rainfall=1.22"

Area (sf)	CN	Description
10,782	98	Paved parking, HSG C
1,064	98	Paved parking, HSG C
4,176	74	>75% Grass cover, Good, HSG C
16,022	92	Weighted Average
4,176		26.06% Pervious Area
11,846		73.94% Impervious Area

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

Summary for Subcatchment 11S: Subcatchment 11S

Runoff = 0.17 cfs @ 12.09 hrs, Volume= 534 cf, Depth> 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 1.22-in Rainfall=1.22"

Area (sf)	CN	Description
7,052	98	Paved parking, HSG C
660	74	>75% Grass cover, Good, HSG C
7,712	96	Weighted Average
660		8.56% Pervious Area
7,052		91.44% Impervious Area

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

Summary for Pond FP1: FocalPoint 1

Inflow Area = 17,980 sf, 82.31% Impervious, Inflow Depth > 0.69" for 1.22-in event
Inflow = 0.33 cfs @ 12.09 hrs, Volume= 1,032 cf
Outflow = 0.15 cfs @ 11.99 hrs, Volume= 1,033 cf, Atten= 54%, Lag= 0.0 min
Primary = 0.15 cfs @ 11.99 hrs, Volume= 1,033 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 226.81' @ 12.28 hrs Surf.Area= 66 sf Storage= 95 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 2.4 min (825.5 - 823.1)

Volume	Invert	Avail.Storage	Storage Description
#1	225.34'	30 cf	**6.00'W x 11.00'L x 2.25'H FocalPoint** 149 cf Overall x 20.0% Voids
#2	226.08'	467 cf	**Surface Bowl Area (Prismatic)**Listed below (Recalc) -Impervious
		497 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
226.08	66	0	0
226.09	66	1	1
227.34	200	166	167
228.34	400	300	467

Device	Routing	Invert	Outlet Devices
#1	Device 2	228.84'	**15.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	225.34'	**15.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 225.34' / 225.04' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#3	Primary	225.34'	**100.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.15 cfs @ 11.99 hrs HW=225.41' (Free Discharge)
- **2=Culvert** (Passes 0.00 cfs of 0.02 cfs potential flow)
  - **1=Orifice/Grate** (Controls 0.00 cfs)
- **3=Exfiltration** (Exfiltration Controls 0.15 cfs)

Summary for Pond FP2: FocalPoint 2

Inflow Area = 14,764 sf, 87.15% Impervious, Inflow Depth > 0.76" for 1.22-in event
Inflow = 0.30 cfs @ 12.09 hrs, Volume= 931 cf
Outflow = 0.14 cfs @ 11.99 hrs, Volume= 931 cf, Atten= 54%, Lag= 0.0 min
Primary = 0.14 cfs @ 11.99 hrs, Volume= 931 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 226.71' @ 12.27 hrs Surf.Area= 60 sf Storage= 83 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 2.3 min (817.2 - 814.9)

Volume	Invert	Avail.Storage	Storage Description
#1	225.34'	27 cf	**10.00'W x 6.00'L x 2.25'H FocalPoint** 135 cf Overall x 20.0% Voids
#2	226.08'	519 cf	**Surface Bowl Area (Prismatic)**Listed below (Recalc) -Impervious
		546 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
226.08	60	0	0
226.09	60	1	1
227.34	250	194	194
228.34	400	325	519

Device	Routing	Invert	Outlet Devices
#1	Device 2	228.84'	**15.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	225.34'	**15.0" Round Culvert**

L= 30.0' CPP, projecting, no headwall, Ke= 0.900
Inlet / Outlet Invert= 225.34' / 224.74' S= 0.0200 '/' Cc= 0.900
n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

#3	Primary	225.34'	**100.000 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Primary OutFlow Max=0.14 cfs @ 11.99 hrs HW=225.42' (Free Discharge)
- **2=Culvert** (Passes 0.00 cfs of 0.02 cfs potential flow)
  - **1=Orifice/Grate** (Controls 0.00 cfs)
- **3=Exfiltration** (Exfiltration Controls 0.14 cfs)

Summary for Pond FP3: FocalPoint 3

Inflow Area = 16,022 sf, 73.94% Impervious, Inflow Depth > 0.57" for 1.22-in event
Inflow = 0.25 cfs @ 12.09 hrs, Volume= 762 cf
Outflow = 0.15 cfs @ 12.21 hrs, Volume= 762 cf, Atten= 41%, Lag= 6.9 min
Primary = 0.15 cfs @ 12.21 hrs, Volume= 762 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 223.48' @ 12.21 hrs Surf.Area= 54 sf Storage= 45 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1.1 min (838.4 - 837.4)

Volume	Invert	Avail.Storage	Storage Description
#1	222.32'	24 cf	**9.00'W x 6.00'L x 2.25'H FocalPoint** 122 cf Overall x 20.0% Voids
#2	223.06'	459 cf	**Surface Bowl Area (Prismatic)**Listed below (Recalc) -Impervious
		484 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
223.06	54	0	0
223.07	54	1	1
224.32	200	159	159
225.32	400	300	459

Device	Routing	Invert	Outlet Devices
#1	Device 2	225.82'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	222.32'	**12.0" Round Culvert** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 222.32' / 222.12' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Primary	222.32'	**100.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 215.39' Phase-In= 0.01'

Primary OutFlow Max=0.15 cfs @ 12.21 hrs HW=223.48' (Free Discharge)
- **2=Culvert** (Passes 0.00 cfs of 2.42 cfs potential flow)
  - **1=Orifice/Grate** (Controls 0.00 cfs)
- **3=Exfiltration** (Controls 0.15 cfs)

Summary for Pond FP4: FocalPoint 4

Inflow Area = 7,712 sf, 91.44% Impervious, Inflow Depth > 0.83" for 1.22-in event
Inflow = 0.17 cfs @ 12.09 hrs, Volume= 534 cf
Outflow = 0.07 cfs @ 11.97 hrs, Volume= 534 cf, Atten= 57%, Lag= 0.0 min
Primary = 0.07 cfs @ 11.97 hrs, Volume= 534 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 190.97' @ 12.29 hrs Surf.Area= 32 sf Storage= 53 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 2.8 min (808.4 - 805.6)

Volume	Invert	Avail.Storage	Storage Description
#1	189.50'	14 cf	**4.00'W x 8.00'L x 2.25'H FocalPoint** 72 cf Overall x 20.0% Voids
#2	190.24'	334 cf	**Surface Bowl Area (Prismatic)**Listed below (Recalc) -Impervious
		348 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
190.24	24	0	0
190.25	24	0	0
191.50	150	109	109
192.50	300	225	334

Device	Routing	Invert	Outlet Devices
#1	Device 2	193.00'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	189.50'	**12.0" Round Culvert** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 189.50' / 189.40' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Primary	189.50'	**100.000 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Primary OutFlow Max=0.07 cfs @ 11.97 hrs HW=189.54' (Free Discharge)
- **2=Culvert** (Passes 0.00 cfs of 0.00 cfs potential flow)
  - **1=Orifice/Grate** (Controls 0.00 cfs)
- **3=Exfiltration** (Exfiltration Controls 0.07 cfs)

DESIGN WORKSHEET

FOCALPOINT -1

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: = 0.25 ac **(A)**
   - Tributary pervious area: = 0.16 ac **(B)**
   - Minimum FocalPoint bed area required: **= ((A x 1.0) + (B x 0.4)) * 174** = 54.6 sf
   - FocalPoint bed area provided: = 66 sf
   - Dimensions of proposed FocalPoint: = 6 ft x 11 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: = 891 ft^3
   - Type II & III 24-hr rainfall depth to generate WQv: = 1.22 in
   - Temporary storage depth provided: = 6 in (typically 6 - 12 in)
   - Temporary storage volume provided at above depth: = 467 ft^3
   - Peak ponding depth from Type III 24-hr storm event: = 226.81 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: = 15 in
   - Rim elevation of overflow riser: = 228.84
   - 6 in invert in elevation from FocalPoint: = 225.34
   - 15" invert out elevation: = 225.34

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

DESIGN WORKSHEET

FOCALPOINT -2

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: = 0.29 ac **(A)**
   - Tributary pervious area: = 0.044 ac **(B)**
   - Minimum FocalPoint bed area required: **= ((A x 1.0) + (B x 0.4)) * 174** = 53.52 sf
   - FocalPoint bed area provided: = 60 sf
   - Dimensions of proposed FocalPoint: = 6 ft x 10 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: = 1007 ft^3
   - Type II & III 24-hr rainfall depth to generate WQv: = 1.22 in
   - Temporary storage depth provided: = 6 in (typically 6 - 12 in)
   - Temporary storage volume provided at above depth: = 519 ft^3
   - Peak ponding depth from Type III 24-hr storm event: = 226.71 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: = 15 in
   - Rim elevation of overflow riser: = 228.84
   - 6 in invert in elevation from FocalPoint: = 225.34
   - 15" invert out elevation: = 225.34

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

DESIGN WORKSHEET

FOCALPOINT - 3

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: = 0.27 ac **(A)**
   - Tributary pervious area: = 0.10 ac **(B)**
   - Minimum FocalPoint bed area required: **= ((A x 1.0) + (B x 0.4)) * 174** = 53.94 sf
   - FocalPoint bed area provided: = 54 sf
   - Dimensions of proposed FocalPoint: = 6 ft x 9 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: = 949 ft^3
   - Type II & III 24-hr rainfall depth to generate WQv: = 1.22 in
   - Temporary storage depth provided: = 6 in (typically 6 - 12 in)
   - Temporary storage volume provided at above depth: = 459 ft^3
   - Peak ponding depth from Type III 24-hr storm event: = 223.48 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: = 12 in
   - Rim elevation of overflow riser: = 225.82
   - 6 in invert in elevation from FocalPoint: = 222.32
   - 12" invert out elevation: = 222.32

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

DESIGN WORKSHEET

FOCALPOINT - 4

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: = 0.162 ac **(A)**
   - Tributary pervious area: = 0.015 ac **(B)**
   - Minimum FocalPoint bed area required: **= ((A x 1.0) + (B x 0.4)) * 174** = 21.10 sf
   - FocalPoint bed area provided: = 29 sf
   - Dimensions of proposed FocalPoint: = 4 ft x 8 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: = 555 ft^3
   - Type II & III 24-hr rainfall depth to generate WQv: = 1.22 in
   - Temporary storage depth provided: = 6 in (typically 6 - 12 in)
   - Temporary storage volume provided at above depth: = 334 ft^3
   - Peak ponding depth from Type III 24-hr storm event: = 190.97 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: = 12 in
   - Rim elevation of overflow riser: = 193.0
   - 6 in invert in elevation from FocalPoint: = 189.5
   - 12" invert out elevation: = 189.5

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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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

ACF ENVIRONMENTAL

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** (i.e. for a technology which is not a stormwater wetland, infiltration practice, etc.)

Water Quality Volume (WQV)

0.41	ac	A = Area draining to the practice
0.25	ac	A_I = Impervious area draining to the practice
0.61	decimal	I = Percent impervious area draining to the practice, in decimal form
0.60	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)
0.25	ac-in	WQV= 1" x Rv x A
891	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".
0.60	inches	Q = Water quality depth. Q = WQV/A
96	unitless	CN = Unit peak discharge curve number. CN =1000/(10+5P+10Q–10*[Q^2 + 1.25*Q*P] $^{0.5}$)
0.5	inches	S = Potential maximum retention. S = (1000/CN) - 10
0.093	inches	Ia = Initial abstraction. Ia = 0.2S
6.0	minutes	T_c = Time of Concentration
	cfs/mi^2/in	q_u is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III.
-	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:

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** (i.e. for a technology which is not a stormwater wetland, infiltration practice, etc.)

Water Quality Volume (WQV)

0.33	ac	A = Area draining to the practice
0.29	ac	A_I = Impervious area draining to the practice
0.88	decimal	I = Percent impervious area draining to the practice, in decimal form
0.84	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)
0.28	ac-in	WQV= 1" x Rv x A
1,007	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".
0.84	inches	Q = Water quality depth. Q = WQV/A
99	unitless	CN = Unit peak discharge curve number. CN =1000/(10+5P+10Q–10*[Q^2 + 1.25*Q*P] $^{0.5}$)
0.1	inches	S = Potential maximum retention. S = (1000/CN) - 10
0.030	inches	Ia = Initial abstraction. Ia = 0.2S
6.0	minutes	T_c = Time of Concentration
	cfs/mi^2/in	q_u is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III.
-	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:

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** (i.e. for a technology which is not a stormwater wetland, infiltration practice, etc.)

Water Quality Volume (WQV)

0.37	ac	A = Area draining to the practice
0.27	ac	A_I = Impervious area draining to the practice
0.73	decimal	I = Percent impervious area draining to the practice, in decimal form
0.71	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)
0.26	ac-in	WQV= 1" x Rv x A
949	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".
0.71	inches	Q = Water quality depth. Q = WQV/A
97	unitless	CN = Unit peak discharge curve number. CN =1000/(10+5P+10Q–10*[Q^2 + 1.25*Q*P] $^{0.5}$)
0.3	inches	S = Potential maximum retention. S = (1000/CN) - 10
0.062	inches	Ia = Initial abstraction. Ia = 0.2S
6.0	minutes	T_c = Time of Concentration
	cfs/mi^2/in	q_u is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III.
-	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:

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** (i.e. for a technology which is not a stormwater wetland, infiltration practice, etc.)

Water Quality Volume (WQV)

0.18	ac	A = Area draining to the practice
0.16	ac	A_I = Impervious area draining to the practice
0.89	decimal	I = Percent impervious area draining to the practice, in decimal form
0.85	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)
0.15	ac-in	WQV= 1" x Rv x A
555	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".
0.85	inches	Q = Water quality depth. Q = WQV/A
99	unitless	CN = Unit peak discharge curve number. CN =1000/(10+5P+10Q–10*[Q^2 + 1.25*Q*P] $^{0.5}$)
0.1	inches	S = Potential maximum retention. S = (1000/CN) - 10
0.028	inches	Ia = Initial abstraction. Ia = 0.2S
6.0	minutes	T_c = Time of Concentration
	cfs/mi^2/in	q_u is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III.
-	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:

Pollutant Removal Efficiencies for Best Management Practices for Use in Pollutant Loading Analysis				Values Accepted for Loading Analyses		
BMP Type	**BMP**	**Notes**	**Lit. Ref.**	**TSS**	**TN**	**TP**
Stormwater Ponds	Wet Pond		B, F	70%	35%	45%
	Wet Extended Detention Pond		A, B	80%	55%	68%
	Micropool Extended Detention Pond	TBA				
	Multiple Pond System	TBA				
	Pocket Pond	TBA				
Stormwater Wetlands	Shallow Wetland		A, B, F, I	80%	55%	45%
	Extended Detention Wetland		A, B, F, I	80%	55%	45%
	Pond/Wetland System	TBA				
	Gravel Wetland		H	95%	85%	64%
Infiltration Practices	Infiltration Trench (≥75 ft from surface water)		B, D, I	90%	55%	60%
	Infiltration Trench (<75 ft from surface water)		B, D, I	90%	10%	60%
	Infiltration Basin (≥75 ft from surface water)		A, F, B, D, I	90%	60%	65%
	Infiltration Basin (<75 ft from surface water)		A, F, B, D, I	90%	10%	65%
	Dry Wells			90%	55%	60%
	Drip Edges			90%	55%	60%
Filtering Practices	Aboveground or Underground Sand Filter that infiltrates WQV (≥75 ft from surface water)		A, F, B, D, I	90%	60%	65%
	Aboveground or Underground Sand Filter that infiltrates WQV (<75 ft from surface water)		A, F, B, D, I	90%	10%	65%
	Aboveground or Underground Sand Filter with underdrain		A, I, F, G, H	85%	10%	45%
	Tree Box Filter	TBA				
	Bioretention System		I, G, H	90%	65%	65%
	Permeable Pavement that infiltrates WQV (≥75 ft from surface water)		A, F, B, D, I	90%	60%	65%
	Permeable Pavement that infiltrates WQV (<75 ft from surface water)		A, F, B, D, I	90%	10%	65%
	Permeable Pavement with underdrain		Use TN and TP values for sand filter w/ underdrain and outlet pipe	90%	10%	45%

Pollutant Removal Efficiencies for Best Management Practices for Use in Pollutant Loading Analysis				Values Accepted for Loading Analyses		
BMP Type	**BMP**	**Notes**	**Lit. Ref.**	**TSS**	**TN**	**TP**
Treatment Swales	Flow Through Treatment Swale	TBA				
Vegetated Buffers	Vegetated Buffers		A, B, I	73%	40%	45%
Pre-Treatment Practices	Sediment Forebay	TBA				
	Vegetated Filter Strip		A, B, I	73%	40%	45%
	Vegetated Swale		A, B, C, F, H, I	65%	20%	25%
	Flow-Through Device - Hydrodynamic Separator		A, B, G, H	35%	10%	5%
	Flow-Through Device - ADS Underground Multichamber Water Quality Unit (WQU)		G, H	72%	10%	9%
	Other Flow-Through Devices	TBA				
	Off-line Deep Sump Catch Basin		J, K, L, M	15%	5%	5%

RIP RAP CALCULATIONS
Wadleigh Road
Rochester NH

Jones & Beach Engineers, Inc.
P.O. Box 219
Stratham, NH 03885
10-Feb-22

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 10-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)
15" ADS (CB2)	0.47	1.36	1.25	10.5	14	
12" ADS (Stormtech #1)	0.14	0.33	1	7.6	11	
15" ADS (Swale)	0.19	0.59	1.25	9.5	13	0.05
8" ADS (Under Walkway)	0.11	0.11	0.67	5.1	7	0.03
18" ADS (18" Culvert)	0.32	1.8	1.5	12.3	17	0.04
Box Culvert	0.4	10.52	2	20.7	10	0.01
						0.09
						0.58

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)
6" ADS (Pond #3)	0.5	0.21	0.5	4.6	10	
4" ADS (Stormtech #2)	0.33	0.25	0.33	6.3	3	
						0.01
						0.03

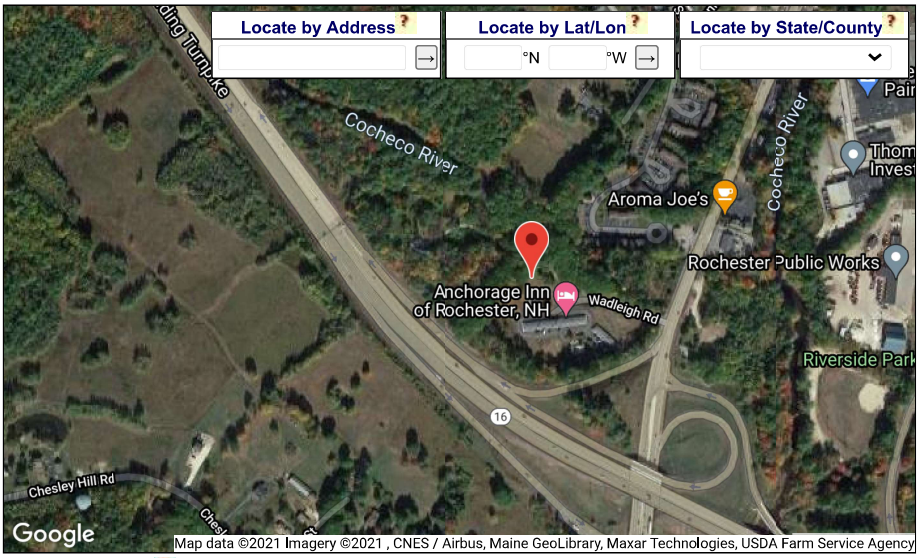
Table 7-24 -- Recommended Rip Rap Gradation Ranges				
d_{50} Size =	0.25	Feet	3	Inches
% of Weight Smaller		Size of Stone (Inches)		
Than the Given d_{50} Size		From		To
100%		5		6
85%		4		5
50%		3		5
15%		1		2

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

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 the map to place a marker, or enter address or latitude/longitude.



Select Options

Smoothing	Delivery
Yes	Popup

Submit

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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.

Smoothing	Yes
State	New Hampshire
Location	
Longitude	70.980 degrees West
Latitude	43.285 degrees North
Elevation	0 feet
Date/Time	Mon, 18 Oct 2021 11:28:33 -0400

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	0.49	0.65	0.81	1.02	**1yr**	0.70	0.97	1.19	1.53	1.97	2.55	2.83	**1yr**	2.26	2.72	3.14	3.86	4.43	**1yr**
2yr	0.32	0.49	0.61	0.80	1.01	1.28	**2yr**	0.87	1.16	1.49	1.89	2.41	3.08	3.44	**2yr**	2.73	3.31	3.81	4.54	5.18	**2yr**
5yr	0.37	0.57	0.72	0.96	1.23	1.58	**5yr**	1.06	1.44	1.85	2.36	3.03	3.88	4.40	**5yr**	3.44	4.23	4.86	5.71	6.45	**5yr**
10yr	0.41	0.64	0.81	1.10	1.43	1.85	**10yr**	1.23	1.69	2.18	2.80	3.60	4.63	5.30	**10yr**	4.10	5.09	5.84	6.79	7.63	**10yr**
25yr	0.47	0.75	0.95	1.31	1.74	2.28	**25yr**	1.50	2.08	2.70	3.51	4.53	5.84	6.77	**25yr**	5.17	6.51	7.46	8.54	9.53	**25yr**
50yr	0.52	0.84	1.08	1.51	2.03	2.69	**50yr**	1.75	2.45	3.20	4.17	5.40	6.96	8.16	**50yr**	6.16	7.85	8.98	10.16	11.27	**50yr**
100yr	0.59	0.96	1.23	1.74	2.37	3.17	**100yr**	2.04	2.88	3.78	4.94	6.42	8.30	9.84	**100yr**	7.35	9.46	10.81	12.11	13.35	**100yr**
200yr	0.66	1.07	1.39	2.00	2.76	3.73	**200yr**	2.39	3.40	4.48	5.88	7.66	9.91	11.87	**200yr**	8.77	11.41	13.01	14.42	15.81	**200yr**
500yr	0.78	1.28	1.67	2.43	3.40	4.63	**500yr**	2.93	4.22	5.58	7.37	9.65	12.53	15.21	**500yr**	11.09	14.62	16.65	18.19	19.78	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.24	0.36	0.44	0.60	0.73	0.90	**1yr**	0.63	0.88	0.92	1.25	1.47	2.01	2.44	**1yr**	1.78	2.35	2.91	3.32	3.96	**1yr**
2yr	0.31	0.48	0.59	0.80	0.99	1.17	**2yr**	0.85	1.15	1.35	1.80	2.32	2.99	3.34	**2yr**	2.64	3.21	3.69	4.41	5.03	**2yr**
5yr	0.35	0.54	0.67	0.91	1.16	1.40	**5yr**	1.00	1.36	1.60	2.12	2.75	3.59	4.04	**5yr**	3.18	3.88	4.52	5.32	6.02	**5yr**
10yr	0.38	0.59	0.73	1.02	1.32	1.59	**10yr**	1.14	1.56	1.81	2.40	3.09	4.10	4.66	**10yr**	3.63	4.48	5.22	6.12	6.86	**10yr**
25yr	0.44	0.67	0.83	1.19	1.57	1.90	**25yr**	1.35	1.86	2.11	2.81	3.58	4.88	5.62	**25yr**	4.32	5.40	6.34	7.32	8.08	**25yr**
50yr	0.49	0.74	0.92	1.33	1.79	2.19	**50yr**	1.54	2.14	2.37	3.16	3.98	5.56	6.46	**50yr**	4.92	6.22	7.35	8.40	9.30	**50yr**
100yr	0.55	0.83	1.03	1.49	2.05	2.51	**100yr**	1.77	2.45	2.68	3.55	4.41	6.33	7.43	**100yr**	5.60	7.14	8.53	9.64	10.58	**100yr**
200yr	0.61	0.92	1.16	1.68	2.34	2.88	**200yr**	2.02	2.82	3.01	3.99	4.89	7.19	8.54	**200yr**	6.36	8.21	9.89	11.06	12.05	**200yr**
500yr	0.71	1.06	1.37	1.98	2.82	3.49	**500yr**	2.43	3.41	3.54	4.65	5.62	8.47	10.27	**500yr**	7.50	9.87	12.02	13.27	14.26	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.43	0.53	0.71	0.87	1.07	**1yr**	0.75	1.05	1.23	1.70	2.15	2.78	3.05	**1yr**	2.46	2.93	3.38	4.16	4.76	**1yr**
2yr	0.33	0.50	0.62	0.84	1.04	1.24	**2yr**	0.89	1.21	1.45	1.93	2.51	3.20	3.57	**2yr**	2.83	3.44	3.95	4.69	5.34	**2yr**
5yr	0.39	0.60	0.75	1.02	1.30	1.57	**5yr**	1.13	1.53	1.83	2.46	3.16	4.18	4.75	**5yr**	3.70	4.57	5.21	6.10	6.86	**5yr**
10yr	0.46	0.70	0.87	1.21	1.57	1.89	**10yr**	1.35	1.85	2.21	3.00	3.81	5.15	5.91	**10yr**	4.56	5.68	6.51	7.44	8.32	**10yr**
25yr	0.56	0.85	1.06	1.51	1.98	2.43	**25yr**	1.71	2.38	2.84	3.90	4.91	6.81	7.90	**25yr**	6.03	7.60	8.67	9.86	10.78	**25yr**
50yr	0.65	0.98	1.23	1.76	2.37	2.93	**50yr**	2.05	2.86	3.44	4.74	5.96	8.41	9.86	**50yr**	7.44	9.48	10.78	12.10	13.24	**50yr**
100yr	0.76	1.14	1.43	2.07	2.84	3.52	**100yr**	2.45	3.44	4.17	5.79	7.25	10.39	12.30	**100yr**	9.20	11.83	13.41	14.88	16.15	**100yr**
200yr	0.88	1.33	1.68	2.44	3.40	4.25	**200yr**	2.93	4.16	5.07	7.06	8.81	12.88	15.38	**200yr**	11.40	14.79	16.68	18.28	19.74	**200yr**
500yr	1.09	1.61	2.08	3.02	4.29	5.44	**500yr**	3.70	5.31	6.53	9.21	11.43	17.14	20.66	**500yr**	15.17	19.87	22.28	24.05	25.74	**500yr**

Powered by ACIS Northeast Regional Climate Center


70° 59' 57" W
70° 57' 56" W
43° 17' 46" N
43° 16' 49" N
338000
338200
338400
338600
338800
339000
339200
339400
339600
339800
340000
340200
340400
337800
4795500
4795300
4795100
4794900
4794700
4794500
4794300
4794100
4793900
202
Brock St
16b
125
SwA
HdC
Gv
WdA
Ru
CsC
DeA
HcB
WfB
WfC
HcB
PdC
HdC
PdB
PbB
PdC
HcB
CsC
MI
WdE
WdE
WdA
SwA
BzB
Gv
WdE
RuW
Gv
Sb
HaA
Ru
WdA
Map Scale: 1:12,400 if printed on A landscape (11" x 8.5") sheet.
N
Meters
0 150 300 600 900
Feet
0 500 1000 2000 3000
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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: Strafford County, New Hampshire
Survey Area Data: Version 22, Aug 31, 2021

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

Date(s) aerial images were photographed: Jun 12, 2019—Aug 30, 2019

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
BzB	Buxton silt loam, 3 to 8 percent slopes	21.2	3.7%
CsC	Charlton fine sandy loam, 8 to 15 percent slopes, very stony	0.5	0.1%
DeA	Deerfield loamy fine sand, 0 to 3 percent slopes	11.8	2.1%
Gv	Gravel and borrow pits	13.0	2.3%
HaA	Hinckley loamy sand, 0 to 3 percent slopes	9.0	1.6%
HcB	Hollis-Charlton fine sandy loams, 3 to 8 percent slopes	20.3	3.5%
HdC	Hollis-Charlton very rocky fine sandy loams, 8 to 15 percent slopes	164.7	28.7%
Ml	Mixed alluvial land, wet	13.6	2.4%
PbB	Paxton fine sandy loam, 3 to 8 percent slopes	2.1	0.4%
PdB	Paxton fine sandy loam, 0 to 8 percent slopes, very stony	11.5	2.0%
PdC	Paxton fine sandy loam, 8 to 15 percent slopes, very stony	9.2	1.6%
Ru	Rumney fine sandy loam	31.4	5.5%
Sb	Saugatuck loamy sand	3.1	0.5%
SwA	Swanton fine sandy loam, 0 to 3 percent slopes	5.3	0.9%
W	Water	8.5	1.5%
WdA	Windsor loamy sand, 0 to 3 percent slopes	219.2	38.3%
WdE	Windsor loamy sand, 15 to 60 percent slopes	19.0	3.3%
WfB	Windsor loamy fine sand, clay subsoil variant, 0 to 8 percent slopes	6.2	1.1%
WfC	Windsor loamy fine sand, clay subsoil variant, 8 to 15 percent slopes	3.4	0.6%
Totals for Area of Interest		**573.0**	**100.0%**

SITE-SPECIFIC SOIL SURVEY REPORT
For
29 Wadleigh Road, Rochester, NH
By
Gove Environmental Services, Inc.

1. MAPPING STANDARDS

Site-Specific Soil Mapping Standards for New Hampshire and Vermont. SSSNNE Special Publication No. 3, Version 7.0, July 2021. This map product is within the technical standards of the National Cooperative Soil Survey. It is a special product, intended for the submission to NH DES Alteration of Terrain. It was produced by a professional soil scientist and is not a product of the USDA Natural Resource Conservation Service.

Hydrologic Soil Group was determined using SSSNNE Special Publication No. 5, Ksat Values for New Hampshire Soils, September 2009.

OVERVIEW:

The site is primarily bedrock-controlled glacial till. The central portion of the site is dominated by exposed bedrock and very shallow soils, found on the large hill. Away from the central portion on the flatter slopes, the bedrock is deeper than 40 inches and the soils are moderately well drained with a mineral restrictive layer. Smaller hills rising above the flatter slope are also shallow-to-bedrock soils. Several streams pass through the wetland areas and dump into Axe Handle Brook.

Scale of soil map:

Approximately 1” equals 30’

Contours:

Intervals of 2 feet

2. DATE SOIL MAP PRODUCED

Date(s) of on-site field work: 11-2-2021

Date(s) of test pits: 10-1-2021

Test pits recorded by: Jones & Beach Engineers

3. GEOGRAPHIC LOCATION AND SIZE OF SITE

City or town where soil mapping was conducted: Rochester

Location: 29 Wadleigh Road, Tax mapb137, lot 3501.

Size of area: approximately 8 acres

Was the map for the entire lot? Yes

If no, where was the mapping conducted on the parcel: n/a

4. PURPOSE OF THE SOIL MAP

Was the map prepared to meet the requirement of Alteration of Terrain? Yes

If no, what was the purpose of the map? n/a

Who was the map prepared for? Jones & Beach Engineers

5. SOIL IDENTIFICATION LEGEND

SSSS SYM.	SSSS MAP NAME	HISS SYM.	HYDROLOGIC SOIL GRP.
32	Boxford silt loam	343	C
141	Hollis-Rock Outcrop-Chatfield complex	228	D
449	Scituate very stony	323	C
547	Walpole very stony	523	C

SLOPE PHASE:

0-8%	B	8-15%	C	15-25%	D
25%+	E				

6. SOIL MAP UNIT DESCRIPTIONS – SOIL DESCRIPTIONS - PHOTOS

SSSS SYM.	SSSS MAP NAME	HISS SYM.	HYDROLOGIC SOIL GRP.
32	Boxford silt loam	343	C

This marine silt and clay map unit makes up a small area of the overall site. It is located on the southeastern end of the site. The soil has a silt loam topsoil and subsoil, with a silty clay loam substratum. The estimated seasonal high water table ranges from 15 to 20 inches deep. Due to the silty textures and the high water table, the hydrologic group is a C.

141	Hollis-Rock Outcrop-Chatfield complex	228	D

The bedrock-controlled glacial till is found on the dominant hill of the site where the cell tower is located and also on other low hills that are on the site and near Axe Handle Brook. This is a complex, because the bedrock is variable from exposed ledge to 3 feet to refusal. Due to the majority of this complex being either exposed bedrock or Hollis soils, the hydrologic soil group is D. This soil makes up a large component of the site. Inclusions would be pockets of soils between the outcrops that are deeper than 40 inches.

449	Scituate very stony	323	C

This dense substratum glacial till soil is the other large component of the upland areas. It lies between the 141 hills on the flatter slopes. The topsoil and subsoil are fine sandy loams, with a dense substratum of loamy sand. Estimated seasonal high water tables range from 20 to 28", and are typically at or slightly above the dense restrictive layer. Because of the seasonal high water table and the mineral restrictive layer, the hydrologic group is C.

547	Walpole very stony	523	C

This soil is the dominant wetland hydric soil type on site. The soil is typically fine sandy loam topsoil and subsoil, with a loamy sand substratum. Estimated water tables are at the surface to a depth of 12 inches. Inclusions would be areas of dense substratum and, in the wetland on the south side of the site, inclusions of Scitico silt loam adjacent the Boxford map unit would be found. The hydrologic group is C. Each of the wetland map units have stream channels that flow northeast to Axe Handle Brook.

7. RESPONSIBLE SOIL SCIENTIST

Name: James P. Gove

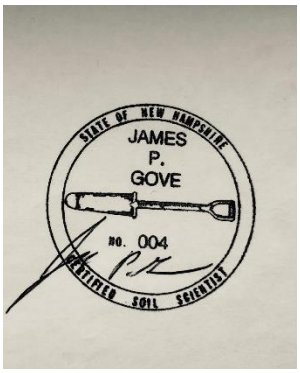
Certified Soil Scientist Number: 004

8. OTHER DISTINGUISHING FEATURES OF SITE

Is the site in a natural condition? For the most part.

If no, what is the nature of the disturbance? The placement of the cell tower and access road to the tower.

Stamp of CSS



11-2-2021

JONES & BEACH ENGINEERS INC.
85 Portsmouth Avenue, PO Box 219, Stratham, NH 03885
603.772.4746 - JonesandBeach.com

STORMWATER MANAGEMENT OPERATION AND MAINTENANCE MANUAL

Wadleigh Road Apartments
Tax Map 137 Lot 35-1
Route 125
Rochester, NH 03839

Prepared for:

Groen Construction
120 Washington Street
Suite 302
Rochester, NH 03839

Prepared by:
Jones & Beach Engineers, Inc.
85 Portsmouth Avenue
P.O. Box 219
Stratham, NH 03885
(603) 772-4746
February 10, 2022
JBE Project No. 21137

Inspection and Maintenance of Facilities and Property

A. Maintenance of Common Facilities or Property

1. The Apartment Complex, future owners and assigns are responsible to perform the maintenance obligations or hire a Professional Engineer to review the site on an annual basis for maintenance and certification of the stormwater system. The Owner shall keep receipts and records of all maintenance companies hired throughout the year to submit along with the following form. The annual report and certification shall be submitted to City of Rochester DPW upon request.

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. Catch basins and drain manholes
    b. Culverts
    c. Swales
    d. Vegetation and landscaping
    e. Parking lots and roadways
    f. Riprap inlet and outlet protection aprons
    g. Bio-retention systems
    h. Focal Point Bioretention
    i. Stormtech Underground Detention System
    j. Roof drains
    k. Rock Slope Ptetection
    l. Invasive Species Control

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

    a. Normal winter roadway and parking lot maintenance including plowing and snow removal.

    b. Road and parking lot sweeping at the end of every winter, preferably at the start of the spring rain season.

c. **Inspection** of culvert inlets and outlets at least **once per month** during the rainy season (March to November). Any debris is to be removed and disposed of properly by owner or owner's agent.

d. **Annual inspection** of the site for erosion, destabilization, settling, and sloughing. Any needed repairs are to be conducted immediately.

e. **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.

f. **Annual inspection** of catch basins and drain manholes to determine if they need to be cleaned. Catch basins 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 catch basin significantly exceeds the one-half depth standard during the inspection, then it should be cleaned more frequently. If woody debris or trash accumulates in a catch basin, then it should be cleaned on a weekly basis. Manholes should be cleaned of any material upon inspection. Catch basins and 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 should be stored, treated, and disposed. Grease hoods are to be wiped clean and the rags disposed of properly. Debris obscuring the grate inlet should also be removed.

g. Permanent stone slope protection should be **inspected annually** in order to ensure that they are in good condition. Any loose rocks or any signs of erosion under the slope should be repaired or replaced immediately. Woody vegetation should not be allowed to become established in riprap areas, and/or any debris removed from the void spaces between the rocks. If the riprap is adjacent to a stream or other waterbody, the water should be kept clear of obstructions, debris, and sediment deposits

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

i. Raingarden - Bioretention Cells:

- Visually inspect monthly and repair erosion. Use small stones to stabilize erosion along drainage paths.

- Check the pH once a year if plantings are not surviving. Apply an alkaline product, such as limestone, if needed.
- Re-mulch any void areas by hand as needed.
- Every 6 months, in the spring and fall, add a fresh mulch layer.
- Once every 2 to 3 years, in the spring, remove old mulch layer before applying new one.
- Immediately after the completion of cell construction, water plant material for 14 consecutive days unless there is sufficient natural rainfall.
- When trees have taken root, or at least by 6 months, remove stakes and wires.
- Once a month (more frequently in the summer), residents are encouraged to visually inspect vegetation for disease or pest problems and treat as required.
- Twice a year, from March 15th to April 30th and October 1st to November 30th, remove and replace all dead and diseased vegetation considered beyond treatment.
- During times of extended drought, look for physical features of stress (unrevived wilting, yellow, spotted or brown leaves, loss of leaves, etc.). Water in the early morning as needed.
- Weed regularly, if needed.
- Prune excess growth annually or more often, if desired. Trimmed materials may be recycled back in with replenished mulch or land filled if there is a concern of heavy metals accumulation.
- After rainstorms, inspect the cell and make sure that drainage paths are clear and that ponding water dissipates over 4-6 hours. (Water may pond for longer times during the winter and early spring.)
- KEEP IN MIND, THE BIORETENTION CELL IS NOT A POND. IT SHOULD NOT PROVIDE A BREEDING GROUND FOR MOSQUITOES. MOSQUITOES NEED AT LEAST FOUR (4) DAYS OF STANDING WATER TO DEVELOP AS LARVA.

j. FocalPoint Biofiltration Systems

A. Maintenance Requirements

1. Annual maintenance generally consists of two (2) scheduled visits unless otherwise specified.

2. Each maintenance visit consists of the following:

    1. *Complete system inspection*

    2. *Removal of foreign debris, silt, plant material, trash and mulch (if needed)*

    3. *Evaluation of biofiltration media*

    4. *Evaluation of plant health*

5. *Inspection of underdrain/storage system via Observation/Maintenance Port*

6. *Properly dispose of all maintenance refuse items (trash, mulch, etc.)*

7. *Take photographs documenting plant growth and general system health*

8. *Update and store maintenance records*

9. *To ensure long term performance of the HPMBS, continuing annual maintenance should be performed per the manufacturer's Operations and Maintenance Manual.*

3. If sediment accumulates beyond an acceptable level in the underdrain/storage system, it will be necessary to flush the underdrain. This can be done by pumping water into the Observation/Maintenance Port or adjacent overflow structure, allowing the turbulent flows through the underdrain to re-suspend the fine sediments. If multiple Observation/Maintenance Ports have been installed, water should be pumped into each port to maximize flushing efficiency.

   Sediment-laden water can be pumped out and either captured for disposal or filtered through a Dirtbag filter bag, if permitted by the locality.

k. Vegetated Buffers:

Inspect buffer at least annually for signs of erosion, sediment buildup, or vegetation loss. If a meadow buffer, provide periodic mowing as needed to maintain a healthy stand of herbaceous vegetation. If a forested buffer, then the buffer should be maintained in an undisturbed condition, unless erosion occurs. If erosion of the buffer (forested or meadow) occurs, eroded areas should be repaired and replanted with vegetation similar to the remaining buffer. Corrective action should include eliminating the source of the erosion problem, and may require retrofit with a level spreader. Remove debris and accumulated sediment, based on inspection.

l. Roof Drip Edges:

The following recommendations will help assure that the roof drip edges are 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 should be replaced, or additional rock added in order to maintain the structure(s) in their undamaged state. Woody vegetation should not be allowed to become established in

stone areas, and/or any debris removed from the void spaces between the stones. Also inspect the roof collection and piping (if any) and clean and repair as necessary.

m. Roof Drains:

Roof drains should be **inspected annually,** preferably in the fall after leaf drop. Drains should be kept clear, and any debris that may clog a drain such as tennis balls, baseballs, beverage cans, etc. should be removed during each inspection. Every drain should have a clean "leaf" grate present to prevent clogging of the drainpipes. A roof inspection in the late fall should also include the removal of leaves. Outfalls should be inspected to assure a clear drainage path.

WHAT TO LOOK FOR:

Although improper roof drainage can best be observed immediately after a rain storm, most impacted drainage conditions will leave "tell-tale" indications even after standing water has evaporated:

1. Accumulated Debris. Debris frequently accumulates in ponding areas. Because water eventually evaporates from impacted areas, a concentric pattern of debris or dirt is a good indication of a ponding condition.
2. Visible Sagging or Deflection.
3. Discoloration of Curbs and Walls. The discoloration may be due to a build-up of snow or ice, or it may be an indication that water may "back up" during very severe rain storms.

n. Invasive Species Control

An invasive plant is a non-native plant that is able to persist and proliferate outside of cultivation, resulting in ecological and/or economic harm. These plants readily colonize disturbed areas and habitat edges, such as transportation and river corridors. Once established in these areas, invasive plants often continue to spread to adjacent habitats. All invasive plant species are aggressive competitors with the ability to significantly reduce diversity of native plant and animal species.

For additional information refer to the "New Hampshire Department of Transportation: *Best Management Practices for Roadside Invasive Plants*"

1. **Invasive Plant Prevention:**

Invasive plants spread by a variety of mechanisms, including birds, wind, and water. Human activities are also a major factor in the spread of these plants, from gardening and transport of nursery stock to erosion control and wildlife plantings. Routine maintenance and construction activities along transportation corridors can

also play a significant role in the spread of invasive plants by dispersing or introducing seeds and other viable plant materials.

Eliminating or reducing the spread and establishment of invasive plants requires a proactive approach, in which there are two key elements. First, new introductions, especially those that occur due to human activities, must be avoided to the maximum extent possible. Second, there must be an emphasis on early detection and eradication of new populations. Control measures are far more likely to be successful, as well as significantly less expensive, on small, young populations rather than on larger, more established populations, as shown in Figure 1.

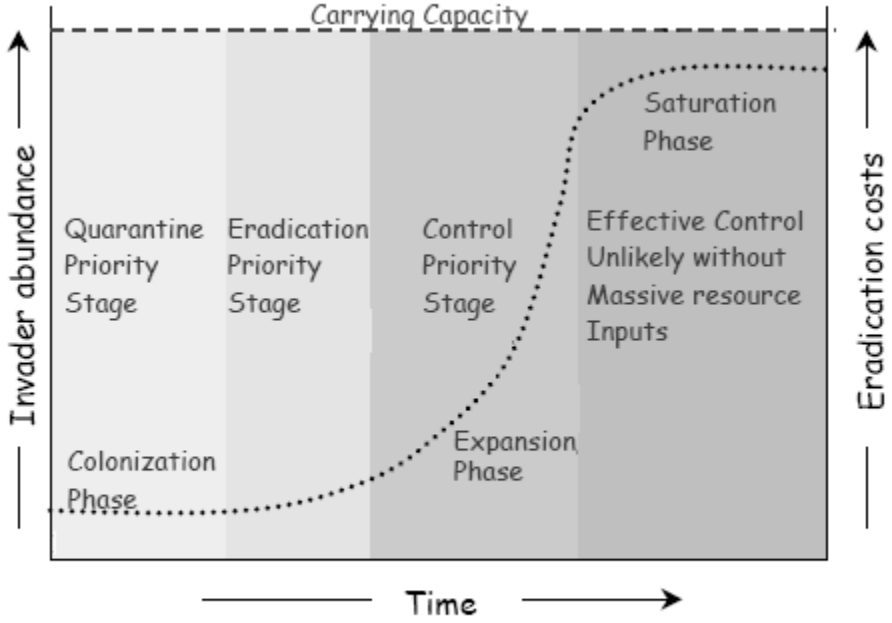


Figure 1. Typical invasive species population curve (from the University of Arizona and USGS Desert Laboratory http://wwwpaztcn.wr.usgs.gov)

2. Best Management Practices

Soil Disturbance and Stabilization:

- BMP #1: Minimize soil disturbance whenever possible. Invasive plants readily colonize areas of disturbed soil. Monitor recent work sites for the emergence of invasive plants for a minimum of two years after project completion.

- BMP #2: Stabilize disturbed soils as soon as possible by seeding and/or using mulch, hay, rip-rap, or gravel that is free of invasive plant material. Seeds of native species should be used whenever possible. Species on the prohibited invasive plant list should never be planted.

- BMP #3: Materials such as fill, loam, mulch, hay, rip-rap, and gravel should not be brought into project areas from sites where invasive plants are known to occur. If the absence of invasive plant parts in these materials cannot be guaranteed, recent work sites should be monitored for the emergence of invasive plants for a minimum of two years after project completion.

Movement and Maintenance of Equipment:

- BMP #4: If work in areas containing invasive plants cannot be avoided, then the movement of maintenance and construction equipment should be from areas not infested by invasive plants to areas infested by invasive plants whenever possible. This is especially important during ditch cleaning and shoulder scraping activities.

- BMP #5: Locate and use staging areas that are free of invasive plants to avoid spreading seeds and other viable plant parts.

- BMP #6: If equipment must be used in areas where invasive plants occur, all equipment, machinery, and hand tools should be cleaned of all visible soil and plant material before leaving the project site. Equipment should be cleaned at the site of infestation. Acceptable methods of cleaning include, but are not limited to: *ƒ* Portable wash station that contains runoff from washing equipment (containment must be in compliance with wastewater discharge regulations); *ƒ* High pressure air; Brush, broom, or other hand tools (used without water).

- BMP #7: If equipment must be used in areas containing Japanese knotweed, phragmites, or purple loosestrife, aboveground plant material should be cut and properly disposed of (see BMP #11) prior to the start of work. If excavation occurs in these areas, see BMPs #13-16.

Mowing:

- BMP #8: These invasive plants have the ability to sprout from stem and root fragments: purple loosestrife, phragmites, and Japanese knotweed. Mowing these plants should be avoided whenever possible. Staking roadside populations of these plants as “do not mow” is one way to accomplish this. If these plants are cut, all plant material must be rendered nonviable and extra care should be taken to avoid spreading plant fragments (see BMP #11).

- BMP #9: In areas where invasive plants occur and the plants listed in BMP #8 (purple loosestrife, phragmites, and Japanese knotweed) are not present, an attempt should be made to mow the right-of-way prior to seed maturation (approximately August 1st). This could be accomplished by identifying specific roads that are either heavily infested with invasive plants or roads that are in sensitive habitat areas, and making those roads a priority in the mowing schedule.

- BMP #10: Mowing equipment should be cleaned at least daily, as well as prior to transport (see BMP #6). This is particularly important if mowing occurs after seed maturation (after August 1st).

Disposal of Plants:

- BMP #11: When invasive plants are cut or removed for roadside maintenance, construction, or control of plants, the spread of viable plant material must be avoided by rendering plant material nonviable. The following methods can be used to destroy plant material:
  - Drying/Liquefying: For large amounts of plant material or for plants with rigid stems, place the material on asphalt, tarps, or heavy plastic, and cover with tarps or heavy plastic to prevent the material from blowing away. For smaller amounts of plant material or for plants with pliable stems, bag the material in heavyduty (3-mil or thicker) garbage bags. Keep plant material covered or bagged for at least one month. Material is nonviable when it is partially decomposed, very slimy, or brittle. Once material is nonviable, it can be disposed of in a landfill or brush pile. Recommended for: Japanese knotweed, purple loosestrife, phragmites.
  - Brush Piles: Plant material from most invasive plants can be piled on site to dry out. However, when piling purple loosestrife, phragmites, and Japanese knotweed, care must be taken to pile stems so that cut surfaces are not in contact with the soil. Recommended for: Woody shrubs, trees, and vines; spotted knapweed; large quantities of purple loosestrife, phragmites, and Japanese knotweed. NOT recommended for: any invasive plant with seeds or fruit attached, unless plants can be piled within the limits of the infestation.
  - Burying: Plant material from most invasive plants can be buried a minimum of three feet below grade. This method is best used on a job site that already has disturbed soils. Recommended for: any invasive plant. NOT recommended for: Japanese knotweed, unless other options are not feasible and knotweed can be buried at the site of infestation at least five feet below grade. *f*
  - Burning: Plant material should be taken to a designated burn pile. (All necessary permits must be obtained before burning.) Recommended for: any invasive plant, especially purple loosestrife, phragmites, Japanese knotweed.

    - Herbicide: Herbicide applications must be carried out by a licensed applicator with a permit from the NH Department of Agriculture Division of Pesticide Control. Recommended for: any invasive plant, especially purple loosestrife, phragmites, Japanese knotweed.

- BMP #12: Invasive plant material must be covered during transport.

Excavated Material:

- BMP #13: Excavated material taken from sites that contain invasive plants cannot be used away from the site of infestation until all viable plant material is destroyed. Excavated material from areas containing invasive plants may be reused within the exact limits of the infestation.

- BMP #14: Any excavated material that contains viable plant material and is not reused within the limits of the infestation must be stockpiled on an impervious surface until viable plant material is destroyed OR the material must be disposed of by burying a minimum of three feet below grade. Japanese knotweed must be buried at least five feet below grade.

- BMP #15: Whenever possible, excavation should be avoided in areas containing Japanese knotweed, purple loosestrife, and phragmites. If excavation does occur in these areas, the BMPs described in Section II must be followed.

- BMP #16: Soil and other materials containing invasive plants must be covered during transport.

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.
85 Portsmouth Avenue
P.O. Box 219
Stratham, NH 03885

T#: (603) 772-4746
F#: (603) 772-0227

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

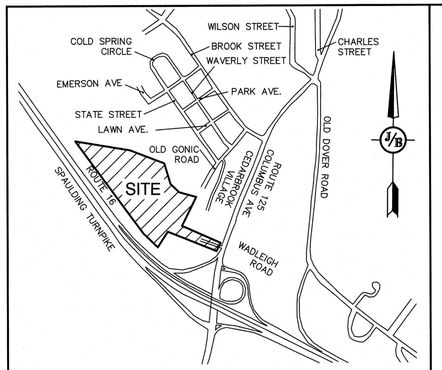
_____
Date

Annual Operations and Maintenance Report

The Wadleigh Road Apartments, future owners and assigns are responsible to perform the maintenance obligations or hire a Professional Engineer to review the site on an annual basis for maintenance and certification of the stormwater system. The Owner or Authorized Agent shall keep receipts and records of all maintenance companies hired throughout the year to submit along with the following form. The annual report and certification shall be submitted to the City of Rochester DPW upon request.

Construction Activity	**Date of Inspection**	**Who Inspected**	**Findings of Inspector**
Catch basins and drain manholes			
Culverts			
Swales			
Vegetation and landscaping			
Parking lots and roadways			

Bio-retention system			
Focal Points			
Stormtech Underground Detention System			
Inlet Protection			
Slope Protection			
Outlet Protection			



LOCUS SCALE: 1"=1000'

LEGEND

- SUBCATCHMENT BOUNDARY
- SUBCATCHMENT (X)
- REACH [X]
- POND (X)
- TC PATH
- WETLANDS
- HISS SOILS
- FLOW ARROW

GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)
1 inch = 60 ft.

PROJECT PARCEL
CITY OF -ROCHESTER
TAX MAP 137, LOT 35-1

APPLICANT
GROEN CONSTRUCTION
120 WASHINGTON STREET
SUITE 302
ROCHESTER NH 03839

TOTAL LOT AREA
8.4 ACRES±

Design: LAZ	Draft: LAZ	Date: 9/8/21
Checked: BAJ	Scale: 1"=30'	Project No.:21137
Drawing Name: 21137-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.

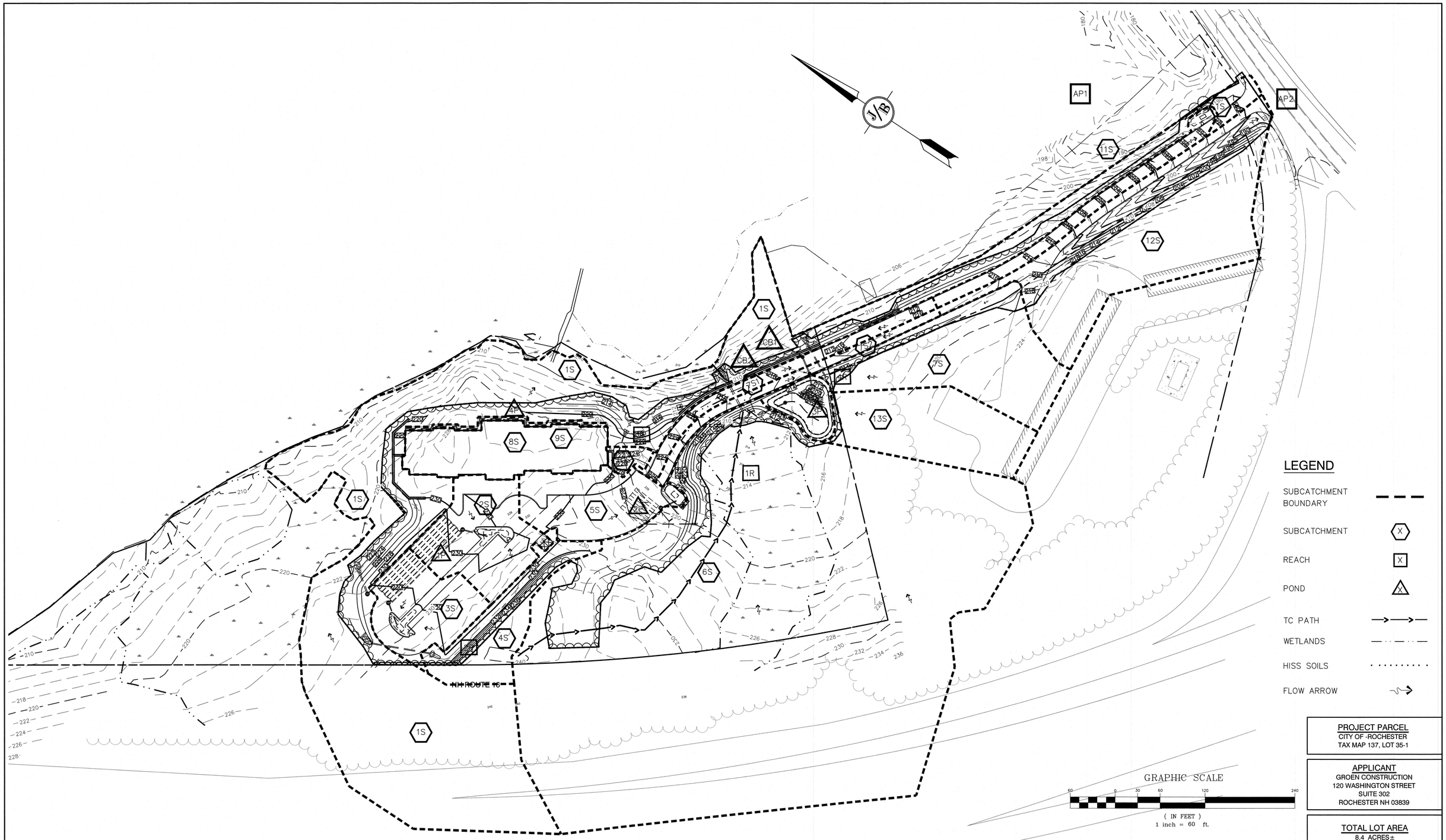
STATE OF NEW HAMPSHIRE – MICHAEL J. KERVAN No. 9645 – LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
2	12/14/21	REVISED FOR PLANNING BOARD SUBMISSION	MJK
1	9/21/21	ISSUED FOR PLANNING BOARD	LAZ
0	9/8/21	ISSUED FOR REVIEW	LAZ

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
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	EXISTING WATERSHED PLAN
Project:	WADLEIGH ROAD APARTMENTS ROCHESTER, NH
Owner of Record:	SSG, LLC ATTN: FENTON GROEN 120 WASHINGTON STREET, ROCHESTER, NH 03839

DRAWING No.
W1
SHEET 1 OF 2
JBE PROJECT NO. 21137



PROJECT PARCEL
CITY OF -ROCHESTER
TAX MAP 137, LOT 35-1

APPLICANT
GROEN CONSTRUCTION
120 WASHINGTON STREET
SUITE 302
ROCHESTER NH 03839

TOTAL LOT AREA
8.4 ACRES±

Design: LAZ	Draft: LAZ	Date: 9/8/21
Checked: BAJ	Scale: 1"=30'	Project No.:21137
Drawing Name: 21137-PLAN.dwg		

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STATE OF NEW HAMPSHIRE – MICHAEL J. KERRIVAN No. 9846 LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
2	12/14/21	REVISED FOR PLANNING BOARD SUBMISSION	MJK
1	9/21/21	ISSUED FOR PLANNING BOARD	LAZ
0	9/8/21	ISSUED FOR REVIEW	LAZ

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
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

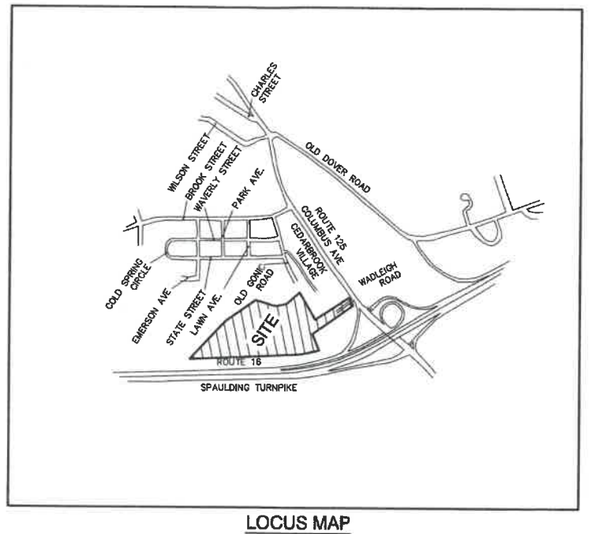
Plan Name:	PROPOSED WATERSHED PLAN
Project:	WADLEIGH ROAD APARTMENTS ROCHESTER, NH
Owner of Record:	SSG, LLC ATTN: FENTON GROEN 120 WASHINGTON STREET, ROCHESTER, NH 03839

DRAWING No.
W2
SHEET 2 OF 2
JBE PROJECT NO. **21137**

RESIDENTIAL DEVELOPMENT
"WADLEIGH ROAD APARTMENTS"
TAX MAP 137, LOT 35-1
WADLEIGH ROAD, ROCHESTER, NH

GENERAL LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY LINES
		SETBACK LINES
		CENTERLINE
		FRESHWATER WETLANDS LINE
		STREAM CHANNEL
		TREE LINE
		STONEWALL
		FENCE
		SOIL BOUNDARY
		FLOOD PLAIN LINE
		EASEMENT
100	100	MAJOR CONTOUR
98	98	MINOR CONTOUR
WC	WC	EDGE OF PAVEMENT
VG	VG	VERTICAL GRANITE CURB
SG	SG	SLOPE GRANITE CURB
X	X	SILT FENCE
D	D	DRAINAGE LINE
S	S	SEWER LINE
G	G	GAS LINE
W	W	WATER LINE
W	W	WATER SERVICE
OHE	OHE	OVERHEAD ELECTRIC
UGE	UGE	UNDERGROUND ELECTRIC
		GUARDRAIL
		UNDERDRAIN
FP	FP	FIRE PROTECTION LINE
		THRUST BLOCK
		IRON PIPE/IRON ROD
		DRILL HOLE
		IRON ROD/DRILL HOLE
		STONE/GRANITE BOUND
x 100.00	x 100.00	PAVEMENT SPOT GRADE
		BENCHMARK (TBM)
		DOUBLE POST SIGN
		SINGLE POST SIGN
TP1	TP1	TEST PIT
		FAILED TEST PIT
		MONITORING WELL
		TREES AND BUSHES
		UTILITY POLE
		LIGHT POLES
		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
		WETLAND IMPACT
		RIPRAP
		OPEN WATER
		FRESHWATER WETLANDS
		STABILIZED CONSTRUCTION ENTRANCE
		CONCRETE
		GRAVEL
		SNOW STORAGE
		RETAINING WALL



LOCUS MAP
SCALE 1" = 1000'

SHEET INDEX

CS	COVER SHEET
OVR EX	OVERVIEW EXISTING CONDITIONS PLAN
C1-C2	EXISTING CONDITIONS PLAN
OVR S	OVERVIEW SITE PLAN
C3-C4	SITE PLAN
C5-C6	GRADING AND DRAINAGE PLAN
C7	EROSION CONTROL PLAN
P1-P2	ROAD PLAN AND PROFILE
P3-P4	SEWER PROFILE
U1-U2	UTILITY PLAN
L1	LANDSCAPE PLAN
L2-L3	LIGHTING PLAN
D1-D5	DETAIL SHEETS
D6	SELECT CROSS SECTIONS
E1	EROSION AND SEDIMENT CONTROL DETAILS
T1	TRUCK TURNING PLAN

CIVIL ENGINEER / SURVEYOR
JONES & BEACH ENGINEERS, INC.
85 PORTSMOUTH AVENUE
PO BOX 219
STRATHAM, NH 03885
(603) 772-4746
CONTACT: BRAD JONES
EMAIL: BJONES@JONESANDBEACH.COM

TRAFFIC ENGINEER
STEPHEN G. PERNAW & COMPANY, INC.
P.O. BOX 1821
CONCORD, NH 03302
(603) 731-8500
CONTACT: STEPHEN G. PERNAW
EMAIL: SGP@PERNAW.COM

WETLAND CONSULTANT
GOVE ENVIRONMENTAL SERVICES, INC.
8 CONTINENTAL DR., BUILDING 2, UNIT H
EXETER, NH 03833-7526
(603) 778-0644
CONTACT: JAMES GOVE
EMAIL: JGOVE@GESINC.BIZ

LANDSCAPE DESIGNER
LM LAND DESIGN, LLC
11 SOUTH ROAD
BRENTWOOD, NH 03833
(603) 770-7728
CONTACT: LISE McNAUGHTON
LMLANDDESIGN@GMAIL.COM

WATER AND SEWER
ROCHESTER DEPARTMENT OF PUBLIC WORKS
45 OLD DOVER ROAD
ROCHESTER, NH 03867
(603) 332-4096
CONTACT: MICHAEL BEZANSON, P.E.

ELECTRIC
EVERSOURCE ENERGY
74 OLD DOVER ROAD
ROCHESTER, NH 03867
(603) 332-7507
CONTACT: PIERRE BOUGIE

TELEPHONE
CONSOLIDATED COMMUNICATIONS
1575 GREENLAND ROAD
GREENLAND, NH 03840
(603) 427-5525
CONTACT: JOE CONSIDINE

CABLE TV
COMCAST COMMUNICATION CORPORATION
334-B CALEF HIGHWAY
EPPING, NH 03042-2325
(603) 679-5695

NATURAL GAS
UNITIL SERVICE CORP.
325 WEST ROAD
PORTSMOUTH, NH 03801
(603) 294-5261
MACLEAND@UNITIL.COM

PROJECT PARCEL
CITY OF -ROCHESTER
TAX MAP 137, LOT 35-1

APPLICANT
GROEN CONSTRUCTION
120 WASHINGTON STREET
SUITE 302
ROCHESTER NH 03839

TOTAL LOT AREA
8.4 ACRES±

APPROVED - ROCHESTER, NH
PLANNING BOARD

DATE:

Design: LAZ	Draft: LAZ	Date: 9/8/21
Checked: BAJ	Scale: AS NOTED	Project No.: 21137
Drawing Name: 21137-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 – MICHAEL J. KERWAN No. 9346 – LICENSED – SURVEYOR
2/10/2022

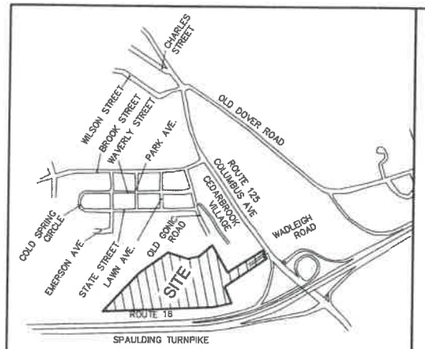
REV.	DATE	REVISION	BY
5	2/10/22	REVISED PER CITY COMMENTS	LAZ
4	1/14/22	REVISED PER CITY COMMENTS	LAZ
3	12/14/21	REVISED PER CITY COMMENTS	LAZ
2	12/6/21	REVISED PER CONSERVATION COMMISSION COMMENTS	LAZ
1	9/21/21	ISSUED FOR PLANNING BOARD	LAZ

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 FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	COVER SHEET
Project:	WADLEIGH ROAD APARTMENTS ROCHESTER, NH
Owner of Record:	SSG, LLC ATTN: FENTON GROEN 120 WASHINGTON STREET, ROCHESTER, NH 03839

DRAWING No.
CS
SHEET 1 OF 27
JBE PROJECT NO. 21137

PROJECT NAME AND LOCATION
JBE # 21137 REVISION 12/14/21



LOCUS SCALE: 1"=1000'

EXISTING CONDITIONS NOTES:

1. THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING CONDITIONS AND BOUNDARY ON TAX MAP 137, LOT 35-1. EXISTING CONDITIONS SURVEY WAS PERFORMED IN AUGUST THROUGH NOVEMBER, 2021.
2. 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 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. SUBJECT PROPERTY IS PARTIALLY LOCATED WITHIN FEDERALLY DESIGNATED 100 YEAR FLOOD HAZARD ZONE. REFERENCE FEMA COMMUNITY PANEL NO. 33017 C0211D, DATED MAY 17, 2005.
4. THE LIMITS OF JURISDICTIONAL WETLANDS WERE DELINEATED BY GOVE ENVIRONMENTAL DURING SUMMER, 2021, USING (EQUIPMENT) AND 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.
7. A TEMPORARY CULVERT AND ROADBED SHALL BE IN PLACE PRIOR TO ANY USE OF A WETLAND CROSSING.
8. WETLAND IMPACTS SHALL NOT OCCUR UNTIL ALL PERMITS HAVE BEEN ACQUIRED AND IMPACT MITIGATION REQUIREMENTS HAVE BEEN SATISFIED.
9. TEST PITS PERFORMED BY GOVE ENVIRONMENTAL SERVICES, INC., 10/1/21.
10. WETLAND BOUNDARIES AND CONSTRUCTION LIMITS ARE TO BE CLEARLY MARKED PRIOR TO THE START OF CONSTRUCTION.
11. BASIS OF BEARING: HORIZONTAL – SPCS NH. VERTICAL – NAVD 88.
12. CERTAIN DATA HEREON MAY VARY FROM RECORDED DATA DUE TO DIFFERENCES IN DECLINATION, ORIENTATION, AND METHODS OF MEASUREMENT.
13. ALL BOOK AND PAGE NUMBERS REFER TO THE STRAFFORD COUNTY REGISTRY OF DEEDS.
14. THE TAX MAP AND LOT NUMBERS ARE BASED ON THE TOWN OF ROCHESTER TAX RECORDS AND ARE SUBJECT TO CHANGE.
15. RESEARCH WAS PERFORMED AT THE TOWN OF ROCHESTER ASSESSOR'S OFFICE AND THE STRAFFORD COUNTY REGISTRY OF DEEDS.
16. 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.
17. 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.
15. THIS PLAN IS THE RESULT OF A CLOSED TRAVERSE WITH A RAW, UNADJUSTED LINEAR ERROR OF CLOSURE GREATER THAN 1 IN 15,000.
16. 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.
17. THE EDGE OF BROOK AS SHOWN HEREON WAS HELD PER RECORD PLAN REFERENCE #1 AND DEED, HOWEVER RIPARIAN RIGHTS MAY EXTEND TO THE CENTER OF SAID BROOK.

PLAN REFERENCES:

1. "PLAN OF LAND PARCEL NO. 5 TAX ASSESSOR'S MAP NO. 59 AND PARCEL NO. 2 TAX ASSESSOR'S MAP NO. 8 NEW HAMPSHIRE ROUTE 125 PREPARED FOR JEN-SCOT REALTY, INC."; PREPARED BY CIVILWORKS ENGINEERS AND SURVEYORS; DATED NOVEMBER 8, 1989 RECORDED AT THE STRAFFORD COUNTY REGISTRY OF DEEDS AS PLAN P37A-028.
2. "CEDARBROOK VILLAGE CONDOMINIUM DEVELOPMENT BOUNDARY SURVEY FOR ROUNDHOUSE REALTY TRUST ROCHESTER, NH"; PREPARED BY BERRY CONST. CO., INC.; DATED APRIL 23, 1986; RECORDED AT THE STRAFFORD COUNTY REGISTRY OF DEEDS AS PLAN P23-059.
3. "THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION, RIGHT-OF-WAY PLANS, PROJECT NO. 10620-D, SPAULDING TURNPIKE, NH ROUTE 16" BY STANTEC, SCALE 1"=50', DATED JANUARY 11, 2011, PLAN 10620-D ON FILE AT THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION.

SOIL NOTES:

THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR INFILTRATION REQUIREMENTS BY THE NH DES ALTERATION OF TERRAIN BUREAU. IT WAS PRODUCED BY A PROFESSIONAL SOIL SCIENTIST, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE. THERE IS A REPORT THAT ACCOMPANIES THIS MAP.

THE SITE SPECIFIC SOIL SURVEY (SSSS) WAS PRODUCED NOVEMBER 2, 2021, AND WAS PREPARED BY JAMES P. GOVE, CSS # 004, GOVE ENVIRONMENTAL SERVICES, INC. THE SURVEY AREA IS LOCATED AT 29 WADLEIGH ROAD, ROCHESTER, NH.

SOILS WERE IDENTIFIED WITH THE NEW HAMPSHIRE STATE-WIDE NUMERICAL SOILS LEGEND, USDA NRCS, DURHAM, NH. ISSUE # 10, JANUARY 2011. THE NUMERIC LEGEND WAS AMENDED TO IDENTIFY THE CORRECT SOIL COMPONENTS OF THE COMPLEX.

HYDROLOGIC SOIL GROUP FROM KSAT VALUES FOR NEW HAMPSHIRE SOILS, SOCIETY OF SOIL SCIENTISTS OF NEW ENGLAND, SPECIAL PUBLICATION NO. 5, SEPTEMBER, 2009.

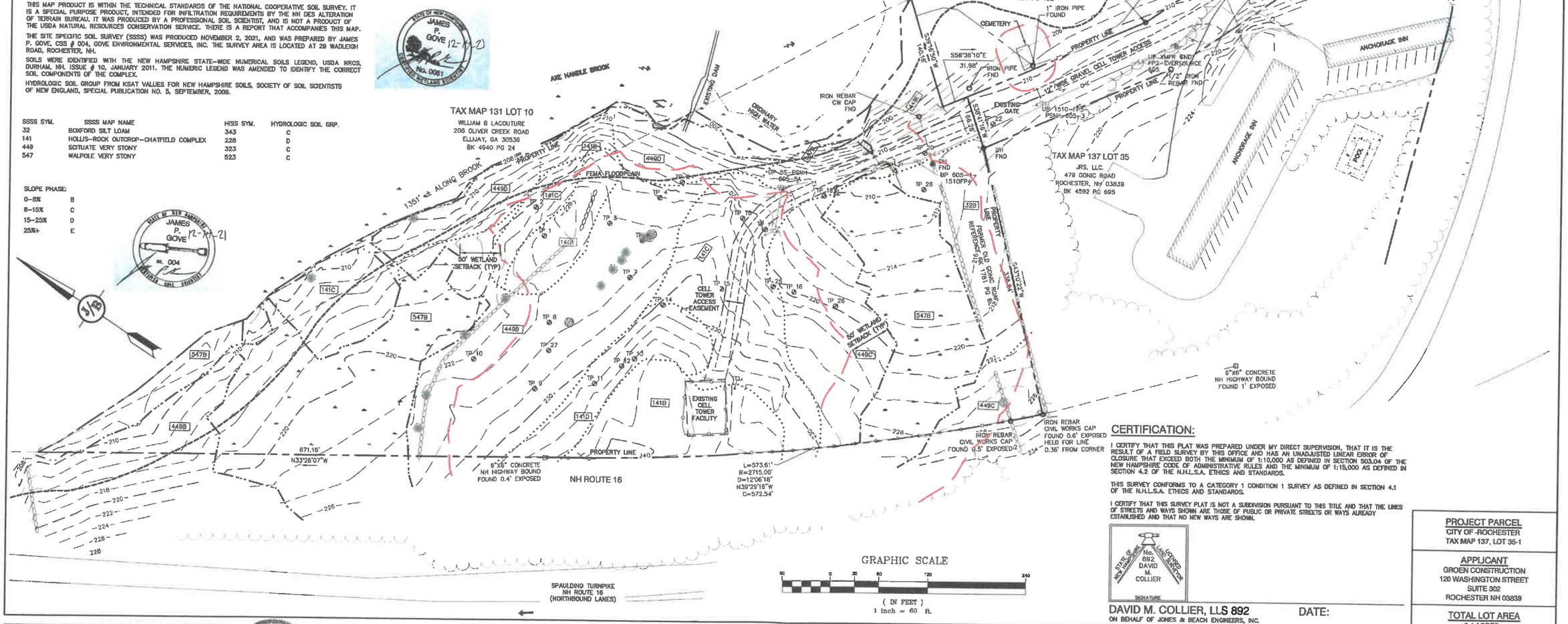
SSSS SYM.	SSSS MAP NAME	HISS SYM.	HYDROLOGIC SOIL GRP.
32	BOXFORD SILT LOAM	343	C
141	HOLLIS-ROCK OUTCROP-CHATFIELD COMPLEX	228	D
449	SCITUATE VERY STONY	323	C
547	WALPOLE VERY STONY	523	C

SLOPE PHASE:

0-8%	B
8-15%	C
15-25%	D
25%+	E

STATE OF NEW HAMPSHIRE JAMES P. GOVE 12-14-21 No. 004 CERTIFIED SOIL SCIENTIST

STATE OF NEW HAMPSHIRE JAMES P. GOVE 12-14-21 No. 0081 CERTIFIED WETLAND SCIENTIST



GRAPHIC SCALE

50 0 30 60 120 240

(IN FEET)
1 inch = 60 ft.

CERTIFICATION:

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.

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STATE OF NEW HAMPSHIRE No. 892 DAVID M. COLLIER LICENSED LAND SURVEYOR SIGNATURE

DAVID M. COLLIER, LLS 892 DATE:
ON BEHALF OF JONES & BEACH ENGINEERS, INC.

PROJECT PARCEL
CITY OF ROCHESTER
TAX MAP 137, LOT 35-1

APPLICANT
GROEN CONSTRUCTION
120 WASHINGTON STREET
SUITE 302
ROCHESTER NH 03839

TOTAL LOT AREA
8.4 ACRES±

Design: LAZ	Draft: LAZ	Date: 9/8/21
Checked: BAJ	Scale: 1"=30'	Project No.: 21137
Drawing Name: 21137-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.

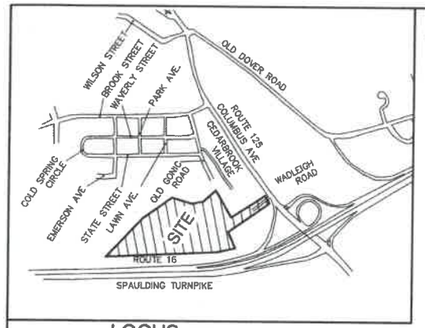
STATE OF NEW HAMPSHIRE MICHAEL J. KERIVAN No. 9648 LICENSED LAND SURVEYOR 2/14/22

REV.	DATE	REVISION	BY
5	2/10/22	REVISED PER CITY COMMENTS	LAZ
4	1/14/22	REVISED PER CITY COMMENTS	LAZ
3	12/14/21	REVISED PER CITY COMMENTS	LAZ
2	12/6/21	REVISED PER CONSERVATION COMMISSION COMMENTS	LAZ
1	9/21/21	ISSUED FOR PLANNING BOARD	LAZ

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
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: **EXISTING CONDITIONS OVERVIEW PLAN**
Project: WADLEIGH ROAD APARTMENTS ROCHESTER, NH
Owner of Record: SSG, LLC ATTN: FENTON GROEN 120 WASHINGTON STREET, ROCHESTER, NH 03839

DRAWING No.
OVR EX
SHEET 2 OF 27
JBE PROJECT NO. 21137



LOCUS SCALE: 1"=1000'

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STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR No. 892 DAVID M. COLLIER SIGNATURE

DAVID M. COLLIER, LLS 892 DATE:
ON BEHALF OF JONES & BEACH ENGINEERS, INC.

STATE OF NEW HAMPSHIRE JAMES P. GOVE 12-17-21 No. 004

STATE OF NEW HAMPSHIRE JAMES P. GOVE 12-17-21 No. 0051 CERTIFIED SOIL SCIENTIST

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft

PROJECT PARCEL
CITY OF -ROCHESTER
TAX MAP 137, LOT 35-1

APPLICANT
GROEN CONSTRUCTION
120 WASHINGTON STREET
SUITE 302
ROCHESTER NH 03839

TOTAL LOT AREA
8.4 ACRES±

Design: LAZ	Draft: LAZ
Checked: BAJ	Scale: 1"=30'
Drawing Name: 21137-PLAN.dwg	

Date: 8/8/21
Project No.: 21137

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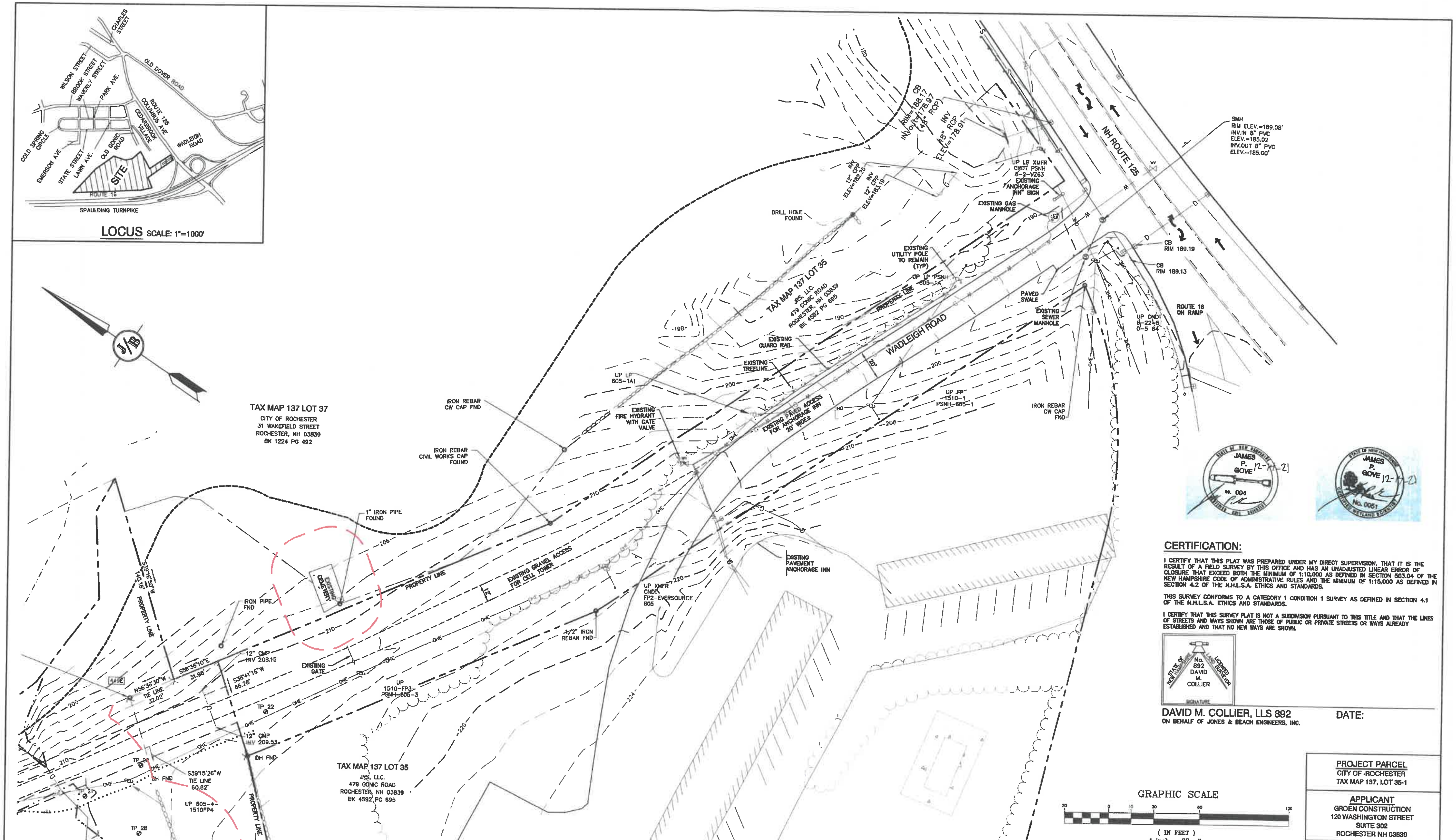
STATE OF NEW HAMPSHIRE MICHAEL J. KERVAN No. 9946 LICENSED PROFESSIONAL ENGINEER
2/14/2022

REV.	DATE	REVISION	BY
5	2/10/22	REVISED PER CITY COMMENTS	LAZ
4	1/14/22	REVISED PER CITY COMMENTS	LAZ
3	12/14/21	REVISED PER CITY COMMENTS	LAZ
2	12/6/21	REVISED PER CONSERVATION COMMISSION COMMENTS	LAZ
1	9/21/21	ISSUED FOR PLANNING BOARD	LAZ

Designed and Produced In NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave. Civil Engineering Services 603-772-4746
PO Box 219 FAX: 603-772-0227
Stratham, NH 03885 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	EXISTING CONDITIONS PLAN
Project:	WADLEIGH ROAD APARTMENTS ROCHESTER, NH
Owner of Record:	SSG, LLC ATTN: FENTON GROEN 120 WASHINGTON STREET, ROCHESTER, NH 03839

DRAWING No.
C1
SHEET 3 OF 27
JBE PROJECT NO. 21137



LOCUS SCALE: 1"=1000'
SITE
ROUTE 16
SPAULDING TURNPIKE
CHARLES STREET
OLD DOVER ROAD
WILSON STREET
BROOK STREET
WAVERLY STREET
PARK AVE.
ROUTE 125 COLUMBUS AVE
CEDARBROOK VILLAGE
WADLEIGH ROAD
COLD SPRING CIRCLE
EMERSON AVE.
STATE STREET
LAWN AVE.
OLD GONIC ROAD
TAX MAP 137 LOT 37
CITY OF ROCHESTER
31 WAKEFIELD STREET
ROCHESTER, NH 03839
BK 1224 PG 492
TAX MAP 137 LOT 35
JRS, LLC.
479 GONIC ROAD
ROCHESTER, NH 03839
BK 4592 PG 695
NH ROUTE 125
WADLEIGH ROAD
ROUTE 16 ON RAMP
EXISTING ANCHORAGE INN
EXISTING PAVEMENT ANCHORAGE INN
EXISTING GRAVEL ACCESS FOR CELL TOWER
EXISTING PAVED ACCESS FOR ANCHORAGE INN 20' WIDE
EXISTING CEMETERY
PROPERTY LINE
EXISTING GUARD RAIL
EXISTING TREELINE
EXISTING FIRE HYDRANT WITH GATE VALVE
EXISTING GATE
EXISTING GAS MANHOLE
EXISTING SEWER MANHOLE
PAVED SWALE
DRILL HOLE FOUND
1" IRON PIPE FOUND
IRON PIPE FND
IRON REBAR CW CAP FND
IRON REBAR CIVIL WORKS CAP FOUND
1/2" IRON REBAR FND
SMH
RIM ELEV.=189.08'
INV.IN 8" PVC
ELEV.=185.02
INV.OUT 8" PVC
ELEV.=185.00'
CB RIM 189.19
CB RIM 189.13
GRAPHIC SCALE
(IN FEET)
1 inch = 30 ft.

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STATE OF NEW HAMPSHIRE No. 892 DAVID M. COLLIER LICENSED LAND SURVEYOR

SIGNATURE

DAVID M. COLLIER, LLS 892
ON BEHALF OF JONES & BEACH ENGINEERS, INC.

DATE:

PROJECT PARCEL
CITY OF ROCHESTER
TAX MAP 137, LOT 35-1

APPLICANT
GROEN CONSTRUCTION
120 WASHINGTON STREET
SUITE 302
ROCHESTER NH 03839

TOTAL LOT AREA
8.4 ACRES±

Design: LAZ	Draft: LAZ	Date: 9/8/21
Checked: BAJ	Scale: 1"=30'	Project No.: 21137
Drawing Name: 21137-PLAN.dwg		

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STATE OF NEW HAMPSHIRE MICHAEL J. KERIVAN No. 0646 LICENSED PROFESSIONAL ENGINEER 2/14/2022

REV.	DATE	REVISION	BY
5	2/10/22	REVISED PER CITY COMMENTS	LAZ
4	1/14/22	REVISED PER CITY COMMENTS	LAZ
3	12/14/21	REVISED PER CITY COMMENTS	LAZ
2	12/6/21	REVISED PER CONSERVATION COMMISSION COMMENTS	LAZ
1	9/21/21	ISSUED FOR PLANNING BOARD	LAZ

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Civil Engineering Services
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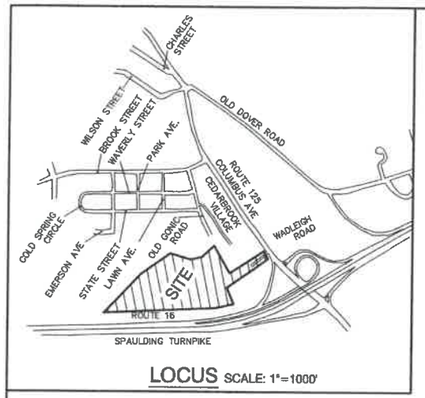
PO Box 219
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	EXISTING CONDITIONS PLAN
Project:	WADLEIGH ROAD APARTMENTS ROCHESTER, NH
Owner of Record:	SSG, LLC ATTN: FENTON GROEN 120 WASHINGTON STREET, ROCHESTER, NH 03839

DRAWING No.
C2
SHEET 4 OF 27
JBE PROJECT NO. 21137



LOCUS SCALE: 1"=1000'

J/B

TAX MAP 131 LOT 8
CEDARBROOK VILLAGE CONDO ASSOCIATION
14A CEDARBROOK VILLAGE
ROCHESTER, NH 03867
BK 1161 PG 202

AXE HANDLE BROOK

TAX MAP 137 LOT 37
CITY OF ROCHESTER
31 WAKEFIELD STREET
ROCHESTER, NH 03839
BK 1224 PG 492

TAX MAP 131 LOT 10
WILLIAM B LACOUTURE
208 OLIVER CREEK ROAD
ELIJAY, GA 30536
BK 4940 PG 24

EXISTING SIDEWALK
PROPOSED BUS SHELTER
EXISTING "ANCHORAGE INN" SIGN
COLUMBUS AVENUE AKA NH ROUTE 125
DRILL HOLE FOUND
EXISTING GUARD RAIL TO REMAIN
EXISTING 20'± ACCESS ROAD TO BE WIDENED TO 22' TRAVELWAY WITH 4' BIKE LANE
TAX MAP 137 LOT 35
JRS, LLC.
479 GONIC ROAD
ROCHESTER, NH 03839
BK 4592 PG 695
WADLEIGH ROAD
IRON REBAR CW CAP FND
SLOPED GRANITE CURB BOTH SIDES
1 REBAR IKS CAP FOUND
1" IRON PIPE FOUND
RETAINING WALL WITH GUARD RAIL
PROPERTY LINE
25' BUFFER
S56°36'10"E 31.98'
IRON PIPE FND
S33°15'50"W 178.78'
END ANCHORAGE INN DRIVEWAY RECONSTRUCTION
1/2" REBAR FND
EXISTING DAM
ORDINARY HIGH WATER
IRON REBAR CW CAP FND
RETAINING WALL WITH GUARD RAIL
FEMA FLOODPLAIN
1351'± ALONG BROOK
PROPERTY LINE
RETAINING WALL WITH FENCE
PROPOSED BUILDING 52 UNITS 17,874 SF FOOTPRINT
BIKE RACK
GUARD RAIL
FORMER OLD GONIC ROAD REFERENCE BK 1781 PG 869
S43°10'22"W 138.54'
GATED ACCESS FOR CELL TOWER
50' WETLAND SETBACK (TYP)
PROPOSED FENCED DUMPSTERS ON CONCRETE DUMPER PAD
RELOCATED GRAVEL ACCESS FOR CELL TOWER
WOODED PICNIC AND RECREATION AREA
EXISTING CELL TOWER FACILITY
PROPOSED TREELINE
PROPERTY LINE
671.16' N33°26'07"W
6"X6" CONCRETE NH HIGHWAY BOUND FOUND 0.4' EXPOSED
BOULDER RETAINING WALL 4' HIGH MAX.
NH ROUTE 16
L=573.61' R=2715.00' D=12°06'18" N39°29'16"W C=572.54'
IRON REBAR CIVIL WORKS CAP FOUND 0.5' EXPOSED
IRON REBAR CIVIL WORKS CAP FOUND 0.6' EXPOSED HELD FOR LINE 0.35' FROM CORNER
6"X6" CONCRETE NH HIGHWAY BOUND FOUND 1' EXPOSED

GRAPHIC SCALE
60 0 30 60 120 240
(IN FEET)
1 inch = 60 ft.

PROJECT PARCEL
CITY OF -ROCHESTER
TAX MAP 137, LOT 35-1

APPLICANT
GROEN CONSTRUCTION
120 WASHINGTON STREET
SUITE 302
ROCHESTER NH 03839

TOTAL LOT AREA
8.4 ACRES±

Design: LAZ	Draft: LAZ	Date: 9/8/21
Checked: BAJ	Scale: 1"=30'	Project No.: 21137
Drawing Name: 21137-PLAN.dwg		

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STATE OF NEW HAMPSHIRE - MICHAEL J. KERVIAN No. 9946 LICENSED PROFESSIONAL ENGINEER - 2/14/2022

REV.	DATE	REVISION	BY
5	2/10/22	REVISED PER CITY COMMENTS	LAZ
4	1/14/22	REVISED PER CITY COMMENTS	LAZ
3	12/14/21	REVISED PER CITY COMMENTS	LAZ
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1	9/21/21	ISSUED FOR PLANNING BOARD	LAZ

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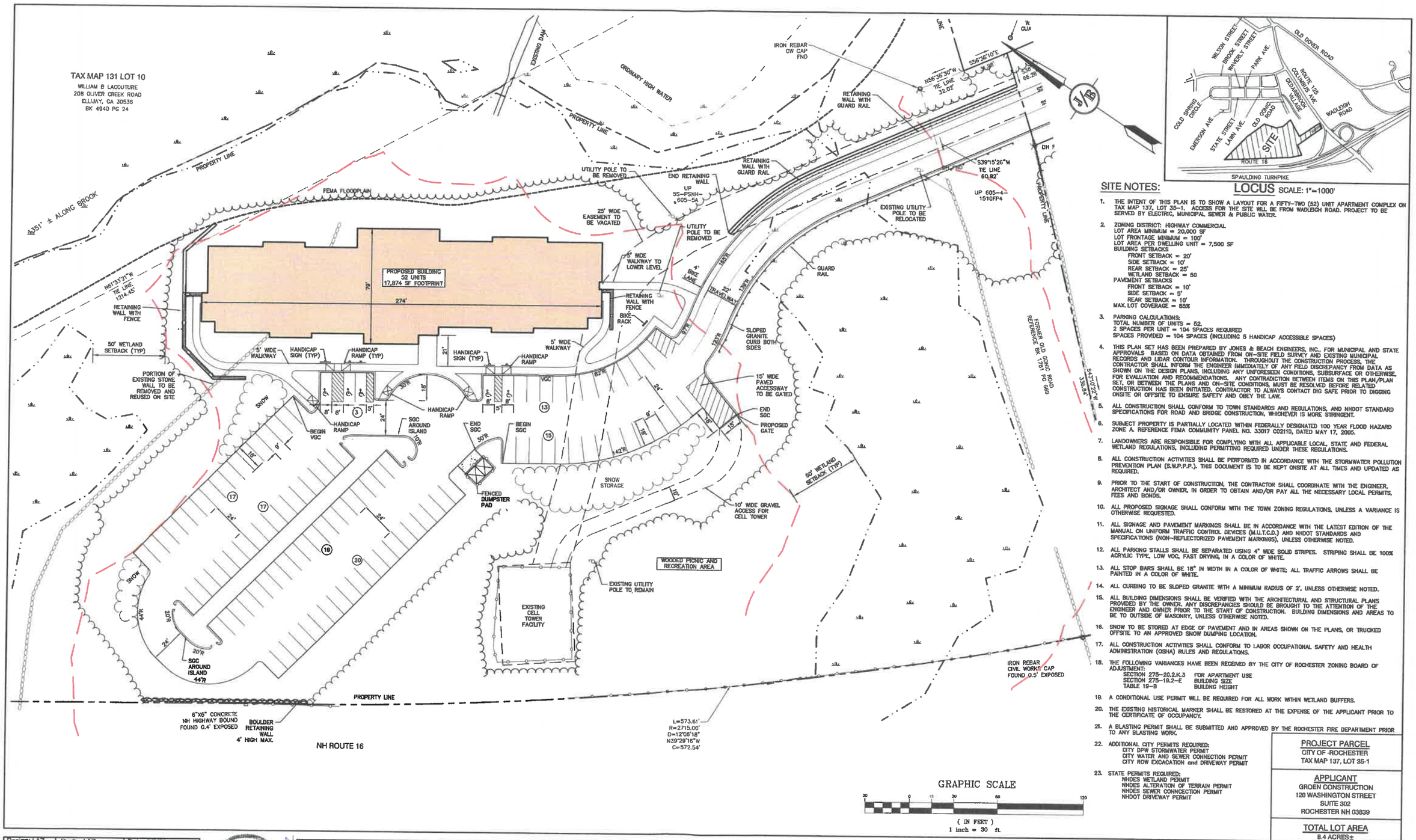
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
Civil Engineering Services
603-772-4746 FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	OVERVIEW SITE PLAN
Project:	WADLEIGH ROAD APARTMENTS ROCHESTER, NH
Owner of Record:	SSG, LLC ATTN: FENTON GROEN 120 WASHINGTON STREET, ROCHESTER, NH 03839

DRAWING No.
C2
SHEET 5 OF 27
JBE PROJECT NO. 21137



LOCUS SCALE: 1"=1000'

SITE NOTES:

1. THE INTENT OF THIS PLAN IS TO SHOW A LAYOUT FOR A FIFTY-TWO (52) UNIT APARTMENT COMPLEX ON TAX MAP 137, LOT 35-1. ACCESS FOR THE SITE WILL BE FROM WADLEIGH ROAD. PROJECT TO BE SERVED BY ELECTRIC, MUNICIPAL SEWER & PUBLIC WATER.
2. ZONING DISTRICT: HIGHWAY COMMERCIAL
   LOT AREA MINIMUM = 20,000 SF
   LOT FRONTAGE MINIMUM = 100'
   LOT AREA PER DWELLING UNIT = 7,500 SF
   BUILDING SETBACKS
   FRONT SETBACK = 20'
   SIDE SETBACK = 10'
   REAR SETBACK = 25'
   WETLAND SETBACK = 50
   PAVEMENT SETBACKS
   FRONT SETBACK = 10'
   SIDE SETBACK = 5'
   REAR SETBACK = 10'
   MAX LOT COVERAGE = 65%
3. PARKING CALCULATIONS:
   TOTAL NUMBER OF UNITS = 52.
   2 SPACES PER UNIT = 104 SPACES REQUIRED
   SPACES PROVIDED = 104 SPACES (INCLUDING 5 HANDICAP ACCESSIBLE SPACES)
4. THIS PLAN SET HAS BEEN PREPARED BY JONES & BEACH ENGINEERS, INC., FOR MUNICIPAL AND STATE APPROVALS BASED ON DATA OBTAINED FROM ON-SITE FIELD SURVEY AND EXISTING MUNICIPAL RECORDS AND LIDAR CONTOUR INFORMATION. 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.
5. ALL CONSTRUCTION SHALL CONFORM TO TOWN STANDARDS AND REGULATIONS, AND NHDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, WHICHEVER IS MORE STRINGENT.
6. SUBJECT PROPERTY IS PARTIALLY LOCATED WITHIN FEDERALLY DESIGNATED 100 YEAR FLOOD HAZARD ZONE A. REFERENCE FEMA COMMUNITY PANEL NO. 33017 C0211D, DATED MAY 17, 2005.
7. LANDOWNERS ARE RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL WETLAND REGULATIONS, INCLUDING PERMITTING REQUIRED UNDER THESE REGULATIONS.
8. 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.
9. 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.
10. ALL PROPOSED SIGNAGE SHALL CONFORM WITH THE TOWN ZONING REGULATIONS, UNLESS A VARIANCE IS OTHERWISE REQUESTED.
11. 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.
12. 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.
13. ALL STOP BARS SHALL BE 18" IN WIDTH IN A COLOR OF WHITE; ALL TRAFFIC ARROWS SHALL BE PAINTED IN A COLOR OF WHITE.
14. ALL CURBING TO BE SLOPED GRANITE WITH A MINIMUM RADIUS OF 2', UNLESS OTHERWISE NOTED.
15. ALL BUILDING DIMENSIONS SHALL BE VERIFIED WITH THE ARCHITECTURAL AND STRUCTURAL PLANS PROVIDED BY THE OWNER. ANY DISCREPANCIES SHOULD 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.
16. SNOW TO BE STORED AT EDGE OF PAVEMENT AND IN AREAS SHOWN ON THE PLANS, OR TRUCKED OFFSITE TO AN APPROVED SNOW DUMPING LOCATION.
17. ALL CONSTRUCTION ACTIVITIES SHALL CONFORM TO LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) RULES AND REGULATIONS.
18. THE FOLLOWING VARIANCES HAVE BEEN RECEIVED BY THE CITY OF ROCHESTER ZONING BOARD OF ADJUSTMENT:
    SECTION 275-20.2.K.3 FOR APARTMENT USE
    SECTION 275-19.2-E BUILDING SIZE
    TABLE 19-B BUILDING HEIGHT
19. A CONDITIONAL USE PERMIT WILL BE REQUIRED FOR ALL WORK WITHIN WETLAND BUFFERS.
20. THE EXISTING HISTORICAL MARKER SHALL BE RESTORED AT THE EXPENSE OF THE APPLICANT PRIOR TO THE CERTIFICATE OF OCCUPANCY.
21. A BLASTING PERMIT SHALL BE SUBMITTED AND APPROVED BY THE ROCHESTER FIRE DEPARTMENT PRIOR TO ANY BLASTING WORK.
22. ADDITIONAL CITY PERMITS REQUIRED:
    CITY DPW STORMWATER PERMIT
    CITY WATER AND SEWER CONNECTION PERMIT
    CITY ROW EXCACATION and DRIVEWAY PERMIT
23. STATE PERMITS REQUIRED:
    NHDES WETLAND PERMIT
    NHDES ALTERATION OF TERRAIN PERMIT
    NHDES SEWER CONNCECTION PERMIT
    NHDOT DRIVEWAY PERMIT

PROJECT PARCEL
CITY OF ROCHESTER
TAX MAP 137, LOT 35-1

APPLICANT
GROEN CONSTRUCTION
120 WASHINGTON STREET
SUITE 302
ROCHESTER NH 03839

TOTAL LOT AREA
8.4 ACRES±

Design: LAZ	Draft: LAZ
Checked: BAJ	Scale: 1"=30'
Date: 9/8/21	Project No.: 21137
Drawing Name: 21137-PLAN.dwg	

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STATE OF NEW HAMPSHIRE – MICHAEL J. KERIVAN No. 9646 – LICENSED PROFESSIONAL ENGINEER – 2/14/2022

REV.	DATE	REVISION	BY
5	2/10/22	REVISED PER CITY COMMENTS	LAZ
4	1/14/22	REVISED PER CITY COMMENTS	LAZ
3	12/14/21	REVISED PER CITY COMMENTS	LAZ
2	12/8/21	REVISED PER CONSERVATION COMMISSION COMMENTS	LAZ
1	9/21/21	ISSUED FOR PLANNING BOARD	LAZ

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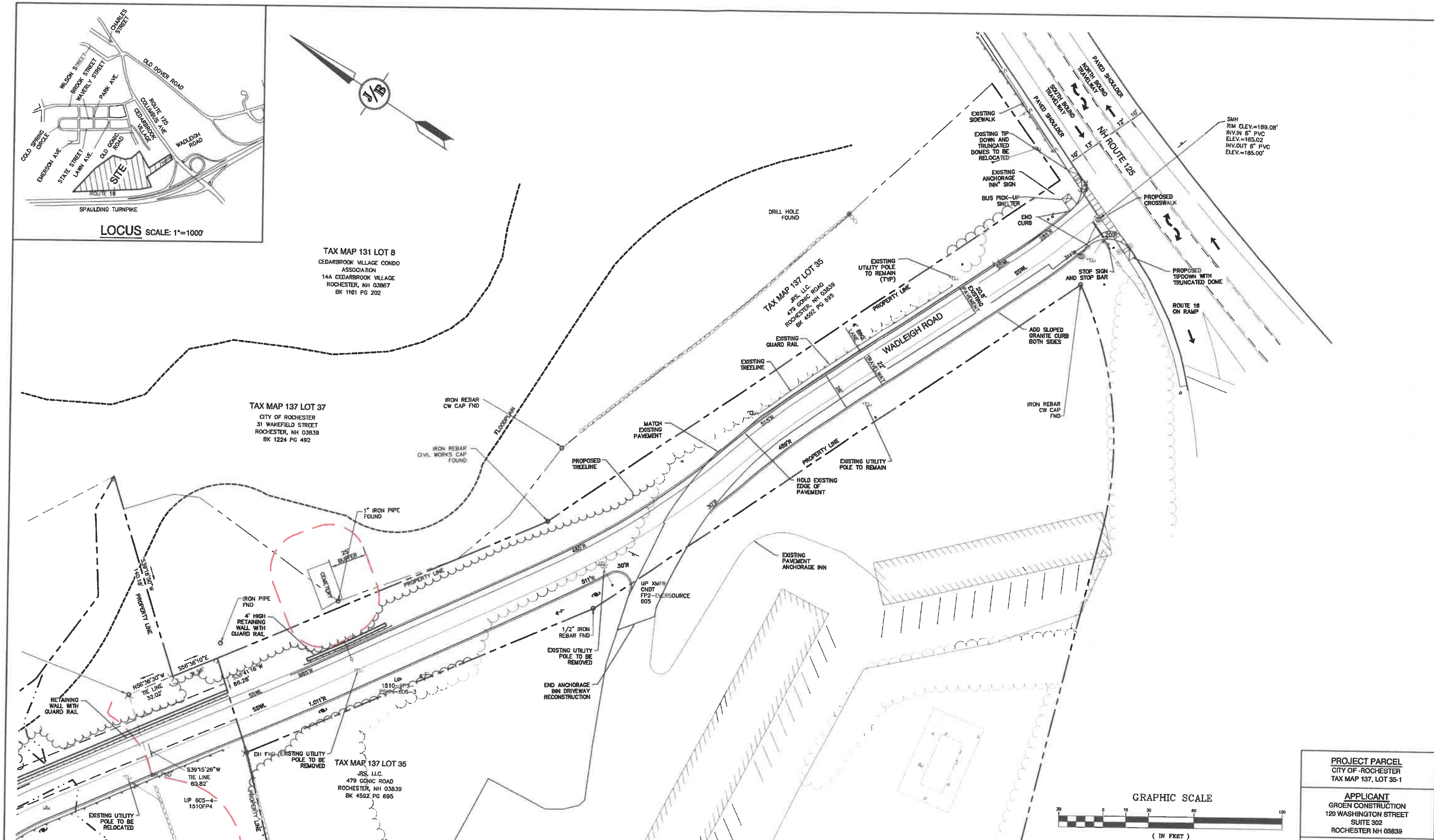
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	SITE PLAN
Project:	WADLEIGH ROAD APARTMENTS ROCHESTER, NH
Owner of Record:	SSG, LLC ATTN: FENTON GROEN 120 WASHINGTON STREET, ROCHESTER, NH 03839

DRAWING No.
C3
SHEET 6 OF 27
JBE PROJECT NO. 21137


LOCUS SCALE: 1"=1000'
CHARLES STREET
OLD DOVER ROAD
WILSON STREET
BROOK STREET
WAVERLY STREET
PARK AVE.
ROUTE 125 COLUMBUS AVE
CEDARBROOK VILLAGE
COLD SPRING CIRCLE
EMERSON AVE
STATE STREET
LAWN AVE.
OLD GONIC ROAD
WADLEIGH ROAD
SITE
ROUTE 16
SPAULDING TURNPIKE
TAX MAP 131 LOT 8
CEDARBROOK VILLAGE CONDO ASSOCIATION
14A CEDARBROOK VILLAGE
ROCHESTER, NH 03867
BK 1161 PG 202
TAX MAP 137 LOT 37
CITY OF ROCHESTER
31 WAKEFIELD STREET
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BK 1224 PG 492
TAX MAP 137 LOT 35
JRS, LLC.
479 GONIC ROAD
ROCHESTER, NH 03839
BK 4592 PG 695
DRILL HOLE FOUND
EXISTING SIDEWALK
EXISTING TIP DOWN AND TRUNCATED DOMES TO BE RELOCATED
EXISTING ANCHORAGE INN SIGN
BUS PICK-UP SHELTER
END CURB
PAVED SHOULDER
NORTH BOUND TRAVELWAY
SOUTH BOUND TRAVELWAY
NH ROUTE 125
SMH
RIM ELEV.=189.08'
INV.IN 8" PVC
ELEV.=185.02
INV.OUT 8" PVC
ELEV.=185.00'
PROPOSED CROSSWALK
PROPOSED TIPDOWN WITH TRUNCATED DOME
ROUTE 16 ON RAMP
STOP SIGN AND STOP BAR
EXISTING UTILITY POLE TO REMAIN (TYP)
PROPERTY LINE
WADLEIGH ROAD
20.5' EXISTING PAVEMENT
4' BIKE LANE
22' TRAVELWAY
ADD SLOPED GRANITE CURB BOTH SIDES
EXISTING GUARD RAIL
EXISTING TREELINE
IRON REBAR CW CAP FND
MATCH EXISTING PAVEMENT
PROPOSED TREELINE
IRON REBAR CIVIL WORKS CAP FOUND
FLOODPLAIN
EXISTING UTILITY POLE TO REMAIN
HOLD EXISTING EDGE OF PAVEMENT
1" IRON PIPE FOUND
25' BUFFER
CEMETERY
EXISTING PAVEMENT ANCHORAGE INN
UP XMFR CNDT FP2-EVERSOURCE 605
1/2" IRON REBAR FND
EXISTING UTILITY POLE TO BE REMOVED
END ANCHORAGE INN DRIVEWAY RECONSTRUCTION
IRON PIPE FND
4' HIGH RETAINING WALL WITH GUARD RAIL
S39°16'50"W 140.18'
S56°38'10"E
N56°38'30"W TIE LINE 32.02'
S33°41'16"W 86.28'
RETAINING WALL WITH GUARD RAIL
SSWL
UP 1510-FP3 PSNH-605-3
DH FND
EXISTING UTILITY POLE TO BE REMOVED
S39°15'26"W TIE LINE 60.82'
UP 605-4-1510FP4
EXISTING UTILITY POLE TO BE RELOCATED
GRAPHIC SCALE
(IN FEET)
1 inch = 30 ft.

PROJECT PARCEL
CITY OF ROCHESTER TAX MAP 137, LOT 35-1
APPLICANT GROEN CONSTRUCTION 120 WASHINGTON STREET SUITE 302 ROCHESTER NH 03839
TOTAL LOT AREA 8.4 ACRES±

Design: LAZ	Draft: LAZ	Date: 9/8/21
Checked: BAJ	Scale: 1"=30'	Project No.: 21137
Drawing Name: 21137-PLAN.dwg		

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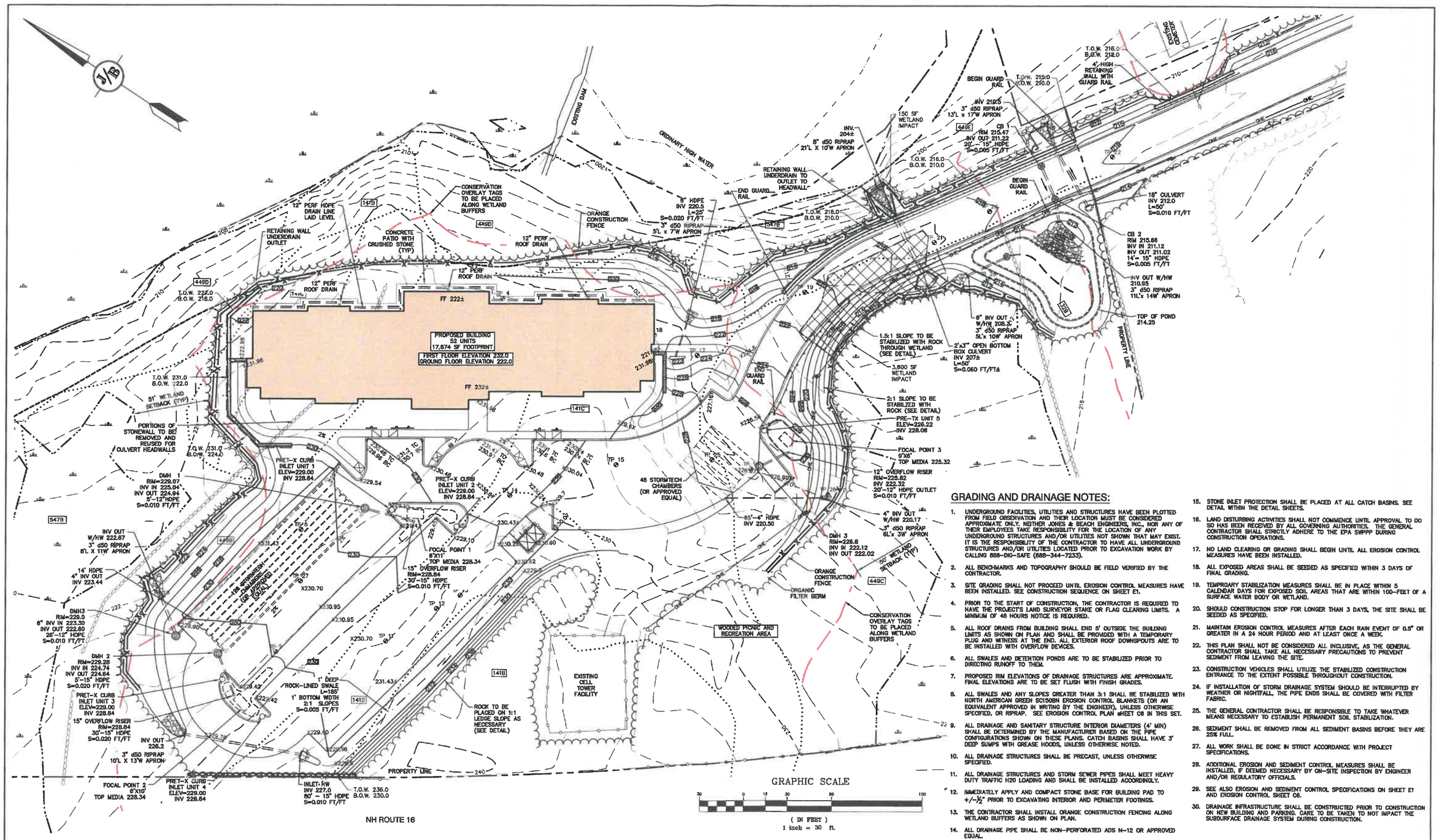
STATE OF NEW HAMPSHIRE — MICHAEL J. KERWAN — No. 9646 — LICENSED PROFESSIONAL ENGINEER — 2/14/2022

REV.	DATE	REVISION	BY
5	2/10/22	REVISED PER CITY COMMENTS	LAZ
4	1/14/22	REVISED PER CITY COMMENTS	LAZ
3	12/14/21	REVISED PER CITY COMMENTS	LAZ
2	12/6/21	REVISED PER CONSERVATION COMMISSION COMMENTS	LAZ
1	9/21/21	ISSUED FOR PLANNING BOARD	LAZ

Designed and Produced in NH
Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
603-772-4746 FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	SITE PLAN
Project:	WADLEIGH ROAD APARTMENTS ROCHESTER, NH
Owner of Record:	SSG, LLC ATTN: FENTON GROEN 120 WASHINGTON STREET, ROCHESTER, NH 03839

DRAWING No.
C4
SHEET 7 OF 27
JBE PROJECT NO. 21137



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 SHOULD 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 SC150BN EROSION CONTROL BLANKETS (OR AN EQUIVALENT APPROVED IN WRITING BY THE ENGINEER), UNLESS OTHERWISE SPECIFIED, OR RIPRAP. SEE EROSION CONTROL PLAN aSHEET C8 IN THIS SET.
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.
11. ALL DRAINAGE STRUCTURES AND STORM SEWER 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. THE CONTRACTOR SHALL INSTALL ORANGE CONSTRUCTION FENCING ALONG WETLAND BUFFERS AS SHOWN ON PLAN.
14. ALL DRAINAGE PIPE SHALL BE NON-PERFORATED ADS N-12 OR APPROVED EQUAL.
15. STONE INLET PROTECTION SHALL BE PLACED AT ALL 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. NO LAND CLEARING OR GRADING SHALL BEGIN UNTIL ALL EROSION CONTROL MEASURES HAVE BEEN INSTALLED.
18. ALL EXPOSED AREAS SHALL BE SEEDED AS SPECIFIED WITHIN 3 DAYS OF FINAL GRADING.
19. TEMPORARY STABILIZATION MEASURES SHALL BE IN PLACE WITHIN 5 CALENDAR DAYS FOR EXPOSED SOIL AREAS THAT ARE WITHIN 100-FEET OF A SURFACE WATER BODY OR WETLAND.
20. SHOULD CONSTRUCTION STOP FOR LONGER THAN 3 DAYS, THE SITE SHALL BE SEEDED AS SPECIFIED.
21. MAINTAIN EROSION CONTROL MEASURES AFTER EACH RAIN EVENT OF 0.5" OR GREATER IN A 24 HOUR PERIOD AND AT LEAST ONCE A WEEK.
22. THIS PLAN SHALL NOT BE CONSIDERED ALL INCLUSIVE, AS THE GENERAL CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SEDIMENT FROM LEAVING THE SITE.
23. CONSTRUCTION VEHICLES SHALL UTILIZE THE STABILIZED CONSTRUCTION ENTRANCE TO THE EXTENT POSSIBLE THROUGHOUT CONSTRUCTION.
24. IF INSTALLATION OF STORM DRAINAGE SYSTEM SHOULD BE INTERRUPTED BY WEATHER OR NIGHTFALL, THE PIPE ENDS SHALL BE COVERED WITH FILTER FABRIC.
25. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO TAKE WHATEVER MEANS NECESSARY TO ESTABLISH PERMANENT SOIL STABILIZATION.
26. SEDIMENT SHALL BE REMOVED FROM ALL SEDIMENT BASINS BEFORE THEY ARE 25% FULL.
27. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH PROJECT SPECIFICATIONS.
28. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED, IF DEEMED NECESSARY BY ON-SITE INSPECTION BY ENGINEER AND/OR REGULATORY OFFICIALS.
29. SEE ALSO EROSION AND SEDIMENT CONTROL SPECIFICATIONS ON SHEET E1 AND EROSION CONTROL SHEET C8.
30. DRAINAGE INFRASTRUCTURE SHALL BE CONSTRUCTED PRIOR TO CONSTRUCTION ON NEW BUILDING AND PARKING. CARE TO BE TAKEN TO NOT IMPACT THE SUBSURFACE DRAINAGE SYSTEM DURING CONSTRUCTION.

Design: LAZ	Draft: LAZ	Date: 9/8/21
Checked: BAJ	Scale: 1"=30'	Project No.: 21137
Drawing Name: 21137-PLAN.dwg		

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STATE OF NEW HAMPSHIRE — MICHAEL A. KENYON No. 5860 — LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
5	2/10/22	REVISED PER CITY COMMENTS	LAZ
4	1/14/22	REVISED PER CITY COMMENTS	LAZ
3	12/14/21	REVISED PER CITY COMMENTS	LAZ
2	12/6/21	REVISED PER CONSERVATION COMMISSION COMMENTS	LAZ
1	9/21/21	ISSUED FOR PLANNING BOARD	LAZ

Designed and Produced in NH
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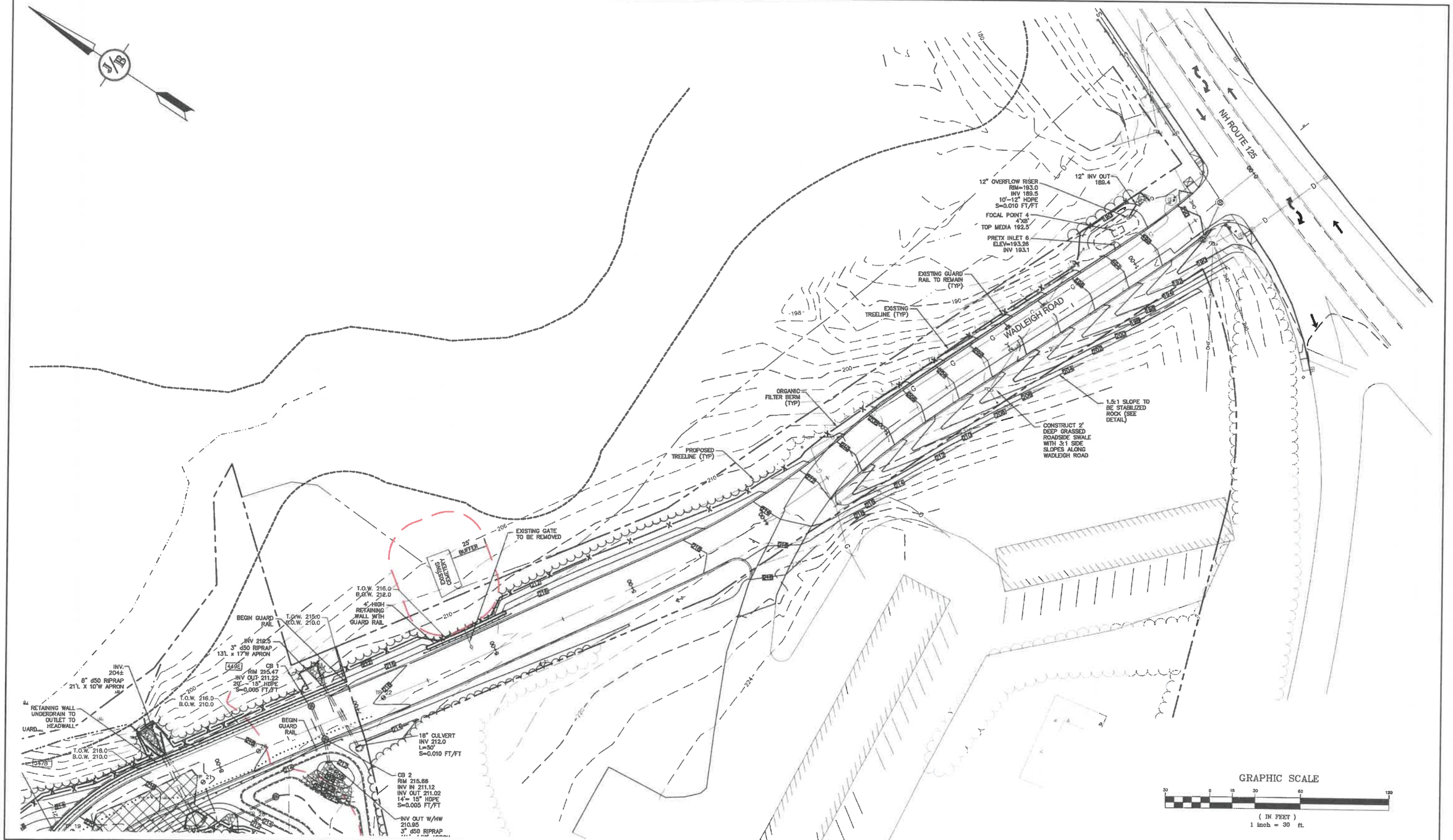
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
Civil Engineering Services
603-772-4746 FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	GRADING AND DRAINAGE PLAN
Project:	WADLEIGH ROAD APARTMENTS ROCHESTER, NH
Owner of Record:	SSG, LLC ATTN: FENTON GROEN 120 WASHINGTON STREET, ROCHESTER, NH 03839

DRAWING No.
C5
SHEET 8 OF 27
JBE PROJECT NO. 21137



Design: LAZ	Draft: LAZ	Date: 9/8/21
Checked: BAJ	Scale: 1"=30'	Project No.: 21137
Drawing Name: 21137-PLAN.dwg		

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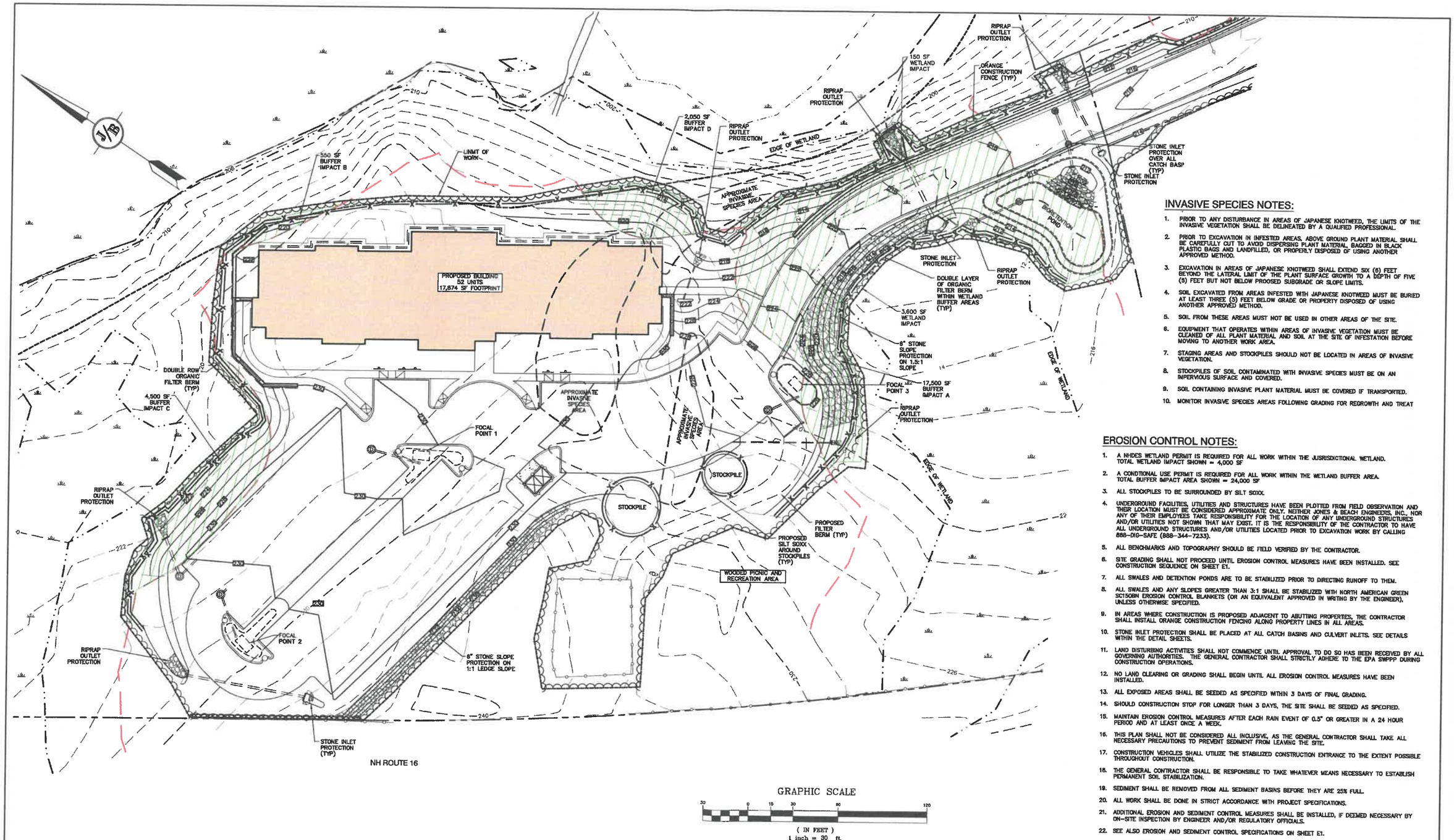
STATE OF NEW HAMPSHIRE — MICHAEL J. KERVAN No. 9946 — LICENSED PROFESSIONAL ENGINEER — 2/14/2022

REV.	DATE	REVISION	BY
6	2/10/22	REVISED PER CITY COMMENTS	LAZ
4	1/14/22	REVISED PER CITY COMMENTS	LAZ
3	12/14/21	REVISED PER CITY COMMENTS	LAZ
2	12/6/21	REVISED PER CONSERVATION COMMISSION COMMENTS	LAZ
1	9/21/21	ISSUED FOR PLANNING BOARD	LAZ

Designed and Produced In NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave. Civil Engineering Services 603-772-4746
PO Box 219 FAX: 603-772-0227
Stratham, NH 03885 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	GRADING AND DRAINAGE PLAN
Project:	WADLEIGH ROAD APARTMENTS ROCHESTER, NH
Owner of Record:	SSG, LLC ATTN: FENTON GROEN 120 WASHINGTON STREET, ROCHESTER, NH 03839

DRAWING No.
C6
SHEET 9 OF 27
JBE PROJECT NO. 21137



GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

INVASIVE SPECIES NOTES:

1. PRIOR TO ANY DISTURBANCE IN AREAS OF JAPANESE KNOTWEED, THE LIMITS OF THE INVASIVE VEGETATION SHALL BE DELINEATED BY A QUALIFIED PROFESSIONAL.
2. PRIOR TO EXCAVATION IN INFESTED AREAS, ABOVE GROUND PLANT MATERIAL SHALL BE CAREFULLY CUT TO AVOID DISPERSING PLANT MATERIAL, BAGGED IN BLACK PLASTIC BAGS AND LANDFILLED, OR PROPERLY DISPOSED OF USING ANOTHER APPROVED METHOD.
3. EXCAVATION IN AREAS OF JAPANESE KNOTWEED SHALL EXTEND SIX (6) FEET BEYOND THE LATERAL LIMIT OF THE PLANT SURFACE GROWTH TO A DEPTH OF FIVE (5) FEET BUT NOT BELOW PROOSED SUBGRADE OR SLOPE LIMITS.
4. SOIL EXCAVATED FROM AREAS INFESTED WITH JAPANESE KNOTWEED MUST BE BURIED AT LEAST THREE (3) FEET BELOW GRADE OR PROPERTY DISPOSED OF USING ANOTHER APPROVED METHOD.
5. SOIL FROM THESE AREAS MUST NOT BE USED IN OTHER AREAS OF THE SITE.
6. EQUIPMENT THAT OPERATES WITHIN AREAS OF INVASIVE VEGETATION MUST BE CLEANED OF ALL PLANT MATERIAL AND SOIL AT THE SITE OF INFESTATION BEFORE MOVING TO ANOTHER WORK AREA.
7. STAGING AREAS AND STOCKPILES SHOULD NOT BE LOCATED IN AREAS OF INVASIVE VEGETATION.
8. STOCKPILES OF SOIL CONTAMINATED WITH INVASIVE SPECIES MUST BE ON AN IMPERVIOUS SURFACE AND COVERED.
9. SOIL CONTAINING INVASIVE PLANT MATERIAL MUST BE COVERED IF TRANSPORTED.
10. MONITOR INVASIVE SPECIES AREAS FOLLOWING GRADING FOR REGROWTH AND TREAT

EROSION CONTROL NOTES:

1. A NHDES WETLAND PERMIT IS REQUIRED FOR ALL WORK WITHIN THE JUSRISDICTIONAL WETLAND. TOTAL WETLAND IMPACT SHOWN = 4,000 SF
2. A CONDTIONAL USE PERMIT IS REQUIRED FOR ALL WORK WITHIN THE WETLAND BUFFER AREA. TOTAL BUFFER IMPACT AREA SHOWN = 24,000 SF
3. ALL STOCKPILES TO BE SURROUNDED BY SILT SOXX.
4. 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).
5. ALL BENCHMARKS AND TOPOGRAPHY SHOULD BE FIELD VERIFIED BY THE CONTRACTOR.
6. SITE GRADING SHALL NOT PROCEED UNTIL EROSION CONTROL MEASURES HAVE BEEN INSTALLED. SEE CONSTRUCTION SEQUENCE ON SHEET E1.
7. ALL SWALES AND DETENTION PONDS ARE TO BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
8. ALL SWALES AND ANY SLOPES GREATER THAN 3:1 SHALL BE STABILIZED WITH NORTH AMERICAN GREEN SC150BN EROSION CONTROL BLANKETS (OR AN EQUIVALENT APPROVED IN WRITING BY THE ENGINEER), UNLESS OTHERWISE SPECIFIED.
9. IN AREAS WHERE CONSTRUCTION IS PROPOSED ADJACENT TO ABUTTING PROPERTIES, THE CONTRACTOR SHALL INSTALL ORANGE CONSTRUCTION FENCING ALONG PROPERTY LINES IN ALL AREAS.
10. STONE INLET PROTECTION SHALL BE PLACED AT ALL CATCH BASINS AND CULVERT INLETS. SEE DETAILS WITHIN THE DETAIL SHEETS.
11. 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.
12. NO LAND CLEARING OR GRADING SHALL BEGIN UNTIL ALL EROSION CONTROL MEASURES HAVE BEEN INSTALLED.
13. ALL EXPOSED AREAS SHALL BE SEEDED AS SPECIFIED WITHIN 3 DAYS OF FINAL GRADING.
14. SHOULD CONSTRUCTION STOP FOR LONGER THAN 3 DAYS, THE SITE SHALL BE SEEDED AS SPECIFIED.
15. MAINTAIN EROSION CONTROL MEASURES AFTER EACH RAIN EVENT OF 0.5" OR GREATER IN A 24 HOUR PERIOD AND AT LEAST ONCE A WEEK.
16. THIS PLAN SHALL NOT BE CONSIDERED ALL INCLUSIVE, AS THE GENERAL CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SEDIMENT FROM LEAVING THE SITE.
17. CONSTRUCTION VEHICLES SHALL UTILIZE THE STABILIZED CONSTRUCTION ENTRANCE TO THE EXTENT POSSIBLE THROUGHOUT CONSTRUCTION.
18. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO TAKE WHATEVER MEANS NECESSARY TO ESTABLISH PERMANENT SOIL STABILIZATION.
19. SEDIMENT SHALL BE REMOVED FROM ALL SEDIMENT BASINS BEFORE THEY ARE 25% FULL.
20. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH PROJECT SPECIFICATIONS.
21. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED, IF DEEMED NECESSARY BY ON-SITE INSPECTION BY ENGINEER AND/OR REGULATORY OFFICIALS.
22. SEE ALSO EROSION AND SEDIMENT CONTROL SPECIFICATIONS ON SHEET E1.
23. MARKERS SHALL BE PLACED ALONG WETLAND BOUNDARIES.

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Drawing Name: 21137-PLAN.dwg			

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STATE OF NEW HAMPSHIRE – MICHAEL J. KERVAN No. 9645 – LICENSED PROFESSIONAL ENGINEER – 2/14/2022

REV.	DATE	REVISION	BY
5	2/10/22	REVISED PER CITY COMMENTS	LAZ
4	1/14/22	REVISED PER CITY COMMENTS	LAZ
3	12/14/21	REVISED PER CITY COMMENTS	LAZ
2	12/6/21	REVISED PER CONSERVATION COMMISSION COMMENTS	LAZ
1	9/21/21	ISSUED FOR PLANNING BOARD	LAZ

Designed and Produced in NH
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85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
Civil Engineering Services
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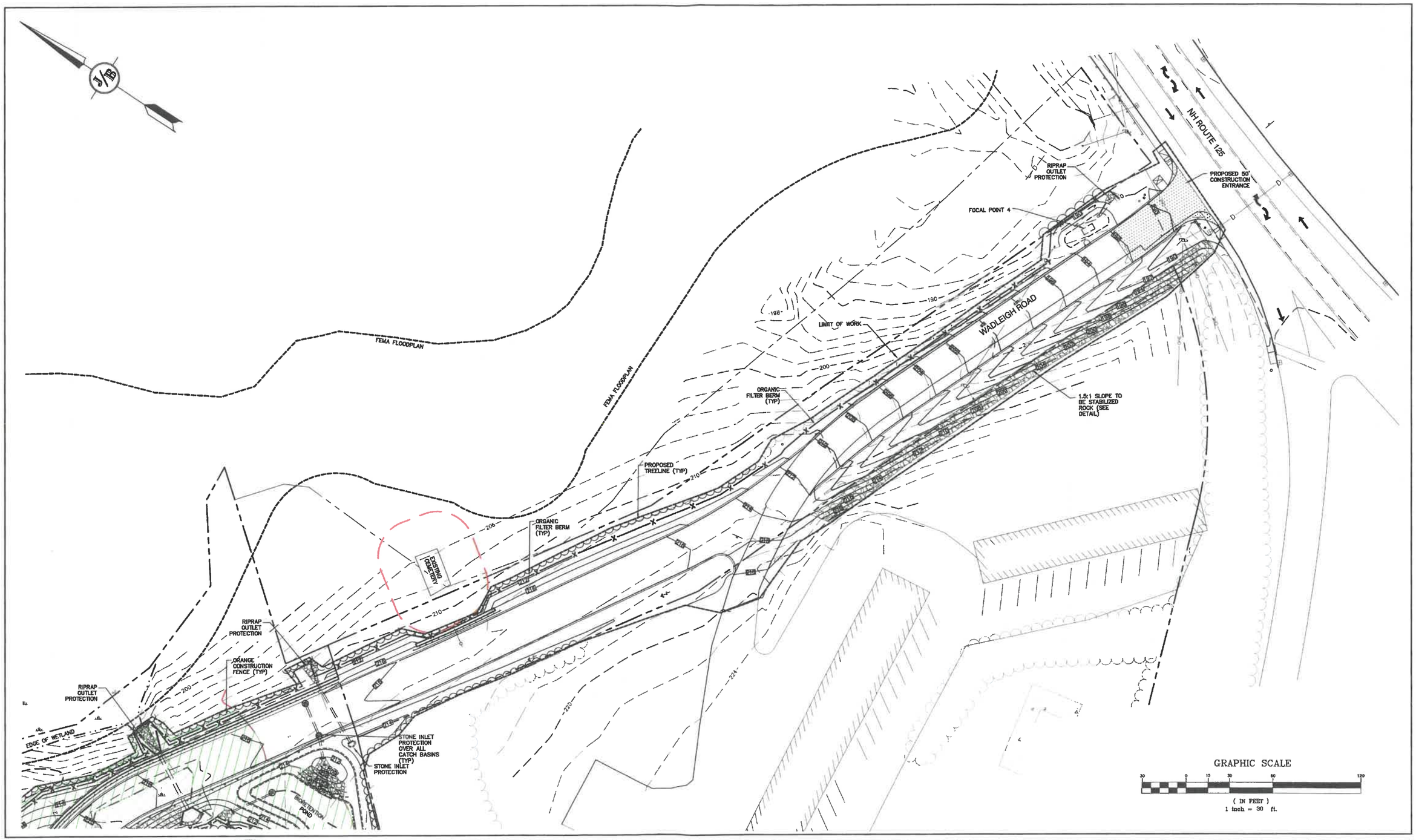
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	EROSION CONTROL PLAN
Project:	WADLEIGH ROAD APARTMENTS ROCHESTER, NH
Owner of Record:	SSG, LLC ATTN: FENTON GROEN 120 WASHINGTON STREET, ROCHESTER, NH 03839

DRAWING No.
C7
SHEET 10 OF 27
JBE PROJECT NO. 21137



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Drawing Name: 21137-PLAN.dwg		

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STATE OF NEW HAMPSHIRE — MICHAEL J. KERVAN No. 9648 LICENSED PROFESSIONAL ENGINEER — 2/18/2022

REV.	DATE	REVISION	BY
5	2/10/22	REVISED PER CITY COMMENTS	LAZ
4	1/14/22	REVISED PER CITY COMMENTS	LAZ
3	12/14/21	REVISED PER CITY COMMENTS	LAZ
2	12/6/21	REVISED PER CONSERVATION COMMISSION COMMENTS	LAZ
1	9/21/21	ISSUED FOR PLANNING BOARD	LAZ

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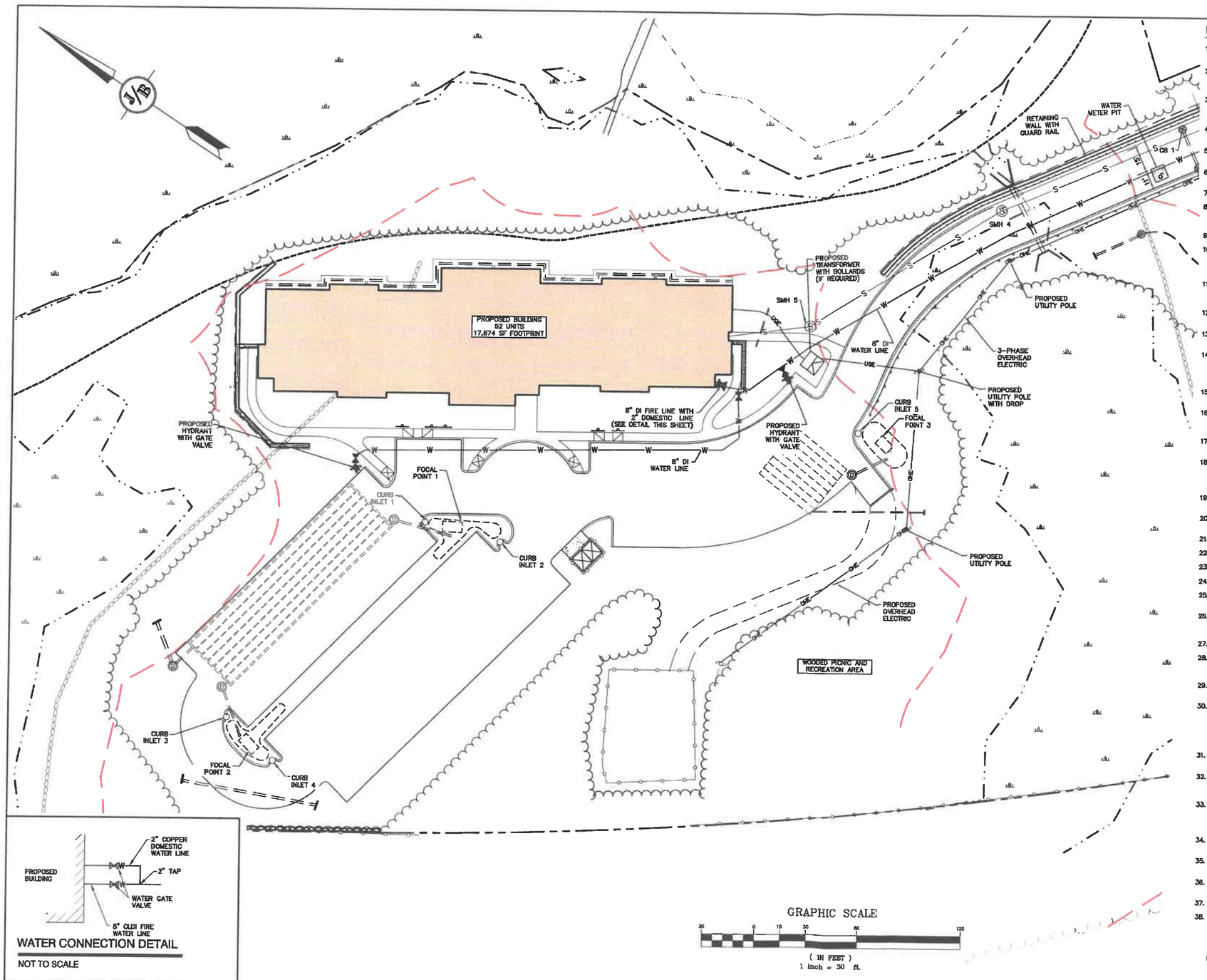
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	EROSION CONTROL PLAN
Project:	WADLEIGH ROAD APARTMENTS ROCHESTER, NH
Owner of Record:	SSG, LLC ATTN: FENTON GROEN 120 WASHINGTON STREET, ROCHESTER, NH 03839

DRAWING No.
C8
SHEET 9 OF 27
JBE PROJECT NO. 21137



WATER CONNECTION DETAIL

NOT TO SCALE

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, GAS, WATER, AND SEWER).
4. A PRECONSTRUCTION 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" 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:
    38 -- TWO BEDROOM UNITS @ 150 GPD/BEDROOM = 11,400 GPD
    14 -- ONE BEDROOM UNITS @ 150/GPD/BEDROOM = 2,100 GPD
    TOTAL FLOW = 13,500 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, GAS GATES AND OTHER UTILITIES TO FINISH 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. ALL WATER AND SANITARY LEADS TO BUILDING(S) SHALL END 5' OUTSIDE THE BUILDING LIMITS AS SHOWN ON PLANS AND SHALL BE PROVIDED WITH A TEMPORARY PLUG AND WITNESS AT END.
20. IF THE BUILDING IS REQUIRED TO HAVE A SPRINKLER SYSTEM, A PRECONSTRUCTION MEETING SHALL BE HELD BETWEEN THE CONTRACTOR, OWNER, ARCHITECT AND THE LOCAL FIRE DEPARTMENT PRIOR TO THE INSTALLATION.
21. THRUST BLOCKS SHALL BE PROVIDED AT ALL BENDS, TEES, MECHANICAL JOINTS AND FIRE HYDRANTS.
22. DIMENSIONS ARE SHOWN TO CENTERLINE OF PIPE OR FITTING.
23. REFER TO FIRE PROTECTION SHEETS FOR LOCATION AND DETAIL OF FIRE LINE LEAD IN TO BUILDING.
24. FIRE LINE SHALL BE STUBBED UP 1' ABOVE FINISH FLOOR ELEVATION IN SPRINKLER ROOM.
25. THE CONTRACTOR SHALL HAVE THE APPROVAL OF ALL GOVERNING AGENCIES HAVING JURISDICTION OVER FIRE PROTECTION SYSTEM PRIOR TO INSTALLATION.
26. CONTRACTOR TO FURNISH SHOP DRAWINGS FOR UTILITY RELATED ITEMS TO ENSURE CONFORMANCE WITH THE PLANS AND SPECIFICATIONS. SHOP DRAWINGS SHOULD BE SENT IN TRIPLICATE TO THE DESIGN ENGINEER FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.
27. EXISTING UTILITIES SHALL BE DISSAFED BEFORE CONSTRUCTION.
28. ALL WATER LINES SHOULD HAVE TESTABLE BACKFLOW PREVENTERS AT THE ENTRANCE TO BUILDING. TESTABLE BACKFLOW PREVENTION DEVICES MUST BE REGISTERED WITH THE CITY UTILITY BILLING OFFICE. TEST RESULTS SHALL BE SUBMITTED TO UTILITY BILLING PRIOR TO DPW SIGN-OFF ON CERTIFATE OF OCCUPANCY.
29. ALL GRAVITY SEWER PIPE, MANHOLES, AND FORCE MAINS 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.
30. ENV-WQ 704.08 GRAVITY SEWER PIPE TESTING. GRAVITY SEWERS SHALL BE TESTED FOR WATER TIGHTNESS BY USE OF LOW-PRESSURE AIR TESTS CONFORMING WITH ASTM F1417-92(2005) OR UNI-BELL PVC PIPE ASSOCIATION UNI-B-6. LINES SHALL BE CLEANED AND VISUALLY INSPECTED AND TRUE TO LINE AND GRADE. DEFLECTION TESTS SHALL TAKE PLACE AFTER 30 DAYS FOLLOWING INSTALLATION AND 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.
31. ENV-WQ 704.17 SEWER MANHOLE TESTING. SHALL BE TESTED FOR LEAKAGE USING A VACUUM TEST PRIOR TO BACKFILLING AND PLACEMENT OF SHELVES AND INVERTS.
32. 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.
33. SEWERS SHALL BE BURIED TO A MINIMUN 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 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.
34. ALL WATER AND SANITARY LEADS TO BUILDING(S) SHALL END AT RIGHT OF WAY AS SHOWN ON PLANS AND SHALL BE PROVIDED WITH A TEMPORARY PLUG AND WITNESS AT END.
35. 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 THE TOWN SEWER DEPARTMENT.
36. LIGHTING CONDUIT SHALL BE SCHEDULE 40 PVC, AND SHALL BE INSTALLED IN CONFORMANCE WITH THE NATIONAL ELECTRIC CODE. CONTRACTOR SHALL PROVIDE EXCAVATION AND BACKFILL.
37. ALL TRENCHING, PIPE LAYING, AND BACKFILLING SHALL BE IN ACCORDANCE WITH FEDERAL OSHA REGULATIONS.
38. 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

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Drawing Name: 21137-PLAN.dwg		

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STATE OF NEW HAMPSHIRE - MICHAEL J. KENYAN No. 9646 LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
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2	12/8/21	REVISED PER CONSERVATION COMMISSION COMMENTS	LAZ
1	9/21/21	ISSUED FOR PLANNING BOARD	LAZ

Designed and Produced in NH
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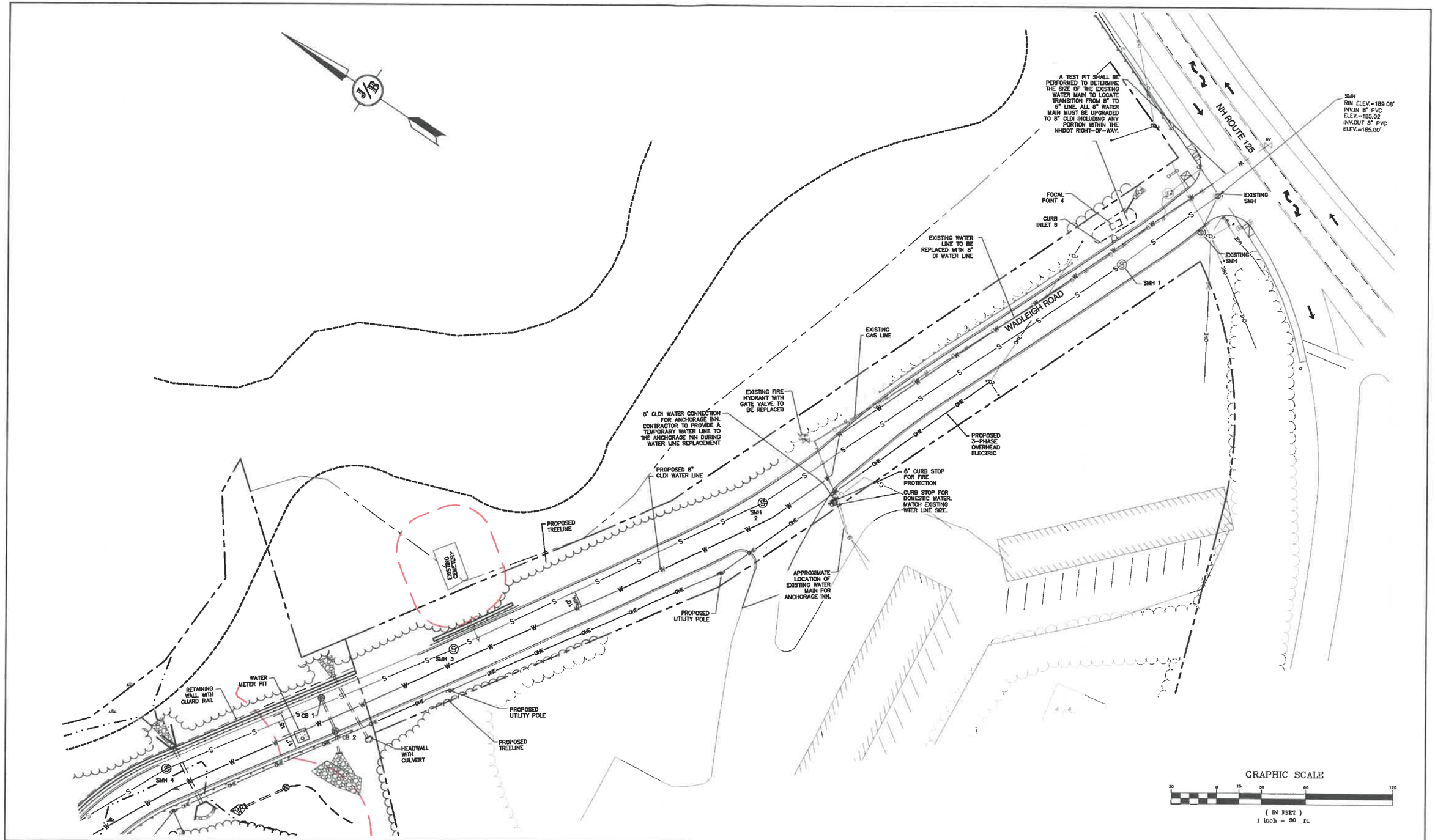
85 Portsmouth Ave. Civil Engineering Services 603-772-4746
PO Box 219 FAX: 603-772-0227
Stratham, NH 03885 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	UTILITY PLAN
Project:	WADLEIGH ROAD APARTMENTS ROCHESTER, NH
Owner of Record:	SSG, LLC ATTN: FENTON GROEN 120 WASHINGTON STREET, ROCHESTER, NH 03839

DRAWING No.

U1

SHEET 11 OF 27
JBE PROJECT NO. 21137



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STATE OF NEW HAMPSHIRE – MICHAEL J. KERVAN No. 9948 – LICENSED PROFESSIONAL ENGINEER – 2/10/2022

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Civil Engineering Services
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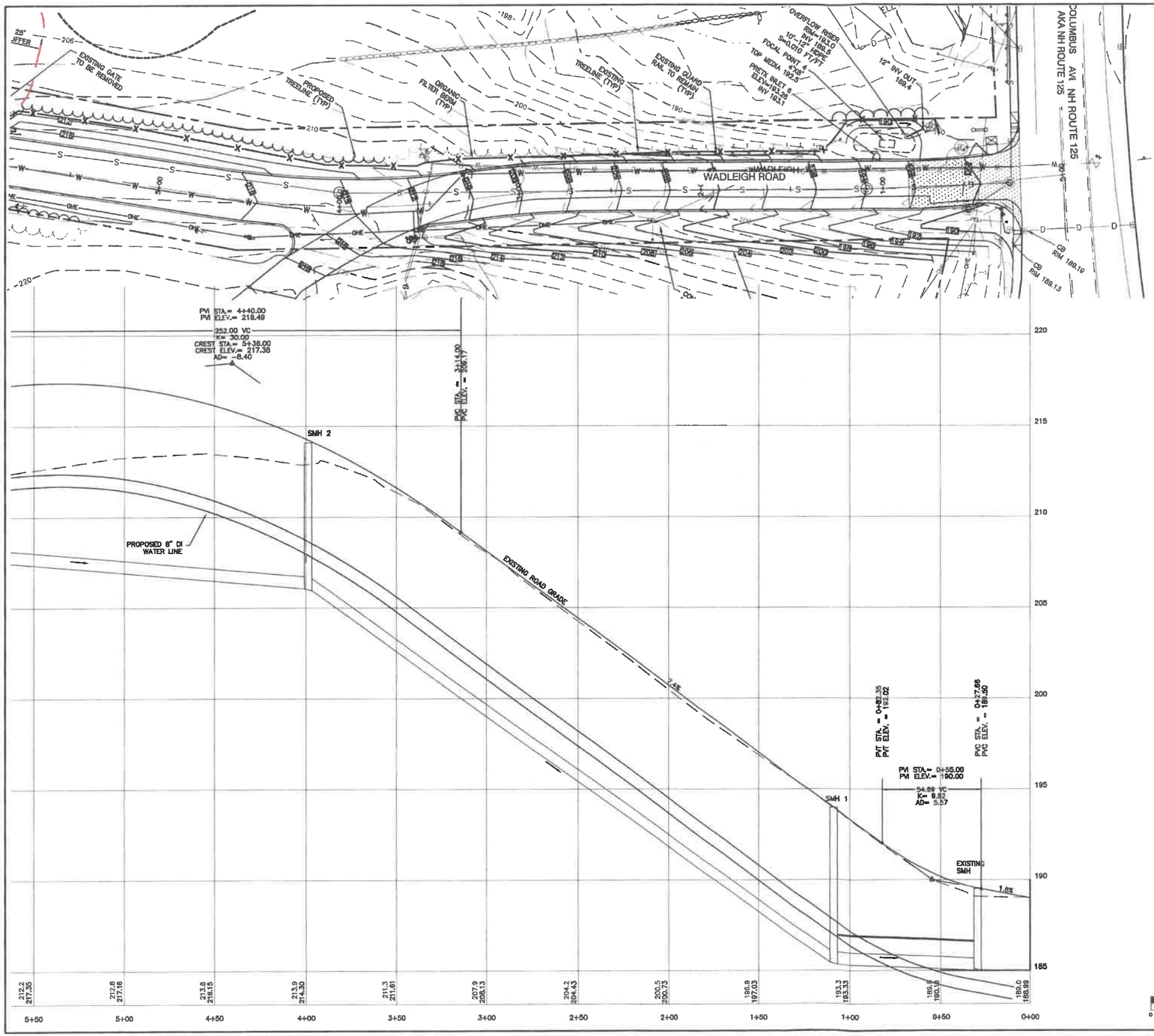
E-MAIL: JBE@JONESANDBEACH.COM

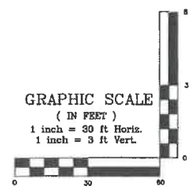
Plan Name:	UTILITY PLAN
Project:	WADLEIGH ROAD APARTMENTS ROCHESTER, NH
Owner of Record:	SSG, LLC ATTN: FENTON GROEN 120 WASHINGTON STREET, ROCHESTER, NH 03839

DRAWING No.
U2
SHEET 12 OF 27
JBE PROJECT NO. 21137



NOTES:

1. THIS SITE WILL REQUIRE A USEPA NPDES PERMIT FOR STORMWATER DISCHARGE FOR THE CONSTRUCTION SITE. THE CONSTRUCTION SITE OPERATOR SHALL DEVELOP AND IMPLEMENT A CONSTRUCTION STORM WATER POLLUTION PREVENTION PLAN (SWPPP), WHICH SHALL REMAIN ON SITE AND BE MADE ACCESSIBLE TO THE PUBLIC. THE CONSTRUCTION SITE OPERATOR SHALL SUBMIT A NOTICE OF INTENT (NOI) TO THE EPA REGIONAL OFFICE SEVEN DAYS PRIOR TO COMMENCEMENT OF ANY WORK ON SITE. EPA WILL POST THE NOI AT HTTP://CFPUB1.EPA.GOV/NPDES/STORMWATER/NOI/NOISEARCH.CFM. AUTHORIZATION IS GRANTED UNDER THE PERMIT ONCE THE NOI IS SHOWN IN "ACTIVE" STATUS ON THIS WEBSITE. A COMPLETED NOTICE OF TERMINATION SHALL BE SUBMITTED TO THE NPDES PERMITTING AUTHORITY WITHIN 30 DAYS AFTER EITHER OF THE FOLLOWING CONDITIONS HAVE BEEN MET:
   A. FINAL STABILIZATION HAS BEEN ACHIEVED ON ALL PORTIONS OF THE SITE FOR WHICH THE PERMITTEE IS RESPONSIBLE; OR
   A. ANOTHER OPERATOR/PERMITTEE HAS ASSUMED CONTROL OVER ALL AREAS OF THE SITE THAT HAVE NOT BEEN FINALLY STABILIZED. PROVIDE DPW WITH A COPY OF THE NOTICE OF TERMINATION (NOT).
2. ALL ROAD AND DRAINAGE WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR THE CITY, AND NHDOT SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, WHICHEVER IS MORE STRINGENT.
3. DEVELOPER IS RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL WETLAND REGULATIONS, INCLUDING ANY PERMITTING AND SETBACK REQUIREMENTS REQUIRED UNDER THESE REGULATIONS.
4. CONTRACTOR TO COORDINATE AND COMPLETE ALL WORK REQUIRED FOR THE RELOCATION AND/OR INSTALLATION OF ELECTRIC, CATV, TELEPHONE, AND FIRE ALARM PER UTILITY DESIGN AND STANDARDS. LOCATIONS SHOWN ARE APPROXIMATE. LOW PROFILE STRUCTURES SHALL BE USED TO THE GREATEST EXTENT POSSIBLE.
5. THIS PLAN 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 SHOWN ON THE DESIGN PLANS. THIS INCLUDES ANY UNFORESEEN CONDITIONS, SUBSURFACE OR OTHERWISE, FOR EVALUATION AND RECOMMENDATIONS. ANY CONTRADICTION BETWEEN ITEMS OF THIS PLAN/PLAN SET, OR BETWEEN THE PLANS AND ON-SITE CONDITIONS MUST BE RESOLVED BEFORE RELATED CONSTRUCTION HAS BEEN INITIATED.
6. SILTATION AND EROSION CONTROLS SHALL BE INSTALLED PRIOR TO CONSTRUCTION, SHALL BE MAINTAINED DURING CONSTRUCTION, AND SHALL REMAIN UNTIL SITE HAS BEEN STABILIZED WITH PERMANENT VEGETATION. SEE DETAIL SHEET E1 FOR ADDITIONAL NOTES ON EROSION CONTROL.
7. ALL DISTURBED AREAS NOT STABILIZED BY NOVEMBER 1st SHALL BE COVERED WITH AN EROSION CONTROL BLANKET. PRODUCT TO BE SPECIFIED BY THE ENGINEER.
8. FINAL DRAINAGE, GRADING AND EROSION PROTECTION MEASURES SHALL CONFORM TO REGULATIONS OF THE PUBLIC WORKS DEPARTMENT.
9. CONTRACTOR TO VERIFY EXISTING UTILITIES AND TO NOTIFY ENGINEER OF ANY DISCREPANCY IMMEDIATELY.
10. ROADWAY INTERSECTIONS WITH SLOPE GRANITE CURB SHALL EXTEND AROUND RADIUS WITH 6' STRAIGHT PIECE ALONG TANGENT.
11. RETAINING WALLS SHALL BE DESIGNED AND STAMPED BY A LICENSED PROFESSIONAL ENGINEER. CONTRACTOR SHALL COORDINATE WITH MANUFACTURER PRIOR TO INSTALLATION.
12. 6" PERFORATED ADS UNDER DRAIN PLACEMENT TO BE DETERMINED BY THE ENGINEER DURING TIME OF SUBGRADE INSPECTION. CONTRACTOR TO ADJUST LOCATION IN THE FIELD ONLY WITH PRIOR APPROVAL OF PROJECT ENGINEER OR PUBLIC WORKS DEPARTMENT. CONTRACTOR TO INCLUDE 3000 LF IN BID PRICE.
13. ENGINEER TO INSTALL PERMANENT BENCHMARK (REINFORCED GRANITE MARKER) AT LOCATIONS SHOWN ON PLANS. BENCH MARKS TO BE TIED TO STATE PLANE COORDINATE SYSTEM.
14. DRAINAGE INSPECTION AND MAINTENANCE SCHEDULE: SILT FENCING WILL BE INSPECTED DURING AND AFTER STORM EVENTS TO ENSURE THAT THE FENCE STILL HAS INTEGRITY AND IS NOT ALLOWING SEDIMENT TO PASS. SEDIMENT BUILD UP IN SWALES WILL BE REMOVED IF IT IS DEEPER THAN SIX INCHES, AND IS TO BE REMOVED FROM SUMPS BELOW THE INLET OF CULVERTS SEMIANNUALLY, AS WELL AS FROM CATCH BASINS. FOLLOWING MAJOR STORM EVENTS, THE STAGE DISCHARGE OUTLET STRUCTURES ARE TO BE INSPECTED AND ANY DEBRIS REMOVED FROM THE ORIFICE, TRASH TRACK AND EMERGENCY SPILL WAY. INFREQUENTLY, SEDIMENT MAY ALSO HAVE TO BE REMOVED FROM THE SUMP OF THE STRUCTURE.
15. ALL DRAINAGE INFRASTRUCTURE SHALL BE INSTALLED AND STABILIZED PRIOR TO DIRECTING ANY RUNOFF TO IT.
16. DETENTION PONDS REQUIRE TIMELY MAINTENANCE AND SHOULD BE INSPECTED AFTER EVERY MAJOR STORM EVENT, AS WELL AS FREQUENTLY DURING THE FIRST YEAR OF OPERATION, AND ANNUALLY THEREAFTER. EVERY FIVE YEARS, THE SERVICES OF A PROFESSIONAL ENGINEER SHOULD BE RETAINED TO PERFORM A THOROUGH INSPECTION OF THE DETENTION POND AND ITS INFRASTRUCTURE. ANY DEBRIS AND SEDIMENT ACCUMULATIONS SHOULD BE REMOVED FROM THE OUTLET STRUCTURE(S) AND EMERGENCY SPILLWAY(S) AND DISPOSED OF PROPERLY. DETENTION POND BERMS SHOULD BE MOWED AT LEAST ONCE ANNUALLY SO AS TO PREVENT THE ESTABLISHMENT OF WOODY VEGETATION. TREES SHOULD NEVER BE ALLOWED TO GROW ON A DETENTION POND BERM, AS THEY MAY DESTABILIZE THE STRUCTURE AND INCREASE THE POTENTIAL FOR FAILURE. AREAS SHOWING SIGNS OF EROSION OR THIN OR DYING VEGETATION SHOULD BE REPAIRED IMMEDIATELY BY WHATEVER MEANS NECESSARY, WITH THE EXCEPTION OF FERTILIZER. RODENT BORROWS SHOULD BE REPAIRED IMMEDIATELY AND THE ANIMALS SHOULD BE TRAPPED AND RELOCATED IF THE PROBLEM PERSISTS.
17. THE DETENTION PONDS ARE TO BE CONSTRUCTED PRIMARILY THROUGH EXCAVATION. IN THOSE AREAS WHERE THE BERMS MUST BE CONSTRUCTED BY THE PLACEMENT OF FILL, THE ENTIRE EMBANKMENT AREA OF THE DETENTION PONDS SHALL BE EXCAVATED TO PROPOSED GRADE, STRIPPED OF ALL ORGANIC MATERIALS, COMPACTED TO AT LEAST 95% AND SCARIFIED PRIOR TO THE PLACEMENT OF THE EMBANKMENT MATERIAL. IN THE EVENT THE FOUNDATION MATERIAL EXPOSED DOES NOT ALLOW THE SPECIFIED COMPACTION, AN ADDITIONAL ONE FOOT (1') OF EXCAVATION AND THE PLACEMENT OF A ONE FOOT (1') THICK, TWELVE FOOT (12') WIDE PAD OF THE MATERIAL DESCRIBED IN THE NOTE BELOW, COMPACTED TO 95% OF ASTM D-1557 MAY BE NECESSARY. PLACEMENT AND COMPACTION SHOULD OCCUR AT A MOISTURE CONTENT OF OPTIMUM PLUS OR MINUS 3% AND NO FROZEN OR ORGANIC MATERIAL SHOULD BE PLACED WITHIN FOR ANY REASON.
18. EMBANKMENT MATERIAL FOR THE BERMS SHALL BE CLEAN MINERAL SOIL WITH A CLAY COMPONENT FREE OF ROOTS, ORGANIC MATTER, AND OTHER DELETERIOUS SUBSTANCES, AND SHALL CONTAIN NO ROCKS OR LUMPS OVER FOUR INCHES (4") IN DIAMETER. THIS MATERIAL SHOULD BE INSTALLED IN 6" LIFTS AND COMPACTED TO 95% OS ASTM D-1557, AND SHOULD MEET THE FOLLOWING SPECIFICATIONS: 4" PASSING 100%, #4 SIEVE 25-70%, #200 SIEVE 10-25% (IN TOTAL SAMPLE).
19. EMBANKMENT IS TO HAVE 3:1 SIDE SLOPES (MAX.) AND IS TO BE BROUGHT TO SPECIFIED GRADES PRIOR TO THE ADDITION OF LOAM (4" MINIMUM) SO AS TO ALLOW FOR THE COMPACTION OF THE STRUCTURE OVER TIME WHILE MAINTAINING THE PROPER BERM ELEVATION.
20. COMPACTION TESTING SERVICES (I.E. NUCLEAR DENSITY TESTS) ARE TO BE PERFORMED BY AN INDEPENDENT GEOTECHNICAL ENGINEER RETAINED BY THE CONTRACTOR FOR ROADWAY CONSTRUCTION, AND ON THE FOUNDATION OF THE BERM AND ON EVERY LIFT OF NEWLY PLACED MATERIAL.



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Drawing Name: 21137-PLAN.dwg		

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STATE OF NEW HAMPSHIRE — MICHAEL J. KERIVAN No. 9646 — LICENSED PROFESSIONAL ENGINEER — 2/14/2022

REV.	DATE	REVISION	BY
5	2/10/22	REVISED PER CITY COMMENTS	LAZ
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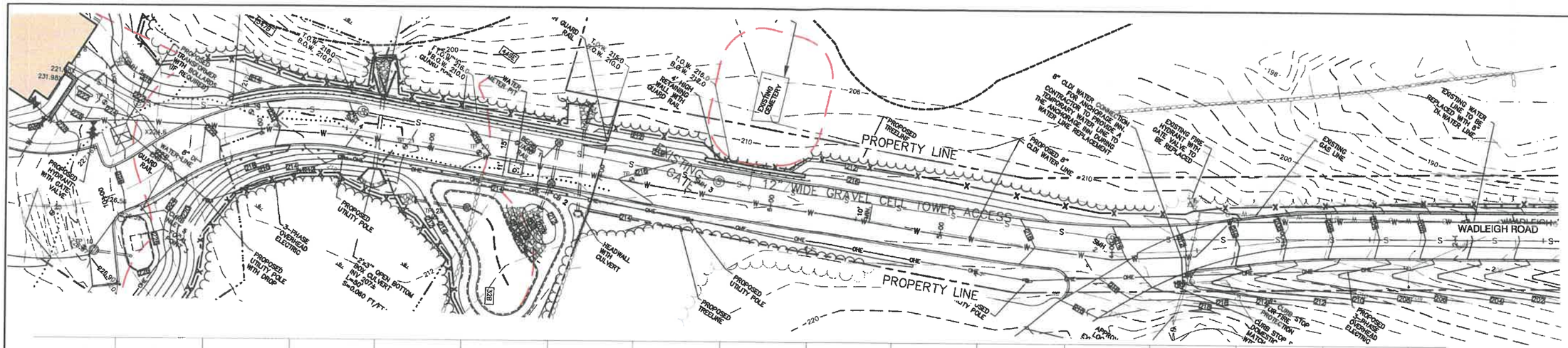
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

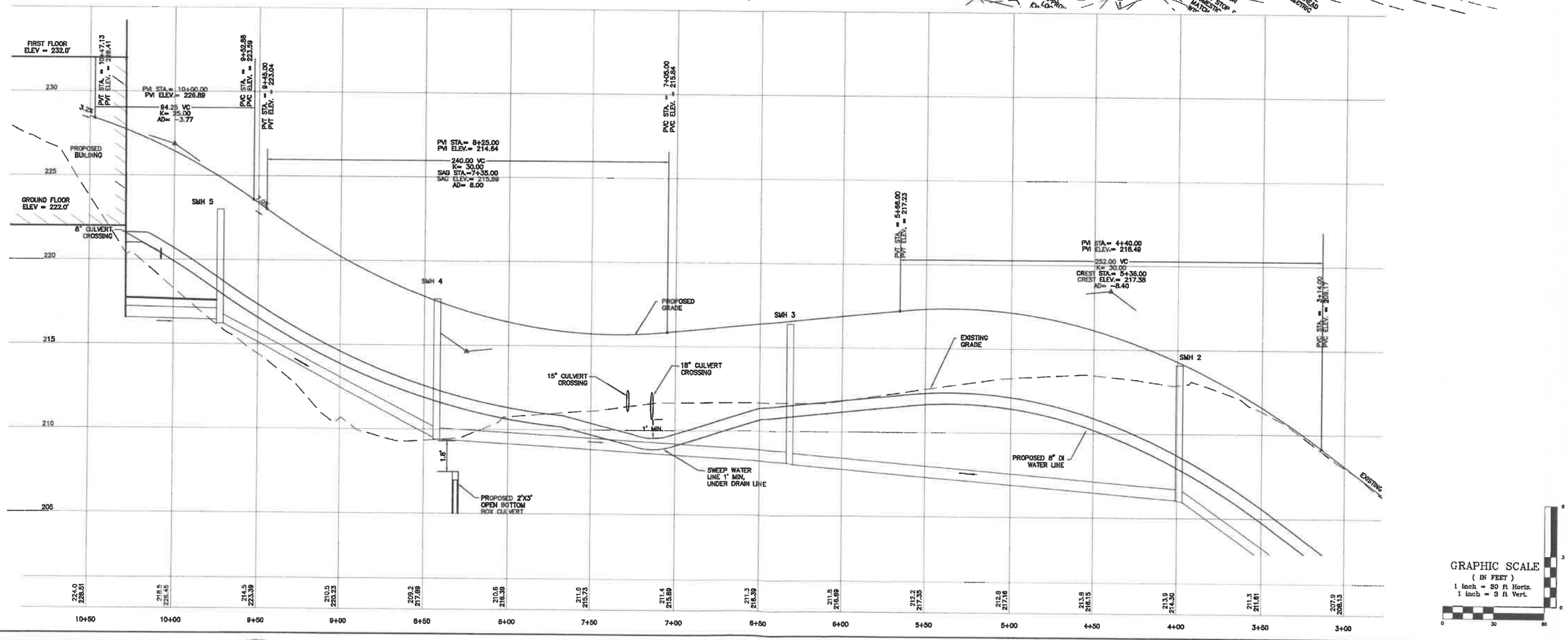
Plan Name:	PLAN AND PROFILE
Project:	WADLEIGH ROAD APARTMENTS ROCHESTER, NH
Owner of Record:	SSG, LLC ATTN: FENTON GROEN 120 WASHINGTON STREET, ROCHESTER, NH 03839

DRAWING No.

P1

SHEET 13 OF 27
JBE PROJECT NO.21137





GRAPHIC SCALE
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1 inch = 3 ft Vert.
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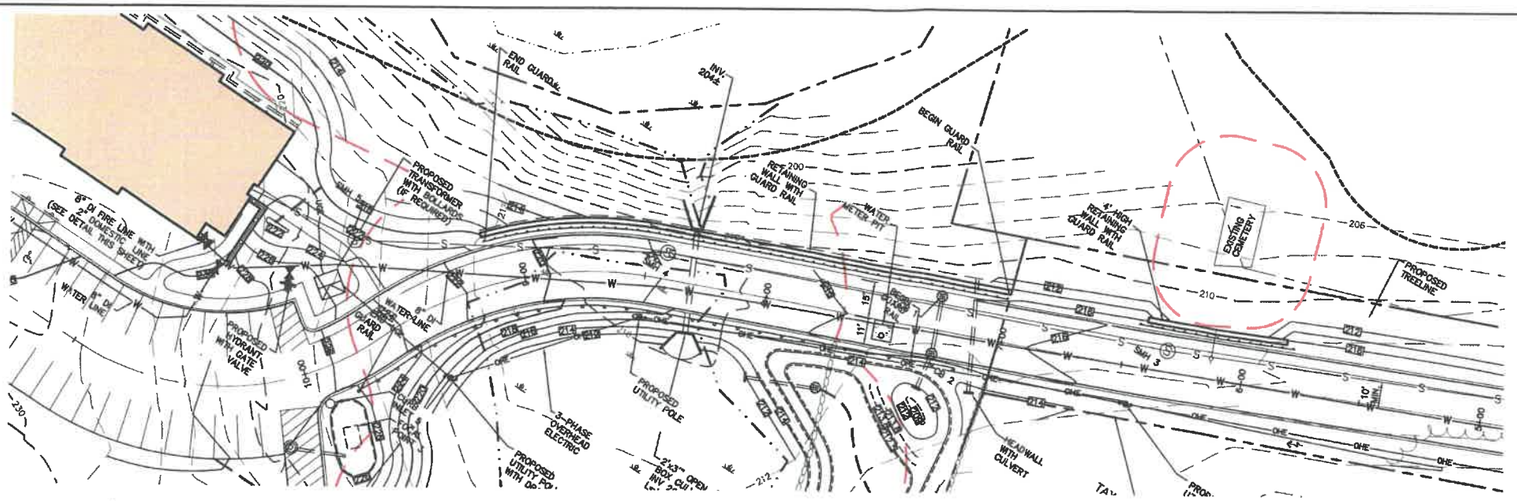
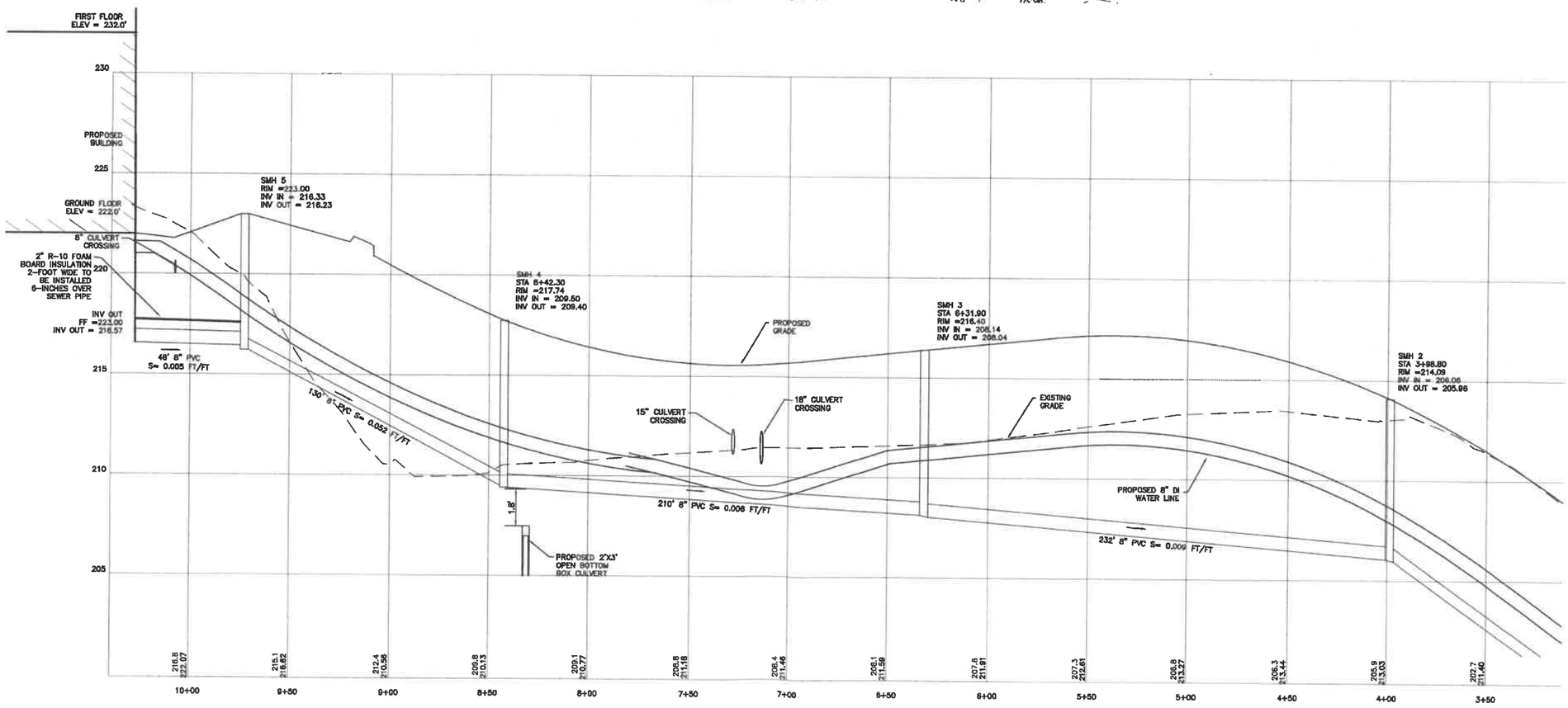
DRAWING No.
P2
SHEET 14 OF 27
JBE PROJECT NO.21137





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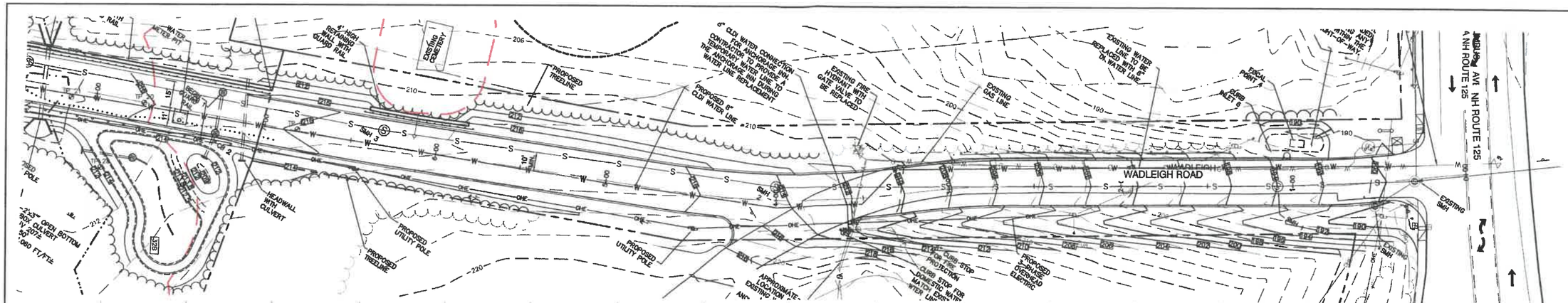
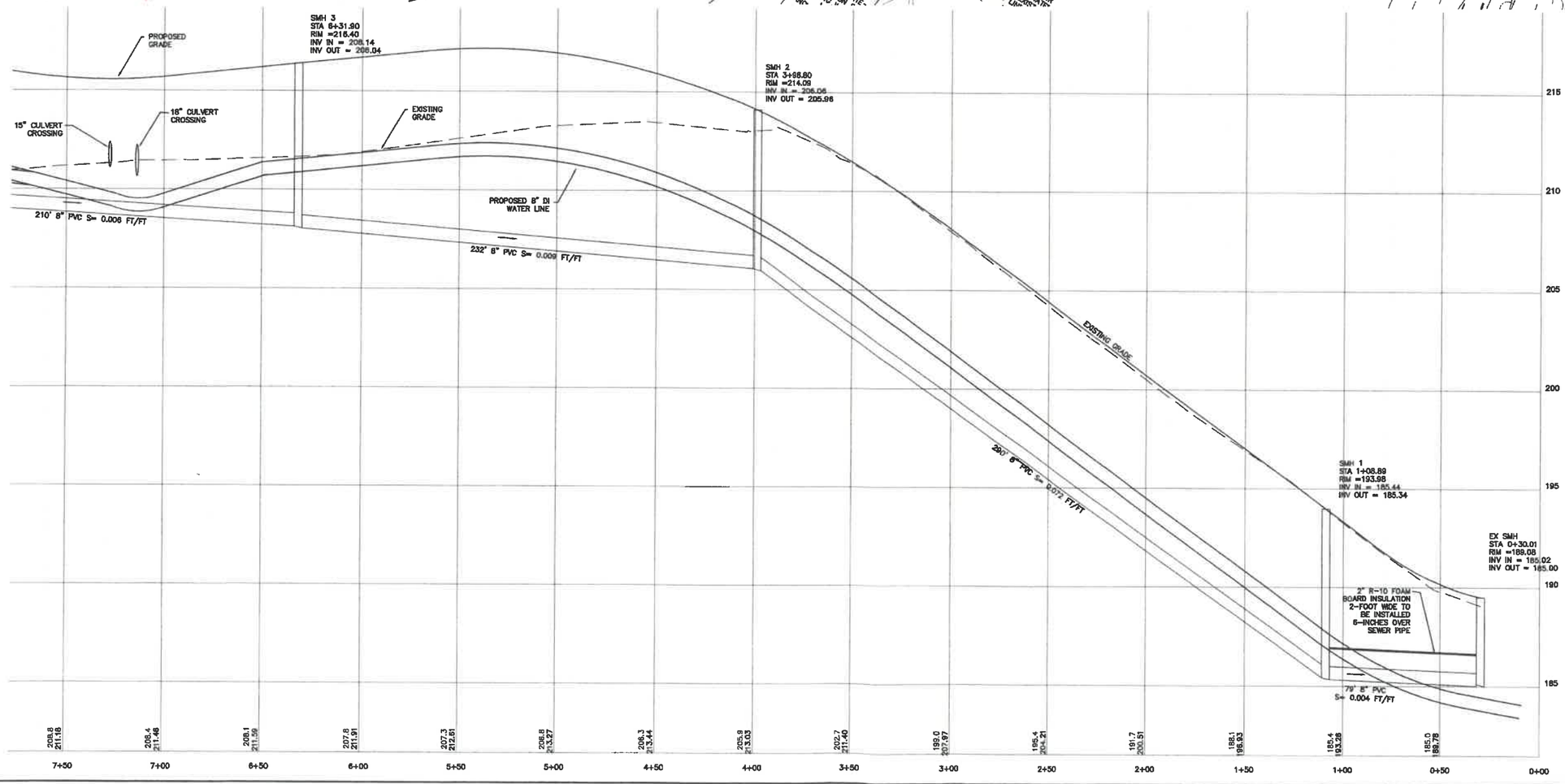
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	SEWER PLAN AND PROFILE
Project:	WADLEIGH ROAD APARTMENTS ROCHESTER, NH
Owner of Record:	SSG, LLC ATTN: FENTON GROEN 120 WASHINGTON STREET, ROCHESTER, NH 03839

DRAWING No.
P3
SHEET 15 OF 27
JBE PROJECT NO.21137





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E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	SEWER PLAN AND PROFILE
Project:	WADLEIGH ROAD APARTMENTS ROCHESTER, NH
Owner of Record:	SSG, LLC ATTN: FENTON GROEN 120 WASHINGTON STREET, ROCHESTER, NH 03839

DRAWING No.
P4
SHEET 16 OF 27
JBE PROJECT NO.21137

TAX MAP 131 LOT 10
WILLIAM B LACOUTURE
208 OLIVER CREEK ROAD
ELLIJAY, GA 30536
BK 4940 PG 24

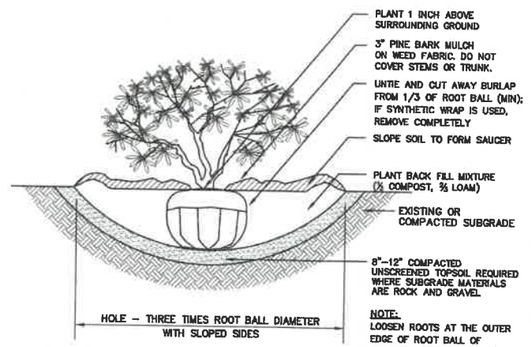
PROPOSED BUILDING
52 UNITS
17,874 SF FOOTPRINT

6 KARLEY ROSE FOUNTAIN GRASS
4 GREEN GIANT ARBORVITAE
2 BLUE SATIN ROSE OF SHARON
37 SHAMROCK INKBERRY HOLLY
3 WICHITA BLUE MT JUNIPER
1 GREENSPIRE LITTLELEAF LINDEN
5 CHANTICLEER CALLERY PEAR
12 KARLEY ROSE FOUNTAIN GRASS
2 BLOODGOOD JAPANESE MAPLE
4 KWANZAN ORIENTAL CHERRY
3 GREENSPIRE LITTLELEAF LINDEN
4 GREEN GIANT ARBORVITAE
3 BALSAM FIR
4 COLORADO SPRUCE
5 EASTERN WHITE PINE
WOODED PICNIC AND RECREATION AREA
RECREATION AREA
LAWN AREA
EXIST. SLOPE
NH ROUTE 16

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

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. 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.
4. 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.
5. 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.
6. BY THE END OF THE GUARANTEE PERIOD, THE CONTRACTOR SHALL HAVE REPLACED ANY PLANT MATERIAL THAT IS MISSING, NOT TRUE TO SIZE AS SPECIFIED, THAT HAS DIED, LOST NATURAL SHAPE DUE TO DEAD BRANCHES, EXCESSIVE PRUNING OR INADEQUATE OR IMPROPER CARE, OR THAT IS, IN THE OPINION OF THE LANDSCAPE ARCHITECT, IN UNHEALTHY OR UNSIGHTLY CONDITION.
7. ALL LANDSCAPING ON THE PLANS SHALL BE MAINTAINED AND DEAD OR DYING VEGETATOIN SHALL BE REPLACED IN A TIMELY MANNER.
8. ALL LANDSCAPE AREAS TO BE GRASS COMMON TO REGION, EXCEPT FOR INTERIOR LANDSCAPED ISLANDS OR WHERE OTHER PLANT MATERIAL IS SPECIFIED.
9. ALL TREES AND SHRUBS SHALL BE PLANTED IN MULCH BEDS WITH EDGE STRIPS TO SEPARATE TURF GRASS AREAS.
10. 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.
11. ALL LANDSCAPING SHALL MEET THE TOWN STANDARDS AND REGULATIONS.
12. 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.
13. 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.
14. THIS PLAN IS INTENDED FOR LANDSCAPING PURPOSES ONLY. REFER TO CIVIL/SITE DRAWINGS FOR OTHER SITE CONSTRUCTION INFORMATION.



SHRUB PLANTING

NOT TO SCALE

WADLEIGH RD APARTMENT BUILDING PLANT LIST

Plants			
Quantity	Botanical Name	Common Name	Size
3	Abies balsamea	BALSAM FIR	8-10 FT. HT.
2	Acer palmatum 'Bloodgood'	BLOODGOOD JAPANESE MAPLE	15 GALLON
3	Juniperus scopulorum 'Wichita Blue'	WICHITA BLUE MT JUNIPER	7-8 FT. HT.
4	Picea pungens	COLORADO SPRUCE	8-10 FT. HT.
5	Pinus strobus	EASTERN WHITE PINE	10-12 FT. HT.
4	Prunus serrulata 'Kwanzan'	KWANZAN ORIENTAL CHERRY	2.5" CALIPER
6	Pyrus calleryana 'Chanticleer'	CHANTICLEER CALLERY PEAR	2.5" CALIPER
8	Thuja plicata 'Green Giant'	GREEN GIANT ARBORVITAE	7-8 FT. HT.
3	Tilia cordata 'Greenspire'	GREENSPIRE LITTLELEAF LINDEN	3" CALIPER
2	Hibiscus syriacus 'DVPazum'	BLUE SATIN ROSE OF SHARON	5 GALLON
37	Ilex glabra 'Shamrock'	SHAMROCK INKBERRY HOLLY	6 GALLON
18	Pennisetum orientale 'Karley Rose'	KARLEY ROSE FOUNTAIN GRASS	2 GALLON

Design: LAZ	Draft: LAZ	Date: 9/8/21
Checked: BAJ	Scale: 1"=30'	Project No.: 21137
Drawing Name: 21137-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.

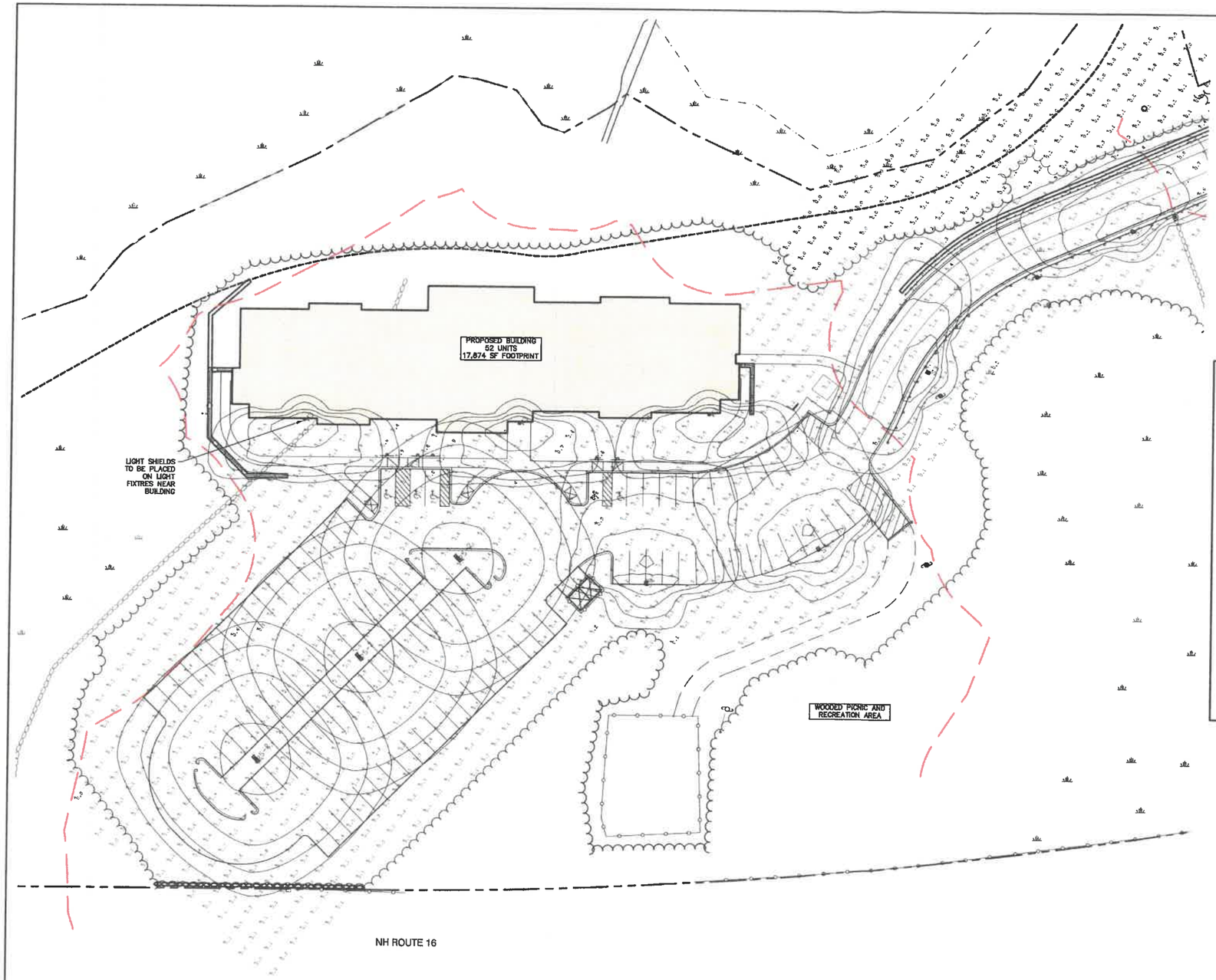
STATE OF NEW HAMPSHIRE - MICHAEL J. MERVAN No. 9640 - LICENSED PROFESSIONAL ENGINEER - 2/14/2022

REV.	DATE	REVISION	BY
5	2/10/22	REVISED PER CITY COMMENTS	LAZ
4	1/14/22	REVISED PER CITY COMMENTS	LAZ
3	12/14/21	REVISED PER CITY COMMENTS	LAZ
2	12/6/21	REVISED PER CONSERVATION COMMISSION COMMENTS	LAZ
1	9/21/21	ISSUED FOR PLANNING BOARD	LAZ

Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave. Civil Engineering Services
PO Box 219
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

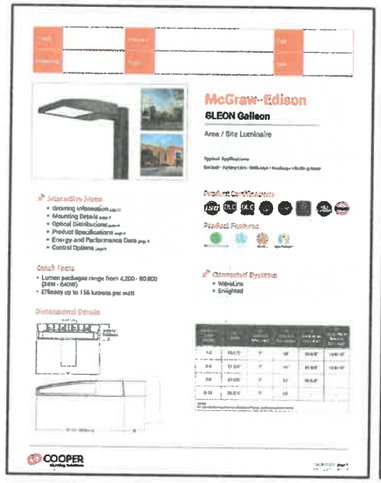
Plan Name:	LANDSCAPE PLAN
Project:	WADLEIGH ROAD APARTMENTS ROCHESTER, NH
Owner of Record:	SSG, LLC ATTN: FENTON GROEN 120 WASHINGTON STREET, ROCHESTER, NH 03839

DRAWING No.
L1
SHEET 17 OF 27
JBE PROJECT NO. 21137



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 TOWN REGULATIONS.
3. ALL OUTDOOR LIGHTING SYSTEMS SHALL BE EQUIPPED WITH TIMERS TO REDUCE ILLUMINATION LEVELS TO NON-OPERATIONAL VALUES PER TOWN 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. NL INDICATES THAT THIS LUMINAIRE SHALL BE ON A NIGHT LIGHT CIRCUIT. FL INDICATES THAT THIS LUMINAIRE SHALL BE A FLOOD LIGHT FIXTURE. MOUNTING BRACKET FOR THIS FL FIXTURE SHALL BE MOUNTED 25' ABOVE BOTTOM OF POLE BASE FOR ALL LIGHT POLES CLOSEST TO STOREFRONT. THESE DESIGNATIONS INDICATE WHAT PHASE LIGHTS ARE WIRED TO (TYP).
9. THE PROPOSED LIGHTING CALCULATIONS AND DESIGN WAS PERFORMED BY CHARRON, INC., P.O. BOX 4550, MANCHESTER, NH 03108, ATTENTION KEN SWEENEY. ALL LIGHTS SHOULD BE PURCHASED FROM THIS COMPANY, OR AN EQUAL LIGHTING DESIGN SHOULD BE SUBMITTED FOR REVIEW IF EQUAL SUBSTITUTIONS ARE PROPOSED BY THE CONTRACTOR OR OWNER.



GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

Luminaire Schedule				
Symbol	Qty	Label	Arrangement	Description
	3	P5-2	Back-Back	GLEON-SA1D-740-U-5WQ / SSS4A20SFN2 (20' AFG)
	2	S3	Single	GLEON-SA1C-740-U-SL3 / SSS4A20SFN1 (20' AFG)
	2	S4	Single	GLEON-SA1C-740-U-T4FT / SSS4A20SFN1 (20' AFG)
	3	W3	Single	GWC-SA1A-740-U-SL3 / WALL MTD 15' AFG

Design: LAZ	Draft: LAZ	Date: 9/8/21
Checked: BAJ	Scale: 1"=30'	Project No.: 21137
Drawing Name: 21137-PLAN.dwg		

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STATE OF NEW HAMPSHIRE · MICHAEL J. KERVAN No. 9940 · LICENSED PROFESSIONAL ENGINEER

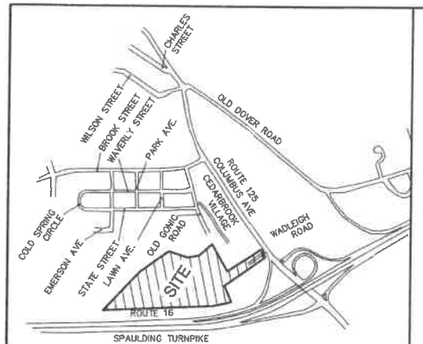
2/10/2022

REV.	DATE	REVISION	BY
5	2/10/22	REVISED PER CITY COMMENTS	LAZ
4	1/14/22	REVISED PER CITY COMMENTS	LAZ
3	12/14/21	REVISED PER CITY COMMENTS	LAZ
2	12/6/21	REVISED PER CONSERVATION COMMISSION COMMENTS	LAZ
1	9/21/21	ISSUED FOR PLANNING BOARD	LAZ

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
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	LIGHTING PLAN
Project:	WADLEIGH ROAD APARTMENTS ROCHESTER, NH
Owner of Record:	SSG, LLC ATTN: FENTON GROEN 120 WASHINGTON STREET, ROCHESTER, NH 03839

DRAWING No.
L2
SHEET 18 OF 27
JBE PROJECT NO. 21137



LOCUS SCALE: 1"=1000'

Design: LAZ	Draft: LAZ	Date: 9/8/21
Checked: BAJ	Scale: 1"=30'	Project No.: 21137
Drawing Name: 21137-PLAN.dwg		

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STATE OF NEW HAMPSHIRE – MICHAEL J. KERIVAN No. 9640 LICENSED PROFESSIONAL ENGINEER – 2/14/2022

REV.	DATE	REVISION	BY
5	2/10/22	REVISED PER CITY COMMENTS	LAZ
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3	12/14/21	REVISED PER CITY COMMENTS	LAZ
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1	9/21/21	ISSUED FOR PLANNING **BOARD**	LAZ

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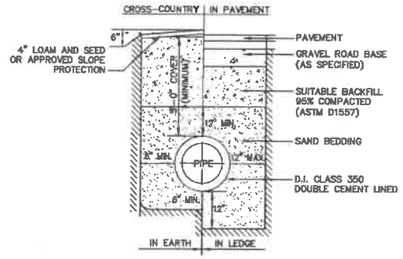
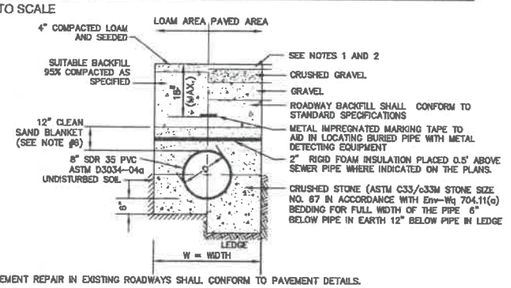
Plan Name:	LIGHTING PLAN
Project:	WADLEIGH ROAD APARTMENTS ROCHESTER, NH
Owner of Record:	SSG, LLC ATTN: FENTON GROEN 120 WASHINGTON STREET, ROCHESTER, NH 03839

DRAWING No.
L3
SHEET 19 OF 27
JBE PROJECT NO. 21137



WATER SYSTEM TRENCH

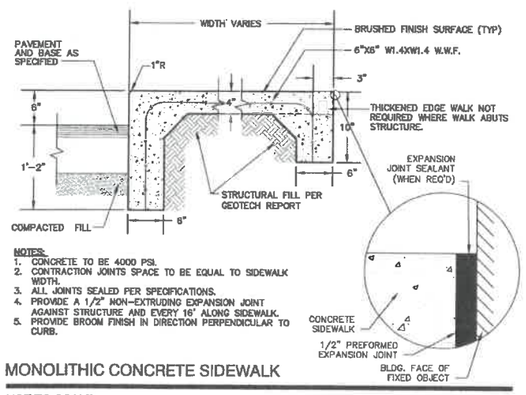
NOT TO SCALE



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).

SEWER TRENCH

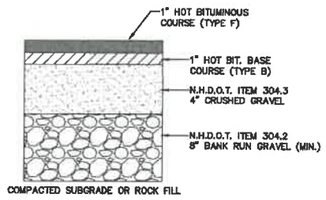
NOT TO SCALE



NOTES:
1. CONCRETE TO BE 4000 PSI.
2. CONTRACTION JOINTS SPACE TO BE EQUAL TO SIDEWALK WIDTH.
3. ALL JOINTS SEALED PER SPECIFICATIONS.
4. PROVIDE A 1/2" NON-EXTRUDING EXPANSION JOINT AGAINST STRUCTURE AND EVERY 16' ALONG SIDEWALK.
5. PROVIDE BROOM FINISH IN DIRECTION PERPENDICULAR TO CURB.

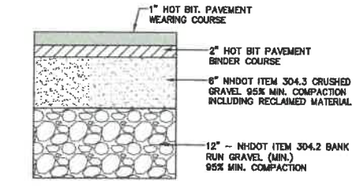
MONOLITHIC CONCRETE SIDEWALK

NOT TO SCALE



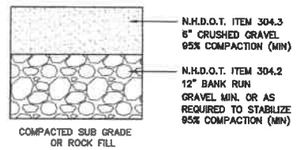
BITUMINOUS SIDEWALK DETAIL

NOT TO SCALE



TYPICAL BITUMINOUS PAVEMENT

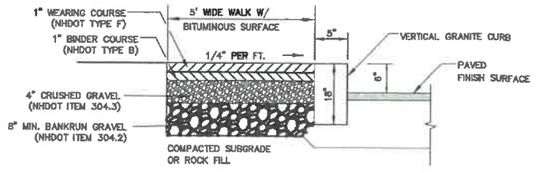
NOT TO SCALE



NOTE: IN AREAS OF ROCK EXCAVATION, MINIMUM 9" BANK RUN GRAVEL SHALL BE PLACED

GRAVEL SECTION

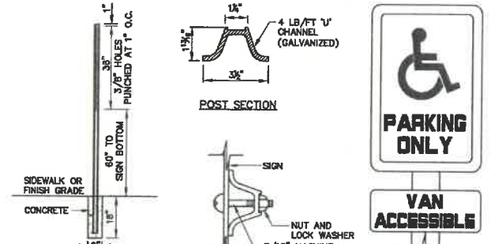
NOT TO SCALE



NOTES:
1. JOINTS BETWEEN STONES SHALL BE MORTARED.
2. EDGING TO BE PLACED PRIOR TO PLACING TOP SURFACE COURSE.

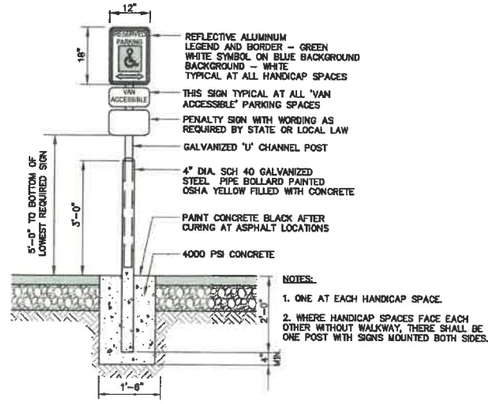
BIT. SIDEWALK W/ VERTICAL GRANITE CURB

NOT TO SCALE



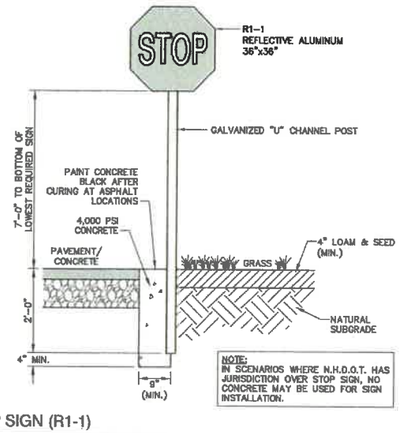
HANDICAP SIGN DETAILS

NOT TO SCALE



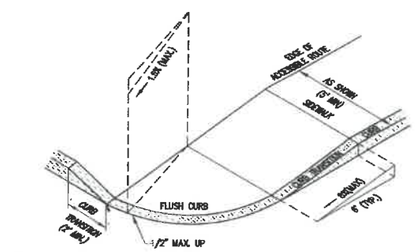
HANDICAP PARKING SIGN (R7-8)

NOT TO SCALE



STOP SIGN (R1-1)

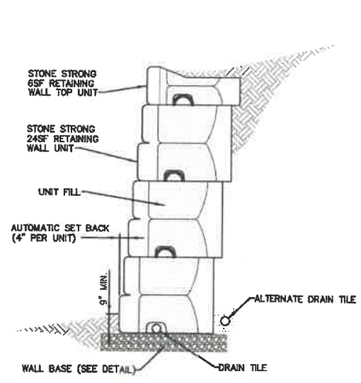
NOT TO SCALE



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, UTILITY 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 'B')

NOT TO SCALE

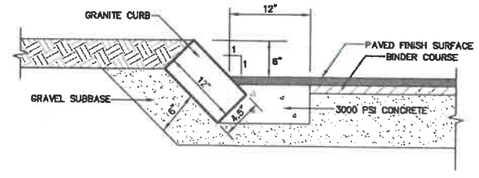


GRAVITY WALL CROSS SECTION

NOTES:
1. DRAIN TILE MAY BE ELIMINATED AT THE DISCRETION OF THE SITE ENGINEER.
2. DAYLIGHT DRAIN TILE AT LOW POINTS THROUGH WALL FACE OR AT ENDS; MAXIMUM SPACING 100 FEET OR PER SITE CONDITIONS.

STONE STRONG RETAINING WALL

NOT TO SCALE



NOTES:
1. CURB TO BE PLACED PRIOR TO PLACING TOP SURFACE COURSE.
2. JOINTS BETWEEN STONES SHALL BE MORTARED.

SLOPED GRANITE CURB

NOT TO SCALE

Design: LAZ	Draft: LAZ	Date: 9/8/21
Checked: BAJ	Scale: AS NOTED	Project No.: 21137
Drawing Name: 21137-PLAN.dwg		

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STATE OF NEW HAMPSHIRE – MICHAEL J. KERVAN No. 9646 LICENSED PROFESSIONAL ENGINEER – 12/21/21

REV.	DATE	REVISION	BY
5	2/10/22	REVISED PER CITY **COMMENTS**	LAZ
4	1/14/22	REVISED PER CITY COMMENTS	LAZ
3	12/14/21	REVISED PER CITY **COMMENTS**	LAZ
2	12/6/21	REVISED PER CONSERVATION COMMISSION COMMENTS	LAZ
1	9/21/21	ISSUED FOR PLANN**ING BOARD**	LAZ

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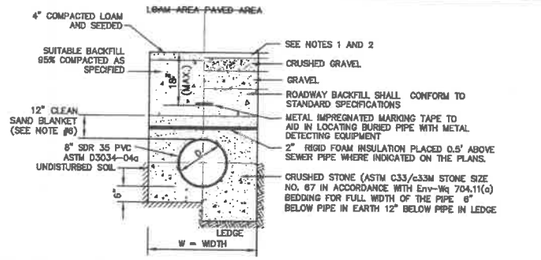
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
Civil Engineering Services
603-772-4746 FAX: 603-772-0227 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	DETAIL SHEET
Project:	WADLEIGH ROAD APARTMENTS ROCHESTER, NH
Owner of Record:	SSG, LLC ATTN: FENTON GROEN 120 WASHINGTON STREET, ROCHESTER, NH 03839

DRAWING No.
D1
SHEET 20 OF 27
JBE PROJECT NO. 21137



NOTES:

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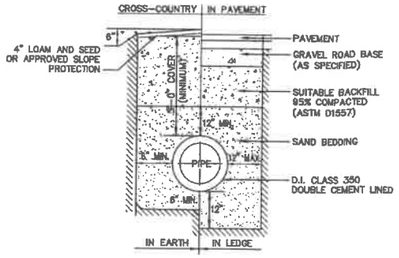
2. NEW ROADWAY CONSTRUCTION SHALL CONFORM TO SUBDIVISION SPECIFICATIONS.
3. TRENCH BACKFILL SHALL CONFORM WITH ENV. Wq 704.11(h) AND BE FREE OF DEBRIS, PAVEMENT, ORGANIC MATTER, TOP SOIL, WET OR SOFT MUCK, PEAT OR CLAY, EXCAVATED LEDGE OR ROCKS OVER SIX INCHES.
4. W= MAXIMUM ALLOWABLE TRENCH WIDTH TO 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 (a).

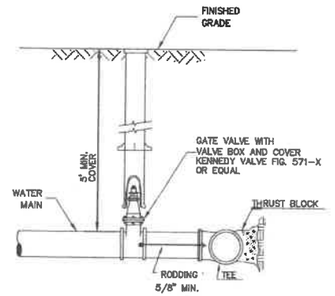
SEWER TRENCH

NOT TO SCALE



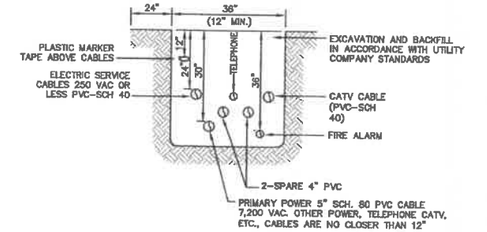
WATER SYSTEM TRENCH

NOT TO SCALE



BURIED GATE VALVE DETAIL

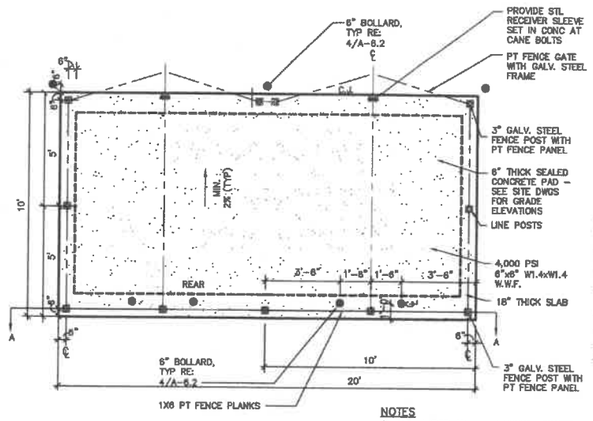
NOT TO SCALE



NOTE: ALL UTILITIES SHALL BE REVIEWED AND APPROVED BY APPROPRIATE UTILITY COMPANY.

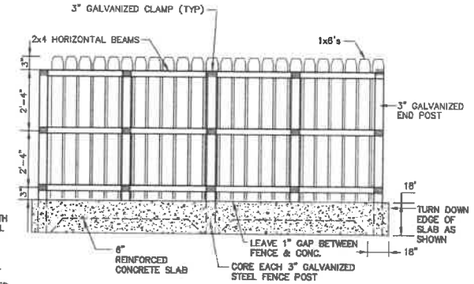
UTILITY TRENCH

NOT TO SCALE



NOTES

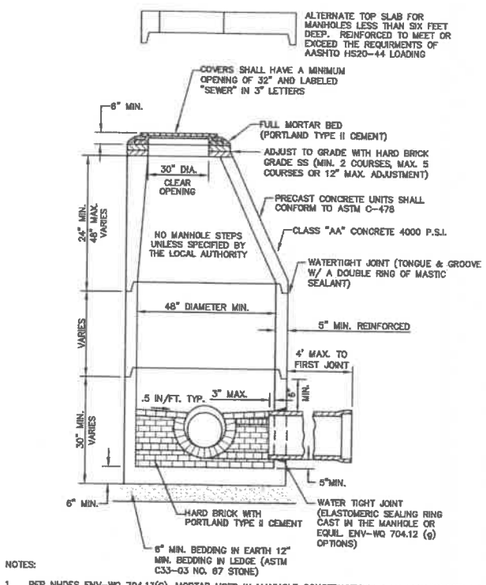
1. ALL LUMBER TO BE PRESSURE TREATED.
2. WOOD FENCE TO BE PAINTED OR STAINED TO MATCH BUILDING FOUNDATION.
3. DUMPSTER SIZE VARIES, SEE SITE PLANS FOR SCREENING SIZE



SECTION A-A

DUMPSTER ENCLOSURE PLAN

NOT TO SCALE



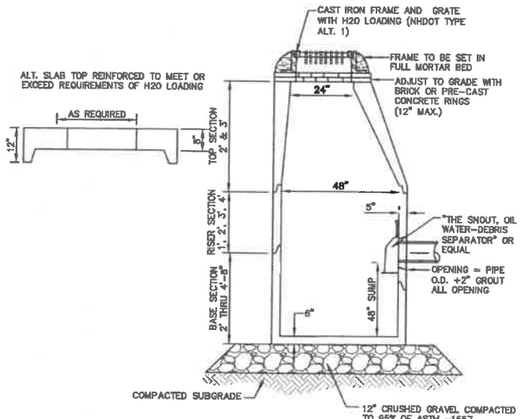
NOTES:

1. PER NHDES ENV-WQ 704.13(C), MORTAR USED IN MANHOLE CONSTRUCTION SHALL COMPLY WITH THE FOLLOWING:
   a. MORTAR SHALL BE COMPOSED OF TYPE II PORTLAND CEMENT AND SAND WITH OR WITHOUT HYDRATED LIME ADDITION
   b. PROPORTIONS IN MORTAR OF PARTS BY VOLUMES SHALL BE PER TABLE 704-4:
      (1) 4.5 PARTS SAND AND 1.5 PARTS CEMENT; OR
      (2) 4.5 PARTS SAND, ONE PART CEMENT AND 0.5 PART HYDRATED LIME;
   c. CEMENT SHALL BE TYPE II PORTLAND CEMENT THAT IS CERTIFIED BY ITS MANUFACTURER AS CONFORMING TO THE ASTM C150/C150M STANDARD IN EFFECT AT THE TIME THE CEMENT WAS MANUFACTURED
   d. HYDRATED LIME SHALL BE TYPE S THAT IS CERTIFIED BY ITS MANUFACTURER AS CONFORMING TO THE ASTM C207 STANDARD IN EFFECT AT THE TIME THE HYDRATED LIME WAS PROCESSED
   e. SAND SHALL CONSIST OF INERT NATURAL SAND THAT IS CERTIFIED BY ITS SUPPLIER AS CONFORMING TO THE ASTM C33 STANDARD IN EFFECT AT THE TIME THE SAND IS PROCESSED BY 'STANDARD SPECIFICATIONS FOR CONCRETE, FINE AGGREGATES
   f. CONCRETE FOR DROP SUPPORTS SHALL CONFORM TO THE REQUIREMENT FOR CLASS AAA CONCRETE OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S 'STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION AS AVAILABLE AT:

   HTTP://WWW.NH.GOV/DOT/ORG/PROJECTDEVELOPMENT/HIGHWAYDESIGN/SPECIFICATIONS/INDEX.HTM
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 A48/48M WITH A CASTING EQUAL TO CLASS 30 IN ACCORDANCE WITH ENV-WQ 704.13 (c) (8).
5. ALL PRECAST SECTIONS SHALL BE COATED ON THE EXTERIOR WITH A BITUMINOUS DAMP-PROOFING COATING IN ACCORDANCE WITH ENV-WQ 704.12 (J).
6. ALL PRECAST SECTIONS AND BASES SHALL HAVE THE DATE OF MANUFACTURE AND THE NAME OR TRADEMARK OF THE MANUFACTURER IMPRESSED OR INDELIBLY MARKED ON THE INSIDE WALL PER ENV-WQ 704.12(i).
7. BRICK MASONRY SHALL CONFORM TO ASTM C32 (ENV-WQ 704.12(a)(8))

SEWER MANHOLE

NOT TO SCALE

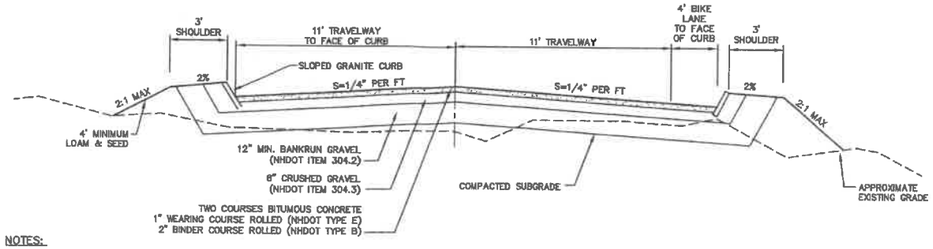


NOTES:

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 CATCH BASIN FRAMES AND GRATES SHALL BE NHDOT CATCH BASIN TYPE ALTERNATE 1 OR NEENAH R-3570 OR APPROVED EQUAL (24"x24" TYPICAL).
8. STANDARD CATCH BASIN FRAME 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'.
9. ALL CATCH BASINS ARE TO BE FITTED WITH GREASE HOODS.

CATCH BASIN WITH GREASE HOOD

NOT TO SCALE



NOTES:

1. REMOVE ALL ORGANICS, TOPSOIL AND MATERIAL YIELDING TO A 10 TON ROLLER. SUBBASE AREAS THAT CONTAIN UNSUITABLE MATERIALS MUST BE EXCAVATED TO A DEPTH NO LESS THAN 36" BELOW FINISH GRADE AND BE REPLACED WITH GRAVEL COMPACTED TO 95%.
2. ALL MATERIALS TO BE AS SPECIFIED PER TOWN STANDARDS AND NHDOT, WHICHEVER IS MOST STRINGENT. GRADATION AND COMPACTION TEST RESULTS (95% MIN.) SHALL BE SUBMITTED FOR REVIEW AND APPROVAL.
3. TOWN MAY REQUIRE UNDERDRAIN AND/OR ADDITIONAL DRAINAGE IF SOIL CONDITIONS WARRANT.
4. WOVEN GEOTEXTILE FABRIC SHALL BE PLACED ABOVE SUBGRADE AT ALL WETLAND CROSSINGS.

TYPICAL ROADWAY SECTION W/CURBING

NOT TO SCALE

Design: LAZ	Draft: LAZ	Date: 9/8/21
Checked: BAJ	Scale: AS NOTED	Project No.: 21137
Drawing Name: 21137-PLAN.dwg		

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STATE OF NEW HAMPSHIRE — MICHAEL J. KERVAN No. 9848 LICENSED LAND SURVEYOR — 2/14/22

REV.	DATE	REVISION	BY
5	2/10/22	REVISED PER CITY COMMENTS	LAZ
4	1/14/22	REVISED PER CITY COMMENTS	LAZ
3	12/14/21	REVISED PER CITY COMMENTS	LAZ
2	12/8/21	REVISED PER CONSERVATION COMMISSION COMMENTS	LAZ
1	9/21/21	ISSUED FOR PLANNING BOARD	LAZ

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 FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

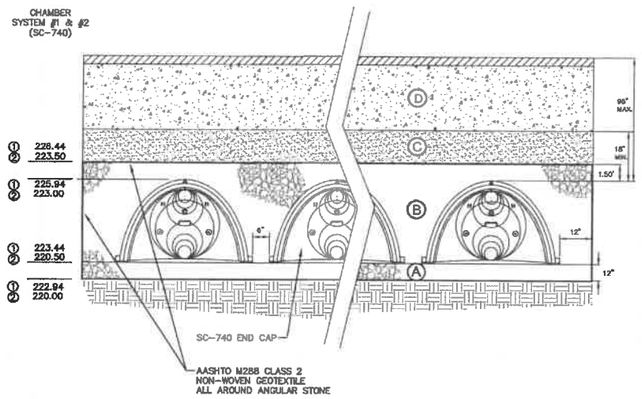
Plan Name:	DETAIL SHEET
Project:	WADLEIGH ROAD APARTMENTS ROCHESTER, NH
Owner of Record:	SSG, LLC ATTN: FENTON GROEN 120 WASHINGTON STREET, ROCHESTER, NH 03839

DRAWING No.
D2
SHEET 21 OF 27
JBE PROJECT NO.21137

ACCEPTABLE FILL MATERIALS
STORMTECH SC-310 AND SC-740 CHAMBER SYSTEMS

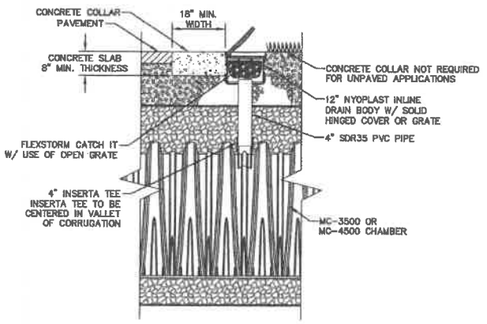
	MATERIAL LOCATION	DESCRIPTION	AASHTO M43 DESIGNATION	AASHTO M145 DESIGNATION	COMPACTION/DENSITY REQUIREMENT
D	PAVEMENT SUBGRADE, DEPTH(S) PER SPECIFICATIONS	PAVEMENT SUBGRADE. MATERIALS PER SPECIFICATIONS	N/A	N/A	PREPARE PER SPECIFICATIONS AND PLANS. PAVED INSTALLATIONS HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	FILL MATERIAL FROM 1.50' ABOVE CHAMBERS TO BOTTOM OF PAVEMENT SUBGRADE	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES.	3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	A-1 A-2 A-3	COMPACT IN 6" LIFTS TO A MINIMUM 95% STANDARD PROCTOR DENSITY. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 LBS. DYNAMIC FORCE NOT TO EXCEED 20,000 LBS.
B	EMBEDMENT STONE SURROUNDING AND TO A 1.50' ELEVATION ABOVE CHAMBERS	WASHED ANGULAR STONE WITH THE MAJORITY OF PARTICLES BETWEEN ¾ - 2 INCH	3, 357, 4, 467, 5, 56, 57	N/A	NO COMPACTION REQUIRED
A	12" FOUNDATION STONE BELOW CHAMBERS	WASHED ANGULAR STONE WITH THE MAJORITY OF PARTICLES BETWEEN ¾ - 2 INCH	3, 357, 4, 467, 5, 56, 57	N/A	PLATE COMPACT OR ROLL TO ACHIEVE A 95% STANDARD PROCTOR DENSITY

PLEASE NOTE: THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE WASHED CRUSHED ANGULAR. FOR EXAMPLE, THE STONE MUST BE SPECIFIED AS WASHED, CRUSHED, ANGULAR NO. 4 STONE.



TYPICAL SC-740 CROSS-SECTION (OR EQUAL)

NOT TO SCALE



TYPICAL SC-740 4" INSPECTION PORT

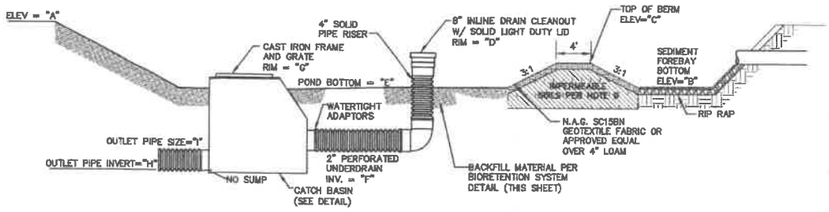
NOT TO SCALE

NOTES:

1. SC-740 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
4. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
   PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.

GENERAL NOTES

1. STORMTECH LLC ("STORMTECH") REQUIRES INSTALLING CONTRACTORS TO USE AND UNDERSTAND STORMTECH'S LATEST INSTALLATION INSTRUCTIONS PRIOR TO BEGINNING SYSTEM INSTALLATION.
2. STORMTECH OFFERS INSTALLATION CONSULTATIONS TO INSTALLING CONTRACTORS. CONTACT OUR TECHNICAL SERVICE DEPARTMENT OR LOCAL STORMTECH REPRESENTATIVE AT LEAST 30 DAYS PRIOR TO SYSTEM INSTALLATION TO ARRANGE A PRE-INSTALLATION CONSULTATION. OUR REPRESENTATIVES CAN THEN ANSWER QUESTIONS OR ADDRESS COMMENTS ON THE STORMTECH CHAMBER SYSTEM AND INFORM THE INSTALLING CONTRACTOR OF THE MINIMUM INSTALLATION REQUIREMENTS BEFORE BEGINNING THE SYSTEM'S CONSTRUCTION. CALL 860-529-8188 TO SPEAK TO A TECHNICAL SERVICE REPRESENTATIVE OR VISIT WWW.STORMTECH.COM TO RECEIVE A COPY OF OUR INSTALLATION INSTRUCTIONS.
3. STORMTECH'S REQUIREMENTS FOR SYSTEMS WITH PAVEMENT DESIGN (ASPHALT, CONCRETE PAVERS, ETC.): MINIMUM COVER IS 24 INCHES NOT INCLUDING PAVEMENT; MAXIMUM COVER IS 6.5 FEET INCLUDING PAVEMENT. FOR INSTALLATIONS THAT DO NOT INCLUDE PAVEMENT, WHERE RUTTING FROM VEHICLES MAY OCCUR, MINIMUM REQUIRED COVER IS 24 INCHES, MAXIMUM COVER IS 6.5 FEET.
4. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE DESIGN ENGINEER.
5. AASHTO M288 CLASS 2 NON-WOVEN GEOTEXTILE (FILTER FABRIC) MUST BE USED AS INDICATED IN THE PROJECT PLANS.
6. STONE PLACEMENT BETWEEN CHAMBERS ROWS AND AROUND PERIMETER MUST FOLLOW INSTRUCTIONS AS INDICATED IN THE MOST CURRENT VERSION OF STORMTECH'S INSTALLATION INSTRUCTIONS.
7. BACKFILLING OVER THE CHAMBERS MUST FOLLOW REQUIREMENTS AS INDICATED IN THE MOST CURRENT VERSION OF STORMTECH'S INSTALLATION INSTRUCTIONS.
8. THE CONTRACTOR MUST REFER TO STORMTECH'S INSTALLATION INSTRUCTIONS FOR A TABLE OF ACCEPTABLE VEHICLE LOADS AT VARIOUS DEPTHS OF COVER. THIS INFORMATION IS ALSO AVAILABLE AT STORMTECH'S WEBSITE: WWW.STORMTECH.COM. THE CONTRACTOR IS RESPONSIBLE FOR PREVENTING VEHICLES THAT EXCEED STORMTECH'S REQUIREMENTS FROM TRAVELING ACROSS OR PARKING OVER THE STORMWATER SYSTEM. TEMPORARY FENCING, WARNING TAPE AND APPROPRIATELY LOCATED SIGNS ARE COMMONLY USED TO PREVENT UNAUTHORIZED VEHICLES FROM ENTERING SENSITIVE CONSTRUCTION AREAS.
9. THE CONTRACTOR MUST APPLY EROSION AND SEDIMENT CONTROL MEASURES TO PROTECT THE STORMWATER SYSTEM DURING ALL PHASES OF SITE CONSTRUCTION PER LOCAL CODES AND DESIGN ENGINEER'S SPECIFICATIONS.
10. STORMTECH PRODUCT WARRANTY IS LIMITED. CONTACT STORMTECH FOR WARRANTY INFORMATION.



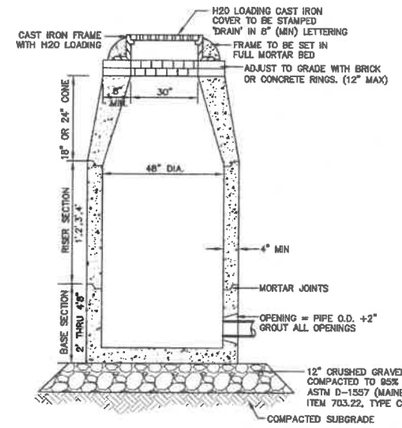
BIORETENTION SYSTEM TABLE

	ELEVATIONS/DIMENSIONS								
	A	B	C	D	E	F	G	H	I
SYSTEM P3	214.25	208.95	213.8	214.0	211.75	208.83	213.0	208.50	12"

BIORETENTION SYSTEM SECTION

NOT TO SCALE

nyloplast usa inc
3130 Verona Avenue - Buford, Georgia 30518
Tel. (770) 932-2443 - Fax (770) 932-2490

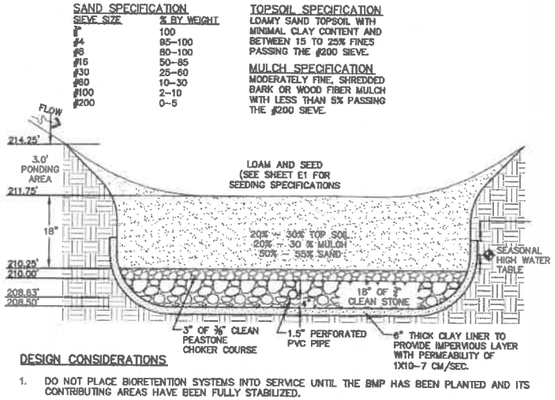


NOTES:

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



SAND SPECIFICATION

SIEVE SIZE	% BY WEIGHT
1"	100
#4	95-100
#8	80-100
#16	50-85
#30	25-60
#50	10-30
#100	2-10
#200	0-5

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.

DESIGN CONSIDERATIONS

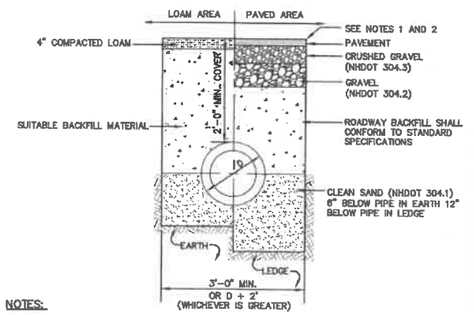
1. DO NOT PLACE BIORETENTION SYSTEMS INTO SERVICE UNTIL THE BMP HAS BEEN PLANTED AND ITS CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
2. DO NOT DISCHARGE SEDIMENT-LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUN-OFF, WATER FROM EXCAVATIONS) TO THE BIORETENTION AREA DURING ANY STAGE OF CONSTRUCTION.
3. DO NOT TRAFFIC EXPOSED SOIL SURFACE WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT OUTSIDE THE LIMITS OF THE INFILTRATION COMPONENTS OF THE SYSTEM.

MAINTENANCE REQUIREMENTS:

1. SYSTEMS SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND FOLLOWING ANY RAINFALL EVENT EXCEEDING 2.5 INCHES IN A 24 HOUR PERIOD, WITH MAINTENANCE OR REHABILITATION CONDUCTED AS WARRANTED BY SUCH INSPECTION.
2. PRETREATMENT MEASURES SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND CLEANED OF ACCUMULATED SEDIMENT AS WARRANTED BY INSPECTION, BUT NO LESS THAN ONCE ANNUALLY.
3. TRASH AND DEBRIS SHOULD BE REMOVED AT EACH INSPECTION.
4. AT LEAST ONCE ANNUALLY, SYSTEM SHOULD BE INSPECTED FOR DRAWDOWN TIME. IF BIORETENTION SYSTEM DOES NOT DRAIN WITHIN 72 HOURS FOLLOWING A RAINFALL EVENT, THEN A QUALIFIED PROFESSIONAL SHOULD ASSESS THE CONDITION OF THE FACILITY TO DETERMINE MEASURES REQUIRED TO RESTORE FILTRATION FUNCTION OR INFILTRATION FUNCTION (AS APPLICABLE), INCLUDING BUT NOT LIMITED TO REMOVAL OF ACCUMULATED SEDIMENTS OR RECONSTRUCTION OF THE FILTER MEDIA.
5. VEGETATION SHOULD BE INSPECTED AT LEAST ANNUALLY, AND MAINTAINED IN HEALTHY CONDITION, INCLUDING PRUNING, REMOVAL AND REPLACEMENT OF DEAD OR DISEASED VEGETATION, AND REMOVAL OF INVASIVE SPECIES.
6. CLAY LINER MATERIAL SHALL BE CLEAN SILTY-CLAY BORROW FREE OF ROOTS, ORGANIC MATTER, AND OTHER DELETERIOUS SUBSTANCES, AND SHALL CONTAIN NO ROCKS OR LUMPS OVER THREE INCHES (3") IN DIAMETER. THIS MATERIAL SHALL BE INSTALLED IN 6" LIFTS COMPACTED TO 92% OF ASTM D-1557, AND SHALL MEET THE FOLLOWING SPECIFICATIONS: 6" PASSING 100% #4 SIEVE, 95-100% #40 SIEVE 60-90% #100 SIEVE 40-60% #200 SIEVE 25-45% (OF THE FRACTION PASSING THE #4 SIEVE). THE CLAY COMPONENT SHALL HAVE A PLASTICITY INDEX OF AT LEAST 8 AND A HYDRAULIC CONDUCTIVITY OF 10 TO THE -6 CM/SEC.
7. COMPACTION AND MATERIALS TESTING SERVICES SHALL BE PERFORMED BY AN INDEPENDENT GEOTECHNICAL ENGINEER RETAINED BY THE OWNER.

BIORETENTION SYSTEM (with clay bottom and pipe)

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

Design: LAZ	Draft: LAZ
Checked: BAJ	Scale: AS NOTED
Drawing Name: 21137-PLAN.dwg	Date: 9/8/21
Project No.: 21137	

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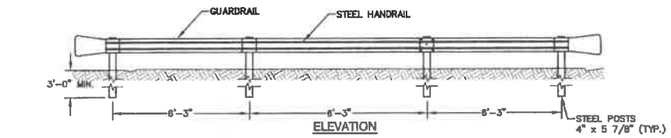
STATE OF NEW HAMPSHIRE — MICHAEL A. KERVAN No. 9946 — LICENSED PROFESSIONAL ENGINEER — 2/10/2022

REV.	DATE	REVISION	BY
5	2/10/22	REVISED PER CITY COMMENTS	LAZ
4	1/14/22	REVISED PER CITY COMMENTS	LAZ
3	12/14/21	REVISED PER CITY COMMENTS	LAZ
2	12/6/21	REVISED PER CONSERVATION COMMISSION COMMENTS	LAZ
1	9/21/21	ISSUED FOR PLANNING BOARD	LAZ

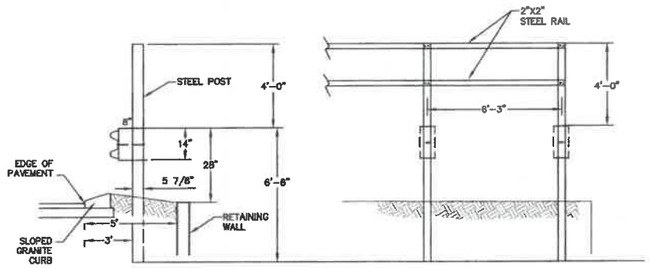
Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
Civil Engineering Services
603-772-4746 FAX: 603-772-0227 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	DETAIL SHEET
Project:	WADLEIGH ROAD APARTMENTS ROCHESTER, NH
Owner of Record:	SSG, LLC ATTN: FENTON GROEN 120 WASHINGTON STREET, ROCHESTER, NH 03839

DRAWING No. D3
SHEET 22 OF 27
JBE PROJECT NO. 21137



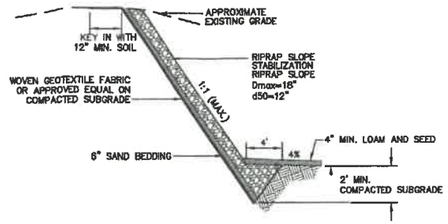
ELEVATION



NOTES:
1. USE IN LIGHT TRAFFIC AREAS.
2. HAND RAIL TO BE GALVANIZED STEEL TYPE (OR EQUIVALENT APPROVED BY THE ENGINEER.
3. POST BOLTS TO BE 10" W/MIN. 2 1/2" THREAD LENGTH.

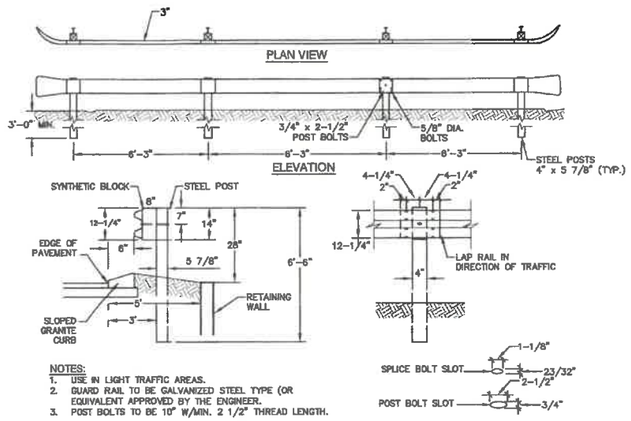
STEEL HAND RAIL DETAIL

NOT TO SCALE



RIPRAP STABILIZED STEEP SLOPE

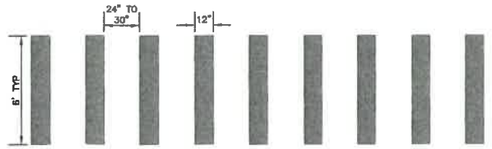
NOT TO SCALE



NOTES:
1. USE IN LIGHT TRAFFIC AREAS.
2. GUARD RAIL TO BE GALVANIZED STEEL TYPE (OR EQUIVALENT APPROVED BY THE ENGINEER.
3. POST BOLTS TO BE 10" W/MIN. 2 1/2" THREAD LENGTH.

GUARD RAIL (STEEL)

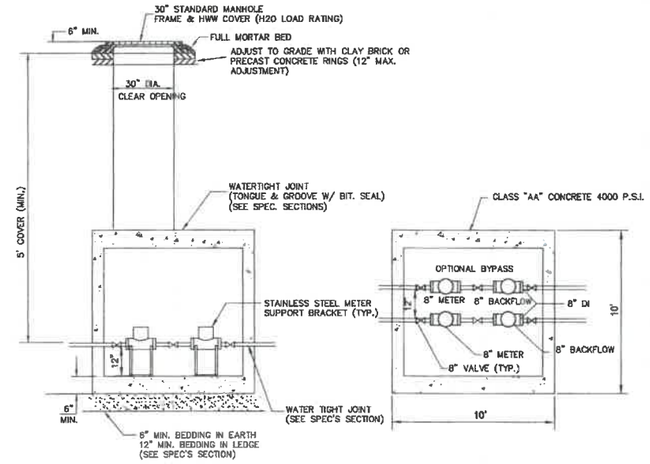
NOT TO SCALE



NOTES:
1. TRANSVERSE CROSSWALK LINES SHALL BE THERMOPLASTIC, NOT LESS THAN 6" WIDE AND NOT LESS THAN 6' APART.
2. SPACING FOR THE CONTINENTAL CLOCK MARKINGS SHALL BE UNIFORM FOR EACH INDIVIDUAL CROSSWALK BUT CAN BE MODIFIED FOR ONE CROSSWALK TO THE NEXT TO ELIMINATE A CROSSWALK MARKING DIRECTLY IN THE WHEELPATH.

NHDOT CONTINENTAL BLOCK MARKING DETAIL

NOT TO SCALE



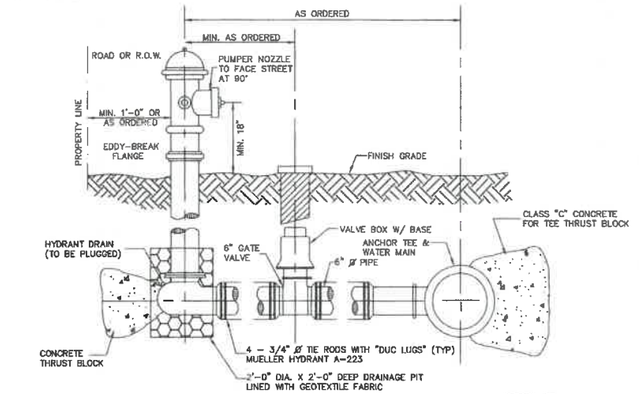
ELEVATION PLAN VIEW

NOTES
1. METER TO BE SENSUS OMNI C2 OF APPROPRIATE SIZE.
2. BACKFLOW TO BE TESTABLE DOUBLE CHECK VALVE ASSEMBLY WITH CENTER-SHAFT OR TOP HINGE CHECKS (WILKINS 350AST OR EQUAL) OF APPROPRIATE SIZE, IF APPLICATION IS DESIGNED LOW HAZARD.
3. OPTIONAL BYPASS MY BE SIZED FOR DOMESTIC SERVICE ONLY.
4. VAULT TO HAVE ADEQUATE ANTI-BOUYANCY FEATURES.
5. VAULT COVERS TO BE STAMPED WITH "WATER" AND MATCH EXISTING CITY OF ROCHESTER INFRASTRUCTURE STANDARDS
6. ISOLATION VALVES REQUIRED AROUND EQUIPMENT FOR MAINTENCE, TESTING AND SERVICE.
7. IF APPLICATION IS DESIGNATED HIGH HAZARD, THE ASSEMBLY MUST USE RPZ BACKFLOW DEVICES AND BE LOCATED IN AN ABOVE GRADE, HEATED AND INSULATED ENCLOSURE TO ALLOW FOR DRAINING.
8. VAULT AND ACCESS HATCHES SHALL BE SIZED TO ALLOW ENTRY FOR INSPECTION, TESTING AND COMPLETE REPLACEMENT OF DEVICES.

BYPASS USAGE:
9. IF OPTIONAL BYPASS LINE IS INSTALLED, WHEN MAIN FEED IS TAKEN OFLINE AND BYPASS ENGAGED, OWNER SHALL CALL 330-7128 TO COORDINATE LOW FLOW CONDITION WITH ROCHESTER FIRE DEPARTMENT AND ROCHESTER PUBLIC WORKS DEPARTMENT.

WATER METER PIT ROCHESTER

NOT TO SCALE



REFER TO
ROCHESTER WATER
DEPARTMENT SPECS.

NOTES
1. ALL PIPE FITTINGS TO BE D.I. PRESSURE CLASS 350, THICKNESS CLASS 52.
2. HYDRANT TO BE PAINTED RED WITH WHITE "REFLECTOR" PAINT ON BONNET.
3. MECHANICAL JOINTS SHALL HAVE MEGALUG RETAINING GLANDS AS MADE BY EBBA OR APPROVED EQUAL.
4. STEAMER NOZZLE TO BE "STORCH" TYPE.
5. NATIONAL STANDARD THREAD.

HYDRANT INSTALLATION

NOT TO SCALE

Design: LAZ	Draft: LAZ	Date: 9/8/21
Checked: BAJ	Scale: AS NOTED	Project No.: 21137
Drawing Name: 21137-PLAN.dwg	

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STATE OF NEW HAMPSHIRE — MICHAEL J. KERVAN No. 9648 — LICENSED PROFESSIONAL ENGINEER — 21 OCT 2022

REV.	DATE	REVISION	BY
5	2/10/22	REVISED PER CITY COMMENTS	LAZ
4	1/14/22	REVISED PER CITY COMMENTS	LAZ
3	12/14/21	REVISED PER CITY COMMENTS	LAZ
2	12/6/21	REVISED PER CONSERVATION COMMISSION COMMENTS	LAZ
1	9/21/21	ISSUED FOR PLANNING BOARD	LAZ

Designed and Produced In NH
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PO Box 219
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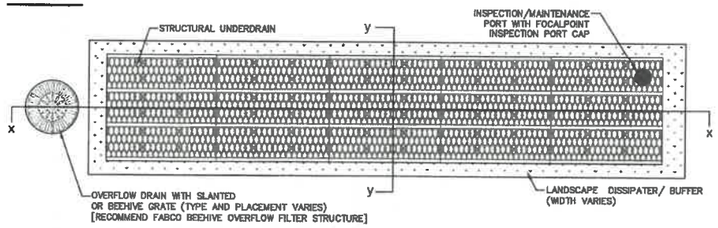
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

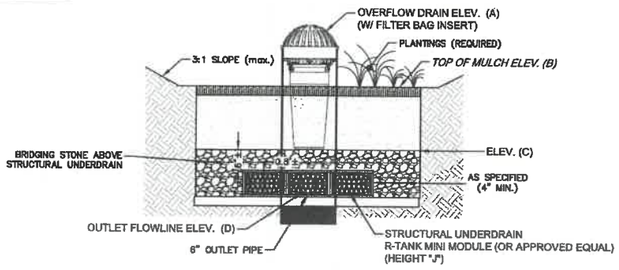
Plan Name:	DETAIL SHEET
Project:	WADLEIGH ROAD APARTMENTS ROCHESTER, NH
Owner of Record:	SSG, LLC ATTN: FENTON GROEN 120 WASHINGTON STREET, ROCHESTER, NH 03839

DRAWING No.
D4
SHEET 23 OF 27
JBE PROJECT NO.21137

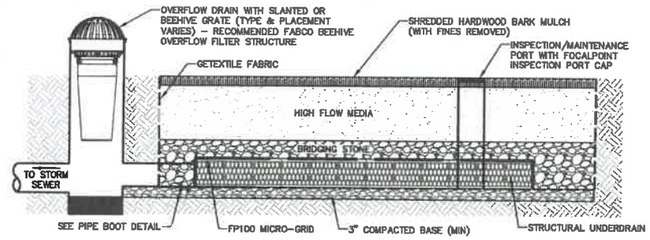
PLAN VIEW



SECTION Y-Y



SECTION X-X



FOCALPOINT BIOFILTRATION SYSTEM TYPICAL LAYOUT AND SECTIONS

NOT TO SCALE

FOCALPOINT HP PERFORMANCE SPECIFICATION:

HIGH PERFORMANCE MEDIA
HIGH PERFORMANCE MEDIA MUST MEET A MINIMUM OF 100-INCHES PER HOUR INFILTRATION RATE.
FIELD HYDRAULIC CONDUCTIVITY TESTING MUST BE CONDUCTED WITHIN 30 DAYS OF INSTALLATION.
FIELD TEST MUST BE CONDUCTED WITH PRESCRIBED INFILTROMETER AND SOP (SEE SPECIFICATIONS)
FAILURE TO MEET FIELD TESTING WILL RESULT IN THE REMOVAL OF MEDIA AND REPLACEMENT FROM ALTERNATE BATCH.

HIGH PERFORMANCE STRUCTURAL UNDERDRAIN

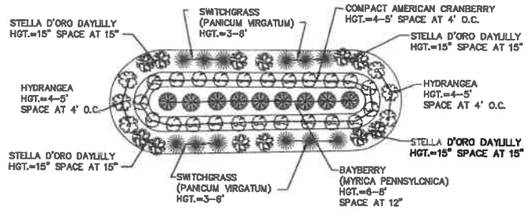
MUST HAVE A MINIMUM OF 19 SQUARE INCHES OF ORIFACE OPENING PER SQUARE FOOT.
MUST MEET H20 LOADING REQUIREMENTS
MUST BE MODULAR IN NATURE AND ASSEMBLED ON SITE.
MUST HAVE MINIMUM 90% INTERIOR VOID SPACE.

PLANT COMPONENT

SUPPLIER SHALL PROVIDE LIST OF ACCEPTABLE PLANTS
PLANTS SHALL BE INSTALLED AT THE TIME THE SYSTEM IS COMMISSIONED FOR USE. PLANTING OUTSIDE THIS TIME REQUIRES APPROVAL BY THE ENGINEER OF RECORD
SEE FOCALPOINT INSTALLATION GUIDE FOR PLANT SPACING, PLANTING PROCEDURES, ETC.

FOCALPOINT HP CONSTRUCTION GUIDE

FOCALPOINT ID	FP-1	FP-2	FP-3	FP-4
FOCALPOINT LENGTH	11'	10'	9'	8'
FOCALPOINT WIDTH	6'	5'	5'	4'
FOCALPOINT INV	225.34	225.34	222.32	189.50
TOP OF MULCH	228.34	228.34	225.32	192.50
OVERFLOW SIZE	15"	15"	12"	12"
OVERFLOW ELEVATION	228.84	228.84	225.82	193.00



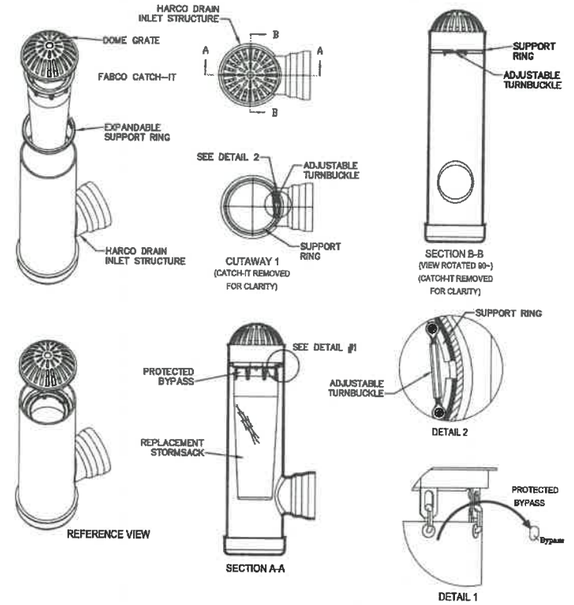
NOTES

1 NATIVE PLANTS ARE BEST SUITED AS THEY ADJUST WELL TO PERIODIC DROUGHTS AND TEMPERATURE EXTREMES. USE USDA HARDINESS ZONES AS THE FIRST GUIDE FOR PLANTS.

1. ROOT MORPHOLOGY IS IMPORTANT. SHALLOW FIBROUS ROOT SYSTEMS ARE BEST AND GENERALLY ONLY GROW TO DEPTHS OF 3 FT. PLANTS WITH TAP ROOTS OR THAT ARE SURFACE SPREADING SHOULD NOT BE USED.
2. SMALL TREES, WOODY SHRUBS OR HERBACEOUS PLANTS ARE ALL SUITABLE FOR THE SYSTEM.
3. IF THE RUNOFF COULD BE CONTAMINATED WITH ROAD SALTS, SALT TOLERANT PLANTS SHOULD BE USED.
4. GENERALLY FACULTATIVE PLANTS THAT LIKE WELL DRAINED SOILS SHOULD BE USED. DESPITE THE VOLUME OF WATER TREATED, THE SOIL DRAINS VERY WELL SO FACULTATIVE-WET OR OBLIGATE PLANTS WILL NOT DO WELL IN THESE SYSTEMS.
5. SOIL MOISTURE IS MAINTAINED THROUGH THE USE OF 10% PEAT MOSS IN THE ORIGINAL MEDIA MIX AND THE USE OF A 3 INCH LAYER OF MULCH ON THE MEDIA SURFACE. OVER THE YEARS, DUE TO ROUTINE REPLACEMENT OF THE MULCH AND ONGOING INPUT OF ORGANIC MATERIAL FROM THE RUNOFF (LEAF LITTER, ORGANICS AND DETRITUS MATERIALS), THIS LEVEL OF ORGANIC CONTENT IS MAINTAINED. THROUGH EXPERIENCE THIS HAS BEEN ADEQUATE TO HELP THE PLANTS SURVIVE EXTENDED DROUGHTS.
6. PLANT SELECTION CAN SOMETIMES BE A FUNCTION OF THE SOIL DEPTH USED FOR THE FOCALPOINT SYSTEM. FOR EXAMPLE, IF LARGE CANOPY TREES ARE REQUIRED, A SOIL DEPTH OF 5 FT. OR MORE MAY BE NEEDED TO PREVENT WIND THROW. IF THERE IS ONLY 1 FT. OF MEDIA THEN FLOWERS OR GRASSES SHOULD BE USED.
7. THE PALETTE USED IS OFTEN DICTATED BY THE LIST OF ACCEPTABLE MATERIALS IN LOCAL REGULATIONS. MOST OF THE TIME, IT IS POSSIBLE TO FIND THE PROPER PLANT FROM THAT LIST.
8. ALTERNATE PLANTINGS MUST BE OF THE TYPE APPROVED BY ACF ENVIRONMENTAL AND APPROVED BY ENGINEER OF RECORD.

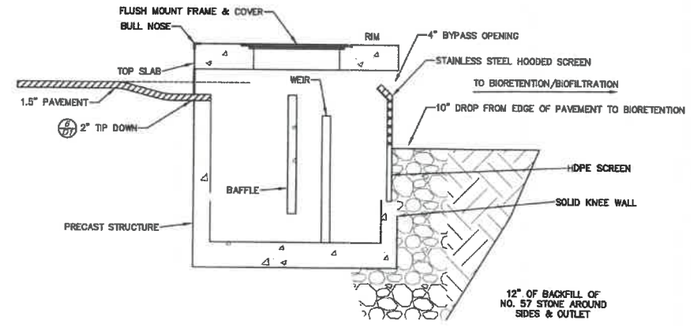
TYPICAL FOCALPOINT PLANTINGS

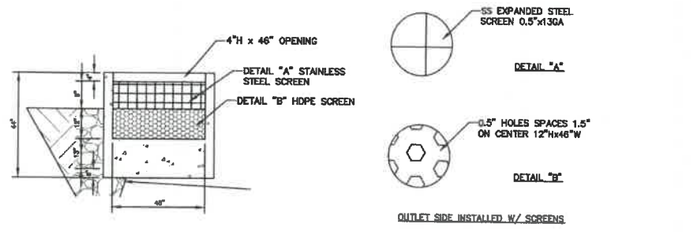
NOT TO SCALE



FABCO BEEHIVE OVERFLOW FILTER STRUCTURE DETAILS (FOCALPOINT)

NOT TO SCALE





PRETX CURB INLET PRE-TREATMENT DETAIL

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Design: LAZ	Draft: LAZ	Date: 9/8/21
Checked: BAJ	Scale: AS NOTED	Project No.: 21137
Drawing Name: 21137-PLAN.dwg		

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STATE OF NEW HAMPSHIRE – MICHAEL J. KERIVAN No. 9346 – LICENSED PROFESSIONAL ENGINEER – 2/4/2022

REV.	DATE	REVISION	BY
5	2/10/22	REVISED PER CITY COMMENTS	LAZ
4	1/14/22	REVISED PER CITY COMMENTS	LAZ
3	12/14/21	REVISED PER CITY COMMENTS	LAZ
2	12/8/21	REVISED PER CONSERVATION COMMISSION COMMENTS	LAZ
1	9/21/21	ISSUED FOR PLANNING BOARD	LAZ

Designed and Produced in NH
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PO Box 219
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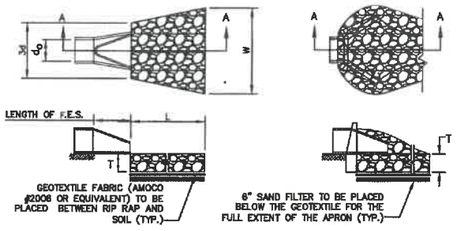
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	DETAIL SHEET
Project:	WADLEIGH ROAD APARTMENTS ROCHESTER, NH
Owner of Record:	SSG, LLC ATTN: FENTON GROEN 120 WASHINGTON STREET, ROCHESTER, NH 03839

DRAWING No.
D5
SHEET 23 OF 27
JBE PROJECT NO. 21137



SECTION A–A
PIPE OUTLET TO FLAT AREA WITH NO DEFINED CHANNEL

SECTION A–A
PIPE OUTLET TO WELL–DEFINED CHANNEL

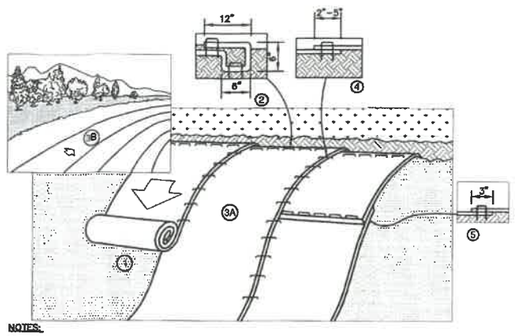
TABLE 7–24––RECOMMENDED RIP RAP GRADATION RANGES				
THICKNESS OF RIP RAP = 1.5 FEET				
d50 SIZE=	0.50	FEET	6	INCHES
% OF WEIGHT SMALLER THAN THE GIVEN d50 SIZE	SIZE OF STONE (INCHES) FROM		TO	
100%	9		12	
85%	8		11	
50%	6		9	
15%	2		3	

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 SHOULD 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 SHOULD BE CHECKED AT LEAST ANNUALLY AND AFTER EVERY MAJOR STORM. IF THE RIP RAP HAS BEEN DISPLACED, UNDERMINED OR DAMAGED, IT SHOULD BE REPAIRED IMMEDIATELY. THE CHANNEL IMMEDIATELY BELOW THE OUTLET SHOULD BE CHECKED TO SEE THAT EROSION IS NOT OCCURRING. THE DOWNSTREAM CHANNEL SHOULD 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



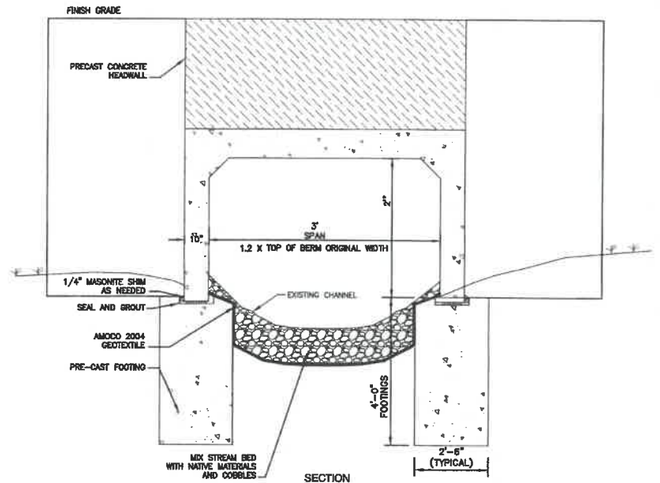
NOTES:

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 (800) 772-2040

NOT TO SCALE



SECTION

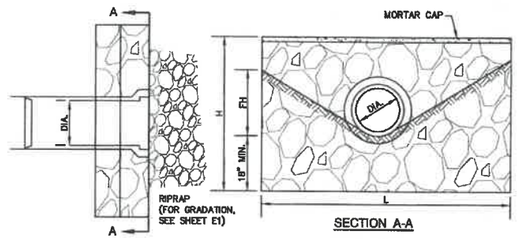
NOTES:

1. STRUCTURE TO BE DESIGNED FOR H20 LOADING.
2. THIS DETAIL IS FOR ILLUSTRATIVE PURPOSES ONLY. PRECAST CULVERT & WINGWALLS TO BE DESIGNED AND STAMPED BY A LICENSED STRUCTURAL ENGINEER.
3. SHOP DRAWINGS & DETAILS STAMPED BY A LICENSED STRUCTURAL ENGINEER SHALL BE REVIEWED & APPROVED FOR PLAN COMPLIANCE BY JONES AND BEACH ENGINEERS, INC. (JBE) PRIOR TO INSTALLATION. JBE TAKES NO LIABILITY FOR THE DESIGN OF THIS BRIDGE STRUCTURE OR ITS COMPONENTS.

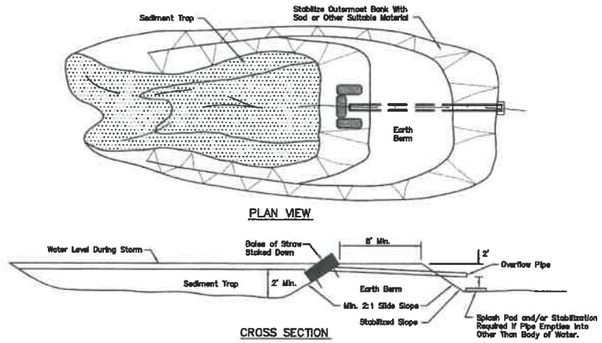
TABLE–RECOMMENDED GRADATION RANGES				
THICKNESS OF COBBLES = 1.25 FEET				
d50 SIZE=	0.50	FEET	8	INCHES
% OF WEIGHT SMALLER THAN THE GIVEN d50 SIZE	SIZE OF STONE (INCHES) FROM		TO	
100%	14"		15"	
85%	10"		14"	
50%	4"		9"	
15%	2"		3"	

PRECAST RIGID FRAME BOX CULVERT W/ WINGWALLS

NOT TO SCALE



SECTION A-A

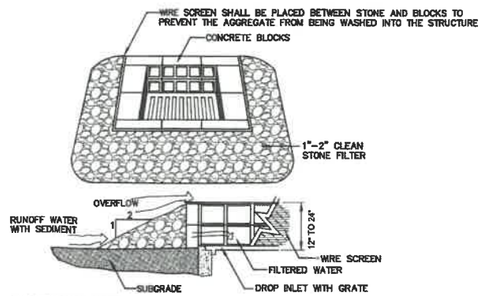


PLAN VIEW

CROSS SECTION

TEMPORARY SEDIMENT BASIN

NOT TO SCALE

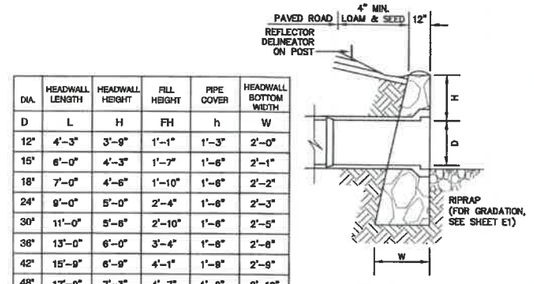


MAINTENANCE NOTE:

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



DIA.	HEADWALL LENGTH	HEADWALL HEIGHT	FILL HEIGHT	PIPE COVER	HEADWALL BOTTOM WIDTH
D	L	H	FH	h	W
12"	4'–3"	3'–9"	1'–1"	1'–3"	2'–0"
15"	6'–0"	4'–3"	1'–7"	1'–6"	2'–1"
18"	7'–0"	4'–6"	1'–10"	1'–6"	2'–2"
24"	9'–0"	5'–0"	2'–4"	1'–6"	2'–3"
30"	11'–0"	5'–6"	2'–10"	1'–6"	2'–5"
36"	13'–0"	6'–0"	3'–4"	1'–6"	2'–6"
42"	15'–9"	6'–9"	4'–1"	1'–9"	2'–9"
48"	17'–9"	7'–3"	4'–7"	1'–9"	2'–10"

LONGITUDINAL SECTION

NOTES:

1. ALL DIMENSIONS GIVEN IN FEET AND INCHES.
2. PROVIDE BELL END AT INLET HEADWALL, AND SPIGOT END AT OUTLET END HEADWALL.
3. RIPRAP SHALL BE SIZED TO RESIST THE TRACTIVE VELOCITY FORCES.

MORTAR RUBBLE MASONRY HEADWALL

NOT TO SCALE

Design: LAZ	Draft: LAZ	Date: 9/8/21	
Checked: BAJ	Scale: AS NOTED	Project No.: 21137	
Drawing Name: 21137-PLAN.dwg			

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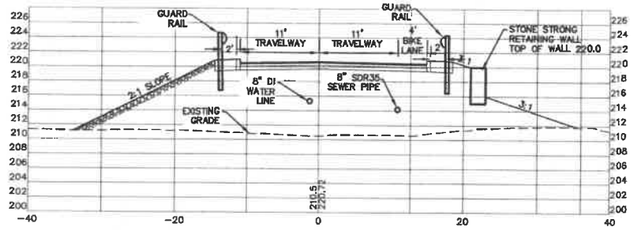
STATE OF NEW HAMPSHIRE – MICHAEL J. KERIVAN No. 9340 LICENSED PROFESSIONAL ENGINEER – 2/4/2022

REV.	DATE	REVISION	BY
5	2/10/22	REVISED PER CITY COMMENTS	LAZ
4	1/14/22	REVISED PER CITY COMMENTS	LAZ
3	12/14/21	REVISED PER CITY COMMENTS	LAZ
2	12/6/21	REVISED PER CONSERVATION COMMISSION COMMENTS	LAZ
1	9/21/21	ISSUED FOR PLANNING BOARD	LAZ

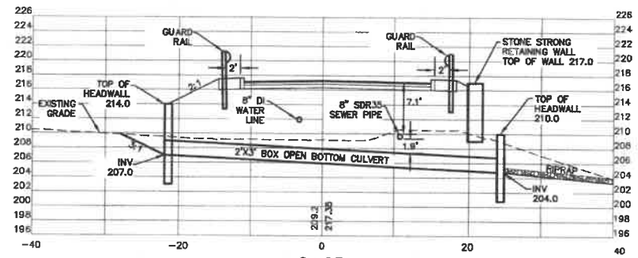
Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave. Civil Engineering Services 603-772-4746
PO Box 219 FAX: 603-772-0227
Stratham, NH 03885 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	DETAIL SHEET
Project:	WADLEIGH ROAD APARTMENTS ROCHESTER, NH
Owner of Record:	SSG, LLC ATTN: FENTON GROEN 120 WASHINGTON STREET, ROCHESTER, NH 03839

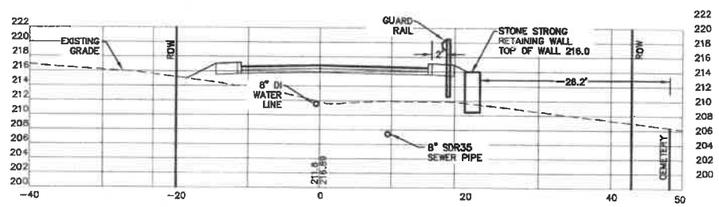
DRAWING No.
D6
SHEET 24 OF 27
JBE PROJECT NO. 21137



9+00
STA 9+00 WALL



8+25
CULVERT CROSSING



6+00
CEMETERY

SELECT CROSS SECTIONS

SCALE: 1"=10'

Design: LAZ	Draft: LAZ	Date: 9/8/21
Checked: BAJ	Scale: AS NOTED	Project No.: 21137
Drawing Name: 21137-PLAN.dwg		

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STATE OF NEW HAMPSHIRE – MICHAEL J. KERVAN No. 9648 – LICENSED PROFESSIONAL ENGINEER

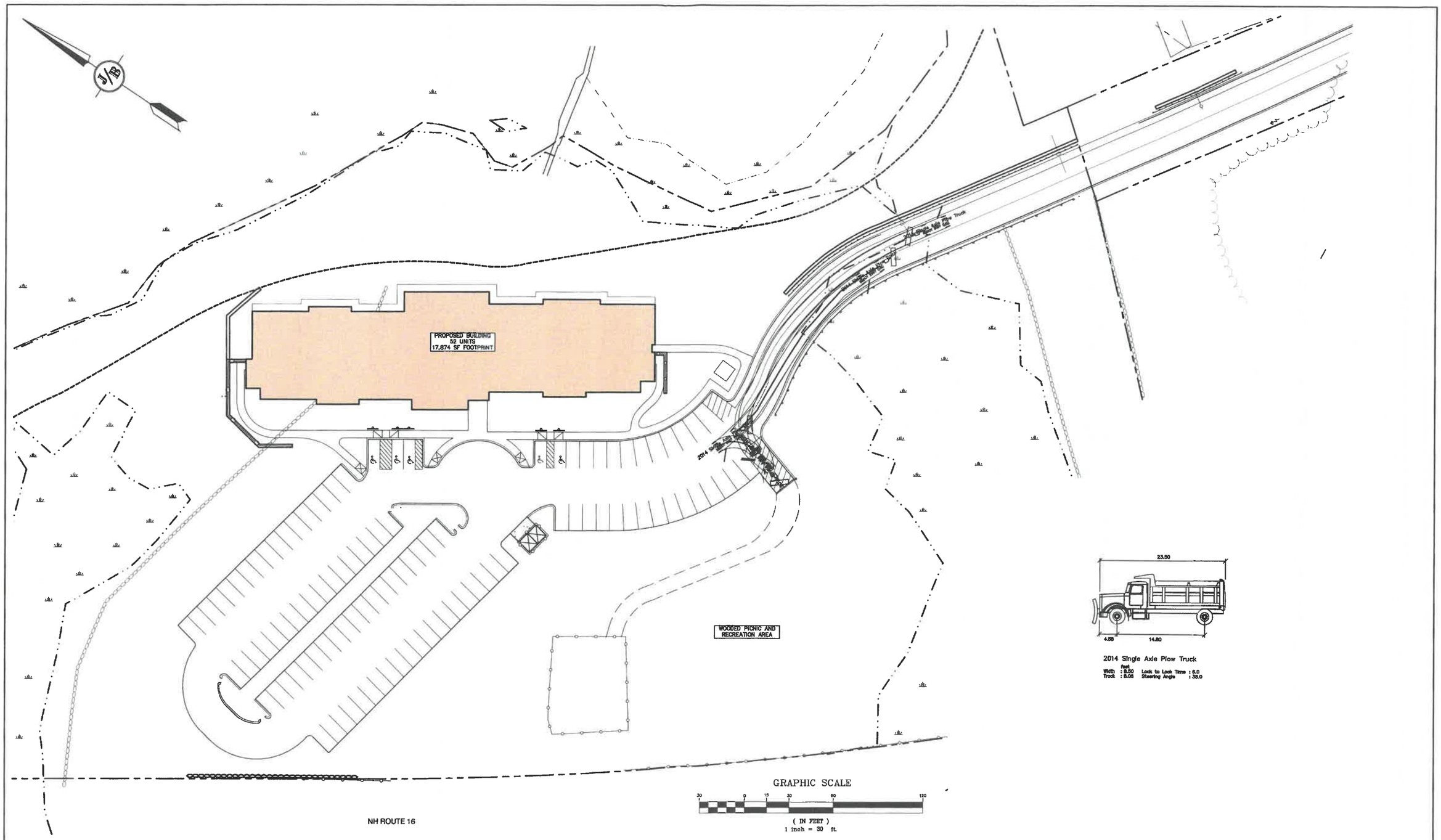
2021.12

REV.	DATE	REVISION	BY
5	2/10/22	REVISED PER CITY COMMENTS	LAZ
4	1/14/22	REVISED PER CITY COMMENTS	LAZ
3	12/14/21	REVISED PER CITY COMMENTS	LAZ
2	12/6/21	REVISED PER CONSERVATION COMMISSION COMMENTS	LAZ
1	9/21/21	ISSUED FOR PLANNING BOARD	LAZ

Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
Civil Engineering Services
603-772-4746 FAX: 603-772-0227 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	DETAIL SHEET CROSS SECTIONS
Project:	WADLEIGH ROAD APARTMENTS ROCHESTER, NH
Owner of Record:	SSG, LLC ATTN: FENTON GROEN 120 WASHINGTON STREET, ROCHESTER, NH 03839

DRAWING No.
D6
SHEET 25 OF 27
JBE PROJECT NO. 21137



2014 Single Axle Plow Truck

	feet		
Width	8.50	Lock to Lock Time	6.0
Track	8.08	Steering Angle	35.0

Design: LAZ	Draft: LAZ	Date: 9/8/21
Checked: BAJ	Scale: 1"=30'	Project No.: 21137
Drawing Name: 21137-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 – MICHAEL J. KERVAN No. 9643 – LICENSED PROFESSIONAL ENGINEER – 2/10/22

REV.	DATE	REVISION	BY
5	2/10/22	REVISED PER CITY COMMENTS	LAZ
4	1/14/22	REVISED PER CITY COMMENTS	LAZ
3	12/14/21	REVISED PER CITY COMMENTS	LAZ
2	12/6/21	REVISED PER CONSERVATION COMMISSION COMMENTS	LAZ
1	9/21/21	ISSUED FOR PLANNING BOARD	LAZ

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
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	TRUCK TURNING PLAN
Project:	WADLEIGH ROAD APARTMENTS ROCHESTER, NH
Owner of Record:	SSG, LLC ATTN: FENTON GROEN 120 WASHINGTON STREET, ROCHESTER, NH 03839

DRAWING No.

T1

SHEET 27 OF 27
JBE PROJECT NO. 21137

COLOR LEGEND

- 1 Bedroom Apt.
- 2 Bedroom Apt.
- Office
- Commons
- Service
- Corridors
- Vertical Circulation

Axe Handle Brook Side
Garden Level Apartments

Building Areas:

Level 1	17,280sf
Level 2	17,280sf
Level 3	16,929sf
Level 4	17,280sf
Total	68,769sf

Apartment Count:

	1 Bedroom	2 Bedrooms	Total
Level 1	4	4	8
Level 2	4	10	14
Level 3	5	10	15
Level 4	5	10	15
Totals	18	34	52

EGA
ARCHITECTS
One Vernon Street
Newburyport, MA 01950
978-462-5515

GROEN
CONSTRUCTION

Wadleigh Road Apts

Wadleigh Rd.
Rochester, NH 03839

17,280sf

Level 1 Floor Plan

3/32" = 1'-0"

24' 12' 0

EGA, P.C.

A1

02/09/22

COLOR LEGEND

- 1 Bedroom Apt.
- 2 Bedroom Apt.
- Office
- Commons
- Service
- Corridors
- Vertical Circulation

EGA ARCHITECTS
One Vernon Street
Newburyport, MA 01950
978-462-5515

GROEN CONSTRUCTION

Wadleigh Road Apts

Wadleigh Rd.
Rochester, NH 03839

17,280sf

Level 2 Floor Plan

3/32" = 1'-0"

24' 12' 0

EGA, P.C.

A2

02/09/22

COLOR LEGEND

- 1 Bedroom Apt.
- 2 Bedroom Apt.
- Office
- Commons
- Service
- Corridors
- Vertical Circulation

1 Level 3 Floor Plan
3/32" = 1'-0"

LEVEL 4 FLOOR PLAN SIMILAR

EGA
ARCHITECTS
One Vernon Street
Newburyport, MA 01950
978-462-5515

GROEN
CONSTRUCTION

Wadleigh Road Apts

Wadleigh Rd.
Rochester, NH 03839

Level 3 Floor Plan

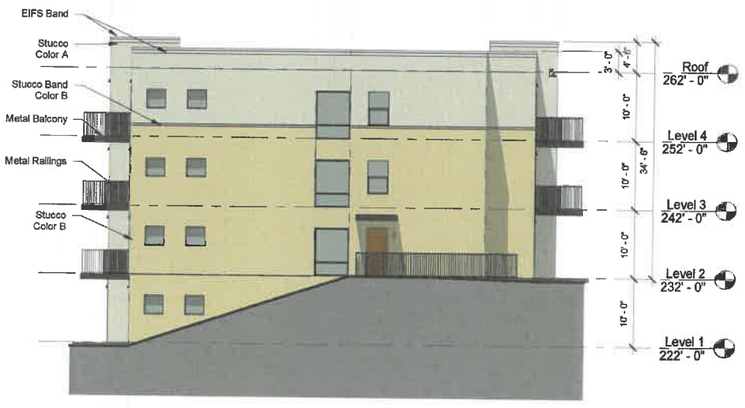
3/32" = 1'-0"

24' 12' 0

EGA, P.C.
A3
02/09/22

1 West Elevation
3/32" = 1'-0"

2 East Elevation
3/32" = 1'-0"



3 North Elevation
3/32" = 1'-0"

4 South Elevation
3/32" = 1'-0"

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ARCHITECTS
One Vernon Street
Newburyport, MA 01950
978-462-5515

GROEN
CONSTRUCTION

Wadleigh Road Apts

Wadleigh Rd.
Rochester, NH 03839

Building Elevations

3/32" = 1'-0"

24' 12' 0

EGA, P.C.
A4
02/09/22

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ARCHITECTS
One Vernon Street
Newburyport, MA 01950
978-462-5515

GROEN
CONSTRUCTION

Wadleigh Road Apts

Wadleigh Rd.
Rochester, NH 03839

Rendering

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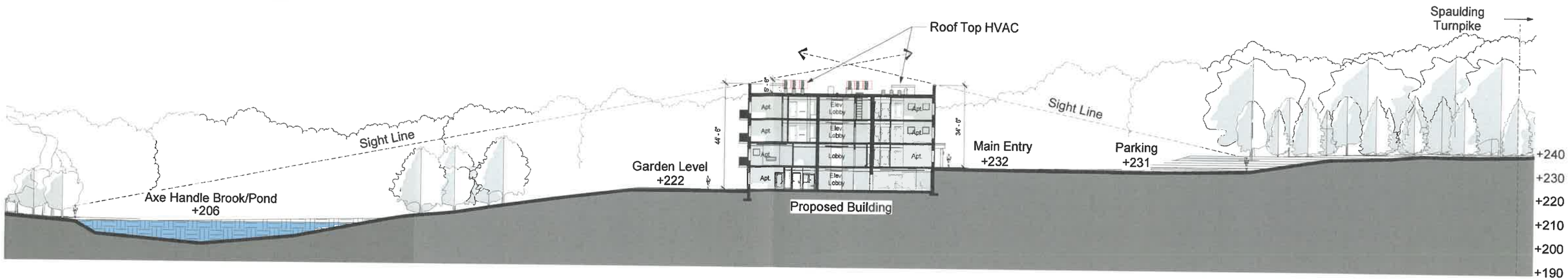
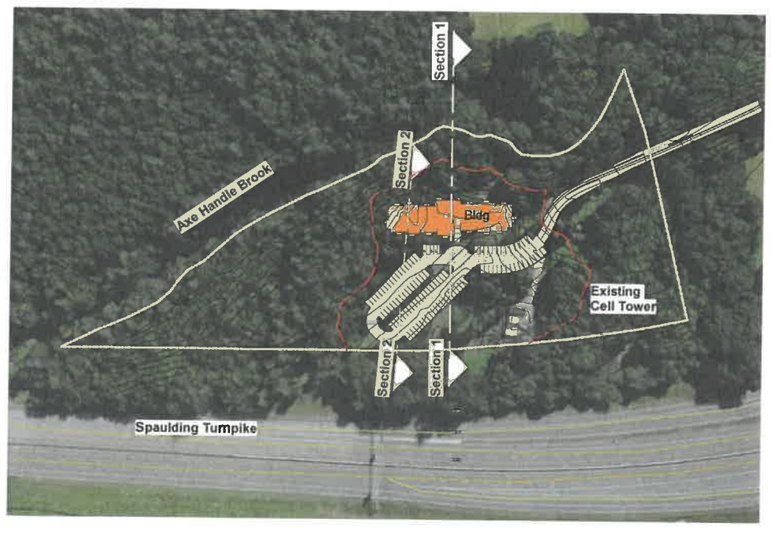
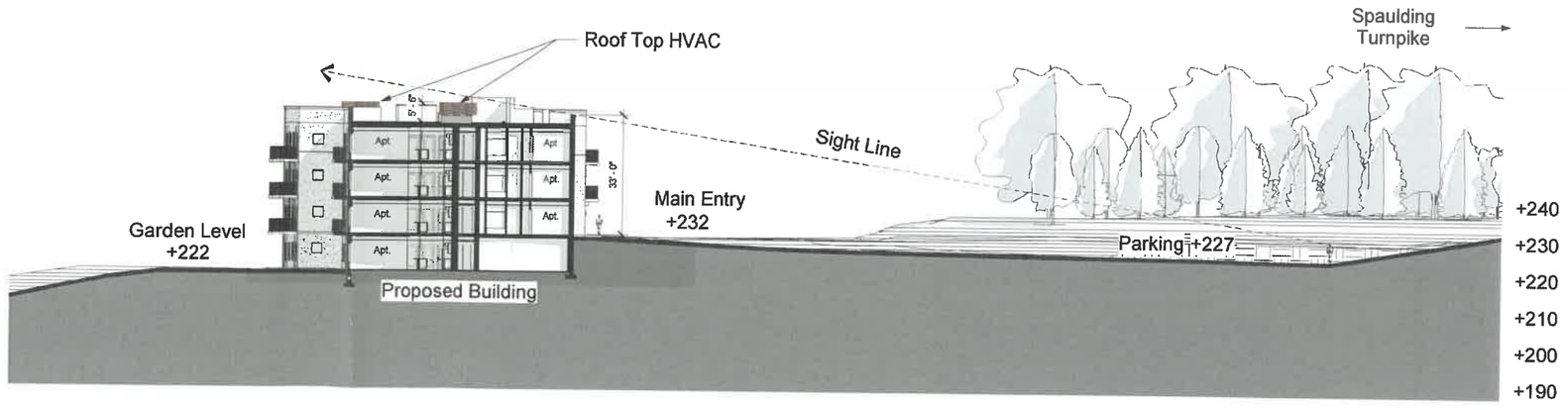
A5
02/09/22



1 Site Section
1" = 20'-0"



KEY PLAN



2 Site Section from Parking Lot
1" = 20'-0"

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GROEN
CONSTRUCTION

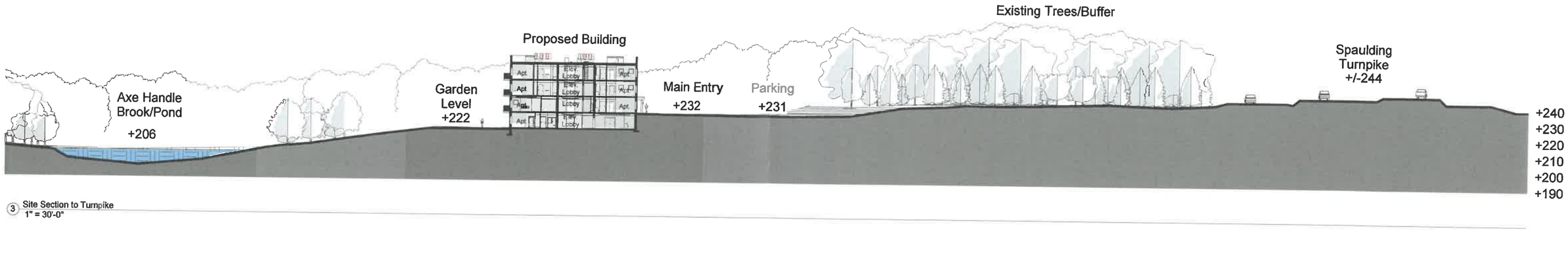
Wadleigh Road Apts

Wadleigh Rd.
Rochester, NH 03839

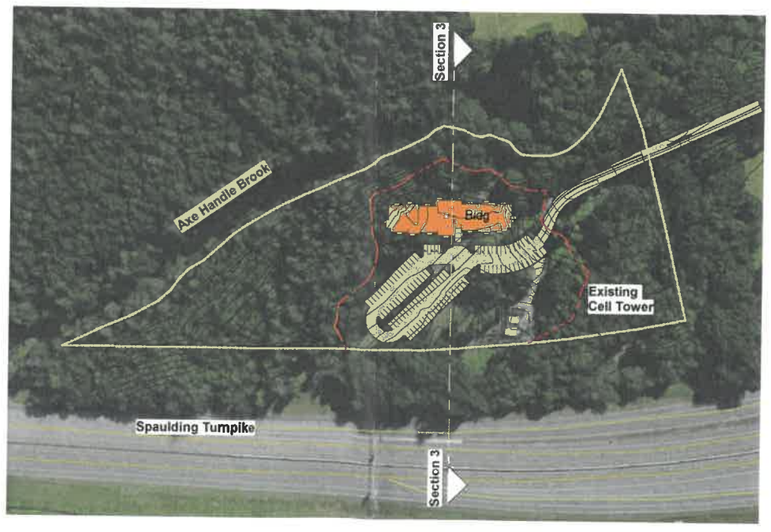
Site Section

0 20' 40'

EGA, P.C.
A6
02/09/22



3 Site Section to Turnpike
1" = 30'-0"



KEY PLAN

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ARCHITECTS
One Vernon Street
Newburyport, MA 01950
978-462-5515

GROEN
CONSTRUCTION

Wadleigh Road Apts

Wadleigh Rd.
Rochester, NH 03839

Site Section

0 30' 60'

EGA, P.C.
A7
02/09/22